Health and Safety Element

INTRODUCTION

This element provides the policy context for the City of South Lake Tahoe to achieve its vision for future health and safety. Planning for change requires consideration of a wide range of public safety issues. Safety hazards are naturally induced, such as seismic, geologic, flooding, snow, avalanche, and wildland fire hazards. Some hazards are the result of natural conditions that are exacerbated by human activity and alteration of the natural environment, such as urban fire, and development in sensitive areas such as floodplains and areas subject to erosion and landslides. Other hazards are human-made including aircraft crash hazards, hazardous materials, and terrorism. In addition to safety issues related to hazardous conditions, the planning process should account for other issues related to community health and safety, including noise exposure. Protection from the risks of natural and human-made hazards is essential in establishing a sense of well-being for residents. Goals and policies are organized under the following headings:

- Emergency Response and Disaster Preparedness
- Fire Hazards
- Seismic and Geologic Hazards
- Flooding Hazards
- Avalanche Hazards
- Hazardous Materials
- Airport Hazards
- Noise

HEALTH AND SAFETY VISION

The following is the City of South Lake Tahoe's vision for future health and safety:

> *"In 2030 South Lake Tahoe has coordinated with local, regional, State, and Federal agencies to create a healthy and fire-safe forest, open spaces, and built environment within the city limits and on surrounding public and private lands."*

EMERGENCY RESPONSE AND DISASTER PREPAREDNESS

The policies in this section focus on providing a high level of safety and protection for residents and businesses from natural and human-made disasters such as floods, earthquakes, wave action (seiches), urban and wildland fires, and terrorist acts. The policies continue cooperative agreements with adjoining jurisdictions and regional, State, and Federal agencies that prescribe procedures for preparedness, response, and disaster recovery.

Goal HS-1	To plan for, train for, and respond to major incidences and disasters in order to minimize loss of life, major injury, and loss of property. Source: GPU Consultants

Policy HS-1.1: Local Emergency Operations Plan Review
The City shall continue to periodically review and update the City's Local Emergency Operations Plan (LEOP). Source: South Lake Tahoe 1999 General Plan.

Policy HS-1.2: Community Emergency Response Team Development
The City should support the Community Emergency Response Team (CERT) program, administered by the El Dorado County Sheriff's Office of Emergency Preparedness to increase community awareness of both emergency/disaster response and an understanding of local preparedness. This includes a safety academy designed to train and educate the public on risks and emergencies that can occur and their associated impacts on the community. Source: Stakeholder, GPU Consultants

Policy HS-1.3: Reverse 911 System
The City shall maintain the existing reverse 911 system (i.e., automated phone system) to notify residents, employees, and visitors of emergency situations and provide instructions. Source: GPU Consultants

Policy HS-1.4: Disaster Staging Area
The City shall identify pre-planned areas throughout the city for disaster staging and evacuations. However, the City shall use the Lake Tahoe Airport, or alternate location as appropriate, as the primary disaster staging area and evacuation point for residents, employees, and visitors. Source: Stakeholder, GPU Consultants

Policy HS-1.5: Terrorism Prevention and Response Planning
The City shall coordinate efforts with El Dorado County's Environmental Management Department and the Federal Department of Homeland Security to develop plans, programs, and strategies to prevent and/or respond to conventional, biological, chemical, and radiological terrorism. Source: GPU Consultants

Policy HS-1.6: Post-Disaster Response
The City shall maintain the Disaster Preparedness Plan for the continued operation of critical infrastructure and facilities following major disaster events to help reduce

problems during post-disaster response such as evacuations, rescues, injuries, and major clean up operations. Source: GPU Consultants

Policy HS-1.7: Emergency and Disaster Preparedness Exercises.
The City should coordinate with local, regional, State, and Federal agencies to conduct emergency and disaster preparedness exercises in order to test operational and emergency plans. Source: GPU Consultants

Policy HS-1.8: Safe Neighborhoods
The City shall create safer neighborhoods through increased street lighting, more frequent police officer patrols, and better security. Source: Latino Outreach Survey

Policy HS-1.9: Natural Hazard Mitigation Plan
The City shall maintain and implement the Natural Hazard Mitigation Plan to identify natural hazards, minimize or eliminate their effects and reduce prospective costs of reparations before any natural hazard takes place. Source: Staff

FIRE HAZARDS

The various ages, construction types, and densities of the structures that comprise the city's landscape create varying degrees of fire risk. If not controlled in the early stages, structural fires can result in severe property damage. Wildfires are one of the greatest threats to life and property in South Lake Tahoe, as demonstrated by the Angora Fire in 2007. Public awareness and education can help to decrease the chance of human-caused wildfires. The potential for damage to structures can be minimized by various site planning construction techniques and installation of fire resistant materials. The policies in this section seek to reduce fire hazards through fire fuel reduction programs, public awareness and education, and improved forest health.

Goal HS-2	To provide minimize fire hazards and provide fire protection services that maintain a safe and healthy community. Source: GPU Consultants

Policy HS-2.1: Fire Resistant Construction
The City shall require new, remodeled, and/or rehabilitated developments to be constructed using fire resistant materials, particularly roofing, and state-of-the-art fire prevention techniques. Source: Draft Tahoe Valley Community Plan

Policy HS-2.2: Fire-Safe Landscaping
The City shall require defensible space plans for all new and rehabilitated structures to conform to the principles of fire-safe landscaping, including incorporation of fire resistant plants and strategic planting, to create defensible space. Source: Draft Tahoe Valley Community Plan

Policy HS-2.3: Defensible Landscaping Space Requirements
The City shall require property owners to maintain defensible space through annual

landscaping maintenance, including the removal of dead/dying material and pruning/thinning of flammable vegetation. Source: Draft Tahoe Valley Community Plan

Policy HS-2.4: Fire Flow Adequacy
The City shall require all public water providers to maintain adequate water supply systems and flows to meet fire suppression needs throughout the city. Source: Staff

Policy HS-2.5: Fire Flow Requirements
The City shall require that all new construction meets the minimum fire flow requirements as set forth in the California Building and Fire Codes. Source: Draft Tahoe Valley Community Plan

Policy HS-2.6: Forest Fuel Reduction Programs 
The City shall improve forest health to reduce the risk of catastrophic wildfire by developing hazardous fuel reduction programs. Source: Stakeholder, Sustainability Plan

Policy HS-2.7: Fire Safe Council Program Expansion
The City shall expand the Fire Safe Council program to train volunteers in each neighborhood for coordination and protection in the event of a threatening fire and to raise awareness to potential fire threats specific to certain neighborhoods (e.g., fires in adjacent meadows, opens spaces, etc.). Source: Staff

Policy HS-2.8: Forest Fuel Reduction Programs
The City should continue to support and participate in fire hazardous fuel reduction programs. The City shall also participate with the Tahoe Basin Multi Agency Coordination Group (MAC) and the Tahoe Fire and Fuels Team (TFFT) in a continued coordinated effort to reduce the threat from wildfires in the wildland/urban interface. Source: Staff

SEISMIC AND GEOLOGIC HAZARDS

South Lake Tahoe is located in a region with active and potentially active faults. These include the West Tahoe fault and the active Genoa fault, both of which are in the General Plan Area. The policies in this section seek to ensure that new buildings and facilities are designed to withstand seismic and geologic hazards. Primary hazards associated with seismic events in South Lake Tahoe include surface faulting, mass wasting, soil liquefaction, flooding, and wave action (seiche).

Goal HS-3	To protect lives and property from seismic and geologic hazards and adverse soil conditions. Source: GPU Consultants

Policy HS-3.1: Seismically Induced Ground Shaking and Related Geologic Hazards
The City shall ensure that all existing and future City buildings and structures are of sufficient construction to withstand seismically induced ground shaking and related geologic hazards. Source: GPU Consultants.

Policy HS-3.2: Retrofit Critical Facilities
The City shall promote the upgrade, retrofitting, and/or relocation of all existing critical facilities (e.g., hospitals, schools, police stations, and fire stations) and other important public facilities that do not currently meet building code standards and are within areas susceptible to seismic or geologic hazards including soil liquefaction. Source: GPU Consultants

FLOODING HAZARDS

While South Lake Tahoe is located in a mountain environment, the Federal Emergency Management Agency (FEMA) has identified 100- and 500-year flood zones along the Upper Truckee River, Bijou Creek, Heavenly Valley Creek, Trout Creek, Sawmill Creek, and Angora Creek. Portions of the Lake Valley and Tahoe Valley neighborhoods are located in 100-year flood zones, due to their location along the Upper Truckee River. Areas of 500-year flood risk are located primarily at the confluence of the Upper Truckee River, Meyers Creek, and Angora Creek. The largest floods occur during winter time as a result of rain-on-snow events. Flooding in the residential areas is associated with inadequate drainage facilities for conveyance of storm water runoff. In additional to seasonal flooding, there is also the potential for failures of the Echo Lake Dam and another gravel dam located at Echo Lake. The policies in this section seek to protect existing and future development from flood damage.

Goal HS-4	To protect life and property from seasonal flooding and flooding related to large storm events. Source: GPU Consultants

Policy HS-4.1: New Development Location Outside of Stream Environment Zones and 100-Year Floodplains
The City shall locate all new development outside of Tahoe Regional Planning Agency-defined Stream Environment Zones (SEZ) and Federal Emergency Management Agency-defined 100-year floodplains. Source: South Lake Tahoe 1999 General Plan.

Policy HS-4.2: Removing Existing Development from Stream Environment Zones and 100-Year Floodplains
The City shall provide incentives to remove private development from Stream Environment Zones and 100-year flood plains to reduce drainage problems and damage to public and private property. Source: South Lake Tahoe 1999 General Plan.

Policy HS-4.3: FEMA Flood Map Updates
The City shall minimize the loss of life, injury, and property damage due to flooding through flood prevention measures, its Cooperating Technical Partnership with FEMA and participation in the National Flood Insurance Program (NFIP), as well as through the implementation of the Flood Insurance Rate Map (FIRM). Source: South Lake Tahoe 1999 General Plan, City Staff.

Policy HS-4.4: Floodplain Restoration
The City shall support the restoration of mapped floodplains through the relocation of existing tourist accommodations (e.g., hotels, motels) within floodplains and the removal of floodplain improvements. Source: Draft Tahoe Valley Community Plan.

Policy HS-4.5: Natural Drainage-Way Improvements
The City shall promote the aesthetic, environmental, and functional improvement of natural drainage-ways where water courses have been disrupted in such a manner as to protect abutting uses from flooding while taking into consideration environmental, recreational, and open space needs. Source: GPU Consultant

AVALANCHE HAZARDS

As in any mountain environment, avalanches are a threat in South Lake Tahoe due to topographical conditions and seasonal snow conditions. The policies in this section seek to protect residents and property from snow and avalanche hazards.

Goal HS-5	To protect and maintain the safety of residents, businesses, and visitors by reducing the threat of avalanches. Source: GPU Consultants

Policy HS-5.1: Avalanche Hazard Identification
The City shall continue to identify avalanche hazard areas, including those identified in TRPA's Natural Hazard Maps, and enforce special standards for construction in avalanche hazard areas. Source: GPU Consultants

Policy HS-5.2: New Building and Large-Scale Public Gathering Space Location
The City shall not allow new buildings or large-scale public gathering spaces (i.e., outdoor auditoriums) to be located in avalanche hazard areas. Source: GPU Consultants

HAZARDOUS MATERIALS

Only relatively small quantities of hazardous materials and hazardous wastes are generated, stored, and transported in South Lake Tahoe because of limited heavy industrial land uses and lack of interstate transportation routes in and around the city. This greatly decreases the risk of hazardous materials spills or incidents. In addition to human-made materials, there are also large amounts of hazardous natural materials such as radon gas, which is naturally-occurring radioactive gas that is found in all soil types, but is often concentrated in granite and granitic soils. The

policies in this section focus on the safe use, storage, transport, and disposal of hazardous materials, as well as proper awareness, siting, and mitigation of hazardous waste storage and uses relative to sensitive land uses.

Goal HS-6

To protect and maintain the safety of residents, businesses, and visitors by reducing, and where possible, eliminating exposure to hazardous materials, waste, and natural substances. Source: GPU Consultants

Policy HS-6.1: Household Hazardous Waste Collection Programs
The City shall continue to require private waste collection providers to provide household hazardous waste collection programs to encourage proper disposal of products containing hazardous materials or hazardous wastes. Source: GPU Consultants

Policy HS-6.2: Hazardous Waste Transportation
The City shall require local hazardous waste collection providers to transport hazardous waste during non-peak hours in order to reduce traffic and lessen risks of public exposure to dangerous materials. Source: GPU Consultants

Policy HS-6.3: Hazardous Waste Site Remediation
The City shall continue to coordinate efforts with the Lahontan Regional Water Quality Control Board (LRWQCB) to remediate existing sites that have released contaminants (e.g., petroleum hydrocarbons, methyl tertiary butyl ether (MTBE), solvents) into groundwater systems. Source: GPU Consultants

Policy HS-6.4: Hazardous Waste Education
The City shall educate residents and businesses on how to reduce or eliminate the use of hazardous materials and products, and shall encourage the use of safer, nontoxic, and environmentally-friendly equivalents. Source: GPU Consultants

Policy HS-6.5: Radon Gas Mitigation
The City shall support public programs for testing, identifying, and fixing houses and businesses with high radon levels in South Lake Tahoe. Source: Stakeholders, GPU Consultants

Policy HS-6.6: Radon Gas Design Provisions
The City shall also amend the current City Building Codes to include design provisions to limit the accumulation of radon gas in new construction. Source: Stakeholders, GPU Consultants

Policy HS-6.7: Radon Gas Awareness Programs
The City shall promote public awareness of the health and safety risks associated with high levels of radon gas. Source: Stakeholders, GPU Consultants

AIRCRAFT HAZARDS

The potential for aircraft crash hazards within the General Plan Area is low; however, any such incident could threaten the lives and property of residents and visitors to South Lake Tahoe. The policies in this section address airport and aircraft hazards.

Goal HS-7	To protect and maintain the safety of residents, businesses, and visitors by reducing the threat of aircraft hazards. Source: GPU Consultants

Policy HS-7.1: Comprehensive Airport Land Use Plan Compliance
The City shall maintain and implement the Comprehensive Airport Land Use Plan for the Lake Tahoe Airport, and ensure that no conflicting land uses are located inside the Lake Tahoe Airport overflight zones. Source: South Lake Tahoe 1999 General Plan, GPU Consultants

NOISE

There are many sources of noise in South Lake Tahoe, including roadways, industrial operations, aircraft noise, and other fixed sources. While most noise is common and acceptable, exposure to excessive noise has often been cited as a health problem, not so much in terms of actual physiological damage such as hearing impairment, but more in terms of general well-being and contributing to undue stress and annoyance. The policies in this section seek to protect noise-sensitive uses, such as residential areas, motels, medical facilities, nursing homes, offices, schools, and playgrounds, from annoying and excessive noise.

Goal HS-8	To protect South Lake Tahoe's residents, workers, and visitors from the harmful and annoying effects of excessive exposure to noise. Source: GPU Consultants

Policy HS-8.1: Annoying and Excessive Non-Transportation Noise Protection
The City shall require all new non-transportation noise sources to not exceed the exterior noise level standards shown in Table HS-1. These standards shall be measured from immediately within the property line of parcels designated as noise-sensitive uses. Source: Draft Tahoe Valley Community Plan; GPU Consultants

Policy HS-8.2: Annoying and Excessive Non-Transportation Noise Mitigation
In instances where a noise-sensitive use is adversely affected by non-transportation noise levels in excess of standards shown in Table HS-1, the City shall require appropriate mitigation to be incorporated into the project's design in order to achieve the standards shown in Table HS-1, as measured immediately within the property line or within a designated outdoor activity area of the project (at the discretion of the Community Development Director). Source: GPU Consultants

Policy HS-8.3: Overall Background Noise Mitigation

The City shall not allow any project to increase the overall background noise levels at receiving land uses by three or more deciles (dB) in instances when measured ambient noise levels exceed the standards contained within Table HS-1. GPU Consultants

TABLE HS-1

Exterior Noise Level Performance Standards for New Projects Affected by or Including Non-Transportation Noise Sources

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Leq, dB	**55**	**45**

Note 1: Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises (e.g., humming sounds, outdoor speaker systems). These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

The City can impose noise level standards that are more restrictive than those specified above based on determination of existing low ambient noise levels.

Fixed noise sources which are typically of concern include, but are not limited to, the following:

HVAC Systems	Cooling Towers/Evaporative Condensers
Pump Stations	Lift Stations
Emergency Generators	Boilers
Steam Valves	Steam Turbines
Generators	Fans
Air Compressors	Heavy Equipment
Conveyor Systems	Transformers
Pile Drivers	Grinders
Drill Rigs	Gas or Diesel Motors
Welders	Cutting Equipment
Outdoor Speakers	Blowers

The types of uses which may typically produce the noise sources described above include but are not limited to: industrial facilities including pump stations, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.

Note 2: For the purposes of this General Plan, transportation noise sources are defined as traffic on public roadways, railroad line operations, and aircraft in flight. Control of noise from these sources is preempted by Federal and State regulations. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, loading docks, etc.

Source: GPU Consultants

TABLE HS-2

Maximum Allowable Noise Exposure From Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] L_{dn}/CNEL, dB		Interior Spaces	
	Roadways	Railroads/ Aircraft	L_{dn}/CNEL,dB	L_{eq}, dB[2]
Residential	60[3]	65[5]	45	--
Transient Lodging	65[4,5]	65[4,5]	45	--
Hospitals, Nursing Homes	60[3]	60[3]	45	--
Theaters, Auditoriums, Music Halls	--		--	35
Churches, Meeting Halls	60[3]	65[5]	--	40
Office Buildings	--		--	45
Schools, Libraries, Museums	--		--	45
Playgrounds, Neighborhood Parks	70	75	--	--

Note 1: Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.

Where it is not practical to mitigate exterior noise levels on patios or balconies of apartment complexes, a common area such as a pool or recreation area may be designated as the outdoor activity area.

Note 2: As determined for a typical worst-case hour during periods of use.

Note 3: Where it is not possible to reduce noise in outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Note 4: For hotels, motels, and other transient lodging facilities where outdoor activity areas such as pool areas are not included in the project design, only the interior noise level criterion will apply.

Note 5: Where it is not possible to reduce noise in outdoor activity areas to 65 dB Ldn/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 70 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: GPU Consultants

Policy HS-8.4: Annoying and Excessive Transportation Noise Protection
The City shall not allow noise-sensitive land uses in areas exposed to existing or projected transportation noise levels that exceed the standards shown in Table HS-2, unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels at or below those shown in Table HS-2. Source: GPU Consultants

Policy HS-8.5: New Transportation Noise Source Mitigation
The City shall require the mitigation of new transportation noise sources to the levels shown in Table HS-2 at all outdoor activity areas and interior spaces of existing noise-sensitive land uses. Source: GPU Consultants

Policy HS-8.6: Acoustical Analysis Preparation
The City shall require an acoustical analysis as part of the environmental review process when noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels shown in Tables HS-1 and HS-2, so noise mitigation may be included in the project design. All acoustical analysis shall:

A. Be the financial responsibility of the applicant;

B. Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics;

C. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources; and

D. Estimate existing and projected cumulative (20 year) noise levels in terms of Ldn or CNEL and/or the standards shown in Table HS-1, and compare those levels to the policies in this section;

E. Recommend appropriate mitigation to achieve compliance with the adopted policies and standards in this section, giving preference to proper site planning and design over mitigation measures which require the construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses;

F. Estimate noise exposure after the prescribed mitigation measure(s) has been implemented; and

G. Describe a post-project assessment program that could be used to evaluate the effectiveness of the proposed mitigation measures. Source: GPU Consultants

Policy HS-8.7: California State Building Code Title 24 Consistency
The City shall ensure that all residential and non-residential projects are consistent with Title 24, Part 2, of the State of California Code of Regulations. These

regulations establish uniform minimum noise insulation performance standards to protect persons within new buildings that house people, including hotels, motels, dormitories, apartment houses and dwellings other than single-family dwellings. Source: GPU Consultants

Policy HS-8.8: Lake Tahoe Airport Comprehensive Land Use Plan Compliance
The City shall ensure that all new projects located within the Lake Tahoe Airport environs comply with the Lake Tahoe Airport Comprehensive Land Use Plan. Source: GPU Consultants

Policy HS-8.9: Airport Noise Mitigation for Adjacent Residential Projects
The City shall require all new residential projects within the Lake Tahoe Airport's 55 dB CNEL contours, as defined in the Lake Tahoe Airport Comprehensive Land Use Plan, to be designed to limit intruding noise such that the interior noise levels shall not exceed 45 dB CNEL in any habitable room. If the 45 dB CNEL standard is achieved with the windows and doors in the closed position, a mechanical air exchange will need to be provided as a part of the project design. Source: GPU Consultants

Policy HS-8.10: Airport Noise Level Compatibility
The City shall ensure land use compatibility with airport noise levels for properties currently developed within the 50-55 CNEL noise contour. Source: Draft Tahoe Valley Community Plan.