

4.4 NOISE

4.4.1 Setting

a. Overview of Sound Measurement. Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the Decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud; and 20 dBA higher four times as loud; and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud). In general, a 3 dB change in community noise levels is noticeable, while 1-2 dB changes are generally not perceived. Noise levels typically attenuate at a rate of 6 dBA per doubling of distance from point sources such as industrial machinery. Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance.

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. Several rating scales have been developed to account for the known effects of noise on people. Based on these effects, the observation has been made that the potential for noise to impact people is dependent on the total acoustical energy content of the noise. A number of noise scales have been developed to account for this factor. These scales include the Equivalent Noise Level (LEQ), the Day Night Noise Level (LDN) and the Community Noise Equivalent Level (CNEL).

LEQ is the sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. LEQ is the “energy” average noise level during the time period of the sample. LEQ can be measured for any time period, but is typically measured for 15 minutes, 1 hour, or 24 hours.

LDN is a 24-hour, time-weighted average noise level. Time-weighted refers to the fact that noise which occurs during certain sensitive time periods is penalized for occurring at these times. In the LDN scale, those events that take place during the night (10 p.m. to 7 a.m.) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of day, where sleep is the most probable activity.



CNEL is similar to the LDN scale except that it includes an additional 5 dBA penalty for events that occur during the evening (7 p.m. to 10 p.m.) time period. Thus, both the Ldn and CNEL noise measures represent a 24-hour average of A-weighted noise levels with Ldn providing a nighttime adjustment and CNEL providing both an evening and nighttime adjustment.

Intermittent or occasional noise such as that associated with stationary noise sources is not of sufficient volume to exceed community noise standards that are based on a time averaged scale such as the LDN scale. To account for intermittent noise, the Percent Noise Level (L%) scale is used. The Percent Noise Level is the level exceeded a percentage of the time during the measurement period. Noise Ordinances are typically specified in terms of the percent noise levels. Ordinances are designed to protect people from noise sources such as music, machinery and vehicular traffic on private property.













The actual time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the daytime. To evaluate community noise on a 24-hour basis, the day-night average sound level was developed (Ldn). Ldn is the time average of all A-weighted levels for a 24-hour period with a 10 dB upward adjustment added to those noise levels occurring between 10:00 PM and 7:00 AM to account for the general increased sensitivity of people to nighttime noise levels. The Community Noise Equivalent Level (CNEL) is identical to the Ldn with one exception. The CNEL adds 5 dB to evening noise levels (7:00 PM to 10:00 PM).

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. These criteria are based on such known impacts of noise on people as hearing loss, speech interference, sleep interference, physiological responses and annoyance.

b. Land Use Compatibility. The State Office of Noise Control has established guidelines to provide the community with a noise environment deemed to be generally acceptable. Figure 4.4-1 depicts ranges of noise exposure levels considered compatible with various types of land uses. Where a land use is denoted as "normally acceptable" for the given Ldn noise environment, the highest noise level in that range should be considered the maximum desirable for conventional construction that does not incorporate any special acoustic treatment. The acceptability of noise environments classified as "conditionally acceptable" or "normally unacceptable" will depend on the anticipated amount of time that will normally be spent outside the structure and the acoustic treatment to be incorporated in structural design.

With regard to noise-sensitive residential uses, the recommended exterior noise limits are 60 dBA CNEL for single family residences and 65 dBA CNEL for multi-family residences. Community noise exposure levels over 70 dB are normally not acceptable for residential, school, library, hospitals and other noise sensitive uses. The recommended maximum interior



LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE								
	Ldn or CNEL, dBA								
	55	60	65	70	75	80	85		
RESIDENTIAL - LOW DENSITY SINGLE FAMILY, DUPLEX, MOBILE HOMES									
RESIDENTIAL - MULTI-FAMILY									
TRANSIENT LODGING - MOTELS, HOTELS									
SCHOOLS, LIBRARIES, CHURCHES, HOSPITALS, NURSING HOMES									
AUDITORIUMS, CONCERT HALLS, AMPHITHEATRES									
SPORTS ARENA, OUTDOOR SPECTATOR SPORTS									
PLAYGROUNDS, NEIGHBORHOOD PARKS									
GOLF COURSES, RIDING STABLES, WATER RECREATION, CEMETERIES									
OFFICE BUILDINGS, BUSINESS COMMERCIAL AND PROFESSIONAL									
INDUSTRIAL, MANUFACTURING, UTILITIES, AGRICULTURE									
<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p> NORMALLY ACCEPTABLE Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.</p> <p> CONDITIONALLY ACCEPTABLE New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.</p> </td> <td style="width: 50%; vertical-align: top;"> <p> NORMALLY UNACCEPTABLE New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.</p> <p> CLEARLY UNACCEPTABLE New construction or development should generally not be undertaken.</p> </td> </tr> </table> <p><i>Source: General Plan Guidelines, California Office of Planning and Research</i></p>								<p> NORMALLY ACCEPTABLE Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.</p> <p> CONDITIONALLY ACCEPTABLE New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.</p>	<p> NORMALLY UNACCEPTABLE New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.</p> <p> CLEARLY UNACCEPTABLE New construction or development should generally not be undertaken.</p>
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Noise and Land Use Compatibility Matrix

Figure 4.4-1

noise level is 45 dBA CNEL, which could normally be achieved using standard construction techniques if exterior noise levels are within the levels described above. The County of Santa Cruz, City of Capitola, City of Santa Cruz, and City of Watsonville require all new development to comply with the State’s Land Use Compatibility Guidelines. The County, and the City of Watsonville require acoustical studies for all new residential development with a future Ldn noise exposure greater than 60 dB. The City of Capitola may require certain noise reduction requirements for projects that result in noise levels ranging from 60 to 70 dB Ldn. The City of Scotts Valley also maintains a standard of 60 dBA at the property line of residential uses, and requires an acoustical engineering study for proposed new construction or renovation of structures in areas where the annual day-night noise level exceeds 60 dBA. However, the City of Scotts Valley also maintains noise increase standards for land use compatibility, as shown in Table 4.4-1.

Table 4.4-1 City of Scotts Valley Noise Increase Standards

Proposed New Use/ Location of dBA Reading	Maximum Noise Increase in dBA Adjacent to Existing:			
	Sensitive	Residential	Commercial	Industrial
<i>Sensitive</i>				
At Property Line	3	5	5	5
50' from Property Line	3	3	--	--
<i>Residential</i>				
At Property Line	3	5	5	5
50' from Property Line	3	3	--	--
<i>Commercial</i>				
At Property Line	3	5	5	5
50' from Property Line	3	3	--	--
<i>Industrial</i>				
At Property Line	3	5	5	7
50' from Property Line	3	3	--	--

Source: City of Scotts Valley General Plan Noise Element, Table 3 (Updated December 1999)

c. Noise Sources. Ambient noise levels in Santa Cruz County vary widely depending upon proximity to noise generators, such as major roads, airports, and rail lines. The major noise sources in the county are described below.

Motor Vehicle Traffic. Motor vehicles are the primary source of noise in most of Santa Cruz County. This can be attributed to the extensive network of major, primary, and secondary arterials located throughout the county, as well as the large number of vehicle trips that occur each day.

The noisiest single road corridor in the county is Highway 1, due to both the high traffic volumes experienced and the high speed of traffic. In 1999, daily traffic on Highway 1 ranged from 7,100 vehicles to 110,000 vehicles. Based upon this number of vehicles, noise levels along portions of Highway 1 corridor exceed 60 dBA CNEL. Approximately 60,000 daily auto and



truck trips occur on Highway 17. Noise generated from these vehicles exceed 60 dBA CNEL along and adjacent to Highway 17. Noise-sensitive land uses in the vicinity of these freeway corridors therefore have the potential to be exposed to noise in excess of what the county normally considers acceptable.

According to the City of Capitola General Plan, the most substantial noise problems in the city are traffic related. Occasional noise disturbances have been noted with respect to village nightlife; however, this appears to be limited in nature. In many parts of the city, the loudest continuous sounds come from the ocean. Noise sensitive locations identified in the General Plan include Capitola Elementary School and New Brighton Middle School, both of which are located near the intersection of Monterey Avenue and Washburn Avenue. The greatest noise levels in the city are associated with traffic along Highway 1, where noise levels are anticipated to reach 65 dBA within approximately 800 feet of the highway by the year 2005. Based on transportation noise sources, the only land use compatibility problems in the city arise adjacent to Highway 1. The General Plan also identifies 41st Avenue as a corridor characterized by relatively high noise levels. However, land uses along this road are more compatible with the anticipated noise levels.

The City of Santa Cruz General Plan 1990-2005 notes that areas of substantial vehicle noise include Ocean Street, where the daily noise exposure level is approximately 68 dBA, although background noise levels dropped to as low as 42A dBA during the night along this corridor. In addition, heavy morning and evening commute traffic produce a noise level of approximately 71 dBA along Mission Street. Background noise levels along Mission Street are approximately 64 dBA during the day, dropping to the high 40 dBA level at night. The City General Plan states that noise levels along arterial streets in the City are not expected to increase substantially between the years 1990 and 2005, partially due to decreased speed on arterial roadways.

According to the Scotts Valley General Plan, vehicular traffic along Highway 17, Mt. Hermon Road and Scotts Valley Drive is the most substantial source of noise in the City. Truck traffic, especially quarry trucks, and buses along Mt. Hermon Road and Scotts Valley Drive, contribute to the noise levels on these two major arterials. Current ambient noise levels in the City range from approximately 40 dBA to 73 dBA.

The City of Watsonville General Plan identifies areas in the vicinity of Watsonville Municipal Airport and along Highway 1 as the areas in the City characterized by the greatest noise levels. The General Plan states that where a direct line of site to Highway 1 is available, the 60 dBA noise contour extends more than 1,000 feet from Highway 1. Other areas of substantial noise in the City of Watsonville are located along Route 129. Railroad noise in the City is concentrated primarily in the industrial triangle formed by Highway 1, Harkins Slough Road, and Beach Street. Although sound levels generated by train pass-bys have been measured at 86 dBA at 50 feet, and whistle blasts may be as high as 98 dBA, these sound levels are of very short duration and occur infrequently.



Aircraft, Railroad, and Marine Operation. Aircraft flyovers in the county are limited to flights to and from Watsonville Municipal Airport and occasional California Department of Forestry (CDF) aircraft, as well as sporadic commercial overflights.

Freight rail service is currently operated within Santa Cruz County on a branch line of the Union Pacific Railroad that traverses the county between Davenport and Watsonville. This line is used for limited commodity movement, serves the RMC Lone Star cement plant in Davenport, and provides rail access to industries in Santa Cruz, Live Oak, and Watsonville. In addition, the Santa Cruz, Big Trees and Pacific Railway Company owns and operates a rail line between Santa Cruz and Felton, offering both freight and recreational passenger service. Several daily passenger trains are operated on this line during the summer. This line serves a lumber mill in Felton for freight service. Union Pacific's "Coast Line" main line between the San Francisco Bay Area and Los Angeles skirts Santa Cruz County near Watsonville. Amtrak offers one daily intercity train, the Coast Starlight, on this route, but it does not stop at the Watsonville junction (Pajaro Station).

The marine transportation facilities in the county are devoted primarily to recreational activities and commercial fishing. There are no harbors or ports in the county for cargo shipment, nor terminals for commercial passenger travel. The closest port facility is located at Moss Landing in Monterey County, where oil tankers unload fuel for a power plant. The Santa Cruz Small Craft Harbor is used primarily for recreational boating and fishing. Approximately 900 licensed boats, five large charter fishing boats, and one charter party boat (exceeding 25 passengers) operate from this harbor. Approximately 100 individual fishing boats also operate from the harbor.

4.4.2 Impact Analysis

a. Methodology and Significance Thresholds. The analysis of noise impacts considers the effects of both temporary construction-related noise and long-term noise associated with transportation system improvements. Temporary construction noise was estimated based upon levels presented in the USEPA document *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances (1971)*. Long-term traffic-related noise was estimated using a modification of the Federal Highway Noise Prediction Model.

Long-term noise level increases are considered a result of the RTP only if RTP implementation involves an improvement project that introduces a new noise source or moves an existing noise source closer to a sensitive receptor (extension of a road through a residential area, for example). Increases in traffic on existing roads on which no improvements are planned are not considered impacts of the RTP, but rather are a result of general increases in traffic.

The significance of potential impacts on noise is based on the CEQA Initial Study Checklist (Appendix G of the CEQA Guidelines). For the purposes of this analysis, implementation of



the RTP of an individual project included in the RTP would result in a significant impact if it would result in:

- *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;*
- *Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;*
- *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or*
- *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.*

b. Project Impacts and Mitigation Measures. This section describes generalized impacts associated with the projects anticipated in the RTP. Table 4.4-2 in Section 4.4.2.c lists the specific projects that could result in the impacts discussed in this section.

Impact N-1 Construction activity associated with road, bike, pedestrian, transit, rail, airport, and marine transportation projects would create temporary noise level increases in discreet locations throughout the county over the life of the RTP. This is considered a Class II, *significant but mitigable* impact.

The operation of heavy equipment during the construction of roadway infrastructure would result in temporary increases in noise in the immediate vicinity of individual construction sites. Average noise levels associated with the use of heavy equipment at construction sites can range from about 78 to 88 dBA at 50 feet from the source, depending upon the types of equipment in operation at any given time and the phase of construction. The highest noise levels generally occur during excavation and foundation development, which involve the use of such equipment as backhoes, bulldozers, shovels, and front end loaders. In addition, the use of pile drivers and other heavy construction equipment could result in the generation of excessive groundborne vibration and/or noise levels.

Noise levels from point sources such as construction sites typically attenuate at a rate of about 6 dBA per doubling of distance. Therefore, only areas within a few hundred feet of construction sites would be expected to be exposed to unacceptable noise levels. Impacts would be temporary, but potentially significant.

Mitigation Measures. RTP Policy 4.3.4, to “Avoid, minimize or mitigate noise, vibration, and visual impacts from transportation improvements in sensitive areas” would reduce project impacts related to noise. Local noise ordinance requirements would apply to construction activity associated with RTP implementation. In addition, the following mitigation measures are recommended:



N-1(a) The local jurisdiction in which a particular RTP project is located shall ensure that, where residences or other noise sensitive uses are located adjacent to construction sites, appropriate measures shall be implemented to ensure consistency with local noise ordinance requirements relating to construction. Specific techniques may include, but are not limited to, restrictions on construction timing, use of sound blankets on construction equipment, and the use of temporary walls and noise barriers to block and deflect noise.

N-1(b) If a particular project located adjacent to sensitive receptors requires pile driving, the local jurisdiction in which this project is located shall require the use of pile drilling techniques instead, where feasible, which would reduce the physical impact and associated noise generation from pile driving. This shall be accomplished through the placement of conditions on the project during its individual environmental review.

Significance After Mitigation. With implementation of local noise control requirements and proposed mitigation, impacts would be reduced to less than significant levels.

Impact N-2 **Various RTP projects could potentially expose sensitive receptors to noise in excess of normally acceptable levels. Projects that increase use of existing roadways, rail lines, and other transportation facilities, or realign such facilities, could result in substantial increases in noise levels at adjacent receptors. This would be considered a Class I, *significant and unavoidable* impact.**

Roadways. The RTP includes many roadway modification projects, a number of which involve widening of existing facilities for the purpose of increasing their capacity. Such projects would not in themselves introduce new traffic, but rather are intended to relieve current or projected future traffic congestion or poor safety conditions. However, in some cases, widening projects would accommodate increased traffic speed and volumes. Although many of the planned widening projects are in rural areas where sensitive noise receptors would not be affected, several would move traffic closer to noise-sensitive land uses. Widening projects with the potential to create significant noise impacts include portions of Routes 1, 129 and 152, and several arterial widenings along Airport Boulevard, Capitola Road, Graham Hill Road, Harkins Slough Road, and Soquel Avenue. Specific widening projects with the potential to create significant noise impacts are listed in Table 4.4-2 in Section 4.4.2.c.

Various improvements for Highway 1, including the Highway 1 widening, would increase the capacity of the freeway, thereby accommodating increased traffic levels. Noise levels would be expected to exceed 65 dBA CNEL along freeway segments and are expected to increase in all locations as traffic levels increase. However, noise level increases would be expected to be substantially less than 3 dBA at all locations. Consequently, although noise will potentially



exceed 65 dBA within several hundred feet of the freeway, the change in noise associated with increased traffic would not be audible to most listeners. In addition, topography, buildings, walls, and other barriers would provide attenuation of highway noise. Many areas along the freeway corridor are at least partially shielded from traffic noise by one or more of these factors.

The RTP contemplates roadway extensions in certain areas. These include Capitola Road in an unincorporated portion of the county, El Pueblo Road in the City of Scotts Valley, Jade Street, Pacific Cove, and Park Avenue in the City of Capitola, and Ohlone Parkway, which would be a new roadway in the City of Watsonville. New or extended roadways would introduce traffic into areas currently not experiencing roadway noise.

Airport. Although an increase in aircraft operations at Watsonville Municipal Airport, the only public airport in the county, is not part of the RTP, improvements at the airport would support increased operations. Therefore, airport projects would be indirectly responsible for incrementally increasing ambient noise levels near airports. Planned improvements with the potential to accommodate additional air traffic or modify noise patterns in the area include construction of runway extensions. Based on the City of Watsonville General Plan Future Noise Contours Map, existing and planned noise-sensitive uses are projected to fall within the 60 and 65 dBA CNEL noise contours for the airport; however, despite the increased traffic anticipated for the facility, overall noise levels are expected to decline due to the introduction of newer, quieter aircraft. Because an increase in noise levels is not anticipated, no significant impacts due to aircraft operations would occur.

Rail Operations. Rail projects (i.e., reuse of existing rail lines for trolleys or other fixed guideway transit) would result in substantial periodic noise levels experienced at adjacent receptors. The rail improvements in the 2001 RTP are designed to reuse rail corridors for bike and pedestrian pathways, trolley systems, or fixed guideway transit, or provide rail stations and associated facilities along existing rail lines. These projects would either reuse existing rail lines for non-rail or trolley use. The RTP rail projects would result in increases in the frequency of rail service in the county. Rail stations would be located just outside Watsonville (i.e., Pajaro rail station to support Caltrain Peninsula Rail system). Construction of rail stations would result in additional localized traffic that would produce vehicle noise. In addition, operation of trolley systems or fixed guideway transit would incrementally increase noise levels in the vicinity of rail lines. Implementation of these rail projects would result in minimal increases in ambient noise levels when averaged over a 24-hour period, but would produce substantial periodic noise levels. This would be considered a potentially significant impact.

Transit Operations. Projects that would increase the number of buses or other transit vehicles used by transit providers, or that would alter or expand existing transit routes would result in increased bus trips and/or trip lengths. This would increase noise on county roadways. However, the reduction in traffic noise that would occur as the result of the associated reduction in vehicle trips would more than offset this noise increase. Therefore,



transit projects would result in an overall noise reduction when compared to existing conditions, which would be considered a beneficial impact.

Marine Operations. The one marine transportation project contemplated in the RTP is the Capitola-Santa Cruz Commuter Ferry Service project, which would involve improvements to the Capitola and Santa Cruz Wharves, station parking facilities, a Santa Cruz Harbor light maintenance/fueling facility, and a compressed natural gas (CNG) ferry. The ferry service would operate 13 hours per day, Monday through Friday, all year. Ferry operations would generate watercraft noise. The exposure of sensitive receptors to these increases in noise levels would result in a potentially significant impact.

Stations and Park and Ride Lots. Implementation of several RTP station and park and ride projects, including the Highway 1/Highway 9 Intersection Improvements and Park and Ride Lot (CT-P20), Multi-modal Station Development (SC 1), Transit Center Joint Daycare Facility (WAT 20), Pajaro Rail Station Design and Construct project (CT-P19), and Pacific Cove Expansion for Park and Ride Lot (CAP-P24), could result in generation of traffic and operations that produce noise that could affect neighboring receptors. This would be considered a potentially significant impact.

The locations of several RTP station and park and ride lot facilities, including the Lift Line Maintenance/Operations Center (CTSA-P2), Capitola Intra-City Rail Trolley Project (CAP-P18), Santa Cruz Intra-City Rail Transit project (SC-P74), Park and Ride Lot Development (RTC-P14), Metrobase (Consolidated Operations Facility) (MTD-1), Capitola-Santa Cruz Commuter Ferry Service (CAP-P19), Park & Ride Lots (SC-P14), Park & Ride Lots for Bus Commuters (MTD-P26), and Rail Transit: Watsonville-Santa Cruz Corridor (MTD-P17), have not been determined. In addition, the RTP provides funding for transit oriented development (TOD) projects (RTC-P25), the sites of which have not been determined. Therefore, an evaluation of noise emissions from facility operations and traffic generated by these projects would be speculative. As described in Section 4.0 of this EIR, the State *CEQA Guidelines* Section 15145 notes that “If, after thorough investigation, a Lead Agency finds that a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact.” An evaluation of the site-specific impacts of the RTP station and park and ride lot projects for which sites have not been defined would be speculative, as neither the existing nor the post-project conditions of the sites can be assessed. Nevertheless, these projects will be required to undergo environmental review pursuant to CEQA when site plans are defined, prior to project implementation.

Mitigation Measures. RTP Policy 4.3.4, to “Avoid, minimize or mitigate noise, vibration, and visual impacts from transportation improvements in sensitive areas” would reduce project impacts related to noise. In addition, the following mitigation measures would apply to the 2001 RTP:



- N-2(a)** If an RTP project is located adjacent to sensitive uses, the local jurisdiction in which the project is located shall ensure that a noise survey is conducted to determine alternate alignments which allow greater distance from, or greater buffering of, noise-sensitive areas. The noise survey shall be sufficient to indicate existing and projected noise levels, to determine the amount of attenuation needed to reduce potential noise impacts to such uses to an exterior noise level of 65 dBA or less. This shall be accomplished during the project's individual environmental review.
- N-2(b)** Various sound attenuation techniques shall be considered where new or expanded roadways or reused rail lines are found to expose receptors to noise exceeding normally acceptable levels. The preferred methods for mitigating noise impacts will be the use of appropriate setbacks and sound attenuating building design, including retrofit of existing structures with sound attenuating building materials where feasible. In instances where use of these techniques is not feasible, the use of sound barriers (earthen berms, sound walls, or some combination of the two) will be considered. Determination of appropriate noise attenuation measures will be assessed on a case-by-case basis during a project's individual environmental review pursuant to the regulations of the applicable agency.

Significance After Mitigation. Implementation of the recommended programmatic measures would reduce potential impacts to a less than significant level. However, it should be noted that the construction of sound attenuation devices may create aesthetic impacts that may be undesirable and may affect the semi-rural character of much of the county. To mitigate this potential secondary impact to the degree feasible, the following measure is recommended:

- N-2(c)** Long expanses of walls or fences should be interrupted with offsets and provided with accents to prevent monotony. Landscape pockets and pedestrian access through walls should be provided. Whenever possible, a combination of elements should be used, including solid fences, walls, and, landscaped berms.

Implementation of soundwalls or other noise barriers along rail lines may be physically or economically infeasible in certain locations. Therefore, noise impacts associated with reuse of rail lines for trolleys and/or other fixed guideway transit would remain significant and unavoidable.

c. Specific RTP Projects That May Result in Impacts. Table 4.4-2 identifies those projects that may create impacts as discussed in Section 4.4.2.b. The individual projects listed could create significant noise impacts but would not necessarily do so. Additional specific analysis



will need to be conducted as the individual projects are implemented in order to determine the actual magnitude of impact. Mitigation measures discussed above would apply to these specific projects.

Table 4.4-2 RTP Projects That May Result in Noise Impacts

Project	Lead Agency	Location	Impact	Description of Impact
Many	All	Construction of Road, Bikeway, Rail and Airport Improvements Throughout the County	N-1	Possible noise impacts for projects within 1,600 feet of sensitive receptors
Constrained Projects				
AIR-P1	Airport	Lump Sum Watsonville Airport Projects	N-2	Possible impacts due to movement of runways closer to sensitive receptors, increased flights, increased traffic to and from airport
CT-P7	Caltrans	Highway 1 widening: HOV/HOT Lanes	N-2	Possible impacts due to increased traffic and speed
CT-3	Caltrans	Highway 1/17 Interchange Project	N-2	Possible impacts due to increased traffic and speed
CT-18	Caltrans	Highway 1/Harkins Slough	N-2	Possible impacts due to increased traffic and speed
CT-2	Caltrans	Highway 1/Mission Street Project	N-2	Possible impacts due to increased traffic and speed
CT-P3	Caltrans	Highway 1 Southbound and Northbound Auxiliary Lane	N-2	Possible impacts due to increased traffic and speed
CT-P20	Caltrans	Highway 1/Highway 9 Intersection Improvements and Park and Ride Lot	N-2	Possible impacts due to increased traffic and activity
CT-P10	Caltrans	Highway 17 Operational Improvements	N-2	Possible impacts due to increased traffic and speed
CT-25	Caltrans	Highway 129 Improvements at Rogge Lane	N-2	Possible impacts due to increased traffic and speed
CT-P34	Caltrans	Highway 1/San Lorenzo Bridge Widening	N-2	Possible impacts due to increased traffic and speed
CT-P17	Caltrans	Highway 152: Revise Hollohan Road/College Road Intersection	N-2	Possible impacts due to increased traffic and speed
CT-P19	Caltrans	Pajaro Rail Station Design and Construct	N-2	Possible impacts due to increased traffic and activity
CAP-P18	Capitola	Capitola Intra-City Rail Trolley Project	N-2	Possible impacts due to periodic rail noise
CAP-1	Capitola	Gross Road Widening	N-2	Possible impacts due to increased traffic and speed
CO-1	County	Capitola Road Widening and Multi-modal Improvements	N-2	Possible impacts due to increased traffic and speed
CO-38	County	Graham Hill Road Widening at	N-2	Possible impacts due to increased



Table 4.4-2 RTP Projects That May Result in Noise Impacts

Project	Lead Agency	Location	Impact	Description of Impact
		Treetop		traffic and speed
SC-P15	Santa Cruz	Bridge Seismic Retrofit and Barrier Modification	N-2	Barrier modification could increase noise levels at adjacent receptors
SC-1	Santa Cruz	Multi-modal Station Development at Front Street, Near Beach Street	N-2	Possible impacts due to increased traffic and activity
SC-2	Santa Cruz	River Street Improvements: Phases B & C	N-2	Possible impacts due to increased traffic and speed
MTD-13	SCMTD	Metro Center Rehabilitation	N-2	Possible impacts due to increased activity
SV-P8	Scotts Valley	Granite Creek/Highway 17 Interchange	N-2	Possible impacts due to increased traffic and speed
UC-P9	UCSC	Heller/Empire Grade Intersection Improvements	N-2	Possible impacts due to increased traffic and speed
UC-P1	UCSC	Main Entrance Improvements	N-2	Possible impacts due to increased/redistributed traffic
WAT-22	Watsonville	Airport Boulevard Widening	N-2	Possible impacts due to increased traffic and speed
WAT-23	Watsonville	Freedom Boulevard & Airport Boulevard Intersection Improvements	N-2	Possible impacts due to increased traffic and speed
WAT-P2	Watsonville	Freedom Boulevard Improvements (Green Valley Road to Compton Terrace)	N-2	Possible impacts due to increased traffic and speed
WAT-20	Watsonville	Transit Center Joint Daycare Facility	N-2	Possible impacts due to increased traffic and activity
<i>Unconstrained Projects</i>				
CT-P2	Caltrans	Highway 1 - Revise Interchanges	N-2	Possible impacts due to increased traffic and speed
CT-P3	Caltrans	Highway 1 Southbound and Northbound Auxiliary Lanes	N-2	Possible impacts due to increased traffic and speed
CT-P32	Caltrans	Highway 129 Widening (Union Street-Bridge Street)	N-2	Possible impacts due to increased traffic and speed
CT-P33	Caltrans	Highway 152 Widening (Martinelli Street-Holohan Road)	N-2	Possible impacts due to increased traffic and speed
CAP-P19	Capitola	Capitola-Santa Cruz Commuter Ferry Service	N-2	Possible impacts due to watercraft and vehicle noise, and increased activity at wharves
CAP-P1	Capitola	41st Avenue Interchange Improvement Project	N-2	Possible impacts due to increased traffic and speed
CAP-P25	Capitola	Jade Street Extension Project	N-2	Introduction of roadway segment would result in increased noise to



Table 4.4-2 RTP Projects That May Result in Noise Impacts

Project	Lead Agency	Location	Impact	Description of Impact
				nearby residents, park and community center
CAP-P24	Capitola	Pacific Cove Expansion for Park and Ride Lot	N-2	Possible impacts due to increased traffic and activity
CAP-P20	Capitola	Park Avenue Extension to Capitola Avenue	N-2	Introduction of roadway segment would result in increased noise to nearby residents
CAP-P10	Capitola	Park Avenue/Coronado Street Improvement Project	N-2	Possible impacts due to increased traffic and speed
CAP-P9	Capitola	Park Avenue/Kennedy Drive Improvement Project	N-2	Possible impacts due to increased traffic and speed
SC-P74	Santa Cruz	Intra-City Rail Transit	N-2	Possible impacts due to periodic rail noise
RTC-P26	SCCRTC	Countywide Talking Intersection Grants	N-2	Possible impacts due to sporadic operational noise
RTC 3	SCCRTC	Rail Line Right-of-way Acquisition: Santa Cruz Branch	N-2	No projects proposed; however, program could ultimately result in transportation projects (e.g., rail line) that could result in periodic rail noise or other noise sources.
MTD-P17	SCMTD	Rail Transit: Watsonville-Santa Cruz Corridor	N-2	Possible impacts due to periodic rail noise
SV-P16	Scotts Valley	Bean Creek Road Realignment to Intersect Scotts Valley Drive Further North	N-2	Possible impacts due to increased/redistributed traffic
SV-P14	Scotts Valley	El Pueblo Road Extension North Via Janis Way to Victor Square	N-2	Introduction of roadway segment would result in increased noise to nearby residents
SV-P15	Scotts Valley	El Pueblo Road Extension to Disc Drive	N-2	Introduction of roadway segment would result in increased noise to nearby residents
SV-P24	Scotts Valley	Emergency Access Granite Creek/Highway 17 Via Navarra Drive to Sucinto Drive	N-2	Introduction of roadway segment would result in increased noise to nearby residents
SV-P25	Scotts Valley	Emergency Access Scotts Valley Drive/Upper Willis Drive	N-2	Introduction of roadway segment would result in increased noise to nearby residents
SV-P26	Scotts Valley	Emergency Access Whispering Pines Drive to Manana Woods	N-2	Introduction of roadway segment would result in increased noise to nearby residents
SV-P23	Scotts Valley	Emergency Access-Bethany Drive/Glenwood Drive	N-2	Introduction of roadway segment would result in increased noise to



Table 4.4-2 RTP Projects That May Result in Noise Impacts

Project	Lead Agency	Location	Impact	Description of Impact
				nearby residents
SV-P22	Scotts Valley	Emergency Access-Sunridge Drive/Pueblo Road	N-2	Introduction of roadway segment would result in increased noise to nearby residents
SV-P10	Scotts Valley	Erba Lane/Terrace View/Scotts Valley Drive Realignment	N-2	Possible impacts due to increased/redistributed traffic
SV-P1	Scotts Valley	Midtown Highway 17 Interchange Between Mt. Hermon Road and Granite Creek Road	N-2	Possible impacts due to increased traffic and speed
SV-P13	Scotts Valley	Mt Hermon Road, Lockwood Lane, Springs Lake widening	N-2	Possible impacts due to increased traffic and speed
UC-P12	UCSC	Western Drive/Empire Grade Intersection Improvements	N-2	Possible impacts due to increased traffic and speed
UC-7	UCSC	Northern Loop Roadway	N-2	Introduction of roadway segment would result in increased noise to nearby residents
WAT-P23	Watsonville	Ohlone Parkway	N-2	Introduction of roadway segment would result in increased noise

