State and federal CO standards have been set for 1- and 8-hour averaging times. The state 1-hour standard is 20 ppm, not to be exceeded, whereas the federal 1-hour standard is 35 ppm, not to be exceeded more than 1 day per year. The state 8-hour standard is 9.0 ppm, while the federal standard is 9 ppm. This means that a monitored 8-hour CO concentration from 9.1 to 9.4 ppm violates the state but not the federal standard.

Nitrogen Dioxide

Nitrogen oxides (NOx) are a family of highly reactive gases that are primary precursors to the formation of ground-level ozone, reacting in the atmosphere to form acid rain. NOx, a mixture of nitric oxide (NO) and NO2, are produced from natural sources, motor vehicles, and other fuel combustion processes. NO is colorless and odorless and is in the atmosphere to form NO2. NO2 is an odorous, brown, acidic, highly corrosive gas that can affect human health and environment. NOx are critical components of photochemical smog. NO2 produces the yellowish-brown color of the smog.

NOx can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. The effects of short-term exposure are still unclear, but continued or frequent exposure to concentrations that are typically much higher than those normally found in the ambient air may cause increased incidence of acute respiratory illness in children. Health effects associated with NOx are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO2 may lead to eye and mucus membrane aggravation along with pulmonary dysfunction. NOx can cause fading of textile dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to the production of particulate nitrates. Airborne NOx can impair visibility.

NOx is a major component of acid deposition in California. NOx may affect both terrestrial and aquatic ecosystems. NOx in the air is a potentially significant contributor to a number of environmental effects, such as acid rain and eutrophication in coastal waters. Eutrophication occurs when a body of water suffers an increase in nutrients that reduces the amount of oxygen in the water, producing an environment that is destructive to fish and other animal life.

The CARB and the EPA have set CAAQS and NAAQS standards, respectively, for NO2 but not for NO. The state NO2 standards are 0.18 ppm as a 1-hour standard, not to be exceeded, and 0.030 ppm as an annual arithmetic mean. The federal NO2 standards are 0.100 ppm as a 1-hour standard, 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor not to be exceeded, and 0.053 ppm as an annual arithmetic mean, not to be exceeded more than one day per year.

Sulfur Dioxide

SOx gases are a family of colorless, pungent gases that include SO2 and are formed primarily by combustion of sulfur-containing fossil fuels (mainly coal and oil), metal smelting, and other industrial processes. SOx can react to form sulfates, which significantly reduce visibility. SOx is also a precursor to particulate matter formation.

The major health concerns associated with exposure to high concentrations of SOx include effects related to breathing, respiratory illness, alterations in pulmonary defenses, and aggra-

vation of existing cardiovascular disease. Major subgroups of the population that are most sensitive to SOx include individuals with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema), as well as children and the elderly. SOx emissions can also damage tree foliage and agricultural crops. Together, SOx and NOx are the major precursors to acid rain, which is associated with the acidification of lakes and streams and accelerated corrosion of buildings and monuments.

The ARB and the EPA have set CAAQS and NAAQS standards for SO2. The state standards are 0.04 ppm as a 24-hour average and 0.25 ppm as a 1-hour average, not to be exceeded. The federal standards are 0.030 ppm as an annual arithmetic mean, not to be exceeded, and 0.14 ppm as a 24-hour average, not to be exceeded more than one day per year.

Inhalable Particulates

Particulates can damage human health and retard plant growth. Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulates also reduce visibility and corrode materials.

The state PM10 standards are 50 micrograms per cubic meter (µg/m3) as a 24-hour average and 20 µg/m3 as an annual arithmetic mean. The federal PM10 standard is 150 µg/m3 as a 24-hour average. For PM2.5, the state has adopted a standard of 12 µg/m3 for the annual arithmetic mean. The federal PM2.5 standards are 35 µg/m3 for the 24-hour average and 15.0 µg/m3 for the annual arithmetic mean.

Lead

Lead is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Several decades ago lead was used as an automotive fuel additive to increase the octane rating. Because gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels, and the use of leaded fuel has been mostly phased out, the ambient concentrations of lead have dropped dramatically.

Short-term exposure to high levels of lead can cause vomiting, diarrhea, convulsions, coma, and death. Small amounts of lead can be harmful, especially to infants, young children, and pregnant women. Symptoms of long-term exposure to lower lead levels may be less noticeable but are still serious. Anemia is common, and damage to the nervous system may cause impaired mental function. Other symptoms are appetite loss, abdominal pain, constipation, fatigue, sleeplessness, irritability, and headache. Continued excessive exposure, as in an industrial setting, can affect the kidneys.

Lead exposure is most serious for young children because they absorb lead more easily than adults do, and they are more susceptible to its harmful effects. Even low-level exposure may harm the intellectual development, behavior, size, and hearing of infants. During pregnancy, and especially in the last trimester, the developing fetus is at particular risk from maternal lead exposure, with low birth weight and slowed postnatal neurobehavioral development noted.

The state standard for lead is 1.5 μg/m3 as a 30-day average, not to be equaled or exceeded. The federal standards are 1.5 μg/m3 averaged over a calendar quarter, not to be exceeded more than one day per year, and 0.15 μg/m3 as a rolling 3-month average, not to be exceeded over a 3-month period.

Toxic Air Contaminants (TACs)

TACs are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants listed above. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., benzene near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Diesel exhaust is the predominant TAC in urban air with the potential to cause cancer. It is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average). According to CARB, diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs, and are listed as carcinogens either under the State's Proposition 65 or under the federal Hazardous Air Pollutants (HAPs) programs. California has adopted a comprehensive diesel risk reduction program. The EPA and CARB have adopted low sulfur diesel fuel standards that will reduce diesel particulate matter substantially. These went into effect in June 2006.

ENVIRONMENTAL SETTING

Atmospheric conditions such as wind speed, wind direction and air temperature interact with the physical features of the landscape to determine the movement and dispersal of air pollutants.

The Tahoe Basin is located in the Lake Tahoe Air Basin (LTAB) that comprises portions of Placer and El Dorado counties in California, and Washoe and Douglas counties and the Carson City Rural District in Nevada. Lake Tahoe lies in a depression between the crests of the Sierra Nevada and Carson ranges at a surface elevation of 6,260 feet above sea level. The mountains surrounding the Lake are approximately 8,000 to 9,000 feet high, with some reaching beyond 10,000 feet.

According to documents from the Tahoe Integrated Information Management System (TIIMS), the bowl shape of the Lake Tahoe Basin has significant air quality implications. There are two meteorological regimes that affect air quality in the Basin.

First, are thermal inversions that occur when a warm layer of air traps a cold layer of air at the surface of the land and lake. Locally-generated air pollutants are often trapped in the “bowl” by frequent inversions that limit the amount of air mixing, which allows pollutants to accumulate. Inversions most frequently occur during the winter in the Tahoe Basin, however are common throughout the year. Often, wintertime inversions result in a layer of wood smoke,

mostly from residential heating, which can be seen over the Lake. Thermal inversions develop under three conditions in the Basin:

- A surface inversion can develop on a clear night, when the earth's surface rapidly radiates heat. Under these conditions, the air directly above the ground can be cooler than the air at higher altitudes.
- An advectional inversion involves a horizontal inflow of cold air from a source like costal wind.
- Another type of surface inversion can occur at night in valleys, when cold, dense air flows down slope along the mountains and rests at the bottom of the "bowl."

The second meteorological regime affecting air quality in the Lake Tahoe Basin is the atmospheric transportation of pollutants from the Sacramento Valley and Bay Area. Lake Tahoe's location directly to the east of the crest of the Sierra Nevada mountain range allows prevailing easterly winds, combined with local mountain upslope winds, to bring air from populated regions west of the Sierras to the Tahoe Basin. The strength of this pattern depends on the amount of heat, usually strongest in summer beginning in April and ending in late October.

Existing Air Quality

One way of summarizing air quality for a year within a Region is to report the number of days with an Air Quality Index (AQI) in each level of concern category. For each air pollutant the EPA provides a rating that ranges from Good to Hazardous, which is based on the highest pollutant concentration measured that day. The EPA calculates the AQI for five major pollutants regulated by the Clean Air Act: ground level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide.

For the Tahoe Region, daily air quality data was available for particulate matter (Sandy Way), carbon monoxide (Harvey's Hotel) and ozone (Incline Village and South Lake Tahoe Airport) from which daily pollutant specific AQI categories were determined. Table 2.7-1 summarizes the number days in each AQI category by year between 2007 and 2011. As shown below the number of "good" days has increased since 2007 from 319 to 361 days. Only four moderate days were documented in 2011. Overall, the AQI for the Lake Tahoe area suggests air quality conditions have improved substantially since 2007.

Table 2.7-1: Air Quality Index Measured by EPA (2007-2011)

Year	*Good*	*Moderate*	*Unhealthy for Sensitive Groups*	*Unhealthy*	*Very Unhealthy*	*Hazardous*
2007	319	46	0	0	0	0
2008	332	32	2[1]	0	0	0
2009	342	23	0	0	0	0
2010	344	21	0	0	0	0
2011	361	4	0	0	0	0

1. Corresponds to increased wildfire activity statewide.

Source: 2011 TRPA Thresholds Evaluation.

Table 2.7-2 shows estimates of the total volume of air pollutants generated each day by stationary sources, areawide sources and mobile sources within the Plan Area. It is clear from the proportion of air pollution generated by different sources varies by pollutant. Cars and trucks are responsible for most of the smog-producing pollutants (nitrogen oxides and reactive organic gases) in the air and two-thirds of the carbon monoxide. Miscellaneous processes is a major source of organic gases, including reactive organic gases that contribute to smog.

Table 2.7-2: 2008 Estimated Sources of Air Pollutants in Placer County - Lake Tahoe Air Basin

Category	*TOG*	*ROG*	*CO*	*NO_X*	*SO_X*	*PM*	*PM10*	*PM2.5*
Stationary Sources								
Fuel Combustion	0%	0%	0%	6%	0%	0%	0%	0%
Cleaning and Surface Coatings	3%	5%	0%	0%	0%	0%	0%	0%
Petroleum Production and Marketing	0%	0%	0%	0%	0%	0%	0%	0%
Industrial Processes	0%	0%	0%	0%	0%	0%	0%	0%
Subtotal	3%	5%	0%	6%	0%	0%	0%	0%
Areawide Sources								
Solvent Evaporation	5%	9%	0%	0%	0%	0%	0%	0%
Miscellaneous Processes	61%	36%	33%	13%	0%	100%	100%	100%
Subtotal	66%	45%	33%	13%	0%	100%	100%	100%
Mobile Sources								
On-road Motor Vehicles	13%	23%	38%	44%	0%	0%	0%	0%
Other Mobile Sources	18%	27%	29%	38%	0%	0%	0%	0%
Subtotal	32%	50%	67%	81%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**0%**	**100%**	**100%**	**100%**

Source: ARB, 2008.

2.8 Greenhouse Gases

Greenhouse gas (GHG) emissions have the potentially to adversely affect the environment because they contribute, on a cumulative basis, to global climate change. This section provides background on global climate change and summarizes the California GHG emissions inventory.

BACKGROUND

Global Climate Change

Global climate change (GCC) is currently one of the most important and widely debated scientific, economic, and political issues in the United States. GCC refers to a change in the average climate of the earth that may be measured by wind patterns, storms, precipitation, and temperature. The baseline by which these changes are measured originates in historical records identifying temperature changes that have occurred in the distant past, such as during previous ice ages. The rate of temperature change has typically been incremental, with warming and cooling occurring over the course of thousands of years. In the past 10,000 years the earth has experienced incremental warming as glaciers retreated across the globe. However, scientists have observed an unprecedented increase in the rate of warming over the past 150 years, roughly coinciding with the global industrial revolution.

Although GCC is now widely accepted as a concept, the extent and speed of change to be expected, and the exact contribution from human sources, remains in debate. Nonetheless, the world's leading climate scientists, the Intergovernmental Panel on Climate Change (IPCC), have reached consensus that global climate change is "very likely" caused by humans, and that hotter temperatures and rising sea levels will continue for centuries no matter how much humans control their future emissions. In particular, human influences have:

- very likely contributed to sea level rise and increased storm surge during the latter half of the 20th century;
- likely contributed to changes in wind patterns, affecting extra-tropical storm tracks and temperature patterns;
- likely increased temperatures of extreme hot nights, cold nights and cold days;
- more likely than not increased risk of heat waves, area affected by drought since the 1970s, and frequency of heavy precipitation events.

The IPCC predicts that global mean temperature increase from 1990-2100 could range from 2.0 to 11.5 degrees Fahrenheit, with the most likely scenario between 3.2 and 7.1 degrees. The same report projects a sea level rise of 7 to 23 inches by the end of the century, with a greater rise possible depending on the rate of polar ice sheet melting.

According to the California Climate Action Team (CCAT), accelerating GCC has the potential to cause a number of adverse impacts in California, including but not limited to: a shrinking Sierra snowpack that would threaten the state's water supply; public health threats caused by higher temperatures and more smog; damage to agriculture and forests due to reduced

water storage capacity, rising temperatures, increasing salt water intrusion, flooding, and pest infestations; critical habitat modification and destruction; eroding coastlines; increased wildfire risk; and increased electricity demand. These impacts have and will continue to have considerable costs associated with them.

Greenhouse Gases

Gases that that trap heat in the Earth's atmosphere are called greenhouse gases (GHGs). These gases play a critical role in determining the Earth's surface temperature. Part of the solar radiation that enters Earth's atmosphere from space is absorbed by the Earth's surface. The Earth reflects this radiation back toward space, but GHGs absorb some of the radiation. As a result, radiation that otherwise would have escaped back into space is retained, resulting in a warming of the atmosphere. Without natural GHGs, the Earth's surface would be about 61°F cooler. This phenomenon is known as the greenhouse effect. However, many scientists believe that emissions from human activities—such as electricity generation, vehicle emissions, and even farming and forestry practices—have elevated the concentration of GHGs in the atmosphere beyond naturally-occurring concentrations, contributing to the larger process of global climate change. The six primary GHGs are:

- **Carbon dioxide (CO2)**, emitted as a result of fossil fuel combustion, with contributions from cement manufacture;
- **Methane (CH4)**, produced through the anaerobic decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion;
- **Nitrous oxide (N2O)**, typically generated as a result of soil cultivation practices, particularly the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning;
- **Hydrofluorocarbons (HFCs)**, primarily used as refrigerants;
- **Perfluorocarbons (PFCs)**, originally introduced as alternatives to ozone depleting substances and typically emitted as by-products of industrial and manufacturing processes; and
- **Sulfur hexafluoride (SF6)**, primarily used in electrical transmission and distribution systems.

Though there are other emissions, such as diesel particulate matter and water vapor that can contribute to global warming, these six are identified explicitly in California legislation and litigation as being of primary concern. GHGs have varying potentials to trap heat in the atmosphere, known as global warming potential (GWP), and atmospheric lifetimes. GWP ranges from 1 (carbon dioxide) to 23,900 (sulfur hexafluoride). GHG emissions with a higher GWP have a greater global warming effect on a molecule-by-molecule basis. For example, one ton of CH4 has the same contribution to the greenhouse effect as approximately 21 tons of CO2. GWP is alternatively described as "carbon dioxide equivalents", or CO2e. The parameter "atmospheric lifetime" describes how long it takes to restore the system to equilibrium following an increase in the concentration of a GHG in the atmosphere. Atmospheric lifetimes of GHGs range from tens to thousands of years.

ENVIRONMENTAL SETTING

GHGs emissions contributing to global climate change are attributable, in large part, to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural emissions sectors. In California, the transportation sector is the largest emitter of GHGs (38 percent of statewide emissions in 2008), followed by electricity generation (24 percent of statewide emissions in 2008). Table 2.8-1 below summarizes the 2008 California GHG emissions inventory and 2020 projections.

Table 2.8-1: California Greenhouse Gas Emission Inventory and Projections

	MMT CO_2e/yr			
Emissions Sector	*2008*	*% of Total*	*2020*	*% of Total*
Electrical Generation	116.4	24%	110.4	22%
Residential/Commercial	43.1	9%	45.3	9%
Transportation	175.0	37%	183.9	36%
Industrial	92.7	19%	91.5	18%
High GWP Processes	15.7	3%	37.9	7%
Agriculture	28.1	6%	29.1	6%
Waste Management	6.7	1%	8.5	2%
Forestry	0.2	0%	0.2	0%
Gross Total Emissions	**477.9**	**100%**	**506.8**	**100%**

Note: MMT $CO2_e$/year = million metric tons of carbon dioxide equivalent per year.
Source: ARB, 2010, 2007:6, 2011c; Ascent Environmental, 2011.

In 2012, the Tahoe Metropolitan Planning Organization and TRPA prepared an emissions inventory as part of the Tahoe Region Sustainability Plan. The baseline years used were 2005 to be consistent with other planning efforts in the Region and 2010 to quantify the effects of the economic downturn after 2005. Source categories were determined based on unique characteristics of the Tahoe Region including forestry, wildfires, and recreational boating, which are not typically significant in urban areas. Emissions estimates were also classified as direct and indirect. Direct emissions are those that result from activity contained entirely within the Basin. Indirect sources take into account emissions from activities outside of the Region that are attributable to activity within the Region (e.g. electricity generated outside of the Region that is consumed within the Region). As shown in Table 2.8-2 below, in 2010, the largest sources of emissions were electricity generation (40 percent), transportation (28 percent), and fuel combustion (21 percent). Between 2005 and 2010 the greatest increase in emissions were in the fire and energy sectors. Sectors with the greatest reductions in emissions were transportation and waste.[21]

[21] Sustainability Action Plan Background. Tahoe Metropolitan Planning Organization (January 2012).

Table 2.8-2: Tahoe Region Greenhouse Gas Emission Inventory

Type	*Source Sector*	*Source Category*	*2005*	*2010*
Direct	Transportation	On-road mobile sources	331,476	319,106
		Recreational boats	22,403	15,994
		Other off-road equipment	53,860	58,751
	Fuel combustion	Wood combustion	97,700	104,297
		Natural gas combustion	179,885	187,755
		Other fuel combustion	5,858	6,161
	Fires	Wildfires and prescribed burns	4,284	91,652
	Land use	Livestock	12,734	12,734
Indirect	Energy	Electricity consumption	487,553	562,543
		Wastewater treatment	2,115	2,300
	Transportation	Aircraft	5,131	4,739
	Waste	Municipal solid waste	110,512	26,704
Total Emissions			**1,313,511**	**1,392,736**

Source: draft Final Report Development of a Regional Greenhouse Gas Emissions Inventory for the Lake Tahoe Basin, page 1-6.

Additionally, in June 2012, Placer County prepared a countywide GHG emissions inventory using 2005 as a base year. As shown in Table 2.8-3 below, the transportation sector accounted for 70 percent of total county GHG emissions. Electricity, natural gas and sanitary fuel consumption within the residential commercial/industrial sectors were the next largest sources of county GHG emissions (14 percent and 10 percent respectively). The remaining 6 percent of GHG emissions came from agriculture and solid waste and wastewater sectors.

Table 2.8-3: Placer County Greenhouse Gas Emission Inventory

	MMT CO_2e/yr	
Emissions Sector	*2005*	*% of Total*
Residential	0.3	14%
Commercial/Industrial	0.2	10%
Transportation	1.6	70%
Solid Waste and Wastewater	0.1	3%
Agriculture	0.1	3%
Gross Total Emissions	**2.3**	**100%**

Note: MMT $CO2_e$/year = million metric tons of carbon dioxide equivalent per year.

Source: Placer County Community-Wide GHG Emissions Inventory, 2012.

Placer County also prepared an inventory of GHG emissions from government operations. In 2005, GHG emissions from government operations totaled 26,921 metric tons of $CO2_e$ (1.2 percent of total countywide GHG emissions). Wastewater treatment accounted for 46 percent of GHG emissions from government operations followed by buildings and facilities (24 percent), and vehicle fleet (24 percent). Solid waste facilities, government-generated solid waste, transit fleet, employ commute, public lighting, and water delivery accounted for the remaining 6 percent.

2.9 Noise

This section provides an overview of the existing noise environment in the Plan Area. It includes a description of applicable noise terminology and existing ambient noise conditions.

NOISE TERMINOLOGY

Sound and Noise

Sound is actually a process that consists of three components: the sound source, the sound path and the sound receiver. All three components must be present for sound to exist. Without a source to produce sound or a medium to transmit sound-pressure waves, there is no sound. Sound also must be received; a hearing organ, sensor, or object must be present to perceive, register or be affected by sound or noise. In most situations, there are many different sound sources, paths and receivers, not only one of each. Noise is defined as loud, unpleasant, unexpected, or undesired sound.

Sound Pressure Levels and Decibels

The amplitude of a sound determines its loudness. Loudness of sound increases and decreases with increasing and decreasing amplitude. Sound pressure level (SPL) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called bels, named after Alexander Graham Bell. To provide finer resolution, a bel is divided into 10 decibels (dB).

Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted by ordinary arithmetic means. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. When two sounds of equal SPL are combined, they produce a combined SPL 3 dB greater than the original individual SPL. In other words, sound energy must be doubled to produce a 3 dB increase. If two sound levels differ by 10 dB or more, the combined SPL is equal to the higher SPL; the lower sound level would not increase the higher sound level.

A-Weighted Decibels

SPL alone is not a reliable indicator of loudness. The frequency of a sound also has a substantial effect on how humans respond. Although the intensity of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. To approximate the frequency response of the human ear, a series of SPL adjustments is usually applied to the sound measured by a sound level meter. The adjustments, referred to as a weighting network, are frequency-dependent.

The A-scale weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. Noise levels for environmental noise studies are typically reported in terms of A-weighted decibels (dBA). In environmental noise studies, A-weighted SPLs are commonly referred to as noise levels. Table 2.9-1 shows typical A-weighted noise levels.

Table 2.9-1: Typical Noise Levels

Common Outdoor Activities	*Noise Level (dBA)*	*Common Indoor Activities*
	–110–	Rock band
Jet flyover at 1,000 feet		
	–100–	
Gas lawn mower at 3 feet		
	–90–	
Diesel truck at 50 feet traveling 50 miles per hour		Food blender at 3 feet
	–80–	Garbage disposal at 3 feet
Noisy urban area, daytime Gas lawn mower at 100 feet	–70–	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	–60–	
		Large business office
Quiet urban daytime	–50–	Dishwasher next room
Quiet urban nighttime	–40–	Theater, large conference room
Quiet suburban nighttime		
	–30–	Library
Quiet rural nighttime		Bedroom at night, concert
	–20–	
		Broadcast/recording studio
	–10–	
Lowest threshold of human hearing	–0–	Lowest threshold of human hearing

Source: Caltrans; 1998.

Human Response to Changes in Noise Levels

It is widely accepted that the average healthy ear can barely perceive 3-dB noise level changes. A 5-dB change is readily perceptible, and a 10-dB change is perceived as being twice or half as loud. As discussed above, doubling sound energy results in a 3-dB increase in sound; therefore, doubling sound energy (e.g., doubling the volume of traffic on a highway) would result in a barely perceptible change in sound level.

Noise Descriptors

Noise in our daily environment fluctuates over time. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors most commonly used in traffic noise analysis.

- **Equivalent sound level (Leq):** Leq represents an average of the sound energy occurring over a specified period. In effect, Leq is the steady-state sound level that in a stated period would contain the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level (Leq[h]) is the energy average of the A-weighted sound levels occurring during a 1-hour period.
- **Percentile-exceeded sound level (Lx):** Lx represents the sound level exceeded for a given percentage of a specified period (e.g., L10 is the sound level exceeded 10 percent of the time, L90 is the sound level exceeded 90 percent of the time).
- **Maximum sound level (Lmax):** Lmax is the highest instantaneous sound level measured during a specified period.
- **Day-night level (Ldn):** Ldn is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring between 10 p.m. and 7 a.m.
- **Community noise equivalent level (CNEL):** CNEL is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring between 10 p.m. and 7 a.m. and 5 dB added to the A-weighted sound levels occurring between 7 p.m. and 10 p.m.

Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the following factors.

- **Geometric Spreading:** Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates (or drops off) at a rate of 6 dBA for each doubling of distance. Highway noise is unique in that the movement of vehicles makes the source of the sound appear to emanate from a line (i.e., a line source) rather than a point.
- **Ground Absorption:** The noise path between the highway and the observer is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. For acoustically hard sites (i.e., those sites with a reflective surface, such as a parking lot or a smooth body of water, between the source and the receiver), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees, between the source and the receiver), an excess ground-attenuation value of 1.5 dBA per doubling of distance is normally assumed. When added to the geometric spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dBA per doubling of distance for a line source and 7.5 dBA per doubling of distance for a point source.
- **Atmospheric Effects:** Atmospheric conditions can have a significant effect on noise propagation. Wind has been shown to be the most important meteorological factor within approximately 500 feet of the source, whereas vertical air-temperature gradients are more important for greater distances. Receptors located downwind from a

source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lower noise levels. Increased sound levels can also occur as a result of temperature inversion conditions (i.e., increasing temperature with elevation).

- **Shielding by Natural or Human-Made Features:** A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by this shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. A taller barrier may provide as much as 20 dB of noise reduction.

ENVIRONMENTAL SETTING

TRPA identifies noise levels from transportation corridors as the main source of noise in the Plan Area. Other noise sources include motorized watercraft, construction vehicles and equipment, machinery associated with refuse collection and snow removal, and off-road vehicles.[22]

In 2011, Ascent Environmental modeled existing traffic noise levels at 100 feet from the centerline of major roadways in the Tahoe Basin. The traffic noise modeling results are based on existing average daily traffic volumes and speeds from traffic counts collected in 2010 as part of the traffic analysis included in Section 3.3, Transportation, of the Regional Plan Update draft Environmental Impact Statement (dEIS). In many cases, the actual distances to noise level contours may vary from the distances predicted by the traffic noise model. Factors such as roadway curvature, roadway grade, shielding from local topography or structures, elevated roadways, or elevated receivers may affect actual sound propagation. The distances reported are considered to be conservative estimates of noise exposure along roadways in the Plan Area.

As shown in Table 2.9-2, the 55-bd CNEL/L_{dn} traffic noise contours along four of the five roadway segments located in the Plan Area extend beyond the highway corridor (300 feet from highway edge).

[22] TRPA Regional Plan Update Draft EIS. Ascent Environmental (2011).

Table 2.9-2: Existing Travel Noise Levels

		Distance (ft) from Roadway Centerline to CNEL/D_{dn} (DB)			
Roadway Segment	*CNEL/L_{dn} (db) at 100 feet from Roadway Centerline*	*70*	*65*	*60*	*55*
SR 28 mp 11.00	62.7	33	71	152	328
SE 28 mp 1.85	64.7	44	95	205	442
SR 89 mp 13.72	65.3	49	105	227	490
SR 267 mp 6.23	66.2	55	119	257	554
SR 267 mp 9.28	64.2	28	60	129	278

Notes: CNEL = Community Noise Level Equivalent; dB = A-weighted decibels; Ldn = day-night average noise level; and mp = mile post.

Source: Ascent Environmental, 2011.

TRPA conducted a shoreline test for motorized watercraft as part of the 2011 Thresholds Evaluation. The threshold is measured based on the number of exceedances of the noise limit (>75 dBA) during the year by motorized watercraft. The current threshold is zero single-event exceedances of the shoreline test noise limit. Two noise monitoring sites are located in the Plan Area, one in Kings Beach and the other in Tahoe City. While TRPA didn't disaggregate the data by testing site, for the period from 2009 to 2011 the exceedance rate on average for Lake Tahoe increased by about 0.045 exceedances/day/year. However, according to TRPA, there is insufficient data to determine a trend and confidence in this status is low.

TRPA also measured cumulative noise events as part of the 2011 Thresholds Evaluation. Depending on the land use category, the adopted CNEL standards range from 45 dBA (e.g. critical wildlife habitat and wilderness areas) to 65 dBA (e.g. highway corridors). TRPA evaluated the status of 16 adopted threshold standards for CNEL. According to TRPA, data indicates that the regional status is somewhat worse than the established target, particularly for critical wildlife habitat areas and the SR 267 transportation corridor.

2.10 Policy Context

REGIONAL PLAN

Conservation policies in the Regional Plan are designed to guide decision-making and planning regarding the preservation, development, utilization, and management of scenic and other natural resources. Their purpose is to minimize the threat that increasing urbanization has on ecological values and public opportunities for use of public lands, and often focus on the maintenance or restoration of natural ecological function as a means of improving environmental threshold conditions. Emphasis is placed on the identification of significant or sensitive resources and subsequent review of development proposals to assess and mitigate potential impacts. In habitat areas and natural communities, policies seek to increase diversity in or der to promote healthy community structures, improving the capacity of the ecosystem to provide for the needs of various species.

Biological Resources

Managing Vegetation. In order to ensure the health and longevity of the region's plant communities, the policies encourage forest management practices, including prescribed harvesting and burning, that increase opportunities for natural succession and greater diversity of age and species. Policies encourage diversity of forest pattern as well, calling for a mix of plant communities and promotion of edge zones. Vegetation management strategies also extend to urban areas, where policies limit disturbance or unnecessary alteration from development activities and promote natural landscaping practices. Plants selected for urban landscaping or the re-vegetation of disturbed sites should be native, water-efficient, nutrient-efficient, fire-resistant, and non-invasive. The Regional Plan also encourages local governments to develop urban forestry plans. (Policies: VEG-1.1, VEG-1.2, VEG-1.3, VEG-1.4, VEG-1.5, VEG-1.6, VEG-1.7, VEG-1.8, VEG-1.9, VEG-1.11)

Protecting Unique Ecosystems, Sensitive Plant Species, and Habitat. Policies seek to protect, maintain, and restore plant communities that serve unique and important functions, including wetlands, meadows, and other riparian vegetation. Policies emphasize the containment and eradication of invasive species and protection against the loss or destruction of threatened, endangered, and sensitive plant species, as well as uncommon plant communities, within the region. The Regional Plan urges the preservation of riparian zones in their natural states as well as the restoration or expansion of these communities wherever possible. These policies are intended to address environmental thresholds related to soils, vegetation, and wildlife, while positively impacting scenic and water quality. Policies place a special emphasis on the preservation of habitat for threatened, endangered, rare, or sensitive species. Management strategies include protection or enhancement programs, and the buffering of critical habitat from disturbing land uses. (Policies: VEG-1.10, VEG-2.1, VEG-2.2, VEG-3.1, VEG-3.2, VEG-3.3, WL-2.1)

Improving Forest Health. Policies provide for the management and increase of the amount of old growth/later seral tree stands through such management practices as:

- Protection of existing old growth stands
- Management of younger stands to progress towards old growth characteristics
- Use of qualified individuals (licensed foresters) for these stands' management and treatment
- Retention of trees of a range of ages
- Use of prescribed burns

Snags (standing dead trees) and woody debris provide essential forest, aquatic, and riparian habitat and are important to the cycling of soil and nutrients, and shall be retained at an appropriate stocking level and distribution within the region. (Policies: VEG-4.1, VEG-4.2, VEG-4.3, VEG-4.4, VEG-4.5, VEG-4.6 VEG-5.1, VEG-5.2)

Reducing Risk of Catastrophic Wildfire. Policies promote active forest management and regional coordination with fire protection agencies. Strategies include hazardous fuels reduction to reduce the intensity of naturally occurring fires, and creating defensible spaces con-

sistent with State codes and community wildfire protection plans. (Policies: VEG-6.1, VEG-6.2)

Maintaining Habitats through Diversity. Policies seek to maintain suitable habitats for the region's indigenous species through the maintenance and improvement of habitat diversity with the goal of fostering habitats that can support large numbers of different species. These policies seek to minimize the impact of urban development on habitats and improving the functional and biological characteristics of the ecosystem in order to support the needs of different wildlife. Objectives include managing development on the basis of wildlife resources, managing riparian vegetation as habitat, controlling non-native and exotic species, controlling domestic animals, and developing urban bear strategies. Areas designated for nature study or wildlife observation should also be regulated to prevent habitat and wildlife disturbance. (Policies: WL-1.1, WL-1.2, WL-1.3, WL-1.4, WL-1.5, R-1.2)

Improve Aquatic Habitats. The Regional Plan seeks to preserve the recreational and ecological quality of the fishery in the Lake Tahoe Region. Its focus is on the maintenance of essential habitats. One approach is the avoidance of future detrimental impacts through development review and expert consultation. Similarly, unnatural blockages such as culverts, dams, and other development, which can impede fish migration, shall be prohibited and removed where appropriate. Stream management policies seek to improve habitat through providing for instream flow needs and maintenance of spawning habitat. Policies call for an instream maintenance program to regularly and efficiently address problems in stream channels, habitat improvement projects, regulations to avoid diversions that lower stream levels, and the transfer of existing diversions from streams to lake sources. Policies support efforts to reintroduce Lahontan cutthroat trout into appropriate isolated lakes or streams in the region. They also prohibit the release of non-native aquatic invasive species, as well as controlling or eradicating those populations that already exist. Further, policies address boating in the near-shore of Lake Tahoe to reduce impacts from noise and associated activities. (Policies: FI-1.1, FI-1.2, FI-1.3, FI-1.4, FI-1.5, FI-1.6, FI-1.7, FI-1.8, FI-1.9)

Discouraging Development in Sensitive Areas. Policies limit land uses and identify development standards to discourage development and direct it away from undeveloped and environmentally sensitive areas. They limit uses in wilderness and other undeveloped areas to low-density, low-impact activities (recreational), and prohibit off-road vehicle use. Policies focusing specifically on Stream Environment Zones (SEZs) prohibit new land coverage and other permanent land disturbances and describe a program for mitigating impacts, incentivizing the restoration of stream corridors and public acquisition of SEZ lands, and allowing limited replacement of coverage providing a net benefit to the SEZ. (Policies: LU-3.4, LU-3.5, OS-1.2, R-1.1, R-1.5, R-2.1, SEZ-1.1, SEZ-1.2, SEZ-1.5, SEZ-1.6, SEZ-1.7, SEZ-1.8)

Water Quality

Maintaining and improving water quality in Lake Tahoe and the region as a whole is a high priority for TRPA, and thresholds are established to achieve this goal. The Lake Tahoe Total Daily Maximum Load (TMDL) identifies loads of fine sediment particles, nitrogen, and phosphorus discharging to Lake Tahoe from urban uplands runoff, atmospheric deposition, forested upland runoff, and stream channel erosion as the primary sources of pollution impairing Lake Tahoe's deep water transparency and clarity.

Implementing Water Management Programs. Policies call for the coordination of federal, State, regional, local, and private water quality management programs to restore and maintain Lake Tahoe's unique transparency, color and clarity in accordance with environmental threshold carrying capacity standards. This coordination will efficiently and effectively further objectives to achieve and maintain water quality thresholds, prioritize and fund water quality improvement projects, mitigate impacts from development, redevelop non-conforming properties, and support TMDL pollutant/stormwater load reduction programs. (Policies: WQ-1.1, WQ-1.2, WQ-1.3, WQ-1.4, WQ-1.5, WQ-1.6, WQ-1.7)

Mitigating Impacts of Development. New and redeveloped residential, commercial, and public projects are required to offset the impacts of their development to water quality (erosion and runoff) via the following:

- Implementing on-site and/or off-site erosion and runoff control projects concurrent with the impact from the project as a condition of project approval and subject to TRPA concurrence as to effectiveness, OR
- Contributing to a water quality mitigation fund for implementing off-site erosion and runoff control projects. The amount of such contributions is established by TRPA ordinance.

(Policies: WQ-1.3, WQ-3.4, DP-4.1)

Reducing Point and Non-Point Source Pollution. To protect water quality in the Lake Tahoe Region, policies call for the reduction or elimination of point and non-point sources of pollution. For point sources, this involves the prohibition of direct discharge or wastewater, sewage, or solid waste to Lake Tahoe, its tributaries, or the groundwaters of the region; and controlling other possible water pollutants, including underground storage tanks, liquid/solid wastes from recreational vehicles and boats, motorized watercraft, snow removal activities, and road maintenance. For non-point source pollutants this involves strategies for achieving water quality thresholds for littoral zones, restoration of disturbed lands, restoration of stream environment zones, promotion of natural infiltration, prohibition of off-road motor vehicle use, restrictions on fertilizer use, and compliance with Best Management Practice (BMP) requirements (per TRPA's BMP Handbook or Manual) as a condition of approval for all development projects. (Policies: WQ-2.1, WQ-2.2, WQ-2.3, WQ-2.4, WQ-2.3, WQ-2.6, WQ-2.7, WQ-3.1, WQ-3.2, WQ-3.3, WQ-3.5, WQ-3.6, WQ-3.7, WQ-3.8, WQ-3.9, WQ-3.11, WQ- 3.12)

Coverage

Establishing Coverage Allowances. The Regional Plan establishes policies to define allowable impervious land coverage in the region for all new development. They define base land coverage allowances by land capability district and allow land coverage increases and transfers consistent with the Regional Plan and TRPA Code to:

- Discourage development in environmentally sensitive lands and outlying residential areas
- Promote environmentally beneficial redevelopment in Town Centers, the Regional Center, and the High Density Tourist District.
- Incentivize the removal and transfer of coverage from priority watersheds.
- Restore disturbed stream environment zones.
- Retire development rights.
- Area Plans may prepare a comprehensive coverage management system as an alternative to the parcel level coverage requirements which provides greater than or equal to overall coverage reductions and reductions in coverage in land capability districts 1 and 2 compared to the parcel level limitations in the Regional Plan and Code.

The Regional Plan also establishes coverage allowances for maintenance, repair and expansion of existing and the rebuilding of damaged or destroyed nonconforming structures; and encourages the rehabilitation and upgrading of existing structures and parcels with existing excess coverage through a mitigation program, payment of a rehabilitation fee, bonus units, and other means that result in environmental benefits. (Policies: LU-2.3, LU-2.4, LU-2.5, LU-2.9, LU-2.10, LU-2.11, LU-2.12, S-1.5, S-1.7, DP-3.4)

Minimizing Soil Erosion. Soil-related policies aim to maintain soil productivity, reduce the loss of soil nutrients through erosion, maintain vegetative cover, and minimize sedimentation into streams and lakes. These limit allowable impervious land coverage and permitted development-related disturbance in both siting and seasonal timing. (Policies: S-1.1, S-1.2, S-1.6)

Resource Conservation

Preserving Cultural Sites. The Regional Plan contains policies to ensure that the Lake Tahoe Region's historical, cultural, and architectural heritage is recognized and protected from damage or loss due to harsh weather and development. These seek the identification of significant landmarks and the establishment of review criteria to protect those landmarks from damage, as well as the provision of incentives to promote preservation and restoration of significant sites. (Policies: C-1.1, C-1.2)

Conserving Energy. Policies promote energy conservation programs and the development of alternative energy sources in order to avoid the consumption and cost of non-renewable sources. Policies encourage waste recycling programs; exploring alternative energy technologies; considering costs to fisheries, instream flows, and scenic quality associated with hydroelectric projects; and implementing energy-saving measures that also improve air quality. (Policies: E-1.1, E-1.2, E-1.3)

Scenic Resources

Maintaining Scenic Qualities of the Landscape. These policies seek to minimize and mitigate impacts on the region's scenic resources resulting from development. They call for the evaluation of proposed development in terms of scenic corridors and viewsheds, against management directions provided in the Lake Tahoe Basin Scenic Resources Evaluation. Additionally, projects shall also be evaluated against the Scenic Quality Improvement Program and the Design Review Guidelines for Scenic Quality. (Policies: SR-1.1, SR-1.2, SR-1.3)

Improving Accessibility for Public Viewing. The Regional Plan includes policies to increase and improve opportunities to view Lake Tahoe from corridors and scenic viewpoints. Methods include designing for view corridors in urban areas, providing scenic viewpoints on roadways, identifying viewpoints with appropriate signage, and, establishing limits on length of stay in scenic view parking areas to ensure turnover and increased access. (Policies: SR-2.1, SR-2.2, SR-2.3, SR-2.4)

Health, Safety, and Noise

Maintaining Noise Thresholds. Noise policies address both single-event and community noise equivalence standards. The policies set conditions for the restriction and permitting of the following single-event noise sources: aircraft, boats, motor vehicles and motorcycles, off-road vehicles, snow-mobiles, and land uses. Policies regarding community noise equivalent levels (CNEL) establish conditions for transportation corridors, the airport, and wilderness and roadless areas that are intended to reduce the impact of cumulative noise events on people and wildlife. (Policies: N-1.1, N-1.2, N-1.3, N-1.4, N-1.5, N-1.6, N-2.1, N-2.2)

Reducing Risk from Natural Hazards. The Lake Tahoe Region is subject to avalanches, wildfires, flooding, earthquakes, and seiches. In order to minimize hazards, policies regulate development in hazardous areas, educate the public about wildfires, encourage the use of fire-resistant materials and construction techniques, manage fuels (vegetation) to reduce fire hazard, and encourage disaster planning. (Policies: NH-1.1, NH-1.2. NH-1.3)

Maintaining Air Quality Thresholds. Air quality policies seek to achieve environmental thresholds and federal, state, and local air quality standards through emissions-reduction strategies. Policies address fugitive dust, smoke, and other pollutants that may limit visibility in the region; greenhouse gases and other emissions from motor vehicles and machinery; and pollutants emitted by gas appliances, wood-burning stoves, buildings, construction, and prescribed burns. Land use and transportation policies also support this goal by reducing air pollution from motor vehicles and through considering air resources. (Policies: AQ-1.1, AQ-1.2, AQ-1.3, AQ-1.4, AQ-1.5, AQ-1.6, DP-4.2)

Open Space Protection

Managing Open Space Areas. The Regional Plan defines open space as land areas void of development and reserved for natural values, including the undeveloped portions of private lots. Policies are intended to protect the resources and public benefits of the region's open spaces, preserving vegetation, maintaining scenic qualities, and protecting the watershed. They promote management practices and use regulations to minimize impacts on soil, vege-

tation, wildlife, water, and air. This goal is supported by policies throughout the document. (Policies: OS-1.1, OS-1.2)

Preserving Scenic and Natural Quality of Shorezones. Policies provide a framework for protecting the shorezones of Lake Tahoe, Fallen Leaf Lake, and Cascade Lake from development pressures and impacts on scenic quality, water access, and habitats. Shorezone policies seek to:

- Protect vegetation at the interface between the backshore and the foreshore zones.
- Regulate construction activity in the unstable cliff area, prioritizing natural buffers over engineering solutions.
- Provide direction for appropriate vegetation in the shorezone, discouraging lawns and ornamental vegetation.
- Regulate the management, disturbance, and development activity in each of the shorezone classes (1 through 8).
- Protect stream channel entrances to the lake to allow unobstructed fish movement.
- Provide an approach to managing public access to the shorezone and the structures/access points that enable it, addressing multiple-use piers, increased opportunities for public access, shorezone tolerance levels for increased activity, and the encouragement of public boating access from private marinas.
- Provide an approach to regulating motor boat use on Fallen Leaf and Cascade Lakes.

(Policies: SZ-1.1, SZ-1.2, SZ-1.3, SZ-1.4, SZ-1.5, SZ-1.6, SZ-1.7, SZ-1.8, SZ-1.10, SZ-1.12, SZ-1.13, SZ-1.14)

Preserving and Restoring Stream Environment Zones. Policies provide for the long-term preservation and restoration of Stream Environment Zones (SEZs) set objectives for restoration of disturbed SEZs as well as standards for SEZ management. They also establish standards for groundwater development, golf course design and management, and new development, and redevelopment. Policies also encourage the public acquisition of SEZ lands for restoration and protection. (Policies: SEZ-1.1, SEZ-1.2, SEZ-1.3, SEZ-1.4, SEZ-1.5, SEZ-1.6, SEZ-1.7, SEZ-1.8)

Environmental Improvement Program

Environmental Improvement Projects are intended to implement the Lake Tahoe Environmental Improvement Program (EIP), an ongoing multijurisdictional environmental restoration effort of the Tahoe Region. EIP projects are designed to achieve and maintain the environmental thresholds set forth in the program. As development or other activity occurs under an Area Plan, it may necessitate, or be part of, an EIP project. Financing policies ensure adequate long-term financing to implement the EIP a. These involve regional partnerships to secure funds and equitably distribute costs, directing regional revenues to high-priority environmental improvement projects, and meeting monitoring and evaluation performance targets. (Policies: FIN-2.1, FIN-2.2, FIN-3.1, FIN-3.2, FIN-4.1, FIN-4.2)

Specifications for Area Plans

The Regional Plan contains some policies that specify requirements for Area Plans, emphasizing the need to recognize and support planned, new, or enhanced Environmental Improvement Projects, promote environmentally beneficial redevelopment and revitalization within Centers, and provide threshold gain, including but not limited to improvements in water quality. An Area Plan may propose to establish area-wide water quality treatments and funding mechanisms in lieu of certain site-specific BMPs. The area-wide program must achieve equal or greater effectiveness and efficiency at achieving water quality benefits than certain site-specific BMPs. An Area Plan may also propose a comprehensive coverage management system as an alternative to the parcel-level coverage requirements outlined in the Code of Ordinances. Policies also encourage the inclusion of urban forestry and urban bear strategy components.

PLACER COUNTY POLICY CONTEXT

The existing General Plan, Community Plan, and Plan Area Statements contain over 140 goals, objectives, and policies related to conservation, many of which are duplicated in numerous plans or convey the same principles and direction using different language. See Appendix B: Existing Conservation Goals, Objectives, and Policies.

The existing goals, objectives, and policies largely mirror policy direction in the Regional Plan. An overarching goal related to conservation is to ensure the attainment and maintenance of the environmental threshold related targets contained in the plans.

Biological Resources. Goals, objectives, and policies focus on the protection, enhancement, and expansion of plant communities and wildlife and aquatic habitats. Restoration of disturbed SEZs and relocation of coverage from SEZs is given a high priority. Development and disturbance is restricted in sensitive areas and policies call for the restoration of disturbed habitats. Off-road vehicle use is restricted.

Water Quality. Goals, objectives, and policies related to water quality aim to achieve the TRPA adopted thresholds relative to stream environment zone restoration and water quality standards. Grading activities are restricted during winter months, BMPs are required, impervious coverage is to be consistent with land capability constraints. Development is to be designed in accordance with adopted TRPA standards in terms of permitted land coverage and BMPs.

Coverage. Policies support reductions in land coverage, including restoration of disturbed SEZs. A number of policies require projects with existing land coverage greater than 70 or 75 percent to reduce on-site coverage by a minimum of five percent.

Resource Conservation. Policies address protection of cultural and historic resources.

Scenic Resources. Policies call for the preservation and enhancement of scenic views to Lake Tahoe and other prominent areas of interest and reference strategies in the TRPA "Lake Tahoe Basin-Scenic Quality Implementation Program" for improving overall scenic quality. Policies also call for the undergrounding of utility lines.

Health, Safety, and Noise. Adopted CNEL noise standards, State and Federal Ambient Air Quality Standards, and seismic safety standards are to be met. Policies also support the Air District and TRPA in development of improved air quality monitoring capabilities. Development is discouraged in areas subject to environmental hazards such as slides or slop failures. The use of fire resistant materials and fire preventative techniques is encouraged.

Open Space Protection. Policies related to biological resources, water quality, scenic resources, and health, safety and noise support protection and management of open space areas to minimize impacts on soil, vegetation, wildlife, water, and air.

Environmental Improvement Program. Policies call for implementation of environmental improvement and restoration projects. Policies identify specific EIP projects to be completed for the Historic Fish Hatchery Property.

ANALYSIS

Overall, the current goals, objectives, and policies are consistent with Regional Plan policy direction for conservation. However, because the goals, objectives, and policies are spread among numerous plans and Plan Area Statements, they lack clarity and a consistent framework. Also, because the goals, objectives, and policies were written for relatively small geographic areas, they tend to be narrow in scope.

Policies are fairly comprehensive regarding encouraging biological resources, water quality, coverage, scenic resources, open space protection, and health, safety, and noise. However, policies concerning energy conservation and shorezone protection are less developed. New policy initiatives for conservation could focus on strengthening the policies related to these two topic areas.

The overall intent and issue areas of the existing goals, objectives and policies should be retained. However, the individual statements should be revised and augmented to more closely align with Regional Plan policies, better articulate the overall approach to conservation, and provide clear direction for implementation. Where appropriate to address localized issues, policies applicable to specific areas or topics should be retained. Duplicative policies should be eliminated and policies that are very similar to each other, with only minor differences should be consolidated.