
Chapter 10: Safety

Introduction and Setting

The interface of the natural and manmade environments creates potential safety hazards associated with avalanches, landslides, earthquakes, floods, and wildfires. Other potential safety hazards, such as airport operations and transportation of hazardous materials, arise from the potential for accidents during the transport of goods and people. Each of these hazards has particular characteristics that affect the future development of the County. Some of these safety hazards can be minimized with emergency planning, while other hazards are reduced by development standards and land use planning. The setting section of the Safety Element addresses the following hazards and hazardous materials issues:

- Emergency Preparedness (EP)
- Geologic Hazards / Seismic Activity (GH)
- Flood Hazards (FH)
- Airport and Military Airspace Hazards (AH)
- Hazardous Materials (HM)
- Public Safety Services and Facilities (SF)
- Fire Hazards and Protection (FP)
- Severe Weather Hazards (WH)

A complete list of acronyms used in the Safety Element is located at the end of this chapter. Additional discussion related to safety is contained in Section 4: Open Space/Recreation Inventory, and Section 5: Resource Capability Analysis, of Volume 2 of the General Plan, and in Section 8 of the Nevada County Master Environmental Inventory, which is part of Volume 3 of the General Plan.

Emergency Preparedness

Emergency Plans and Guides

In the event of a major disaster, it is in the interest of the federal government to ensure that local governments have made efforts toward minimizing disasters. The Disaster Mitigation Act of 2000 (DMA), requires that each State develop a hazard mitigation plan, in order to receive future disaster mitigation funding following a disaster. The DMA also requires the development of local or county plans for that particular county to be eligible for post-disaster mitigation funding. The purpose of these requirements is to encourage State and local government to engage in systematic

and nationally uniform planning efforts that will result in locally tailored programs and projects that help minimize loss of life, destruction of property, damage to the environment and the total cost of disasters before they occur.

The Nevada County Office of Emergency Services (OES), in coordination with the Nevada County Operational Area Emergency Services Council, has developed a Local Hazard Mitigation Plan (LHMP) for Nevada County to meet the requirements of the DMA on behalf of the County, its incorporated cities and towns and participating districts. Approved by the Nevada County Board of Supervisors in July 2012 and by FEMA in August of 2012, the LHMP enables Nevada County to be eligible for future post-disaster mitigation funding. The current LHMP is a required 5-year written update of the Multi-Hazard Mitigation Plan approved in 2006. The LHMP recognizes the threat natural disasters and hazards pose to people and property within Nevada County and that undertaking hazard mitigation action delineated in the LHMP reduces the potential for harm to people and property from future disaster and hazardous incidents. The LHMP identified a list of potential hazards each evaluated for severity of hazard, vulnerability and exposure and then listed in order of perceived likely impact. The top five hazards listed in the LHMP are: urban and wildland fire, severe weather, flood, drought, dam failure.

The Nevada County and Nevada Operational Area Emergency Operations Plan (EOP) prepared by the OES and adopted by the Board of Supervisors in June 2011, delineates responsibilities of First Responders and other response support organizations, e.g., Office of Emergency Services, Department of Public Health, Environmental Health., etc., for natural disasters and manmade incidents in or affecting Nevada County.

Community Emergency Preparedness Guides which are specific to individual communities in Nevada County, provide the basic information for residents to be prepared for potential disaster. If government funds are utilized to develop such a guide, it must be coordinated and approved by the Nevada County Office of Emergency Services, the local fire district, and the local law enforcement agency.

Emergency Notification System

In June of 2014, the Emergency Communications Network completed a transition to the CodeRED mass notification system which allows access to patented technologies that were not previously available. The current service agreement includes this high-speed notification technology allows Nevada County to more effectively communicate time sensitive messages and includes the following provisions:

- Access to a web based alert notification system
- Ability to access and activated the service via phone or web
- Integration and geocoding of supplied 911 database
- 50,000 minutes of actual service usage
- Unlimited SMTP texting

Evacuation Planning

Evacuations normally occur due to incidents or disasters that cause large numbers of people to flee the area in all types of vehicles over all roads regardless of sized or legal restrictions. The evacuation is marked by a sense of panic among the evacuees as stress and the fear levels are high. Individuals, groups, and families, including pets, evacuate as quickly as possible and, usually only after finding themselves away from their residence do they consider food, water, clothing, medical care, and possibly, shelter.

During an evacuation the responsible jurisdictional law enforcement agency under the direction of the incident commander is responsible for directing and facilitating the continued movement of evacuees. Fire departments and fire protection districts may be requested to assist law enforcement with traffic control. The Office of Emergency Services coordinates with the American Red Cross and the County Department of Social Services to establish temporary shelters if requested to do so by the Incident Commander.

Evacuation plans during an incident are developed on-site and are dependent on the type of incident, the urgency of the impending threat, and the direction of threat. The public may be notified using door-to-door notification methods; local media via radio, television, and internet; activation of the emergency alert notification system.

Routes designated on the Nevada County General Plan Land Use Maps as interstates, freeways, highways, and other principal arterial routes are considered primary evacuation routes. Such routes provide the highest levels of capacity and contiguity and serve as the primary means of egress during an evacuation from the County. Routes designated on the General Plan Land Use Maps as minor arterial and major collector routes are considered secondary evacuation routes. These routes supplement the primary evacuation routes, and provide egress from local neighborhood and communities.

Geologic Hazards / Seismic Activity

Avalanches

Avalanche hazard areas are generally located on high, mountainous slopes and terrain at elevations above 7,000 feet. The most important factor necessary to release an avalanche is heavy snowfall. A rapidly increasing snow layer is unable to stabilize or bond with the old layer of snow or the ground below it, so that after a certain amount of time the new snow layer will simply slide off as an avalanche.

Four avalanche hazard zones are defined, ranging from no hazard to high hazard. High hazard areas are those where avalanches that could damage standard wood-frame structures and/or bury automobiles are expected to occur with a probability of one chance in twenty per year. Identified high hazard areas within Nevada County include portions of the Donner Lake, Tahoe-Donner, and Soda Springs areas.

Landslides

A landslide can be defined as an event in which surface masses of slope-forming earth move outward and downward from their underlying and stable floors in response to the force of gravity. Unstable or potentially unstable slopes are those areas susceptible to slides, falls, creeps, or flows. Topography, climate, geology, and hydrology are factors contributing to slope instability. The degree of severity of these factors and their interactions is what determines potential hazard. Although slope movements can occur in any type of rock material, certain bedrock formations exhibit a high susceptibility to such movement. This type is found in the central portion of the County. However, most of the County's soils are underlain with dense bedrock formations and lack the characteristics contributing to landslide susceptibility.

Triggers such as an earthquake, heavy rainfall and human activities can set a landslide in motion. Mining is a human activity that can greatly increase the potential of a landslide. Nevada County contains many historic hydraulic mining sites, one of which, located northeast of Nevada City, and is an area of over 20,000 acres. Because of the extreme methods used in hydraulic mining to “wash away” hillsides in the mid to late nineteenth century, these areas are extremely prone to slope failure resulting in landslides.

Earthquakes

According to the U.S. Geological Service, Nevada County falls within five earthquake ground movement intensity zones. The western half of the County is in the lower intensity zones (5-20 %gravity), the middle portion is in the moderate zone (21-30%gravity) and the eastern edge is in the 31-40%gravity zone. No part of Nevada County is exposed to an earthquake probability of gravity 40 or more.

Lake of the Pines is the primary community developed in the 8-10% peak ground acceleration zone of Nevada County. Developed primarily since the 1960's, Lake of the Pines would not be expected to suffer significant damage during a normal earthquake event for this area. Grass Valley, Nevada City, Penn Valley, Cedar Ridge, Lake Wildwood, Rough and Ready, and North San Juan are the communities primarily in the 10-15% peak ground acceleration zone. Of these communities, Grass Valley, North San Juan, Rough and Ready and Nevada City are those, which have structures of un-reinforced masonry buildings in their older neighborhoods and commercial districts. While possible, it is not expected that normal seismic activity in this area would result in significant damage. Truckee is the major community of Nevada County located in the 30-40% peak ground acceleration zone. Truckee is similar to Nevada City and Grass Valley in terms of the location of un-reinforced masonry buildings being located in the historic portions of town and the commercial district. Previous local earthquake history has not shown these structures to be at significant risk during normal events.

Flood Hazards

Flooding of Streams and Rivers

Nevada County has reported 13 flooding disasters since 1950 the most recent being in 2008. Fortunately these events have not resulted in loss of life or catastrophic property damage in Nevada County. Primarily due to the significant east to west elevation change in the western part of the county, most of the heavy storm rainfall moves quickly out of the watershed. In the eastern part of the County, higher elevation causes most precipitation to fall as snow during the first 4 months of the winter season. In general, flood hazard areas are generally confined to the area adjacent to the County’s rivers and streams. Flooding affecting Nevada County normally occurs when heavy rainfall combines with unseasonably warm temperatures that begin a premature melt of the snow pack. This phenomenon is most dramatically seen on the Yuba River with its steep canyon walls and the Truckee River with its smaller river channel. The Bear River because of its lower elevations and shallow riverbed tends to be impacted more by heavy rain over an extended period. The primary areas within Nevada County that are subject to flooding are shown below in Table 10.1.

**TABLE 10.1
PRIMARY AREAS SUBJECT TO 100-YEAR FLOODING**

<i>Eastern County</i>	<i>Western County</i>
Truckee River*	South Fork Yuba River
South Fork Prosser Creek	Greenhorn Creek
North Fork Prosser Creek	Deer Creek
Summit Creek*	Wolf Creek
Trout Creek*	Little and South Forks of Wolf Creek*
Little Truckee River	Squirrel Creek (and tributaries)*
Donner Creek*	Clear Creek
South Fork Yuba River	Bear River

*Detailed flood hazard information is provided by the Flood Insurance Study for the unincorporated areas of Nevada County, California, Community Number -060210, by FEMA, revised February 5, 1997.

The Federal Emergency Agency (FEMA) provides guidance for floodplain management. FEMA manages the National Flood Insurance Program (NFIP), which provides insurance to communities that participate in the program, and works with State and local agencies to adopt floodplain management policies and flood mitigation measures. Nevada County has been a participating community in the NFIP program since January 1, 1983. Nevada County’s Floodplain Management Regulations are contained in the Land Use and Development Code Chapter XII of the Nevada County Code which was updated in 2009. Additionally, the Nevada County LHMP contains a completed assessment of flooding hazards, flood hazard mapping and recommended flood hazard mitigations.

A key element of the NFIP is the identification of floodplain boundaries which are depicted on the FEMA Flood Insurance Rate Maps (FIRM). The concept of the 100-year flood represents a flood event is a central component in FIRM Mapping. The 100-year flood represents a flood event that is likely to occur once in every 100 years or, in other words, has a 1 percent chance of occurring in a given year. Areas prone to be impacted by 100-year flood events are identified on

the FIRM as Special Flood Hazard Zones (Zones A, AE, AO and AH). Federal flood insurance is required for any structure within a Special Flood Hazard Zone, for any property that has a federally insured loan.

Dam Failure

Dam failure is another form of flood hazard. Failure can occur as a result of manmade or natural causes. Such causes include improper siting, structural design flaws, and erosion of the face of foundation, earthquakes, massive landslides, and rapidly rising flood waters. Nevada County has identified 21 regulated and non-regulated privately owned dams in Western Nevada County and 25 such dams in eastern Nevada County. Twelve of the 46 dams are regulated and owned by organizations such as the Nevada Irrigation District, Pacific Gas and Electric, the Army Corps of Engineers or other organizations. Regulated Dams have filed dam inundation plans with the State of California, the appropriate federal agency and the County. There are populated areas within the inundation zone of several of these dams; others have public property (such as roads) located down creek. However, the area of Nevada County where these dams exist is not located within a historically seismically active zone. In fact, the western half of the County resides within the lowest earthquake intensity zone in California.

Within the eastern portion of Nevada County, classified in a higher earthquake intensity zone, are three major dams: Prosser Creek Reservoir Dam, Stampede Reservoir Dam (located with Sierra County) and Boca Reservoir Dam. One of the two major faults believed to be potential seismic sources appears to be relatively active and of special significance due to its close proximity to the three dams noted above. However, the Truckee earthquake of 1966 had a magnitude of 5.4 but only relatively slight damage occurred to both Prosser and Boca earth fill dams. Martis Creek Dam, found near the town of Truckee has been the subject of recent concern receiving national attention. The dam is managed by the Army Core of Engineers and has been listed by the Core as one of nation's six dams most at risk of failure. Three key risks of failure sited by the Core are: seepage under the dam leading to foundation failure, a too small spillway leading to overflowing events in heavy rains, and an earthquake fault-line located within 200 yards of the dam. The dam is on an active monitoring program, not in use for water storage and has extensive remediation work underway.

In the western portion of the County, flooding in the event of failure of the Upper and Lower Scotts Flat Dams would inundate a wide area from east of Nevada City, through Nevada City and west to Lake Wildwood. The failure of such a dam would most likely be the result of a significant earthquake. Also in western Nevada County is the Rollins Reservoir on the Bear River, which flows into Combie Lake. The Nevada Irrigation District owns both. Inundation plans are in place for both bodies of water. It is predicted that a collapse of the Rollins Reservoir may impact Camp Far West reservoir in Yuba County. Three dams are owned by PG&E in the Spaulding Lake complex. Collapse of the three dams would cause significant flooding at the 2700 foot level in the Town of Washington.

Seiches

Seiches are seismically induced waves in bodies of water that can be particularly hazardous where lakes and reservoirs are bordered by campgrounds or other facilities on flat banks.

Because of the large number of recreational lakes in Nevada County, seismically induced seiches could prove very damaging. However, most recorded seiches have not been of significant magnitude, and considering the overall seismic risk in this County, seiche risk should be considered only a moderate hazard.

Airport Hazards

Nevada County has within its boundaries several small private airports and two public airports, the Nevada County Airport and Truckee-Tahoe Airport. The Nevada County Airport lies within the foothills near Grass Valley and Nevada City, and the Truckee-Tahoe Airport is located east of the Town of Truckee, with portions of airport lands crossing the County line into Placer County. Safety issues arise as a result of compatible use and non-compatible land uses existing side by side with one another. The Federal Aviation Administration (FAA) defines the most critical areas as those that are immediately beyond the runway ends, the initial climb out and final approach sectors. It is within these approach/departure sectors that a concentration of aircraft accidents occurs. In addition, there are studies indicating that about half of all airport accidents occur on airport property and an additional 15 percent of accidents occur within one mile outside the airport property. This information suggests that those areas immediately off the ends of the runway and under the airport traffic pattern should be carefully evaluated for compatible future land use and development.

Airport Land Use Compatibility Planning

State law requires that any county with an airport operated for the benefit of the general public establish an airport land use commission (ALUC). ALUCs were first established under the California State Aeronautics Act in 1967 for the fundamental purpose to promote land use compatibility around airports. ALUCs have three primary functions under state law:

1. The adoption of land use standards that minimize the public's exposure to safety hazards and excessive levels of noise.
2. Prevent the encroachment of incompatible land uses around public-use airports.
3. The preparation of an Airport Land Use Compatibility Plan (ALUCP) for the area around each public use airport that defines compatible land uses for noise, safety, airspace protections, and overflight.

Government Code Section 65302.3 establishes that each county and city affected by an airport land use compatibility plan must make its general plan, any applicable specific plans and zoning ordinance consistent with the ALUCP. Alternatively, local agencies can take the series of steps listed in the Public Utilities Code to make specific findings to overrule the ALUCP policies or portions of it. While the ALUC has the sole authority to adopt the ALUCP and conduct compatibility reviews, the implementation of the compatibility policies rests with local governments.

Nevada County Airport Land Use Compatibility Plan

The *Nevada County Airport Land Use Compatibility Plan (NCALUCP)* was adopted by the Nevada County ALUC on September 21, 2011. Guidelines and requirements for fulfilling the ALUC's duty to review airport and adjacent land use development proposals are set forth in this land use policy document. The NCALUCP identifies the compatibility zones and sets the criteria applicable to local agencies in their preparation or amendment of land use plans and ordinances and to land owners in their design of a proposed project or new development. Land areas within both the City of Grass Valley and Nevada County are affected by the NCALUCP.

Tahoe Truckee Airport Land Use Compatibility Plan

Adopted in by the *Truckee Tahoe Airport Land Use Compatibility Plan (TTALUCP)* on October 19, 2010, the TTALUCP identifies the land use safety and compatibility zones and the associated guidelines for development that is compatible with airport operations. The TTALUCP identifies compatibility zones that include land areas within the local jurisdictions of the Town of Truckee, Placer County and Nevada County.

Military Airspace Compatibility

In guiding growth and development in Nevada County, it is important to consider the critical role of Military Operation Areas (MOAs) in support of national defense. A military operations area is a three dimensional airspace designated for military training and transport activities that has a defined floor (minimum altitude) and ceiling (maximum altitude). In Nevada County the MOA consists of a Military Training Route (MTR) which is a low-level high speed route that is not only used for commutes between installations but allows the pilots to develop the skills necessary to avoid detection by enemy radar. There is one MOA located in the eastern portion of Nevada County that is used by military aircraft to practice high- and low-altitude training exercises and to traverse between military installations. Any development or new construction that seriously impacts or hinders the function and viability of a MOA is considered incompatible land use. As Nevada County's population and economic activity grow in the future, public safety within the MOA shall be coordinated with the military through compatible land use planning in accordance with California Government Code Sections 65352 (a)(5) and (6)(A), 65940, and 65944.

Hazardous Materials

The significance of hazardous materials to the environment, property, and human health depends on the type, location, and quantity of the material released. Certain areas of the County are at higher risk of encountering a hazardous material incident. Roadways, railways, waterways, and airways are frequently used for transporting hazardous materials. Areas with industrial facilities that use, store, or dispose of such materials all have an increased potential to exposure.

The County's pre-incident planning and preparedness for hazardous materials releases is contained in the Nevada County Hazardous Materials Plan that was approved in July 2010. The Hazardous Materials Plan fulfills state law and is used as a resource document in conjunction with the Nevada County Emergency Operations Plan, and other local and state plans.

Stationary Sources of Hazardous Materials

The majority of the hazardous waste stream within Nevada County is generated by small quantity generators with the major contributor to the hazardous waste stream being waste oil. Miscellaneous waste, which includes types of waste such as asbestos, metal dust, chemical toilet waste, and photo processing waste, is another major group. Other groups include non-halogenated solvents, dye and paint sludges, resins, and non-metallic inorganic liquids. The Nevada County Department of Environmental Health maintains a complaint site list of contaminated sites within Nevada County. The most commonly found form of groundwater contamination on this list occurs from hydrocarbons (gasoline, diesel, and other fuels).

Transport of Hazardous Materials

Interstate 80, the Union Pacific Railroad, and the Kinder Morgan petroleum pipeline are the three major transportation routes by which tons of hazardous materials are transported through the County. Interstate 80 weaves in and out of the County from the State Route 20 interchange to the Nevada state line. It is within this corridor that the incident of an accidental release of hazardous material is most likely to occur. Traffic volumes, the winding character of the Interstate, and snow and ice make this corridor especially dangerous during the winter months. In addition to the character of the interstate, the remoteness of the County from outside help creates even a greater potential for a major incident. Assistance from areas outside the County would be unavailable for a period of one to four hours in the event of a hazardous materials spill.

Mining

More than a century of placer and hardrock mining in Nevada County leaves a legacy of both physical and chemical hazards. Of the approximately 50 contaminated sites identified by the state Department of Toxic Substances Control (DTSC) in Nevada County, the most common contaminants are arsenic, lead, and mercury from past mining activities. The County is also home to Lava Cap Mine, a Federal Superfund site. Historic mining practices, processing techniques, and improper closures at hundreds of abandoned mine sites pose potentially hazardous conditions in both *Rural* and *Community Regions*. Potential hazards vary from one site to another. Mine waste cleanup is regulated by a number of federal and state agencies, including the US Environmental Protection Agency, the DTSC, and the Regional Water Quality Control Board.

Fire Hazards and Protection

Wildland Fires

The County's single largest risk for human life and financial loss is fire. Wildland fires and, in particular, fires that impinge on the wildland urban interface have cost County residents the most financially and in loss of life. The combined efforts of all involved parties maintain a tapestry of vigilance, preventative efforts and rapid response to the wildland fires threat. Residential developments in wildland areas and limited forestland management resources have created and will perpetuate an environment of dense fuel reserves with seasonal wildland fire risk to the County's residents and their improvements. Our best strategy to date has been to thin fuel sources

at wildland urban interfaces, educate residents, and provide a rapid response to wildland fires when they start.

Today, people in Nevada County are attracted to live and build their homes in remote areas, on hillsides, and in and among the native woodlands. There is a misconception held by many of us that today's grasslands, oak woodlands, and forests are "natural" and as such, think if we just keep suppressing fires, these vegetation types will remain the same. This is a grave error. All of our fire-adapted ecosystems are complex entities. They are not like a photograph and non-changing over time; they are constantly changing. There is a tremendous amount of growth and in-growth every year. As a result, without periodic fire or treatment, these vegetation types have ever-increasing unnaturally high fuel loads that, over time, have created hazardous fire conditions.

We now understand that the extreme fire behavior we are witnessing is a result of the long-term interruption of the natural fire cycle. The combination of our topography, climate, and present day fuel conditions produces large, high severity and intense wildland fires; e.g., the Forty-niner fire in September 1988, (33,500 ac/185 homes); the Martis fire, June 2001, (14,500 ac/4structures); the Trauner fire, August 1994 (500 ac/12 homes); and the Cottonwood, fire, August 1994, (46,800 ac). The Forty-niner fire, the Martis fire and the Trauner fire resulted in over 33 million dollars damage and more than 27 million dollars in suppression cost. The Cottonwood fire cost 12.5 million dollars to suppress.

We can never go back to the natural fire cycles as land use has changed dramatically since the mid-1800's and we now have life and property intermixed within the wildland environment. However, we can, with vegetation management, reduce fuels to those pre-settlement "natural" levels in target areas in and around our communities.

Accepting Nevada County's terrain, climate, rainfall, and forest land/urban mix, it is a certainty that significant wildland fires are going to continue as a threat. Contributing to the threat over the last 75 years have been the fire suppression techniques and policies that have allowed a large fuel load to accumulate.

Generally, the fire season extends from early spring to late fall. Fire conditions arise from a combination of hot weather, an accumulation of vegetation, and low moisture content in the air. These conditions, when combined with high winds and years of drought, increase the potential for wildfire to occur. The wildfire risk is predominantly associated with Wildland-Urban Interface (WUI) areas. WUI is a general term that applies to development interspersed or adjacent to landscapes that support wildland fire. WUI areas have been a major focus of California Department of Forestry and Fire Protection's (CAL FIRE) fire management strategy since at least 1972. A fire along this wildland/urban interface can result in major losses of property and structures. Potential losses from wildfire include: human life, structures and other improvements; natural and cultural resources; the quality and quantity of the water supply; other assets such as timber, range and crop land, and recreational opportunities; and economic losses. In addition, catastrophic wildfire can lead to secondary impacts or losses such as future flooding landslides during the rainy season. Generally, there are three major factors that sustain wildfires and predict a given area's potential to burn. These factors are fuel, topography, and weather.

Fuel – Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and by volume. Fuel sources are diverse and include everything from dead tree needles and leaves, twigs, and branches to dead standing trees, live trees, brush, and cured grasses. Also to be considered as a fuel source, are man-made structures, such as homes, and other associated combustibles. The type of prevalent fuel directly influences the behavior of wildfire. Light fuels such as grasses burn quickly and serve as a catalyst for fire spread. In addition, “ladder fuels” can spread a ground fire up through brush and into trees, leading to a devastating crown fire. The volume of available fuel is described in terms of Fuel Loading. Certain areas in and surrounding Nevada County are extremely vulnerable to fires as a result of dense grassy vegetation combined with a growing number of structures being built near and within rural lands. The presence of fine fuels, 1000hr fuels, and needle cast combined with the cumulative effects of previous drought years, heavy vegetation mortality, tree mortality and lowdown of timber across Nevada County has added to the fuel loading in the area. Fuel is the only factor that is under human control.

Topography - An area’s terrain and land slopes affect its susceptibility to wildfire spread. Fire intensities and rates of spread increase as slope increases due to the tendency of heat from a fire to rise via convection. The natural arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes.

Weather - Weather components such as temperature, relative humidity, wind, and lightning also affect the potential for wildfire. High temperatures and low relative humidity dry out the fuels that feed the wildfire creating a situation where fuel will more readily ignite and burn more intensely. Wind is the most treacherous weather factor. The greater a wind, the faster a fire will spread, and the more intense it will be. Winds can be significant at times in Nevada County. North winds in Nevada County are especially conducive to hot, dry conditions, which can lead to “red flag” days indicating extreme fire danger. Winds coming from the southeast have also been noted as a concern in the western third of the County. In addition to wind speed, wind shifts can occur suddenly due to temperature changes or the interaction of wind with topographical features such as slopes or steep hillsides. Lightning also ignites wildfires, often in difficult-to reach terrain for firefighters. Related to weather is the issue of recent drought conditions contributing to concerns about wildfire vulnerability. During periods of drought, the threat of wildfire increases.

Other factors contributing to the wildfire problem in Nevada County include:

- Overstocked forests, severely overgrown vegetation, and lack of defensible space around structures;
- Excessive vegetation along roadsides and hanging over roads, fire engine access, and evacuation routes;
- Conditions such as drought and overstocked forests contribute to increased beetle kill in weakened and stressed trees;
- Narrow and often one lane and/or dead end roads complicating evacuation and emergency response as well as subdivisions that have only one means of ingress/egress;
- Inadequate or missing street signs on private roads and house address signs;
- Nature and frequency of lightning ignitions; and

- Increasing population density leading to more ignitions.

Three other organizations have also been very active. The Fire Safe Council of Nevada County has been active in providing free public information and education for County residents as well as a free wood debris-chipping program on site for property owners. The Nevada County Resource and Development Council and the Nevada County Resource Conservation District have been sponsoring shaded fire breaks in conjunction with Tahoe National Forest in the area around Scotts Flat Lake. Tahoe National Forest has been working on strategically placed fire control points using thinning processes. Additional projects are proposed in this plan's mitigation measures.

Fire-Safe Infrastructure

Fire-Safe Circulation

Roads are critical infrastructure supports for suppressing wildfires. They serve as ingress and egress routes to and from wildfires, staging areas, safety zones, coordinating locations, anchor points for fire suppression activities, and evacuation routes. Most initial incident command posts are established as roadside locations to coordinate with incoming fire equipment.

Private roads, which network between residences and public roads, provide another avenue for firefighting operations and evacuation. The Nevada County road system consists of 3,000 miles of public and private roads, of which nearly 60% are private roads, which equates to approximately 1,800 miles of roadway. The quality and conditions of these roads are variable. Some private roads fail to meet the minimum fire safety standards established in the Nevada County Land Use and Development Code.

More detailed information on circulation is provided in General Plan Chapter 4: Circulation Element.

Roadside Vegetation Management

The width of and clearance around roads is a primary factor affecting firefighting operations. Only 585 miles of the County's approximately 1,200 miles of public roads are treated for fire fuel, and then only in conjunction with road maintenance, generally repaving or chip sealing. This vegetation management occurs under the Nevada County Public Works Department's Roadside Vegetation Management Program, which currently treats approximately 35 miles or approximately 6% of the County road system on an annual basis. This figure equates to rotational roadside treatment of approximately 17 years for each mile of roadside vegetation.

Emergency Water Storage Systems

Emergency water storage throughout the County involves a mixture of systems. A hydrant system is the dominant source in cities, towns, and major subdivisions. Rural areas of the County depend on a mixture of individual water tanks, pools, ponds, lakes, and ditches. The Nevada County Land Use and Development Code specifies the minimum size for individual water tanks for proposed subdivisions and other applicable projects. The placement of

emergency water storage has been incremental, resulting in small storage tanks on development sites. Given the development patterns, densities, and locations of existing water storage tanks, fire experts recognize the need for improving the emergency water storage system.

Fire Agencies and Support Organizations

Fire Protection Agencies and Services

The County is protected by multiple fire protection agencies, including eight local fire districts, one water district, two City fire departments, CAL FIRE, the Bureau of Land Management (BLM), and the US Forest Service (USFS). In Eastern Nevada County, the Truckee Fire Protection District provides fire protection services. In Western Nevada County, the following fire districts and departments provide fire protection services for the cities and unincorporated areas of the County:

- Grass Valley City Fire Department
- Higgins Fire Protection District
- Nevada City Fire Department
- Nevada County Consolidated Fire District
- North San Juan Fire Protection District
- Ophir Hill Fire Protection District
- Peardale-Chicago Park Fire Protection District
- Penn Valley Fire Protection District
- Rough and Ready Fire Protection District
- Washington County Water District

Fire protection services are determined by jurisdiction and responsibilities. In general, local fire districts and city departments provide emergency medical services, other emergency responses, and fire protection for structures within their respective jurisdictions. Many fire districts are staffed with volunteers. CAL FIRE provides wildland fire protection services on private, non-federal lands for the purpose of life, property and resource protection. USFS and BLM provide wildland fire protection services on federal lands in Federal Responsibility Areas for watershed and resource protection. Some areas are also identified as Local Responsibility Areas, including those within the cities of Grass Valley and Nevada City, as well as the area under the jurisdiction of the Truckee Fire Protection District. Various agreements between the fire protection agencies enable cooperative fire protection services. The Grass Valley Emergency Command Center, a cooperative facility between the USFS and CAL FIRE, provides emergency dispatching services through cooperative agreements with all the fire districts and cities within Nevada County.

Fire Safety Support Staff and Organizations

The Nevada County Fire Marshal enforces, inspects and reviews County projects based on fire safety codes and regulations, unless the project is located within the jurisdiction of a local fire protection district with Fire Prevention staff. The Fire Marshal also reviews and recommends changes to the County fire safety regulations. The Nevada County Fire Chief's Association also participates in the review of community, County, and state fire safety codes and regulations.

The Fire Safe Council (FSC) of Nevada County is a public benefit, non-profit 501(c)(3) corporation formed in 1998 by citizens concerned about the very high potential for catastrophic wildfire in our communities and adjacent forestland. The mission of the FSC is “To provide fire wise education and programs to enhance emergency preparedness for catastrophic wild to all citizens in Nevada County in order to reduce the loss of life, property and natural resources and to promote Firewise Communities; to network with other Fire Safe Councils, Firewise Communities, government agencies and foundations for the benefit of citizens of Nevada County.”

Fire Protection Regulations

Fire science research indicates the area around a home or other buildings requires at least 100 to 200 feet of reduced and modified vegetation to minimize structure ignition from radiation and convection heat, and/or firebrands landing and accumulating directly on the home. Fire science also indicates that structure fires can produce sufficient amounts of heat and firebrand to ignite wildland vegetation.

Nevada County Land Use and Development Code Chapter XVI requires new projects and construction meet fire safety standards described in PRC 4290, and establishes requirements for fuel modification and emergency water supply, as well as minimum fire safe driveway and road standards. New structures built in Nevada County must also comply with fire safety building regulations. These building codes require the use of ignition-resistant building materials and establish design standards to improve the ability of a building to survive a wildfire.

State-mandated PRC 4291 requires the management of flammable vegetation around buildings or structures as a firebreak within 30 feet or to the property line from a structure, and as a fuelbreak, within 30 to 100 feet or to the property line from the structure. This regulation applies to all buildings or structures in a mountainous area; forest-covered, brush-covered, or grass-covered lands; or any land that is covered with flammable material in the SRA.

Fire Protection Plans and Programs

Federal and State Plans

The Land and Resource Management Plan and the Sierra Nevada Forest Plan Amendment guide fire planning for the Tahoe National Forest. The Sierra Nevada Forest Plan Amendment provides guidance for minimizing wildfires on federal and tribal lands. California addresses wildfire issues through the California Fire Plan and its local version, the Nevada-Yuba-Placer Unit Fire Plan. These documents focus on reducing fire hazards by addressing pre-fire fuels management for strategic fire suppression. Roads, water storage, buildings, evacuation planning, and other factors associated with private property development are not included in these documents.

The Nevada County FSC has developed a Community Wildfire Protection Plan (CWPP) based on the requirements of the Healthy Forest Restoration Act of 2003, which identifies measures that protect and restore forest land. The CWPP coordinates with the LHMP on wildfire issues as required by the DMA. The CWPP provides educational opportunities for the public to

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understand the complex issues of fire and fuels and to engage in the decision-making process for community safety. An adopted CWPP increases opportunities for pre-disaster funding to the County from the USFS and BLM.

The Nevada County LHMP provides a risk assessment of all potential natural and selected human-caused hazards, and identifies all potential types of disaster likely to occur in Nevada County, including wildland fire. One purpose of the LHMP is to minimize the magnitude of potential wildfire disasters.

Community / Area Plans

Two communities within the unincorporated areas of the County, Lake Wildwood and Lake of the Pines, have localized defensible space/fire safety regulations. These fire safety regulations require fuels treatment around homes and vacant parcels. Additionally, the Nevada County Consolidated Fire District may enforce hazard abatement requirements on vacant parcels pursuant to Health and Safety Codes.

The South Yuba River Comprehensive Management Plan provides strategies for the management of public lands in Nevada County's Lower South Yuba River area, including support of existing fire suppression and fuel reduction strategies developed by public resource agencies, FSCs, fire districts, and others for the Yuba River watershed.

The Lake Vera-Round Mountain Fire Safe Plan applies to an area north of Nevada City and south of the South Yuba River, generally identified as the Lake Vera-Round Mountain area. The Plan identifies actions to reduce fire hazard, including a determination of circulation, emergency road access, fuels modification and use of cluster and building setbacks. The 550 parcels within the Plan area are zoned by the County with a restrictive "SP" zoning that requires development to comply with the specific fire safe standards contained within the Plan.

The Community Fire Plan for the North San Juan Fire Protection District area provides for brush thinning, evacuation route clearing, and other related assistance to reduce fuel loads, decrease the intensity of wildfire, and limit fire danger to structures and life. The plan promotes safe evacuation and citizen protection in the event of wildfire, ongoing public education, training of cooperative citizen teams, improvement of neighborhood fire safety, and professional assessment of fire-related infrastructure needs throughout the District.

Fire Prevention Programs

Nevada County's Fire Prevention Assistance Program provides annual wildland fire safety inspections based on the requirements of PRC 4291. Each fire season, temporary County employees typically complete approximately 2,000 fire safety inspections. The primary focus of the program is to provide education through fire safety inspections and helpful brochures.

The Nevada County Roadside Vegetation Management Program treats vegetation in conjunction with road maintenance such as repaving or chip sealing. This program includes protocols for fuels treatment, herbicide use, and other issues related to maintaining roadside vegetation.

The Nevada County FSC has numerous grant-funded fire protection programs that are active as grant funds become available. All programs and services offered by the FSC are free of charge to the residents of Nevada County and provide education and assistance to those living in the wildfire prone environment. These programs include the following:

The Defensible Space Advisory Visit Program brings a qualified volunteer to private homes to help property owners understand and implement effective defensible space clearing

The Defensible Space Chipping Program provides free chipping of brush and other hazardous vegetation that has been cleared 100 feet from any permanent structure and/or 30 feet from any roadside or driveway used for evacuation purposes

Community Green Waste Drops at various locations throughout the County offer another method of disposal

The Special Needs Assistance Program provides defensible space clearing for property owners who are unable to clear their property due to age, physical disability, or financial need; have no other person to assist in the clearance; and cannot afford to hire a contractor to do the work

The Scotch Broom Challenge provides methods of controlling the invasive non-native plant Scotch broom, a highly flammable ladder fuel, including a weed wrench loan program to remove the invasive weed from your property

The Firewise Communities/USA[®] program is a unique opportunity available to America's fire-prone neighborhoods and communities. Its goal is to encourage and acknowledge action that minimizes home loss to wildfire. It teaches you to prepare for a fire before it occurs. The program adapts well to small communities, developments and residential associations of all types. The FSC of Nevada County has assisted a number of communities in Nevada to become designated Firewise Communities USA.

The FSC also works to implement community fuel reduction projects such as roadside evacuation clearing and fire fuel breaks as defined in the Nevada County CWPP.

Severe Weather Hazards

Wind, Lightning, Snow, Freezing, Heavy Rain

Severe weather across the County routinely leads to regional power outages, isolation of vulnerable regions (single access road closures), and white-out conditions on roadways. Deep snow, strong winds and severe cold have also created unsafe living conditions for vulnerable members of our community. Rain, snow, lightning and high winds are likely to continue as one of the natural threats to Nevada County.

Numerous severe weather incidents affecting Nevada County were documented in the period from 1960 to 2013:

- 33 incidents related to high wind
- 8 incidents related to freezing or extreme cold
- 6 incidents related to lightning

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- 27 incidents were reported as heavy rain
- 26 incidents related to winter storms or snow
- 1 incident tornado

(Note: some incidents included more than one cited cause)

Blizzards

Not specifically mentioned above were blizzards, which are the combination of wind and blowing snow. Closure of roads and highways due to blowing snow is a common and annual event above elevations of 5,000 feet in the Sierra Nevada.

Goals, Policies, and Programs

The following sections identify the eight primary types of goals, policies and programs of the Safety Element, which are grouped by subject categories as follows:

- Emergency Preparedness (EP)
- Geologic Hazards / Seismic Activity (GH)
- Flood Hazards (FH)
- Airport and Military Airspace Hazards (AH)
- Hazardous Materials (HM)
- Public Safety Services and Facilities (SF)
- Fire Hazards and Protection (FP)
- Severe Weather Hazards (WH)

Emergency Preparedness (EP)

GOAL EP-10.1

Provide a coordinated approach to hazard and disaster response preparedness.

Policy EP-10.1.1

Ensure a coordinated, interagency program for disaster preparedness that will facilitate federal and state disaster assistance by planning for the reduction of the effects of natural hazards.

Policy EP-10.1.2

The Local Hazard Mitigation Plan (LHMP), adopted by the County on July 17, 2012, in accordance with the Federal Disaster Mitigation Act of 2000 and Government Code 65302.6, shall serve as the implementation program for the coordination of hazard planning and disaster response efforts within the County.

The LHMP shall be reviewed annually by the County Office of Emergency Services and updated as necessary to ensure

compliance with the Federal Disaster Mitigation Act of 2000, as it exists or as may be amended.

Policy EP-10.1.3 Coordinate with the State Office of Emergency Services for wildfire, awareness of implementation of state programs. The local earthquake preparedness plan shall be coordinated with regional plans for earthquake preparedness through the local and State Office of Emergency Services.

Policy EP-10.1.4 Provide for adequate evacuation routes in areas of high fire hazard, high potential for dam failure, earthquake, seiches, avalanche, flooding or other natural disaster.

Policy EP-10.1.5 Promote the continued effectiveness and public awareness of the Nevada County and Nevada Operational Area Emergency Operations Plan, and Community Emergency Preparedness and Evacuation Guides, through the local Office of Emergency Services, as the focus for planning for emergency evacuation of threatened populations. .

Policy EP-10.1.6 Transportation routes that are designated on the General Plan Land Use Maps as Interstates, freeways, highways, and other principal arterial routes shall be considered primary evacuation routes on a countywide basis. Such routes provide the highest levels of capacity and contiguity and serve as the primary means for egress from the County.

The routes designated on the General Plan Land Use Maps as minor arterial or major collector routes shall be considered secondary evacuation routes on a countywide basis. These routes supplement the primary evacuation routes, and provide egress from local neighborhood and communities.

Policy EP-10.1.7 Support the development and maintenance of countywide and local emergency evacuation plans.

Policy EP-10.1.8 Recognize that the Emergency Preparedness and Evacuation Guides will be developed as supporting plans to the Nevada County and Nevada Operational Area Emergency Operations Plan.

Policy EP-10.1.9 Support the development of Community Emergency Preparedness and Evacuation Guides by local community members in collaboration with the County Office of Emergency Services.

GOAL GH-10.2

Minimize injury and property damage due to geologic and seismic hazards.

Policy GH-10.2.1 Ensure that new construction meets current structural and safety standards.

Policy GH-10.2.2 Continue to cooperate with the State Department of Conservation – California Geological Survey, the State Office of Emergency Services and other appropriate federal, state and local agencies and incorporate the most current data concerning the following as the basis for the County's Site Development Standards, and project site plan review:

- a. geologic hazards; and
- b. seismic hazard data for sensitive land uses such as schools, medical facilities, high-density residential uses, and intensive commercial uses.

The project review shall consider the need to mitigate development in such areas in accordance with federal, state and local standards.

As part of the project site review process, require sufficient soils and geologic investigations to identify and evaluate the various geologic and seismic hazards that may exist for all proposed development, including subdivisions. Such investigations shall be required within an area determined to be seismically active by the State Department of Conservation – California Geological Survey, or within an area having potential geologic hazards, including slope instability and excessive erosion.

Policy GH-10.2.1.3 Carry out the requirements of the California Building Code, particularly with regard to seismic design.

Policy GH-10.2.1.4 Require that underground utility lines, particularly water and natural gas mains, be designed to withstand seismic forces.

Flood Hazards (FH)

GOAL FH-10.3

Reduce the potential for injury, property damage, and environmental damage from flooding.

Policy FH-10.3.1 Implement development standards to ensure new construction does not result in increased peak run-off or flood potential.

Policy FH-10.3.2 Avoid potential increases in downstream flooding potential by protecting natural drainage and vegetative patterns through project site plan review, application of Comprehensive Site Development Standards, use of clustered development and project subdivision design. The Comprehensive Site Development Standards shall include measures applicable to all discretionary and ministerial projects to avoid downstream flooding resulting from new development. Such measures, shall include, but not be limited to:

- a. Avoidance of stream channel modifications;
- b. Avoidance of excessive areas of impervious surfaces; and
- c. Use of on-site retention or detention of storm water.

Policy FH-10.3.3 Participate in County flood studies and programs.

Policy FH-10.3.4 Continue to work with appropriate local, state and federal agencies (particularly FEMA) in maintaining the most current flood hazard and flood plain information as a basis for project review in such areas in accordance with federal, state and local standards.

Policy FH-10.3.5 Continue to participate in the National Flood Insurance Program.

Airport Hazards (AH)

GOAL AH-10.4

Ensure the safety and compatibility of land uses in the vicinity of airports and military airspace

Policy AH-10.4.1 Maintain land use and development patterns in the vicinity of airports that reflect and are consistent with policies for the different airport land use compatibility zones within the defined Airport Influence Areas as set forth by the Nevada County and Truckee Tahoe Airport Land Use Compatibility Plans (ALUCPs).

Policy AH-10.4.2 Through appropriate zoning regulations, the County shall enforce airport ground and height safety areas, and land use compatibility standards, consistent with the ALUCPs adopted by Nevada County and Truckee Tahoe Airport Land Use Commissions, as those plans are currently in effect.

Policy AH-10.4.2 Ensure early notification to the military of proposed discretionary development projects within the Military Operation Area (MOA) by implementing California Government Code Sections 65352 (a)(5) and (6)(A), 65940, and 65944 to facilitate the exchange of project related information pertinent to military operations within the MOA.

Program AH-10.4.1 Identify the airspace used by the military in Nevada County and develop procedures to coordinate with the military the review of new development to ensure that it is compatible with military air operations.

Hazardous Materials (HM)

GOAL HM-10.5

Protect public health, safety, natural resources, and property through regulation of use, storage, transport, and disposal of hazardous materials.

Policy HM-10.5.1 Provide means for the identification, safe use, storage, transport, and disposal of hazardous materials.

Policy HM-10.5.2 In siting on and off-site hazardous waste management facilities, the County shall follow the criteria and mitigation measures set forth in the Nevada County Hazardous Waste Management Plan, and attendant Final Environmental Impact Report, in order to minimize safety hazards associated with hazardous material and hazardous waste incidents.

Policy HM-10.5.3 The County will encourage the cleanup of sites contaminated by mine wastes or other hazardous materials.

Policy HM-10.5.4 The County will actively promote prompt clean-up or remediation of properties contaminated by mine waste or other hazardous materials and shall not grant any discretionary or ministerial land use approvals to develop or change boundaries or reconfigure parcels believed to be contaminated unless and until the nature, extent, type and location of the contamination is determined and satisfactory arrangements are made for clean-up or remediation, in accordance with Nevada County standards or state regulations.

Public Safety Services and Facilities (SF)

GOAL SF-10.6

Ensure adequate public safety services and facilities through development standards, development fees, and land use patterns.

Policy SF-10.6.1 Maintain appropriate levels of safety and protection services and facilities on land and water for both *Community* and *Rural Regions*.

Policy SF-10.6.2 County public safety facilities shall be included in the County's development impact fee program, as provided in Policy 3.8 to provide for new facilities or upgrading of existing facilities necessary to serve new development.

Policy SF-10.6.3 The following shall be included in the adopted Comprehensive Site Development Standards as the basis for site plan review:

- a. Standards to enhance the ability of the County law enforcement personnel to protect multi-family, commercial, industrial, and business park uses, including but not limited to:
 - (1) exterior building and parking area lighting; and
 - (2) trimming and maintenance of on-site vegetation to provide adequate view of parking areas, building entrances, and other areas accessible to the public.
- b. Standards to ensure adequate site and building access for fire and emergency medical access.

Policy SF-10.6.4 Land use patterns and development standards shall minimize hazards resulting from flooding, earthquake, slope failure, avalanche, and other natural occurrences.

Policy SF 10.6.5 Encourage appropriate levels of consolidated services to provide for efficiency and cost containment.

Policy SF-10.6.6 The County will encourage joint service agreements and consolidation of police, fire, and emergency services between the County, cities, and service districts.

Fire Hazards and Protection (FP)

GOAL FP-10.7

Enhance fire safety and improve fire protection effectiveness through infrastructure and service improvements.

- Policy FP-10.7.1* Identify existing County-maintained roads not meeting design standards for current or anticipated use as designated on the General Plan Land Use Map.
- Policy FP-10.7.2* Ensure that proposed private roads are maintained.
- Policy FP-10.7.3* As a condition of development, require long-term maintenance of private roads to the standards of the original improvements, including roadside vegetation management.
- Policy FP-10.7.4* Research the feasibility of a countywide rural fire protection water system that provides a cost-effective, adequate water supply.
- Policy FP-10.7.5* Encourage fire protection agencies to determine appropriate levels of fire protection facilities and services for both *Community* and *Rural Regions*.
- Policy FP-10.7.6* Encourage the upgrading of facilities within existing fire protection districts, and encourage the expansion of existing districts where warranted by the population density allowed under the General Plan.
- Policy FP-10.7.7* Cooperate with CAL FIRE, US Forest Service, local fire districts, and the Nevada County Fire Safe Council in fire prevention programs.

GOAL FP-10.8

Reduce fire risk to life and property through land use planning, ordinances, and compliance programs.

- Policy FP-10.8.1* As needed, review and revise existing wildland fire-related codes and ordinances to address the recognized hazards of development in the wildland urban interface.
- Policy FP-10.8.2* Recognize the ignition-resistant building standards in Land Use and Development Code Chapter V, Building.
- Policy FP-10.8.3* Comply with air quality regulations by encouraging alternatives to debris burning.
- Policy FP-10.8.4* Support removal of fuels and chipping and onsite distribution of chipped material as preferred alternatives to burning.
- Policy FP-10.8.5* Consider new wildfire safety codes and ordinances to meet the County's fire safe needs.

- Policy FP-10.8.6*** Review wildfire safety policies, codes, and ordinances, and report the findings to the Board of Supervisors at least every three years.
- Policy FP-10.8.7*** Review and recommend improvement of the “same practical effect” process for meeting the intent of the fire safety regulations.
- Policy FP-10.8.8*** Recognize the value of the “same practical effect” or “exception” process when the letter of the law may not be practically applied, but the intent of the law may be achieved through application of other measures. Develop a public information sheet to increase public awareness and understanding regarding the application of these processes.
- Policy FP-10.8.9*** Land use patterns and development standards shall minimize fire hazard.
- Policy FP-10.8.10*** The County shall coordinate and centralize firesafe reviews which will include coordination of development with respect to fire prevention and safety, and implementation of Nevada County fire safety programs, standards and procedures.
- Policy FP-10.8.11*** The following shall be included in the Comprehensive Site Development Standards as the basis for site plan review:
- a. Standards for roads and private driveways which will enhance the ability of emergency service providers to respond to structural and wildland fires, and calls for medical and law enforcement emergency assistance. The standards shall provide for secondary road access to new projects where necessary for fire safety or emergency access;
 - b. Water supply standards which will provide necessary on-site water supply for fire protection;
 - c. Sign and address standards which will provide for easy identification of roads, streets, driveways and buildings by emergency service providers; and
 - d. Standards to reduce hazards associated with the structural and wildland intermix including:
 - (1) Fuel modification; and vegetation management procedures adjacent to structures;
 - (2) Vegetation management adjacent to roads and driveways to provide safe travel of residents and firefighting personnel; and

(3) Building setbacks.

Policy FP-10.8.12 In those areas outside *Community Regions*, which are identified as having a high fire hazard, and/or lack adequate year-round fire protection facilities, maintain low-density land use designations (Rural or Forest) in order to minimize the potential fire hazard.

GOAL FP-10.9

Encourage fire safety education and support programs to promote participation, voluntary compliance, and community awareness of fire safety issues.

Policy FP-10.9.1 Inform the public how to undertake fuels management activities in accordance with environmental regulations and guidelines.

Policy FP-10.9.2 Make available educational materials regarding environmental regulations, guidelines, and protection measures that property owners should be aware of and are responsible for when planning and undertaking fuels management activities. These educational materials shall be available to members of the public at the County.

Policy FP-10.9.3 Increase public education and outreach on wildfire safety issues by utilizing the Fire Safe Council and collaborating with community and business associations.

Policy FP-10.9.4 Provide a better understanding to the public and to the architectural and building industry about the benefits and material/design options available with ignition-resistant building materials.

Policy FP-10.9.5 Support the development of a fuels management consulting and technical service contact list for private property owners by the appropriate fire agency.

Policy FP-10.9.63 Encourage the development and organization of a property owner assistance program for fuels treatment.

Policy FP-10.9.7 Encourage and support the effort for local neighborhoods and communities to become certified under the Firewise Communities USA[®] certification program through the Fire Safe Council.

Policy FP-10.9.8 Create a cooperative business environment that encourages business, professional services, and governmental agencies to provide landowners with prudent, safe, economical, and environmentally sensitive services.

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- Policy FP-10.9.9* Create incentives to encourage voluntary compliance with fire safe regulations.
- Policy FP-10.9.10* The County shall work with the California Department of Insurance to obtain recognition that Nevada County has developed fire safety programs that promote compliance with fire safety regulations.
- Policy FP-10.9.11* Assist the Fire Safe Council with identifying fuel reduction priorities for grant-funded projects.
- Policy FP-10.9.12* Support the Fire Safe Council's public education efforts in order to ensure projects are consistent with County policies, resource standards, and ordinances.
- Policy FP-10.9.13* Improve public awareness regarding Nevada County's ecosystem and fire history.
- Policy FP-10.9.14* Encourage landowners to obtain fire safety educational information from the appropriate fire and resource agencies.
- Policy FP-10.9.15* Support collaboration among CAL FIRE, the US Forest Service, the Bureau of Land Management, the Nevada County Superintendent of Schools, and other interested groups to develop a school curriculum based upon the role of cyclical historic fire in Sierra Nevada forests.
- Policy FP-10.9.16* Explore the feasibility of a forest school within the Tahoe National Forest to provide students a laboratory in which to study and understand the dynamics of the Sierra Nevada forests.

GOAL FP-10.10

Involve all stakeholders in collaborating on countywide fire safety goals and plans to consistently and efficiently implement fire safety-related best management practices.

- Policy FP-10.10.1* Create a collaborative process for integration of countywide common goals into each fire agency's fire prevention program.
- Policy FP-10.10.2* Facilitate a collaborative process with public and private land managers for integrated wildland-urban interface fuels management.

GOAL FP-10.11

Reduce fire severity and intensity through fuels management.

Policy FP-10.11.1 Recognize Public Resources Codes 4290 and 4291, and other defensible space standards and guidelines in order to protect structures from wildfire, protect wildlands from structure fires, and provide safe access routes for people and firefighters.

Policy FP-10.11.2 Recognize the Nevada County Defensible Space Standard as described in this policy. The Defensible Space Standard provides the basic protection measures for life and property from encroaching wildfire, and minimizes structure fires or other fires which may threaten to spread into the wildlands. The standard utilizes Public Resources Code 4291 and includes one component of Public Resources Code 4290, fuels treatment next to driveways, as the minimum fire safety standard in Nevada County.

The following definitions apply to the Nevada County Defensible Space Standard:

- a. Flammable vegetation: Any live or dead vegetation that is combustible during normal summer weather. Vegetation which is pruned, limbed, cultivated, or considered ornamental shrubbery or plants, provided they are maintained and/or irrigated and they do not form a means of rapidly transmitting a fire from the surrounding wildlands, is not considered flammable vegetation and is permissible to be retained;
- b. Firebreak: An area where flammable vegetation and other combustible growth are removed and cleared to create a condition that avoids the spreads of fire to other vegetation or to a building or structure;
- c. Fuelbreak: An area that has been changed from dense, heavy vegetation to lower fuel volumes with tree pruning, intermediate shrub, brush, and dead fuel removed, and grasses and forbs replacing the shrub species;
- d. Structure Ignition Zone: A firebreak area free of flammable vegetation and other combustible growth around any structure.
- e. Reduced Fuel Zone: A fuelbreak area of separated vegetation, both vertically and horizontally, which extends beyond the Structure Ignition Zone;
- f. Extended Reduced Fuel Zone: An extension of the Reduced Fuel Zone on downslope areas that varies depending on slopes and vegetation characteristics, as shown in the table below; and

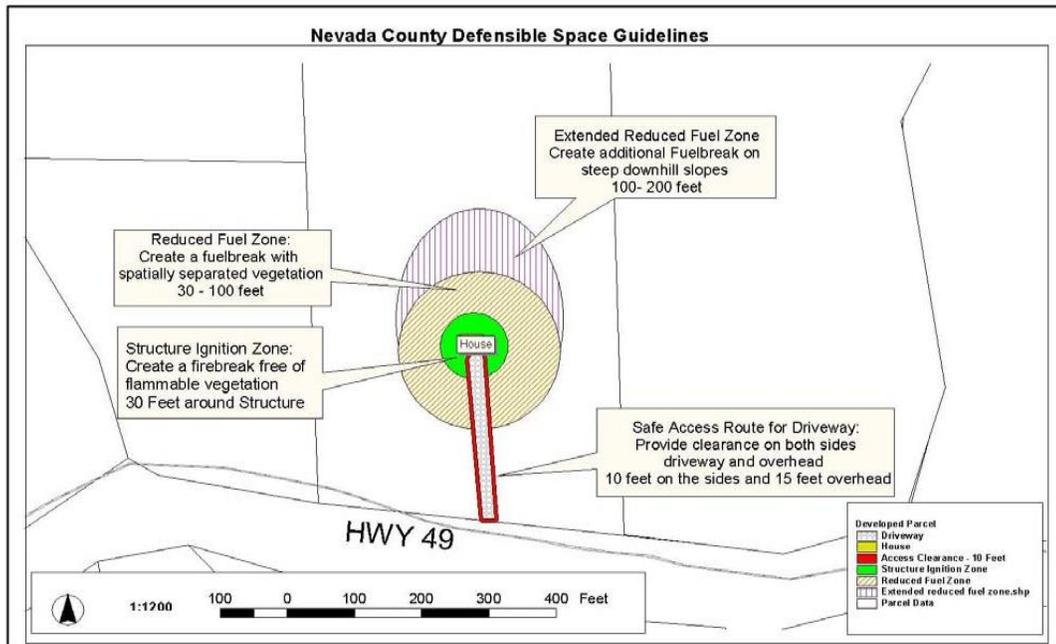
- g. **Safe Access Route:** A fuelbreak of spatially separated vegetation, both vertically and horizontally, adjacent to driveways that connect homes with roadways.

**TABLE 10.2
DEFENSIBLE SPACE EXTENDED REDUCED FUEL ZONES**

<i>Vegetation Type</i>	<i>Down Slope: 0 - 20%</i>	<i>Down Slope: 21 - 30%</i>	<i>Down Slope: >31%</i>
Grass-Oak Woodlands	100 feet	100 feet	100 feet
Montane Brush	100 feet	150 feet	200 feet
Mixed Conifer Forest	100 feet	150 feet	200 feet
Eastside Pine w/Sage	100 feet	125 feet	150 feet

The defensible space zones listed above are shown in Figure 10.1 below.

FIGURE 10.1: NEVADA COUNTY DEFENSIBLE SPACE ZONES



The following criteria, in items *a* through *c* below, comprise the Nevada County Defensible Space Standard, which should apply to property within the unincorporated portions of Nevada County:

- a. Vegetation may only be maintained and treated on one’s own property. Fuel modification is limited to the property line;
- b. Defensible space should be maintained; and

- c. The recommended guidelines in Policies FP-10.11.3 and 10.11.5 should be observed when undertaking fuels treatment in the Extended Reduced Fuel Zone.

Policy FP-10.11.3

Recognize the following fuels treatment guidelines, which serve as recommendations for appropriate spatial arrangement, width, depth, and pruning/limbing height of vegetation in the Extended Reduced Fuel Zone during declared fire season. The guidelines also distinguish appropriate fuels treatment for the various vegetation types in the County: grass-oak woodlands, montane brush, mixed conifer forest and eastside pine with sage. These guidelines supplement the Extended Reduced Fuel Zone standards in Policy FP-10.11.2.

- a. **Guidelines for grass-oak woodlands:** Grass and oak trees dominate the western lower foothills of Nevada County. This vegetation type primarily consists of blue oaks, valley oaks and interior live oaks with brush and occasional conifer species. Fuel loadings are typically low to moderate with low fire resistance, and fire burns very fast. Fire Hazard Severity Rating ranges from moderate to high depending on slope and aspect.

Montane brush lands are generally localized areas in the western lower foothills of Nevada County. This vegetation type primarily consists of brush species such as manzanita, deer brush, and scrub oak, with occasional oaks and pines in the overstory. Fuel loadings are typically moderate to high with moderate fire resistance time, and fire burns very fast. Fire Hazard Severity Ratings range from high to very high depending on slope and aspect.

Fuels treatment guidelines for grass-oak woodlands and montane brush lands are as follows:

- (1) Grass vegetation: A height of 3 inches or irrigated greenbelt should be maintained.
- (2) Brush plants: Dead or dying brush species should be removed at least 30 feet from the structure and gradually extending out to 100 feet. Individual plants or groups of plants can be retained, based on species, size, and slope conditions, with the following conditions:

- (a) Plants should be healthy and free of dead branches and leaves;
 - (b) Plants should be 10 feet or less in canopy width;
 - (c) Brush plant canopies should be horizontally separated at 3 times their height;
 - (d) The lower branches of plants should be vertically separated from understory vegetation; and
 - (e) For grass-oak woodlands, a break in the ladder fuels should be created between grass, brush, and tree species, retaining spatially separated healthy plants.
 - (3) Oak and conifer tree species: Dead or dying oaks or conifers should be removed, along with suppressed conifer species. Individual trees or groups of trees can be retained, based on species, size, and slope conditions, with the following conditions:
 - (a) Heritage oak trees and landmark oak groves should be retained;
 - (b) Trees should be healthy and generally free of dead branches and leaves;
 - (c) Trees should be horizontally separated a distance of 10 to 30 feet between trunk of trees; and
 - (d) The lower canopy of trees should be vertically separated from the understory, with limbing or pruning to a height of 8 feet in order to prevent canopy fires.
 - (4) Dead and down woody vegetation: Dead and down woody vegetation that is 8 or fewer inches in diameter and 2 or more feet in length should be removed. Dead material can be incorporated into the soil.
- b. **Guidelines for mixed conifer forest and eastside pine with sage:** Conifer forest dominates the mid-elevation on the west side and east side of the Sierra Nevada Range with pines, cedars, firs and deciduous oak trees in the canopy, and brush species in the understory. Fuel loadings are typically moderate to very high and have very high fire resistance time, and fire burns moderately fast. Fire Hazard

Severity Ratings range from high to very high on most aspects and slopes.

Eastside pine dominates the mid-elevations on the east side of the Sierra Nevada Range with pines and sagebrush species in the understory. Fuel loadings are moderate and have moderately to high fire resistance time, and fire burns moderately to very fast. Fire Hazard Severity Ratings range from high to very high on most aspects and slopes.

Fuels treatment guidelines for mixed conifer forest and eastside pine with sage are as follows:

- (1) Pine needles and leaves: Pine needles and leaves should be raked to a height of 3 inches or less.
- (2) Brush plants: Flammable brush plants should be removed. Individual plants or groups of plants are acceptable, based on species, size, and slope conditions, with the following conditions:
 - (a) Plants should be healthy and free of dead branches and leaves;
 - (b) Plants should be 5 feet or less in canopy width;
 - (c) Brush plant canopies should be horizontally separated at 3 times their height; and
 - (d) The lower branches of plants should be vertically separated from understory vegetation.
- (3) Oak and conifer tree species: Remove dead or dying trees. Remove suppressed conifer species. Individual trees or groups of trees can be retained, based on species, size, and slope conditions, with the following conditions:
 - (a) Trees should be healthy and free of dead branches and leaves;
 - (b) Trees should be horizontally separated a distance of 10 to 30 feet between trunk of trees; and
 - (c) The lower canopy should be vertically separated from the understory, with limbing

and pruning to 8 feet in height in order to prevent canopy fires.

- (4) Dead and down woody vegetation: Dead and down woody vegetation that is 8 or fewer inches in diameter and 2 or more feet in length should be removed. Dead material can be incorporated into the soil.

Policy FP-10.11.4

Recognize a stewardship program focusing on the management of flammable, hazardous vegetation in and around community areas to effectively reduce wildfire intensity and severity, while considering other valuable resources and public interest.

Policy FP-10.11.5

Support the Nevada County Wildland Stewardship Program, which provides flexible guidelines for managing hazardous vegetation and promotes property owners' understanding of the wildland environment and responsible land stewardship concepts, including voluntary property management and collaboration with neighbors. The Wildland Stewardship Program focuses on the area adjacent to the defensible space area to enhance protection for structures and protect surrounding natural resources. The Wildland Stewardship Program is described in educational materials which shall be available at the County. The Wildland Stewardship Program includes the following:

- a. The **educational material**, which provides background and supporting information describing the wildfire and regulatory setting, as well as other important information for property owners in understanding and maintaining defensible space.
- b. A **property owner's guide** to help property owners develop goals, identify types of fire fuels, select treatment processes, estimate cost and time frames, and understand environmental constraints and regulations.
- c. **Good neighbor practices** to help achieve adequate defensible space in situations where structures cannot achieve it due to parcel size or other constraints.
- d. **Fuels management environmental protection measures** to inform property owners of various regulations, provide contacts at resource and regulatory agencies, and explain how best to comply with the regulations.
- e. **Technical and funding assistance** information to facilitate fuels management activities.

- d. **Networking and coordination** information to facilitate the coordination of fuels treatment programs.

The County may issue a Statement of Cooperation for property owners who demonstrate effective stewardship practices, in order to provide an incentive for property owners to engage in fuels treatment activities. The County may also monitor the effectiveness of the Wildland Stewardship Program and provide reports to the Board of Supervisors to assess the effectiveness of the program.

Policy FP-10.11.6

The County shall collaborate with the Fire Safe Council in updating and maintaining the countywide Community Wildfire Protection Plan according to Healthy Forest Restoration Act guidelines.

GOAL FP-10.12

As desirable and as funding becomes available, the County should consider Programs FP-10.12.1 through FP-10.12.29, prioritized by the order in which they appear.

Program FP-10.12.1

Establish an official Nevada County Fire Marshal’s Office, and provide funding for the appropriate staffing of the County Fire Marshal’s Office to provide oversight and implement fire protection policies.

Program FP-10.12.2

Support the Fire Safe Council as a significant contributor of providing fire safe education and information to the residents of the County by assisting in funding their services and programs.

Program FP-10.12.3

Coordinate with the Fire Safe Council in their efforts to update and maintain the countywide Community Wildfire Protection Plan. These efforts include:

- a. Identifying areas within the County that potentially could be the source of large and damaging wildfires; and
- b. Prioritizing those potentially hazardous areas for grant funds to reduce the fire hazard and risk.

Program FP-10.12. 4

Provide a permanent funding mechanism for the Fire Safe Council’s chipping program and services.

Program FP-10.12. 5

Develop a water storage inspection program.

- Program FP-10.12.6 Sponsor workshops that develop cooperative efforts between businesses, professional services, and governmental agencies in the fuel and resource management industry, including those that provide fire-safe operations, fuel management services, and environmental compliance services.
- Program FP-10.12.7 Support the establishment and publication of a list of business resources that includes businesses and professionals that have attended the County's fire safety workshop and are knowledgeable of County fire-safe programs.
- Program FP-10.12.8 Support and expand greenwaste pickup and chipping programs and develop a mulching-composting program as the preferred methods for leaf and pine needle disposal.
- Program FP-10.12.9 Provide consulting services for private landowners for the restoration and rehabilitation of wildlands impacted by fire, insects, and disease.
- Program FP-10.12.10 Create a directory of assistance programs for large landowners, including CAL FIRE's Vegetation Management Program, CAL FIRE's California Forest Improvement Program, and the Natural Resources Conservation Service's Environmental Quality Incentives Program.
- Program FP-10.12.11 Provide financial aid to those landowners who can demonstrate financial need based upon established criteria and who are incapable of accomplishing the fuels management on their own to meet the requirement of the Nevada County Defensible Space Standards.
- Program FP-10.12.12 Nevada County Department of Public Works and the Fire Marshal's Office should work together to identify County-maintained arterial and collector roads or segments of these roads that are not meeting design standards for current or anticipated average daily trips, and prioritize these roads for upgrading as funds become available.
- Program FP-10.12.13 Direct the Fire Marshal's Office to coordinate with the Fire Safe Council to create a multimedia format lending library. The lending library shall focus on proper land stewardship, defensible space, fire prevention, disaster preparedness and

application of fuels management prescriptions. The Fire Marshal's Office should seek outlets to inform the public of this library.

Program FP-10.12.14

Develop a compliance program for future development to ensure that proposed roads are maintained over the long term to the same standard as they were originally approved and conditioned.

Program FP-10.12.15

Encourage the Board of Supervisors to reconvene a Fire Safety Committee at least every five years for a comprehensive review of the effectiveness of the fire protection policies in the General Plan.

Program FP-10.12.16

Develop an evacuation road standard and private landowner incentives to participate in the standard.

Program FP-10.12.17

Encourage the Board of Supervisors to explore feasible funding mechanisms for those County roads not meeting the evacuation road standard.

Program FP-10.12.18

Conduct a study for funding a countywide system of strategically located rural fire protection water storage tanks.

Program FP-10.12.19

Conduct an analysis of private roads with offers of dedication on them and identify those of significant regional importance for public safety and evacuation. Once identified, those roads should be prioritized for inclusion into the County-maintained mileage program through a public process.

Program FP-10.12.20

Explore feasible funding mechanisms to add roads that are regionally important for connectivity and public safety access under County maintenance.

Program FP-10.12.21

Support the Fire Safe Council's effort to create a biomass reutilization center.

Program FP-10.12.22

Upon implementation of a countywide water storage program; amend Land Use and Development Code Chapter XVI to eliminate the requirement for individual water storage tanks. Develop a transition process to coordinate the change in the water storage program.

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<u>Program FP-10.12.23</u>	Create a forum to bring together private and public groups with a statutory or general interest in wildfire risk reduction with the intent of creating and maintaining a consistent public message regarding fire prevention and risk reduction requirements and activities.
<u>Program FP-10.12.24</u>	Task the County Fire Marshal, in cooperation with the Fire Safe Council, to develop and maintain a forum with public and private land managers to treat hazardous vegetation on their lands in order to increase community wildfire protection.
<u>Program FP-10.12.25</u>	Conduct seminars for landowners on proper stewardship techniques based upon County fuels management guidelines and programs.
<u>Program FP-10.12.26</u>	Provide educational workshops on environmental protection measures for property owners to minimize environmental impacts while implementing fuels treatment projects on their property.
<u>Program FP-10.12.27</u>	Increase the County roadside vegetation management program treatment rate from the current rate of 6% to a minimum of 10% of County-maintained road miles, thus decreasing the rotational period from an estimated 17-year return interval to a 10-year return interval.
<u>Program FP-10.12.28</u>	Implement recommendations based on the countywide water storage study.
<u>Program FP-10.12.29</u>	Provide cost-share assistance through grant programs to property owners who have collectively organized and develop a project based on the Community Wildfire Stewardship Program.

Severe Weather Hazards (WH)

GOAL WH-10.13

Minimize injury and property damage due to severe weather hazards (rain, snow, lightning, and high winds).

<i>Policy WH-10.13.1</i>	Ensure a coordinated, multi-jurisdictional preparedness program that will educate residents of Nevada County on how to best prepare for the hazards that severe weather can cause.
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Policy WH-10.13.2 Continue to promote public awareness of emergency preparedness for potential severe weather hazards by:

- a. Providing education opportunities to local community groups; and
- b. Distributing the latest educational documents on emergency preparedness.

Program WH-10.13.1 Continue to maintain qualification as a National Weather Service StormReady® County.

List of Acronyms

The following acronyms are used in the Safety Element:

AH	Airport Hazards
ALUC	Airport Land Use Commission
ALUCP	Airport Land Use Compatibility Plan
BLM	Federal Bureau of Land Management
CAL FIRE	California Department of Forestry and Fire Protection
CWPP	Community Wildfire Protection Plan
DMA	Federal Disaster Mitigation Act of 2000
DTSC	California Department of Toxic Substances Control
EP	Emergency Preparedness
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FH	Flood Hazards
FP	Fire Hazards and Protection
FSC	Nevada County Fire Safe Council
GH	Geologic Hazards / Seismic Activity
HM	Hazardous Materials LHMP Local Hazard Mitigation Plan
MOA	Military Operation Area
NFPA	National Fire Protection Association
OES	Nevada County Office of Emergency Services
PRC	California Public Resources Code
SRA	State Responsibility Area
USFS	US Forest Service
WH	Severe Weather Hazards