



# El Dorado County Draft Public Health, Safety, and Noise Element Background Report

November 2023

*Final Draft – Appendix B*



## Notice

Attached is the revised version of the El Dorado County (“County”) Draft Public Health, Safety, and Noise Element (Safety Element). This version incorporates edits and feedback from the California Department of Forestry and Fire Protection (“CAL FIRE”), California Geological Survey, County Chief Administrative Office, City of South Lake Tahoe, County Counsel, El Dorado County Transportation Commission, El Dorado Water Agency, County Office of Wildfire Protection and Resilience, County Planning and Building Department, County Public Health Department, the Safety Element Advisory Committee (SEAC), and stakeholder participants. We appreciate the time you each took to review and provide feedback on the Draft Safety Element.

As a reminder, only the natural hazards sections and the sections required to be updated by law (i.e. evacuation accessibility and climate adaptation and resiliency) were revised. This includes revisions to the existing fire safety, geologic and seismic hazards, and flood hazard sections. This also includes new natural hazards added to the Safety Element related to climate adaptation and resiliency covered in the drought and water supply, evacuation accessibility, agriculture and forestry disease and tree mortality, extreme heat, human-health hazards, high wind, severe weather, and climate adaptation and resiliency sections. Underline text refers to new and revised text additions that are part of this update process. ~~Strikeout~~ text refers to text deletions.

We welcome your feedback on the Draft Safety Element Update. If you prefer to review the Draft Safety Element using Microsoft Word, we ask that you each download and save the MS Word version to your computer, review and make comments or edits in track changes, save your file, and then email it back to Thea Graybill at [thea.graybill@edcgov.us](mailto:thea.graybill@edcgov.us). You can also review and provide digital comments using the attached PDF version.

As a friendly reminder, please provide the County comments by Friday, December 8th.

## Fire Hazards

Fire hazards include both urban fires and wildfires. El Dorado County experiences wildfire risk due to its climate, terrain, vegetation, and ignition sources, such as lightning strikes and human activities. The frequency, severity, and impacts of wildfire are also influenced by development patterns, accumulation of vegetation, high temperatures, wind patterns, precipitation variability, and pest infestations. It is difficult to project where and how wildfires will burn, but the County experiences major wildfires that threaten public health and safety and damage property. Generally, fire season in the County extends from early spring through late fall but can occur earlier in the spring and extend later into the fall. According to data compiled by the California Department of Forestry and Fire Protection (CAL FIRE) and the County, 93 major fires (over 500 acres) have occurred in the County between 1916 to 2022, which have burned 731,741 acres. Additional historical data on wildfires in the County can be found in the County's Local Hazard Mitigation Plan (LHMP). Wildfires pose a significant threat to the health and safety of the County residents and visitors, and it is a key concern for communities. It is a complex hazard risk linked to several components: terrain and climate, ignition sources that start the fires and the vegetative fuels that spread the fire, local fire history, and fire prevention and reduction measures and land use planning policies.

### FIRE TYPES

Three types of fires can impact the County: wildfires, wildland-urban interface (WUI) fires, and structural fires. Most wildfires and WUI fires are human-caused due to human carelessness associated with vehicle and equipment use and electrical accidents, with lightning being the main natural cause.

#### Wildfires

The County consists of large rural areas with varying terrain and steep topography that contain forested vegetation that is flammable, which is the primary source of vegetative fuels for wildfires in the County. Many of the grass, plants, and tree species regenerate following fires making wildfires a natural part of the forest ecology. Seasonal and extended drought conditions can also intensify the County's wildfire risk. Due to the lack of structures and roads, wildland fires may be managed in remote areas if the fire does not threaten public safety, property, structures, or critical infrastructure. Critical infrastructure, also referred to in the Safety Element as essential public facilities means a use or facility classified within one or more of the following categories: 1) essential services facilities, 2) at-risk populations facilities, and 3) hazardous materials and solid waste facilities.

- Essential services facilities include, without limitation, public safety, emergency response, emergency medical, designated emergency shelters, communications infrastructure, public utility plant facilities and equipment, and government operations facilities.
- At-risk population facilities include, without limitation, pre-schools, public and private primary and secondary schools, before and after school care centers with 12 or more students, daycare centers with 12 or more children, group homes, assisted living residential or congregate care facilities with 12 or more residents, and hospital and medical facilities.
- Hazardous materials and solid waste facilities include, without limitation, any facility that could, if adversely impacted, release hazardous materials or waste in sufficient amounts during a hazard event that would create harm to people, the environment and property.

The definition of critical infrastructure and essential public facilities aligns with the definitions noted in the County Climate Vulnerability Assessment (CVA) included in Appendix C.

#### Wildland-Urban Interface Fires

The WUI is the area where structures and infrastructure mix with areas of flammable wildland vegetation. Wildfire threat within the County ranges from moderate to very high, as shown in Figure HS - 1. WUI fires occur throughout El Dorado County where most of the lands are prone to high and very high wildfire threat. In the WUI, fire prevention and suppression efforts consist of multiple approaches focused on enforcing defensible space maintenance requirements around buildings and infrastructure,

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enforcing no-burn days when fire danger is high, hardening structures, promoting wildfire education, and enhancing emergency response.

Additionally, fire agencies throughout the County employ extensive public outreach strategies via social media and conventional channels to disseminate information about red flag conditions and precautionary measures to the public. Furthermore, as a standard protocol, there is an effort to increase staffing and allocate more resources during these heightened fire risk conditions. This proactive approach ensures a swift and coordinated response in safeguarding both lives and properties in the face of potential wildfire threats.

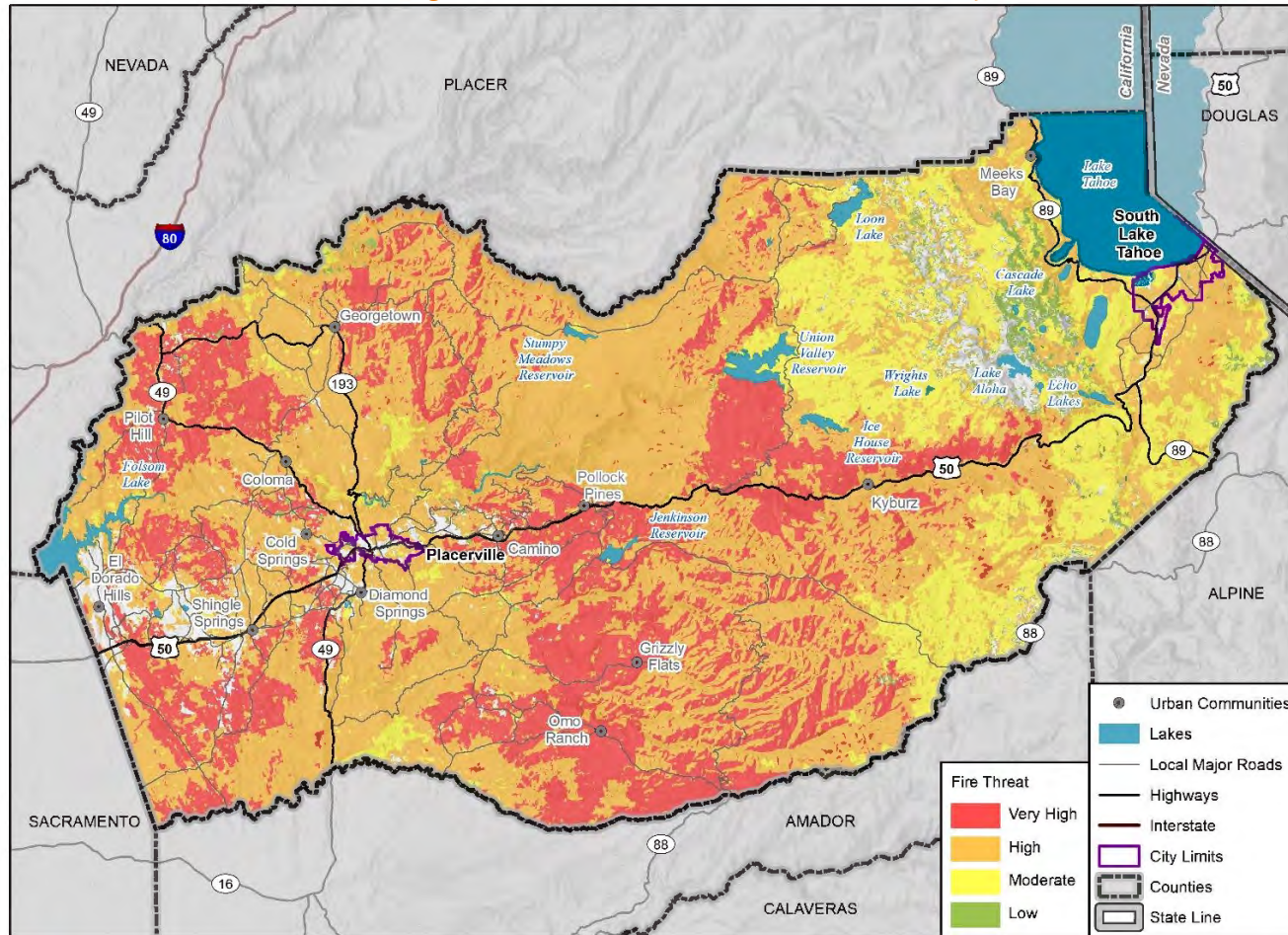
### **Structural Fires**

Structural fires occur within the built environment in both urban and rural areas and are due to a number of causes, including electrical or mechanical issues and homeowner accidents. These fires are more common within older buildings or structures that lack fire alarms or sprinkler systems.

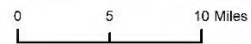
Compliance with the current California Fire Code minimizes structural fire risk from the wildland, or a vegetation fire. The California Structure Fire Code establishes regulations affecting or relating to buildings, structures, processes, premises, and a reasonable degree of life and property safeguards regarding the hazard of fire and explosions arising from the storage, handling, or use of structures or devices. The Fire Code also governs the materials, systems, and assemblies used for structural fire resistance to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings.

Additionally, compliance with standards that mandate ignition-resistant construction and the ability of a building to resist flames or burning embers, ensuring an adequate water supply for fire suppression, establishing minimum road widths for access, and providing appropriate signage are essential measures. Fire prevention education and awareness programs help residents and visitors understand how to prevent and respond during structural fire events. Defensible space compliance also helps keep structure fires limited to the building by not allowing fire to spread into the wildland.

Figure HS - 1 Wildfire Threat Areas in El Dorado County



Map compiled 4/202;  
Intended for planning purposes only.  
Data Source: El Dorado County, CALFIRE, FRAP



## WILDFIRE HISTORY

CAL FIRE and the County maintain records of the major wildfires in the County, defined as those over 500 acres. This information is updated annually by CAL FIRE and is used to develop fire prevention, reduction, and protection programs in the County. Table HS - 8 summarizes the total number of major fires and total acres burned in the County from 1916 to 2022. The County has a history of frequent and repetitive wildfires, with an evident increase in wildfire size in the last decade marked by the Kings, Caldor, and Mosquito fires. These wildfires underscore the need for policies and implementation programs to reduce the risk of future wildfires.

**Table HS - 8 Major Wildfires in El Dorado County 1916-2022**

YEAR	FIRE NAME	CAUSE	ACRES BURNED
2022	Mosquito	Miscellaneous	76,771
2021	Caldor	Unknown / Unidentified	221,786
2020	Fork	Unknown / Unidentified	1,668
2019	Caples	Debris	3,442
2017	Latrobe	Debris	1,268
2016	Trailhead	Miscellaneous	5,645
2014	King	Arson	97,685
2014	Sand	Vehicle	4,239
2013	Kyburz	Miscellaneous	571
2009	Mammoth	Miscellaneous	643
2007	Angora	Campfire	3,070
2006	Ralston	Miscellaneous	8,421
2004	Freds	Equipment Use	7,558
2002	Plum	Debris	1,762
2002	Hickok	Arson	776
2002	Gondola	Smoking	643
2002	Hunter	Debris	545
1996	Scott	Arson	8,828
1994	Kelsey	Arson	813
1992	Cleveland	Miscellaneous	22,519
1992	SMUD #1	Powerline	1,179
1992	Farnham	Equipment Use	801
1988	Bear	Debris	582
1986	Salmon	Unknown / Unidentified	762
1985	8 Mile	Miscellaneous	813
1981	Wrights	Miscellaneous	3,843
1981	Joerger Series	Equipment Use	1,676
1979	Chili Bar	Campfire	6,927
1976	Quarry	Unknown / Unidentified	20,870
1974	Devore Station	Unknown / Unidentified	743
1973	Pilliken	Arson	10,316
1973	Park Creek	Arson	715

1972	<u>Slug Gulch</u>	<u>Unknown / Unidentified</u>	<u>655</u>
1970	-	<u>Miscellaneous</u>	<u>1,455</u>
1968	<u>Fair Play</u>	<u>Unknown / Unidentified</u>	<u>916</u>
1964	<u>Roadside #51</u>	<u>Unknown / Unidentified</u>	<u>3,545</u>
1964	<u>Placer Roadside #51</u>	<u>Unknown / Unidentified</u>	<u>1,717</u>
1964	<u>Joerger</u>	<u>Unknown / Unidentified</u>	<u>1,514</u>
1964	<u>Indian Creek Fire</u>	<u>Unknown / Unidentified</u>	<u>725</u>
1962	<u>Buckeye</u>	<u>Unknown / Unidentified</u>	<u>870</u>
1961	<u>Kelsey Mill</u>	<u>Unknown / Unidentified</u>	<u>11,816</u>
1961	<u>Auburn</u>	<u>Unknown / Unidentified</u>	<u>672</u>
1960	<u>Volcano</u>	<u>Smoking</u>	<u>42,596</u>
1960	-	<u>Miscellaneous</u>	<u>11,213</u>
1960	<u>Volcano</u>	<u>Unknown / Unidentified</u>	<u>2,136</u>
1959	<u>Ice House (Usfs #8)</u>	<u>Unknown / Unidentified</u>	<u>19,099</u>
1959	<u>Camp 7</u>	<u>Unknown / Unidentified</u>	<u>10,226</u>
1958	-	<u>Unknown / Unidentified</u>	<u>1,170</u>
1957	<u>Snowline</u>	<u>Unknown / Unidentified</u>	<u>1,021</u>
1955	<u>B.O.B. Co-Op Escape</u>	<u>Unknown / Unidentified</u>	<u>814</u>
1955	<u>Brown Bar Canyon</u>	<u>Unknown / Unidentified</u>	<u>663</u>
1954	-	<u>Miscellaneous</u>	<u>14,710</u>
1954	<u>Luneman #2</u>	<u>Unknown / Unidentified</u>	<u>1,143</u>
1952	<u>Dressler</u>	<u>Unknown / Unidentified</u>	<u>1,555</u>
1952	<u>Long Escape</u>	<u>Unknown / Unidentified</u>	<u>564</u>
1951	<u>Dressler</u>	<u>Unknown / Unidentified</u>	<u>810</u>
1951	<u>Jameson</u>	<u>Unknown / Unidentified</u>	<u>536</u>
1950	<u>Steves Escape</u>	<u>Unknown / Unidentified</u>	<u>822</u>
1950	<u>Bear Mt. (Co.Rd #10)</u>	<u>Unknown / Unidentified</u>	<u>506</u>
1947	-	<u>Unknown / Unidentified</u>	<u>2,835</u>
1943	-	<u>Unknown / Unidentified</u>	<u>1,800</u>
1936	-	<u>Miscellaneous</u>	<u>777</u>
1933	-	<u>Miscellaneous</u>	<u>1,488</u>
1932	-	<u>Miscellaneous</u>	<u>7,481</u>
1931	-	<u>Unknown / Unidentified</u>	<u>3,297</u>
1931	<u>Rubicon</u>	<u>Unknown / Unidentified</u>	<u>1,378</u>
1929	-	<u>Lightning</u>	<u>806</u>
1928	-	<u>Miscellaneous</u>	<u>817</u>
1926	-	<u>Miscellaneous</u>	<u>734</u>
1926	-	<u>Miscellaneous</u>	<u>550</u>
1924	<u>Upper Desolation Val</u>	<u>Unknown / Unidentified</u>	<u>10,973</u>
1924	<u>Pi Pi-Indian Digging</u>	<u>Miscellaneous</u>	<u>8,948</u>
1924	-	<u>Unknown / Unidentified</u>	<u>701</u>
1924	<u>Badger Hill</u>	<u>Miscellaneous</u>	<u>638</u>
1923	-	<u>Miscellaneous</u>	<u>1,691</u>

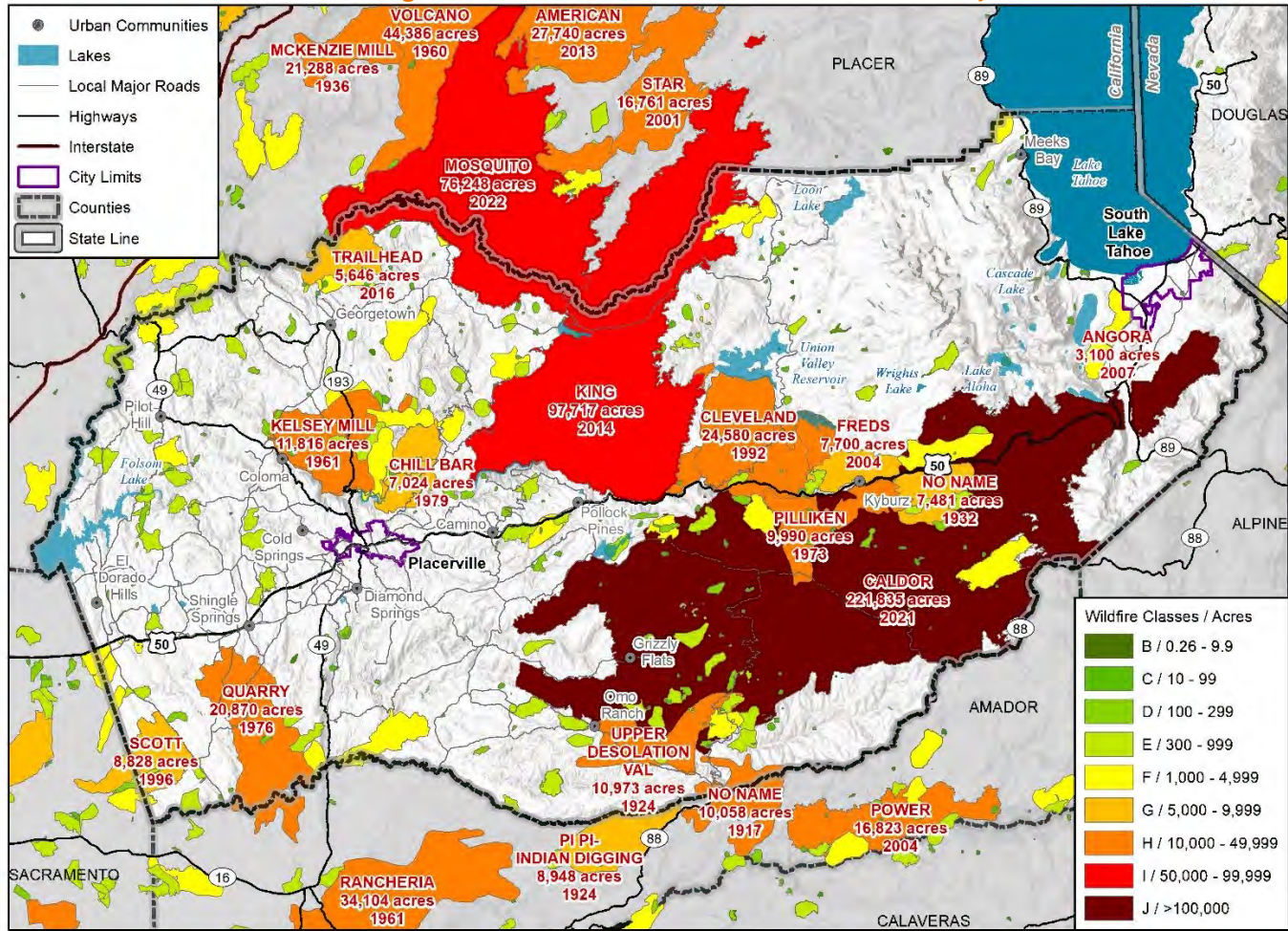
1923	-	Miscellaneous	1,106
1922	-	Miscellaneous	2,450
1920	Bryants Mill	Miscellaneous	1,665
1919	Sand Mt	Miscellaneous	1,874
1919	-	Miscellaneous	603
1919	-	Unknown / Unidentified	505
1918	-	Unknown / Unidentified	1,013
1917	-	Unknown / Unidentified	10,058
1917	Section 28	Miscellaneous	1,698
1917	Bottle Hill	Lightning	1,327
1917	-	Unknown / Unidentified	699
1917	-	Unknown / Unidentified	602
1916	-	Unknown / Unidentified	4,306
1916	-	Unknown / Unidentified	2,132
1916	-	Miscellaneous	1,860
1916	-	Miscellaneous	1,408
1916	-	Miscellaneous	1,397
1916	-	Unknown / Unidentified	773

Source: CAL FIRE 2023

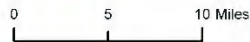
NOTE - CAL FIRE does not define Miscellaneous.



Figure HS - 2 Historical Fire Perimeters in El Dorado County



Map compiled 2/2023;  
 Intended for planning purposes only.  
 Data Source: El Dorado County, CALFIRE,  
 USDA FS, USDI BLM and FWS, NPS, NIFS



## **FIRE RESPONSIBILITY AREAS**

Local, state, and federal agencies have legally defined areas of responsibility. These responsibility areas are codified under state law into three categories: local responsibility areas (LRAs), state responsibility areas (SRAs), and federal responsibility areas (FRAs). LRAs are the areas within the incorporated cities (Placerville and South Lake Tahoe) and those lands which do not meet the State's wildland criteria as defined by the California Public Resources Code. These areas are protected by local agencies, including city fire departments, local fire protection districts (FPDs), and CAL FIRE when they are under contract to the local agencies. The County has 50,871 acres of LRA with most of these areas concentrated around Placerville and South Lake Tahoe.

SRAs are areas where CAL FIRE has the primary responsibility for wildfire protection under the California Public Resources Code. SRAs are generally unincorporated areas that are not federally owned, have a limited structural density, and are covered by wildland vegetation or rangeland. The SRA also includes lands owned by state agencies, like the State of California Department of Parks and Recreation and California Tahoe Conservancy. About half of the land in the County is within the SRA; there are 548,612 acres within the SRA in the County. Fire district boundaries also overlap the SRA and the local fire agencies have a concurrent responsibility for fire protection in these areas.

FRAs are areas that are managed by a federal agency, such as the U.S. Forest Service (USFS), Bureau of Reclamation, Bureau of Land Management, and the U.S. Fish and Wildlife Service. In El Dorado County, the Eldorado National Forest is the primary federal landowner. Approximately 545,182 acres of the land in El Dorado County is federally owned.

Wildfires in the County can span large rural areas that traverse different jurisdictional and organizational boundaries, which means fires are managed by a combination of federal, state, and local agencies. In California, wildland fire protection is the responsibility of these agencies and organizations through laws and cooperative agreements that establish the legal authority and responsibilities of each entity and outline how each agency must cooperate and coordinate fire suppression activities in the event of a wildfire. The California Master Mutual Aid Agreement and California Master Mutual Aid Agreement Addendum outlines the mutual aid agreement between CAL FIRE, El Dorado County, and Amador County to the south. Agencies may request resource and overhead assistance from other agencies during the initial period of any incident, although no funds will be exchanged between departments.

CAL FIRE is required to classify lands within the SRA into Fire Hazard Severity Zones (FHSZs). FHSZs are designated geographical areas in the SRAs of California, where the potential fire hazard is assessed and communicated using a science-based and field-tested model. These zones are developed by considering various factors that influence fire likelihood and behavior, such as fire history, existing and potential fuel (natural vegetation), predicted flame length, blowing embers, terrain, and typical fire weather for the area.

The FHSZ maps categorize the hazard into three levels: moderate, high, and very high. This classification helps residents, local authorities, and land management agencies to understand the varying degrees of fire hazard in their respective regions.

In 2007, CAL FIRE updated and adopted the FHSZ maps to reflect revised very high FHSZs (VHFHSZs) for the LRA. El Dorado participated in this process and is participating in the current FHSZ revision process. The adopted FHSZs are displayed in Figure HS - 3. FHSZ maps identify moderate, high, and VHFHSZs using fire science and risk modelling that assigns a hazard score based on fire history, existing and potential fuel vegetation, flame length, embers, terrain, and regional weather patterns, all of which are factors that influence fire likelihood and fire behavior.

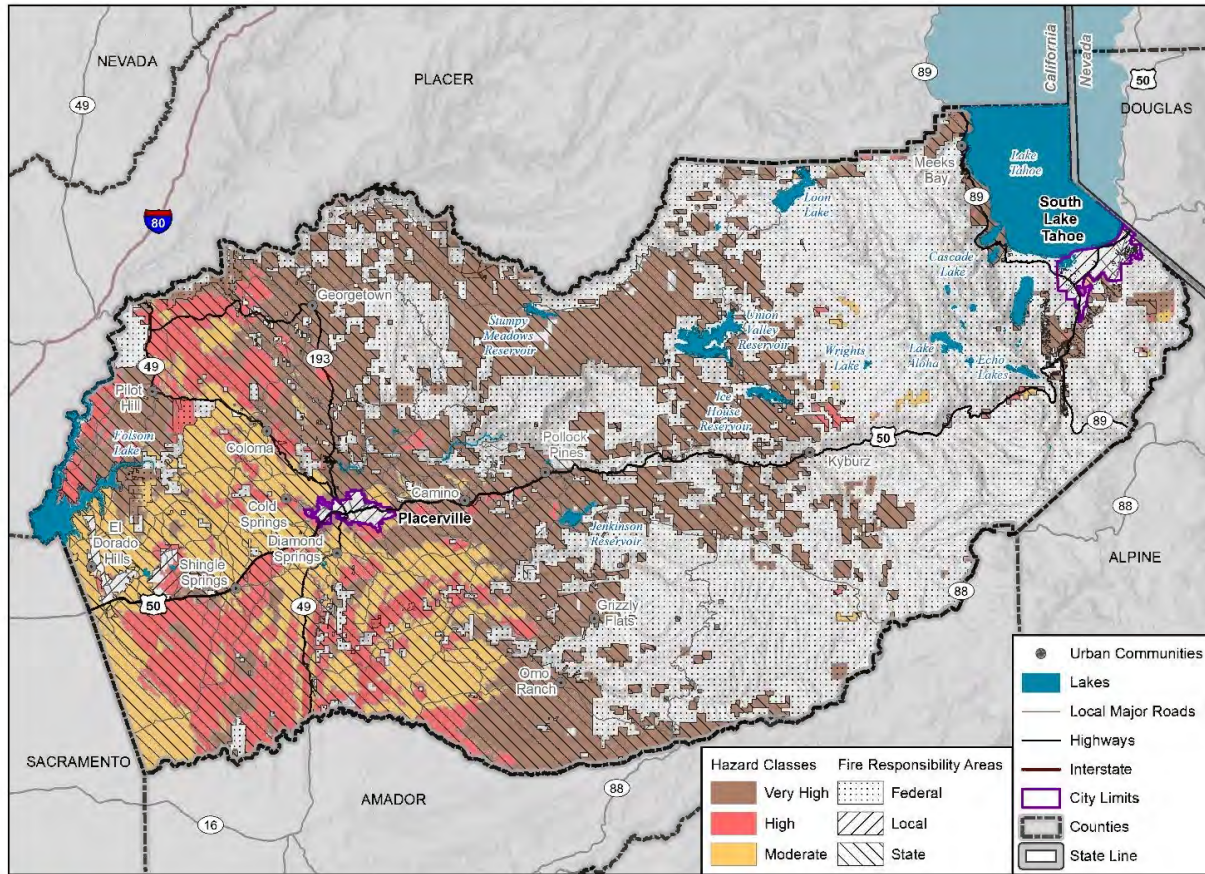
The SRA and FHSZ maps are then used to determine where WUI building standards under Chapter 7A of the California Building Code establish minimum property development requirements by California Code of

Regulations Title 14 Natural Resources Division 1.5 Department of Forestry Chapter 7 - Fire Protection Subchapter 2 State Minimum Fire Safe Regulations Articles 1-5. These requirements address ingress and egress, signing and building numbering, emergency water standards and building siting, setbacks, and fuel modifications standards. They also inform natural hazard real estate disclosures at the time of sale.

Figure HS - 4 shows the locations of existing essential facilities (essential services facilities include, without limitation, public safety, emergency response, emergency medical, designated emergency shelters, communications, public utility plant facilities and equipment, and government operations facilities) in the County, in addition to major roads and their relation to the SRA and VHFHSZs in the LRA.

Figure HS - 5 and Figure HS - 6 provide the location and distribution of existing development in the SRA and VHFHSZs the LRA. The existing development pattern is based on the two city limit and Sphere of Influence (SOI) boundaries; residential, commercial, and industrial land use designations (shown by Figure HS - 5); and existing building footprints that provide information on the extent of existing and planned residential and commercial patterns (shown by Figure HS - 6). These existing development patterns can be used to infer where planned development may occur. Planned development in the unincorporated County is also likely to occur primarily in Community Regions and Rural Centers. Most of the land in the SRA and VHFHSZs also consist of land use designations like open space and agriculture that limit development.

Figure HS - 3 Fire Hazard Severity Zones in El Dorado County



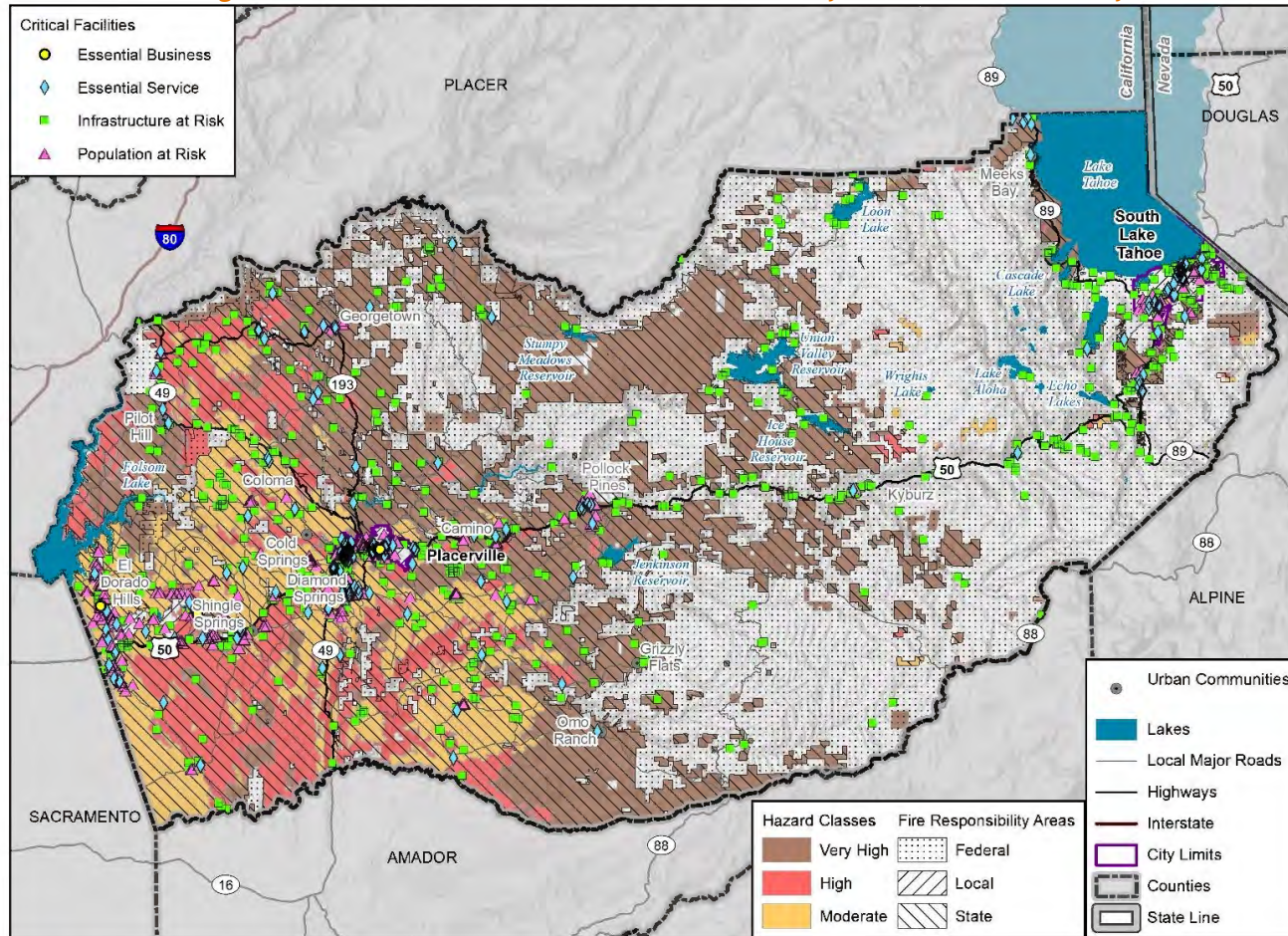
Map compiled 6/2023;  
 Intended for planning purposes only.  
 Data Source: El Dorado County, CALFIRE, FRAP  
 The Fire Severity Hazard Zones data was adopted in 2007.

0 5 10 Miles



NOTE: CAL FIRE has been building the new model for a 2022 FHSZ update. The revised mapping includes new factors on land use changes, recent fire history, significant wind event data, as well as a model that is more spatially detailed. Classification of all lands within SRAs into FHSZs is required by law. Therefore, the FHSZ designations and accompanying maps must follow the Administrative Procedures Act and be approved by the Office of Administrative Law.

Figure HS - 4 Essential Facilities and the Fire Hazard Severity Zones in El Dorado County



Map compiled 6/2023;  
 Intended for planning purposes only.  
 Data Source: El Dorado County, CALFIRE, FRAP, HIFLD  
 The Fire Severity Hazard Zones data was adopted in 2007.

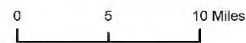
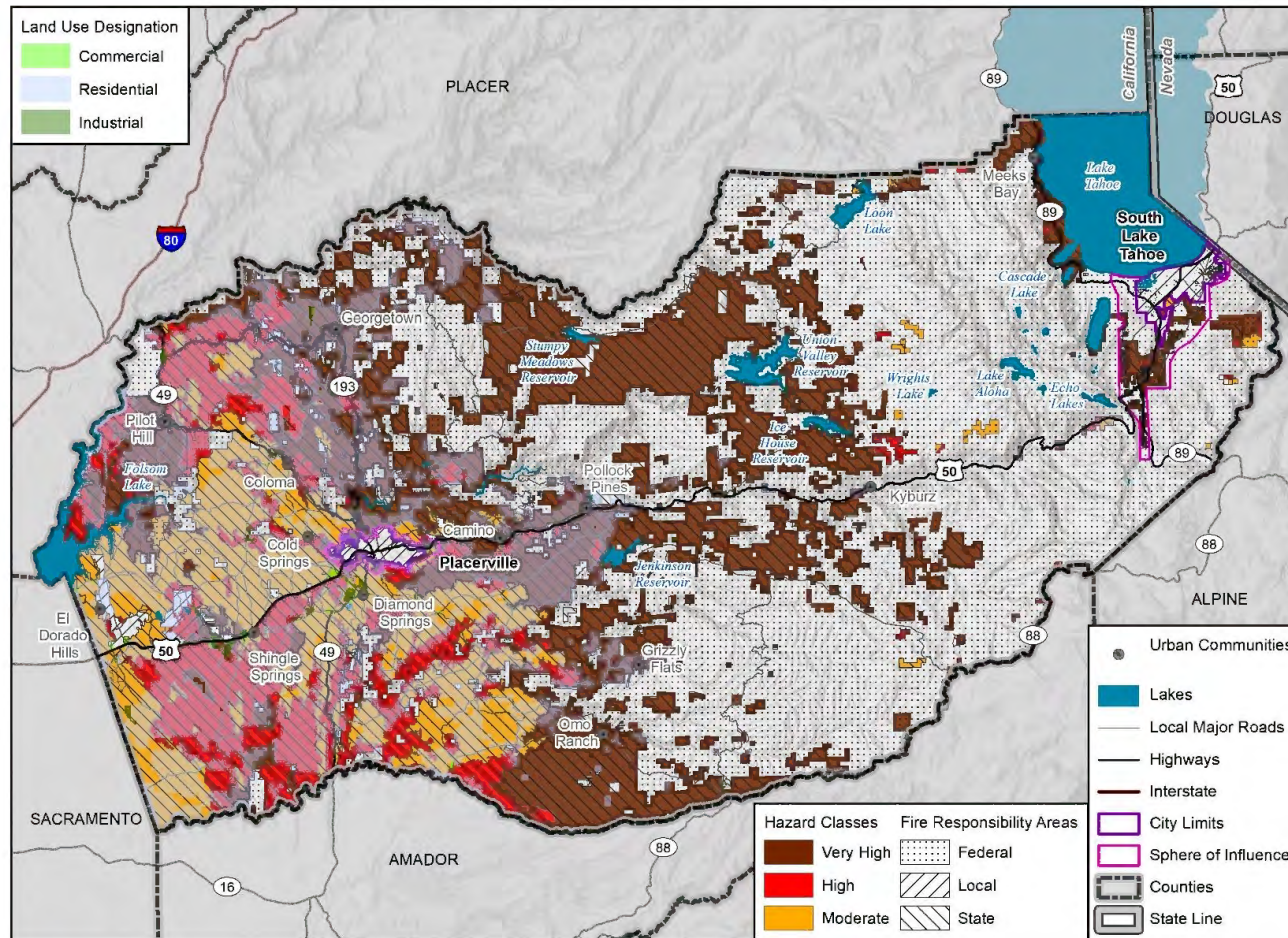


Figure HS - 5 Existing and Planned Development in relation to Fire Hazard Severity Zones in El Dorado County

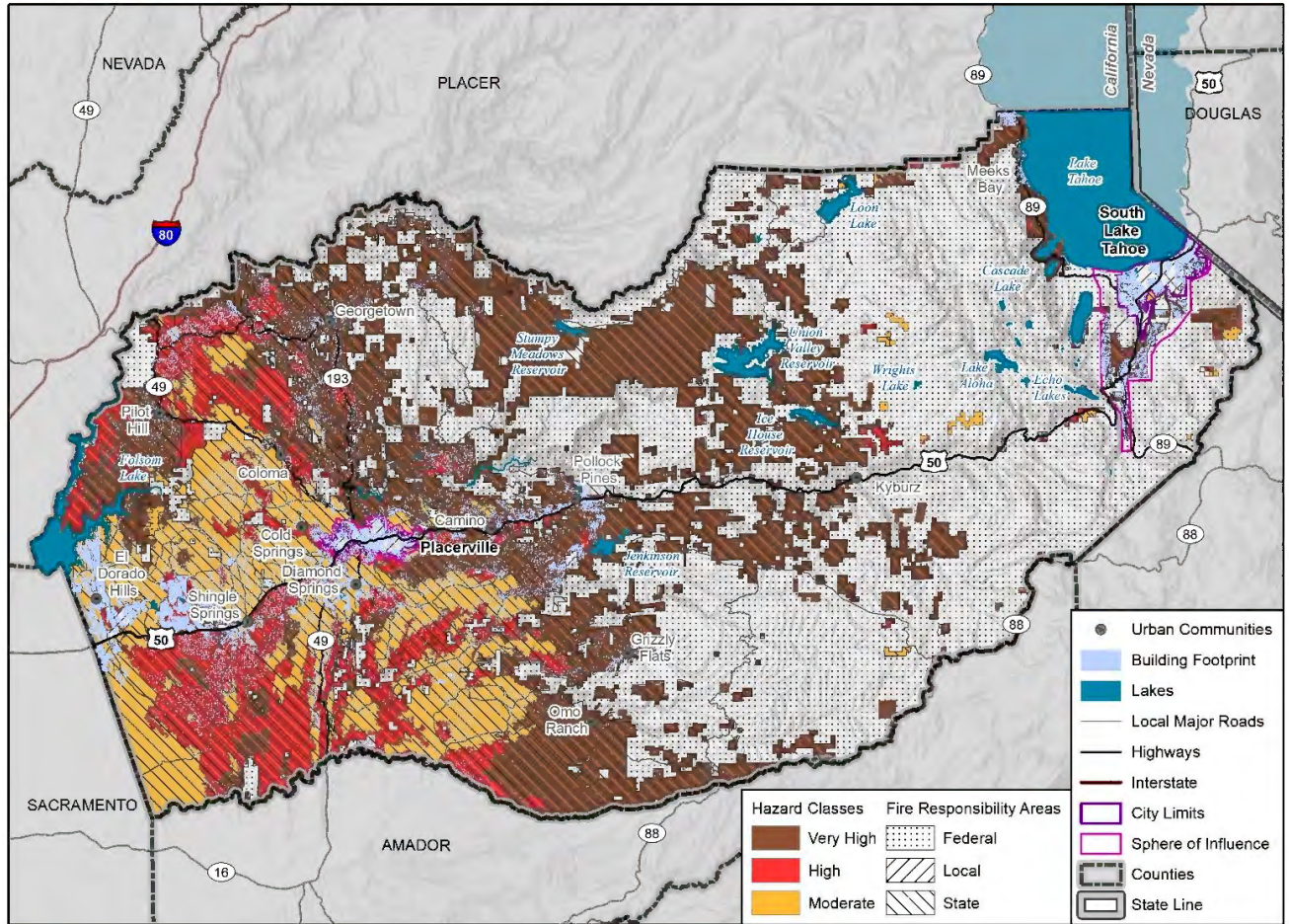


Map compiled 6/2023;  
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 Data Source: El Dorado County, CALFIRE, FRAP  
 The Fire Severity Hazard Zones data was adopted in 2007.

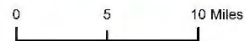
0 5 10 Miles



Figure HS - 6 Existing Building Footprints in relation to Fire Hazard Severity Zones in El Dorado County



Map compiled 6/2023;  
 Intended for planning purposes only.  
 Data Source: El Dorado County, CALFIRE, FRAP  
 The Fire Severity Hazard Zones data was adopted in 2007.



## **FIRE PROTECTION**

CAL FIRE provides Emergency Command Center Services (Dispatching) for the west slope of El Dorado County through a Joint Powers Authority (JPA) comprised of all fire agencies and the Emergency Medical Service (EMS) authorities. The County contracts with the JPA for ambulance and dispatch. The JPA, in turn, subcontracts with CAL FIRE for EMS dispatch. The response of all fire and EMS resources, regardless of jurisdiction, are coordinated through the CAL FIRE Emergency Command Center in Camino.

The El Dorado County FPD provides fire protection for a 281-square mile area that serves approximately 74,000 residents in the unincorporated communities of Apple Hill, Camino, Coloma, Cool, Gold Hill, Kyburz, Lotus, Oak Hill, Pacific House, Pilot Hill, Placerville, Pleasant Valley, Pollock Pines, Salmon Falls, Shingle Springs, Sierra Springs, Silver Fork, Strawberry, Texas Hill, and Twin Bridges. The El Dorado FPD operates the following community fire stations: Station 15 in Strawberry; Station 16 in Kyburz; Stations 17 and 18 in Pollock Pines; Station 21 in Camino; Stations 19, 23, 25, 26 and 27 in Placerville; Station 28 in Shingle Springs; Station 27 in Cool; Station 73 in Pilot Hill; and Station 74 in Lotus.

There are other volunteer and non-volunteer fire stations in the County associated with the 13 local fire agencies. The USFS provides fire protection within the Eldorado National Forest and the Lake Tahoe Basin Management Unit. CAL FIRE is responsible for providing fire protection on all SRA lands.

In addition to the El Dorado County FPD, 12 local fire agencies provide fire protection services within unincorporated portions of the County. These include the Cameron Park Community Services District (CSD), Diamond Springs - El Dorado FPD, El Dorado Hills County Water District (CWD), Garden Valley FPD, Georgetown FPD, Pioneer FPD, Rescue FPD, Fallen Leaf Lake CSD, Lake Valley FPD, Meeks Bay FPD, Mosquito FPD, and the City of South Lake Tahoe Fire Department/Fire Rescue.

The Cameron Park Fire Department serves the 8.4 square mile Cameron Park area under an agreement between the Cameron Park CSD and CAL FIRE. The Department utilizes two fire stations to provide fire protection to the roughly 18,000 residents in the area. In addition to fire and hazard protection, the Department provides emergency medical services and public education programs.

The Diamond Springs - El Dorado FPD provides services to an estimated 24,000 people over 93 square miles. It serves the communities of El Dorado, Diamond Springs, Logtown, Nashville, and Gold Hill out of five fire stations, located in Diamond Springs, Placerville, El Dorado, and Shingle Springs. The FPD also responds to medical emergencies and hazardous conditions within the District's boundaries.

El Dorado Hills CWD operates the El Dorado Hills Fire Department. Currently, the Department has five stations, located in El Dorado Hills, and Shingle Springs. In 2014, the Latrobe FPD was dissolved and annexed into the El Dorado Hills Fire Department. The Department currently provides fire suppression, EMS, and emergency response services to approximately 49,627 people over 30,000 acres.

The Garden Valley FPD provides fire protection to the Garden Valley area. The FPD operates three stations to service an estimated 6,000 people over 60 square miles. The FPD provides first response, automatic aid, and mutual aid to the Georgetown FPD, the USFS-El Dorado National Forest, CAL FIRE Amador-El Dorado Unit, El Dorado County Fire, and Mosquito FPD.

The Georgetown FPD, located in the northwestern County, operates five fire stations over 87 square miles. There are an estimated 3,000 residents in the area served, which includes Georgetown, Buckeye, Volcanoville, and Quintette. The FPD also houses and operates an Advanced Life Support ambulance.

The Pioneer FPD spans 296 square miles and provides fire protection to Somerset, Fairplay, Omo Ranch, Mt. Aukum, Grizzly Flat and Outingdale. The FPD has six fire stations, located in Three Forks, Omo Ranch, Grizzly Flats, Mt. Aukum, Somerset, and Willow. The FPD provides emergency services as well as fire protection.

The 34 square mile Rescue area, located north of Cameron Park and west of Gold Hill, is served by the Rescue FPD. The District services an estimated 5,000 people, providing emergency services and fire suppression services from two stations. The FPD was formerly in a shared services agreement with the



El Dorado Hills Fire Department, but the joint partnership dissolved in 2022. The FPD has two stations.

The Fallen Leaf Lake Fire Department (FLLFD) provides fire suppression services to the Fallen Leaf Lake CSD just outside of South Lake Tahoe. FLLFD operates one station. It is estimated the CSD has a population of 15 in the winter and 1,000 in the summer.

Lake Valley FPD provides emergency medical services and fire suppression to the 75 square mile area between the El Dorado/Placer County line on Highway 89 north, west to Twin Bridges on Highway 50, south to the El Dorado/Alpine County line on Highway 89 south, and east to the city limits of South Lake Tahoe. The FPD includes the neighborhoods around Christmas Valley, Echo Summit Area, Emerald Bay, Heavenly Valley Ski Resort, Meyers, Montgomery Estates, North Upper Truckee, Pioneer, and Sawmill. The permanent population is estimated to be 10,000, although the tourist peak could go up to 30,000.

Meeks Bay FPD is located on both sides of Highway 89 from Eagle Falls at Emerald Bay, north to El Dorado/Placer County line. The District operates out of one station. The estimated population in the District is 2,600.

Mosquito FPD spans 13 square miles, providing emergency services and fire suppression to an estimated 3,500 people. The FPD is located north of the South Fork of the American River approximately 2 miles north of Union Ridge Road in the Fannon Reservoir area. The FPD operates a fire station in Placerville.

The City of South Lake Tahoe Fire Department/Fire Rescue provides emergency services and fire suppression services to South Lake Tahoe. The Department spans 17 square miles and operates 3 fire stations. The permanent population is estimated to be over 22,000 residents, but that number is often quadrupled during peak tourist season.

## **WILDFIRE PREPAREDNESS AND RESILIENCE**

As wildfires continue to increase in frequency and intensity across California and the County, resulting in hundreds of thousands of acres burned and thousands of homes destroyed each year, the County takes a multi-faceted and proactive approach to wildfire preparedness and resilience efforts. The County addresses fire safety through a comprehensive range of hazard reduction and control measures designed to reduce fire hazards in the County. These efforts include minimizing the occurrence, size, and spread of fires once they start, but also reducing vegetative fuel loads and the exposure of susceptible properties, buildings and structures, and infrastructure to wildfires. The County's efforts, therefore, involve the following major wildfire preparedness and fuels reduction activities: defensible space maintenance and enforcement, education and outreach programs, development and maintenance of fuel breaks, prescribed fire, local fire hazard reduction treatments, fire prevention measures, and evaluating emergency services. The County regularly updates Fire Management Plans (FMPs), the LHMP, and two Community Wildfire Protection Plans (CWPPs) to plan for and reduce wildfire risk in the County. Additionally, the County Sheriff's Department, Office of Emergency Services, the County Office of Wildfire Preparedness and Resilience (OWPR), and El Dorado County Fire Council, in coordination with the El Dorado County Transportation Commission (EDCTC), CAL FIRE, and the City of Placerville conduct evacuation planning; maintain fire suppression units and equipment; collaborate with local, state, and federal agencies; and track funding opportunities to enhance technical and staffing capabilities.

Following the devastating Caldor Fire, El Dorado County established a Coordination Wildfire Preparedness and Resilience Coordination Group to collaborate on lessons learned, define funding sources, and initiate a robust and community-based wildfire resiliency and vegetation management program that would accelerate the County's current fuels management efforts on both public and private lands within the County. This Coordination Group is further comprised of the County OWPR, the El Dorado County Fire Safe Council, CAL FIRE – Amador El Dorado Unit (AEU), USFS – Eldorado National Forest, El Dorado County Fire Chiefs Association, El Dorado County Fire Prevention Officers Association, the El Dorado and Georgetown Divide Resource Conservation Districts (RCDs), Lake Tahoe Fire And Fuels Team, and the Sheriff's Office of Emergency Services.

In 2023, the OWPR developed a Wildfire Protection Strategy (Wildfire Strategy) with the goal of creating a fire-adapted and resilient County through collaboration and coordination. The Wildfire

Strategy has several elements, including public outreach, policy, data management and sharing, planning, funding coordination, and project coordination with the Lake Tahoe Basin (Tahoe Basin) and West Slope, which it plans to implement.

The County coordinates with local cities and local fire agencies, state and federal agencies, and a variety of local volunteer and other organizations. Additional efforts include the implementation of forest and vegetation restoration, watershed restoration, and fuels reduction projects. As part of the establishment of the OWPR, the County partners with the El Dorado and Georgetown Divide RCDs on multiple programs related to wildfire preparedness and resilience. The County also has a strong network of Firewise USA communities and works with Fire Safe Councils and other non-governmental organizations (NGOs) to support wildfire preparedness efforts, community assistance, information sharing, and education programs to reduce the risk of loss of lives, property, and environmental resources due to wildfire.

## **Fire Management Plans**

### **Unit Strategic Fire Plan**

The AEU Strategic Fire Plan identifies and prioritizes pre-fire and post-fire management strategies meant to reduce the loss of values at risk within the unit. It was developed collaboratively between federal, state, city, and county agencies, as well as interested parties. The Strategic Fire Plan aims to reduce the loss of life, property, watershed values, and other assets. It supports coordinated fuels reduction and planning efforts that encourage the safe ingress and egress routes for emergency incidents. It also aims to provide operational training that supports safe suppression operations. Further, the Strategic Fire Plan utilizes CAL FIRE and community resources to mitigate large and damaging wildfires with defensible space zones and prescribed fire, implements safe clearances around structures, and supports the WUI building standards, among other actions. The Strategic Fire Plan is available here:

<https://osfm.fire.ca.gov/media/irefprho/2022-amador-el-dorado-alpine-sacramento-unit-fire-plan.pdf>

### **Local Hazard Mitigation Plan**

The LHMP provides a comprehensive analysis of natural and human-caused hazards in the County and focuses on the development of a range of mitigation projects. The LHMP maintains the County's eligibility for federal and state hazard mitigation assistance grant funding. The LHMP also complements the goals and policies in the Safety Element, and multiple sections of the Safety Element incorporate the LHMP through incorporation by reference, pursuant to California Government Code Section 65302(g). The El Dorado County LHMP is available here: [edcgov.us/Government/sheriff/Documents/ElDoradoCounty\\_LHMP.pdf](http://edcgov.us/Government/sheriff/Documents/ElDoradoCounty_LHMP.pdf).

### **Community Wildfire Protection Plans**

In 2022, the El Dorado County Fire Safe Council prepared the West Slope CWPP referred to as the Western El Dorado County CWPP (<https://www.edcfiresafe.org/wp-content/uploads/2022/07/EDC-CWPP-Final-2022-compressed.pdf>). The plan identifies projects and activities, including roadside fuels treatment and fuel breaks in many areas of the West slope associated with local fire safe councils. OWPR is undertaking a significant update to the Western El Dorado County CWPP that will include a hazard and risk assessment, gap analysis and planning for all areas on the West slope. Recommendations will be designed to safeguard communities, identify priorities, and provide the foundation for seeking grants and other funding opportunities. The Western El Dorado County CWPP will also be informed by the Tahoe Basin CWPP.

Tahoe Resource Conservation District (Tahoe RCD) is leading an effort to update the Tahoe Basin CWPP. The current Tahoe Basin CWPP is an all-inclusive planning document that has assisted Tahoe collaborators in identifying crucial actions to mitigate wildfire hazards. The CWPP outlines tactics to minimize dangerous fuels, reinforce homes and enhance defensible spaces, as well as to prepare Tahoe communities for wildfire events. As the Tahoe Fire and Fuels Team partners finalized the Tahoe Basin CWPP in 2015, it is necessary to refresh the plan's content, which includes incorporating knowledge

acquired from the lessons learned from the Caldor Fire (<https://www.tahoelivingwithfire.com/take-the-lake-tahoe-basin-survey/>).

### **Public Outreach and Education Programs**

#### **County Defensible Space and Hazardous Vegetation Management Program Ordinance**

The County has a diverse and complex landscape, including mountains, forests, and other brush, or grass-covered wildlands, which have the potential to fuel a catastrophic fire event. The purpose of the ordinance is to provide for the removal of hazardous vegetation and combustible materials situated in the unincorporated areas of the County to reduce the potential for fire and to promote the safety and welfare of the community.

#### **Fuel Treatment Projects**

Fuel treatment projects help protect the County and are commonly organized into the following elements: defensible space around commercial and residential properties, clearing vacant lots and roadside areas, and treating areas that are part of an existing Fire Safe Plan or CWPP. Additional details on specific projects can be found in the Western El Dorado County CWPP and Tahoe Basin CWPP.

#### **Prescribed Fire**

Prescribed burning reduces the loading of vegetative fuels, duff, large woody fuels, rotten material, shrubs, and other surface fuels. These changes, together with increased fuel compactness and reduced fuel continuity change the amount of fuel within forested areas thereby reducing potential fire spread rate and intensity. Burning reduces horizontal fuel continuity (shrub, low vegetation, woody fuels), which disrupts growth of surface fires, limits buildup, and reduces spot fire ignition probability. Given current accumulations of fuels in some stands in the County, multiple prescribed fires in combination with thinning and pile burning may be needed initially, followed by long-term maintenance burning or other fuel reduction activities to reduce crown fire hazard and the likelihood of severe ecosystem impacts from high severity fires. Prescribed fire activities are described in more detail in the Western El Dorado County CWPP and the Tahoe Basin CWPP.

#### **Fuel Breaks**

A fuel break is a strip of land that is purposely converted from one vegetation type to another for firefighting. Generally, fire access roads can serve as fuel breaks, in addition to providing emergency ingress and egress. Transmission line corridors are another example of a fuel break. Shaded fuel breaks, which are common in El Dorado County, are created by removing small trees and other vegetation (less than 8 inches in diameter breast height) and limbing larger trees up to 16 feet above ground level to allow better access for emergency vehicle equipment. These landscape-level treatments complement structure clearances treatments like defensible space maintenance by slowing the rate of fire spread and lowering the intensity of a fire. New fuel breaks can be developed as a fuel treatment and fire prevention efforts. They are also created as part of the emergency response to a large wildfire. Over time these fuel breaks are regenerated with native vegetation. Summaries and maps of planned fuel breaks and in some cases the acreage and priority of these projects are described in more detail in the Western El Dorado County CWPP and the Tahoe Basin CWPP.

#### **Fuel Reduction Projects**

The various local fire agencies are responsible for the development and the implementation of fire control projects and measures in the LRA, and by contract with CAL FIRE, for the SRA of the unincorporated areas of the County. There are numerous fire prevention and protection projects that must be completed to comply with the state requirements. Additionally, each local fire agency can implement additional projects to assist the community in fire prevention and protection. Activities include vegetation removal and thinning and pile burning projects from neighborhoods, roads, and fuel break areas; construction of fire prevention facilities, fuel break maintenance, and clearing drainage areas. For a complete list of all current fire agency projects, refer to the Western El Dorado County CWPP and the Tahoe Basin CWPP, or contact the County.

Biomass utilization is a component of fuel reduction in the County. Biomass utilization decreases woody fuel loads while decreasing the risk of catastrophic fires and promoting clean energy and improved air and watershed quality. There is currently a lack of facilities in the County which discourages biomass utilization through feasibility and transportation considerations. However, at least eight locations in the County, including in Camino, Georgetown, and South Lake Tahoe, have been identified as potential locations for biomass facilities, and grant opportunities are currently being sought. Biomass utilization continues to be a large focus and will tie back into larger fuel reduction projects.

The El Dorado County Office of Wildfire Preparedness and Resilience's Website (<https://stantec.maps.arcgis.com/apps/webappviewer/index.html?id=fc5f49f2652d403a9bfe3273cb157132>) links to the RCD Fuel Reduction Projects, which includes an online mapping tool.

## **Land Use Planning**

### **Development Review Standards**

Development in the WUI means new development must adhere to specific development standards and land use planning review. The land use planning process requires that these wildfire hazards be addressed and the County's Building and Planning Department therefore conducts site review on a case-by-case basis to ensure proposed development is consistent with current Fire Code, Building Code, state statutes and regulations, and County policies. Under the California Environmental Quality Act, the County conducts environmental review to ensure development proposals minimize impacts to environmental resources. The County also has legal authority through the County's land use and zoning regulations to govern land use and development to reduce fire hazards.

### **Fire Code**

The County enforces Article VI – Fire Regulations and Chapter 8.08 – Fire Prevention, also known as the County Fire Hazard Ordinance. The Fire Regulations (Article VI) restrict activities that have the potential to result in WUI fires or wildfires in the County. Sections 9.46.700, 9.46.710, and 9.46.720 restrict building, lighting or maintaining fires of any nature in parks and limit firework and smoking activities. The County is authorized to adopt ordinances, rules, and regulations to provide fire prevention restrictions or regulations necessary to meet local conditions of weather, vegetation, and fire hazards. Chapter 8.08 of the County Municipal Code pertains to the use of incinerators, areas where smoking is prohibited (particularly during the wildfire season), fireworks, and campfires. Chapter 8.08 also authorizes the Director of the Department of Forestry and authorized agents by the laws of the State, all USFS Officers and officers of legally constituted FPDs and, peace officers for the purpose of making arrests for violations of any of the provisions of this chapter.

The El Dorado County FPD adopted the 2022 Edition of the California Fire Code, which incorporates the 2021 International Fire Code. The California Fire Code regulates and governs life and property from fire hazards (Ordinance 2022-02). It amended code sections related to gas storage; specifications for fire apparatus access roads, dead ends, bridges, parking, access gates, and fire lanes; home address identification; water supplies for fire protection; fire sprinklers; and fire alarms.

The California Fire Code Section 507.1 requires an approved water supply capable of providing the required water flow for fire protection to premises upon which facilities, buildings, or portions of buildings which are hereinafter constructed or moved into or within the jurisdiction.

### **Fire Safe Regulations**

The County must comply with the State Minimum Fire Safe Regulations identified under Public Resources Code 4290 and Title 14 CCR 1270-1276.05. These regulations set minimum standards in the SRAs and VHFHSZs of the LRA. The Fire Safe Regulations are referenced on the County's Building Services webpage, which cross references Title 14 Natural Resources, Division 1.5 Department of Forestry, Chapter 7 – Fire Protection, and Articles 1 through 5 in Subchapter 2 SRA Fire Safe Regulations. Article 2 addresses emergency access and egress for roads. Article 3 addresses signing and building and numbering. Article 4 addresses fire suppression supplies and emergency water standards for fire hydrants and water tanks. Article 5 addresses fuel modification standards like setbacks for structure

defensible space and control of flammable vegetation and fuels.

### **Building Code**

In 2008, the California Building Code (CBC) was modified to require the use of fire-resistant materials in areas at risk of wildfire. State law requires the use of ignition-resistant building methods and materials as a fire prevention control measure for buildings located in any FHSZ within the SRA, any local agency VHFHSZs, or any WUI areas. The County's Planning and Building Department refers to the current adopted County FHSZ maps to identify these areas for the unincorporated County.

Effective January 1, 2023, the 2022 California Building Standards Code (CCR, Title 24) became effective in the State. This is modeled after the 2021 International Fire Code.

### **Defensible Space Requirements**

Defensible space is defined as the area surrounding a structure or building where basic wildfire protection practices are implemented, providing the key point of defense from an approaching wildfire or escaping structure fire. The area is characterized by the establishment and maintenance of fuel modification measures. The establishment of defensible space or clearances around structures prevents fire hazards and is required by State law under Public Resources Code 4291 and County policies and regulations.

In 2005, the California Board of Forestry and Fire Protection adopted provisions identified in Public Resources Code Section 4291 that requires all structures on SRA lands to maintain 100 feet of defensible space clearances. The 100-foot defensible space requirements are enforced in the LRA by the County, cities, and local fire agencies. The County's OWPR is responsible for and implements the County's Defensible Space Program, in partnership and through agreements with local fire agencies. As of 2022, the County designated County Emphasis Areas (CEAs) for focused and proactive defensible space inspections. The CEAs are identified annually, in collaboration with CAL FIRE, based on the VHFHSZs rating, call volume to a specific area, structural density of an area, ingress/egress in an area, fire history and/or ignition patterns, weather patterns, the WUI, topography, and existing defensible space inspection data. Similarly, CAL FIRE identifies Target Hazard Areas (THAs) using comparable criteria, including input from local field battalion chiefs. These THAs serve as priority areas for targeted defensible space inspections.

The County's current Defensible Space Ordinance, Chapter 08.09 Vegetation and Defensible Space, became effective on May 30, 2019, with inspections and enforcements implemented on June 1, 2020. The ordinance establishes an annual hazardous vegetation and combustible material abatement program for the unincorporated areas of the County to reduce the potential for fire and promote the safety and welfare of the community. An update to the ordinance was initiated in 2023 and expected to be completed by 2024.

### **Other Best Practices**

Land use planning in the County continues to be guided by best practices from the Federal Emergency Management Agency, the Governor's Office of Planning and Research (OPR), and CAL FIRE. National resources also include Planning the Wildland Urban Interface and Community Wildfire Safety Through Regulations, which are publications by the American Planning Association and USFS and National Fire Protection Association (NFPA), respectively. The FEMA 2008 Home Builder's Guide to Construction in Wildfire Zones provides information about wildfire behavior and recommendations for building design and construction methods in the WUI, while emphasizing the need to follow local and state best practices. FEMA's 2023 Best Practices for Wildfire-Resilient Subdivision Planning offers additional information on best practices and procedures at the subdivision and neighborhood scales.

Further, OPR's 2022 Fire Hazard Planning Technical Advisory provides a robust planning framework for addressing fire hazards, reducing risk, and increasing resilience across California's diverse communities and landscapes. Finally, CAL FIRE, in collaboration with OPR, Community Wildfire Planning Center, the Board of Forestry and Fire Protection, and California Climate Investments released the WUI Planning Guide in 2022 as a supplement to the Fire Hazard Planning Technical Advisory to expand on WUI

planning best practices.

### **County Policies and Implementation Program**

Directed by the El Dorado County Strategic Plan, the Wildfire Strategy is the roadmap for the creation, coordination and maintenance of fire adapted communities and aligns federal, state and local policies, plans and initiatives.

The County's Fire Safety goals, policies, and implementation measures reference the applicable California Public Resources Code and associated regulations, including the Fire Safe Regulations (California Public Resources Code 4290 and Title 14, CCR 1270-1276.04), Chapter 7A Building Standards (Fire Ignition Resistant Construction Methods in the CCR, Title 24, Part 2, of the CBC. The County also addresses California Government Code Section 51178 – 51182 through the proposed policy amendments associated with local adoption of VHFHSZs into the local ordinance, defensible space clearances, and applicable building code standards.

Changing climate conditions are expected to increase the risk and severity of wildfires in the County. Increased temperatures can exacerbate drought conditions. Droughts can then result in drier plant and soil conditions, which in turn create fuel for wildfires. Increased temperatures are also likely to increase forestry disease and pest infestations associated with the bark beetle, which also means more dead trees and forest fuels for wildfires. Further, increased wind events may result in shifts in wildfire behavior, which can result in intentional power shutoffs, or Public Safety Power Shutoffs (PSPS). These increased temperatures have already resulted in a longer wildfire season, which is anticipated to continue and likely begin earlier in the spring months and last longer into the fall months.

Air quality during significant fire-related incidents can have detrimental effects on public health. Wildfires release environmental toxins, such as carbon monoxide, and hazardous air pollutants, such as particulate matter (i.e. polycyclic aromatic hydrocarbons [PAHs] composed of acids, molds, metals, or soot), into the air where they can drift long distances, affecting millions of people (see Chapter 4.C, "Increases Wildfire Severity" of the Climate Vulnerability Assessment). These small particles easily slip into homes, where they can be inhaled, potentially causing negative cardiovascular and respiratory conditions. These effects are felt most acutely by first responders, as well as sensitive populations, such as the young and the old.

In summary, wildfire is a threat to all people in the County as it can impact air and water quality; however, it is of particular concern to those at-risk populations with respiratory issues; those with limited mobility; communities with limited access to transportation and health-care; under-resourced communities, young children and dependents, and outdoor workers. The secondary effects of wildfire, including the destruction of agricultural crops and damages to buildings, can cause further economic and social harms to people and communities.

## Geologic and Seismic Hazards

Geologic, seismic, and soil hazards are all risks that involve the movement of the Earth's surface. Seismic hazards are associated with earthquakes and ground shaking; geologic hazards consist of land movements that are not associated with seismic activity but depend on the geologic composition of an area. They can involve landslides, rockslides, debris flows, soil instability, naturally occurring asbestos, and radon.

Geologic and seismic hazards each affect urban development and land use planning can help minimize adverse effects by considering ground surface rupture from faulting, liquefaction (loss of strength of saturated and sandy soils after an earthquake), and ground shaking; landslides; Lake Tahoe seiches; high groundwater; and subsidence, expansive soils (shrink and swell soils), and other soil instabilities.

### SEISMIC HAZARDS

The County is in a seismically active region. Moderate earthquakes have occurred in the County along active faults in the Sierra Nevada, within Lake Tahoe, and along the Nevada border, and the foothills in the far western portion of the County near the Central Valley. These nearby faults could result in ground shaking in the County. The potential for ground shaking is discussed in terms of the 2% percent probability of exceeding peak ground acceleration (% g) in the next 50 years, which is shown in Figure HS - 7. The overall ground shaking potential for the County is low, ranging from 5-50% g, except the areas near the City of South Lake Tahoe where the ground shaking potential varies from 50-100% g. As shown in Figure HS - 7, a few faults traverse the City of South Lake Tahoe, while only one fault appeared in the western portion of the County. Moreover, a few Alquist-Priolo Fault Hazard Zones are in the vicinity of the City of South Lake Tahoe. These are regulatory zones surrounding the surface traces of active faults in California. Wherever an active fault exists, if it has the potential for surface rupture, a structure for human occupancy cannot be placed over the fault and must be a minimum distance from the fault (generally fifty feet). There are no liquefaction zones in the County. There are also no military installations in the County and therefore no installations subject to seismic risk.

### GEOLOGIC HAZARDS

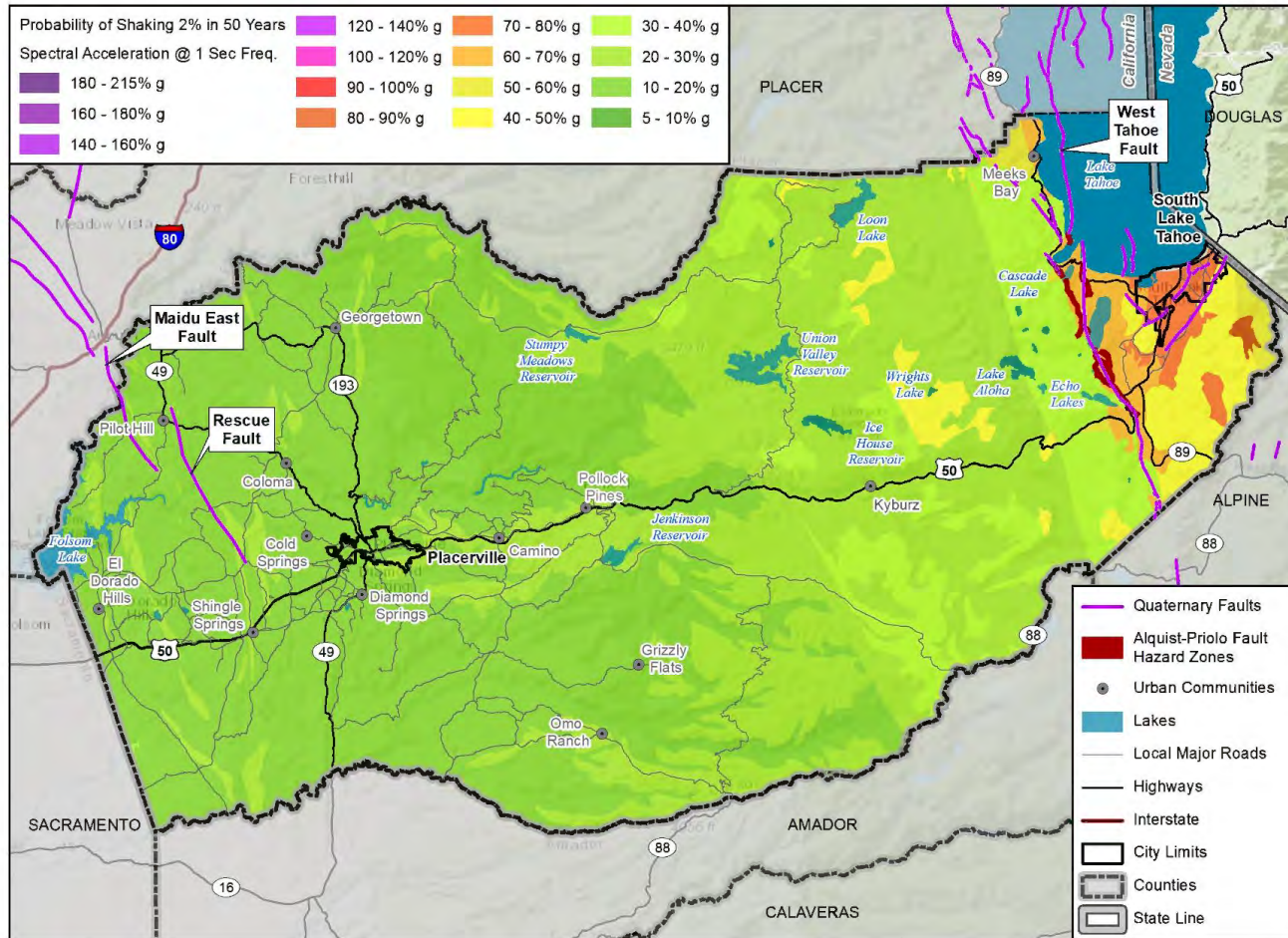
Landslides, rockslides, debris flows, and other soil erosion and unstable soil risks are present throughout the County given the steep slopes and varying terrain in mountainous areas. The Sierra Nevada is subject to the most landslide, rockslide, and erosion potential.

Figure HS - 8 shows the deep-seated landslide susceptibility in the County. The foothills within the West Slope of the County are less prone to geologic hazards; however, slope instability does occur along major waterways, and is evident in historic mining areas.

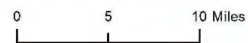
The risk of land subsidence due to groundwater overdraft is low given there has been between -0.1 to 0.1 feet of vertical displacement in recent years based on Department of Water Resources (DWR) data. These vertical displacement areas have been mapped with the South Lake Tahoe Area and along the far western edge of the County. Land subsidence can also occur near areas with abandoned mines.

Climate change is not anticipated to directly affect geologic and seismic hazards in the County. However, it may indirectly contribute to such risks through phenomena like drought and wildfires, which could lead to soil instability. Specifically, increased precipitation variability and more intense rainfall or snow events may raise the potential for cascading impacts associated with landslides, rockslides, or mudslides. This pattern was observed after atmospheric river events in the 2016-2017 and 2022-2023 winter seasons. Additionally, drier conditions, elevated temperatures, and prolonged droughts could heighten the likelihood of wildfires, which, if followed by brief periods of intense precipitation, may trigger more landslides, rockslides, and mudflows.

Figure HS - 7 El Dorado County Ground Shaking Potential & Nearby Fault

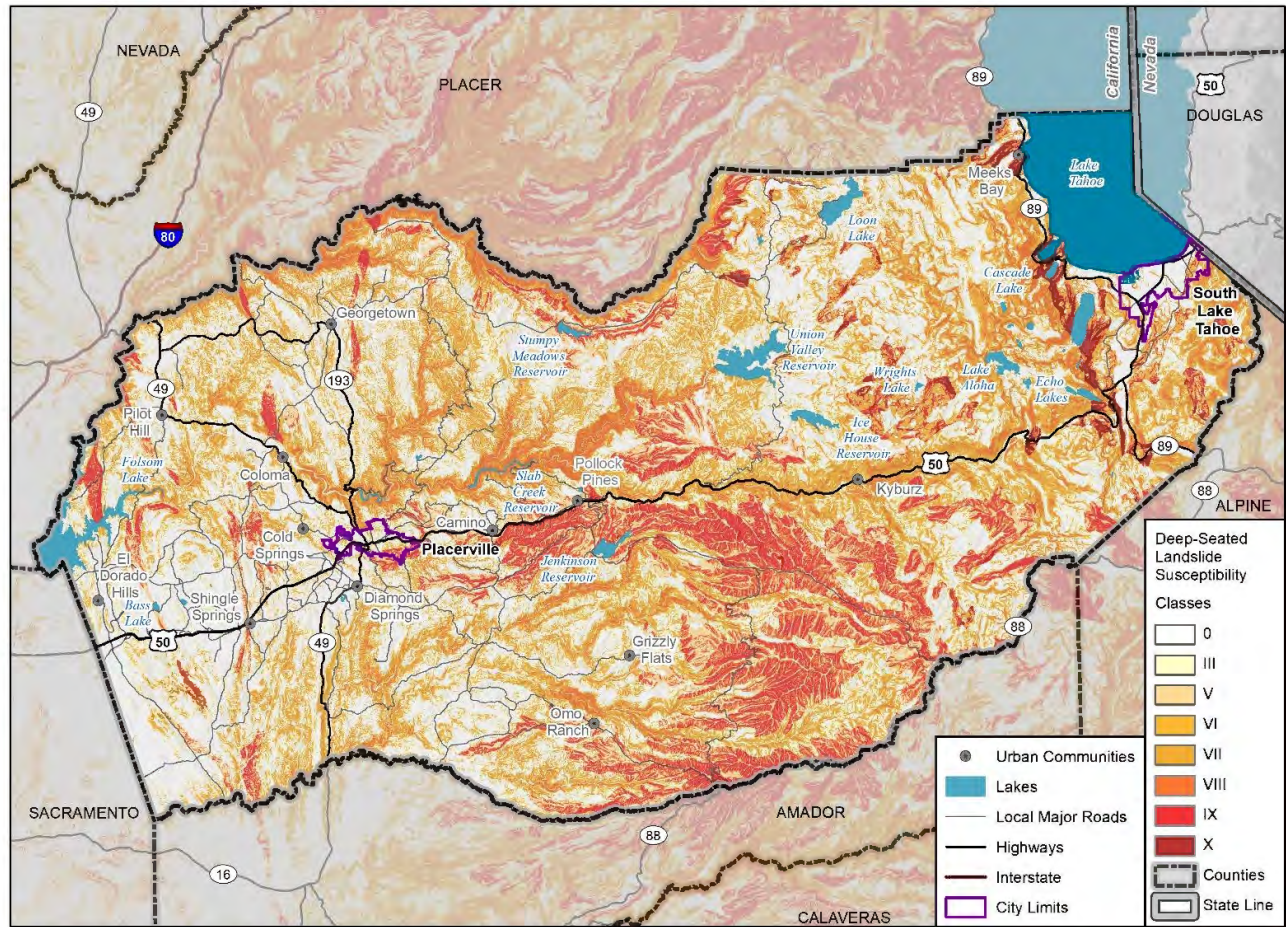


Map compiled 6/2023;  
 Intended for planning purposes only.  
 Data Source: El Dorado County, California  
 Geological Survey, USGS

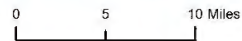




# Figure HS - 8 Deep-Seated Landslide Susceptibility in El Dorado



Map compiled 1/2023;  
 Intended for planning purposes only.  
 Data Source: El Dorado County, Department of Conservation,  
 California Geological Survey



Land use planning, the Building Code, and evacuation route planning address geologic hazards. Land use planning and site plan review can ensure construction is avoided in areas with active faults or with appropriate setback distances, depending on the conditions. Site plan review may also avoid siting essential public facilities on or adjacent to active faults. Development can also avoid steep slope gradients and sewer systems should not be sited in areas subject to landslide risk or areas with high groundwater. Compliance with Title 24 of the California Building Code regulates building construction and would ensure structure can withstand impacts from earthquakes and seismic factors.

California Government Code Section 65302(g)(1) requires the Safety Element to address evacuation routes as they relate to geologic hazards, and specifically their capacity, safety, and viability and evacuation locations under a range of emergency scenarios. Once the County develops draft evacuation plans and routes, these route maps can be used to facilitate coordinated and safe evacuation. While it is difficult to determine the specific evacuation routes prior to an earthquake event due to the unpredictability of the direct impacts, some of the secondary hazards, like landslides, mudslides, and other soil hazards may occur in combination with subsequent precipitation events and can be mapped and provide advance notice to residents and visitors to evacuate. In the event of a large-scale geologic or seismic disaster, the County Sheriff's Office can activate the Emergency Operations Center and implement the El Dorado County Multi-Hazard Functional Emergency Operations Plan (EOP), which outlines emergency planning and response protocols.

### **CASCADING HAZARDS**

Areas with exposed geological features may be more vulnerable to erosion and may expose individuals to geological hazards or contaminants, which could affect their health. When ground cover is lost due to factors like fires and climate warming, and when human activities disrupt the environment, several public health concerns arise. First, the loss of ground cover makes the soil more susceptible to wind erosion, which can disperse dust and particulate matter into the air. This can have adverse effects on respiratory health, especially for individuals with preexisting conditions such as asthma. Additionally, the dispersal of mechanical filaments, small wind-borne particles, may pose health risks if they contain toxic materials or contaminants. Recreational activities that contribute to ground erosion not only harm ecosystems but also expose individuals to potential health hazards related to soil-borne contaminants or dust inhalation. Refer to the Chapter 5.D "Cascading Impacts" in the CVA in Appendix C for more information on cascading hazards.

### **ASBESTOS**

Asbestos is of special concern in El Dorado County because it occurs naturally in surface deposits of several types of ultramafic materials (materials that contain magnesium and iron and a small amount of silica). Asbestos emissions can result from the sale or use of asbestos-containing materials, road surfacing with such materials, grading activities, and surface mining. The El Dorado County Air Quality Management District (AQMD) is responsible for implementing and enforcing asbestos-related regulations and programs. This includes implementation of Title 17, Sections 93105 and 93106 of the CCR (Asbestos Airborne Toxic Control Measure-Asbestos-Containing Serpentine) and the County's Naturally Occurring Asbestos and Dust Protection Ordinance. Regulated activities include construction or digging on a site containing naturally occurring asbestos in rock or soils and the sale and use of serpentine material or rock containing asbestos materials for surfacing. Asbestos-related measures presented in this General Plan are focused on supporting the actions of the AQMD.

## Flood Hazards

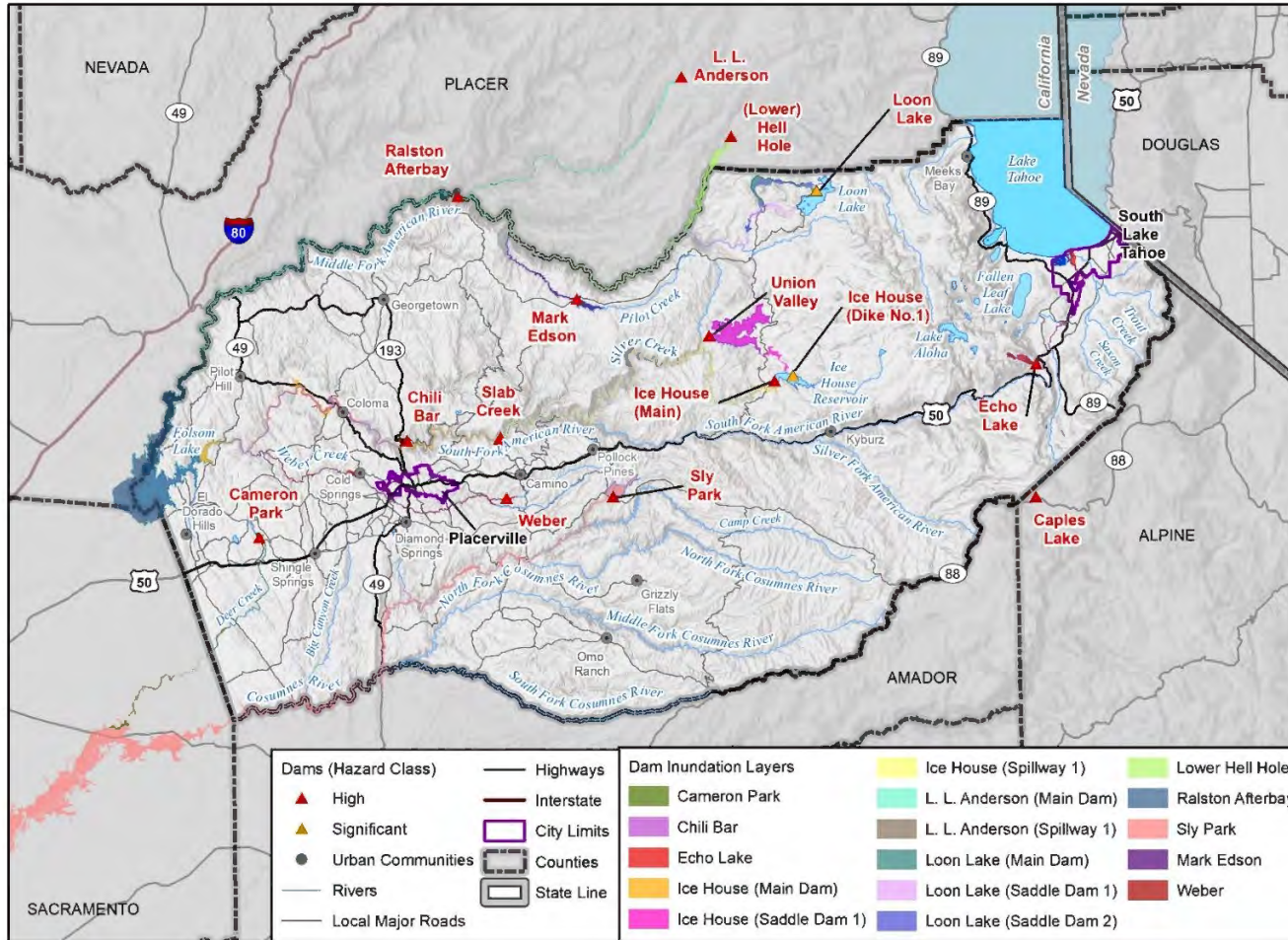
Flooding is a temporary overflow of water onto land that is normally dry. It results from long periods of intense amounts of precipitation in the form of rain, snow, and overflows from dams. Flood can have a slow or quick onset. Slow flooding events can occur after an extended period of heavy rain or in the spring following the winter snow season and can result in structural problems, severe damage, or building collapse. Flash floods can occur with no warning following short periods of intense rainfall or rapid snowmelt.

Flooding is one of the most frequent natural hazards in the County during the winter and spring (November through April) when waterways fill with surface water runoff and snowmelt. Where it occurs depends on the issues in each community. Flooding is also costly to recover from based on substantial damage to structures, facilities, infrastructure, and economic loss. Flood events also threaten human life during flash flooding events.

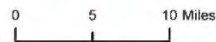
Flooding can also occur downstream of dams located within and outside the County as result of dam incidents or failures. Figure HS - 9 shows the dams, lakes and reservoirs, and rivers and streams within the County at risk of dam incidents or failure. Individual dam failure inundation zone maps for Blakely Dam, Cameron Park Lake Dam, Caples Lake Dam, Chili Bar and Slab Creek Dams, Echo Lake Dam, Ice House Dam, Loon Lake Dam, Stumpy Meadows Dam, Union Valley Dam, and Weber Creek Dam are located in Appendix D. Dam failure can cause significant downstream impacts to communities, roads, essential facilities, agricultural land, and other assets.

A tsunami is a wave caused by an underwater earthquake, landslide, or volcanic eruption. A seiche is a rhythmic motion of water in a partially or completely landlocked water body caused by landslides or earthquake-induced ground shaking. The County is not located in a coastal area susceptible to tsunamis, but the Lake Tahoe region is located along Lake Tahoe and several of the tributaries feeding into Lake Tahoe could be subject to flooding due to a lake seiche in the event of a major landslide or earthquake. The City of South Lake Tahoe EOP contains response provisions for seiche wave hazards, such as a warning process when an earthquake event with a magnitude of 7 or greater occurs that would generate a seiche wave.

Figure HS - 9 Dams within El Dorado



Map compiled 2/2023;  
 Intended for planning purposes only.  
 Data Source: El Dorado County,  
 Department of Water Resources,  
 Division of Safety of Dams (DSOD)



Reports of flooding in the County are localized and often related to capacity and conveyance issues on the West Slope and rain on snow flooding in the Tahoe Basin. The combination of West Slope hydrology, soils and topography may cause these areas to experience frequent and localized flooding. For example, drainage problems and flooding have occurred in low-lying areas around Cameron Park where culverts that are undersized or blocked with debris have intensified flooding. The Tahoe Basin can experience flooding because of rain-on-snow events, particularly when severe storms start warm with rain and later, snow. Residential neighborhoods and roads that are routinely plowed for snow removal still experience flooding during rain events when runoff pools as it cannot infiltrate through the snow or the densely packed surfaces. Much of this flooding has occurred in neighborhoods near the floodplains.

Areas at an elevated risk of flooding are divided into 100-year flood zones and 500-year flood zones. A 100-year flood zone has a 1% annual chance of flooding in any given year and a 500-year flood zone has a 0.2% annual chance of flooding in any given year. The 100-year and 500-year flood zones are identified by the Federal Emergency Management Agency (FEMA). The United States Army Corps of Engineers (USACE) Comprehensive Study also maps the 200-year flood zones, which have a 0.5% annual chance of flooding in any given year. Areas outside of these mapped floodplains may still be subjected to riverine flooding in the waterways and localized flooding hazards. Figure HS - 10 shows 100-year flood zones in the County. As shown, the floodplains closely follow the major rivers and tributaries on the West Slope that flow into the South Fork of the American River and the Middle Fork of the American River; Truckee River, Cold Creek, and Trout Creek in the Tahoe Basin; and the area around Lake Tahoe. The 0.2% annual chance floodplains (also referred to as the 500-year floodplains) are not shown on the map as they are not clearly visible at the current map scale.

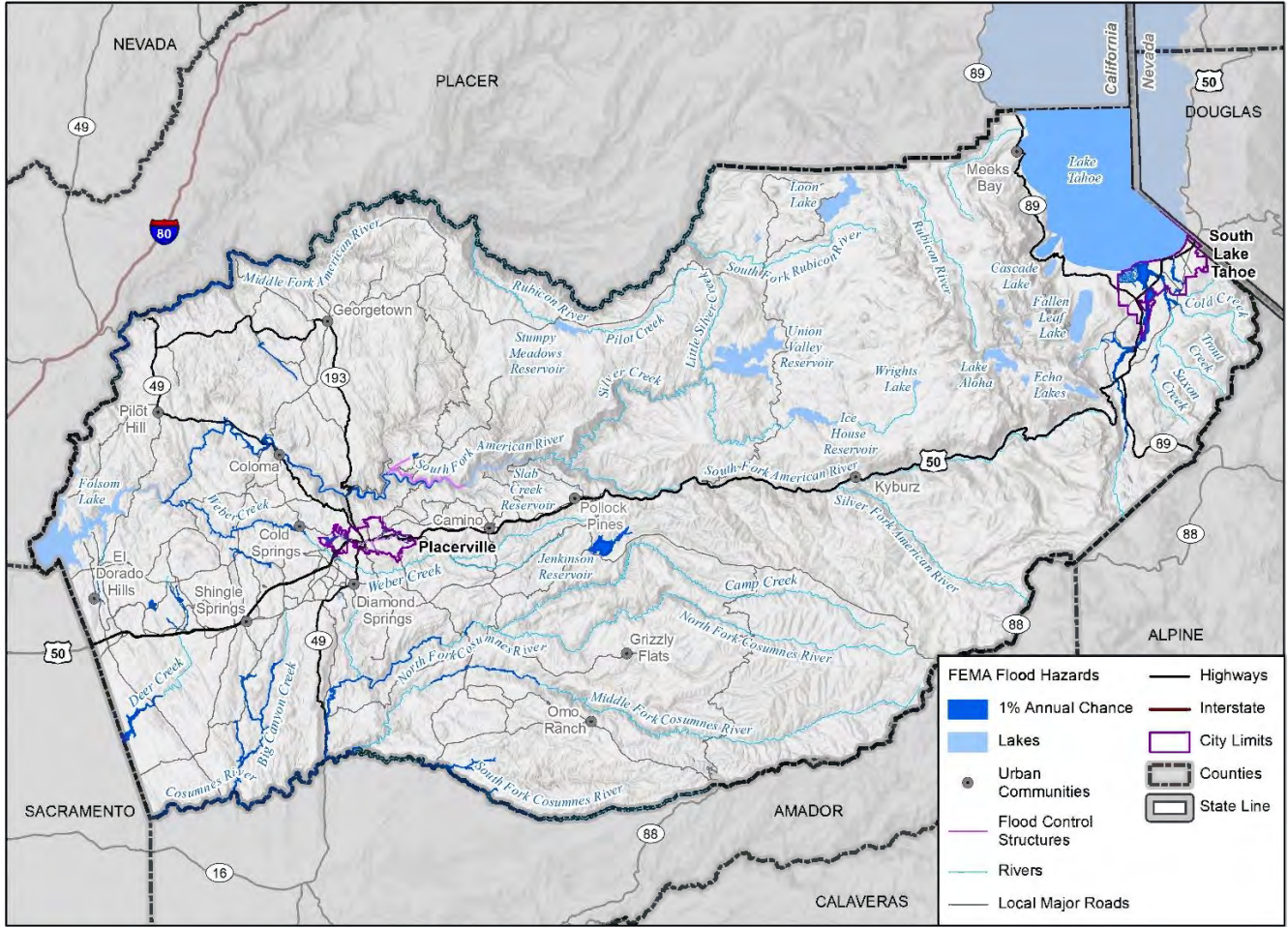
No USACE 200-year flood zones are mapped in the County. There are also no levees or levee protection zones and areas subject to inundation in the event of a levee or failure of a floodwall. Refer to the County LHMP for historical data on flooding, areas that are vulnerable to post-wildfire flooding, and areas and properties that have experienced repeated losses due to flooding.

People in the County who are most vulnerable to flood events are those living near waterways and natural/man-made drainage courses. Vulnerability in these areas is further compounded by factors such as living in mobile homes or in rural or isolated areas with limited access, or for populations that are unhoused, very young, or very old. Flooding is also projected to increase with climate change. Although climate change may not result in increases in precipitation, projections forecast an increase in precipitation variability over time. This means that during some years, the County will experience intense rainfall and snow events that result in a significant amount of precipitation over a short period of time, which may result in flooding. In other years, the County will experience long periods of drought, which could result in drier soil conditions, so that when there is precipitation, the surface water runoff is less likely to infiltrate and absorb into the ground, which can lead to flood hazards.

Additionally, climate change is projected to lead to increased wildfire severity. More intense and frequent wildfires may result in a loss of vegetation and rapid runoff. The loss of vegetation following wildfires can also lead to post-wildfire debris flows, rock falls, mudslides, and other soil instabilities. In combination with forestry pests and diseases, the secondary impacts from droughts and wildfires will increase flood risk.

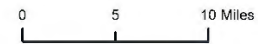



Figure HS - 10 County 1% Annual Chance Floodplains



Map compiled 1/2023;  
 Intended for planning purposes only.  
 Data Source: El Dorado County,  
 FEMA NFHL 4/3/2012

\*0.2% Annual chance floodplains are not shown due to not being able to show up at the current map scale.

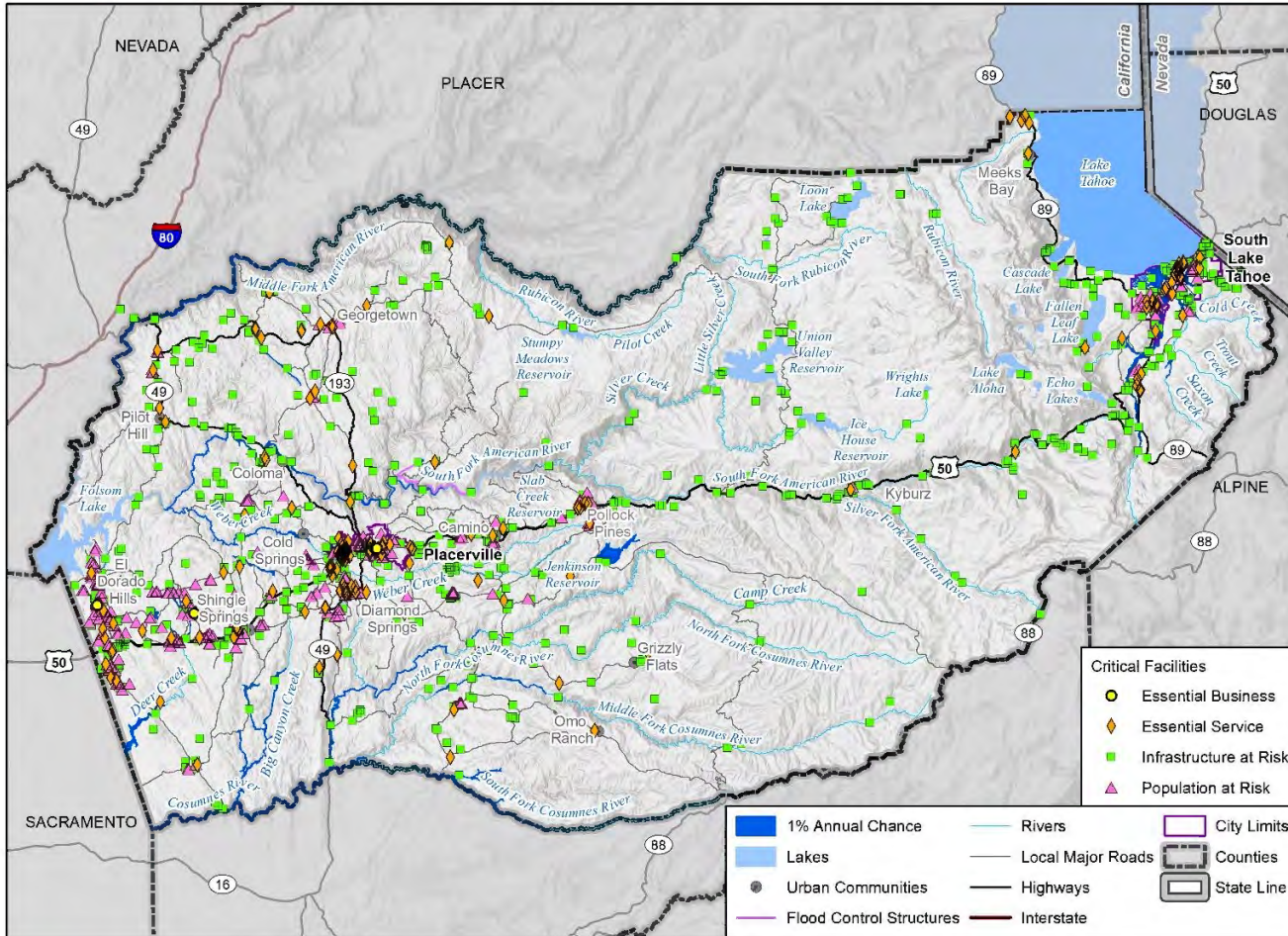




In 1974, the County became a participating community in the National Flood Insurance Program (NFIP). The NFIP provides County property owners and renters with federal flood insurance, reduces flood damage through a mandatory local floodplain management ordinance, and identifies and maps County flood hazards. The NFIP requires the County to maintain a floodplain management ordinance based upon current FEMA Flood Insurance Rate Maps (FIRM). These maps identify Special Flood Hazard Areas (SFHAs), or land subject to inundation by a flood that has a 1% annual chance of occurring in any given year. The County uses FIRMs to display the limits of mapped flood hazard areas, illustrate insurance zone designations used in the determination of flood insurance rates and premiums, and provide minimum regulatory 100-year flood elevations that the County floodplain management ordinance is based upon. FIRMs are also used to promote specific design and construction standards for new buildings and improvements within the floodplain. Refer to the County's LHMP for information on historical flooding and repeated losses.

The County has a defined regulatory floodplain that consists of areas with an elevated risk of flooding where additional development regulations are enforced to reduce exposure to flood hazards. These regulations are summarized in the County's Flood Damage Prevention Ordinance (Chapter 130.32 of the County Municipal Code) and Drainage Manual. The County can also mitigate flood hazards by avoiding flood-prone areas, implementing floodplain management activities, conducting emergency response planning, and implementing flood control projects. Figure HS - 11 shows the locations of existing essential public facilities in the County, in addition to major roads, and their relation to the 1% annual chance floodplains.

Figure HS - 11 Essential Public Facilities in relation to the 1% Annual Chance Floodplains in El Dorado County



Map compiled 1/2023;  
 Intended for planning purposes only.  
 Data Source: El Dorado County, HIFLD  
 FEMA NFHL 4/3/2012

\*0.2% Annual chance floodplains are not shown due to not being able to show up at the current map scale.

0 5 10 Miles






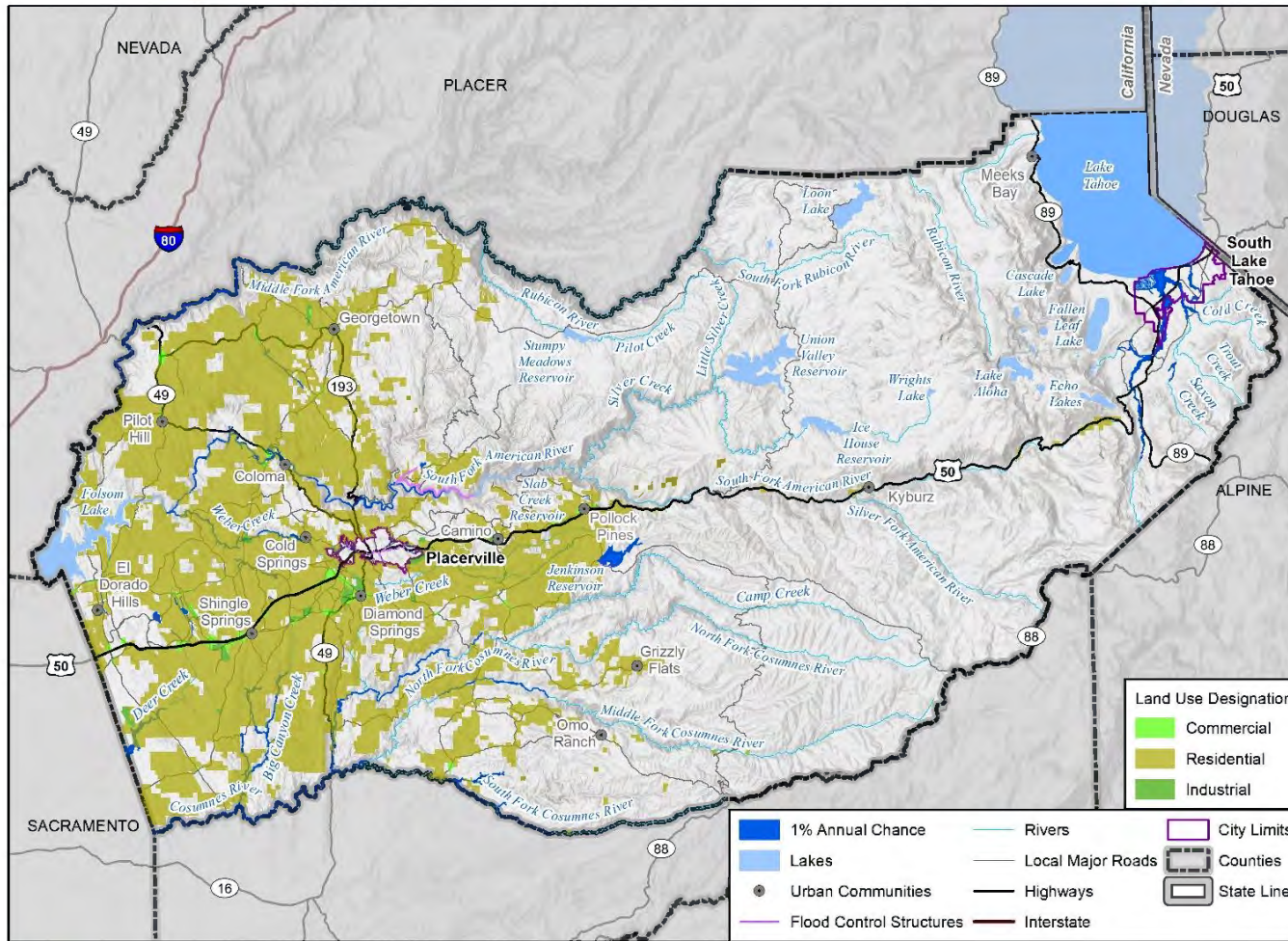


Figure HS - 12 and Figure HS - 13 provide the location and distribution of existing development in the 1% annual chance floodplains (Refer to the CVA [Appendix C] and LHMP for additional details on the specific essential public facilities within the floodplain). The existing development pattern is based on the two city limits and SOI boundaries; residential, commercial, and industrial land use designations (shown by Figure HS - 12); and existing building footprints that provide information on the extent of existing and planned residential and commercial patterns (shown by Figure HS - 13). The existing development patterns can also be used to infer where planned development may occur. Planned development in the unincorporated County is also likely to occur primarily in existing Community Regions and Rural Centers. Also, most land in the in the 1% annual chance floodplain is designated for parks and open space that limit development.

Policies in this section are designed to minimize flood hazards by restricting development in flood-prone areas, require development that does occur in floodplains to be designed to avoid flood damage, and promoting public education about flood hazards.

Figure HS - 12 Existing and Planned Development in relation to the 1% Annual Chance Floodplains in



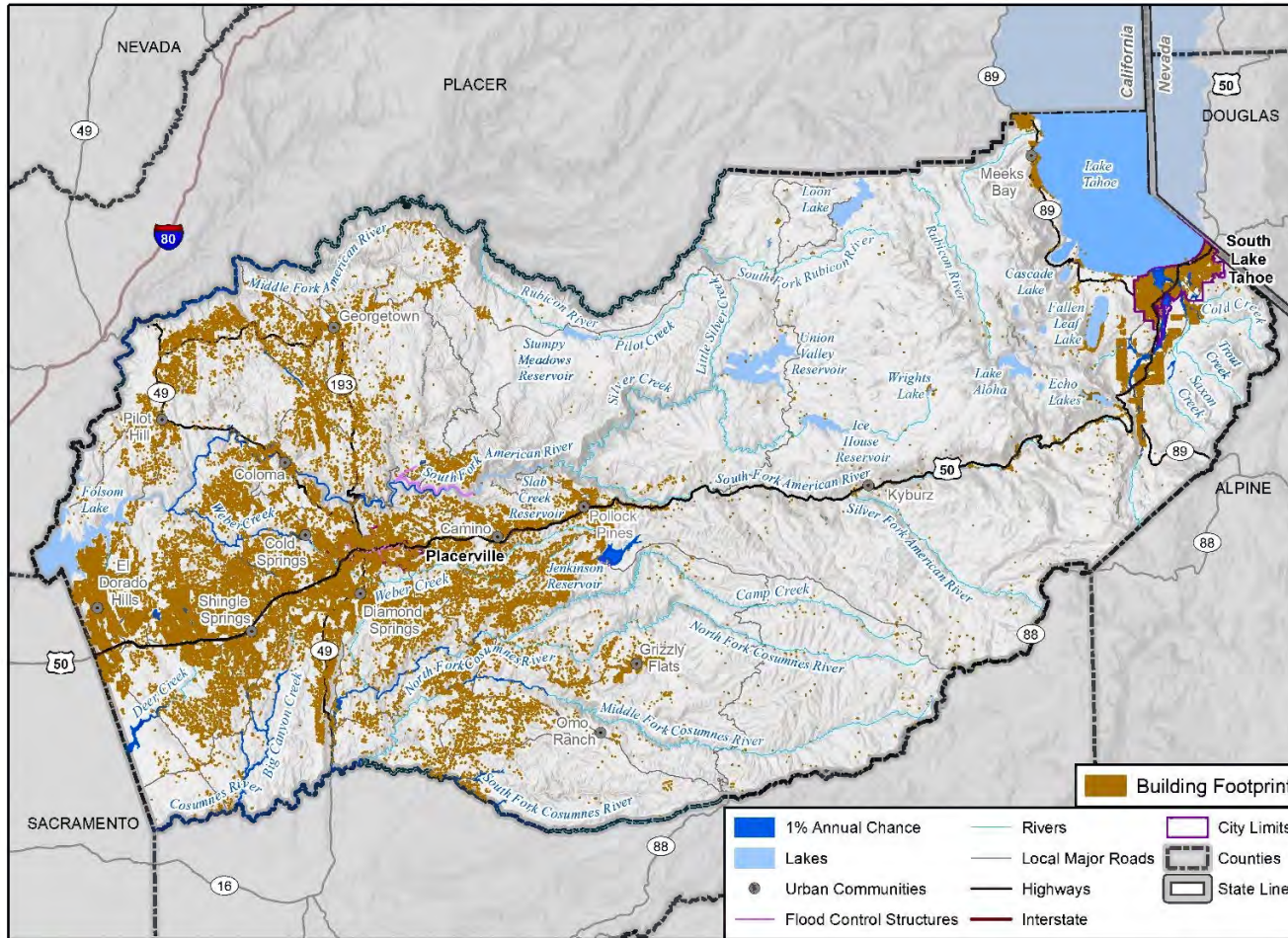
Map compiled 1/2023;  
Intended for planning purposes only.  
Data Source: El Dorado County,  
FEMA NFHL 4/3/2012

\*0.2% Annual chance floodplains are not shown due to not being able to show up at the current map scale.

0 5 10 Miles

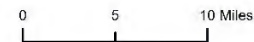


Figure HS - 13 Existing Building Footprints in relation to the 1% Annual Chance Floodplains in El Dorado County



Map compiled 1/2023;  
 Intended for planning purposes only.  
 Data Source: El Dorado County,  
 FEMA NFHL 4/3/2012

\*0.2% Annual chance floodplains are not shown due to not being able to show up at the current map scale.



## Noise

Some level of noise is unavoidable and the result of a healthy community. Too much noise can impact public health and quality of life. Noise regulations and land use planning can separate sensitive populations, such as children, from hazardous amounts of noise, like those created from heavy construction or airports.

## Hazardous Materials

There are several sources of hazardous materials in the County. Highways, railways, and commercial and military aviation routes are high risk areas due to the multitude of chemicals and hazardous materials transported through them. Manufacturing businesses in the incorporated and unincorporated County may handle hazardous materials. Accidental release of pesticides, fertilizers, and other agricultural chemicals, primarily in the West Slope, can be harmful to the ecosystem and human health. Finally, illegitimate businesses such drug labs, and illegal disposal of hazardous waste, pose additional threats to the community. Those most vulnerable to these threats include outdoor workers, those who live near transportation routes, those who work in industries mentioned above, children, the elderly, and low-income or marginalized communities.

## Air Quality

According to the California Environmental Health Screening Tool (CalEnviroScreen) 4.0, a tool used to identify communities that are disproportionately burdened by multiple sources of pollution, most of the County has good air quality. The indicator maps show low levels of diesel particulate matter (PM) around El Dorado Hills, Placerville, and South Lake Tahoe, and the West Slope shows low levels of PM<sub>2.5</sub>. Ozone levels throughout the County are higher than 65-75% of census tracts in the State. Children, the elderly, those with respiratory or autoimmune conditions, women who are pregnant, and outdoor workers are most vulnerable to poor air quality.

## Aviation-Related Hazards

The four airports in the County, the Placerville Airport, Lake Tahoe Airport, Cameron Park Airport, and Georgetown Airport, facilitate air transportation and connectivity and provide a link to the region and beyond. Airports enhance the overall connectivity and accessibility of the County, contributing to economic growth, tourism, and emergency response capabilities. Well-maintained airports serve as vital assets during emergencies, offering a crucial lifeline for medical evacuations, disaster response, and swift transportation of essential supplies.

Well-executed land use planning surrounding airports is essential to the safety of the County. By establishing zoning regulations that restrict incompatible land uses, such as residential or sensitive facilities, in areas prone to high noise levels or safety hazards, conflicts between the airport and neighboring communities can be minimized. This cooperative relationship supports the smooth operation of the airport while maintaining a favorable living environment for residents.

## Highway Safety

The highway system in the County serves as a transportation and connectivity network, facilitating movement within the region. The County heavily relies on U.S. Highway 50, along with additional state routes and local roads, to connect its major population centers, including Placerville, South Lake Tahoe, El Dorado Hills, Cameron Park, Diamond Springs, and Camino, to each other and the surrounding counties.

Well-maintained highways offer numerous advantages, including enhanced accessibility to essential services like healthcare, education, and commerce. This significance is particularly pronounced considering the County's largest economic sector, consisting of education, healthcare, and social assistance, heavily depends on the seamless transportation of individuals. Additionally, highways contribute to economic development by enabling efficient transportation of goods and attracting businesses to the area.

The highway system assumes a critical role during hazard events, serving as an essential route for evacuation and access to emergency services. Highway safety assumes paramount importance in rural areas, characterized by unique safety considerations such as limited lighting, narrow roads, and potential encounters with wildlife. Enhancing highway safety not only safeguards residents from accidents but also enhances their overall well-being and quality of life.



## Drought and Water Supply

Drought is a complex phenomenon that occurs when a region experiences drier than normal conditions for an extended period. A drought can result from a variety of environmental events, including decreased precipitation, decreased snowpack or a shift in snowpack run-off, or water sources being depleted faster than they can recharge. Snowpack is currently the primary source of water in the County. Snowpack has historically melted throughout the year, providing a reliable source of water. As temperatures increase, precipitation that would have accumulated as snowpack is now falling as rain instead of snow. The decreased snowpack will melt sooner, shifting the seasonal distribution of precipitation, resulting in less water availability during late summer to early fall, often the warmest part of the year. Drought impacts are expected to result in potential water shortages in the County and may be most severe for vulnerable assets, such as isolated and rural communities, the farming sector, and natural resources.

El Dorado County has six public water purveyors. Four of them – El Dorado Irrigation District (EID), Georgetown Divide Public Utility District (GDPUD), City of Placerville, and Grizzly Flats Community Services District (GFCSD) – provide surface water services in the West Slope. EID's sources include both surface water and recycled water with the three main diversion points for surface water being the Sly Park Dam and Jenkinson Lake, the District-owned and operated El Dorado Hydroelectric Federal Energy Regulatory Commission (FERC) Project 184 at Forebay Reservoir, and the Folsom Reservoir via to Bureau of Reclamation water service contracts. The City of Placerville sources its water wholesale from EID. South Lake Tahoe Public Utility District (STPUD) provides groundwater to the City of South Lake Tahoe and the unincorporated community of Meyers. Smaller water purveyors also supply water in the South Lake Tahoe areas and the communities around Fallen Leaf Lake and Meeks Bay. These purveyors do not cover the entire El Dorado County, leaving residents, farms, ranches, and businesses outside their boundaries reliant on groundwater.

In the West Slope, shallow groundwater wells are the norm, while in the Tahoe Basin, groundwater is extracted from either the Tahoe South or Tahoe West Subbasin.

Those dependent on small water systems, which are defined by the California Health and Safety Code as a system for the provision of piped water to the public for human consumption that serves at least five, but not more than 14, service connections and does not regularly serve drinking water to more than an average of 25 individuals daily for more than 60 days out of the year are particularly vulnerable to drought. This vulnerability stems from the lack of redundant water supplies and a shallow, fractured rock aquifer that renders groundwater unreliable in the West Slope. Even when these small water systems are geographically close to larger providers, they often struggle to connect to these larger systems due to the challenging foothill terrain.

## Evacuation Accessibility

Wildfires, flooding, geologic and seismic events, and other hazards can isolate households and communities in the County by limiting access for emergency response and safe evacuation for residents. Government Code Section 65302.15(a) requires a Safety Element to identify evacuation routes and their capacity, safety, and viability and evacuation locations under a range of emergency scenarios. Government Code Section 65302(g)(1) requires a Safety Element address evacuation routes as they relate to identified geologic hazards. The County's physical geography, terrain, and climate greatly influence the potential for wildfire and flood hazards, in addition to secondary impacts associated with geologic and seismic events.

The El Dorado County Transportation Commission began development of the Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Plan (also referred to as a Study) to help provide a guide that allows Placerville and the County to react quickly and be prepared for future destructive wildfire events that are expected to occur based on the size and frequency of wildfires in California in recent years. The plan will provide a baseline to support subsequent analysis and understand how future transportation and evacuation accessibility and planning efforts can be expected to benefit the community. While the study area in the Existing Conditions Report (Report) for the Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Plan focuses around the greater Placerville area along the western slopes of the foothills of the Sierra Nevada, the assessment can be used at a regional planning level to enable the County to review development projects and develop safety policies that facilitate wildfire evacuation preparedness. The same policy concepts can be applied to flood and earthquake hazards under a range of emergency scenarios. The outcome of the Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Plan is to develop a multi-stage planning approach that can focus subsequent evacuation route analysis and their capacity, safety, and viability at specific locations both within the greater Placerville area but also within the unincorporated County. These efforts would therefore support tactical-level efforts that reduce not only wildfire risk, but risk to people and property during flood and geologic and seismic events by ensuring the communities are informed and educated on how and when to safely evacuate during a hazard event.

Determining evacuation routes prior to the occurrence of a wildfire or seismic or geologic event is difficult primarily because of the unpredictability of these hazards; however, the secondary hazards that may follow severe weather events like landslides, mudslides, or rock falls may be planned for with advance notice and warnings. Still, due to the variability for these hazards, the County may not prescribe fixed emergency evacuation routes for a range of emergency scenarios, particularly wildfire, geologic and seismic, or flood events. When hazard events occur with little warning, law enforcement and public safety agencies in the County, including the County's Sheriff's Office, the California Highway Patrol (CHP), CAL FIRE, and local police and fire departments (depending on the hazard event) are responsible for emergency response and evacuations.

Although the County does not have a formally identified evacuation network, there are several routes that can meet evacuation needs from different neighborhoods and communities. These routes should provide sufficient road capacity, freedom of traffic flow, and have limited exposure to hazard-prone areas. The County also maintains emergency response protocols that outline communication and implementation actions that must be taken to order a warning and evacuation alert. These public agencies must therefore follow specific protocols to determine evacuation routes based on the hazard conditions, the type of emergency, and the established agreements and procedures set forth by the agencies, their mutual aid agreements, and their applicable EOPs. These protocols are also in place to ensure that, if evacuation procedures are needed, that the dissemination of evacuation route information is clear and the timing of evacuation is coordinated to ensure traffic moves smoothly, and accidents and road congestion is minimized.

The City of South Lake Tahoe and El Dorado County Sheriff's Department and Office of Emergency Services, in cooperation with the CHP, CAL FIRE, Fire Safe Council, and American Red Cross developed an All Hazard Community Evacuation Plan and evacuation maps for the South Shore area, which includes the unincorporated communities of Meyers, Fallen Leaf Lake, the Spring Creek tract, and the Echo Summit area. The plan covers home and neighborhood evacuation, how citizens will be notified during an evacuation, how to shelter in place, and how to respond after the incidents. There are also preliminary initiatives in place at the Tahoe Transportation District to develop a Regional Evacuation Plan that contains strategies to coordinate regional transportation policies, infrastructure planning, and response plans throughout the region in the event of an emergency evacuation. Similarly, the Tahoe Regional Planning Agency Regional Plan has policies (Policy 3.4 in the Regional Plan) in place that support emergency preparedness and response planning, including the development of a regional evacuation plan.

The primary transportation corridor in the County is the U.S. Highway 50, which provides connections from Sacramento County to the State of Nevada and serves all the County's major population centers, including El Dorado Hills, Cameron Park, Diamond Springs, and Camino, as well as the two incorporated cities. The regional roadway system includes four additional State Routes (SR) (SRs 49, 89, 153, and 193) and a network of local public and private roads. The regional road system is shown in Figure HS - 14. Note that SR 153 is a short 0.5-mile highway situated from the junction of Cold Springs Road and SR 49 in the community of Coloma. Given its short length, it is not shown in Figure HS - 14.

The City of Placerville has identified areas within the Greater Placerville region with low (only one route in/out) and medium (with up to three routes in/out) accessibility in the preliminary Greater Placerville Wildfire Evacuation Preparedness Study Existing Conditions Report (Report) (March 2023).<sup>1</sup> Results from the Report including areas with low, medium, and high accessibility within the Greater Placerville area are displayed in Figure HS - 15. The County will need to conduct a similar analysis for the portions of the unincorporated County not covered in the Report upon the next update of the Housing Element; this analysis can also be conducted as part of the County's LHMP update.

Government Code Section 65302(g)(5) also requires the identification of residential neighborhoods that have fewer than two emergency evacuation routes. In the unincorporated County, there are 99 neighborhoods with 30 or more dwelling units that do not have at least two emergency evacuation routes. These neighborhoods were identified based upon coordination with local County Sheriff's Department, Fire Department, and CAL FIRE and the CHP. The locations of residential neighborhoods (existing subdivisions with more than 30 dwelling units) with fewer than two emergency evacuation routes (evacuation constraints) in the County, as identified by the California Board of Forestry and Fire Protection and the State Fire Marshall as part of the Subdivision Review Program are shown in Figure HS - 16

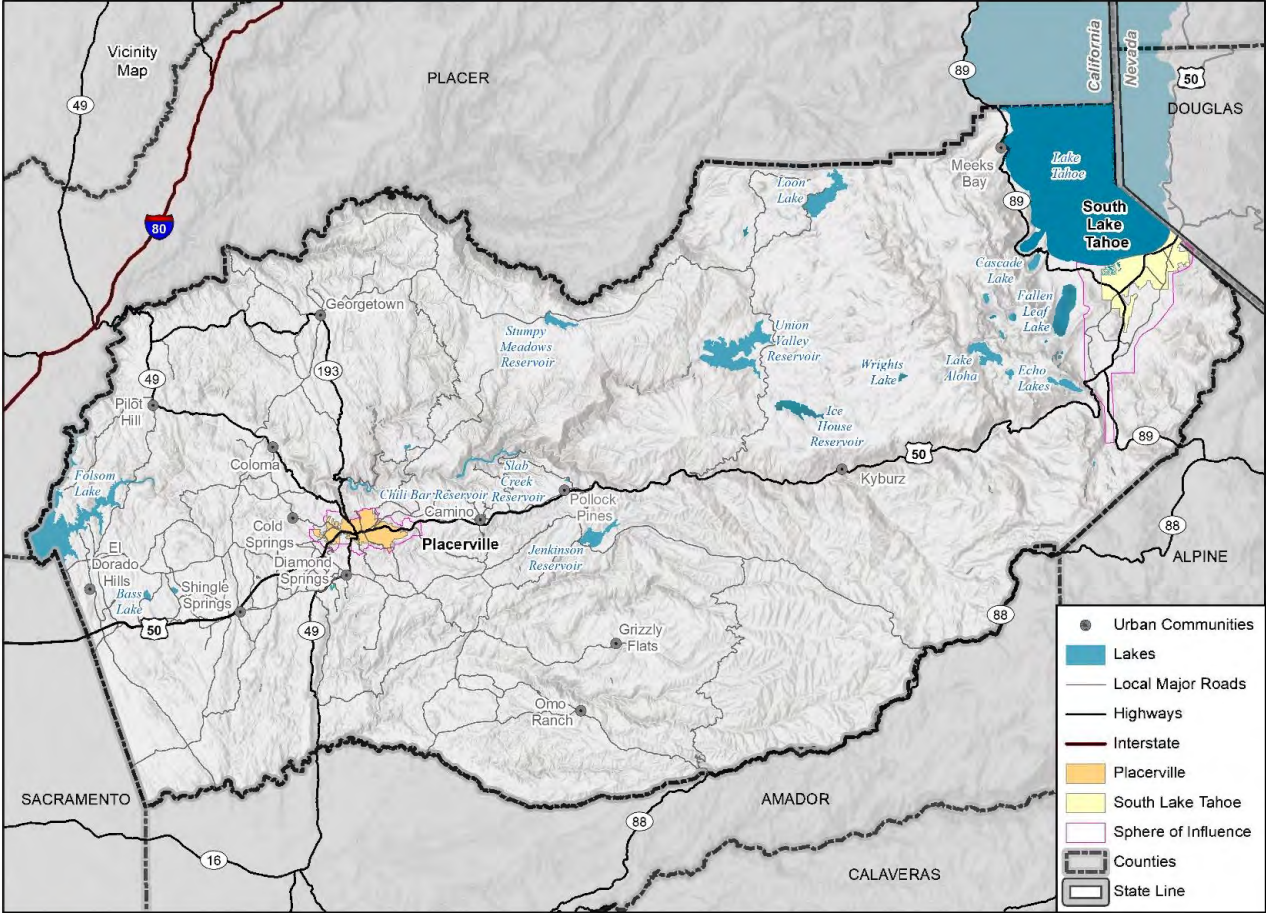
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<sup>1</sup> The El Dorado Transportation Commission is currently developing the Greater Placerville Wildfire Evacuation Preparedness Study Existing Conditions Report. The County intends to use information in this Report to further evaluate evacuation constraints for unincorporated communities in the County.

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Figure HS - 14 El Dorado County Major Highways & Roads



Map compiled 6/2023;  
Intended for planning purposes only.  
Data Source: El Dorado County

0 5 10 Miles



**Figure HS- 15 Areas with Low, Medium, and High Accessibility Within the Greater Placerville Region**

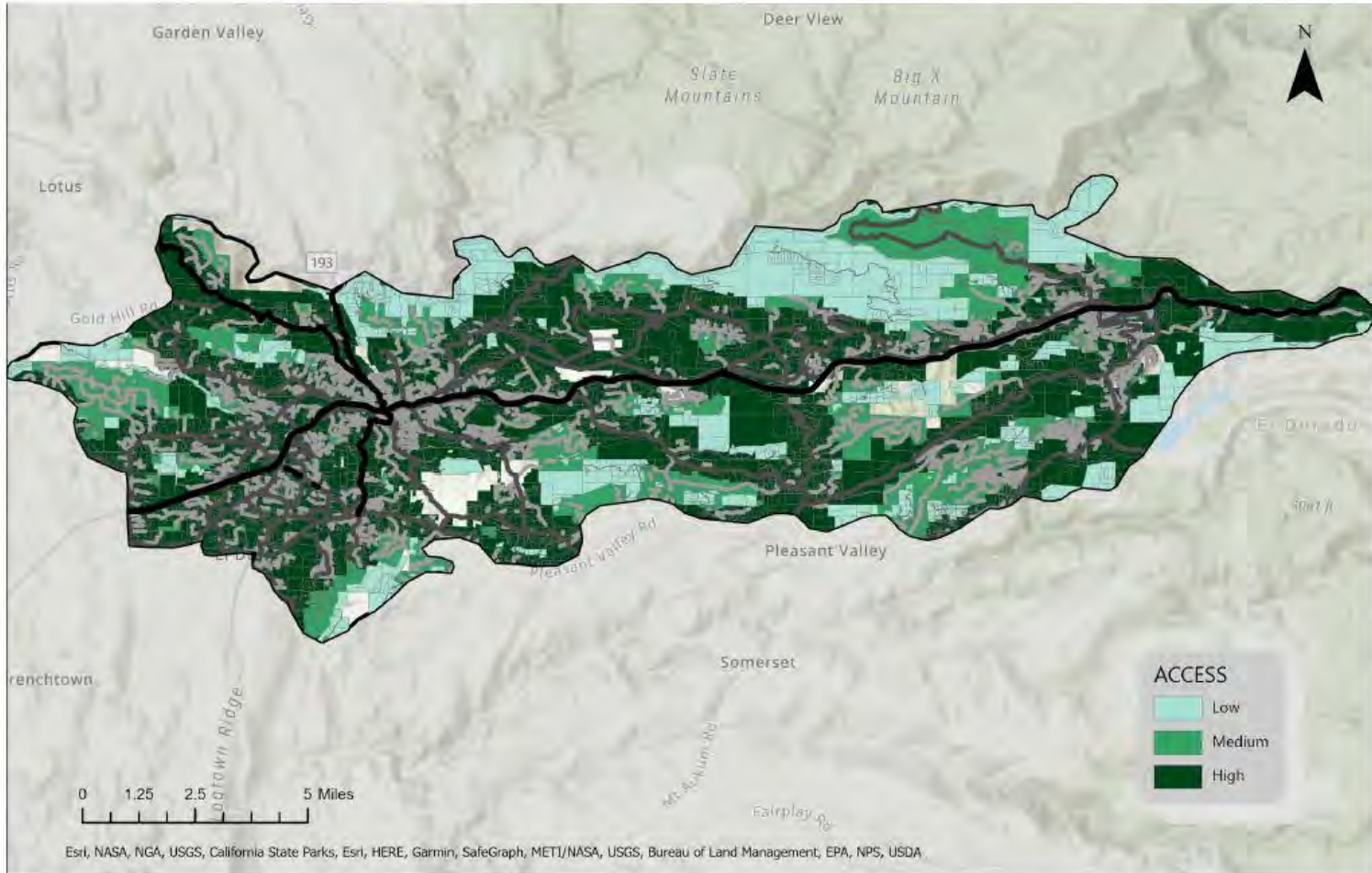
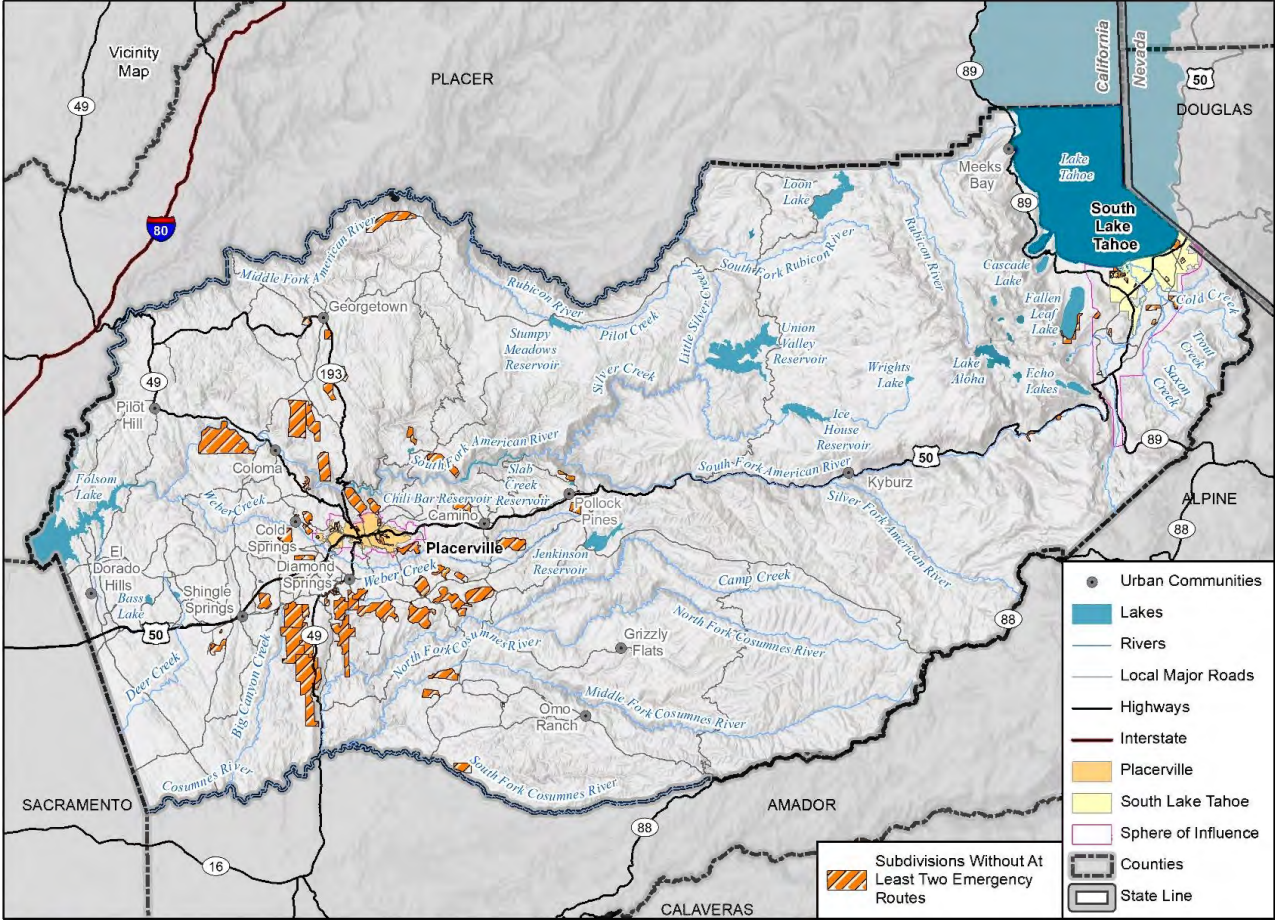


Figure HS - 16 Subdivisions Without At Least Two Emergency Routes



Map compiled 6/2023;  
 Intended for planning purposes only.  
 Data Source: El Dorado County, CAL FIRE

## Agriculture and Forestry Disease and Tree Mortality Hazards

Climate change may contribute to an increase in agricultural and forestry disease and tree mortality throughout California and the County. Warmer temperatures can extend the geographic range of pests and result in longer active seasons. Long and severe droughts weaken forests, making them more susceptible to pests and disease, and decrease their fire resiliency. Plants that have been weakened by pests and drought then become primed for spreading wildfire and threatening human lives and infrastructure.

As is shown in


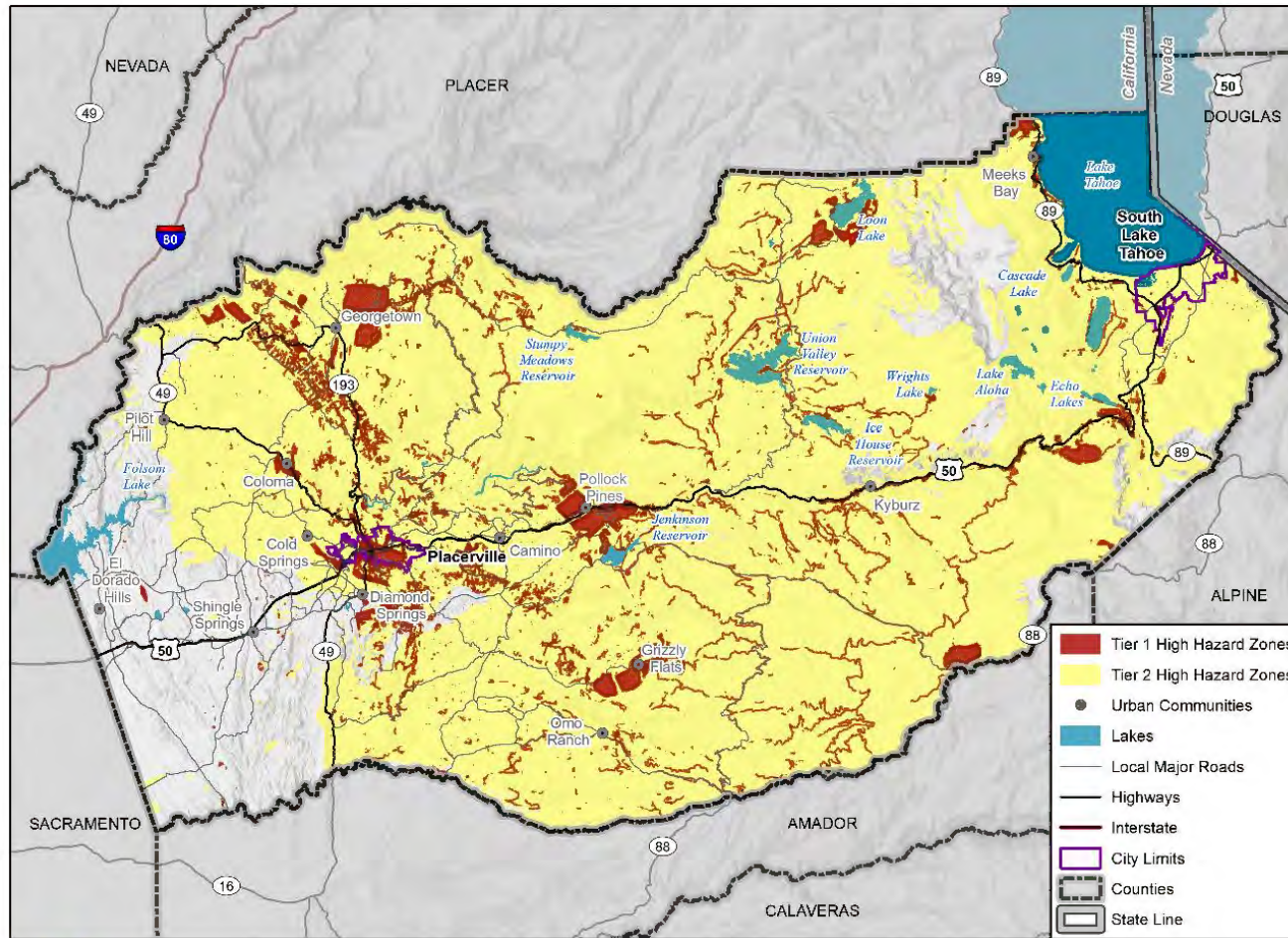


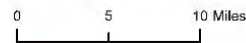
Figure HS - 17, most of the County falls under the Tree Mortality Related Tier 2 High Hazard Zones. Tier 2 High Hazard Zones are areas that have significant tree mortality and significant community and natural resource assets. Tier 1 High Hazard Zones are also scattered throughout the County. These are areas where tree mortality directly coincides with critical infrastructure.



Figure HS - 17 Tree Mortality Related High Hazard Zones



Map compiled 1/2023;  
Intended for planning purposes only.  
Data Source: El Dorado County, CALFIRE, FRAP



## Extreme Heat

The County's overall temperature, number of extreme heat days, and number of warm nights are projected to rise throughout the 21st century. These increased temperatures can lead to more intense extreme heat events, which can cause illness and death, especially in sensitive populations. Prolonged exposure to excessive heat can lead to other impacts, such as drier soils, increased drought conditions, greater tree and agricultural mortality, increased risk of injuring or killing livestock, increased risk of public health hazards, and increased wildfire risk. Power outages may also occur as heavy demands strain the electrical power grid.

While extreme heat events have immediate and direct adverse effects on human health, the prolonged rise in temperatures will have broader implications, particularly the northward migration of disease vector species not native to the Sierra region. Notable examples of this phenomenon are the spread of mosquito and tick-borne diseases, such as West Nile virus and Lyme disease. As temperatures continue to warm, it is expected that these disease vectors will extend their range.

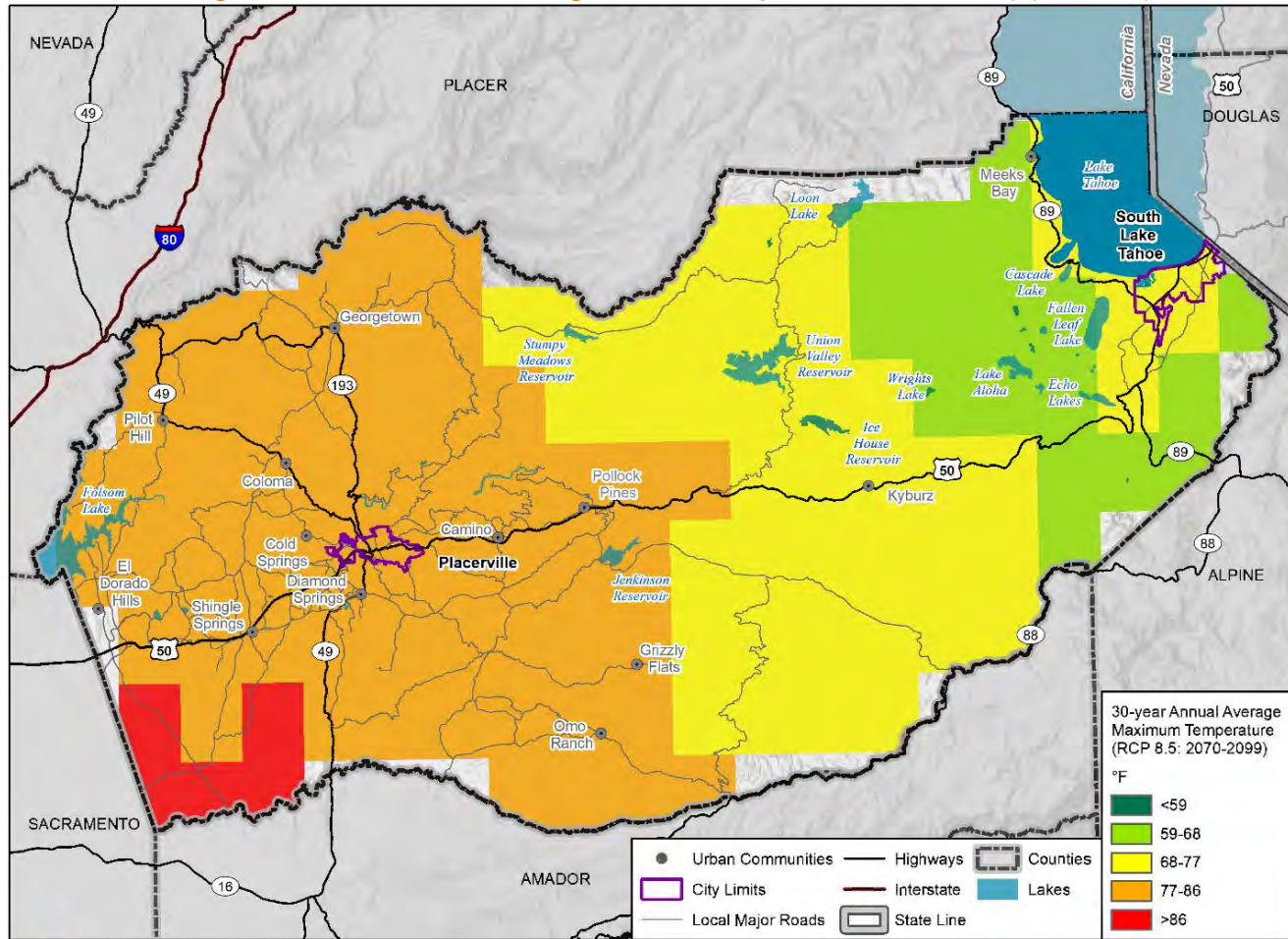
Rising temperatures can also influence the migration patterns of invasive agricultural species. Additionally, shifts in precipitation patterns and temperature can impact other disease vectors relevant to El Dorado County, such as deer mice, which serve as vectors for Hantavirus in the higher elevations. These ecological changes can have far-reaching implications for public health.

In the context of vector-borne diseases, various anthropogenic factors play a crucial role in disease transmission. These factors include vector control measures, changes in land use, alterations to ecosystems, and socio-economic status. By understanding the complex interplay of these factors, public health authorities can better anticipate and address the evolving challenges posed by warming environmental conditions and disease vectors in the Sierra region.

Incorporated cities in the County, as well as unincorporated communities like El Dorado Hills, are also prone to the urban heat island effect, a phenomenon where cities experience higher temperatures compared to their surrounding rural areas. This difference in temperatures is primarily caused by the unique characteristics of urban environments and human activities within them. Cities have extensive concrete and asphalt surfaces that absorb and store heat during peak temperatures and release it slowly as temperatures cool. The lack of vegetation in urban areas reduces cooling through evaporation and shading. Human activities, such as transportation and industrial processes, also contribute to the heat. Additionally, the density of buildings obstructs air flow and traps heat within the city. Urban heat islands have various impacts, including increased energy consumption, health risks, and environmental impacts.

The average annual maximum temperature is a metric used to quantify extreme heat by averaging the hottest daily temperatures annually. The current 30-year average maximum temperature for the West Slope is between 59°F and 77°F, while the 30-year average maximum temperature for the Tahoe Basin is between 51°F and 68°F. Under the Representative Concentration Pathway (RCP) 8.5 scenario (high emissions, business as usual scenario), the average annual maximum temperature for the West Slope will be between 77°F to 86°F by the end-of-century, and 59°F to 68°F for the Tahoe Basin. These increased temperature projections are detailed in Figure HS - 18. For more information on extreme heat projections related to climate change refer to the CVA in Appendix C.

Figure HS - 18 30-Year Annual Average Maximum Temperature: End-of-century (2070-2099)



Map compiled 5/2022;  
Intended for planning purposes only.  
Data Source: El Dorado County, Cal-Adapt

0 5 10 Miles



## Human-Health Hazards

The primary intervention for future community wellness is sustainable, high-quality healthcare that prioritizes prevention and education at both the individual and population levels. This proactive approach is essential to the County's strategy. Augmented by robust public health infrastructure working in tandem with established emergency services, it equips capacity for an effective community response to anticipated human health hazards and novel disease events that can strain resources and necessitate surge capacity.

The extensive impacts of climate change on human and environmental health as currently understood will continue to have detrimental effects on the human state of wellness. Climate change, through shifts in temperature and precipitation patterns, amplifies the potential for human health hazards. Warmer climates provide favorable conditions for bacteria, viruses, parasites, and other disease-causing agents, including those responsible for illnesses such as West Nile virus, influenza, and Lyme disease.

Continuous proactive planning has contributed to improved community health, communicable disease control, and the ability to effectively respond to known and emerging challenges that affect populations and public health. Improvements in planned development and human hazard mitigation not only reduces the financial burden on the government for healthcare but also bolsters the health of the County's workforce; protects the segments of the population most vulnerable to human health hazards, including young children, the elderly, economically disadvantaged households, and individuals with underlying health conditions; stimulates the economy; and considers the well-being of future County residents.

## High Wind

The National Weather Service defines high wind events as events during which sustained wind speeds of 40 miles per hour (mph) or greater last for one hour or longer, or winds of 58 mph or greater last for any duration. Maximum wind gusts at the Central Sierra Snow Lab on Donner Summit typically measure between 35 to 59 mph. During the 2022-2023 winter storms, wind gusts along the Sierra Nevada Crest were reported between 60-80 mph.

High winds can cause significant property, infrastructure, and agricultural losses related to downed trees, damaged power lines, and crop damage. High winds can also have adverse economic impacts from business closures and power losses associated with PSPS events. Additionally, flying debris from high wind events can result in injuries and deaths. Residents of mobile homes, outdoor workers, those with limited mobility, low-income communities, and isolated communities that may have limited access to early warning systems and transportation networks are most vulnerable to high wind events.

## Severe Weather

Severe weather includes thunderstorms, heavy rain, lightning, hail, winter storms, and heavy snow. Actual risk to the County is dependent on the nature and location of any given hazard event. The most significant secondary hazards associated with severe local storms are flash floods, falling and downed trees, landslides, downed power lines, dry-mantle flash-flood events, landslides, and debris flow. The County has experienced 25 state emergency declarations from 1950 to 2017, 18 of which were associated with severe winter storms, heavy rains, or flooding, and one of which was for a severe freeze event. As temperatures rise and precipitation patterns shift, there will likely be an increase in rain-on-snow flooding, which can overwhelm both natural and manmade drainage systems, causing overflow, localized flooding, and property destruction. Those most vulnerable populations to these events include those who reside in mobile homes, those with limited mobility, electricity-dependant individuals, homeless individuals, and rural communities that may have limited infrastructure and may be hard to reach by emergency services.

## Climate Adaptation and Resiliency

Climate change in the County is expected to increase temperatures, increase precipitation variability, and shift precipitation patterns. This may result in an increase of the number of warm days and nights, an increase in the length of dry spells or periods of drought, an increase in the severity of precipitation events, a decrease in the availability of snowpack, and an increase in the frequency and severity of wildfires, which can lead to long periods of poor air quality. Climate change may alter or increase the frequency, duration, and magnitude of most natural hazards addressed in Safety Element, with the geologic and hazardous material incidents being the most probable exceptions. Climate change can also exacerbate the likelihood of cascading hazards, where increased temperatures and drought conditions, in combination with high winds and wildfire risk may result in energy shortages or PSPS events.

The County's CVA (see Appendix C) evaluates how climate change may impact socially vulnerable populations, property, critical facilities and infrastructure, natural and cultural resources, and economic assets. Climate change will likely have the greatest disproportionate impact on at-risk population groups who are already marginalized or disadvantaged, such as low-income communities, indigenous communities, and minority groups. While the effects of climate change pose the greatest risk to life and property, the implementation of a suite of climate adaptation and resiliency strategies can increase the community's resilience.

Goals and policies that address climate change impacts on specific natural hazards, such as Fire Hazards, Flood, Geologic and Seismic Hazards, Drought and Water Supply, Extreme Heat, and Severe Weather are addressed in the Safety Element. The framework of climate adaptation and resiliency goals, policies, and strategies further support resiliency within those at-risk population groups and community assets most vulnerable to the effects of climate change. Additional information on agencies responsible for public health and the secondary impacts of climate change, climate vulnerabilities specific to the County, as well as information on existing adaptive capacity is detailed in the County's CVA (see Appendix C).



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