8. SAFETY ELEMENT Chapter 10: Safety

Introduction and Setting

The purpose of the Safety Element is to reduce short and long-term loss of life, injuries, and damage to property resulting from natural and human-caused public safety hazards including flooding, geologic and seismic hazards, fire hazards, severe weather and the additional consequences of climate change. Other potential safety hazards, such as airport operations, and the transportation of hazardous materials arise from the transport of goods and people. The Safety Element addresses hazards and hazardous materials of the present (transportation of hazardous materials, industrial spills, etc.) and historic remnants (legacy of historic mining; mineshafts and tailings). Each of these hazards has particular characteristics that affect the future of development of the ~~county~~County. Some safety hazards can be minimized with emergency planning, while other hazards are reduced by development standards and land use planning. The Safety Element identifies areas where private and public decisions on land use need to be responsive to potentially hazardous conditions. It also serves to inform individuals, firms and public agencies of Nevada County's policies regarding appropriate levels and locations of public services such as Sheriff's and Fire protection.

~~A complete list of acronyms used in the Safety Element is located at the end of this chapter.~~ The Safety Element addresses the potential and existing hazards recognized and experienced in Nevada County using the following categories:

- Emergency Preparedness (EP)
- Geologic Hazards/Seismic Activity (GH)
- Flood Hazards (FH)
- Airport and Military Airspace Hazards (AH)
- Hazardous Materials and Mining Hazards (HM)
- Public Safety Services and Facilities (SF)
- Fire Hazards and Protection (FP)
- Severe Weather Hazards (WH)
- Climate Change Resiliency and Mitigation (CC)
- Environmental Justice (EJ)

Additional discussion related to safety is contained within the following chapters of the Nevada County General Plan: Chapter 1, Land Use; Chapter 3, Public Facilities and Services; Chapter 4,

Circulation; Chapter 6, Open Space; Chapter 8, Housing; Chapter 9, Noise; and Chapter 17, Mineral Management.

Statutory Requirements

The Governor's Office of Planning and Research

The primary responsibility of the Governor's Office of Planning and Research is working with local jurisdictions on topics related to land use planning. The Governor's Office of Planning and Research is designated in statute as the State's comprehensive planning agency and as such provides oversite on local general plan preparation.

In addition to containing the vision of the community, California law also requires General Plans address public safety as one of the eight mandatory elements. The Safety Element shall include mapping of known seismic and other geologic hazards. It shall also address evacuation routes, military installations, peak load water supply requirements, and minimum road widths and clearances around structures as those items relate to identified fire and geologic hazards.

Federal Emergency Management Agency

The Federal Emergency Management Agency coordinates the Federal government's role in preparing for, mitigating the effects of, responding to, and recovering from all domestic disasters, whether natural or man-made. The Disaster Relief Act of 1974 created the system and the agency, Federal Emergency Management Agency, by which a presidential disaster declaration of an emergency triggers financial and physical assistance. In order to be eligible for Federal disaster assistance from Federal Emergency Management Agency under the Disaster Mitigation Act of 2000, Nevada County is required to periodically update both the Safety Element of the General Plan and the Local Hazard Mitigation Plan.

The Nevada County Office of Emergency Services

The Nevada County Office of Emergency Services is responsible for maintaining and updating Nevada County's Local Hazard Mitigation Plan. Hazard Mitigation Planning is the process used by State, local and tribal leaders to understand risks from natural and man-made hazards and develop long-term strategies to reduce the impacts of disasters on people, property, and the environment. The Local Hazard Mitigation Plan is a critical planning tool that identifies community risks based on historical experience and data, modeling of frequency and magnitude of disasters projected, and develops mitigation strategies to build resiliency, avoid impacts, adapt to or mitigate risks. The Local Hazard Mitigation Plan is the implementing tool of Nevada County's General Plan and specifically the Safety Element. Whereas the Safety Element informs, guides and directs land use decisions to avoid or reduce risks from hazards, the Local Hazard Mitigation Plan provides the measures by which potential hazards and hazardous conditions are to be mitigated.

The Office of Emergency Services in coordination with local, County, State, Federal and non-profit partners has the responsibility to also prepare the Wildfire Hazard Reduction and Preparedness Plan. The objective of the plan is to identify and prioritize pre- and post-fire management strategies and tactics to reduce loss of life, property, and natural resources.

California Department of Forestry and Fire Protection

The California Department of Forestry and Fire Protection (Cal Fire) is responsible, in partnership with local jurisdiction, for fire planning in State Responsibility Areas. State Responsibility Areas is a legal term defining the area where the State has financial responsibility for wildland fire protection. Incorporated cities (Local Responsibility Areas) and Federal ownership (Federal Responsibility Areas) are not included. As part of the State's Fire and Resource Assessment Program, Cal Fire is responsible for mapping areas of significant fire hazards based on fuels, terrain, weather and other relevant factors. The areas, which are referred to as Fire Hazard Severity Zones, relate to the prescription of various mitigation strategies to reduce risk associated with wildland fires. The State Board of Forestry and Cal Fire are responsible for drafting a comprehensive document for wildland fire protection in California. Nevada County Fire Departments and Cal Fire are responsible for implementing the California Fire Plan in Nevada County. The planning process defines a level of service measurement, considers assets at risk, incorporates the cooperative inter-dependent relationships of wildland fire protection providers, provides for public stakeholder involvement, and creates a fiscal framework for policy analysis. Nevada County is one of six contract counties that maintain a contractual relationship with Cal Fire.

Senate Bill 1241 revises the Safety Element requirements for State Responsibility Areas and Very High Fire Hazard Severity Zones. Local jurisdictions are required to review and update, as necessary, their Safety Element to address that risk of fire in State responsibility areas and Very High Fire Hazard Severity Zones. The draft Safety Element (or amendment of the Safety Element) of a County or city shall be submitted for review to the State Board of Forestry and Fire Protection at least 90-days prior to adoption or amendment. Cal Fire is responsible for reviewing the draft Safety Element or draft amendment to insure that specific provisions found in the most recent Office of Planning and Research Fire Hazard Planning document are considered where appropriate and the Safety Element includes the following:

- Information regarding fire hazards, including, but not limited to all of the following:
  - Fire hazard severity zone maps;
  - Historical data on wildfires available from local agencies or reference to where the data can be found;
  - Information about wildfire hazard areas that may be available from the United States Geological Service;
  - General location and distribution of existing and planned uses of land in very high fire hazard severity zones; and
  - Local, State, and Federal agencies with responsibility for fire protection, including special districts and local offices of emergency services.
- A set of goals, policies, and objectives based on the information identified for the protection of the community from the unreasonable risk of wildfire.
- A set of feasible implementation measures designed to carry out the goals, policies, and objectives based on the information identified, including but not limited to:
  - Avoiding or minimizing the wildfire hazards associated with the new uses of land;
  - Locating, when feasible, new essential public facilities outside of high fire risk areas or identifying construction methods or other methods to minimize damage if

these facilities are located in a State Responsibility Areas or very high fire hazard severity zone;
    - Designing adequate infrastructure if a new development is located in a State responsibility area or in a very high hazard severity zone, including safe access for emergency response vehicles, visible street signs, and water supplies for structural fire suppression; and
    - Working cooperatively with public agencies with responsibility for fire protection.
- Upon each revision of the housing element, the planning agency shall review, and if necessary, revise the safety element to identify new information that was not available during the previous revision of the Safety Element.

California Geological Survey of the Department of Conservation

The California Geological Survey's mission is to provide products and services about the State's geology, seismology and mineral resources, including their hazards, which affect the health, safety and business interests of the people of California. The programs operated by the California Geological Survey include responsibility for providing technical information, advice and production of maps that reflect landslide hazards, seismic hazards (earthquake faults), geological, mineral resources and hazards, and tsunamis.

The California Geological Survey provides local lead agencies with comments on geological issues associated with the review of various types of environmental documents including local General Plans. These comments are used by local agencies to make land use decisions. At least 45-days prior to adoption or amendment of the Safety Element, each County or city shall submit to the California Geological Survey of the Department of Conservation one copy of a draft of the Safety Element or amendment and any technical studies used for developing the safety element. The California Geological Survey will review drafts submitted to it to determine whether they incorporate known seismic and other geologic hazard information and reports its findings to the planning agency.

Emergency Preparedness

Land Use Influences

The ability to prepare for, react to and recover from a major disaster is dependent upon many factors. Land Use is one of the most critical and often over-looked factors in emergency preparedness. Both existing land use and the future, planned land use directly influence the pattern of development across a landscape. Land use influences the distribution, location, density, intensity of development and it directs the type of uses whether it be residential, commercial, industrial, recreation, open space, or agriculture. How land uses are dispersed across the landscape directly effects the layout of roads, utility infrastructure, location of essential public facilities, population centers and areas to be protected in open space. Emergency preparedness should be a consideration when establishing land use and zoning designations and again when discretionary development permits are required of a new or modified development. To assure that development is not creating, for example, capacity issues for existing infrastructure that might affect water availability in a certain community sector for firefighting or capacity of roads to accommodate emergency vehicle ingress and evacuation egress. Section 2, Chapter 1 of the General Plan lays out goals, policies and maps that establish the desired land use pattern that balances future growth

with other factors. (Link of Nevada County GIS Land Use Maps: https://gis.nevcounty.net/MyNeighborhood/ and Section 4.3.1 in the Local Hazard Mitigation Plan for the Land Use Map and Future Development Areas Map).

Emergency Plans and Guides

In the event of a major disaster, it is in the interest of the ~~federal~~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~~County plans for that particular ~~county~~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 of natural and man-made 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: Ag Hazards (severe weather, insects pests), Avalanche, Climate Change, Dam Failure, Drought and Water Shortage, Earthquake, Flood, Hazardous Materials Transportation, Landslide/Mud Flow, Levee Failure, ~~urban and wildland fire, severe~~ Severe weather~~Weather~~ (extreme cold, extreme heat, extreme storms), ~~flood, drought, dam failure,~~ Subsidence, Volcano, and Wildfire (smoke, tree mortality, and conflagration).

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 The Emergency Communications Network, CodeRed, completed a transition to the CodeRED used by Nevada County (and other Counties and Cities in California), is a 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 allowing 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, email, text alerts 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 or Right-of-Entry (ROE) form (to allow for recovery activities to occur on private property).

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 in real time 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; and/or activation of the emergency alert notification system.

Routes designated on the Nevada County General Plan Land Use Maps as interstatesInterstates, 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 and ingress for emergency personnel. 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. Local roads are roads that primarily serve as access to and from individual properties. Local roads serve as the first leg of the evacuation route that many Nevada County residents will take. The majority of local road miles in Nevada County are privately owned and many of these roads pre-exist the current road and fire standards. Current standards that address width, slope, vegetation management and access road gates are

found in Chapter XVII: Road Standards and Chapter XVI: Fire Safety Regulation of the Land Use and Development Code.

Nevada County Evacuation Notification Categories

Immediate Evacuation Order: Requires the immediate movement of people out of an affected area due to an imminent threat to life. Choosing to stay could result in loss of life. Staying may also impede the work of emergency personnel. Due to the changing nature of the emergency, this Immediate Evacuation Order may be the only warning that people in the affected area (s) receive.

Evacuation Warning: Alerts people in an affected area(s) of potential threat to life and property. People who need additional time should consider evacuating at this time. An Evacuation Warning considers the probability that an area will be affected and prepares people for a potential Immediate Evacuation Order.

Shelter-In-Place: Advises people to stay secure at their current location by remaining in place as evacuation will cause a higher potential for loss of life.

Though not a specific evacuation notification category, rescue services are also performed by Nevada County first responders. Rescues include emergency actions taken within the affected area to recover and remove injured or trapped citizens. Responders have specific training and personal protective equipment necessary to accomplish the mission i.e., hazard material spill, swift-water and avalanche rescues, etc. Boundaries of the area(s) where rescue is planned is identified on the incident map with and includes a notification that entry is restricted to rescue workers only.

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, Debris and Mud Flows

A lLandslides, debris and mud flows can be defined as an event in which the 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, vegetation removal (potential results from a wildfire or development), 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, the remaining slopes are very steep and are capped by very expansive clay soils. The result is that these areas are extremely prone to damaging slope failure resulting in landslides. In addition to presenting risks to human life and property, landslides also present risks to the integrity of infrastructure such as water, sewer, gas lines and transportation corridors. (For more Nevada County landslide and debris flow data please refer to the Nevada County Local Hazards Mitigation Plan, Sections 4.2.14 and 4.3.11).

Earthquakes

According to the U.S. Geological ServiceSurvey, Nevada County falls within five all three "Maximum Expectable Earthquake Intensity" earthquake ground movement intensity severity zones. The western half of the County is in the lower intensity zones (5-20 %gravity), the middle portion quarter is in the moderate zone (21-30%gravity) and the eastern edge quarter is in the 31-40%high intensity gravity zone (Figure XX. Maximum Expectable Earthquake Intensity). No part of Nevada County is exposed to an earthquake probability of gravity 40 or more. Western Nevada County does experience ground shaking from distant major to great earthquakes on faults to the west and east. For example, to the west, both the San Andreas Fault and the Hayward Fault have the potential for experiencing major events.

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 accelerationlocated in the low intensity 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. The Town of Truckee is the major community of Nevada County located in the 30-40% peak ground accelerationhigh intensity 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. Historically, major earthquakes have not been an issue for Nevada County. Minor earthquakes have occurred locally and major earthquakes have been felt locally, however, Previous the previous local earthquake history has not shown these structures to be at significant risk during normal events. (For more Nevada County Earthquake data please refer to the Nevada County Local Hazards Mitigation Plan 4.2.10 and 4.3.7).

Subsidence

Land Subsidence in Nevada County has not been quantified. However, the California Department of Conservation GIS data identifies 366 potential mine sites in Nevada County. These features may or may not be significant in the level of risk they pose (additional information on hazards posed by mining operation remnants can be found below under Mining Hazards).

In addition to mines, Nevada County is at risk to subsidence from karst, which are topographic features (surficial and/or subterranean) formed by the dissolution of rocks. Closed depressions, sinking streams and cavern openings are commonly referred to as karst. For example, in January of 2017, a karst opened up in Grass Valley. The sinkhole that presented was seven stories deep and 80 feet in diameter when it first formed and occurred when a 7.5 foot-diameter underground culvert for Little Wolf Creek failed.

A cause for subsidence can also be related to the drawdown of groundwater through pumpage. Fine-grained sediments (clays and silts) within an aquifer system have been found to be one of the main causes. When fine-grained sediments are originally deposited, they tend to be deposited in random orientations with a lot of interstitial space to store water. However, when ground water levels decline to historically low levels, the randomly oriented sediments are rearranged into stacks with little interstitial space to store water and the results are subsidence (For more Nevada County Earthquake data please refer to the Nevada County Local Hazard Mitigation Plan 4.2.16 and 4.3.14).

Flood Hazards

Flooding

Flooding is the rising of and overflowing of a body of water onto normally dry land. Nevada County historical data reflects that floods are one of the most frequent natural hazards impacting Nevada County. Historically, portions of Nevada County have always been at risk to flooding because of its high annual percentage of rainfall, heavy snowfall in the winter, and the number of watercourses that traverse the 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.~~ Flooding events have caused severe damage in the very eastern and western portions of the County, but are less of a threat within the center of the County. Primarily due to the significant east to west elevation change in the western part of the ~~county~~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 areas 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. Floods can cause losses to human life, structures and other improvements; natural and cultural resources; the quality and quantity of the water supply; assets such as timber, range and crop land, and recreational opportunities; and economic losses. Flooding~~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 localized flooding are shown below in ~~Table~~ Figure 10.~~1~~2.

~~TABLE 10.1~~

~~PRIMARY AREAS SUBJECT TO 100-YEAR FLOODING~~

~~Eastern County~~	~~Western County~~
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.

~~Eastern County~~	~~Western County~~
~~Truckee River*~~	~~South Fork Yuba River~~
~~South Fork Prosser Creek~~	~~Greenhorn Creek~~
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~~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.~~

Figure 10.2: Primary Areas Subject to 100-Year Flooding Events

The Federal Emergency Management Agency ~~(FEMA)~~ provides guidance for floodplain management. The Federal Emergency Management Agency ~~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 National Flood Insurance Program ~~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 Local Hazard Mitigation Plan contains a completed assessment of flooding hazards, flood hazard mapping and recommended flood hazard mitigations.

A key element of the National Flood Insurance Program ~~NFIP~~ is the identification of floodplain boundaries which are depicted on the Federal Emergency Management Agency ~~FEMA~~ Flood Insurance Rate Maps ~~(FIRM)~~. The concept ~~of the~~that a 100-year flood ~~represents~~ determines a flood event is a central component in Flood Insurance Rate Maps ~~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 National Flood Insurance Program ~~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 and, for any property that has a federalFederally 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 or foundation, earthquakes, massive landslides, and rapidly rising flood waters due to a severe storm event(s). Nevada County has identified 21 regulated and non-regulated privately owned dams in Western Nevada County and 25 such dams in eastern Nevada CountyAccording to data from California Department of Resources Division of Safety of Dams there are 42 dams in Nevada County under their jurisdiction.. The Division of Safety of Dams classifies four categories for Downstream Hazard Potential:

- Extremely High Hazard: Expected to cause considerable loss of human life or would result in an inundation area with a population of 1,000 or more.
- High Hazard: Expected to cause loss of at least one human life.
- Significant Hazard: No probability of loss of human life, however, can cause economic loss, environmental damage, impacts to critical facilities, or other significant impacts.
- Low Hazard: No probability of loss of human life and low economic and environmental losses. Losses are expected to be principally to the owner's property.

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. Of the 42 jurisdictional dams in Nevada County, 8 are rated as Extremely High, 5 are rated High, 6 are rated as Significant and 23 are rated as low.

Nevada County Extremely High and High Hazard Rated Dams

- Bowman (E)
- Combie (H)
- Deer Creek Diversion (E)
- Donner Lake (E)
- Jackson Meadows (E)
- Lake Angela (H)
- Lake Fordyce (E)
- Lake Spalding (E)
- Lake Van Norden (H)*
- Loma Rica Airport (H)
- Magnolia (H)
- Martis Creek Dam**
- Rollins (E)
- Scotts Flat (E)

(* Lake Van Norden Dam spillway to be modified (lowered) Fall 2019, to no longer impound water, consistent with California Division of Water Rights. ** Martis Creek Dam, operated by the U.S. Army Corps of Engineers and not included in the Division of Safety of Dam's list, is being managed to significantly reduce dam failure risks. The measures taken include keeping the dam gates open in order to keep the reservoir at minimum pool.)

The California Department of Water Resources Division of Safety of Dams has jurisdiction over impoundments that meet certain capacity and height criteria. Embankments that are less than 6 feet high and impoundments that can store less than 15 acre-feet are non-jurisdictional. Additionally, dams that are less than 25 feet high and impound up to 50 acre-feet are non-jurisdictional.

Regulated Jurisdictional Dams have filed dam inundation plans with the State of California, the appropriate federalFederal 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 The area of Nevada County where most of 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 zones in California.

Within the eastern portion of Nevada County, classified in a the 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.

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 Two dams are owned by PG&E in the Spaulding Lake complex (Spalding and Fordyce) have a downstream hazard rating of Extremely High . Collapse of the three two dams would cause significant flooding at the 2,700 foot level in the Town of Washington.

In the aftermath of the near failure of the Oroville Dam, in Butte County, Senate Bill 92 was signed into law on June 17, 2017. The intent of Senate Bill 92, was to codify requirements that would assist and guide local jurisdictions in their emergency planning for dam failure events and aid local, State, and Federal agencies to ensure effective dam incident emergency response procedures and planning. The bill requires owners of State regulated dams to submit their Inundation Maps for review and approval to the Department of Water Resources. Inundation Maps are now required to be publicly available. After the the approval of the Inundation Map, the dam owner is required to prepare an Emergency Action Plan, with the exception of low-hazard dams. Prior to Senate Bill 92, the State did not have the power to compel dam owners to prepare Emergency Action Plans. The Emergency Action Plans are also required to be updated no less than every 10 years or when significant changes occur at the dam or downstream.

The Emergency Action Plan is a written document that identifies potential emergency conditions at a dam and specifies preplanned actions to help minimize property damage and loss of life should

those conditions occur. The plan contains procedures and information that instruct dam owners to issue early warning and notification messages to downstream emergency management authorities. The plan must also contain the approved inundation map(s) identifying critical areas for evacuation-related actions.

Downstream hazard classifications are based solely on potential downstream impacts to life and property should the dam fail when operating with a full reservoir. The definitions for downstream hazard classifications are based on the Federal Emergency Management Agency's *Federal Guidelines for Inundation Mapping of Flood Risks Associate with Dam Incidents and Failures (FEMA P-946, July 2013).* Federal Emergency Management Agency categorizes the downstream hazard potential into three categories in increasing severity: Low, Significant, and High. Division of Safety of Dams adds a fourth category of "Extremely High" to identify dams that may impact highly populated areas or critical infrastructure, or have short evacuation warning times. Additional information on dams in Nevada County, and their hazard profiles and vulnerability assessments can be found in Nevada County's Local Hazards Mitigation Plan in Sections 4.2.8 and 4.3.5.

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~~County with an airport operated for the benefit of the general public establish an ~~airport~~ Airport land ~~Land use~~ Use ~~commission~~ 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~~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~~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 and Truckee Tahoe Airport Land Use Compatibility Plans

Through formal and informal consultation with the Nevada County Community Development Agency and the Town of Truckee, thee ***Nevada County** and the Truckee Tahoe Airport Land Use Compatibility Plans (NCALUCP and TTALUCP)* ~~was~~have been adopted and are maintained by the Nevada County Airport Land Use Commission (NCALUC) and the ~~ALUC~~ Truckee Tahoe Land Use Commission (TTALUC) ~~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 these is land use policy documents. The NCALUCP and TTALUCP identifyies 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, the Town of Truckee and Nevada County are affected by the NCALUCP.

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 and Mining Hazards

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~~State law and is used as a resource document in conjunction with the Nevada County Emergency Operations Plan, and other local and ~~state~~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, and 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

Inter~~state~~State 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. Inter~~state~~State 80 weaves in and out of the County from the State Route 20 interchange to the Nevada ~~state~~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 Inter~~state~~State, and snow and ice make this corridor especially dangerous during the winter months. In addition to the character of the inter~~state~~State, 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~~State Department of Toxic Substances Control (DTSC) in Nevada County, the most common contaminates 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~~Federal and ~~state~~State agencies, including the

US Environmental Protection Agency, the Department of Toxic Substance Control, and the Regional Water Quality Control Board.

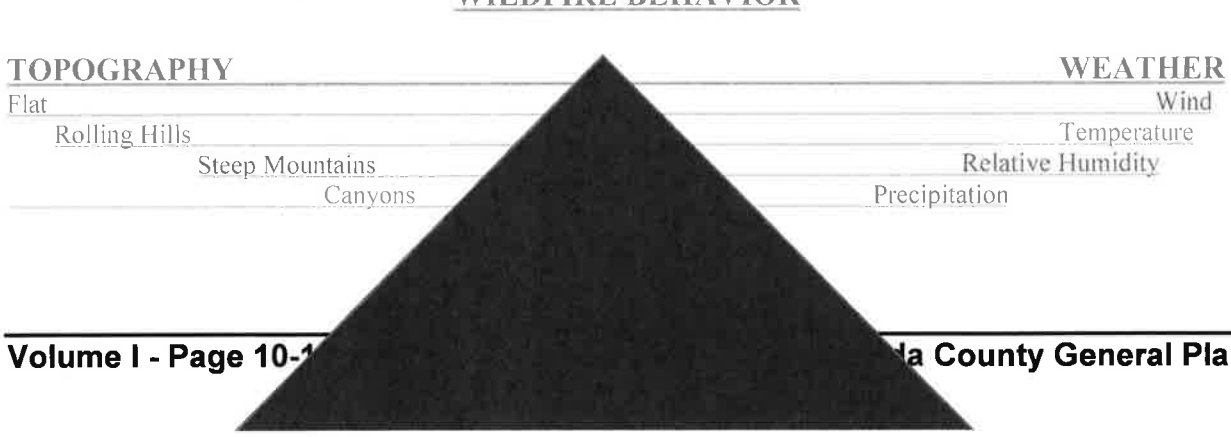
Given the extensive mining history in Nevada County, subsidence due to past mining operations is a concern when identifying appropriate land use and associated development. Past mining activities have created surface subsidence and the potential for subsidence in other areas. Hydraulic mining has significantly altered landscapes by relocating large volumes of sediment that has been carried downstream and redeposited. The hydraulic mine pits may continue to release sediment into surface flows and impact water quality during large precipitation events. Tailing piles and tailings ponds are also mining remnant surface features that can pose risks due to the potential presence of hazardous materials. According to the *Abandoned Mine Lands Preliminary Assessment Handbook* from the California Department of Toxic Substances Control, contaminated water, known as acid mine drainage, from a mine or mine waste pile can also pose risks to waterways, aquatic biota (plants and animals), and the surrounding environment. The pathways for potential human health threats from exposure of contaminants from abandoned mines may be from direct contact or from indirect exposure, such as through the consumption of food items. In addition to the potential presence of hazardous materials, w~~W~~hen mines were abandoned airshafts were left exposed or covered with wooden boards that have since rotted. Access shaft entrances were often quickly covered up with logs and or boulders that are now gone or decayed and no longer serving the purpose of excluding entrance and protecting the public.

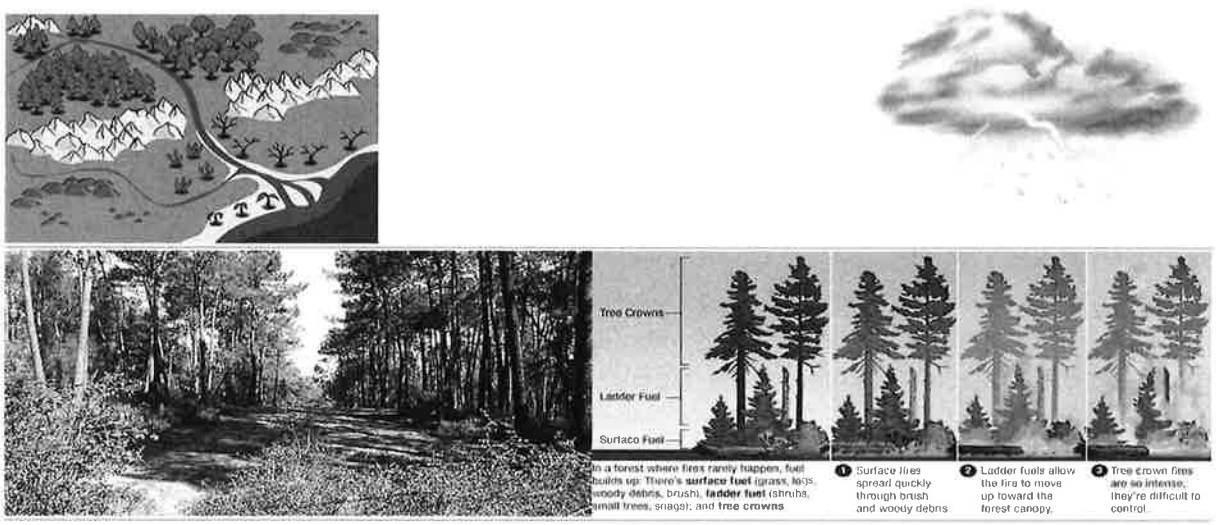
Fire Hazards and Protection

Wildland Fires

The number and severity of wildfires in California are projected to continue to face dramatic increases. Fifteen of the 20 most destructive wildfires in the State's history occurred between 2000 and 2019 and 10 of the most destructive fires have occurred since 2015.

Fire has been an integral part of the California landscape for thousands of years. The Mediterranean climate (cold and wet winters/spring and warm and dry summers/fall) supports very productive natural plant communities, and with the rugged terrain contribute to the one of the most extremely fire-prone and consequently fire-adapted landscapes in the world. The extreme fire behavior observed over the last twenty-years is a product of these three elements and the exponential influences of climate change. Add to this formula the fire management constraints due to the increasing population trends within and adjacent to forests and other highly flammable vegetated landscapes, which correlates to increased human ignition sources, in total these conditions have created circumstances most conducive to large scale, extremely impactful wildfires. Figure XX diagram highlights the elements that influence wildfire behavior.





FUEL
Fine or Heavy
Arrangement and Continuity
Fuel Moisture

Figure 10.3: Wildfire Behavior Diagram

Fire Behavior is "the manner in which fuel ignites, flame develops, and fire spreads and exhibits other related phenomena as determined by the interaction of **fuel**, **weather** and **topography**." Climatic factors have increased the odds that these elements come together more often and produce extreme fire behavior.

~~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~~ Wildland urban Urban ~~interface~~ Interface, have the potential to 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 and adjacent to the ~~wildland~~ Wildland Urban Interface areas and limited forestland management resources have created and will continue to perpetuate an environment of dense fuel reserves with ~~seasonal~~ wildland fire risk to the County's residents and their improvements. ~~Our~~ The 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~~ The extreme fire behavior ~~we are witnessing~~ experienced across California is a the result of the long-term interruption of the natural fire cycle and the consequences

of Climate Change. 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.

Facilitating the return of the natural fire cycle is not an option across many portions of Nevada County because of the fuel loads that exist today and the dispersed development pattern in the Wildland Urban Interface that continues to expand into areas previously not developed. 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 (including prescribed/controlled burns), the reduce reduction of fuels to those the pre-settlement "natural" levels in targeted areas in and around our communities will reduce the risks associated with wildfires.

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. Where there is human access to wildland areas, such as the Sierra Nevada and foothills areas, the risk of fire increases due to the greater chance for human carelessness and human caused ignitions.

GenerallyHistorically, the fire season extendeds from early late spring Spring to late early fallFall in the Sierra. Fire conditions arise from a combination of hot weather, an accumulation of vegetation, and low moisture content in the air and the vegetation. These conditions, when combined with high winds and years of drought, increase the potential for wildfire to occur. Climatic changes have given rise to warmer average temperatures beginning earlier in the Spring and continuing through the Fall which is resulting in a longer fire season. The wildfire risk is predominantly associated with Wildland Urban Interface areas. WUI Wildland Urban Interface is a general term that applies to development interspersed or adjacent to landscapes that support wildland fire. Wildland Urban InterfaceWUI areas have been a major focus of California Department of Forestry and Fire Protection's (CAL Cal FIREFire) 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 and landslides during the rainy season.

Since the passing of the Bates Bill (Senate Bill 337) in 1992, Cal Fire has worked with local governments to identify high hazard severity zones within local and State responsibility areas. The Hazard Severity Zones map identifies the level of fire hazard geographically based on the physical conditions and the likelihood that an area will burn over a 30 to 50-year period. The Map is used to direct policy as it pertains to how buildings are constructed and property is protected (e.g.;

defensible space, availability of water, building codes, driveway and road standards) to reduce risks (the potential damage a fire can do) associated with wildland fires. A map with fire hazard severity zones within the State Responsibility Areas can be found on the Nevada County GIS site at: https://gis.nevcounty.net/MyNeighborhood/. For a map showing the fire hazard severity zones across the County in State, Local and Federal Responsibility Areas to provide a complete picture of the level of fire hazard severity that exists across all jurisdictions in Nevada County, please refer to the Nevada County Local Hazard Mitigation Plan, Section 4.3.15.

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 Factors contributing to the wildfire problem hazard risks and vulnerabilities in Nevada County include:

Hazards:

- Overstocked forests, severely overgrown vegetation, lack of vegetation management by some absentee property owners, and lack of defensible space around structures;
- Excessive vegetation along roadsides (both publicly owned and private) and hanging over roads that can impede, ~~fire engine~~emergency access, and emergency evacuation ~~routes~~;
- Conditions such as drought and overstocked forests stress and weaken trees making them susceptible to ~~contribute to increased~~ beetle kill ~~infestations that kill trees in~~ small to very large swaths of land across the landscape; ~~in weakened and stressed trees~~;
- Topography; steep canyons accommodating wind corridors; and
- Nature and frequency of lightning ignitions.

Vulnerabilities:

- 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;
- Locked gates across private roads that serve more than one property impairing or eliminating a second means of emergency ingress/egress that may or may not have previously been available;
- Inadequate or missing street signs on private roads and absent or poorly placed house address signs;
- ~~Nature and frequency of lightning ignitions; and~~Inadequate water storage and fire-flow infrastructure in some portions of the County;
- ~~Increasing population density leading to more ignitions~~. Increasing residential development in the Wildland Urban Interface and older legacy residential development that does not meet today's development and fire codes; and
- Mobility limitations of certain populations such as seniors, non-drivers and one-car households.

~~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.~~

In an effort to prevent fires, the electrical services provider for western Nevada County—Pacific Gas and Electric Company (PG&E)—initiated public safety power shutoff (PSPS) events in 2019, which may continue in subsequent years until fire risks associated with power lines are decreased. PSPS events involve PG&E turning off electrical service during times when the weather is predicted to have a heightened fire risk from gusty winds and dry conditions. Dependent on the fire risks, the power outage events may occur in specific areas or for all PG&E customers across the County. The PSPS events that occurred in Nevada County for 2019 impacted a majority of the western portion of the County, including Nevada City and the City of Grass Valley. The widespread PSPS events in the County brings additional risks to the residents in the County, to include inadequate access to medical devices and services, food preservation and safety, proper

storage of medication, uncontrolled temperatures and exposure to excessive heat or cold, inadequate ventilation, lack of water and proper sanitation, disrupted communications, inability to use electronic gates or garage doors, and closed businesses and services. Throughout the PSPS events, emergency services in Nevada County remain functional with back-up power supplies, but many businesses and agencies are not operational. The PSPS events pose health and safety risks to all impacted businesses and residents to Nevada County, with an elevated risk to more vulnerable communities with less resources available during and after power outages.

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 at 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 3,0002,360 miles of public and private roads, of which nearly 6075% are private roads, which equates to approximately 1,800 miles of roadway. The quality and conditions of these roads are variable. Some Most private roads fail do not to meet the minimum fire safety standards established in the Nevada County Land Use and Development Code because they predate the current code.

More detailed information on circulation is provided in the Nevada County 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 The County's County maintains approximately 1,200560 miles of public roads are treated for fire fuel, and then onlyincluding vegetation management to reduce fuels 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 50 miles or approximately 69% of the County road system on an annual basis. This figure equates to rotational roadside treatment of approximately 17 11 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, the maintenance of the facilities and assurance the tanks are maintained as full.

Critical Facilities and Populations at Risk

The Local Hazard Mitigation Plan included an inventory of critical facilities at risk. That is, the inventory accounted for all critical facilities and the Fire Hazard Severity Zones across all jurisdictions. The Inventory identified a total 282 critical facilities in the Very High Fire Hazard Severity Zone, 109 facilities in the High Fire Hazard Severity Zone, and 37 facilities in the Moderate Fire Hazard Severity Zone. The following lists types of facilities that provide essential services and/or house at-risk populations that were included in the inventory (the entire list and mapped locations can be found in the Nevada County Local Hazard Mitigation Plan, Section 4.3):

- Airports
- Bridges
- Churches
- Fire Stations
- Government Buildings
- Hospitals
- Schools
- Shelters

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~~ Some fire districts are staffed with volunteers. ~~CAL FIRE~~Cal Fire provides wildland fire protection services ~~on private, non~~ within those areas mapped State Responsibility Areas on ~~non-federal~~Federal lands for the

purpose of life, property and resource protection. USFS and BLM provide wildland fire protection services on ~~federal~~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~~

Master Mutual Aid and California Mutual Aid agreements between the fire protection agencies serving Nevada County enable cooperative fire protection ~~services~~and the dispatch of appropriate level emergency response from the cooperating agencies, providing the most effectual fire protection regardless of the responsibility area. The Grass Valley Emergency Command Center, located at the Nevada County Airport in Grass Valley, is an interagency-agency cooperative facility between the ~~USFS~~ United States Forest Service (Tahoe National Forest) and ~~CAL FIRE~~Cal Fire, (Nevada-Yuba-Placer Unit). Cal Fire dispatch personnel provide ~~provides emergency~~emergency dispatching services through cooperative agreements with all the fire districts and cities within Nevada County, a dozen County Offices of Emergency Services in the Sierra Nevada and private contractors delivering air and ground medical services.

Nevada County is home to an additional distinct emergency resource located at the Nevada County Airport in Grass Valley. The Interagency Wildfire Air Attack Base. One of only 13 wildfire air attack bases in California, our local Wildfire Air Attack Base is one of three Interagency Wildfire Air Attack Bases in the State (Redding and Porterville are the other two). The air attack base is operated and staffed by Cal Fire (Nevada-Yuba- Placer Unit) Air Attack and the U.S. Forest Service (Tahoe National Forest) Air Attack. Cal Fire maintains two planes and the Forest Service maintains one plane. Two retardant air tankers are also based during the fire season at the air attack base. The strategic location of the Grass Valley air base assists Cal Fire in achieving its goal of 20-minute response times anywhere in California.

The White Cloud Helitack base and the Washington Ridge Conservation Camp are two more wildfire-fighting resources established in Nevada County. The Helitack base has a dedicated crew and the helicopter has water drop capabilities. Washington Ridge Conservation Camp maintains 5 fire-fighting hand crews with up to 18 individuals in each crew. The crews are a year round resource providing fuel reduction assistance within Nevada County communities when they are not fighting wildfires.

~~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~~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 Fire Safe Council~~FSC~~ is is: ~~"To~~ to work to reduce the risk of life and property loss from wildfire. The organization actively seeks public and private funding to provide a wide range of landowner assistance programs,

services and community fuels reduction projects in order to reduce the fire danger for all Nevada County residents. The Fire Safe Council utilizes national and local public education programs to increase public awareness of the high potential for catastrophic wildfire in our communities and adjacent forestland. The Fire Safe Council specifically provides fire wise education and programs to enhance emergency preparedness for catastrophic wildfire; ~~to all citizens in Nevada County in order to reduce the loss of life, property and natural resources and~~ to promote, develop and retain formal Firewise Communitiesies; to network with other Fire Safe Councils, Firewise Communities, government agencies and foundations for the benefit of citizens of Nevada County."

The Firewise Communities/USA® program is an ~~unique~~ opportunity available to fire-prone neighborhoods and communities in Nevada County. ~~Its~~ The goal ~~is~~ of Firewise Community organizations is to encourage and acknowledge action that minimizes home loss to wildfire. ~~It~~ Neighborhood and community chapters teach~~es~~their residents how ~~you~~ to prepare for a wildfire before it occurs. The program ~~adapts~~ is scalable ~~will~~ to ~~small~~ communities large and small, developments and ~~residential~~neighborhoods ~~associations~~ of all types. The Fire Safe Council~~FSC~~ of Nevada County has assisted a number of communities in Nevada County to become designated Firewise Community chapters..

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 and immediately adjacent to 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 a certain distance of the structures footprint.~~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 and high or very high Fire Hazard Severity Zones.

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~~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 Fire Safe CouncilFSC 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 Community Wildfire Protection PlanCWPP coordinates with the Local Hazard Mitigation Plan on wildfire issues as required by the DMA. The Community Wildfire Protection Plan provides educational opportunities for the public to 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 Local Hazards Mitigation Plan in Sections 4.2.18 and 4.3.15 provide information pertaining to the specific hazards and vulnerabilities in Nevada County wildfire poses. Included in the plan is wildfire history in Nevada County, values at risk, critical facilities in high and very high fire hazard severity zones and maps that geographically reflect the hazards and risks.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 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 (Blizards), Freezing, Heavy Rain

Severe weather across the County routinely leads to regionalis generally defined as any destructive weather event and usually occurs in Nevada County as localized storms that bring 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. More recently extreme heat has been identified as form of severe weather that needs to be addressed. Temperature extremes are likely to continue to occur annually in Nevada County. Though less likely to occur in the Eastern portion of the County at higher elevations, temperatures at or above 90 F are common most summer days in the western portion of the County.

The California Climate Adaptation Strategy, citing a California Energy commission study, States that "over the past 15 years, heat waves have claimed more lives in California than all other

declared disaster events combined." This study shows that California is getting warmer, leading to an increased frequency, magnitude, and duration of heat waves.

Storms in Nevada County are generally characterized by heavy rain and often strong winds. Heavy storms can cause both widespread flooding as well as extensive localized drainage issues. Lack of adequate drainage systems has become an increasingly important issue. In addition to the flooding that often occurs during these storms, strong winds when combined with saturated soil conditions, can down large trees, cause landslides and other slope failures. Some storms that cross Nevada County's diverse landscapes are accompanied by thunder and lightning. Lightning is a concern when it is cloud-to-ground type which can kill or injure people and destroy structures. Lightning is a particular concern during fire season due to the number of fires that are started by lightning.

High winds often accompany severe storms and thunderstorms and can cause significant property and crop damage, threaten public safety and have adverse economic impacts from business closures and power loss. Nevada County is subject to significant, non-tornadic, winds. High winds are defined as sustained wind speeds of 40 mph or greater lasting for 1 hour or longer, or winds of 58 mph or greater for any duration. Winds also exacerbate fire conditions by drying out the ground cover, propelling embers at great distances ahead of the fire and increasing the ferocity of an existing fire. (For more information, historical data and maps please refer to the Local Hazard Mitigation Plan sections 4.2.2, 4.2.3, 4.2.4, 4.3.12, and 4.3.13.)

~~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 lightening~~
- ~~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.

A drought is an event of prolonged shortages in the water supply, whether atmospheric (below-average precipitation), surface water or ground water. A drought can last for months or years and it can have a substantial impact on the ecosystem and agriculture of the affected region and harm to the local economy. In the case of environmental effects drought can cause lower surface and subterranean water-levels, lower flow-levels, increase pollution of surface water, the drying out of wetlands, more and larger fires, loss of biodiversity, it can worsen the health of trees and the appearance of pests and dendroid diseases. Economic losses include lower agricultural, forests, game and fishing output, higher food-production costs, lower energy-production levels in hydro

plants, problems with water supply for the energy sector, disruption of water supplies for residential and agricultural use. Social costs include the negative effect on the health of people directly exposed to this phenomenon (heat waves), possible limitation of water supplies, increased pollution levels, high food-costs, and stress caused by failed harvests.

Climate Change Resiliency and Mitigation

An important factor affecting public safety and disaster management functions is climate change. The impacts of climate change pose an immediate and growing threat to California's economy, environmental and public health. From the north coast of California through the Sierra Nevada to the Mojave Desert, all of California will continue to experience effects of climate change in different ways, including increased likelihood of drought, flooding, wildfires, heat waves, severe weather and sea level rise. Climate change effects from drought can cause changes in rainfall, which may also impact ground water supply. When rainfall is less than normal for several weeks or more, the flow of surface water declines and water levels in lakes and reservoirs fall, and the depth to water in wells increases. Drought and severe weather events caused by climate change can also impact food production from crops, which may lead to food security issues.

With the passing of Senate Bill 379, local jurisdictions are required to review and update as necessary their Safety Element to address climate adaptation and resiliency strategies applicable to that city or County. Senate Bill 379, requires the update to include a set of goals, policies and objectives based on a vulnerability assessment, identifying the risks that climate change poses to the local jurisdiction and the geographic areas at risk from climate change impacts.

Climate change is the change in measures of weather patterns over long periods, from decades to millions of years. More specifically, it may be a change in average weather conditions such as temperature, rainfall, snow, snowline elevation, ocean and atmospheric circulation or in the distribution of the weather around the average. While the Earth's climate has cycled over its 4.5 billion year age, these natural cycles have taken place gradually over millennia, and the Holocene, the most recent epoch in which human civilization developed, has been characterized by a highly stable climate, until recently. Human-induced climate change has been rapidly warming the Earth at rates unprecedented in the last 1,000 years.

Since industrialization began in the 19th century, the burning of fossil fuels (coal, oil and natural gas) at escalating quantities has released vast amounts of carbon dioxide and other greenhouse gases responsible for trapping heat in the atmosphere, increasing the average temperature of the Earth. Secondary impacts include changes to precipitation patterns, global water cycles, melting glaciers, melting ice caps and rising sea levels. Climate change will increase the severity of existing natural hazards such as wildfire, flooding, and extreme weather conditions affecting people and landscapes.

To provide a clearer picture of the effects of climate change on the diverse regional landscapes, California's Adaptation Planning Guide has divided California into 11 different regions based on political boundaries, projected climate impacts, existing environmental setting, socioeconomic factors and regional designations. Nevada County falls within the North Sierra Region characterized as a sparsely settled mountainous region where the region's economy is primarily tourism-based. The region is rich in natural resources, biodiversity, and is the source for the

majority of water used by the rest of the State. In the North Sierra Region and Nevada County Planning Area average temperatures for January are projected to increase by 2.5°F to 4°F by 2050 and July temperatures are projected to increase by 4°F to 5°F by 2050. Average precipitation declines are projected for the region and will vary north to south from 3 to 6 inches 2050. By 2050, the annual number of heatwaves per year is expected to increase by two. Snowpack levels are projected to decline dramatically and wildfires are projected to increase up to 10.5 times throughout the region with the highest risks expected in the northern and southern parts of the region. Recognizing the current reality that climate change may lead to an increase in the frequency and severity of existing natural hazards, which may also lead to an increase in the frequency of events that may pose risks and call for evacuations, could be problematic as a result of an increasing population of people moving to higher elevations, such as Nevada County. Over the long-term, reducing greenhouse gases can help make these changes less severe, but the changes cannot be avoided entirely.

The following is a list of how climate change and its impacts may exacerbate natural hazards in Nevada County in the future:

- Frequency, intensity, and duration of extreme heat events and heat waves, which are likely to increase the risk of mortality and morbidity due to heat-related illness and exacerbation of existing chronic health conditions. Those most at risk and vulnerable are elderly, individuals with chronic health issues such as heart and lung disease, diabetes, and mental illnesses, infants, the socially or economically disadvantaged, and those who work outdoors.
- Higher temperatures will melt the Sierra snowpack and drive the snowline higher, resulting in less snowpack water storage for water supply later in the season.
- Intense rainfall events, periodically ones with larger than historical runoff, will continue to affect Nevada County with more frequent and /or more extensive flooding. Flooding projections for 100 and 500-year events reflect higher frequencies.
- Storms and snowmelt may coincide and produce higher winter and/or spring runoff initiating downstream flooding.
- Warmer temperatures, reduced snowpack, and earlier snowmelt can be expected to increase wildfire and wildfire intensity potential through increased plant moisture stress (grasses drying sooner, tree and shrub water content decreased), increased insect populations; both of which affect forest health and reduce forest resilience to wildfires. An increase in wildfire intensity and extent will increase public safety risks, property damage, fire suppression and emergency response costs to government, air quality impacts from smoke, watershed and water quality impacts, vegetation conversions and habitat fragmentation, and the ability to hold ground water in the upper watersheds.
- With the increase in wildfire risks that leave slopes bare of vegetation and severe weather events in the form of heavy rain, landslides and or debris/mudflows are also a potential exasperated safety hazard.
- Warmer temperatures have the potential for increasing both the species and quantities of insect pests that can significantly impact agricultural operations and production. For example, several species of pine bark beetles have gone from one hatch per year to three or four hatches per year due to milder temperatures and shorter winter-snow season.

- Long periods of drought can adversely impact the environment and agriculture through lowered water tables and reduced water supplies affecting crop yields and forest resources. The availability, access and stability of food resources and production could be negatively affected, impacting Nevada County agricultural operations during prolonged drought periods.

Nevada County's Local Hazard Mitigation Plan includes a hazard identification assessment that lists the County's potential hazards, along with each hazards' geographic extent of influence, probability of future occurrences, magnitude of severity, significance (minimal potential to widespread potential impact), and the potential influence climate change may have on the specific hazard. Based on the assessment results, mitigation strategies have been developed for reducing the County's risks and vulnerabilities to these hazards. (See the Local Hazard Mitigation Plan, Sections 4.1 and Chapter 5).

In addition to the mitigation strategies identified in the Local Hazard Mitigation Plan to reduce climate change impacts, the County has adopted an Energy Action Plan (EAP) that provides an analysis of the energy use in the unincorporated area of the County, and a roadmap for accelerating energy efficiency, water efficiency, and renewable energy efforts that are already underway in Nevada County. Community members and the County have opportunities to save energy by addressing inefficiencies of current energy-consuming systems, operations, and behaviors. The EAP was developed to provide a broad view of energy use in the County, to set energy and water-energy saving goals, to recommend actions that result in short and long-term energy savings, and to educate the community on existing resources designed to save utility customers energy. Efforts to implement the EAP are in place by working groups.

Environmental Justice and Vulnerable Populations

In 2016, Senate Bill 1000 was signed into law requiring cities and counties that have disadvantaged communities to incorporate environmental justice policies into their General Plans, either in a separate environmental justice element or by integrating related goals, policies, and objectives throughout other elements of the General Plan. The California Department of Environmental Protection defines Environmental Justice in the following text: "*The principles of environmental justice call for fairness, regardless of race, color, national origin or income, in the development of laws and regulations that affect every community's natural surroundings, and the places people live, work, play and learn*".

The concept of environmental justice encompasses different aspects of land use, safety, housing, conservation and recreation planning. Most often environmental justice goals and policies addresses inequitable exposure to pollutant and the siting of locally unwanted land uses. More broadly, environmental justice addresses land-use patterns such as the location of industrial and commercial land uses that have the potential to adversely impact vulnerable populations and communities. Environmental justice also addresses the lack of certain land uses, amenities and social and physical infrastructure to serve vulnerable populations and communities. These

populations tend to be affected disproportionately, be it the ability to keep their homes cool during an extreme heat event or the ability to recover after a wildfire or flood event that damages or destroys their home. Vulnerable populations may also face additional challenges of not having resources available to assist with hazardous conditions, such as being able to evacuate, or to adapt to public safety power shutoff (PSPS) events by finding alternative practices or power sources.

The term "vulnerable population and community" includes disadvantaged communities based on geographic, socioeconomic, public health and environmental hazards criteria. It is further defined to include, but is not limited to:

- Areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation; or
- Areas with concentrations of people that are of low-income, high unemployment, low levels of home ownership, high rent burden, sensitive populations, or low levels of educational attainment; or
- Populations that are vulnerable in their ability to prepare for, react to, or recover from emergency situations such as those with communication limitations or barriers (lack of phone and/or wi-fi access or language), and individuals, neighborhoods, or institutions, with limited or no mobility.

As Stated in the introduction of this chapter, the purpose of the Safety Element is to reduce short and long-term loss of life, injuries, and damage to property resulting from natural and human-caused public safety hazards including flooding, geologic and seismic hazards, fire hazards, severe weather and the additional consequences of climate change. The Safety Element identifies areas where private and public decisions on land use, appropriate levels and locations of public services and the dissemination of educational materials for both preparedness and response are addressed. In addressing the different safety hazard potentials in Nevada County it is imperative to address responses to the safety needs of vulnerable populations and communities.

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 and Mining Hazards (HM)
- Public Safety Services and Facilities (SF)
- Fire Hazards and Protection (FP)
- Severe Weather Hazards (WH)
- Climate Change Resiliency and Mitigation (CC)

- Environmental Justice (EJ)

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~~Federal and ~~state~~State disaster assistance by planning for the reduction of the effects of natural hazards and training for disaster management.(also see: Local Hazard Mitigation Plan 5.4 Mitigation and Action Plan)

Policy EP-10.1.2 The Local Hazard Mitigation Plan ~~(LHMP)~~, adopted by the County ~~on July 17, 2012,~~ and periodically reviewed and updated 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 Local Hazard Mitigation Plan~~LHMP~~, which is incorporated into this Safety Element by reference and includes mitigation strategies for wildland fire hazards, shall be reviewed, along with the County's mutual aid agreements and existing wildland fire-related codes and ordinances to address the hazards of development in the wildland urban interface annually, or as ~~by the County Office of Emergency Services and updated as~~ necessary, to ensure compliance with the Federal Disaster Mitigation Act of 2000 and State Fire Code, 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~~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~~ Sustain the continued ~~effectiveness and~~efforts in building 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 InterstateStates, freeways, highways, and other principal arterial routes shall be considered primary evacuation routes on a countyCountywide 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 countyCountywide basis. These routes supplement the primary evacuation routes, and provide egress from local neighborhood and communities.

Policy EP-10.1.7 Prioritize the creation and maintenance of private road districts on existing private roads to insure emergency ingress and egress meets Nevada County and Cal Fire road and driveway standards and maintains these standards. Private road districts shall include the assurance that emergency ingress and egress will be maintained.

Policy EP-10.1.8 Support the development and maintenance of countyCountywide 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-10.1.109 Support the development of Community Emergency Preparedness and Evacuation Guides by local community members in collaboration with the County Office of Emergency Services.

Policy EP-10.1.10 Emergency preparedness planning shall include recovery plans to support the people, services and environments affected by the emergency event.

Policy EP-10.1.11 Mitigate development in areas of High and Very High Fire Hazard Severity Zones by incorporating into conditions of approval the most current data in order to assure appropriate fuel modification around the development and emergency ingress and egress for residents, visitors and emergency services.

Policy EP-10.1.12 Continue to work with Cal Fire, California Office of Emergency Services and Nevada County Office of Emergency Services to adopt by ordinance the most current Fire Hazard Severity Zones Map,

adopt the most appropriate fire-resistant building material standards and fuel modification/vegetation management requirements for each zone as a basis for project review in accordance with Federal, State and local standards.

Policy EP-10.1.13 Nevada County shall develop policies and provide updates, as appropriate, that address recovery and redevelopment after a large fire with the intent to address the reduction of future vulnerabilities to fire hazard risks through site preparation, redevelopment layout design, fire resistant landscape planning, and fire retarding building design and materials.

Geologic Hazards / Seismic Activity (GH)

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~~Federal, ~~state~~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~~Federal, ~~state~~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-10.3.3 Nevada County shall ~~Continue~~ continue to work with appropriate local, ~~state~~State and ~~federal~~Federal agencies, and, in particular, ~~(particularly FEMA)~~the Federal Emergency Management Agency and the National Flood Insurance Program in maintaining the most current flood hazard and flood plain information as a basis for project review in such areas in accordance with ~~federal~~Federal, ~~state~~State and local standards.

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

Policy FH-10.3.4 Owners of dams under State jurisdiction shall submit their Emergency Action Plans including the Inundation Map and subsequent updates to the Nevada County Office of Emergency Services at the time of the Local Hazard Mitigation Plan's next update and with each 5-year update thereafter.

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-10.4.3 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 including household hazardous waste.

Policy HM-10.5.2 ~~In s~~When siting new on and off-site hazardous waste management facilities, the County shall follow the ~~criteria and mitigation measures~~ procedures set forth in the ~~Nevada County Hazardous Waste Management Plan, and attendant Final Environmental Impact Report~~California State Health and Safety Code Division 20, Chapter 6.5, Article 8.7 Procedures for the Approval of New Facilities. ~~in~~

with the objective ~~order to~~ of minimizinge safety hazards associated with hazardous material and hazardous waste incidents.

Policy HM-10.5.3 The Nevada County Hazardous Materials Area Plan (Area Plan) shall provide direction and establish the policies, responsibilities and procedures required to protect the health and safety of Nevada County's citizens, the environment and public and private property from the effects of hazardous materials emergency incidents. As the principal guide for agencies of Nevada County, the Area Plan shall maintain consistency with the National Incident Management System (NIMS), the framework for incident management within which government and private entities at all levels can work together effectively. Operational as well as a reference document, the Area Plan may be used for pre-emergency as well as a resource for emergency response.

Policy HM-10.5.34 The County will encourage the cleanup of sites contaminated by mine wastes or other hazardous materials.

Policy HM-10.5.5 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~~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-10.6.32 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 lighting of building and parking areas ~~lighting~~; and

(2) ~~trimming and maintenance of on-site~~ vegetation management to provide adequate view of parking areas, building entrances, ~~and~~ other areas accessible to the public and maintenance of defensible space.

b. Standards to ensure adequate site and building access for fire and emergency medical access.

Policy SF-10.6.3 Land use patterns and development standards shall minimize hazards resulting from wildfire, flooding, earthquake, slope failure, avalanche, and other natural occurrences.

Policy SF 10.6.54 Encourage appropriate levels of consolidated services to provide for efficiency and cost containment.

Policy SF-10.6.65 The County will encourage joint service agreements and consolidation of police, fire, and emergency services between the County, cities, and service districts.

Program SF-10.6.1 The County shall inventory and identify public and private facilities that provide or can be improved to provide temporary safety zones in times of emergencies.

Program SF-10.6.2 The County emergency service organizations shall participate with other local, state and federal emergency services entities to inventory and identify public and private facilities that provide or can be improved to provide temporary safety zones in times of emergencies.

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~~Ensure County-maintained roads ~~not~~ meeting design standards for current or anticipated use as designated on the General Plan Land Use Map. Maintain and update Nevada County

road standards for both public and private roads to adequately address emergency ingress and egress.

~~*Policy FP-10.7.2* Ensure that proposed private roads are maintained.~~

Policy FP-10.7.32 As a condition of development, require long-term maintenance of private roads to meet current the standards of the original improvements, including roadside vegetation management, as part of a formal private road association or similar entity.

Policy FP-10.7.3 Projects requiring a traffic study shall include in such study an assessment of the current emergency evacuation capacity of the pubic and/or private roads that serve the proposed project and recommended mitigation that will increase the evacuation capacity, if so needed.

~~*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-10.7.54 Encourage fire protection agencies to determine appropriate levels of fire protection facilities and services for both *Community* and *Rural Regions*.

Policy FP-10.7.65 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.~~

Policy FP-10.7.6 Locate new critical facilities outside of High and Very High Fire Hazard Severity Zones, unless alternative is available or feasible. (Refer to Fire Hazard Severity Zone Map and Critical Facilities in Section 4.3.15 in the Local Hazard Mitigation Plan).

Policy FP-10.7.7 The County shall support community or County-wide water supply systems and the ongoing maintenance of water supply infrastructure for fire protection.

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-10.8.1 Nevada County shall apply and enforce State of California Public Resource Code 4290 and 4291 through County-adopted ordinances, which includes minimum fire safety standards related to defensible space that are applicable to State responsibility area lands and lands classified and designated as very high fire hazard severity zones as reflected on current and future maps defined in subdivision (i) of Section 51177 of the California State Government Code. Nevada County shall continue to adopt revisions to the California Fire and Building Codes and other standards which address fire safety as they are approved by inspection organizations and the State of California. Review, revise, and/or adopt existing or new local codes, ordinances, and Fire Safe Standards to reflect contemporary fire safe practices.

~~*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-10.8.62 Review wildfire safety policies, codes, and ordinances, and report the findings to the Board of Supervisors ~~at least every three years~~with OES review of the Local Hazard Mitigation Plan (see EP-10.1.2).

~~*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-10.8.83 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-10-8.4 New development and subdivisions shall include adequate emergency infrastructure that includes but is not limited to, emergency water facilities to assist and support wildfire suppression and adequate ingress and egress routes to facilitate emergency responders' access and the evacuation of inhabitants. Provisions shall be made on applicable projects to require the maintenance of emergency infrastructure and facilities.

Policy FP-10.8.95 Land use patterns and development standards shall minimize fire hazard and shall be reviewed and revised, as needed, consistent with the five year update of the Safety Element.

Policy FP-10-.8.6 Fire safe measures shall be commensurate with the response time for emergency services (e.g. longer distance to a fire department requires more stringent mitigation measures).

~~*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 7 ~~The~~ As part of the coordinated and centralized fire safe reviews, 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~~Each property outside of a developed water system shall maintain sufficient usable water storage to provide wildfire and structure protection on the property;

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 and fuel breaks where appropriate;

(2) Vegetation management adjacent to roads and driveways to provide safe travel ~~of~~ for residents, and firefighting, medical and police personnel; and
(3) Building setbacks.

Policy FP-10.8.~~12~~8 In those areas outside *Community Regions*, which are identified as having a high to very high fire hazard severity, 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.

Policy FP-10.8.9 The County shall consult the Fire Hazard Severity Zones map during the review of all projects so that standards and mitigation measures appropriate to each hazard classification can be applied. Land use densities and intensities shall be determined by mitigation measures that may include development clustering, fire breaks and fire resistant building design and materials.

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~~1 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~~2 Increase public education and outreach on wildfire safety issues through the Nevada County Office of Emergency Services and ~~by utilizing~~ the Fire Safe Council, and by collaborating with community and business associations.

Policy FP-10.9. 3 Support the Nevada County Office of Emergency Services and the Fire Safe Council's public education efforts to inform and create ~~Provide~~ a better understanding ~~to~~ with the public and ~~to~~ with the architectural and building industry about the benefits of reducing vulnerabilities to wildfire risks through site design, defensible space and building 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-10.9.74 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.~~

Policy FP-10.9.95 Create incentives to encourage voluntary compliance with fire safe regulations.

Policy FP-10.9.106 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. which may help to address homeowner fire insurance challenges.

Policy FP-10.9.7 The County shall work with other jurisdictions and agencies to prepare for public safety power shutoffs, and shall be supportive of viable plans to provide resources for the community and vulnerable populations during and after public safety power shutoff events.

~~*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 countyCountywide 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 countyCountywide 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-10.1110

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

Vegetation Type	Down Slope: 0—20%	Down Slope: 21—40%	Down Slope: 41%+
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.

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:

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:

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-10.10.1 The County shall encourage the use of prescribed burning as a management tool for hazardous fuels reduction, timber management, livestock forage production and enhancement of wildlife habitat consistent with seasonal State and local regulations.

Policy FP-10.10.2 Consistent with Senate Bill 1122 (2012) and Senate Bill 859 (2016), Nevada County shall facilitate public and or private entities' efforts to establish bio-mass facilities in the County with the goal of reducing forest fuel loads, reducing the wildfire hazard risk and creating electrical power.

Policy FP-10.11 10.3 The County shall collaborate with the Fire Safe Council in updating and maintaining the countyCountywide Community Wildfire Protection Plan according to Healthy Forest Restoration Act guidelinescooperate with Federal, State, community fire safety groups and other fire protection entities in fire hazard risk reduction projects in zones of high and very high fire hazard severity zones either prior to or as a component of project review..

Policy FP-10.10.4 The County shall support fuel modification across public and private forestlands to reduce the potential for catastrophic wildfires, with the highest priority directed toward reducing hazardous fuel levels in the WUI. The County shall, in coordination with other agencies, identify, create and maintain fuel breaks, such as the Ponderosa West Grass Valley Defense Zone.

Policy FP-10.10.5 The County shall be supportive of programs for affordable, residential green waste disposal opportunities to encourage vegetation management on private property.

GOAL FP-10.~~12~~11
As desirable and as funding becomes available, the County should consider Programs FP-10.12.1 through FP-10.12.29~~16~~, prioritized by the order in which they appear.

Program FP-10.~~12~~11.1 ~~Establish~~ Maintain the cooperative relationship between the Nevada County Community Development Agency and ~~the~~an ~~official~~ Nevada County Fire Marshal~~'s Office~~, and provide funding for the appropriate staffing of the County Fire Marshal ~~services's Office~~ to provide oversight and implement fire protection policies.

Program FP-10.~~12~~11.2 Support the Nevada County Office of Emergency Services and the Fire Safe Council as ~~a~~ significant contributors 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~~11.3 Coordinate with the Nevada County Office of Emergency Services and the Fire Safe Council in their efforts to update and maintain the ~~county~~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~~11.4 Provide a permanent funding mechanism for the Fire Safe Council's chipping program and services.

~~Program FP-10.1211.5 Conduct a study for funding a Countywide system of strategically located rural fire protection water storage tanks,~~

Program FP-10.~~12~~11.6 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~~11.~~14~~7 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~~11.~~15~~8 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, codes, and ordinances along with the Office of Emergency Services review and update of the Local Hazard Mitigation 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~~11.~~21~~9 Support the Fire Safe Council's and other public and private entities in their effort to create a biomass reutilization ~~center~~opportunities.

~~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.~~

~~Program FP-10.12.23~~ ~~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.~~

~~Program FP-10.12.24~~ ~~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.~~

Program FP-10.~~12~~11.~~25~~10 Conduct ~~seminars-~~on-going workshops for landowners on ~~proper stewardship~~defensible space, vegetation management and home-hardening techniques based upon ~~County fuels~~current science, management guidelines and ~~programs~~policies to reduce wildfire hazards.

~~Program FP-10.12.26 Provide educational workshops on environmental protection measures for property owners to minimize environmental impacts while implementing fuels treatment projects on their property.~~

Program FP-10.~~12~~11.~~27~~11 Increase the County roadside vegetation management program treatment rate from the current rate of ~~6~~9% to a minimum of 10% of County-maintained road miles, thus decreasing the rotational period from an estimated ~~17~~11-year return interval to a 10-year return interval.

Program FP-10.~~12~~11.~~28~~16 ~~Implement recommendations based on the countywide water storage study.~~

~~Program FP-10.12.29 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~~12
Minimize injury and property damage due to severe weather hazards (rain, snow, lightning, and high winds).

Policy WH-10.~~13~~12.1 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.

Policy WH-10.~~13~~12.2 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.

Policy WH-10.12.3~~Program WH-10.13.1~~ Continue to maintain qualification as a National Weather Service StormReady® County.

Climate Change Resiliency And Mitigation (CC)

GOAL CC-10.13
Build Climate-Resilient Communities and Protect Neighborhoods, Public Infrastructure and Natural Resources Through Mitigating Climate Change.

Policy CC-10.13.1 While the impacts of climate change on local communities are difficult to quantify, to the extent possible, Nevada County will prepare to address environmental hazards and vulnerabilities that climate change is currently influencing and will influence in the future.

Policy CC-10.13.2 Nevada County shall identify within the existing safety hazards and vulnerabilities discussed in the Safety Element and the Local Hazard Mitigation Plan which ones are likely to be exasperated by climate change and have the potential to negatively affect the people and the environment of Nevada County. During the periodic future updates of the Safety Element the hazards and vulnerabilities shall be reviewed, updated and new policies adopted to reflect the most current information available regarding climate change and strategies to reduce hazard risks compounded by climate change.

Policy CC-10.13.3 Nevada County shall identify, based on current and updated science, strategies to foster resiliency to climate change influences in both the built and undeveloped lands including mitigation measures to reduce climate change causes and adaptation plans to decrease the effects of climate change and to protect residents and businesses from increased risks of natural disasters such as flooding, drought, severe weather events and wildfire. The mitigation measures will be implemented as feasible.

Policy CC-10.13.4 Require new discretionary development to include an analysis of potential affects to climate change impacts and water resources in the project review process. Projects shall reduce or limit impacts as feasible.

Policy CC-10.13.5 The County shall work with State agencies on adaptation strategies to address climate change impacts.

Policy CC-10.13.6 The County adopted Energy Action Plan shall be implemented through the support and collaboration of working groups.

Program CC-10.13.1 The County shall research funding, financing and partnership opportunities that would offset costs for energy efficiency appliances and infrastructure.

Environmental Justice (EJ)

GOAL CC-10.14

Reduce the exposure to, increase preparedness for and reduce recovery times from natural and human-caused safety risks for all populations and communities in Nevada County.

Policy EJ-10.14.1 Ensure that public emergency operations' (including evacuation routes) educational materials are available via different platforms and in formats that are understandable by Nevada County residents including non-English readers.

Policy EJ-10.14.2 Ensure emergency preparedness planning efforts inventory and consider vulnerable communities and populations such as seniors, daycare facilities, health care facilities, latch key kids, and other populations where mobility is a constraint that creates additional vulnerability in emergency evacuation situations.

Policy EJ-10.14.3 Ensure Nevada County emergency facilities and services are located and/or can respond equitably to the emergency needs of vulnerable populations and communities (also see FP-10.9.7).

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~~