4.10 NOISE

This chapter discusses noise in Butte County and evaluates the potential noise impacts associated with General Plan 2030 and the Airport Land Use Compatibility Plan (ALUCP) override. The following evaluation is based on both a quantitative and spatial analysis, and assesses human exposure to unacceptable noise levels, generation of unacceptable noise levels, groundborne vibration, and noise from airports.

A. Regulatory Framework

This section begins with a discussion of fundamental concepts of environmental acoustics and vibration, followed by a summary of federal, State and local laws, policies and regulations that apply to noise.

1. Fundamental Concepts of Environmental Acoustics and Vibration

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound can be caused by its pitch or its loudness. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales that are used to describe noise in a particular location. A decibel (dB) is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective "noisiness" or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as an approximate dou-

bling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 4.10-1.

There are several methods of characterizing sound. The most common in California is the A-weighted sound level, or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive.

Representative outdoor and indoor noise levels in units of dBA are shown in Table 4.10-2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Because excessive noise interferes with the ability to sleep, human sensitivity to noise increases during the evening and at night. Therefore, 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The Community Noise Equivalent Level (CNEL) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 p.m. – 10:00 p.m.) and a 10 dB addition to nocturnal (10:00 p.m. – 7:00 a.m.) noise levels. The Day/Night Average Sound Level (L_{dn} or DNL), is essentially the same as CNEL, with the exception that

TABLE 4.10-1 **DEFINITIONS OF ACOUSTICAL TERMS**

Term	Definition
Decibel, dB	A unit describing the amplitude of sound.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	Decibel level as measured using the A-weighting filter network, which de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear. All sound levels in this report are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1 percent, 10 percent, 50 percent, and 90 percent of the time during the measurement period.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels to sound levels measured from 7:00 p.m. to 10:00 p.m. and 10 decibels to sound levels measured between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	Noise which exceeds the existing ambient noise at a given location. Relative intrusiveness depends on amplitude, duration, frequency, time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Jones and Stokes, 2006.

TABLE 4.10-2 **TYPICAL SOUND LEVELS**

Outdoor Sound (Distance from Source)	dBA	Indoor Sound	Threshold
	140		
Civil Defense Siren (100')	130		
Jet Takeoff (200')	120		Pain Threshold
	110		
Diesel Pile Driver (100')	100	Rock Music Concert	Very Loud
	90	Boiler Room Printing Press Plant	
Freight Cars (50')	80		
	70	In Kitchen With Garbage Disposal Running	Moderately Loud
Freeway (100') Vacuum Cleaner (10')	60	Data Processing Center	
Light Traffic (100') Large Transformer (200')	50	Department Store	
	40	Private Business Office	
Soft Whisper (5')	30	Quiet Bedroom	Quiet
	20		
	10	Recording Studio	
	0		Threshold of Hearing

Source: Jones and Stokes, 2006.

the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors, the thresholds are about 15 dBA higher. Steady noise of sufficient intensity above 35

dBA and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA L_{dn}.

In situations where traffic noise governs the outdoor noise level, the L_{dn} value is about equal to the loudest hour noise level, which is typically during the day, and about 10 dB higher than the quietest hour noise level, which is typically at night. The California interior noise standard of 45 dBA L_{dn} is designed for sleep and speech protection, and most jurisdictions apply the same criterion for all residential uses.

Typical structural attenuation is about 15 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels at the face of the building are about 60 dBA L_{dn} with open windows and 65 to 70 dBA L_{dn} if the windows are closed. Levels of 55 to 60 dBA are common at land uses located along collector streets and secondary arterials, while 65 to 70 dBA is a typical value for land uses located along a primary or major arterial. Levels as high as 75 to 80 dBA can occur at the first row of development adjacent to a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways typically need to have windows that can be closed with an airtight seal, and bedrooms facing major roadways and freeways typically need acoustically-rated windows.

Attitude surveys are used to gauge community annoyance with noises intruding into homes or affecting outdoor activity areas. Previous attitude surveys have determined that causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The L_{dn} as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. There is disagreement about the relative annoyance of noise caused by aircraft and ground transportation. When measuring the percentage of the population highly annoyed, the threshold for ground vehicle noise is about 55 dBA L_{dn}. At an L_{dn} of

about 60 dBA, approximately 2 percent of the population is highly annoyed. When the L_{dn} increases to 70 dBA, the percentage of the population highly annoyed increases to about 12 percent. There is, therefore, an increase of about 1 percent per dBA between an L_{dn} of 60 to 70 dBA. Between an L_{dn} of 70 to 80 dBA, the percentage of the population that is highly annoyed increases by about 2 percent with each decibel.

People appear to respond more adversely to aircraft noise. When the L_{dn} is 60 dBA, approximately 10 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 2 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 3 percent increase in the percentage of the population that is highly annoyed.

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several methods are typically used to quantify the amplitude of vibration, including Peak Particle Velocity (PPV) and Root Mean Square (RMS) velocity. PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. RMS velocity is defined as the average of the squared amplitude of the signal. PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration. Typical sources of ground vibration include trains and dynamic construction equipment such as pile drivers.

Table 4.10-3 displays continuous vibration impacts on human annoyance and on buildings. As discussed previously, annoyance is a subjective measure and vibrations may be found to be annoying at much lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying.

Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little

TABLE 4.10-3 **REACTION OF PEOPLE AND DAMAGE TO BUILDINGS AT CONTINUOUS VIBRATION LEVELS**

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006- 0.019	Threshold of perception: Possibility of intrusion	Vibration unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibrations begin to annoy people	Virtually no risk of "architectural" damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk of "architectural" damage to normal dwellings such as plastered walls or ceilings.
0.50	Vibrations considered unpleasant by people subjected to continuous vibrations	Vibration at this level would cause "architectural" damage and possibly minor structural damage.

Source: Caltrans, 2004, *Transportation- and Construction-Induced Vibration Guidance Manual*, Sacramento, CA.

risk of actual structural damage. In high noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction-related groundborne vibration levels. Because of the impulsive nature of such activities, the peak particle velocity descriptor is routinely used to measure and assess ground-borne vibration. It is used almost exclusively to assess the potential of vibration to induce structural damage and the degree of annoyance for humans.

The two primary concerns with vibration, the potential to damage a structure and the potential to reduce quality life, are evaluated against different vibration limits. Studies have shown that the threshold of perception for average persons is in the range of 0.006 to 0.09 inches per second (in/sec), PPV. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as those in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as minor cracking of building elements, or may threaten the integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher and there is no general consensus as to what amount of vibration may pose a threat for structural damage to the building. Construction-induced vibration detrimental to the building is very rare and has only been observed in instances where construction activity occurs immediately adjacent to a structure that is already at a high state of disrepair.

Railroad train vibration is an example of a vibration that can be annoying to people. Human response to ground vibration has been correlated best with the velocity of the ground. The velocity of the ground is expressed on the decibel scale. The reference velocity is 1×10^{-6} in/sec, RMS, which equals 0 vibration decibels (VdB), and 1 in/sec equals 120 VdB. Although not a universally accepted notation, VdB is used in this document to reduce the potential for confusion with sound decibels.

Typical background vibration levels in residential areas are 50 VdB or lower, well below the threshold of perception for most humans. Perceptible vibration levels inside residences are attributed to the operation of heating and air conditioning systems, door slams and foot traffic. Construction activities, train operations, and street traffic are some of the most common external sources of vibration that are perceptible inside residences.

One of the problems with developing suitable criteria for groundborne vibration is the limited research into human response to vibration and, more im-

portantly, human annoyance inside buildings. However, experience with rapid transit systems over the last few decades has resulted in the development of rational vibration limits that can be used to evaluate human annoyance to groundborne vibration. These criteria are primarily based on experience with passenger train operations, such as rapid transit and commuter rail systems. The main difference between passenger and freight operations is the time duration of individual events; a passenger train lasts few seconds, whereas a freight train may last several minutes, depending on speed and length. Although these criteria are based on shorter duration events reflected by passenger trains, they are also used in this assessment to evaluate the potential of vibration annoyance on the site due to large freight trains.

The US Department of Transportation has developed vibration impact assessment criteria for evaluating vibration impacts associated with transit projects. The Federal Transit Administration (FTA) has proposed vibration impact criteria, based on maximum overall levels for a single event. The impact criteria for groundborne vibration are shown in Table 4.10-4. Note that there are criteria for frequent events (more than 70 events of the same source per day), occasional events (30 to 70 vibration events of the same source per day) and infrequent events (less than 30 vibration events of the same source per day).

2. California Building Code

New multi-family housing in the State of California is subject to the environmental noise limits set forth in Appendix Chapter 1208A.8.4 of the California Building Code. The noise limit is a maximum interior noise level of 45 dBA DNL. Where exterior noise levels exceed 60 dBA DNL, a report must be submitted with the building plans describing the noise control measures that have been incorporated into the design of the project to meet the interior noise limit.

3. Butte County Airport Land Use Compatibility Plan

The Butte County Airport Land Use Commission (ALUC) is charged with promoting land use compatibility around the county's airports, in order to

TABLE 4.10-4 **RAILROAD TRAIN GROUNDBORNE VIBRATION IMPACT CRITERIA**

Land Use Category*Note, Existing Conditions	Groundborne Vibration Impact Levels (VdB re 1 μinch/sec, RMS) Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Category 1: Buildings where vibration would interfere with interior operations	65 VdB[d]	65 VdB[d]	65 VdB[d]
Category 2: Residences and buildings where people normally sleep	72 VdlB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use	75 VdB	78 VdB	83 VdB

[a] "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall in this category.

[b] "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.

[c] "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.

[d] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration sensitive manufacturing or research should always require detailed evaluation to define the acceptable vibration levels. Ensuring low vibration levels in a building requires special design of HVAC systems and stiffened floors.

Source: US Department of Transportation, Federal Transit Administration, May 2006, *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06.

minimize public exposure to excessive noise and safety hazards. The primary means by which this is accomplished is through the preparation and periodic update of an Airport Land Use Compatibility Plan (ALUCP), the most recent of which was adopted in 2000. The ALUCP covers four airports in Butte County: Chico Municipal Airport, Oroville Municipal Airport, Paradise Skypark Airport, and Ranchaero Airport. The ALUCP analyzes the noise impacts from these airports, using data from the Butte County Airport Comprehensive Land Use Plan.

All land uses located outside of the 65 dB CNEL contours are considered compatible. However, according to the ALUCP, residential and lodging land uses located between the 55 dB and 60 dB CNEL contours could generate complaints. This is to be expected given that the background noise levels, absent of aircraft overflights, are low. Maximum noise levels due to typical single engine aircraft overflights can range between 65 dB and 80 dB, which may be considered annoying to individuals.

The purpose of the ALUCP is to establish procedures and criteria by which, in accordance with the California State Aeronautics Act, the ALUC shall review proposed land use development in Butte County and affected cities within the county. In addition, the ALUC shall review certain types of airport development proposals. It is important to note that the ALUCP specifically states: "Where development not in conformance with the Airport Land Use Compatibility Plan already exists, additional infill development of similar land uses may be allowed to occur, even if such land uses are to be prohibited elsewhere in the zone. This exception applies only within Compatibility Zones B2 and C."

B. Existing Conditions

This section discusses the existing conditions related to noise in Butte County.

1. Existing Noise Sensitive Land Uses

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the primary intended use of the land. Places where people live, sleep, recreate, worship, and study are generally considered to be sensitive to noise because intrusive noise can be disruptive to these activities.

2. Major Mobile Noise Sources

Major mobile noise sources in the county include roadway traffic, railroads, and airports. Roadway traffic is the most substantial source because the noise is constant as opposed to the periodic noise from railroads and airports.

a. Traffic

Noise generated by vehicular traffic in the county was evaluated using the Federal Highway Administration (FHWA) Traffic Noise Model Version 2.5 and traffic volumes developed as part of the General Plan 2030 process. Table 4.10-5 summarizes existing traffic noise levels along roadways in the county expressed at L_{dn} values at 100 feet from the roadway centerline. The distance to the 70, 65, and 60 L_{dn} noise contours is also provided. The existing noise contours, which are based on the information described in Table 4.10-5, are illustrated in Appendix D of this EIR.

b. Railroad

Railroad activity in Butte County occurs along two Union Pacific Railroad (UPRR) alignments. The "Valley Line" runs parallel to the west side of Highway 99, while another, unnamed UPRR line runs generally parallel to the Feather River. For the Valley Line, the 70 dB-L_{dn} contour is located 159 feet from the centerline of the track, the 65 dB-L_{dn} contour is located about 342 feet from the centerline of the track, and the 60 dB-L_{dn} contour is located 736 feet from the centerline of the track. For the line running along the Feather River, the 70 dB-L_{dn} contour is located 184 feet from the centerline of the track, the 65 dB-L_{dn} contour is located about 398 feet from the centerline of the track, and the 60dB-L_{dn} contour is located 858 feet from the centerline of the track. The existing noise contours for the railroad is also shown in Appendix D.

c. Aircraft

As discussed in Section A.3, there are four primary airports in Butte County. The following is a description of each airport and its activity.

TABLE 4.10-5 **EXISTING TRAFFIC NOISE LEVELS**

	Segment Location	Receiver Distance* (Feet)	dB Ldn	Distance to L_{dn} Noise Contour (Feet)		
				70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
SR 32	Muir Ave. to East Ave.	100	62	45	83	145
	East Ave. to W. Sacramento Ave.	100	60		64	117
	W. Sacramento Ave. to W. 1st St.	100	61	33	69	125
	W. 1st St. W. 5th St.	100	62	43	83	150
	W. 5th St. 8th/9th/Walnut St.	100	60		59	107
	8th St. (One way WB),Walnut to Main	100	58		50	92
	9th St. (One way EB), Walnut to Main	100	58		47	88
	8th St. (WB), Main to SR 99	100	59		57	103
	9th St. (EB), Main St. to SR 99	100	60		61	111
	SR 99 to Forest Ave.	100	61	34	69	123
	Forest Ave. to Humboldt Rd. (Hog Springs)	100	62	41	78	132
	Humboldt Rd. (H.S.) to Robert E. Lee Dr. (F.R.)	100	58		47	85
SR 70	Yuba County Line to Lower Honcut Rd.	100	66	74	127	225
	Lower Honcut Rd. to East Gridley Rd.	100	67	77	131	234
	East Gridley Rd. to Palermo Rd.	100	66	76	129	229
	Palermo Rd. to SR 162	100	67	78	132	234
	SR 162 to Montgomery St.	100	68	87	149	258
	Montgomery St. to Grand Ave.	100	70	106	184	321
	Grand Ave. to SR 149	100	68	88	149	257
	SR 149 to SR 191	100	62	40	76	131
	SR 191 to Pentz Rd.	100	57		40	77
	Pentz Rd. to Big Bend Rd. (Concow)	100	55			62

TABLE 4.10-5 **EXISTING TRAFFIC NOISE LEVELS** (CONTINUED)

	Segment Location	Receiver Distance* (Feet)	dB Ldn	Distance to L_{dn} Noise Contour (Feet)		
				70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
SR 99	Sutter County line to Archer Ave.	100	66	71	124	222
	Archer Ave. to Spruce St. (Gridley)	100	63	45	87	164
	Spruce St. to East Biggs Hwy.	100	66	68	119	213
	East Biggs Hwy. SR 162 (East)	100	64	57	99	180
	SR 162 to (East) to SR 149	100	64	54	95	171
	SR 149 to Durham - Pentz Rd.	100	69	100	174	304
	Durham - Pentz Rd to Skyway	100	69	98	169	292
	Skyway to East 20th St.	100	71	126	215	369
	East 20th to SR 32	100	73	146	249	430
	SR 32 to Cohasset Rd.	100	73	147	250	432
	Cohasset Rd. to East Ave.	100	70	115	194	333
	East Ave. to Eaton Rd.	100	69	97	165	283
	Eaton Rd. to Keefer Rd.	100	66	72	122	209
SR 149	SR 70 to SR 99	100	40			
SR 162	Glenn County line to SR 99 (south intersect)	100	51			34
	SR 99 (north intersect) to Larkin Rd.	100	60		60	105
	Larkin Rd. to SR 70	100	59		55	99
	SR 70 to Feather River Blvd.	100	64	51	95	184
	Feather River Blvd. to Lincoln Blvd.	100	63	44	84	153
	Lincoln Blvd. to Olive Hwy.	100	63	46	86	157
	Olive Hwy. to Lower Wyandotte Rd.	100	62	36	74	137
	Lower Wyandotte Rd. to Foothill Blvd.	100	63	49	89	156
	Foothill Blvd. to Canyon Dr.	100	61	36	72	125

TABLE 4.10-5 **EXISTING TRAFFIC NOISE LEVELS** (CONTINUED)

	Segment Location	Receiver Distance* (Feet)	dB Ldn	Distance to L_{dn} Noise Contour (Feet)		
				70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
	Canyon Dr. to Forbestown Rd.	100	39			
SR 191	SR 70 to Durham-Pentz Rd.	100	57		37	74
	Durham-Pentz Rd. to Airport Rd.	100	57		37	74
	Airport Rd. to Bushmann Rd.	100	58		47	88
	Buschmann Rd. to Pearson Rd.	100	58		46	86
Aguas Frias Rd.	Durham-Dayton Rd. to Grainland Ave.	100	50			
	Grainland Ave. to SR 162	100	47			
Biggs East Hwy.	Biggs to SR 99	100	50			
	SR 99 to Larkin Rd.	100	51			35
Clark Rd.	Wagstaff Rd. to Skyway	100	57		40	78
Cohasset Rd.	SR 99 to East Ave.	100	60		63	112
	East Ave. to Lupin Rd.	100	60		63	110
	Lupin Rd. to E. Lassen Ave.	100	59		57	98
	Lassen Ave. to Boeing Dr. (Chico M. Airport)	100	60	33	68	116
	Boeing Dr. to Keefer Rd.	100	54			60
	Keefer Rd. to Vilas Rd.	100	53			48
Colusa Hwy.	Colusa County line to Pennington Rd.	100	45			
	Pennington Rd. to Biggs Gridley Rd.	100	47			
	Biggs Gridley Rd. to SR 99	100	56			68
Dayton Rd.	SR 32 to Hegan Lane	100	55			60
	Hegan Lane to Durham-Dayton Hwy.	100	55			66
Durham-Dayton Hwy.	Dayton Rd. to Midway	100	53			51
	Midway to Stanford Lane	100	50			

TABLE 4.10-5 **EXISTING TRAFFIC NOISE LEVELS** (CONTINUED)

	Segment Location	Receiver Distance* (Feet)	dB Ldn	Distance to L_{dn} Noise Contour (Feet)		
				70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
	Stanford Lane to SR 99	100	50			
Durham–Pentz Rd.	SR 99 to SR 191	100	56		35	71
	SR 191 to Pentz Rd.	100	50			
East Ave. - Manzanita Ave. - Bruce Ave.	SR 32 to Cussick Ave.	100	61	35	70	120
	Cussick Ave. to Esplanade	100	63	48	86	146
	Esplanade to SR 99	100	60		65	116
	SR 99 to Cohasset Rd.	100	58		46	86
	Cohasset Rd. to Floral Ave.	100	60		63	110
	Floral Ave. to Mariposa Ave.	100	61	33	68	118
	Mariposa Ave. to Marigold Ave.	100	58		51	91
	Marigold Ave. to Manzanita Ave.	100	58		51	91
	East Ave. to Vallombrosa Ave.	100	58		51	91
	California Park Dr. to SR 32	100	59		57	98
East Gridley Rd.	SR 99 to Larkin Rd.	100	54			58
	Larkin Rd. to SR 70	100	54			58
Eaton Rd.	Esplanade to SR 99	100	58		50	90
	SR 99 to Hicks Lane	100	59		59	101
	Hicks Lane to Cohasset Rd.	100	59		58	99
Esplanade	SR 99 to Garner Lane	100	47			
	Garner Lane to Eaton Rd.	100	56		35	71
	Eaton Rd. to Lassen Ave.	100	58		48	88
	Lassen Ave. to East Ave.	100	60		59	105
	East Ave. to Cohasset Rd.	100	60		59	105

TABLE 4.10-5 **EXISTING TRAFFIC NOISE LEVELS** (CONTINUED)

	Segment Location	Receiver Distance* (Feet)	dB Ldn	Distance to L_{dn} Noise Contour (Feet)		
				70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
	Cohasset Rd. to E. 9th Ave.	100	60		65	115
	E. 9th Ave. to E. 1st Ave.	100	59		51	93
	E. 1st Ave. to Main St./Broadway	100	60		65	115
Main St. (NB)	Esplanade/E. 1st St. to 9th St.	100	58		48	87
Broadway (SB)	Esplanade/E. 1st St. to 9th St.	100	57		39	77
Park Ave.	E. 9th St. to 16th St.	100	58		46	86
	E. 16th St. to E. 20th St.	100	57		43	82
	E. 20th St. to East Park Ave.	100	59		55	96
E. Park Ave.	Park Ave. to SR 99	100	60		65	116
Forbestown Rd.	SR 162 to Lumpkin Rd.	100	51			35
Hegan Lane	Dayton Rd. to S.P. Railroad tracks	100	55			64
	S.P. Railroad tracks to Midway	100	56		34	69
Honey Run Rd.	Skyway to Centerville Rd.	100	49			
Centerville Rd.	Honey Run Rd. to Nimshew Rd.	100	45			
Nimshew Rd.	Centerville to Skyway	100	43			
Larkin Rd.	SR 162 to E. Hamilton Rd.	100	56		40	75
	E. Hamilton Rd. to East Biggs Hwy.	100	51			37
	East Biggs Hwy. to E. Gridley Hwy.	100	48			
	E. Gridley Hwy. to E. Evans Reimer Rd.	100	55			63
Lincoln Blvd.	SR 162 to Marysville Baggett Rd.	100	57		44	82
	Marysville Baggett Rd. to Monte Vista Ave.	100	59		56	96
	Monte Vista Ave. to Ophir Rd.	100	58		50	89

TABLE 4.10-5 **EXISTING TRAFFIC NOISE LEVELS** (CONTINUED)

	Segment Location	Receiver Distance* (Feet)	dB Ldn	Distance to L_{dn} Noise Contour (Feet)		
				70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
	Ophir Rd. to Palermo Rd.	100	57		40	77
Lower Honcut Rd.	SR 70 to Palermo Honcut Hwy.	100	45			
	Palermo Honcut Hwy. to LaPorte Rd.	100	45			
LaPorte Rd.	Lower Honcut Rd. to Oro-Bangor Hwy.	100	47			
Lower Wyandotte Rd.	SR 162 to Oro-Bangor Hwy.	100	55			66
	Oro-Bangor Hwy. to Ophir Rd.	100	60		63	106
	Ophir Rd. to Foothill Blvd.	100	57		44	82
Upper Palermo Rd.	Ophir Rd. to Palermo Rd.	100	57		44	80
Palermo Honcut Hwy.	Palermo Rd. to Lower Honcut Rd.	100	52			45
Midway	East Park Ave. to Hegan Lane	100	61	36	72	122
	Hegan Lane to Southgate Extension	100	59		56	96
Montgomery St.	SR 70 to Lincoln Blvd.	100	55			62
	Lincoln Blvd. to Table Mountain Blvd.	100	55			62
Oroville - Bangor Hwy.	Lincoln Blvd. to Lower Wyandotte Rd.	100	50			
	Lower Wyandotte Rd. to Foothill Blvd.	100	50			
	Foothill Blvd. to Swedes Flat Rd.	100	47			
	S/O Swedes Flat Rd.	100	50			
Palermo Rd.	Upper Palermo Rd. to Lincoln Blvd.	100	49			
	Lincoln Blvd. to Lone Tree Rd.	100	49			
	Lone Tree Rd. to SR 70	100	49			
Pentz Rd.	SR 70 to Messilla Valley Rd.	100	52			43
	Messilla Valley Rd. to Malibu Dr.	100	54			55
Skyway	SR 99 to Notre Dame Blvd.	100	63	51	90	157

TABLE 4.10-5 **EXISTING TRAFFIC NOISE LEVELS** (CONTINUED)

	Segment Location	Receiver Distance* (Feet)	dB Ldn	Distance to L_{dn} Noise Contour (Feet) 70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
	Notre Dame Blvd. to Bruce Rd.	100	62	40	77	131
	Bruce Rd. to Honey Run Rd.	100	67	83	138	234
	Honey Run Rd. to Neal Rd.	100	66	72	120	203
	Neal Rd. to Pearson Rd.	100	61	34	69	122
	Pearson Rd. to Bille Rd.	100	60		61	108
	Bille Rd. to Wagstaff Rd.	100	59		57	100
	Wagstaff Rd. to Clark Rd.	100	57		41	79
	Clark Rd. to Pentz Rd	100	59		53	94
	Pentz Rd. to S. Park	100	59		55	97
	South Park to Nimshew Rd	100	58		51	91
	Nimshew Rd. to Lovelock Rd.	100	50			
	Lovelock Rd. to Powellton Rd.	100	47			
Table Mountain Blvd.	Montgomery St. to County Center Dr.	100	57		42	80
	County Center Dr. to SR 70	100	60		61	105
Ophir Rd.	East of Feather River Blvd.	100	57		46	84
Foothill Blvd.	South of SR 162	100	54			58
Miners Ranch Rd.	South of SR 162	100	53			53

* Distance to roadway centerline.

Source: ICF Jones & Stokes, 2009.

i. Chico Municipal Airport

The Chico Municipal Airport is the largest airport in Butte County. According to the ALUCP, the airport has 70,000 annual takeoffs and landings. There are approximately 130 aircraft based at the airport. The airport runway is equipped with a precision instrument landing system and accommodates a full range of business aircraft. The airport has limited scheduled commuter airline service. The airport also receives major use during the fire season, due to the fact that it is a designated "fire attack base."

Average annual daily aircraft operations without fire attack aircraft is 182 operations. During a peak fire season day, an additional 200 aircraft operations may occur.

ii. Oroville Municipal Airport

The Oroville Municipal Airport is located within an extension of the Oroville city limits, approximately 2.5 miles west of the remainder of the city. Existing annual average operations are approximately 100 operations per day.

iii. Paradise Skypark Airport

The Paradise Skypark Airport is a privately-owned airport. Existing annual average operations are approximately 41 operations per day. As of 2003, there were 45 aircraft based at the airport.

iv. Ranchaero Airport

The Ranchaero Airport is a privately-owned airport which is located near the southwestern edge of the City of Chico. This airport serves a combination of recreational, flight training, agricultural, and limited business flights. Existing annual average operations are approximately 14 operations per day.

3. Major Stationary Noise Sources

Industrial processes and facilities can be sources of substantial noise. Mechanical equipment, heavy equipment, and trucks operated at these facilities are the primary sources of noise. Major stationary noise sources in unincorporated Butte County are described below.

a. Landfills/Transfer Stations

The Neal Road Recycling and Waste Facility (Neil Road Facility) is located at 1023 Neal Road, south of the City of Chico and east of Highway 99. There are also two solid waste transfer stations in Butte County; one is located south of Chico on Scott Road, and the other is located on Ord Ranch Road near Gridley. A worst-case hourly average noise level at the landfill is 80 dBA L_{eq}, at a reference distance of 50 feet, and maximum levels can be as high as 94 dB at a distance of 50 feet. Based on field observations, there are no noise-sensitive land uses affected by the Neil Road Facility. Noise levels associated with transfer stations indicate that typical hourly average noise levels range between 60 dB L_{eq} and 70 dB L_{eq} at a distance of 50 feet from the transfer station building.

b. Mining Operations

Existing and proposed aggregate mining operations within Butte County have been identified as potential stationary noise sources. Aggregate mining and processing noise emissions for small to moderate size facilities are approximately 85 dB L_{eq} and 90 dB L_{max}, respectively, at a reference distance of 100 feet. Therefore, unshielded operations would require setbacks of approximately 3,000 feet. Shielding of various on-site noise sources with natural berms or acoustical curtains can reduce overall noise levels between 5 dB and 20 dB.[1]

c. General Service Commercial & Light Industrial Uses

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

[1] Butte County, August 8, 2005, *General Plan Technical Update Background Report, Final Draft*, page 17-13.

d. Recreational Sources

The Cycleland Speedway, the Paradise Rod Gun & Shooting Club, and parks and school playing fields are the major sources of stationary noise from recreational uses in the county. The Cycleland Speedway is located in the central portion of Butte County on the southwest corner of Nelson Road and Highway 99. Events at Cycleland Speedway run from mid-February to mid-October. Most events are scheduled on Saturday or Sunday. Based on data collected at similar facilities, the worst-case hourly average noise level is about 80 dBA L_{eq}, at a reference distance of 200 feet from the center of the motocross track. Maximum levels could be as high as 88 dB at a distance of 200 feet.

The Paradise Rod & Gun Club Shooting Range is a firing range on a 40-acre parcel on the south side of the Skyway, between Chico and Paradise. The club provides recreational shooting for the general public and club members, local law enforcement for training, and youth firearms safety. Noise conditions associated with this facility were evaluated in an environmental noise analysis prepared by Bollard Acoustical Consulting in 1998.[2] Because there is no County noise ordinance, the report identified appropriate noise level criteria designed specifically for the project. A series of noise mitigation measures were included in the project design to reduce the potential for annoyance at residential uses.

There are numerous park and school uses within the unincorporated areas of Butte County. At a distance of 100 feet from an elementary school playground being used by 100 students, average and maximum noise levels of 60 and 75 dB, 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 service commercial uses, the noise generation of parks and school playing fields is variable.

[2] Butte County, August 8, 2005, *General Plan Technical Update Background Report, Final Draft*, page 17-15.

e. Other Stationary Noise Sources

The Wild Goose Gas Storage facility is located on West Liberty Road, west of Gridley. Bollard & Brennan, Inc. conducted noise level measurements at the nearest residential uses to the east and west of the project site.[3] Noise measurement results indicated that daytime and nighttime noise generated by the facility was not audible, and that overall background noise levels were generally below 50 dB L_{eq}.

4. Groundborne Vibration Sources

Train passages and construction activity can generate high levels of groundborne vibration. Blasting and high-impact construction equipment such as pile drivers have the potential to result in perceptible vibration at noise sensitive land uses and in extreme cases result in damage to structures. Vibration from train passages can sometimes be perceptible within about 100 feet of a track.

C. Standards of Significance

General Plan 2030 and the ALUCP override would have a significant noise-related impact if they would:

- Expose people to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or other applicable standards.
- Expose people to or generate excessive groundborne vibration or groundborne noise levels.
- Create a substantial temporary, periodic or permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

[3] Butte County, August 8, 2005, *General Plan Technical Update Background Report, Final Draft*, page 17-14.

- Expose people living or working in the project area to excessive noise from a public or private airport.

D. Impact Discussion

The following discussion provides an analysis of potential project and cumulative noise impacts that could occur as a result of the projected 2030 buildout of General Plan 2030 and the ALUCP override.

1. Project Impacts

a. Expose people to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or other applicable standards.

The assessment of the exposure of people to or generation of noise in this section is based on an analysis of the spatial location of development allowed by General Plan 2030. General Plan 2030 would allow development of residential land uses and other potentially noise sensitive uses, such schools, parks, and churches, in areas adjacent to noise sources, such as roadways, industrial facilities, airports, or railroad tracks. However, the Health and Safety Element of General Plan 2030 includes new standards for maximum allowable exposure to both transportation and non-transportation noise sources. Table 4.10-6 shows the Health and Safety Element's performance standards for new projects affected by transportation noise sources. Table 4.10-7 shows the maximum allowable noise exposure to non-transportation noise sources.

Table 4.10-8 summarizes traffic noise levels predicted in the buildout year of 2030. The noise contours predicted in the buildout year of 2030 are also illustrated in Appendix D. Rail operations are not anticipated to substantially increase in the future. Aircraft operations at the county's four airports are anticipated to increase in the future. Aircraft noise contours for each airport are presented in Appendix E.

TABLE 4.10-6 **MAXIMUM ALLOWABLE NOISE EXPOSURE TO TRANSPORTATION SOURCES**

	Exterior Noise Level Standard for Outdoor Activity Areas		Interior Noise Level Standard	
Land Use	**L_{dn}/CNEL, dB**	**L_{eq}, dBA[a]**	**L_{dn}/CNEL, dB**	**L_{eq}, dB[b]**
Residential	60[c]	–	45	–
Transient lodging	60[c]	–	45	–
Hospitals, nursing homes	60[c]	–	45	–
Theaters, auditoriums, music halls	–	–	–	35
Churches, meeting halls	60[c]	–	–	40
Office buildings	–	–	–	45
Schools, libraries, museums	–	70	–	45
Playgrounds, neighborhood parks	–	70	–	–

Note: – = Not applicable.
[a] Where the location of outdoor activity areas is unknown, the exterior noise-level standard shall be applied to the property line of the receiving land use.
[b] As determined for a typical worst-case hour during periods of use.
[c] Where it is not possible to reduce noise in outdoor activity areas to 60 dB L_{dn}/CNEL or less using a practical application of the best-available noise-reduction measures, an exterior noise level of up to 65 dB L_{dn}/CNEL may be allowed, provided that available exterior noise-level reduction measures have been implemented and interior noise levels are in compliance with this table.
Source: Butte County General Plan 2030.

The traffic noise modeling results in Table 4.10-8 indicate that traffic noise levels within several hundred feet of major roadways, including Highways 32, 70, and 99, will exceed 60 L_{dn} in the future. Train noise levels and aircraft noise levels will also exceed 60 L_{dn} at many areas throughout the county.

TABLE 4.10-7 **MAXIMUM ALLOWABLE NOISE EXPOSURE TO NON-TRANSPORTATION NOISE SOURCES**

	Designation					
	Daytime 7 a.m. – 7 p.m.		Evening 7 p.m. – 10 p.m.		Night 10 p.m. – 7 a.m.	
Noise Level Description	Urban	Non-Urban	Urban	Non-Urban	Urban	Non-Urban
Hourly Leq, dB	55	50	50	45	45	40
Maximum Level, dB	70	60	60	55	55	50

Notes:
1. "Non-Urban designations" are Agriculture, Timber Mountain, Resource Conservation, Foothill Residential, and Rural Residential. All other designations are considered "urban designations" for the purposes of regulating noise exposure.
2. Each of the noise levels specified above shall be lowered by 5 dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g. caretaker dwellings).
3. The County can impose noise level standards which are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site.
4. In urban areas, the exterior noise level standard shall be applied to the property line of the receiving property. In rural areas, the exterior noise level standard shall be applied at a point 100 feet away from the residence. The above standards shall be measured only on property containing a noise sensitive land use. This measurement standard may be amended to provide for measurement at the boundary of a recorded noise easement between all affected property owners and approved by the County.

Source: Butte County General Plan 2030.

With implementation of General Plan 2030, there is potential for new noise sensitive uses to be located in areas where noise exceeds County noise compatibility standards.

The following goals, policies and actions in the proposed General Plan 2030 Health and Safety Element directly address the exposure of new noise sensitive land uses to noise exceeding General Plan noise standards. Goal HS-1 is

TABLE 4.10-8 **FUTURE (2030) TRAFFIC NOISE LEVELS**

	Segment Location	Receiver Distance* (Feet)	dB L_{dn}	Distance to Ldn Noise Contour (Feet)		
				70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
SR 32	Muir Ave. to East Ave.	100	63	52	93	164
	East Ave. to W. Sacramento Ave.	100	61	35	72	129
	W. Sacramento Ave. to W. 1st St.	100	62	38	75	135
	W. 1st St. W. 5th St.	100	63	47	88	160
	W. 5th St. 8th/9th/Walnut St.	100	61		67	122
	8th St. (One way WB),Walnut to Main	100	60		60	109
	9th St. (One way EB), Walnut to Main	100	59		56	101
	8th St. (WB), Main to SR 99	100	61		66	121
	9th St. (EB), Main St. to SR 99	100	61	33	69	125
	SR 99 to Forest Ave.	100	64	54	96	177
	Forest Ave. to Humboldt Rd. (Hog Springs)	100	62	44	82	141
	Humboldt Rd. (H.S.) to Robert E. Lee Dr. (F.R.)	100	59		54	95
SR 70	Yuba County Line to Lower Honcut Rd.	100	68	88	153	270
	Lower Honcut Rd. to East Gridley Rd.	100	68	90	157	278
	East Gridley Rd. to Palermo Rd.	100	69	100	177	313
	Palermo Rd. to SR 162	100	69	98	171	301
	SR 162 to Montgomery St.	100	71	121	211	369
	Montgomery St. to Grand Ave.	100	72	133	233	409
	Grand Ave. to SR 149	100	70	112	191	331
	SR 149 to SR 191	100	62	44	82	143
	SR 191 to Pentz Rd.	100	58		47	86
	Pentz Rd. to Big Bend Rd. (Concow)	100	56		38	74

TABLE 4.10-8 **FUTURE (2030) TRAFFIC NOISE LEVELS** (CONTINUED)

	Segment Location	Receiver Distance* (Feet)	dB L_{dn}	Distance to Ldn Noise Contour (Feet) 70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
SR 99	Sutter County line to Archer Ave.	100	68	85	148	267
	Archer Ave. to Spruce St. (Gridley)	100	64	52	96	186
	Spruce St. to East Biggs Hwy.	100	67	79	137	247
	East Biggs Hwy. SR 162 (East)	100	66	72	126	229
	SR 162 to (East) to SR 149	100	66	70	123	223
	SR 149 to Durham - Pentz Rd.	100	72	131	230	404
	Durham - Pentz Rd to Skyway	100	72	135	234	406
	Skyway to East 20th St.	100	73	148	253	437
	East 20th to SR 32	100	74	168	288	498
	SR 32 to Cohasset Rd.	100	74	168	288	498
	Cohasset Rd. to East Ave.	100	72	137	234	403
	East Ave. to Eaton Rd.	100	71	121	206	354
	Eaton Rd. to Keefer Rd.	100	68	88	149	256
SR 149	SR 70 to SR 99	100	40			
SR 162	Glenn County line to SR 99 (south intersect)	100	53			45
	SR 99 (north intersect) to Larkin Rd.	100	60		61	107
	Larkin Rd. to SR 70	100	60		65	118
	SR 70 to Feather River Blvd.	100	66	65	122	240
	Feather River Blvd. to Lincoln Blvd.	100	64	58	104	195
	Lincoln Blvd. to Olive Hwy.	100	64	57	103	193
	Olive Hwy. to Lower Wyandotte Rd.	100	63	46	88	167
	Lower Wyandotte Rd. to Foothill Blvd.	100	65	61	106	190
	Foothill Blvd. to Canyon Dr.	100	63	51	90	159

TABLE 4.10-8 **FUTURE (2030) TRAFFIC NOISE LEVELS** (CONTINUED)

	Segment Location	Receiver Distance* (Feet)	dB L_{dn}	Distance to Ldn Noise Contour (Feet) 70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
	Canyon Dr. to Forbestown Rd.	100	39			
SR 191	SR 70 to Durham-Pentz Rd.	100	57		40	79
	Durham-Pentz Rd. to Airport Rd.	100	57		37	75
	Airport Rd. to Bushmann Rd.	100	59		54	98
	Buschmann Rd. to Pearson Rd.	100	59		54	97
Aguas Frias Rd.	Durham-Dayton Rd. to Grainland Ave.	100	52			43
	Grainland Ave. to SR 162	100	50			
Biggs East Hwy.	Biggs to SR 99	100	51			
	SR 99 to Larkin Rd.	100	51			37
Clark Rd.	Wagstaff Rd. to Skyway	100	57		44	82
Cohasset Rd.	SR 99 to East Ave.	100	62	38	75	131
	East Ave. to Lupin Rd.	100	61	37	73	126
	Lupin Rd. to E. Lassen Ave.	100	60		63	109
	Lassen Ave. to Boeing Dr. (Chico M. Airport)	100	62	44	81	138
	Boeing Dr. to Keefer Rd.	100	56		35	69
	Keefer Rd. to Vilas Rd.	100	53			53
Colusa Hwy.	Colusa County line to Pennington Rd.	100	46			
	Pennington Rd. to Biggs Gridley Rd.	100	48			
	Biggs Gridley Rd. to SR 99	100	57		38	75
Dayton Rd.	SR 32 to Hegan Lane	100	55			65
	Hegan Lane to Durham-Dayton Hwy.	100	57		42	79
Durham-Dayton Hwy.	Dayton Rd. to Midway	100	54			52
	Midway to Stanford Lane	100	51			37

TABLE 4.10-8 **FUTURE (2030) TRAFFIC NOISE LEVELS** (CONTINUED)

	Segment Location	Receiver Distance* (Feet)	dB L_{dn}	Distance to Ldn Noise Contour (Feet) 70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
	Stanford Lane to SR 99	100	51			37
Durham–Pentz Rd.	SR 99 to SR 191	100	56		35	71
	SR 191 to Pentz Rd.	100	51			
East Ave. - Manzanita Ave. - Bruce Ave.	SR 32 to Cussick Ave.	100	62	46	83	142
	Cussick Ave. to Esplanade	100	64	55	94	163
	Esplanade to SR 99	100	62	40	77	134
	SR 99 to Cohasset Rd.	100	60		63	111
	Cohasset Rd. to Floral Ave.	100	61	39	75	129
	Floral Ave. to Mariposa Ave.	100	62	43	80	137
	Mariposa Ave. to Marigold Ave.	100	59		59	103
	Marigold Ave. to Manzanita Ave.	100	60		61	107
	East Ave. to Vallombrosa Ave.	100	61	35	70	121
	California Park Dr. to SR 32	100	62	41	78	134
East Gridley Rd.	SR 99 to Larkin Rd.	100	57		43	81
	Larkin Rd. to SR 70	100	57		42	81
Eaton Rd.	Esplanade to SR 99	100	60		60	105
	SR 99 to Hicks Lane	100	61	37	72	123
	Hicks Lane to Cohasset Rd.	100	60	33	68	116
Esplanade	SR 99 to Garner Lane	100	49			
	Garner Lane to Eaton Rd.	100	57		41	78
	Eaton Rd. to Lassen Ave.	100	59		52	93
	Lassen Ave. to East Ave.	100	60		65	115
	East Ave. to Cohasset Rd.	100	60		66	117

TABLE 4.10-8 **FUTURE (2030) TRAFFIC NOISE LEVELS** (CONTINUED)

	Segment Location	Receiver Distance* (Feet)	dB L_{dn}	Distance to Ldn Noise Contour (Feet) 70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
	Cohasset Rd. to E. 9th Ave.	100	61	37	73	128
	E. 9th Ave. to E. 1st Ave.	100	59		55	99
	E. 1st Ave. to Main St./Broadway	100	61	36	72	126
Main St. (NB)	Esplanade/E. 1st St. to 9th St.	100	59		56	98
Broadway (SB)	Esplanade/E. 1st St. to 9th St.	100	58		46	86
Park Ave.	E. 9th St. to 16th St.	100	59		56	101
	E. 16th St. to E. 20th St.	100	59		55	99
	E. 20th St. to East Park Ave.	100	61	34	68	119
E. Park Ave.	Park Ave. to SR 99	100	61		66	118
Forbestown Rd.	SR 162 to Lumpkin Rd.	100	55			64
Hegan Lane	Dayton Rd. to S.P. Railroad tracks	100	56		37	72
	S.P. Railroad tracks to Midway	100	57		42	78
Honey Run Rd.	Skyway to Centerville Rd.	100	54			44
Centerville Rd.	Honey Run Rd. to Nimshew Rd.	100	46			
Nimshew Rd.	Centerville to Skyway	100	44			
Larkin Rd.	SR 162 to E. Hamilton Rd.	100	58		50	88
	E. Hamilton Rd. to East Biggs Hwy.	100	53			49
	East Biggs Hwy. to E. Gridley Hwy.	100	50			
	E. Gridley Hwy. to E. Evans Reimer Rd.	100	59		55	94
Lincoln Blvd.	SR 162 to Marysville Baggett Rd.	100	60		61	109
	Marysville Baggett Rd. to Monte Vista Ave.	100	62	44	81	137
	Monte Vista Ave. to Ophir Rd.	100	60	33	68	116

TABLE 4.10-8 **FUTURE (2030) TRAFFIC NOISE LEVELS** (CONTINUED)

	Segment Location	Receiver Distance* (Feet)	dB L_{dn}	Distance to Ldn Noise Contour (Feet) 70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
	Ophir Rd. to Palermo Rd.	100	60		65	111
Lower Honcut Rd.	SR 70 to Palermo Honcut Hwy.	100	45			
	Palermo Honcut Hwy. to LaPorte Rd.	100	45			
LaPorte Rd.	Lower Honcut Rd. to Oro-Bangor Hwy.	100	48			
Lower Wyandotte Rd.	SR 162 to Oro-Bangor Hwy.	100	57		39	76
	Oro-Bangor Hwy. to Ophir Rd.	100	61	35	69	116
	Ophir Rd. to Foothill Blvd.	100	59		58	98
Upper Palermo Rd.	Ophir Rd. to Palermo Rd.	100	57		46	82
Palermo Honcut Hwy.	Palermo Rd. to Lower Honcut Rd.	100	53			53
Midway	East Park Ave. to Hegan Lane	100	62	42	78	131
	Hegan Lane to Southgate Extension	100	60	33	67	115
Montgomery St.	SR 70 to Lincoln Blvd.	100	57		41	79
	Lincoln Blvd. to Table Mountain Blvd.	100	58		47	87
Oroville - Bangor Hwy.	Lincoln Blvd. to Lower Wyandotte Rd.	100	52			39
	Lower Wyandotte Rd. to Foothill Blvd.	100	52			42
	Foothill Blvd. to Swedes Flat Rd.	100	48			
	S/O Swedes Flat Rd.	100	50			
Palermo Rd.	Upper Palermo Rd. to Lincoln Blvd.	100	50			
	Lincoln Blvd. to Lone Tree Rd.	100	50			
	Lone Tree Rd. to SR 70	100	51			38
Pentz Rd.	SR 70 to Messilla Valley Rd.	100	53			46
	Messilla Valley Rd. to Malibu Dr.	100	55			62
Skyway	SR 99 to Notre Dame Blvd.	100	63	51	90	157

TABLE 4.10-8 **FUTURE (2030) TRAFFIC NOISE LEVELS** (CONTINUED)

	Segment Location	Receiver Distance* (Feet)	dB L_{dn}	Distance to Ldn Noise Contour (Feet) 70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
	Notre Dame Blvd. to Bruce Rd.	100	62	40	77	132
	Bruce Rd. to Honey Run Rd.	100	67	83	138	234
	Honey Run Rd. to Neal Rd.	100	67	82	136	231
	Neal Rd. to Pearson Rd.	100	62	43	81	142
	Pearson Rd. to Bille Rd.	100	60		66	117
	Bille Rd. to Wagstaff Rd.	100	60		59	104
	Wagstaff Rd. to Clark Rd.	100	57		41	79
	Clark Rd. to Pentz Rd	100	59		53	94
	Pentz Rd. to S. Park	100	59		55	97
	South Park to Nimshew Rd	100	59		53	93
	Nimshew Rd. to Lovelock Rd.	100	50			
	Lovelock Rd. to Powellton Rd.	100	48			
Table Mountain Blvd.	Montgomery St. to County Center Dr.	100	59		56	98
	County Center Dr. to SR 70	100	60	33	67	115
Ophir Rd.	East of Feather River Blvd.	100	60		65	112
Foothill Blvd.	South of SR 162	100	52			45
Miners Ranch Rd.	South of SR 162	100	55			65

* Distance to roadway centerline.
Source: ICF Jones & Stokes, 2009..

to maintain an acceptable noise environment in all areas of the county. In support of this goal, Policy HS-P1.1 states that new development projects proposed in areas that exceed the land use compatibility standards in Tables HS-2 and HS-3 of the General Plan (Tables 4.10-6 and 4.10-7 in this EIR, respectively) shall require mitigation of noise impacts. Policy HS-P1.2 limits noise from transportation sources to levels below land use compatibility standards in Table HS-2 of the General Plan. Policy HS-P1.3 restricts new noise-sensitive land uses within the 55 L_{dn} contour of airports, roadways, and other noise generating uses, with the exception of the Chico Municipal Airport. Policy HS-P1.4 states that new noise-sensitive land uses shall not be located within the 60 L_{dn} contour of the Chico Municipal Airport. Policy HS-P1.5 restricts noise from new recreational activities from exceeding 60 dB at the nearest noise sensitive land use. Policy HS-P1.6 requires that applicants proposing a new noise-producing project near existing or planned noise-sensitive uses shall provide a noise analysis prepared by an acoustical specialist with recommendations for design mitigation. Policy HS-P1.7 states that applicants for discretionary permits shall be required to limit noise-generating construction activities located within 1,000 feet of residential uses to daytime hours between 7:00 a.m. and 6:00 p.m. on weekdays and non-holidays. In addition, Policy HS-P1.8 states that construction noise control measures be implemented at construction sites.

In addition, under Action HS-A1.1 the County will develop and adopt an appropriate and consistent County Noise Ordinance to control noise impacts and to ensure that residents are not exposed to excessive noise levels from stationary and mobile sources.

Implementation of these goals, policies and actions will reduce potential noise exposure impacts to a *less-than-significant* level.

Noise impacts from the ALUCP override are discussed in Section D.1.d.

b. Expose people to or generate excessive groundborne vibration or groundborne noise levels.

The assessment of the exposure of people to groundborne vibration or noise in this section is based on an analysis of the spatial location of development allowed by General Plan 2030. General Plan 2030 would allow development of sensitive receptors, such schools, parks, residences and churches, at locations adjacent to the UPRR tracks. High-impact construction activity could also occur near existing residences.

The followings policies in the Health and Safety Element directly address the exposure of noise sensitive land uses to vibration. Policy HS-P1.10 reduces impacts from groundborne vibration associated with rail operations by requiring residences or other vibration-sensitive buildings to be sited at least 100 feet from the centerline of the nearest railroad track whenever feasible. Development of vibration-sensitive buildings, such as those containing precision medical and industrial equipment or television, radio, and recording studios, within 100 feet from the centerline of the nearest railroad track, shall require a study demonstrating that groundborne vibration issues associated with rail operations have been adequately addressed through building siting or construction techniques.

Implementation of these policies will reduce impacts from groundborne vibration to a *less-than-significant* level.

Noise impacts from the ALUCP override are discussed in Section D.1.d.

c. Create a substantial temporary, periodic or permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

This section separates the impact discussions for temporary and permanent increases in ambient noise.

i. Temporary Increase in Ambient Noise

The assessment of a temporary increase in ambient noise in this section is based on an analysis of the spatial location of development allowed by General Plan 2030. With implementation of General Plan 2030, construction and demolition activities would occur. Table 4.10-9 summarizes noise levels produced by heavy equipment commonly used for construction and demolition activities.

Assuming that the three noisiest pieces of equipment (scraper, paver, and concrete truck) could operate in the same location at the same time, the combined noise level would be 93 dBA at a distance of 50 feet from the noise source(s). Construction noise typically attenuates at a rate of 6 dB per doubling of distance. This corresponds to the following construction noise levels at various distances:

- 93 dBA at 50 feet
- 87 dBA at 100 feet
- 81 dBA at 200 feet
- 75 dBA at 400 feet
- 69 dBA at 800 feet
- 63 dBA at 1,600 feet

As discussed in Sections D.1.a and D.1.b, implementation of General Plan 2030 includes Policy HS-P1.9 to limit construction hours and noise-generating activity. As a result, implementation of General Plan 2030 will reduce this impact to a *less-than-significant* level.

Noise impacts from the ALUCP override are discussed in Section D.1.d.

ii. Permanent Increase in Ambient Noise

The assessment of a permanent increase in ambient noise in this section is based on a quantitative analysis of impacts resulting from the projected 2030 buildout of General Plan 2030. General Plan 2030 would allow increased development that will result in more traffic on roadways in the county. Table 4.10-10 summarizes predicted traffic noise levels for the General Plan

TABLE 4.10-9 **CONSTRUCTION EQUIPMENT NOISE EMISSION LEVELS**

Equipment	Typical Noise Level (dBA) 50 Feet from Source
Scraper	89
Paver	89
Concrete Truck	85
Rough Terrain Forklift	85
Backhoe	80
Roller	74

Source: Federal Transit Administration, 2006.

projected 2030 buildout and compares projected 2030 buildout levels to existing noise levels. Significant noise impacts are considered to occur along roadway segments where the following conditions occur:

- 5 dB increase where existing noise is less than 60 L_{dn}.
- 3 dB increase where existing noise is between 60 and 65 L_{dn}.
- 1.5 dB increase where existing noise is greater than 65 L_{dn}.

As indicated in Table 4.10-10, there are several roadway segments where implementation of General Plan 2030 would cause increases in noise that would result in significant impacts.

It is not anticipated that adoption of General Plan 2030 will result in increased train operations on the UPRR track. However, aircraft operations at the county's four airports are anticipated to increase as follows:[4]

- **Chico Municipal Airport.** Future aircraft operations are estimated to increase from 182 to 257 daily operations, excluding fire attack aircraft. Existing and future operations may also include an additional 200 daily

[4] Information for each airport is from Butte County, August 8, 2005, *General Plan Technical Update Background Report, Final Draft*, pages 17-16 through 17-18.

TABLE 4.10-10 **EXISTING AND 2030 TRAFFIC NOISE LEVELS**

		Existing L_{dn} at 100 Feet from Roadway Centerline	2030 L_{dn} at 100 Feet from Roadway Centerline	Change in Noise	Significant Impact
SR 32	Muir Ave. to East Ave.	62	63	1	No
	East Ave. to W. Sacramento Ave.	60	61	1	No
	W. Sacramento Ave. to W. 1st St.	61	62	1	No
	W. 1st St. W. 5th St.	62	63	1	No
	W. 5th St. 8th/9th/Walnut St.	60	61	1	No
	8th St. (One way WB),Walnut to Main	58	60	2	No
	9th St. (One way EB), Walnut to Main	58	59	1	No
	8th St. (WB), Main to SR 99	59	61	2	No
	9th St. (EB), Main St. to SR 99	60	61	1	No
	SR 99 to Forest Ave.	61	64	3	Yes
	Forest Ave. to Humboldt Rd. (Hog Springs)	62	62	0	No
	Humboldt Rd. (H.S.) to Robert E. Lee Dr. (F.R.)	58	59	1	No
SR 70	Yuba County Line to Lower Honcut Rd.	66	68	2	Yes
	Lower Honcut Rd. to East Gridley Rd.	67	68	1	No
	East Gridley Rd. to Palermo Rd.	66	69	3	Yes
	Palermo Rd. to SR 162	67	69	2	Yes
	SR 162 to Montgomery St.	68	71	3	Yes
	Montgomery St. to Grand Ave.	70	72	2	Yes
	Grand Ave. to SR 149	68	70	2	Yes
	SR 149 to SR 191	62	62	0	No
	SR 191 to Pentz Rd.	57	58	1	No
	Pentz Rd. to Big Bend Rd. (Concow)	55	56	1	No

TABLE 4.10-10 **EXISTING AND 2030 TRAFFIC NOISE LEVELS** (CONTINUED)

		Existing L_{dn} at 100 Feet from Roadway Centerline	2030 L_{dn} at 100 Feet from Roadway Centerline	Change in Noise	Significant Impact
SR 99	Sutter County line to Archer Ave.	66	68	2	Yes
	Archer Ave. to Spruce St. (Gridley)	63	64	1	No
	Spruce St. to East Biggs Hwy.	66	67	1	No
	East Biggs Hwy. SR 162 (East)	64	66	2	No
	SR 162 to (East) to SR 149	64	66	2	No
	SR 149 to Durham - Pentz Rd.	69	72	3	Yes
	Durham - Pentz Rd to Skyway	69	72	3	Yes
	Skyway to East 20th St.	71	73	2	Yes
	East 20th to SR 32	73	74	1	No
	SR 32 to Cohasset Rd.	73	74	1	No
	Cohasset Rd. to East Ave.	70	72	2	Yes
	East Ave. to Eaton Rd.	69	71	2	Yes
	Eaton Rd. to Keefer Rd.	66	68	2	Yes
SR 149	SR 70 to SR 99	40	40	0	No
SR 162	Glenn County line to SR 99 (south intersect)	51	53	2	No
	SR 99 (north intersect) to Larkin Rd.	60	60	0	No
	Larkin Rd. to SR 70	59	60	1	No
	SR 70 to Feather River Blvd.	64	66	2	No
	Feather River Blvd. to Lincoln Blvd.	63	64	1	No
	Lincoln Blvd. to Olive Hwy.	63	64	1	No
	Olive Hwy. to Lower Wyandotte Rd.	62	63	1	No
	Lower Wyandotte Rd. to Foothill Blvd.	63	65	2	No
	Foothill Blvd. to Canyon Dr.	61	63	2	No

TABLE 4.10-10 **EXISTING AND 2030 TRAFFIC NOISE LEVELS** (CONTINUED)

		Existing L_{dn} at 100 Feet from Roadway Centerline	2030 L_{dn} at 100 Feet from Roadway Centerline	Change in Noise	Significant Impact
	Canyon Dr. to Forbestown Rd.	39	39	0	No
SR 191	SR 70 to Durham-Pentz Rd.	57	57	0	No
	Durham-Pentz Rd. to Airport Rd.	57	57	0	No
	Airport Rd. to Bushmann Rd.	58	59	1	No
	Buschmann Rd. to Pearson Rd.	58	59	1	No
Aguas Frias Rd.	Durham-Dayton Rd. to Grainland Ave.	50	52	2	No
	Grainland Ave. to SR 162	47	50	3	No
Biggs East Hwy.	Biggs to SR 99	50	51	1	No
	SR 99 to Larkin Rd.	51	51	0	No
Clark Rd.	Wagstaff Rd. to Skyway	57	57	0	No
Cohasset Rd.	SR 99 to East Ave.	60	62	2	No
	East Ave. to Lupin Rd.	60	61	1	No
	Lupin Rd. to E. Lassen Ave.	59	60	1	No
	Lassen Ave. to Boeing Dr. (Chico M. Airport)	60	62	2	No
	Boeing Dr. to Keefer Rd.	54	56	2	No
	Keefer Rd. to Vilas Rd.	53	53	0	No
Colusa Hwy.	Colusa County line to Pennington Rd.	45	46	1	No
	Pennington Rd. to Biggs Gridley Rd.	47	48	1	No
	Biggs Gridley Rd. to SR 99	56	57	1	No
Dayton Rd.	SR 32 to Hegan Lane	55	55	0	No
	Hegan Lane to Durham-Dayton Hwy.	55	57	2	No
Durham-Dayton Hwy.	Dayton Rd. to Midway	53	54	1	No
	Midway to Stanford Lane	50	51	1	No

TABLE 4.10-10 **EXISTING AND 2030 TRAFFIC NOISE LEVELS** (CONTINUED)

		Existing L_{dn} at 100 Feet from Roadway Centerline	2030 L_{dn} at 100 Feet from Roadway Centerline	Change in Noise	Significant Impact
	Stanford Lane to SR 99	50	51	1	No
Durham–Pentz Rd.	SR 99 to SR 191	56	56	0	No
	SR 191 to Pentz Rd.	50	51	1	No
East Ave. - Manzanita Ave. - Bruce Ave.	SR 32 to Cussick Ave.	61	62	1	No
	Cussick Ave. to Esplanade	63	64	1	No
	Esplanade to SR 99	60	62	2	No
	SR 99 to Cohasset Rd.	58	60	2	No
	Cohasset Rd. to Floral Ave.	60	61	1	No
	Floral Ave. to Mariposa Ave.	61	62	1	No
	Mariposa Ave. to Marigold Ave.	58	59	1	No
	Marigold Ave. to Manzanita Ave.	58	60	2	No
	East Ave. to Vallombrosa Ave.	58	61	3	No
	California Park Dr. to SR 32	59	62	3	No
East Gridley Rd.	SR 99 to Larkin Rd.	54	57	3	No
	Larkin Rd. to SR 70	54	57	3	No
Eaton Rd.	Esplanade to SR 99	58	60	2	No
	SR 99 to Hicks Lane	59	61	2	No
	Hicks Lane to Cohasset Rd.	59	60	1	No
Esplanade	SR 99 to Garner Lane	47	49	2	No
	Garner Lane to Eaton Rd.	56	57	1	No
	Eaton Rd. to Lassen Ave.	58	59	1	No
	Lassen Ave. to East Ave.	60	60	0	No
	East Ave. to Cohasset Rd.	60	60	0	No
	Cohasset Rd. to E. 9th Ave.	60	61	1	No

TABLE 4.10-10 **EXISTING AND 2030 TRAFFIC NOISE LEVELS** (CONTINUED)

		Existing L_{dn} at 100 Feet from Roadway Centerline	2030 L_{dn} at 100 Feet from Roadway Centerline	Change in Noise	Significant Impact
	E. 9th Ave. to E. 1st Ave.	59	59	0	No
	E. 1st Ave. to Main St./Broadway	60	61	1	No
Main St. (NB)	Esplanade/E. 1st St. to 9th St.	58	59	1	No
Broadway (SB)	Esplanade/E. 1st St. to 9th St.	57	58	1	No
Park Ave.	E. 9th St. to 16th St.	58	59	1	No
	E. 16th St. to E. 20th St.	57	59	2	No
	E. 20th St. to East Park Ave.	59	61	2	No
E. Park Ave.	Park Ave. to SR 99	60	61	1	No
Forbestown Rd.	SR 162 to Lumpkin Rd.	51	55	4	No
Hegan Lane	Dayton Rd. to S.P. Railroad tracks	55	56	1	No
	S.P. Railroad tracks to Midway	56	57	1	No
Honey Run Rd.	Skyway to Centerville Rd.	49	54	5	No
Centerville Rd.	Honey Run Rd. to Nimshew Rd.	45	46	1	No
Nimshew Rd.	Centerville to Skyway	43	44	1	No
Larkin Rd.	SR 162 to E. Hamilton Rd.	56	58	2	No
	E. Hamilton Rd. to East Biggs Hwy.	51	53	2	No
	East Biggs Hwy. to E. Gridley Hwy.	48	50	2	No
	E. Gridley Hwy. to E. Evans Reimer Rd.	55	59	4	No
Lincoln Blvd.	SR 162 to Marysville Baggett Rd.	57	60	3	No
	Marysville Baggett Rd. to Monte Vista Ave.	59	62	3	No
	Monte Vista Ave. to Ophir Rd.	58	60	2	No
	Ophir Rd. to Palermo Rd.	57	60	3	No

TABLE 4.10-10 **EXISTING AND 2030 TRAFFIC NOISE LEVELS** (CONTINUED)

		Existing L_{dn} at 100 Feet from Roadway Centerline	2030 L_{dn} at 100 Feet from Roadway Centerline	Change in Noise	Significant Impact
Lower Honcut Rd.	SR 70 to Palermo Honcut Hwy.	45	45	0	No
	Palermo Honcut Hwy. to LaPorte Rd.	45	45	0	No
LaPorte Rd.	Lower Honcut Rd. to Oro-Bangor Hwy.	47	48	1	No
Lower Wyandotte Rd.	SR 162 to Oro-Bangor Hwy.	55	57	2	No
	Oro-Bangor Hwy. to Ophir Rd.	60	61	1	No
	Ophir Rd. to Foothill Blvd.	57	59	2	No
Upper Palermo Rd.	Ophir Rd. to Palermo Rd.	57	57	0	No
Palermo Honcut Hwy.	Palermo Rd. to Lower Honcut Rd.	52	53	1	No
Midway	East Park Ave. to Hegan Lane	61	62	1	No
	Hegan Lane to Southgate Extension	59	60	1	No
Montgomery St.	SR 70 to Lincoln Blvd.	55	57	2	No
	Lincoln Blvd. to Table Mountain Blvd.	55	58	3	No
Oroville - Bangor Hwy.	Lincoln Blvd. to Lower Wyandotte Rd.	50	52	2	No
	Lower Wyandotte Rd. to Foothill Blvd.	50	52	2	No
	Foothill Blvd. to Swedes Flat Rd.	47	48	1	No
	S/O Swedes Flat Rd.	50	50	0	No
Palermo Rd.	Upper Palermo Rd. to Lincoln Blvd.	49	50	1	No
	Lincoln Blvd. to Lone Tree Rd.	49	50	1	No
	Lone Tree Rd. to SR 70	49	51	2	No
Pentz Rd.	SR 70 to Messilla Valley Rd.	52	53	1	No
	Messilla Valley Rd. to Malibu Dr.	54	55	1	No
Skyway	SR 99 to Notre Dame Blvd.	63	63	0	No
	Notre Dame Blvd. to Bruce Rd.	62	62	0	No

TABLE 4.10-10 **EXISTING AND 2030 TRAFFIC NOISE LEVELS** (CONTINUED)

		Existing L_{dn} at 100 Feet from Roadway Centerline	2030 L_{dn} at 100 Feet from Roadway Centerline	Change in Noise	Significant Impact
	Bruce Rd. to Honey Run Rd.	67	67	0	No
	Honey Run Rd. to Neal Rd.	66	67	1	No
	Neal Rd. to Pearson Rd.	61	62	1	No
	Pearson Rd. to Bille Rd.	60	60	0	No
	Bille Rd. to Wagstaff Rd.	59	60	1	No
	Wagstaff Rd. to Clark Rd.	57	57	0	No
	Clark Rd. to Pentz Rd	59	59	0	No
	Pentz Rd. to S. Park	59	59	0	No
	South Park to Nimshew Rd	58	59	1	No
	Nimshew Rd. to Lovelock Rd.	50	50	0	No
	Lovelock Rd. to Powellton Rd.	47	48	1	No
Table Mountain Blvd.	Montgomery St. to County Center Dr.	57	59	2	No
	County Center Dr. to SR 70	60	60	0	No
Ophir Rd.	East of Feather River Blvd.	57	60	3	No
Foothill Blvd.	South of SR 162	54	55	1	No
Miners Ranch Rd.	South of SR 162	53	55	2	No

Notes: Shaded rows = significant increase.
Roadway segment of < 60 dB increasing by 5 dB qualifies as a significant increase
Roadway segment of 60 dB to 65 dB increasing by 3 dB qualifies as a significant increase.
Roadway segment of > 65 dB increasing by 1.5 dB qualifies as a significant increase.

Source: ICF Jones & Stokes, 2009.

operations during peak fire season. This increase in operations corresponds to 1.5 dB increase in noise without fire attack aircraft and a further 1 dB increase during peak fire season. The ALUCP has developed CNEL noise level contours for three scenarios, including the Future Average Fire Season Day, the Expanded Forecast, and the Peak Fire Attack Day. Noise contours for this airport are provided in Appendix E of this EIR.

- **Oroville Municipal Airport.** Future annual average aircraft operations are estimated to increase from 100 to 200 operations per day. This corresponds to a 3 dB increase in noise. The ALUCP contains one set of noise level contours for the airport; they are provided in Appendix E of this EIR.

  Paradise SkyPark. Future annual average aircraft operations are estimated to increase from 41 to 82 operations per day. This corresponds to a 3-dB increase in noise. The ALUCP contains one set of noise level contours for the airport; they are provided in Appendix E of this EIR.

- **Ranchaero Airport.** Future annual average aircraft operations are estimated to increase from 14 to 27 operations per day. This corresponds to 3 dB increase in noise. The ALUCP contains one set of noise level contours for the airport; they are provided in Appendix E of this EIR.

These increases in noise are potentially significant depending on the proximity of noise-sensitive uses to each airport.

As discussed in Section D.1.a, General Plan 2030 Health and Safety Element policies would reduce impacts related to the exposure of people to or generation of noise levels in excess of local standards to a less-than-significant level. However, proposed General Plan 2030 policies would not mitigate the significant impacts from traffic noise increases and aircraft noise increases on ambient noise levels in all cases. This traffic and aircraft operation is an unavoidable outcome of the type of residential and commercial growth foreseen in Butte County. Therefore, the proposed General Plan 2030 is considered to have a *significant and unavoidable* impact on ambient noise levels.

Noise impacts from the ALUCP override are discussed in Section D.1.d.

d. Expose people living or working in the project area to excessive noise from a public or private airport.

The assessment of the exposure of people to noise from an airport in this section is based on an analysis of the spatial location of development allowed by General Plan 2030. Aircraft noise contours presented in Appendix E are representative of aircraft noise contours predicted to occur at buildout of General Plan 2030. Noise sensitive uses in the vicinity of these noise sources could be exposed to noise levels that exceed existing General Plan noise standards. However, Policy HS-P1.3 requires that new noise-sensitive land uses shall not be located within the 55 L_{dn} contour of airports, roadways, and other noise generating uses, with the exception of the Chico Municipal Airport. Policy HS-P1.4 states that new noise-sensitive land uses shall not be located within the 60 L_{dn} contour of the Chico Municipal Airport. Implementation of these policies will reduce this impact to a *less-than-significant* level.

As discussed in Chapter 4.9, Land Use, the General Plan 2030 land use map includes land use designations that are inconsistent with the ALUCP Airport Land Use Compatibility Zones. However, as discussed in Chapter 4.6, Hazards and Safety, both General Plan 2030 and the ALUCP allow a similar type of residential development within the conflict areas; the conflicts are only related to the density of development allowed. Therefore, General Plan 2030 allows residential development only where residential development is deemed appropriate by the ALUCP. The impact from inconsistency with the ALCUP is a land use impact, and not related to the exposure of people to noise in excess of typically acceptable levels. Therefore, the ALUCP override would have a *less-than-significant* noise impact.

2. Cumulative Impacts

The traffic noise levels predicted in 2030 and evaluated in Section D.1 are based on cumulative traffic conditions that take into account cumulative development in the county, including development within the incorporated

municipalities. As discussed above and shown in Table 4.10-10, implementation of General Plan 2030 is predicted to result in permanently increased traffic noise levels throughout the county, particularly on Highways 70, 99 and 32. Anticipated development in the incorporated cities and in Plumas, Yuba, Sutter, Colusa, Glenn and Tehama Counties will also contribute increased traffic to these and other major regional roadways. Although traffic noise may be somewhat reduced through changes in vehicle types, such as the increased use of electric vehicles and the use of quiet pavement, implementation of General Plan 2030 would still be expected to contribute to cumulative noise conditions that exceed County noise standards and that cause a substantial permanent increase in ambient noise levels. Since this traffic is an unavoidable outcome of the type of residential and commercial growth foreseen in Butte County and the surrounding counties, this impact is *significant and unavoidable*.

E. Maximum Theoretical Buildout

The maximum theoretical buildout allowed under General Plan 2030 would include significantly more development than the projected 2030 buildout analyzed in Section D. Under these conditions, both the amount and the extent of development would be increased, which would in turn increase the potential for noise impacts. However, as discussed in Chapter 3, it is unlikely that maximum theoretical buildout would ever occur under General Plan 2030, and an analysis of maximum theoretical buildout is not required by CEQA.

F. Impacts and Mitigation Measures

Impact NOISE-1: Implementation of General Plan 2030 would cause a substantial permanent increase in ambient noise levels because more people would be living, driving and flying in Butte County.

General Plan 2030 Health and Safety Element policies would reduce many noise exposure impacts to a less-than-significant level, but would not mitigate

the significant impacts from traffic noise increases and aircraft noise increases on ambient noise levels in all cases. Since this traffic and aircraft operation is an unavoidable outcome of the type of residential and commercial growth foreseen in Butte County, there is no feasible mitigation measure to reduce this impact to a less-than-significant level. Therefore, this impact is *significant and unavoidable.*

Impact NOISE-2: Implementation of General Plan 2030 would contribute to conditions that exceed County noise standards and that cause a substantial permanent increase in ambient noise levels, causing a significant cumulative noise impact.

General Plan 2030 would contribute to cumulative traffic noise conditions that exceed County noise standards. Since this traffic is an unavoidable outcome of the type of residential and commercial growth foreseen in Butte County and the surrounding counties, this impact is *significant and unavoidable.*