

Addendum to the General Plan Environmental Impact Report

El Dorado County General Plan Safety Element Update
El Dorado County, California

SCH No. 2001082030

Prepared for:

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Acronyms and Abbreviations

AB	Assembly Bill
amsl	above mean sea level
BLM	Bureau of Land Management
BMP	Best Management Practice
CAMP	Climate Adaptation and Mitigation Partnership
CCR	Code of California Regulations
CEQA	California Environmental Quality Act
CPUC	California Public Utilities Commission
CVA	Climate Vulnerability Assessment
CWPP	Community Wildfire Protection Plan
EDCWA	El Dorado County Water Agency
EIR	Environmental Impact Report
EOP	Emergency Operations Plan
FHSZ	Fire Hazard Severity Zone
LHMP	Local Hazard Mitigation Plan
LTBMU	Lake Tahoe Basin Management Unit
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
MWELO	Model Water Efficient Landscape Ordinance
PRC	Public Resources Code
SB	Senate Bill
SEIR	Subsequent Environmental Impact Report
SRA	State Responsibility Area
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VHFHSZ	Very High Fire Hazard Severity Zone
WUI	wildland-urban interface

1.0 INTRODUCTION

1.1 Background

This Addendum to the Final Environmental Impact Report (EIR) for the 2004 El Dorado County General Plan (General Plan), certified in July 2004 (State Clearinghouse Number 2001082030), addresses the proposed minor revisions to the Public Health, Safety, and Noise Element (Safety Element) of the General Plan. El Dorado County (County) is proposing the minor revisions to the proposed 2024-2032 Safety Element update to comply with current statutory requirements. The minor revisions integrate updated information related to natural hazards; incorporate a set of climate resiliency and adaptation strategies; and include new and revised policies related to fire hazards, geologic and seismic hazards, flooding, and evacuation accessibility.

As the Lead Agency pursuant to the California Environmental Quality Act (CEQA), the County prepared this Addendum in accordance with Section 15164 of the CEQA Guidelines to evaluate whether the minor revisions proposed to the Safety Element update were adequately examined in the General Plan EIR or whether any changes trigger supplemental or subsequent environmental review under CEQA Guidelines Section 15162 or 15163. The Addendum to the County's General Plan EIR considers whether the environmental conditions today have changed such that new or substantially more severe environmental impacts would occur compared to that evaluated in the General Plan EIR. As described in the analysis for this Addendum, no changes associated with the proposed 2024-2032 Safety Element update, and no changes in circumstances, would trigger subsequent or supplemental review.

1.2 Previous Environmental Review

The environmental process for the General Plan involved the preparation of the following documents that are relevant to the consideration for the proposed 2024-2032 Safety Element update.

- Draft EIR for the El Dorado County General Plan, May 2003 ([https://www.edcgov.us/Government/planning/pages/draft_environmental_impact_report_\(deir\).aspx](https://www.edcgov.us/Government/planning/pages/draft_environmental_impact_report_(deir).aspx))
- Final EIR for the El Dorado County General Plan, January 2004 ([https://www.edcgov.us/Government/planning/pages/final_environmental_impact_report_\(eir\).aspx](https://www.edcgov.us/Government/planning/pages/final_environmental_impact_report_(eir).aspx))
- Mitigation Monitoring and Reporting Program for the El Dorado County General Plan, January 2004 (https://www.edcgov.us/government/planning/staffreport7-2004/documents/Att2_ExC_MMRP.pdf)
- Findings of Fact and Statement, July 2004 (https://www.edcgov.us/government/planning/staffreport7-2004/documents/Att1_ExB_Findings.pdf)
- Statement of Overriding Considerations for the General Plan, July 2004 (https://www.edcgov.us/government/planning/staffreport7-2004/documents/Att1_ExA_Overrides.pdf)

1.3 Overview of the Safety Element Update

On July 29, 2004, the County certified the Final EIR for the General Plan. Pursuant to CEQA (Public Resources Code [PRC] Section 21000, et seq.), the Final EIR evaluated the potential effects that would result from the adoption of the General Plan for the County with a planning horizon of 2025.

The General Plan serves as the primary policy document for development, providing a framework for managing and utilizing its physical, economic, and human resources. It articulates the County's intentions regarding the rights and expectations of the public, property owners, and potential investors. Through its goals, objectives, policies, and standards, the General Plan informs citizens of the County's development trajectory and outlines the responsibilities of all stakeholders in achieving these objectives. The Safety Element is one of nine elements of the County's General Plan. State law requires each city and county to adopt a general plan containing at least seven mandatory elements, including a Safety Element. Like the Housing Element, the Safety Element is one of the elements that is required by law to be updated every 8 years and it must be reviewed by the California Board of Forestry and Fire Protection (BOF) prior to consideration for adoption.

The proposed 2024-2032 Safety Element is an update to the County's existing Safety Element, which was amended four times since adoption and most recently in August 2019. The Safety Element update is not a comprehensive rewrite but would replace the existing Safety Element and serve as the County's guiding policy document that provides a framework to identify and address the County's safety concerns and mitigate natural hazard risks. Minor revisions to the Safety Element address changes to State law that require counties to review their Safety Elements when their Housing Elements or their Local Hazard Mitigation Plans (LHMPs) are updated, at least once every 8 years. The County updated its Housing Element on August 31, 2021, which necessitated the update to the Safety Element.

As part of the 8-year update cycle, counties must include new information related to natural hazards, include a set of climate adaptation and resiliency strategies, address evacuation accessibility, and comply with statutory changes outlined in California Government Code Section 65302(g) and 65302.15 as updated by Senate Bills (SB) 1241, 379, 1035, and 99 as well as Assembly Bills (AB) 747 and 1409. California Government Code Section 65302(g) requires that safety elements contain hazard information, mapping, and goals and policies to protect communities from seismically induced surface rupture, ground shaking, and ground failure; tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence; liquefaction; other seismic hazards; flooding; wildland and urban fires; and climate change. SB 1241 requires the Safety Element address wildfire risk in State Responsibility Areas (SRAs) and very high fire hazard severity zones (VHFHSZs). SB 379 and 1035 require the inclusion of a Climate Vulnerability Assessment (CVA) and integration of adaptation strategies in the Safety Element. SB 99 requires the Safety Element to identify residential developments in hazards areas that do not have at least two emergency evacuation routes. AB 747 and 1409 require the Safety Element to identify evacuation locations and routes and evaluate their capacity, safety, and viability under a range of emergency scenarios. The Safety Element was also modified to update existing conditions information; identify County issues, assets, and opportunities; and involve and integrate stakeholders and the community input as part of the update process. This proposed update covers the 2024-2032 planning period (8-year planning period).

The major changes of this Safety Element update are centered on:

- 1) Addressing wildfire risks in SRAs and VHFHSZs and developing policies to mitigate that risk;
- 2) Addressing climate change hazards and incorporating the CVA to integrate climate adaptation and resiliency strategies;
- 3) Minor revisions to existing policy statements that cover geologic and seismic hazards, flooding, emergency services, and wildfire, where necessary to be compliant with current State law;

- 4) Referencing the soon-to-be updated LHMP that will identify an evacuation route plan, evacuation locations, and evaluate the capacity, safety, and viability of the routes in the plan under a range of scenarios; and
- 5) Identifying residential developments in hazard areas that do not have at least two emergency evacuation routes (evacuation route policies included based on input from emergency responders).

As a policy document, the proposed Safety Element update does not result in physical changes to the environment but encourages the mitigation of foreseeable risks to the County's critical assets and resources. None of the policies in the proposed Safety Element update change the existing land use pattern, as established by the General Plan land use designations and evaluated in the General Plan EIR. The proposed 2024-2032 Safety Element update also does not modify the County's Zoning Ordinance.

1.4 Purpose of an EIR Addendum

Altered conditions, changes, or substantial additions to the description of a project that occur after certification of an EIR may require additional analysis under CEQA. The legal parameters that guide determinations on whether additional environmental documentation is required are provided in the CEQA Guidelines, which establish three mechanisms to address these changes: 1) a Subsequent EIR (SEIR); 2) a Supplement to an EIR; or 3) an Addendum to an EIR.

According to Section 15164(a) of the CEQA Guidelines, "the lead agency or responsible agency shall prepare an addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred." Section 15164(c) states that an addendum does not need to be circulated for public review. Section 15164(d) provides that the decision-making body shall consider the addendum in conjunction with the certified EIR prior to making a decision on the project. Section 15164(e) requires documentation of the decision not to prepare a subsequent or supplemental EIR pursuant to Section 15162.

Section 15162(a) of the State CEQA Guidelines lists the conditions that would require the preparation of a SEIR rather than an Addendum. When an EIR has been certified for a project, no SEIR shall be prepared for that project unless the Lead Agency determines, on the basis of substantial evidence in light of the whole record, one or more of the following:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:
 - A. The project will have one or more significant effects not discussed in the previous EIR or Negative Declaration;
 - B. Significant effects previously examined will be substantially more severe than shown in the previous EIR;

- C. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
- D. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Section 15163 of the CEQA Guidelines states that a Lead Agency may choose to prepare a supplement to an EIR rather than a SEIR if:

1. Any of the conditions described above for Section 15162 would require the preparation of a SEIR; and
2. Only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation.

Under Section 15164, an Addendum is appropriate where a previously certified EIR has been prepared and some changes or revisions to the project are proposed, or the circumstances surrounding the project have changed, but none of the changes or revisions would result in significant new or substantially more severe environmental impacts, consistent with California Public Resources Code Section 21166 and CEQA Guidelines Sections 15162, 15163, 15164, and 15168.

1.5 Scope of the Addendum

Based on the criteria above and the results of the EIR evaluation, the County has determined that an Addendum to the General Plan EIR is the appropriate CEQA documentation. The EIR evaluation is intended to review relevant environmental topic areas for any changes in circumstances or substantial new information as defined under CEQA Guidelines Section 15162, compared to the environmental impacts identified in the certified General Plan EIR. This will include a summary of current environmental conditions in the County and the relevant resource topics.

While the proposed Safety Element update includes new goals, policies, and implementation measures, the update does not enable future development, nor does it include specific projects. As a policy document, the proposed Safety Element update is self-mitigating as it encourages the mitigation of foreseeable risks to the County's assets and resources. None of the policies would change the existing land use pattern, as established by the General Plan land use designations. Additionally, the policy revisions do not approve specific development, and projects would have to undergo environmental review on a case-by-case basis, consistent with CEQA. Therefore, the minor revisions to the proposed Safety Element update would not result in new significant effects or a substantial increase in the severity of a previously identified significant effect requiring a major revision to the General Plan EIR.

In summary, the proposed Safety Element update would not result in 1) substantial changes that require major revisions to the previously certified Final EIR; 2) substantial changes to circumstances related to significant effects that require major revisions to the certified Final EIR; or 3) new information of substantial importance regarding more severe significant effects, mitigation measures, or alternatives that are now feasible, or new mitigation measures or alternatives that are considerably different from those analyzed in the certified Final EIR.

A copy of this Addendum, and supporting documentation, may be reviewed at the El Dorado County Safety Element Update webpage:

<https://www.edcgov.us/Government/longrangeplanning/general-plan-safety-element->

update and in-person at the El Dorado County Planning & Building Department offices at 2850 Fairlane Court, Building C, Placerville, California 95667.

2.0 PROJECT DESCRIPTION

2.1 Project Overview

The proposed 2024-2032 Safety Element update conveys the County's goals, objectives, policies, and implementation measures that minimize public health and safety hazards within the unincorporated areas of the County. The goal of the Safety Element update is to reduce the risk of injury, death, property loss, and other hardships to acceptable levels by identifying natural hazards that affect existing and future development and providing policy guidelines that protect residents, employees, visitors, and other members of the community from injury and death. The proposed 2024-2032 Safety Element describes the present and expected future conditions and sets policies and standards for improved public safety. The proposed 2024-2032 Safety Element also seeks to minimize impacts to important assets in the County, such as people; property; essential buildings, critical infrastructure, and community services; economic systems; and natural and cultural resources.

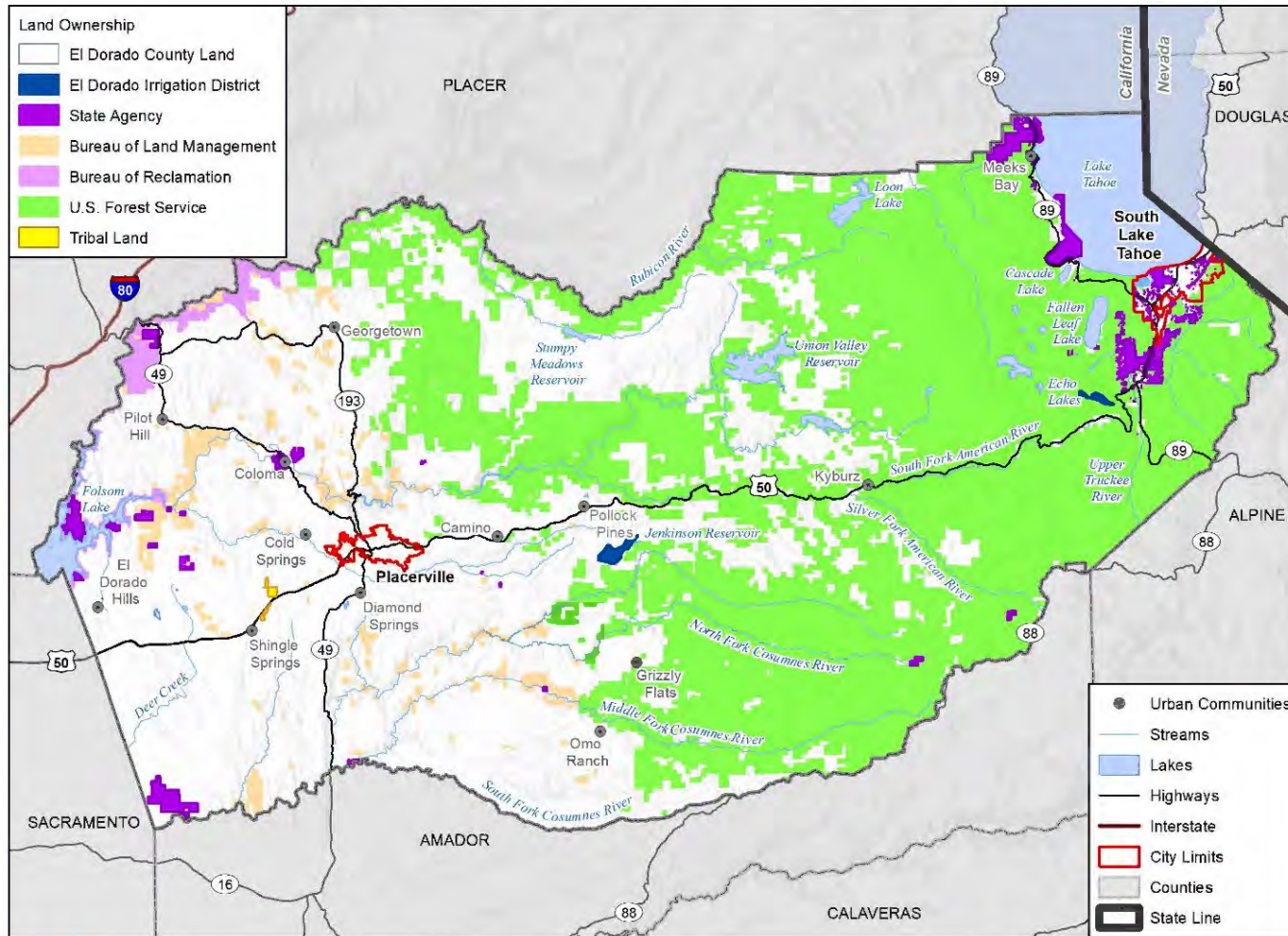
2.2 Project Location

The County is located in Northern California, bordered by Placer County to the north, Amador and Alpine counties to the south, and Sacramento County to the west; the State of Nevada borders the County to the east (see Figure 2-1). The County encompasses approximately 1,708 square miles of land and 78 square miles of water. Elevations within the County range from 850 feet above mean sea level (amsl) in the westernmost portion to over 7,200 feet amsl at some of the higher peaks in the eastern portion of the County. The County boundary spans the eastern part of the Central Valley and increases in elevation from urban western El Dorado across the Sierra Nevada crest to the high-alpine City of South Lake Tahoe and the Nevada state line.

2.3 Project Setting

The County is generally divided into two geographically distinct areas: the northeast corner of the County is within the Lake Tahoe Basin (Basin) and the remainder of the County is in the western slope region. The Basin contains the mountainous terrain over the Sierra Nevada crest to Lake Tahoe and lands managed by the U.S. Forest Service (USFS) Lake Tahoe Basin Management Unit (LTBMU). The western slope includes the rolling foothills and agricultural lands in the lower elevations near Sacramento County. The Eldorado and Tahoe National Forests cover a vast portion of land in the western portion of the County. The County is traversed by several major roadways, including U.S. Highway 50 and State Routes (SRs) 49, 88, and 89. Primary access to the County is provided by U.S. Highway 50. SR 49 provides north-south access through the western portion of the County, SR 88 provides east-west access through the southern portion of the County, and SR 89 provides north-south access through the Basin portion of the County.

Figure 2-1 El Dorado County General Plan



wsp Map compiled 4/2024;
 Intended for planning purposes only.
 Data Source: El Dorado County, BIA, Living Atlas,
 California Protected Areas Database

0 5 10 Miles



The proposed 2024-2032 Safety Element update goals, objectives, policies, and implementation measures would be effective throughout the unincorporated portions of the County. There are a number of areas that are under the jurisdiction of other governmental entities, including incorporated cities, state, and federal public lands, and Native American reservations. As described in the General Plan EIR, the areas outside of the County's jurisdiction are as follows:

Incorporated Cities. There are two incorporated cities in the County: City of Placerville and City of South Lake Tahoe. These incorporated areas are governed by their respective general plans.

Public Lands. The State of California and the Federal government own and manage substantial land holdings in the County. Lands under the purview of State agencies include the California Department of Parks and Recreation, California Department of Fish and Wildlife, and California Tahoe Conservancy. Federal land consists primarily of National Forest lands managed by the USFS, which include portions of the Eldorado National Forest, Tahoe National Forest, the LTBMU, and lands administered by the Bureau of Land Management (BLM) and the U.S. Fish and Wildlife Service (USFWS).

Native American Reservations. The Shingle Springs (Miwok) Rancheria and associated lands (of which the Federal government holds in trust) represents the only Native American land holding within the County. The tribal members of the Shingle Springs Band of Miwok Indians consist of Miwok, Maidu, and Nisenan Indians. The rancheria consists of 160 acres in Shingle Springs. For the purposes of the EIR analysis, the tribe is considered a sovereign nation with its own regulations and land use planning authority.

2.4 Program Background

California Government Code Section 65302(g) requires that Safety Elements contain hazard information, mapping, and goals and policies to protect communities from seismically induced surface rupture, ground shaking, and ground failure; tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence; liquefaction; other seismic hazards; flooding; wildland and urban fires; and climate change. Safety Elements must also include a set of climate adaptation strategies and consider evacuation route planning, peak load water supply, and military installations. This information helps the County decide where to direct development and how to protect the community in the event there is a hazard-related emergency, such as an earthquake, flood, or wildfire. Recent legislative requirements, which modified California Government Code Sections 65302(g) and 65302.15 that are addressed in the proposed 2024-2032 Safety Element update are described below.

- **AB 2140.** Links LHMPs and Safety Elements by encouraging the incorporation by reference of LHMPs into Safety Elements and by tying State funding eligibility to the adoption of LHMPs into the Safety Element (2006).
- **SB 1241.** Requires a Safety Element to address wildfire risks in SRAs and VHFHSZs pursuant to Government Code §65302(g)(3), develop policies to mitigate wildfire risk, and include review by the California BOF (2012).
- **SB 379.** Requires the inclusion of a CVA and integration of adaptation strategies in the Safety Element and encourages a climate change discussion in the LHMP. A CVA must be completed if the current LHMP does not meet the requirements of Government Code Section 65302(g)(4) (2015).
- **SB 1035.** Addresses climate adaptation strategies in Safety Element and requires an update of climate data at least every 8 years (2018).

- **AB 747.** Requires a Safety Element to identify evacuation routes and evaluate their capacity, safety, and viability under a range of emergency scenarios. Requirements are in Government Code Section 65302.15 related to land use (2019).
- **SB 99.** Requires a Safety Element to identify residential developments in hazard areas that do not have at least two emergency evacuation routes (2019).
- **AB 1409.** Requires the Safety Element be reviewed and updated to identify evacuation locations (2021).

The current Safety Element, last updated in August 2019, does not address the statutory requirements outlined above. Therefore, the County modernized the Safety Element and brought it into compliance with State law and integrated new and revised policies that reflect current hazard conditions and risk in the County. Since the current General Plan was adopted, the County has experienced significant natural hazard events, such as drought events, multiple wildfires, and severe winter storms that have heightened its susceptibility of future hazards. Urban expansion and population growth have led to the encroachment of residential areas into the wildland-urban interface (WUI), placing more homes and infrastructure in areas at risk of wildfire. Climate change has also played a significant role in intensifying natural hazards, with rising temperatures, prolonged droughts, and altered precipitation patterns creating drier conditions conducive to wildfires. The spread of invasive species, such as the bark beetle infestations has further complicated ecosystem dynamics and vegetative fuel accumulation. Additionally, inadequate infrastructure and limited evacuation routes can hinder emergency response and leave communities and people isolated, increasing vulnerability to wildfires.

Fire Hazards

The proposed 2024-2032 Safety Element fire hazard policy updates largely reflect standards and regulations that the County must already comply with, or standards and regulations the County complies with as required under the State Fire Safe Regulations. Updates to the wildfire section in the Safety Element include:

- New maps and updates to existing maps;
- Updated wildfire information such as ignition sources and causes, major wildfires, and hazard reduction measures;
- Hyperlinks to online resources and related plans, such as the LHMP, Community Wildfire Protection Plans (CWPPs), and Emergency Operations Plan (EOP);
- Updated wildfire related plans and services;
- Information on public outreach programs for defensible space and emergency preparedness;
- Measures, tools, and programs to reduce wildfire risk;
- Identification of single egress neighborhoods (pursuant to SB 99); and
- Applicable local, state, and federal codes and regulations.

The Safety Element contains updated goals, objectives, policies, and implementation measures, including one revised objective and one new objective as well as four revised policies and 17 new policies that address fire hazards. Each of these policies was drafted to meet requirements in California Government Code Section 65302(g), and specifically to mitigate fire risk in SRAs and areas classified as VHFHSZs, along with other wildfire-prone areas (SB 1241). The Safety Element update also identifies existing and planned land uses within these high-risk zones, emphasizing the avoidance of wildfire hazards for new development, locating essential public facilities away from high fire risk areas, ensuring sufficient

infrastructure for new development, and specifying the local and state agencies responsible for fire protection (as defined in section 51177; SB 1241).

Climate Change Adaptation

The proposed Safety Element update addresses climate change hazards and incorporates a CVA. The findings from the CVA were used to inform the goals, objectives, policies, and programs focused on climate adaptation and resilience strategies (as mandated by SB 379). The CVA which is an appendix to the Safety Element, includes the following information:

- Information from the Internet based Cal-Adapt tool;
- Information from the most recent version of the California Adaptation Planning guide;
- Identification of local populations most sensitive to climate change exposures;
- Information regarding the ability of local agencies to deal with the impacts of climate change;
- Identification of historical data on natural events and hazards, including sites that have been repeatedly damaged; and
- Maps showing existing and planned development in at-risk areas.

The Safety Element also includes a set of adaptation and resiliency goals, objectives, and policies based on the findings in the CVA, as well as a set of feasible implementation measures. Hazards addressed by the CVA and the Safety Element include drought and water supply issues, agricultural and forestry disease, extreme heat, high wind, severe weather, human health hazards, and general climate change adaptation and resiliency. The Climate and Adaptation section of the proposed Safety Element update contains the following new policies: eight climate adaptation policies, nine drought and water supply policies, four agriculture and forestry disease policies, two extreme heat policies, one wind policy, and three severe weather policies.

The policies and implementation measures focus on the consideration of climate change impacts, adaptation strategies in long-range planning decisions, collaboration with community-based organizations and climate collaboratives, protecting vulnerable communities from climate impacts, prioritizing nature-based and natural infrastructure solutions, and promoting community awareness and public education around climate resilience. This set of policies ensures the County includes an adaptation framework in the Safety Element in compliance with SB 379.

Evacuation Planning

Evacuation planning is required to be addressed in the Safety Element, pursuant to SB 99 (2019), AB 747 (2019), and AB 1409 (2021). To meet the requirements in these bills, one objective addresses SB 99, requiring the identification of residential neighborhoods without at least two means of egress, and one objective addresses AB 747 and AB 1409, requiring the identification of evacuation locations and routes and their capacity, safety, and viability under a range of emergency scenarios. Two policies meet the requirements laid out in SB 99, five policies meet the requirements of AB 747 and AB 1409, and one policy addresses all three legislative requirements. There is also a policy that supports the County's efforts to extend safety and evacuation information to vulnerable populations.

The background report of the proposed Safety Element includes mapping identified residential developments in hazard areas that do not have at least two emergency evacuation routes and potential evacuation locations. It also includes a process to evaluate the capacity,

safety, and viability of evacuation routes under a range of emergency scenarios in the LHMP, and a program that would ensure a capacity-based evaluation of the County's evacuation network upon each subsequent Safety Element update.

Plan Integration

These new and revised goals and policies would complement the LHMP requirements and promote plan integration (AB 2140). The proposed 2024-2032 Safety Element Update would address the following topics, several of which are currently addressed in the LHMP and EOP:

- Fire Safety
- Geologic and Seismic Hazards
- Flood Hazards
- Noise
- Hazardous Materials
- Air Quality
- Aviation-Related Hazards
- Highway Safety
- Drought and water supply
- Evacuation Accessibility
- Agricultural and Forestry Disease and Tree Mortality
- Extreme Heat
- Human Health Hazards
- High Wind
- Severe Weather
- Climate Adaptation and Resiliency

Of these topics, fire safety, geologic and seismic hazards, flood hazards, noise, hazardous materials, air quality, aviation-related hazards, and highway safety were addressed in the existing Safety Element. New topics covered in the proposed 2024-2032 Safety Element update include all the existing topics, in addition to drought and water supply, evacuation accessibility, agricultural and forestry disease and tree mortality, extreme heat, human health hazards, high wind, severe weather, and climate adaptation and resiliency. The proposed 2024-2032 Safety Element update also only updated goals, objectives, policies, and implementation measures for natural hazards. Of the other hazards covered in the element, six additional policies would be added to the existing geologic and seismic hazards section, eight new human-health policies would be added, and one additional policy would be added to the existing flood section on dam inundation. There were no revisions to the noise, hazardous materials, air quality, aviation-related hazards, or highway safety policies other than minor clean up edits.

2.5 Goals and Objectives

According to the State of California General Plan Guidelines, the goal of the Safety Element is "to reduce the potential short and long-term risk of death, injuries, property damage, and economic and social dislocation resulting from fires, floods, droughts, earthquakes, landslides, climate change, and other hazards." The proposed 2024-2032 Safety Element update identifies health and safety concerns in the unincorporated areas of the County and lays out goals and policies to protect the community. As a required element of the General Plan, the proposed Safety Element update provides a long-term framework on how the County will grow and keep communities and their assets safe through hazard identification and development of goals, policies, and implementation measures focused on hazard risk reduction and avoidance.

The proposed 2024-2032 Safety Element update retains existing goals, objectives, policies, and implementation measures from the current Safety Element, and adds new and revised goals, objectives, policies, and implementation measures.

The new and revised goals and objectives are summarized as follows:

- **Goal 6.1: Coordination.** A coordinated approach to hazard and disaster response planning.
 - Objective 6.1.2: Expand community resilience to support effective emergency response and recovery during and after emergency events.
- **Goal 6.2: Fire Hazards.** Minimize fire hazards and risks in both wildland and developed areas.
 - Objective 6.2.1: All existing and new development and structures shall meet “defensible space” requirements to minimize wildland fire hazards.
 - Objective 6.2.6: Ensure fire preparedness and response through inter-agency and multi-governmental cooperation.
- **Goal 6.3: Geologic and Seismic Hazards.** Minimize the threat to life and property from seismic and geologic hazards.
 - Objective 6.3.1: Adopt and enforce development regulations, including building and site standards, to avoid social dislocations, which refer to the disruption or displacement of communities, and protect against seismic and geologic hazards.
 - Objective 6.3.2: Continue to evaluate seismic related hazards such as liquefaction, landslides, avalanche, and seiche particularly in the Basin.
- **Goal 6.10: Management of Water Resources.** Provide a resilient water supply that will meet the demand of residents, businesses, and visitors.
 - Objective 6.10.1: Promote cost-effective water conservation and water efficiency measures.
 - Objective 6.10.2: Promote sustainable water management measures.
- **Goal 6.11: Evacuation Routes.** Identify and maintain adequate evacuation routes in the incorporated and unincorporated County.
 - Objective 6.11.1: Identify and analyze emergency evacuation routes and areas without at least two evacuation routes.
 - Objective 6.11.2: Ensure viability of future use of evacuation routes.
- **Goal 6.12: Agricultural And Forestry Disease.** Increase resistance to pests and disease on agricultural and forest lands.
 - Objective 6.12.1: Increase resiliency against agricultural and forestry disease and tree mortality.
 - Objective 6.12.1: Remove potential hazard trees to reduce disease spread and wildfire fuel.
- **Goal 6.13: Extreme Heat Hazards.** Create an effective regulatory system to minimize injury and damage due to extreme heat events.
 - Objective 6.13.1: Mitigate heat-health effects.
- **Goal 6.14: Human Health Hazards.** Protect public health and safety through preventative intervention.
 - Objective 6.14.1: Provide preventative public health services.
 - Objective 6.14.2: Protect public health and safety through preventive intervention.

- **Goal 6.16: Severe Weather.** Reduce impacts to people and property caused by severe weather events.
 - Objective 6.16.1: Infrastructure.
 - Objective 6.16.2: Education and outreach.
- **Goal 6.17: Climate Adaptation and Resiliency.** Ensure the County can adapt to the hazards created or exacerbated by climate change.
 - Objective 6.17.1: Minimize the risks and vulnerabilities associated with climate change.

2.6 Policy Statements

The proposed Safety Element update consists of policies organized by hazard topics. A policy is a specific statement that guides decision-making. It indicates a commitment of the local legislative body to a particular course of action. Policies help implement a general plan's vision and are carried out by implementation measures. While most of the goals, objectives, policies, and implementation measures from the current Safety Element are carried forward into the proposed Safety Element update, new and revised policies are depicted and shown in underline text and ~~strikeout~~ text is used to indicate deletions.

The current Safety Element has a total of 73 policies and 24 implementation measures. The proposed Safety Element update would include 139 policies and 41 implementation measures, which amounts to 66 new policies, 5 revised policies, and 17 new implementation measures. Most of the new policies and implementation measures were included to meet statutory requirements, and most of the wildfire requirements and standards are already being implemented by the County. Out of the proposed new policies, there are 29 that the County has discretion over or flexibility to revise and are not required by State law or are not currently being implemented by the County. The remaining 37 proposed policies are mandated by the State and are mostly under the discretion of the California BOF. Key policy revisions focus on mitigating wildfire risks, integrating climate adaptation strategies, and referencing updates to the LHMP for evacuation route planning and evaluating evacuation locations and route capacity, safety, and viability under different scenarios. New policies also focus on identifying residential developments in hazard areas that do not have at least two emergency evacuation routes and reducing impacts associated with other climate-related hazards, such as agricultural and forestry disease and extreme heat.

Table 2-1 includes the new and modified policies from the proposed Safety Element update, in addition to the implementation measures that carry out each policy.

Table 2-1 Policy Changes in the Proposed Safety Element Update

Section	Policy Statement	Implementation Measure
General	<p>Policy 6.1.2.1 <u>Support an emergency mass evacuation and sheltering plan that prioritizes the needs of at-risk, vulnerable, and disadvantaged people and individuals with disabilities, access and functional needs, and other special needs by providing meaningful opportunities in emergency planning efforts.</u></p>	Measure HS-BB, Measure HS-MM, Measure HS-NN
Fire Hazards	<p>Policy 6.2.1.3 <u>Require all existing and new residential development in State Responsibility Areas (SRAs) and/or very high Fire Hazard Severity Zones (VHFHSZs) to enforce fire-resistant landscaping and defensible space requirements that meet or exceed Title 14, Code of California Regulations (CCR), Division 1.5, Chapter 7, Subchapter 2, Articles 1-5 (commencing with Section 1270) (State Minimum Fire Safe regulations) and Subchapter 3, Article 3 (commencing with Section 1299.01) (Fire Hazard Reduction around Buildings and Structures Regulations). Adequate compliance with these requirements shall be determined by the local Fire Protection Districts (FPDs) or other local fire agencies, as appropriate.</u></p>	Measure HS-Y
	<p>Policy 6.2.1.4 <u>Require consistency with fire code and development standards that ensure adequate defensible space clearance around all existing and new structures in compliance with the California Fire Code, Public Resources Code Section 4291 (ember-resistant zone), Government Code Section 51175-51188, CCR Title 14, Division 1.5, Chapter 7, Subchapter 3, Section 1299.03, and in the County Code of Ordinances Chapter 8.09.</u></p>	Measure HS-Y
	<p>Policy 6.2.1.5 <u>Maintain and enforce the County Defensible Space Ordinance and Fire Prevention Programs and Plans in coordination with local the VHFHSZs and other fire agencies and continue to support related fire prevention programs associated with defensible space inspections as detailed in County Code of Ordinances Chapter 8.09, fire development standards, and public education.</u></p>	Measure HS-Y
	<p>Policy 6.2.2.2 <u>The County shall preclude development, including public facilities and essential services (see definition in the Background Information Report in Appendix B), in areas of high and very high wildland fire hazard or in areas identified as Wildland Urban Interface (WUI) communities within the vicinity of Federal lands that are a high risk for wildfire, as listed in the Federal Register Executive Order 13728 of May 18, 2016, unless such development can be adequately protected from wildland fire hazard, as demonstrated in a WUI Fire Safe Plan prepared by a qualified professional as approved by the El Dorado County Fire Prevention Officers Association. The WUI Fire Safe Plan shall be approved by the local FPD having jurisdiction and/or CAL FIRE. (Resolution 124- 2019, August 6, 2019)</u></p>	Measure HS-B
	<p>Policy 6.2.3.1 <u>As a requirement for approving new development, the County must find, based on information provided by the applicant and the responsible fire protection district-FPD that, concurrent with development, adequate emergency and peak load water supply, water flow, fire access, and firefighting personnel and equipment will be available in accordance with applicable State and local fire district standards to support fire suppression efforts.</u></p>	Measure HS-B

	<p>Policy 6.2.3.5 <u>Identify actions to ensure noncompliant development meets current fire safe standards and road standards as defined in Title 14 CCR, Division 1.5, Chapter 7 Fire Protection, Subchapter 2, Articles 1-5, SRA Fire Safe Regulations through the WUI Fire Safe Plan review process and through collaboration with the FPDs and local fire agencies when reviewing Fire Protection Plans and provisions for new development.</u></p>	<p>Measure HS-B, Measure HS-OO</p>
	<p>Policy 6.2.3.6 <u>All new development within an SRA or Very High Fire Hazard Severity Zone (VHFHSZs) shall prepare a Fire Protection Plan that complies with established fire safety standards. Ingress and egress to the new development will be constructed utilizing the most current State Fire Safe Regulations, Fire Code, and/or County Code that meets these minimum requirements. Key components of a Fire Protection Plan include:</u></p> <ol style="list-style-type: none"> 1) <u>risk analysis;</u> 2) <u>fire response capabilities;</u> 3) <u>fire safety requirements – defensible space, infrastructure, and building ignition resistance;</u> 4) <u>mitigation measures and design considerations for non-conforming fuel modification;</u> 5) <u>wildfire education, maintenance, and limitations; and</u> <u>evacuation planning.</u> 	<p>Measure HS-B, Measure HS-OO</p>
	<p>Policy 6.2.4.2 <u>The County shall cooperate with the California Department of Forestry and Fire Protection and local fire protection districts CAL FIRE and local FPDs to identify opportunities for fuel breaks in zones of high and very high fire hazard either prior to or as a component of project review and will support the fire protections in tracking grants to fund fire breaks and their long-term maintenance.</u></p>	<p>Measure HS-B</p>
	<p>Policy 6.2.4.3 <u>Require fuel modification around homes and subdivision developments in SRAs or VHFHSZs by assisting the local FPDs and other local fire agencies.</u></p>	<p>Measure HS-B</p>
	<p>Policy 6.2.4.4 <u>Continue to work cooperatively and promote advocacy efforts with the US Forest Service, CAL FIRE, local FPDs, and other local fire agencies in managing wildfire hazards.</u></p>	<p>Measure HS-B</p>
	<p>Policy 6.2.4.5 <u>The County shall build and support biomass facilities.</u></p>	<p>Measure HS-B, Measure HS-KK</p>
	<p>Policy 6.2.6.1 <u>To ensure coordinated wildfire planning and response, applicable CWPPs shall be implemented and consulted for all wildfire planning and disaster response within the County. The CWPPs listed in Table HS - 2 cover sections of both the incorporated and unincorporated County and will be incorporated by reference to the Safety Element.</u></p>	<p>Measure HS-A</p>
	<p>Policy 6.2.6.2 <u>Partner with local fire agencies, state and federal agencies, and other local agencies and organizations within the County to regularly update and implement the Western El Dorado County and Tahoe Basin CWPPs.</u></p>	<p>Measure HS-A</p>

	<p>Policy 6.2.6.3 <u>All County-area FPDs, the County Sheriff's Department, and Office of Emergency Services, Office of Wildfire Preparedness and Resilience, and other emergency services and response staff shall attend regular inter-agency training programs to effectively coordinate and provide multi-agency mutual aid in the event of a wildfire or other hazard occurrence.</u></p>	Measure HS-A
	<p>Policy 6.2.6.4 <u>Prepare future conditions studies which are comprehensive assessments of projected demographic, infrastructure, and environmental factors at smaller scales in unincorporated parts of the County that may be susceptible to evacuation constraints. These studies will aim to evaluate the specific viability and capacity of the local road and street networks serving existing and new residential developments.</u></p>	Measure HS-A
	<p>Policy 6.2.6.5 <u>Routinely evaluate the ability of the County's essential fire and law enforcement facilities to function after a major disaster and as part of new development review to ensure adequate access for future emergency needs.</u></p>	Measure HS-A, Measure HS-AA, Measure HS-FF, Measure HS-OO
Geologic And Seismic Hazards	<p>Policy 6.3.1.4 <u>Enforce the California Uniform Building Code and general building design and construction requirements related to life safety to address seismic risks associated with ground shaking.</u></p>	Measure HS-D, Measure HS-G
	<p>Policy 6.3.1.5 <u>Prohibit the construction of buildings near active faults in Earthquake Fault Zones unless a geologic investigation is performed to delineate hazards associated with surface fault ruptures and appropriate mitigation actions, based on the investigation, are included in the project design.</u></p>	Measure HS-D
	<p>Policy 6.3.1.6 <u>Require that linear projects, including roads, streets, highways, electrical transmission and distribution corridors, water facilities, and underground oil and gas facilities avoid intersecting active faults to the extent possible. When such locations are unavoidable, the project design shall include measures to minimize the effects of fault movement.</u></p>	Measure HS-D
	<p>Policy 6.3.2.5 <u>Require geotechnical reports that demonstrate adequate slope stability and construction methods for buildings and road improvements that are on slopes greater than 50 percent pursuant to the California Building Code (CBC) Appendix J: Grading Section 108.1-3 on setbacks.</u></p>	Measure HS-D, Measure HS-G

	<p>Policy 6.3.2.6 <u>Development in mapped high landslide susceptibility and debris flow hazard areas shall require a geotechnical investigation and shall incorporate appropriate mitigation into the project design.</u></p>	Measure HS-D
	<p>Policy 6.3.2.7 <u>Consider the inclusion of seiche hazard areas within the Lake Tahoe Basin during the update of Area Plans and require development in potential seiche hazard areas to perform a geotechnical engineering investigation and mandate the incorporation of appropriate mitigation measures, based on the investigation, into the project design.</u></p>	Measure HS-D
Flood Hazards	<p>Policy 6.4.1.1 <u>Continue participation in the National Flood Insurance Program and application of flood plain zoning regulations to qualify for flood insurance and disaster assistance.</u></p>	Measure HS-H
	<p>Policy 6.4.2.3 <u>Coordinate with the El Dorado Irrigation District, the Georgetown Divide Public Utility District, the Cameron Park Community Services District, the Sacramento Municipal Utility District, and other dam owners and operators to ensure there are plans in place for flood protection and to address risks associated with dam incidents.</u></p>	Measure HS-HH
Management of Water Resources	<p>Policy 6.10.1.1 <u>Encourage structural and nonstructural flood management methods to enhance water storage and groundwater recharge.</u></p>	Measure HS-CC, Measure HS-DD
	<p>Policy 6.10.1.2 <u>Continue to enforce the County Landscape and Irrigation Standards, where applicable, including parking lot shading; incorporating stormwater best management practices into landscape areas; requiring water conservation methods that encourage the use of native, drought tolerant species; and promoting knowledge of Appendix C to the Standards, El Dorado County Drought Resistant Plant List, to encourage use in private development).</u></p>	Measure HS-CC, Measure HS-DD
	<p>Policy 6.10.1.3 <u>Require new development to demonstrate that adequate water is available before project approval and to fund its fair-share costs associated with the provision of water service.</u></p>	Measure HS-CC
	<p>Policy 6.10.1.4 <u>Support the integrated management of surface and groundwater, stormwater treatment and use, and the treatment and reuse of wastewater, where feasible.</u></p>	Measure HS-CC

	<p>Policy 6.10.1.5</p> <p><u>Enforce the Model Water Efficient Landscape Ordinance (MWELO) for new development and retrofitted landscapes, as referenced by Title 24, Part 11, Chapters 4 and 5 of the CalGreen Building Code.</u></p>	Measure HS-G, Measure HS-CC
	<p>Policy 6.10.2.1</p> <p><u>Encourage water suppliers, groundwater management agencies, and groundwater sustainability agencies to track and monitor the quantity and quality of the County's water resources to ensure a sustainable water supply that serves existing and future residents, businesses, agricultural users, government services, and natural resources.</u></p>	Measure HS-CC
	<p>Policy 6.10.2.2</p> <p><u>Support the diversification of water supplies from varied sources that contribute to a sustainable and diverse water supply and storage portfolio that includes, but is not limited to surface water, groundwater, recycled water, imported water, and stormwater, if these sources protect public health and natural resources.</u></p>	Measure HS-DD
	<p>Policy 6.10.2.3</p> <p><u>Support regional and local water planning efforts led by the El Dorado County Water Agency, El Dorado Irrigation District, and other water agencies and water suppliers by participating on committees and advisory groups to coordinate planning efforts related to water and land use planning decisions that may include the Urban Water Management Plan, Groundwater Sustainability Plans, the Regional Drought Contingency Plan, County-wide water resources development and management programs, and other local integrated regional water management plans.</u></p>	Measure HS-GG
	<p>Policy 6.10.2.4</p> <p><u>Participate on County Drought Task Force and partner on regional drought contingency planning efforts to reduce the potential for future water shortages by cooperating with water agencies and suppliers on surface water augmentation storage projects, surface water diversions to secure water supply to smaller communities, groundwater augmentation to ensure redundant supplies when surface water supplies are limited, and to improve water infrastructure so that water is easily transferred between water agencies when supplies are constrained.</u></p>	Measure HS-GG
Evacuation Routes	<p>Policy 6.11.1.1</p> <p><u>Continue to improve transportation corridors that support effective evacuation routes and access for the public and emergency responders by identifying residential developments in hazard areas that do not have at least two emergency evacuation routes and work with affected residents to help prepare them to anticipate their evacuation alternatives (e.g., public transit, carpooling, shelter in place).</u></p>	Measure HS-Z, Measure HS-LL

	<p>Policy 6.11.1.2</p> <p><u>Identify rural neighborhoods, mobile home parks, including senior communities, and public facilities that support at-risk populations (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, and assisted living residential or congregate care facilities with 12 or more residents) that are located within an area classified as an SRA (Public Resources Code Section 4102) or land classified as a VHFHSZ with limited accessibility or a single access point and implement an evacuation plan that consists of evacuation zones, routes, or shelter-in-place plans depending on the hazard event.</u></p>	<p>Measure HS-Z, Measure HS-LL, Measure HS-MM</p>
	<p>Policy 6.11.1.3</p> <p><u>Identify and communicate safe and viable evacuation routes in multiple languages and across various communication platforms, as appropriate, to reach at-risk and vulnerable populations.</u></p>	<p>Measure HS-Z</p>
	<p>Policy 6.11.2.1</p> <p><u>Development shall be served by a street system with at least two evacuation routes capable of carrying peak load traffic and have sufficient capacity to meet project needs, or they must provide the necessary capacity to ensure the development has adequate fire protection and safe ingress and egress routes in conformance with the California Fire Safe Regulations (Section 1273 and 1274) of the California Code of Regulations – Title 14, Division 1.5, Chapter 7, Articles 2 and 3).</u></p>	<p>Measure HS-Z</p>
	<p>Policy 6.11.2.2</p> <p><u>Construction of new roads, streets, and evacuation routes must be adequate in terms of width, turning radius, and grade to facilitate access by firefighting apparatus. Priorities for road improvements will be based on evacuation accessibility.</u></p>	<p>Measure HS-Z</p>
	<p>Policy 6.11.2.3</p> <p><u>Evacuation routes and their capacity, safety, and viability under a range of emergency scenarios will be identified in the County's Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) update, which will then be incorporated by reference into the Safety Element. The County shall work with emergency service agencies to evaluate the evacuation route, capacity, safety, and viability under a range of emergency scenarios to facilitate fire, law enforcement, and emergency medical services and resident ingress and egress, consistent with the goals and objectives of the County's MJHMP.</u></p>	<p>Measure HS-W, Measure HS-Z, Measure HS-FF</p>
	<p>Policy 6.11.2.4</p> <p><u>Continue to coordinate with the County Sheriff's Department, CAL FIRE, local FPDs, and other fire agencies to identify, assess, and maintain evacuation routes to support the adequate capacity, safety, and viability of those routes under a range of emergency scenarios. Identify designated evacuation routes that are not compliant with Fire Safe Regulations (14 CCR Section 1270.00) for roadway standards and develop a plan to bring those roads into conformance to promote adequate and safe accessibility in communities.</u></p>	<p>Measure HS-W, Measure HS-Z, Measure HS-FF</p>

	<p>Policy 6.11.2.5</p> <p><u>Collaborate with Fire Safe Councils, Community Organizations, and other local fire agencies to support the long-term maintenance of fire breaks surrounding roads and the continued clearance of private and public roads.</u></p>	Measure HS-Z, Measure HS-FF
Agricultural and Forestry Disease Safety	<p>Policy 6.12.1.1</p> <p><u>Use science-based approaches to evaluate, understand, and protect against the negative impacts of new and emerging threats such as climate change, pests, disease outbreaks, or land use changes on forest health and public safety, including the buildup of hazardous fuel conditions and resulting fire behavior.</u></p>	Measure HS-JJ
	<p>Policy 6.12.1.2</p> <p><u>Continue to work with federal and state agencies to support fuel and pest management activities on federal and state lands, including areas impacted by bark beetle and other pests.</u></p>	Measure HS-KK
	<p>Policy 6.12.2.1</p> <p><u>Seek funding opportunities to support reduction in the rate of spread of forest diseases and removal of dead and dying trees.</u></p>	Measure HS-KK
	<p>Policy 6.12.2.2 <u>Explore opportunities to locate facilities in the County that can store and process bark beetle-infested wood and debris from forest fuel clearing activities into useful products and biomass.</u></p>	Measure HS-KK
Extreme Heat Hazards	<p>Policy 6.13.1.1</p> <p><u>Support the opening of cooling centers during heat events and coordinate with transit providers to ensure adequate access for vulnerable communities.</u></p>	Measure HS-BB
	<p>Policy 6.13.1.2</p> <p><u>Continue to publicize precautions for preventing heat-health effects to the most vulnerable populations such as seniors, outdoor workers, children, and those living in poverty.</u></p>	Measure HS-BB, Measure HS-MM
Human Health Hazards	<p>Policy 6.14.1.3</p> <p><u>Facilitate and support continued development and access to an effective and quality driven community primary care network promoting self-care management through comprehensive coordination and ongoing partnerships with community hospitals, tribal health centers, federally qualified health centers, school-based health services and rural designated community clinics.</u></p>	Measure HS-EE
	<p>Policy 6.14.1.4</p> <p><u>Facilitate and coordinate MediCal Managed Care expansion at the local level. Leverage the introduction of a public MediCal managed care plan offering to El Dorado County residents with the intent of increasing and improving available services and healthy outcomes. Facilitate</u></p>	Measure HS-EE

	and coordinate a health data assessment specific to preventive service utilization and a health outcome response with the three MediCal Managed Care Plans active.	
	Policy 6.14.1.5 Facilitate ways to identify, mitigate and educate on the dangers of lead exposure to human health and sources of those exposures, including but not limited to sub-standard housing and environmental, occupational, recreational exposure pathways.	Measure HS-EE
	Policy 6.14.2.1 Integrate health impact evaluation that considers harmful as well as protective health effects for all intragovernmental County government policy development. Facilitate community-level dialog focusing on prevention as a means to mitigate human-health hazard with all local government agencies, special districts, and community-based organizations and supporting health care industries.	Measure HS-EE
	Policy 6.14.2.2 Promote ways to protect the community population from the known hazards of tobacco exposure in the form of second and third-hand smoke where they live, work, and play.	Measure HS-EE
	Policy 6.14.2.3 Promote ways to protect the community and the environment from the hazards associated with tobacco products that fall under the classification of mixed hazardous waste, subject to 22 California Code of Regulation Section 66261.9, such as single use tobacco products containing but not limited to, plastic, cellulose acetate or other fibrous plastic material, or any organic or biodegradable material, and electronic smoking devices that are mixed hazardous waste products, including cartridges that are not designed to be refilled.	Measure HS-EE
Severe Weather	Policy 6.16.1.1 Adopt and enforce regulations governing construction and retrofitting of residential and commercial infrastructure to protect against the impacts of severe weather.	Measure HS-G
	Policy 6.16.1.2 Facilitate the designation and operation of emergency centers that are both convenient and ADA accessible to prioritize and protect the needs of at-risk, vulnerable, and disadvantaged populations from severe weather hazards.	Measure HS-MM
	Policy 6.16.2.1 Organize inclusive outreach to at-risk, vulnerable, and disadvantaged populations to share information about emergency centers and the details and benefits of 72-hour emergency kits and to provide meaningful opportunities to engage in emergency planning efforts.	Measure HS-MM

Climate Adaptation and Resiliency	Policy 6.17.1.1 <u>Identify natural infrastructure and nature-based solutions when considering restoration, infrastructure, or engineering improvements that may be used as an adaptation project component proposed by the Transportation, Environmental Management, and Chief Administrative Office. Where feasible, the adaptation component shall use existing natural features and ecosystem processes, or the restoration of natural features and ecosystem processes, when developing alternatives for consideration.</u>	Measure HS-AA, Measure HS-JJ
	Policy 6.17.1.2 <u>Implement any recommendations and mitigation actions of the LHMP that may provide climate change adaptation throughout the County.</u>	Measure HS-AA, Measure HS-JJ
	Policy 6.17.1.3 <u>Continue to enforce building codes that will help ensure buildings can adequately withstand damage during hazard events.</u>	Measure HS-G, Measure HS-AA, Measure HS-II, Measure HS-JJ
	Policy 6.17.1.4 <u>Locate new essential public facilities outside of areas exposed to the climatic hazards of climate change or identify methods to minimize damage if these facilities are in areas exposed to climatic hazards.</u>	Measure HS-AA, Measure MS-II, Measure HS-JJ
	Policy 6.17.1.5 <u>Promote climate change and resilience awareness education about the effects of climate change-induced hazards and ways to adapt and build resiliency to climate change.</u>	Measure HS-AA, Measure HS-JJ
	Policy 6.17.1.6 <u>Regularly (at minimum every 8 years) update the County's Climate Vulnerability Assessment or regularly update (at minimum every 5 years) the County's LHMP to incorporate the best available public information from federal, state, and regional agencies on the effects of climate change to keep the climate adaptation strategies in the LHMP and the Safety Element current and relevant to the community's risk.</u>	Measure HS-AA, Measure HS-JJ
	Policy 6.17.1.7 <u>Partner with academic institutions and the El Dorado County Agricultural Commissioner's Office to develop monitoring projects that help agricultural operators use climate information to detect and plan for forecasted weather and climate impacts associated with extreme heat events, warm nights, periods of drought, and cold temperatures that can impact agricultural and crop commodities.</u>	Measure HS-AA, Measure HS-JJ
	Policy 6.17.1.8	Measure HS-AA, Measure HS-JJ

	<u>Prioritize County programs and grant opportunities and other equitable project improvements or investments that address climate change impacts and support climate resiliency for at-risk, vulnerable, and disadvantaged communities, such as seniors, children, outdoor workers, individuals with existing health conditions, those with access and functional needs, and lower-income residents.</u>	
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2.7 IMPLEMENTATION PROGRAM

The proposed 2024-2032 Safety Element update includes an implementation program that contains new and revised implementation measures. An implementation measure is an action, procedure, program, or technique that carries out the general plan policies outlined in the element. Each policy must have at least one corresponding implementation measure; implementation measures may also support more than one policy statement.

All existing implementation measures in the current Safety Element update would remain, as implementation for many of these measures is ongoing. The proposed 2024-2032 Safety Element update includes 41 implementation measures, including 24 implementation measures from the current Safety Element and 17 revised and/or new implementation measures. The new and revised implementation measures proposed in the Safety Element update are listed below:

- **MEASURE HS-Y:** Update the County Code of Ordinances, Chapter 8.09, Defensible Space Ordinance to incorporate fire safe regulations that meet or exceed the minimum requirements for Fire Safe Regulations (14 CCR Section 1270.00) for projects in SRAs or VHFHSZs. [Policies 6.2.1.3, 6.2.1.4, and 6.2.1.5]
- **MEASURE HS-Z:** Draft development standards and coordinated emergency notification and evacuation plans and procedures that apply across jurisdictional boundaries for wildfire protection and to protect high-density residential and affordable housing developments located within infill locations that are within the WUI, SRA, or VHFHSZs and have adequate access, defined evacuation routes, and sufficient water supplies and infrastructure. [Policies 6.11.1.1, 6.11.1.2, 6.11.1.3, 6.11.2.1, 6.11.2.2, 6.11.2.3, 6.11.2.4, and 6.11.2.5]
- **MEASURE HS-AA:** The County shall coordinate climate resiliency efforts with federal, states, and local climate collaboratives, such as the Sierra Climate Adaptation and Mitigation Partnership (CAMP) and other regional organizations. [Policies 6.17.1.1-6.17.1.8]
- **MEASURE HS-BB:** The County shall designate facilities that can be used as cooling or warming centers or resilience hubs and ensure they are equipped with backup power supplies, including on-site renewable energy generation and energy back-up storage systems. [Policies 6.1.2.1, 6.13.1.1, and 6.13.1.2]
- **MEASURE HS-CC:** Continue to promote water conservation programs to reduce agricultural and residential water use in the County. [Policies 6.10.1.1-6.10.1.5 and 6.10.2.1]
- **MEASURE HS-DD:** Support El Dorado County Water Agency during updates to its County-wide water resources development and management program and Regional Drought Contingency Plans to coordinate ongoing efforts and to plan for potential water shortages and to promote sustainable, long-term drinking water supply for County residents and businesses. [Policies 6.10.1.1-6.10.1.2, and 6.10.2.2]
- **MEASURE HS-EE:** Support free or reduced-cost vaccinations for vector-borne diseases are made available to County residents. [Objective 6.14.1]
- **MEASURE HS-FF:** Review and update emergency operation plans, emergency response and evacuation plans, and related procedures at least every 5 years to reflect current conditions and community needs. [Policies 6.11.2.3, 6.11.2.4, and 6.11.2.5]
- **MEASURE HS-GG:** Work with El Dorado County Water Agency (EDCWA) to develop Drought Task Force and implement the County El Dorado County Drought Resilience Plan [Policies 6.10.2.4 and 6.10.2.3]
- **MEASURE HS-HH:** Continue implementation and regular updates of the County's Stormwater Management Plan to address how existing best management practices (BMP) and stormwater design may be anticipated to change under future climate conditions. [Objective 6.4.2]
- **MEASURE HS-II:** Pursuant to CEQA Guidelines Section 15126.2, Consideration and Discussion of Significant Environmental Impacts, lead agencies should make a good faith effort to analyze potentially significant direct, indirect, and cumulative environmental impacts that a project may

cause by placing projects in hazardous locations, including locations potentially affected by hazards that result from climate change. [Policies 6.15.1.1, 6.17.1.3, and 6.17.1.4]

- **MEASURE HS-JJ:** Educate County decision makers, departments, and staff on climate change science, climate projections, and adaptation and mitigation actions that minimize natural hazard impacts and support climate resiliency. [Policies 6.17.1.1-6.17.1.8 and 6.12.1.1]
- **MEASURE HS-KK:** Identify funding opportunities to support biomass utilization within the County and continuing to use biomass as a component in projects. [Policies 6.2.4.5, 6.12.1.2, 6.12.2.1, and 6.12.2.2]
- **MEASURE HS-LL:** Implement measures that support safe evacuation education and planning, including but not limited to efforts to notify residents who live in neighborhoods with one means of egress, prioritizing defensible space inspections, and implementing vegetation management and fuel reduction projects in and around identified neighborhoods. [Policies 6.11.1.1 and 6.11.1.2]
- **MEASURE HS-MM:** Conduct a survey targeting individuals and communities with access and functional needs to inform emergency evacuation and shelter requirements. This includes but is not limited to assessing needs related to transportation, access to emergency facilities, and necessary capacities. [Policies 6.1.2.1, 6.11.1.2, 6.16.1.2, and 6.16.2.1]
- **MEASURE HS-NN:** Develop a Mass Evacuation and Sheltering Plan that addresses the needs of at-risk, vulnerable, and disadvantaged people and individuals with disabilities and access and functional needs. [Policy 6.1.2.1]
- **MEASURE HS-OO:** Require Fire Protection Plans for new development to comply with fire protection standards and identify adequate infrastructure for the following:
 - 1) Location of anticipated water supply,
 - 2) Water flow for fire suppression needs,
 - 3) Maintenance and long-term integrity of water supplies,
 - 4) Fuel modification and defensible space,
 - 5) Vegetation clearance maintenance on public and private roads,
 - 6) Visible home and street addressing and signage, and
 - 7) Community fire breaks and discussion of how those fire breaks will be maintained. [Policies 6.2.3.5 and 6.2.3.6]

2.8 Required Actions

The County would be required to consider the Addendum in conjunction with the certified General Plan EIR prior to taking action to adopt the 2024-2032 Safety Element Update. No other County actions would be required.

3.0 CEQA Analysis

3.1 Environmental Analysis

The General Plan contains policies related to land use; transportation and circulation; housing; public services and utilities; public health, safety, and noise; conservation and open space; agriculture and forestry; parks and recreation; and economic development. The General Plan is largely designed to be self-mitigating by incorporating policies and implementation measures that address and mitigate related environmental impacts, such as zoning codes and design standards.

As previously described in Section 1.1, this Addendum to the Final EIR of the County's General Plan addresses the proposed revisions to the Safety Element. Table 2-1 shows the new and revised Safety Element policies that meet statutory requirements as well as the implementation measures that carry out each policy. The proposed 2024-2032 Safety Element update aims to address wildfire hazards, climate change adaptation, evacuation planning, and plan integration through new and revised goals, objectives, policies, and implementation measures that mitigate those risks and remain compliant with current State

law. The updated 2024-2032 Safety Element would not result in physical changes to the environment but encourages the mitigation of foreseeable risks to the County's assets and resources.

Policy 6.1.2.1 involves supporting an emergency mass evacuation and sheltering plan that prioritizes the needs of at-risk, vulnerable, and disadvantaged people and individuals with disabilities, access and functional needs, and other special needs by providing meaningful opportunities in emergency planning efforts. Policy 6.2.1.3 requires all existing and new residential development in SRAs and/or VHFHSZs to enforce fire-resistant landscaping and defensible space requirements that meet or exceed Title 14, Code of California Regulations (CCR), Division 1.5, Chapter 7, Subchapter 2, Articles 1-5 (commencing with Section 1270) (State Minimum Fire Safe regulations) and Subchapter 3, Article 3 (commencing with Section 1299.01) (Fire Hazard Reduction around Buildings and Structures Regulations). Policy 6.3.1.4 enforces the California Uniform Building Code and general building design and construction requirements related to life safety to address seismic risks associated with ground shaking.

Further, Policy 6.10.11 encourages structural and nonstructural flood management methods to enhance water storage and groundwater recharge. Policy 6.11.1.2 involves identifying rural neighborhoods, mobile home parks, including senior communities, and public facilities that support at-risk populations (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, and assisted living residential or congregate care facilities with 12 or more residents) that are located within an area classified as an SRA (Public Resources Code Section 4102) or land classified as a VHFHSZ with limited accessibility or a single access point and implement an evacuation plan that consists of evacuation zones, routes, or shelter-in-place plans depending on the hazard event. Policy 6.17.1.6 involves regularly (at minimum every 8 years) updating the County's CVA or regularly update (at minimum every 5 years) the County's LHMP to incorporate the best available public information from federal, state, and regional agencies on the effects of climate change to keep the climate adaptation strategies in the LHMP and the Safety Element current and relevant to the community's risk.

The majority of the implementation measures would also mitigate foreseeable risks to the County's assets and resources. Measure HS-Y involves updating the County Code of Ordinances, Chapter 8.09, Defensible Space Ordinance to incorporate fire safe regulations that meet or exceed the minimum requirements for Fire Safe Regulations for projects in SRAs or VHFHSZs. Measure HS-Z involves drafting development standards and coordinated emergency notification and evacuation plans and procedures that apply across jurisdictional boundaries for wildfire protection and to protect high-density residential and affordable housing developments located within infill locations that are within the WUI, SRA, or VHFHSZs and have adequate access, defined evacuation routes, and sufficient water supplies and infrastructure. Measure HS-AA and Measure HS-JJ involve coordinating climate resiliency efforts with federal, states, and local climate collaboratives and educating County decision makers on climate projections and mitigation actions. Similarly, Measure HS-LL involves implementing measures that support safe evacuation education and planning, including but not limited to efforts to notify residents who live in neighborhoods with one means of egress, prioritizing defensible space inspections, and implementing vegetation management and fuel reduction projects in and around identified neighborhoods.

Other implementation measures center on protecting vulnerable populations, enforcing fire protection standards, and coordinating with key state and regional agencies on planning efforts. Measure HS-NN involves developing a Mass Evacuation and Sheltering Plan that addresses the needs of at-risk, vulnerable, and disadvantaged people and individuals with disabilities and access and functional needs. Measure HS-OO requires Fire Protection Plans for new development to comply with fire protection standards and identify adequate infrastructure. Measure HS-DD involves supporting El Dorado County Water Agency during updates to its County-wide water resources development and management program and Regional Drought Contingency Plans to coordinate ongoing efforts and to plan for potential water shortages and to promote sustainable, long-term drinking water supply for County residents and businesses. Measure HS-FF involves reviewing and updating emergency operation plans, emergency response and evacuation plans, and related procedures at least every 5 years to reflect current conditions and community needs. Measure HS-HH involves continual implementation and regular updates of the County's Stormwater Management Plan to address how existing best management practices (BMP) and stormwater design may be anticipated to change under future climate conditions.

The 17 new and revised implementation measures represent minor changes that allow the County to update its policies and goals to minimize public health and safety hazards for present and unexpected

future conditions. Changes related to fire hazard policy align with regulations that the County must already comply with as required under the State Fire Safe Regulations. These minor revisions include new and updated maps, updated wildfire information such as ignition sources and hazard reduction measures, updated hyperlinks to online sources, and identification of single egress neighborhoods pursuant to SB 99. Climate adaptation updates address the consideration of climate change impacts, adaptation strategies in long-range planning decisions, collaboration with community-based organizations and climate collaboratives, protecting vulnerable communities from climate impacts, prioritizing nature-based and natural infrastructure solutions, and promoting community awareness and public education around climate resilience. Evacuation planning policy updates include the identification of residential neighborhoods without at least two means of egress and the identification of evacuation locations and routes and their capacity, safety, and viability under a range of emergency scenarios. This includes mapping identified residential developments in hazard areas that do not have at least two emergency evacuation routes, identifying potential evacuation locations, outlining a process to evaluate the capacity, safety, and viability of evacuation routes under a range of emergency scenarios in the LHMP, and establishing a program that would ensure a capacity-based evaluation of the County's evacuation network upon each subsequent Safety Element update.

Moreover, these new and revised goals, objectives, policies, and implementation measures would complement the LHMP requirements and promote plan integration (AB 2140). New topics covered in the proposed Safety Element includes all the existing topics addressed in the current element, in addition to topics currently addressed in the County's LHMP, such as drought and water supply, evacuation accessibility, agricultural and forestry disease and tree mortality, extreme heat, human health hazards, high wind, severe weather, and climate adaptation and resiliency.

The proposed Safety Element update also only updated goals and objectives, policies, and implementation measures for natural hazards. There were no revisions to the noise, hazardous materials, air quality, aviation-related hazards, or highway safety policies. As a result, the development of new policies and implementation measures, and modification to the existing policies would not result in any physical impacts on the environment. Further, policies identified in the General Plan EIR to reduce physical environmental effects would continue to apply to future development and would reduce impacts to the same significance level as identified in the General Plan EIR.

As the proposed Safety Element does not change any physical environmental conditions, the impacts would be no more substantial than those analyzed in the General Plan EIR. While new goals and policies would establish new requirements or standards; they would not approve or authorize a specific project, and any specific projects would be subject to environmental review on a case-by-case basis. Therefore, there would be no new impacts associated with the proposed 2024-2032 Safety Element Update. The proposed 2024-2032 Safety Element does not change any physical environmental conditions and the impacts of the proposed Safety Element update would be no more substantial than analyzed in the General Plan EIR. No new mitigation measures are necessary.

3.2 Finding

The discussion in this Addendum confirms that the proposed 2024-2032 Safety Element has been evaluated for significant impacts pursuant to CEQA. The discussion is meaningfully different than a determination that a project is "exempt" from CEQA review, as the proposed 2024-2032 Safety Element update is not exempt. Rather, the determination here is that the 2004 General Plan EIR evaluated the physical impacts likely to result from future development. As the proposed 2024-2032 Safety Element does not result to any physical changes to the environment, the General Plan EIR provides a sufficient and adequate analysis of the environmental impacts of the proposed 2024-2032 Safety Element.

There are no substantial changes in the circumstances or new information that was not known and could not have been known at the time of the adoption of the General Plan EIR. The proposed 2024-2032 Safety Element consists entirely of new and revised goals, objectives, policies, and implementation measures related to fire hazards, geologic and seismic hazards, flooding, and evacuation accessibility and represents no change from the impacts that were assumed and analyzed by the General Plan EIR.

As a result, and for the reasons explained in this Addendum, the proposed 2024-2032 Safety Element would not cause any new significant environmental impacts or substantially increase the severity of significant environmental impacts disclosed in the General Plan EIR. Thus, the proposed Safety Element update does not trigger any of the conditions in CEQA Guidelines Section 15162 thereby allowing the preparation of a

SEIR, and the appropriate environmental document as authorized by CEQA Guidelines Section 15164(b) is an Addendum.

The following identifies the standards set forth in Section 15162 of the CEQA Guidelines as they relate to the proposed project. The text that follows the provisions of the law relates to the proposed 2024–2032 Safety Element.

1. No substantial changes are proposed in the project which would require major revisions of the EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.

As shown in Table 2-1, the policy changes included in the proposed 2024–2032 Safety Element are limited to complying with State law and are mostly under discretion of the California BOF. A majority of the wildfire requirements and standards are already being implemented by the County. The proposed project would not result in changes to the physical environment or approval of any development project. All development in the County must be consistent with the General Plan, and if the development project requires a discretionary action, the project would also be subject to CEQA.

The proposed changes to the County Defensible Space Ordinance identified in Table 2-1 represent modification of an existing policy to either streamline development that is already allowed or make the code consistent with State law or implement new programs. All of the new and revised policies and implementation measures proposed in the 2024–2032 Safety Element update aim to mitigate current hazard conditions and risk in the County and there would be no change in the physical environment associated with these policy revisions. Therefore, policies identified in the General Plan EIR to reduce physical environmental effects would continue to apply to future development and would reduce impacts to the same significance level as identified in the General Plan EIR.

2. The project will have one or more significant effects not discussed in the previous EIR.

As shown in Table 2-1, the proposed 2024–2032 Safety Element programs are similar to and improve upon the existing policies of the General Plan. The proposed 2024–2032 Safety Element includes 68 new policies, 5 revised policies, and 18 new implementation measures. The proposed policy revisions address existing and future public health and safety hazards and are intended to further reduce potential hazards related to wildfire, flooding, climate change, and severe weather hazards. As stated previously, these amended and new programs would not result in any physical impacts on the environment.

3. Significant effects previously examined will be substantially more severe than shown in the previous EIR.

The General Plan EIR identified significant impacts for land use; agriculture and forestry; visual resources; traffic and circulation; water resources; utilities; public services; human health and safety; geology, soils, and mineral resources; noise; air quality; biological resources; and cultural resources. The policies identified in the General Plan EIR to reduce physical environmental effects would also apply to the proposed project. Because the proposed 2024–2032 Safety Element exclusively involves creation of new policies and revisions to existing policies, the amended programs identified in Table 2-1 would not result in new developments or result in physical changes to the environment and there are no new or more severe significant impacts associated with the proposed project.

4. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative.

The proposed 2024–2032 Safety Element includes policy-level changes that are limited to compliance with State law and would not result in physical changes to the environment that were not previously disclosed in the General Plan EIR. Moreover, the proposed Safety Element update would not create new impacts or the need for additional mitigation measures. The policies identified in the General Plan EIR to reduce physical environmental effects address significant impacts for land use; agriculture and forestry; visual resources; traffic and circulation; water resources; utilities; public services; human health and safety; geology, soils, and mineral resources; noise; air quality; biological resources; cultural resources. These policies in the General Plan EIR would continue to apply with the implementation of the proposed 2024–2032 Safety Element.

The County is required to adopt a Safety Element, and the element must be reviewed and certified by the El Dorado County Planning & Building Department and subsequently the County Board of Supervisors. There is no feasible alternative to adopting a Safety Element. As with the existing Safety Element evaluated in the General Plan EIR, the proposed 2024–2032 Safety Element update does not result in significant environmental impacts; therefore, there is no need for new mitigation measures.

5. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

The proposed project would have the same significant impacts as the previously certified General Plan EIR and all associated policies identified in the General Plan EIR to reduce physical environmental effects would continue to apply. As stated in the response to Standard 4, there are no new significant impacts resulting from adoption of the 2024–2032 Safety Element; therefore, there are no new mitigation measures or alternatives to the proposed project.

4.0 REFERENCES

- Draft EIR for the El Dorado County General Plan, May 2003
([https://www.edcgov.us/Government/planning/pages/draft_environmental_impact_report_\(deir\).aspx](https://www.edcgov.us/Government/planning/pages/draft_environmental_impact_report_(deir).aspx))
- Draft EIR for the El Dorado County General Plan, May 2003
([https://www.edcgov.us/Government/planning/pages/draft_environmental_impact_report_\(deir\).aspx](https://www.edcgov.us/Government/planning/pages/draft_environmental_impact_report_(deir).aspx))
- Final EIR for the El Dorado County General Plan, January 2004
([https://www.edcgov.us/Government/planning/pages/final_environmental_impact_report_\(eir\).aspx](https://www.edcgov.us/Government/planning/pages/final_environmental_impact_report_(eir).aspx))
- Mitigation Monitoring and Reporting Program for the El Dorado County General Plan, January 2004 (https://www.edcgov.us/government/planning/staffreport7-2004/documents/Att2_ExC_MMRP.pdf)
- Findings of Fact and Statement, July 2004
(https://www.edcgov.us/government/planning/staffreport7-2004/documents/Att1_ExB_Findings.pdf)
- Statement of Overriding Considerations for the General Plan, July 2004
(https://www.edcgov.us/government/planning/staffreport7-2004/documents/Att1_ExA_Overrides.pdf)

5.0 REPORT PREPARATION

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EL DORADO COUNTY GENERAL PLAN PUBLIC HEALTH, SAFETY, AND NOISE ELEMENT

PRINCIPLE

The Plan must identify public health and safety issues and provide guidance for protecting the health, safety, and welfare of El Dorado County residents.

INTRODUCTION

The Public Health, Safety, and Noise Element is consistent with the requirements set forth in the California Government Code Section 65302 and other applicable sections. Specifically, California Government Code Section 65302(g) requires communities to identify “any reasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence; liquefaction; and other geologic-seismic hazards identified pursuant to Chapter 7.8 (commencing with Section 2690) of Division 2 of the Public Resources Code, and other geologic hazards known to the legislative body; flooding; and wildland and urban fires.” The Public Health, Safety, and Noise Element shall include “mapping of known seismic and other geologic hazards.” It shall also address “evacuation routes, military installations, peakload water supply requirements, and minimum road widths and clearances around structures, as those items relate to identified fire and geologic hazards.”

The Public Health, Safety, and Noise Element addresses community noise problems, in accordance with Government Code Section 65302(f). The noise contour maps required by that statute are found in Appendix CE. Additionally, this element satisfies the State mandated requirements for the safety general plan element.

REGULATORY FRAMEWORK

This element addresses two of the required General Plan elements: Noise and Safety. In 1971, the State of California mandated that county and city general plans include a noise element. A noise element must contain the following information:

1. Identification of major noise sources which affect the county;
2. Mapping of noise contours for major noise producers, including roadways;
3. Policies and programs which address existing and foreseeable noise problems and minimize the exposure of community residents to excessive noise.

The Safety Element meets the requirements of Government Code Section 65302(g). A Safety Element must contain the following information:

1. Unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence; liquefaction; and other seismic hazards identified pursuant to Chapter 7.8 (commencing with Section 2690) of Division 2 of the Public Resources Code, and other geologic hazards known to the legislative body; flooding; and wildland and urban fires.
2. Mapping of known seismic and other geologic hazards.
3. Evacuation routes, military installations, peakload water supply requirements, and minimum road widths and clearances around structures, as those items relate to identified fire and geologic hazards.
4. Identify information regarding flood hazards, including, but not limited to, the following:
 - Flood hazard zones. As used in this subdivision, “flood hazard zone” means an area subject to flooding that is delineated as either a special hazard area or an area of moderate or minimal hazard on an official flood insurance rate map issued by the Federal Emergency Management Agency (FEMA). The identification of a flood hazard zone does not imply that areas outside the flood hazard zones or uses permitted within flood hazard zones will be free from flooding or flood damage.
 - National Flood Insurance Program maps published by FEMA.
 - Information about flood hazards that is available from the United States Army Corps of Engineers.
 - Designated floodway maps that are available from the Central Valley Flood Protection Board.
 - Dam failure inundation maps prepared pursuant to Section 6161 of the Water Code that are available from the Department of Water Resources.
 - Awareness Floodplain Mapping Program maps and 200-year flood plain maps that are or may be available from, or accepted by, the Department of Water Resources.
 - Maps of levee protection zones.
 - Areas subject to inundation in the event of the failure of project or nonproject levees or floodwalls.
 - Historical data on flooding, including locally prepared maps of areas that are subject to flooding, areas that are vulnerable to flooding after wildfires, and sites that have been repeatedly damaged by flooding.
 - Existing and planned development in flood hazard zones, including structures, roads, utilities, and essential public facilities.
 - Local, state, and federal agencies with responsibility for flood protection, including special districts and local offices of emergency services.
5. Establish a set of comprehensive goals, policies, and objectives for the protection of the community from the unreasonable risks of flooding, including, but not limited to:

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- Avoiding or minimizing the risks of flooding to new development.
 - Evaluating whether new development should be located in flood hazard zones, and identifying construction methods or other methods to minimize damage if new development is located in flood hazard zones.
 - Maintaining the structural and operational integrity of essential public facilities during flooding.
 - Locating, when feasible, new essential public facilities outside of flood hazard zones, including hospitals and health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities or identifying construction methods or other methods to minimize damage if these facilities are located in flood hazard zones.
 - Establishing cooperative working relationships among public agencies with responsibility for flood protection.
 - Establish a set of feasible implementation measures designed to carry out the goals, policies, and objectives established.
6. Risk of fire for land classified as state responsibility areas, as defined in Section 4102 of the Public Resources Code, and land classified as very high fire hazard severity zones, as defined in Section 51177. This review shall consider the advice included in the Office of Planning and Research's most recent publication of "Fire Hazard Planning, General Plan Technical Advice Series." Information regarding fire hazards, including, but not limited to, all of the following:
- Fire hazard severity zone maps available from the Office of the State Fire Marshal.
 - Any historical data on wildfires available from local agencies or a reference to where the data can be found.
 - Information about wildfire hazard areas that may be available from the United States Geological Survey.
 - General location and distribution of existing and planned uses of land in very high fire hazard severity zones and in state responsibility areas, including structures, roads, utilities, and essential public facilities. The location and distribution of planned uses of land shall not require defensible space compliance measures required by state law or local ordinance to occur on publicly owned lands or open space designations of homeowner associations.
 - Local, state, and federal agencies with responsibility for fire protection, including special districts and local offices of emergency services.
7. A set of goals, policies, and objectives for the protection of the community from the unreasonable risk of wildfire.
8. A set of feasible implementation measures designed to carry out the goals, policies, and objectives including, but not limited to, all of the following:
- Avoiding or minimizing the wildfire hazards associated with new uses of land.
 - Locating, when feasible, new essential public facilities outside of high fire risk areas, including, but not limited to, hospitals and health care facilities, emergency shelters,

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- emergency command centers, and emergency communications facilities, or identifying construction methods or other methods to minimize damage if these facilities are located in a state responsibility area or very high fire hazard severity zone.
- Designing adequate infrastructure if a new development is located in a state responsibility area or in a very high fire hazard severity zone, including safe access for emergency response vehicles, visible street signs, and water supplies for structural fire suppression.
 - Working cooperatively with public agencies with responsibility for fire protection.
 - If a city or county has adopted a fire safety plan or document separate from the general plan, an attachment of, or reference to, a city or county's adopted fire safety plan or document that fulfills commensurate goals and objectives.
9. A vulnerability assessment that identifies the risks that climate change poses to the local jurisdiction and the geographic areas at risk from climate change impacts, including, but not limited to, an assessment of how climate change may affect the risks related to flooding and wildfires. Information that may be available from federal, state, regional, and local agencies that will assist in developing the vulnerability assessment and the adaptation policies and strategies, but not limited to, all of the following:
- Information from the internet-based Cal-Adapt tool.
 - Information from the most recent version of the California Adaptation Planning Guide.
 - Information from local agencies on the types of assets, resources, and populations that will be sensitive to various climate change exposures.
 - Information from local agencies on their current ability to deal with the impacts of climate change.
 - Historical data on natural events and hazards, including locally prepared maps of areas subject to previous risk, areas that are vulnerable, and sites that have been repeatedly damaged.
 - Existing and planned development in identified at-risk areas, including structures, roads, utilities, and essential public facilities.
 - Federal, state, regional, and local agencies with responsibility for the protection of public health and safety and the environment, including special districts and local offices of emergency services.
10. A set of feasible implementation measures designed to carry out the goals, policies, and objectives, including, but not limited to, all of the following:
- Feasible methods to avoid or minimize climate change impacts associated with new uses of land.
 - The location, when feasible, of new essential public facilities outside of at-risk areas, including, but not limited to, hospitals and health care facilities, emergency shelters, emergency command centers, and emergency communications facilities, or identifying construction methods or other methods to minimize damage if these facilities are located in at-risk areas.

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- The designation of adequate and feasible infrastructure located in an at-risk area.
 - Guidelines for working cooperatively with relevant local, regional, state, and federal agencies.
 - The identification of natural infrastructure that may be used in adaptation projects. Where feasible, the plan shall use existing natural features and ecosystem processes, or the restoration of natural features and ecosystem processes, when developing alternatives for consideration. For purposes of this clause, “natural infrastructure” means using natural ecological systems or processes to reduce vulnerability to climate change related hazards, or other related climate change effects, while increasing the long-term adaptive capacity of coastal and inland areas by perpetuating or restoring ecosystem services. This includes, but is not limited to, the conservation, preservation, or sustainable management of any form of aquatic or terrestrial vegetated open space, such as beaches, dunes, tidal marshes, reefs, seagrass, parks, rain gardens, and urban tree canopies. It also includes systems and practices that use or mimic natural processes, such as permeable pavements, bioswales, and other engineered systems, such as levees that are combined with restored natural systems, to provide clean water, conserve ecosystem values and functions, and provide a wide array of benefits to people and wildlife.
11. Identify residential developments in any hazard area identified in the safety element that do not have at least two emergency evacuation routes.
 12. Identify evacuation routes and their capacity, safety, and viability and evacuation locations under a range of emergency scenarios.
 13. Review and revise the safety element upon each revision of the housing element or local hazard mitigation plan, but not less than once every eight years, to identify new information relating to flood and fire hazards and climate adaptation and resiliency strategies applicable to the city or county that was not available during the previous revision of the safety element.

A complete list of acronyms used in this document is included in Appendix A. This element, in addition to a Background Information Report, included as Appendix B, meets the requirements of Government Code Section 65302(g). The Climate Vulnerability Assessment (CVA), included as Appendix C, contains detailed information regarding the existing conditions related to climate change vulnerabilities and climate change adaptation. Appendix D contains the dam inundation maps. Appendix E includes the noise contour maps.

The County Safety Element incorporates the El Dorado County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) update, which will identify specific hazard mitigation actions are developed to reduce or eliminate hazard risk. The implementation of these mitigation actions, which include both short and long-term strategies, involve planning, policy changes, programs, projects, and other activities which will further support community safety and resilience. The MJHMP is incorporated by reference into the General Plan Public Health, Safety, and Noise Element and forms the basis for many of the policies in this element. This plan alignment ensures the County follows a coordinated approach to public safety and makes the County eligible for additional funding opportunities consistent with California Government Code Section 65302.6. The MJHMP update can be found on the County’s website at [https://www.edcgov.us/Government/sheriff/Support/Pages/office_of_emergency_services_\(oes\).a_spx](https://www.edcgov.us/Government/sheriff/Support/Pages/office_of_emergency_services_(oes).a_spx). The County Safety Element acknowledges the California State Hazard Mitigation Plan. The County Safety Element also incorporates the Greater Placerville Wildfire Evacuation

Preparedness, Community Safety, and Resiliency Study for the County. The study focuses on identifying major evacuation routes and assessing their performance under various scenarios, such as estimating evacuation times and identifying potential bottlenecks using simulations. It also includes evaluating evacuation strategies and projects aimed at enhancing community safety and resilience in anticipation of future wildfire events. The Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Study is incorporated by reference into the General Plan Public Health, Safety, and Noise Element, serving as a foundation for many wildfire and evacuation accessibility policies within this document. This alignment ensures a cohesive and coordinated County-wide approach to public safety measures, and compliance with Government Code Section 65302.15.

RELATIONSHIP TO OTHER ELEMENTS

Issues set forth in this element are closely linked to the Land Use, Conservation and Open Space, Circulation, and Public Services and Utilities elements. ~~The overall~~ focus of the Public Health, Safety, and Noise Element is to provide guidelines for protecting the residents from existing and potential hazards in El Dorado County. Table HS - 1 includes policies from other elements that address existing and potential hazards in the County, demonstrating consistency between the elements of this General Plan.

<u>Table HS - 1</u>	
<u>Policies in Other Elements Addressing Adaptation and Resiliency</u>	
<u>Land Use Element</u>	
<u>Policy 2.1.1.7</u>	<u>Development within Community Regions</u>
<u>Policy 2.2.7.2</u>	<u>Coordination with Incorporated Cities</u>
<u>Policy 2.3.1.1</u>	<u>Topography and Native Vegetation</u>
<u>Transportation and Circulation Element</u>	
<u>Policy TC-1a</u>	<u>Unified Countywide Road and Highway System</u>
<u>Policy TC-1w</u>	<u>New Development Standards and Vehicular Safety</u>
<u>Policy TC-Xa</u>	<u>Traffic Impact Mitigation</u>
<u>Policy TC-2f</u>	<u>Provision of Paratransit Services and Facilities</u>
<u>Policy TC-8b</u>	<u>Sustainable Communities Strategy Consistency</u>
<u>Housing Element</u>	
<u>Policy HO-1.3</u>	<u>Development Standards</u>
<u>Policy HO-5.2</u>	<u>Energy and Water Efficiency in New Land Use Development</u>
<u>Public Services and Utilities Element</u>	

<u>Policy 5.1.1.1</u>	<u>Development of Long-Range Plans for Services Including Water Supply</u>
<u>Policy 5.1.2.1</u>	<u>Authorization of New Development Requiring Public Services and Utilities</u>
<u>Policy 5.1.2.2</u>	<u>Prevention of Reduction of Service Standards</u>
<u>Policy 5.2.1.1</u>	<u>Water Resources Development and Management Program</u>
<u>Policy 5.2.1.2</u>	<u>Adequate Water for All Uses</u>
<u>Policy 5.2.1.7</u>	<u>Development Projects During Water Shortage</u>
<u>Policy 5.2.1.9</u>	<u>Water Supply Assessments for Building Permits</u>
<u>Policy 5.2.1.10</u>	<u>Water Conservation and Recycling Programs</u>
<u>Policy 5.2.1.12</u>	<u>Recycled Water Collaboration with El Dorado Irrigation District</u>
<u>Policy 5.2.1.13</u>	<u>Reduction of Environmental Effects of Infrastructure Projects</u>
<u>Policy 5.2.1.15</u>	<u>Acquisition of New Surface Water Sources</u>
<u>Conservation and Open Space Element</u>	
<u>Policy 7.1.2.1</u>	<u>Development Standards for Slopes</u>
<u>Policy 7.1.2.2</u>	<u>Minimization of Erosion and Sedimentation</u>
<u>Policy 7.1.2.3</u>	<u>Grading Ordinance Provisions</u>
<u>Policy 7.1.2.4</u>	<u>Cooperation with Resource Conservation Districts to Prevent Soil Erosion</u>
<u>Policy 7.1.2.5</u>	<u>Cooperation with Department of Transportation to Maintain Road Surfaces</u>
<u>Policy 7.1.2.7</u>	<u>Agricultural Grading Permits</u>
<u>Policy 7.3.1.1</u>	<u>Best Management Practices in Watershed Lands</u>
<u>Policy 7.3.1.2</u>	<u>Establishment of Water Conservation Programs</u>
<u>Policy 7.3.1.3</u>	<u>Domestic Gray Water Use</u>
<u>Policy 7.3.2.1</u>	<u>Protection of Stream and Lake Embankments</u>
<u>Policy 7.3.2.2</u>	<u>Grading Permits and Erosion Control Programs</u>
<u>Policy 7.3.2.3</u>	<u>Separation of Storm Drainage</u>

<u>Policy 7.3.3.1</u>	<u>Protection of Wetlands</u>
<u>Policy 7.3.3.4</u>	<u>Riparian and Wetland Setbacks</u>
<u>Policy 7.3.5.1</u>	<u>Drought Tolerant Plant Species</u>
<u>Policy 7.3.5.2</u>	<u>Indigenous Drought Tolerant Materials</u>
<u>Policy 7.3.5.4</u>	<u>Efficient Water Conveyance Systems in New Construction</u>
<u>Policy 7.3.5.5</u>	<u>Water Reuse Programs</u>
<u>Agriculture and Forestry Element</u>	
<u>Policy 8.2.1.3</u>	<u>Pursuit of New Agricultural Water Supplies</u>
<u>Policy 8.2.1.5</u>	<u>Adequate Water Supplies for Agricultural Uses</u>
<u>Economic Development Element</u>	
<u>Policy 10.1.4.1</u>	<u>Integration of Economic Health and Environmental Enhancement</u>
<u>Policy 10.2.4.4</u>	<u>Road and Drainage Funding</u>

ORGANIZATION OF THE ELEMENT

Consistent with the County MJHMP, this element sets forth planning strategies for fire hazards, seismic hazards, flood hazards, noise, hazardous materials, air quality, airport safety, and highway safety. drought and water supply hazards, evacuation accessibility, agriculture/forestry disease and tree mortality hazards, extreme heat, human-health hazards, high wind, severe weather, and climate change adaptation.

The Public Health, Safety, and Noise Element identifies and assesses a range of natural and human-caused hazards, air quality impacts, and noise hazards in the County and establishes goals, policies, and implementation measures to reduce those hazards and impacts to an acceptable level. The natural and human-caused hazards addressed in the element are consistent with the County's MJHMP. This element also sets forth planning strategies in the element for the following topics:

- Fire Hazards
- Geologic and Seismic Hazards
- Flood Hazards
- Noise
- Hazardous Materials
- Air Quality
- Aviation-Related Hazards
- Highway Safety
- Drought and Water Supply
- Evacuation Accessibility
- Agriculture and Forestry Disease and Tree Mortality Hazards
- Extreme Heat
- Human-Health Hazards
- High Winds
- Severe Weather
- Climate Adaptation and Resiliency

POLICY SECTION

GENERAL

GOAL 6.1: COORDINATION

A coordinated approach to hazard and disaster response planning.

OBJECTIVE 6.1.1: IMPLEMENT THE EL DORADO COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

The El Dorado County Multi-Jurisdictional Local Hazard Mitigation Plan shall serve as the implementation program for this Goal.

Policy 6.1.1.1 The El Dorado County Multi-jurisdictional Local Hazard Mitigation Plan (~~LHMP~~) MJHMP shall serve as the implementation program for the coordination of hazard planning and disaster response efforts within the County and is incorporated by reference to this Element. The County will ensure that the ~~LHMP~~ MJHMP is updated ~~on a regular basis~~ regularly to keep pace with the growing population.

OBJECTIVE 6.1.2: Expand community resilience to support effective emergency response and recovery during and after emergency events.

Policy 6.1.2.1 Support an emergency mass evacuation and sheltering plan that prioritizes the needs of at-risk, vulnerable, and disadvantaged people and individuals with disabilities, access and functional needs, and other special needs by providing meaningful opportunities in emergency planning efforts.

FIRE SAFETY

GOAL 6.2: FIRE HAZARDS

Minimize fire hazards and risks in both wildland and developed areas.
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OBJECTIVE 6.2.1: DEFENSIBLE SPACE

All existing and new development and structures shall meet “defensible space” requirements ~~and adhere to fire code building requirements~~ to minimize wildland fire hazards.

Policy 6.2.1.1 Implement Fire Safe ordinance to attain and maintain defensible space through conditioning of tentative maps and in new development at the final map and/or building permit stage.

Policy 6.2.1.2 Coordinate with the local Fire Safe Councils, California Department of Forestry and Fire Protection (CAL FIRE), and federal and state agencies having land use jurisdiction in El Dorado County in the development of a

countywide fuels management strategy.

- Policy 6.2.1.3 Require all existing and new residential development in State Responsibility Areas (SRAs) and/or very high Fire Hazard Severity Zones (VHFHSZs) to enforce fire-resistant landscaping and defensible space requirements that meet or exceed Title 14, Code of California Regulations (CCR), Division 1.5, Chapter 7, Subchapter 2, Articles 1-5 (commencing with Section 1270) (State Minimum Fire Safe regulations) and Subchapter 3, Article 3 (commencing with Section 1299.01) (Fire Hazard Reduction around Buildings and Structures Regulations). Adequate compliance with these requirements shall be determined by the local Fire Protection Districts (FPDs) or other local fire agencies, as appropriate.
- Policy 6.2.1.4 Require consistency with fire code and development standards that ensure adequate defensible space clearance around all existing and new structures in compliance with the California Fire Code, Public Resources Code Section 4291 (ember-resistant zone), Government Code Section 51175-51188, CCR Title 14, Division 1.5, Chapter 7, Subchapter 3, Section 1299.03, and in the County Code of Ordinances Chapter 8.09.
- Policy 6.2.1.5 Maintain and enforce the County Defensible Space Ordinance and Fire Prevention Programs and Plans in coordination with local the VHFHSZs and other fire agencies and continue to support related fire prevention programs associated with defensible space inspections as detailed in County Code of Ordinances Chapter 8.09, fire development standards, and public education.

OBJECTIVE 6.2.2: LIMITATIONS TO DEVELOPMENT

Regulate development in areas of high and very high fire hazard as designated by the California Department of Forestry and Fire ~~Prevention~~Protection Fire Hazard Severity Zone (FHSZ) Maps.

- Policy 6.2.2.1 ~~Fire Hazard Severity Zone~~FHSZ Maps shall be consulted in the review of all projects so that standards and mitigation measures appropriate to each hazard classification can be applied. Land use densities and intensities shall be determined by mitigation measures in areas designated as high or very high fire hazard.
- Policy 6.2.2.2 The County shall preclude development, including public facilities and essential services (see definition in the Background Information Report in Appendix B), in areas of high and very high wildland fire hazard or in areas identified as Wildland Urban Interface (WUI) communities within the vicinity of Federal lands that are a high risk for wildfire, as listed in the Federal Register Executive Order 13728 of May 18, 2016, unless such development can be adequately protected from wildland fire hazard, as demonstrated in a WUI Fire Safe Plan prepared by a qualified professional as approved by the El Dorado County Fire Prevention

Officers Association. The WUI Fire Safe Plan shall be approved by the local ~~Fire Protection District~~ FPD having jurisdiction and/or CAL FIRE California Department of Forestry and Fire Protection. (Resolution 124-2019, August 6, 2019)

Policy 6.2.2.3 In the event of a major fire (defined as greater than 500 acres), the County shall evaluate redevelopment within the impacted fire areas to comply with current Fire Safe Regulations and related County standards. All development shall meet or exceed the County's Building Code, and conform to the State Fire Safe Regulations through application of the Fire Code and wildfire development standards pertaining to fuel modification and defensible space, Public Resources Code 4290, and Title 14 California Code of Regulations 1270-1276.04 referenced on the County's Building Services webpage, in addition to any applicable updates required at the state level, except where exempt by ordinance.

OBJECTIVE 6.2.3: ADEQUATE FIRE PROTECTION

Application of uniform fire protection standards to development projects by fire districts.

- Policy 6.2.3.1 As a requirement for approving new development, the County must find, based on information provided by the applicant and the responsible ~~Fire Protection District~~ FPD that, concurrent with development, adequate emergency and peak load water supply, water flow, fire access, and ~~fire fighting~~ firefighting personnel and equipment will be available in accordance with applicable State and local fire district standards to support fire suppression efforts.
- Policy 6.2.3.2 As a requirement of new development, the applicant must demonstrate that adequate access exists, or can be provided to ensure that emergency vehicles can access the site and private vehicles can evacuate the area.
- Policy 6.2.3.3 Day care centers shall be subject to conformance with all applicable sections of Title 19 of the Fire Code.
- Policy 6.2.3.4 All new development and public works projects shall be consistent with applicable State Wildland Fire Standards and other relevant State and federal fire requirements.
- Policy 6.2.3.5 Identify actions to ensure noncompliant development meets current fire safe standards and road standards as defined in Title 14 CCR, Division 1.5, Chapter 7 Fire Protection, Subchapter 2, Articles 1-5, SRA Fire Safe Regulations through the WUI Fire Safe Plan review process and through collaboration with the FPDs and local fire agencies when reviewing Fire Protection Plans and provisions for new development.

Policy 6.2.3.6 All new development within an SRA or very high (VHFHSZs) shall prepare a Fire Protection Plan that complies with established fire safety standards. Ingress and egress to the new development will be constructed utilizing the most current State Fire Safe Regulations, Fire Code, and/or County Code that meets these minimum requirements. Key components of a Fire Protection Plan include:

1. risk analysis;
2. fire response capabilities;
3. fire safety requirements – defensible space, infrastructure, and building ignition resistance;
4. mitigation measures and design considerations for non-conforming fuel modification;
5. wildfire education, maintenance, and limitations; and
6. evacuation planning.

Existing development within an SRA or VHFHSZ can meet these requirements through retro-fitting and home hardening.

Policy 6.2.3.7 Enforce the most recent California Uniform Building Code Fire Code to safeguard life and property from the hazards of fires and explosions; dangerous conditions arising from the storage, handling, and use of hazardous materials and devices; and hazardous conditions in the use or occupancy of building or premises.

OBJECTIVE 6.2.4: AREA-WIDE FUEL MANAGEMENT PROGRAM

Reduce fire hazard through cooperative fuel management activities.

Policy 6.2.4.1 Discretionary development within high and very high fire hazard areas shall be conditioned to designate fuel break zones that comply with fire safe requirements to benefit the new and, where possible, existing development.

Policy 6.2.4.2 The County shall cooperate with ~~the California Department of Forestry and Fire Protection and local fire protection districts~~ CAL FIRE and local FPDs to identify opportunities for fuel breaks in zones of high and very high fire hazard either prior to or as a component of project review and will support the FPDs in tracking grants to fund fire breaks and their long-term maintenance.

Policy 6.2.4.3 Require fuel modification around homes and subdivision developments in SRAs or VHFHSZs by assisting the local FPDs and other local fire agencies.

Policy 6.2.4.4 Continue to work cooperatively and promote advocacy efforts with the US Forest Service, CAL FIRE, local FPDs, and other local fire agencies in managing wildfire hazards.

Policy 6.2.4.5 The County shall build and support biomass facilities.

OBJECTIVE 6.2.5: FIRE PREVENTION EDUCATION

Inform and educate homeowners regarding fire safety and prevention.

Policy 6.2.5.1 The County shall cooperate with the U.S. Forest Service, ~~California-
Department of Forestry and Fire Protection,~~ and local fire districts CAL FIRE,
local FPDs, and other local fire agencies in fire prevention education programs.

OBJECTIVE 6.2.6: FIRE PREPAREDNESS AND EVALUATION

Ensure fire preparedness and response through inter-agency and multi-governmental cooperation.

Policy 6.2.6.1 To ensure coordinated wildfire planning and response, applicable Community Wildfire Protection Plans (CWPPs) shall be implemented and consulted for all wildfire planning and disaster response within the County. The CWPPs listed in Table HS - 2 cover sections of both the incorporated and unincorporated County and will be incorporated by reference to the Safety Element.

**Table HS - 2
El Dorado County CWPPs**

<u>CWPP(s)</u>	<u>Fire Protection District</u>
<u>Western El Dorado County CWPP</u>	<u>Cameron Park Fire Department</u> <u>Diamond Springs/El Dorado Fire Protection District</u> <u>El Dorado County Fire District</u> <u>El Dorado Hills Fire Department</u> <u>Garden Valley Fire Protection District</u> <u>Georgetown Fire Protection District</u> <u>Mosquito Fire Protection District</u> <u>Pioneer Fire Protection District</u> <u>Rescue Fire Protection District</u>
<u>Lake Tahoe Basin CWPP</u>	<u>Fallen Leaf Fire Department</u> <u>Lake Valley Fire Protection District</u> <u>Meeks Bay Fire Protection District</u> <u>South Lake Tahoe Fire Department</u>

Policy 6.2.6.2 Partner with local fire agencies, state and federal agencies, and other local agencies and organizations within the County to regularly update and implement the Western El Dorado County and Tahoe Basin CWPPs.

Policy 6.2.6.3 All County-area FPDs, the County Sheriff’s Department, and Office

of Emergency Services, Office of Wildfire Preparedness and Resilience (OWPR), and other emergency services and response staff shall attend regular inter-agency training programs to effectively coordinate and provide multi-agency mutual aid in the event of a wildfire or other hazard occurrence.

Policy 6.2.6.4 Prepare future conditions studies which are comprehensive assessments of projected demographic, infrastructure, and environmental factors at smaller scales in unincorporated parts of the County that may be susceptible to evacuation constraints. These studies will aim to evaluate the specific viability and capacity of the local road and street networks serving existing and new residential developments.

Policy 6.2.6.5 Routinely evaluate the ability of the County’s essential fire and law enforcement facilities to function after a major disaster and as part of new development review to ensure adequate access for future emergency needs.

GEOLOGIC AND SEISMIC 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 very 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 California Code of Regulations (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.~~

GOAL 6.3: GEOLOGIC AND SEISMIC HAZARDS

Minimize the threat to life and property from seismic and geologic hazards.
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OBJECTIVE 6.3.1: BUILDING AND SITE STANDARDS

Adopt and enforce development regulations, including building and site standards, to avoid social dislocations, which refer to the disruption or displacement of communities,

and protect against seismic and geologic hazards.

Policy 6.3.1.1 The County shall require that all discretionary projects and all projects requiring a grading permit, or a building permit that would result in earth disturbance, that are located in areas likely to contain naturally occurring asbestos (based on mapping developed by the California Department of Conservation [DOC]) ~~have a California-registered geologist knowledgeable about asbestos-containing formations inspect the project area for the presence of asbestos using appropriate test methods. The County shall amend the Erosion and Sediment Control Ordinance to include a section that addresses the reduction of thresholds to an appropriate level for grading permits in areas likely to contain naturally occurring asbestos (based on mapping developed by the DOC).~~ comply with the Air Quality Management District (AQMD) Rules 223, 223-1 and 223-2 requirements. The Department of Transportation and the AQMD shall consider the requirement of posting a warning sign at the work site in areas likely to contain naturally occurring asbestos based on the mapping developed by the DOC.

Policy 6.3.1.2 The County shall establish a mandatory disclosure program, where potential buyers and sellers of real property in all areas likely to contain naturally occurring asbestos (based on mapping developed by ~~the California Department of Conservation (DOC)~~DOC) are provided information regarding the potential presence of asbestos subject to sale. Information shall include potential for exposure from access roads and from disturbance activities (e.g., landscaping).

Policy 6.3.1.3 The County Environmental Management Department shall report annually to the Board of Supervisors regarding new information on asbestos and design an information outreach program.

Policy 6.3.1.4 Enforce the California Uniform Building Code and general building design and construction requirements related to life safety to address seismic risks associated with ground shaking.

Policy 6.3.1.5 Prohibit the construction of buildings near active faults in Earthquake Fault Zones unless a geologic investigation is performed to delineate hazards associated with surface fault ruptures and appropriate mitigation actions, based on the investigation, are included in the project design.

Policy 6.3.1.6 Require that linear projects, including roads, streets, highways, electrical transmission and distribution corridors, water facilities, and underground oil and gas facilities avoid intersecting active faults to the extent possible. When such locations are unavoidable, the project design shall include measures to minimize the effects of fault movement.

OBJECTIVE 6.3.2: COUNTY-WIDE SEISMIC HAZARDS

Continue to evaluate seismic related hazards such as liquefaction, landslides, and

avalanche, and seiche, particularly in the Tahoe Basin.

Policy 6.3.2.1 Maintain updated geologic, seismic and avalanche hazard maps, and other hazard inventory information in cooperation with the State Office of Emergency Services, California Department of Conservation--Division of Mines and Geology, U.S. Forest Service, Caltrans, Tahoe Regional Planning Agency, and other agencies as this information is made available. This information shall be incorporated into the El Dorado County Operational Area Multi-Hazard Functional Emergency Operations Plans.

Policy 6.3.2.2 Future subdivision in the area around Fallen Leaf Lake shall be precluded.

Policy 6.3.2.3 An avalanche overlay zone shall be established and applied to all residential areas subject to avalanche. All new structures located within avalanche susceptible areas shall be designed to withstand the expected forces of such an event.

Policy 6.3.2.4 *intentionally blank*

Policy 6.3.2.5~~4~~ Applications for development of habitable structures shall be reviewed for potential hazards associated with steep or unstable slopes, areas susceptible to high erosion, and avalanche risk. Geotechnical studies shall be required when development may be subject to geological hazards. If hazards are identified, applicants shall be required to mitigate or avoid identified hazards as a condition of approval. If no mitigation is feasible, the project will not be approved.

Policy 6.3.2.5 Require geotechnical reports that demonstrate adequate slope stability and construction methods for buildings and road improvements that are on slopes greater than 50 percent pursuant to the California Building Code (CBC) Appendix J: Grading Section 108.1-3 on setbacks.

Policy 6.3.2.6 Development in mapped high landslide susceptibility and debris flow hazard areas shall require a geotechnical investigation and shall incorporate appropriate mitigation into the project design.

Policy 6.3.2.7 Consider the inclusion of seiche hazard areas within the Lake Tahoe Basin during the update of Area Plans and require development in potential seiche hazard areas to perform a geotechnical engineering investigation and mandate the incorporation of appropriate mitigation measures, based on the investigation, into the project design.

FLOOD HAZARDS

GOAL 6.4: FLOOD HAZARDS

Protect the residents of El Dorado County from flood hazards.
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OBJECTIVE 6.4.1: DEVELOPMENT REGULATIONS

Minimize loss of life and property by regulating development in areas subject to flooding in accordance with Federal Emergency Management Agency (FEMA) guidelines, California law, and the El Dorado County Flood Damage Prevention Ordinance.

- Policy 6.4.1.1 ~~The County shall e~~Continue participation in the National Flood Insurance Program and application of flood plain zoning regulations to qualify for flood insurance and disaster assistance.
- Policy 6.4.1.2 ~~The County shall i~~Identify and delineate flood prone study areas discovered during the completion of the master drainage studies or plans.
- Policy 6.4.1.3 No new critical or high occupancy structures (e.g., schools, hospitals) shall be located in the 100-year floodplain of any river, stream, or other body of water.
- Policy 6.4.1.4 Creation of new parcels which lie entirely within the 100-year floodplain as identified on the most current version of the flood insurance rate maps provided by ~~the Federal Emergency Management Agency (FEMA)~~ or dam failure inundation areas as delineated in dam failure emergency response plans maintained by the County shall be prohibited.
- Policy 6.4.1.5 New parcels which are partially within the 100-year floodplain or dam failure inundation areas as delineated in dam failure emergency response plans maintained by the County must have sufficient land available outside the FEMA or County designated 100-year floodplain or the dam inundation areas for construction of dwelling units, accessory structures, and septic systems. Discretionary applications shall be required to determine the location of the designated 100-year floodplain and identified dam failure inundation areas on the subject property.
- Policy 6.4.1.6 Encourage the U.S. Forest Service, CAL FIRE, and other agencies and organizations to work together to treat areas burned by wildfires by planting fire-resistant vegetation to prevent erosion, protect soils, and to control stormwater runoff prior to winter storms, and areas prone to rock slides, mudslides, and landslides.

OBJECTIVE 6.4.2: DAM FAILURE INUNDATION

Protect life and property of County residents below dams.

- Policy 6.4.2.1 Apply a zoning overlay for areas located within dam failure inundation zones as identified by the State Department of Water Resources Division of Safety of Dams (DSOD).
- Policy 6.4.2.2 No new critical or high occupancy structures (e.g., schools, hospitals) should be located within the inundation area resulting from failure of dams

identified by the State Department of Water Resources ~~Division of Safety of Dams~~ DSOD.

Policy 6.4.2.3 Coordinate with the El Dorado Irrigation District, the Georgetown Divide Public Utility District, the Cameron Park Community Services District, the Sacramento Municipal Utility District, and other dam owners and operators to ensure there are plans in place for flood protection and to address risks associated with dam incidents.

NOISE

GOAL 6.5: ACCEPTABLE NOISE LEVELS
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Ensure that County residents are not subjected to noise beyond acceptable levels.
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OBJECTIVE 6.5.1: PROTECTION OF NOISE-SENSITIVE DEVELOPMENT

Protect existing noise-sensitive developments (e.g., hospitals, schools, churches and residential) from new uses that would generate noise levels incompatible with those uses and, conversely, discourage noise-sensitive uses from locating near sources of high noise levels.

- Policy 6.5.1.1 Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table HS-3 or the performance standards of ~~Table 6-2~~ HS-4, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.
- Policy 6.5.1.2 Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of ~~Table 6-2~~ HS-4 at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.
- Policy 6.5.1.3 Where noise mitigation measures are required to achieve the standards of ~~Tables 6-1~~ Table HS-3 and ~~6-2~~ Table HS-4, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings.
- Policy 6.5.1.4 Existing dwellings and new single-family dwellings on legal lots of record, as of the date of adoption of this General Plan, are not subject to County review with respect to satisfaction of the standards of the Public Health, Safety, and Noise Element except in areas governed by the Airport Land Use Compatibility Plan for applicable airports. (See Objective 6.5.2.)

As a ~~consequence~~ result, such dwellings may be constructed in other areas where noise levels exceed the standards of the Public Health, Safety, and Noise Element. It is not the responsibility of the County to ensure that such dwellings meet the noise standards of the Public Health, Safety, and Noise Element, or the noise standards imposed by lending agencies such as ~~HUD, FHA, and Cal Vet~~ Housing and Urban Development (HUD), Federal Housing Administration (FHA), and California Department of Veteran Affairs (Cal Vet). If homes are located and constructed in accordance with the Public Health, Safety, and Noise Element, it is expected that the resulting exterior and interior noise levels will conform to the HUD/FHA/Cal Vet noise standards.

- Policy 6.5.1.5 Setbacks shall be the preferred method of noise abatement for residential projects located along U.S. Highway 50. Noise walls shall be discouraged within the foreground viewshed of U.S. Highway 50 and shall be discouraged in favor of less intrusive noise mitigation (e.g., landscaped berms, setbacks) along other high-volume roadways.
- Policy 6.5.1.6 New noise-sensitive uses shall not be allowed where the noise level, due to non-transportation noise sources, will exceed the noise level standards of ~~Table 6-2 HS-4~~ HS-4 unless effective noise mitigation measures have been incorporated into the development design to achieve those standards.
- Policy 6.5.1.7 Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of ~~Table 6-2~~ HS-4 for noise-sensitive uses.
- Policy 6.5.1.8 New development of noise sensitive land uses will not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in ~~Table 6-1 HS-3~~ HS-3 unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels specified in ~~Table 6-1~~ HS-3.
- Policy 6.5.1.9 Noise created by new transportation noise sources, excluding airport expansion but including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in ~~Table 6-1~~ HS-3 at existing noise-sensitive land uses.
- Policy 6.5.1.10 To provide a comprehensive approach to noise control, the County shall:
- A. Develop and employ procedures to ensure that noise mitigation measures required pursuant to an acoustical analysis are implemented in the project review process and, as may be determined necessary, through the building permit process.
 - B. Develop and employ procedures to monitor compliance with the standards of the Noise Element after completion of projects where noise mitigation measures were required.
 - C. The zoning ordinance shall be amended to provide that noise

standards will be applied to ministerial projects with the exception of single-family residential building permits if not in areas governed by the Airport Land Use Compatibility Plan. (See Objective 6.5.2.)

Table 6-4 HS - 3			
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR TRANSPORTATION NOISE SOURCES			
Land Use	Outdoor Activity Areas¹ L_{dn}/CNEL, dB	Interior Spaces	
		L_{dn}/CNEL, dB	L_{eq}, dB²
Residential	60 ³	45	--
Transient Lodging	60 ³	45	--
Hospitals, Nursing Homes	60 ³	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls, Schools	60 ³	--	40
Office Buildings	--	--	45
Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Notes:

¹ In Communities and Rural Centers, where the location of outdoor activity areas is not clearly defined, the exterior noise level standard shall be applied to the property line of the receiving land use. For residential uses with front yards facing the identified noise source, an exterior noise level criterion of 65 dB L_{dn} shall be applied at the building facade, in addition to a 60 dB L_{dn} criterion at the outdoor activity area. In Rural Regions, an exterior noise level criterion of 60 dB L_{dn} shall be applied at a 100-foot radius from the residence unless it is within Platted Lands where the underlying land use designation is consistent with Community Region densities in which case the 65 dB L_{dn} may apply. The 100-foot radius applies to properties which are five acres and larger; the balance will fall under the property line requirement.

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

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

Table 6-2 HS - 4						
NOISE LEVEL PERFORMANCE PROTECTION STANDARDS FOR NOISE SENSITIVE LAND USES AFFECTED BY NON-TRANSPORTATION* SOURCES						
Noise Level Descriptor	Daytime 7 a.m. - 7 p.m.		Evening 7 p.m. - 10 p.m.		Night 10 p.m. - 7 a.m.	
	Community	Rural	Community	Rural	Community	Rural
Hourly L_{eq} , dB	55	50	50	45	45	40
Maximum level, dB	70	60	60	55	55	50

Notes:
Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).
The County can impose noise level standards which are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site.
In Community areas the exterior noise level standard shall be applied to the property line of the receiving property. In Rural areas the exterior noise level standard shall be applied at a point 100' away from the residence. The above standards shall be measured only on property containing a noise sensitive land use as defined in Objective 6.5.1. This measurement standard may be amended to provide for measurement at the boundary of a recorded noise easement between all effected property owners and approved by the County.
*Note: For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways, railroad line operations and aircraft in flight. Control of noise from these sources is preempted by Federal and State regulations. Control of noise from facilities of regulated public facilities is preempted by California Public Utilities Commission (CPUC) regulations. All other noise sources are subject to local regulations. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, schools, hospitals, commercial land uses, other outdoor land use, etc.

Policy 6.5.1.11 The standards outlined in ~~6-3, 6-4, 6-5~~ Table HS-5, Table HS-6, and Table HS-7 shall not apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally- recognized holidays. Further, the standards outlined in Tables 6-3, 6-4, and 6-5 HS-5, HS-6, and HS-7 shall not apply to public projects to alleviate traffic congestion and safety hazards.

Table 6-3 HS - 5			
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NONTRANSPORTATION NOISE SOURCES IN COMMUNITY REGIONS AND ADOPTED PLAN AREAS—CONSTRUCTION NOISE			
Land Use Designation¹	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
Higher-Density Residential (MFR, HDR, MDR)	7 am–7 pm	55	75
	7 pm–10 pm	50	65
	10 pm–7 am	45	60
Commercial and Public Facilities (C, R&D, PF)	7 am–7 pm	70	90
	7 pm–7 am	65	75
Industrial (I)	Any Time	80	90
Note:			
¹ Adopted Plan areas should refer to those land use designations that most closely correspond to the similar General Plan land use designations for similar development.			

Table 6-4 HS - 6			
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NONTRANSPORTATION NOISE SOURCES IN RURAL CENTERS—CONSTRUCTION NOISE			
Land Use Designation	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
All Residential (MFR, HDR, MDR)	7 am–7 pm	55	75
	7 pm–10 pm	50	65
	10 pm–7 am	40	55
Commercial, Recreation, and Public Facilities (C, TR, PF)	7 am–7 pm	65	75
	7 pm–7 am	60	70
Industrial (I)	Any Time	70	80
Open Space (OS)	7 am–7 pm	55	75
	7 pm–7 am	50	65

Table 6-5 HS - 7			
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NONTRANSPORTATION NOISE SOURCES IN RURAL REGIONS—CONSTRUCTION NOISE			
Land Use Designation	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
All Residential (LDR)	7 am–7 pm	50	60
	7 pm–10 pm	45	55
	10 pm–7 am	40	50
Commercial, Recreation, and Public Facilities (C, TR, PF)	7 am–7 pm	65	75
	7 pm–7 am	60	70
Rural Land, Natural Resources, Open Space, and Agricultural Lands (RR, NR, OS, AL)	7 am–7 pm	65	75
	7 pm–7 am	60	70

-
- Policy 6.5.1.12 When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration.
- A. Where existing or projected future traffic noise levels are less than 60 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 5 dBA L_{dn} caused by a new transportation noise source will be considered significant;
 - B. Where existing or projected future traffic noise levels range between 60 and 65 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 3 dBA L_{dn} caused by a new transportation noise source will be considered significant; and
 - C. Where existing or projected future traffic noise levels are greater than 65 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 1.5 dBA L_{dn} caused by a new transportation noise will be considered significant.
- Policy 6.5.1.13 When determining the significance of impacts and appropriate mitigation to reduce those impacts for new development projects, including ministerial development, the following criteria shall be taken into consideration:
- A. In areas in which ambient noise levels are in accordance with the standards in Table ~~6-2 HS - 3~~, increases in ambient noise levels caused by new ~~nontransportation~~ non transportation noise sources that exceed 5 dBA shall be considered significant; and
 - B. In areas in which ambient noise levels are not in accordance with the standards in Table ~~6-2 HS - 3~~, increases in ambient noise levels caused by new non transportation noise sources that exceed 3 dBA shall be considered significant.
- Policy 6.5.1.14 The County will adopt a noise ordinance to resolve neighborhood conflicts and to control unnecessary noise in the County. Examples of the types of noise sources that can be controlled through the use of a quantitative noise ordinance include noisy mechanical equipment (e.g., swimming pool pumps, HVAC units), and amplified music in commercial establishments.
- Policy 6.5.1.15 The County will establish and maintain coordination among city, county, and state agencies involved in noise abatement and other agencies to reduce noise generated from sources outside the County's jurisdiction.

OBJECTIVE 6.5.2: AIRPORT NOISE GUIDELINES

The County shall recognize the Airport Land Use Compatibility Plan (ALUCP) for the Placerville Airport, the Cameron Airpark Airport, and the Georgetown Airport as the applicable guidelines for development within the Airport Noise Zones for these airports. Where there is a conflict between the County noise standards and the noise standards of the ALUCP, the standards of the ALUCP shall take precedence.

Policy 6.5.2.1 All projects, including single-family residential, within the Airport Noise Zones of the Cameron Airpark, Georgetown, and Placerville airports shall be evaluated against the applicable policies in the ALUCP.

Policy 6.5.2.2 The County shall develop and apply a combining zone district for areas located within the Airport Noise Zones in the ALUCP.

HAZARDOUS MATERIALS

GOAL 6.6: MANAGEMENT OF HAZARDOUS MATERIALS
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Recognize and reduce the threats to public health and the environment posed by the use, storage, manufacture, transport, release, and disposal of hazardous
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OBJECTIVE 6.6.1: REGULATION OF HAZARDOUS MATERIALS

Regulate the use, storage, manufacture, transport, and disposal of hazardous materials in accordance with State and Federal regulations.

Policy 6.6.1.1 The Hazardous Waste Management Plan shall serve as the implementation program for management of hazardous waste in order to protect the health, safety, property of residents and visitors, and to minimize environmental degradation while maintaining economic viability.

Policy 6.6.1.2 Prior to the approval of any subdivision of land or issuing of a permit involving ground disturbance, a site investigation, performed by a Registered Environmental Assessor or other person experienced in identifying potential hazardous wastes, shall be submitted to the County for any subdivision or parcel that is located on a known or suspected contaminated site included in a list on file with the Environmental Management Department as provided by the State of California and federal agencies. If contamination is found to exist by the site investigations, it shall be corrected and remediated in compliance with applicable laws, regulations, and standards prior to the issuance of a new land use entitlement or building permit.

Policy 6.6.1.3 Provision must be made for disposal of aviation generated petroleum, oils, lubricants, and solvents at the County airports.

AIR QUALITY

GOAL 6.7: AIR QUALITY MAINTENANCE

A. Strive to achieve and maintain ambient air quality standards established by the U.S. Environmental Protection Agency and the California Air Resources Board.

B. Minimize public exposure to toxic or hazardous air pollutants and air

OBJECTIVE 6.7.1: EL DORADO COUNTY CLEAN AIR PLAN

Adopt and enforce Air Quality standards to reduce the health impacts caused by harmful emissions.

Policy 6.7.1.1 Improve air quality through land use planning decisions.

Policy 6.7.1.2 Support local and regional air quality improvement efforts.

OBJECTIVE 6.7.2: VEHICULAR EMISSIONS

Reduce motor vehicle air pollution by developing programs aimed at minimizing congestion and reducing the number of vehicle trips made in the County and encouraging the use of clean fuels.

Policy 6.7.2.1 Develop and implement a public awareness campaign to educate community leaders and the public about the causes and effects of El Dorado County air pollution and about ways to reduce air pollution.

Policy 6.7.2.2 Encourage, both through County policy and discretionary project review, the use of staggered work schedules, flexible work hours, compressed work weeks, teleconferencing, telecommuting, and carpool/van pool matching as ways to reduce peak-hour vehicle trips.

Policy 6.7.2.3 To improve traffic flow, synchronization of signalized intersections shall be encouraged ~~as a means~~ to reduce congestion, conserve energy, and improve air quality.

Policy 6.7.2.4 Encourage a local and inter-State rail system.

Policy 6.7.2.5 Upon reviewing projects, the County shall support and encourage the use of, and facilities for, alternative-fuel vehicles to the extent feasible. The County shall develop language to be included in County contract procedures to give preference to contractors that utilize low-emission heavy-duty vehicles.

Policy 6.7.2.6 The County shall investigate the replacement of its fleet vehicles with

more fuel-efficient alternative fuel vehicles (e.g., liquid natural gas, fuel cell vehicles, electric vehicles, hybrids).

OBJECTIVE 6.7.3: TRANSIT SERVICE

Expand the use of transit service within the County.

- Policy 6.7.3.1 Legally permissible trip reduction programs and the development of transit and ridesharing facilities shall be given priority over highway capacity expansion when such programs and facilities will help to achieve and maintain mobility and air quality.
- Policy 6.7.3.2 Transit Service – The County shall promote infill development that is compact, mixed used, pedestrian friendly, and transit oriented in areas identified as Transit Priority Project Areas.

OBJECTIVE 6.7.4: PROJECT DESIGN AND MIXED USES

Encourage project design that protects air quality and minimizes direct and indirect emissions of air contaminants.

- Policy 6.7.4.1 Reduce automobile dependency by permitting mixed land use patterns which locate services such as banks, child care facilities, schools, shopping centers, and restaurants in close proximity to employment centers and residential neighborhoods.
- Policy 6.7.4.2 Promote the development of new residential uses within walking or bicycling distance to the County’s larger employment centers.
- Policy 6.7.4.3 New development on large tracts of undeveloped land near the rail corridor shall, to the extent practical, be transit supportive with high density or intensity of use.
- Policy 6.7.4.4 All discretionary development applications shall be reviewed to determine the need for pedestrian/bike paths connecting to adjacent development and to common service facilities (e.g., clustered ~~mail boxes~~ mailboxes, bus stops, etc.).
- Policy 6.7.4.5 Specific plans submitted to the County shall provide for the implementation of all policies contained under Objective 6.7.4 herein.
- Policy 6.7.4.6 The County shall regulate wood-burning fireplaces and stoves in all new development. Environmental Protection Agency (EPA) approved stoves and fireplaces burning natural gas or propane are allowed. The County shall discourage the use of non-certified wood heaters and fireplaces during periods of unhealthy air quality.
- Policy 6.7.4.67 The County shall inform the public regarding the air quality effects

associated with the use of wood for home heating. The program should address proper operation and maintenance of wood heaters, proper wood selection and use, the health effects of wood smoke, weatherization methods for homes, and determining the proper size of heaters needed before purchase and professional installation. The County shall develop an incentive program to encourage homeowners to replace high-pollution emitting non-EPA-certified wood stoves that were installed before the effective date of the applicable EPA regulation with newer cleaner-burning EPA-certified wood stoves.

OBJECTIVE 6.7.5: AGRICULTURAL AND FUEL REDUCTION BURNING

Adopt and maintain air quality regulations which will continue to permit agricultural and fuel reduction burning while minimizing their adverse effects.

OBJECTIVE 6.7.6: AIR POLLUTION-SENSITIVE LAND USES

Separate air pollution sensitive land uses from significant sources of air pollution.

Policy 6.7.6.1 Ensure that new facilities in which sensitive receptors are located (e.g., schools, child care centers, playgrounds, retirement homes, and hospitals) are sited away from significant sources of air pollution.

Policy 6.7.6.2 New facilities in which sensitive receptors are located (e.g., residential subdivisions, schools, childcare centers, playgrounds, retirement homes, and hospitals) shall be sited away from significant sources of air pollution.

OBJECTIVE 6.7.7: CONSTRUCTION RELATED, SHORT-TERM EMISSIONS

Reduce construction related, short-term emissions by adopting regulations which minimize their adverse effects.

Policy 6.7.7.1 The County shall consider air quality when planning the land uses and transportation systems to accommodate expected growth, and shall use the recommendations in the most recent version of the El Dorado County Air Quality Management (AQMD) *Guide to Air Quality Assessment: Determining Significance of Air Quality Impacts Under the California Environmental Quality Act*, to analyze potential air quality impacts (e.g., short-term construction, long-term operations, toxic and odor-related emissions) and to require feasible mitigation requirements for such impacts. The County shall also consider any new information or technology that becomes available prior to periodic updates of the Guide.

OBJECTIVE 6.7.8: THE EFFECTS OF AIR POLLUTION ON VEGETATION

Monitor ongoing scientific research regarding the adverse effects, if any, of air pollution on vegetation.

Policy 6.7.8.1 The County shall monitor ongoing scientific research regarding the adverse effects, if any, of air pollution on vegetation, including commercially valuable timber, threatened or endangered plant species, and other plant species. If and when such research conclusively determines, or if and when the weight of scientific opinion concludes, that air pollution is causing significant harm to vegetation within El Dorado County or similarly situated areas, the County, through its periodic review of the General Plan pursuant to Policy 2.9.1.2, shall consider whether to add policies to the General Plan to try to mitigate such harm.

AVIATION-RELATED HAZARDS

GOAL 6.8: AVIATION-RELATED HAZARDS

Minimize aviation-related hazards in and around existing and future airports.

OBJECTIVE 6.8.1: SAFETY HAZARDS EXPOSURE

Minimize the public's exposure to airport-related safety hazards by requiring new development around airports to be compatible with that use.

Policy 6.8.1.1 All development within the Airport Influence Area of the Placerville Airport, the Cameron Airpark Airport, and the Georgetown Airport shall comply with El Dorado County Airport Land Use Commission's policies and maps as set forth in the Airport Land Use Compatibility Plan for each airport. All development within the Airport Influence Area of the South Lake Tahoe Airport shall comply with the Airport Land Use Compatibility Plan (ALUCP) for the areas around the South Lake Tahoe Airport. Where there is a difference between the County development standards and the development standards of the Airport Land Use Compatibility Plan, as applied to proposed development, the standards that will most reduce airport-related hazards shall apply. (Resolution 124-2019, August 6, 2019)

Policy 6.8.1.2 The County shall develop an airport combining zone district within the El Dorado County Zoning Ordinance, for each of the Safety Zones as defined by the Airport Land Use Compatibility Plan for each of the County's public airports. Said ordinance shall specify maximum density and minimum parcel size.

HIGHWAY SAFETY

GOAL 6.9: HIGHWAY SAFETY

Provide highways within the County that provide for the safe movement of goods and people throughout the County.

OBJECTIVE 6.9.1: SAFETY HAZARDS REDUCTION PROGRAM

Create a program to reduce safety hazards on County roadways especially at locations with a history of frequent accidents.

- Policy 6.9.1.1 The County shall identify those roadways with existing or projected safety problems, prioritize them in terms of the immediacy of the need for improvements, and develop programs for financing needed improvements.
- Policy 6.9.1.2 Recognize that substandard road conditions exist in some rural areas of the County and include feasible roadway, pedestrian, and bicyclist safety improvements in the roadway improvement priority list.
- Policy 6.9.1.3 New roads connecting to County roads shall be designed to provide safe access as required by the County Design and Improvement Standards Manual.

OBJECTIVE 6.9.2: EMERGENCIES ON STATE HIGHWAYS

The County should coordinate with Caltrans for the efficient movement of traffic on County roads in the event of closures on State highways.

DROUGHT AND WATER SUPPLY

GOAL 6.10: MANAGEMENT OF WATER RESOURCES

Provide a resilient water supply that will meet the demand of residents, businesses, and visitors.

OBJECTIVE 6.10.1: ENCOURAGE WATER EFFICIENCY

Promote cost-effective water conservation and water efficiency measures.

- Policy 6.10.1.1 Encourage structural and nonstructural flood management methods to enhance water storage and groundwater recharge.
- Policy 6.10.1.2 Continue to enforce the County Landscape and Irrigation Standards, where applicable, including parking lot shading; incorporating stormwater best management practices into landscape areas; requiring water conservation methods that encourage the use of native, drought tolerant species; and promoting knowledge of Appendix C to the Standards, El Dorado County Drought Resistant Plant List, to encourage use in private development).
- Policy 6.10.1.3 Require new development to demonstrate that adequate water is available before project approval and to fund its fair-share costs associated with the provision of water service.

Policy 6.10.1.4 Support the integrated management of surface and groundwater, stormwater treatment and use, and the treatment and reuse of wastewater, where feasible.

Policy 6.10.1.5 Enforce the Model Water Efficient Landscape Ordinance (MWELO) for new development and retrofitted landscapes, as referenced by Title 24, Part 11, Chapters 4 and 5 of the CalGreen Building Code.

OBJECTIVE 6.10.2: SUSTAINABLE WATER MANAGEMENT

Promote sustainable water management measures.

Policy 6.10.2.1 Encourage water suppliers, groundwater management agencies, and groundwater sustainability agencies to track and monitor the quantity and quality of the County’s water resources to ensure a sustainable water supply that serves existing and future residents, businesses, agricultural users, government services, and natural resources.

Policy 6.10.2.2 Support the diversification of water supplies from varied sources that contribute to a sustainable and diverse water supply and storage portfolio that includes, but is not limited to surface water, groundwater, recycled water, imported water, and stormwater, if these sources protect public health and natural resources.

Policy 6.10.2.3 Support regional and local water planning efforts led by the El Dorado County Water Agency (EDWA), El Dorado Irrigation District, and other water agencies and water suppliers by participating on committees and advisory groups to coordinate planning efforts related to water and land use planning decisions that may include the Urban Water Management Plan, Groundwater Sustainability Plans, the Regional Drought Contingency Plan, County-wide water resources development and management programs, and other local integrated regional water management plans.

Policy 6.10.2.4 Participate on County Drought Task Force and partner on regional drought contingency planning efforts to reduce the potential for future water shortages by cooperating with water agencies and suppliers on surface water augmentation storage projects, surface water diversions to secure water supply to smaller communities, groundwater augmentation to ensure redundant supplies when surface water supplies are limited, and to improve water infrastructure so that water is easily transferred between water agencies when supplies are constrained.

EVACUATION ACCESSIBILITY

GOAL 6.11: EVACUATION ROUTES

Identify and maintain adequate evacuation routes in the incorporated and unincorporated County.

OBJECTIVE 6.11.1: EVACUATION ROUTE IDENTIFICATION

Identify and analyze emergency evacuation routes and areas without at least two evacuation routes.

Policy 6.11.1.1 Continue to improve transportation corridors that support effective evacuation routes and access for the public and emergency responders by identifying residential developments in hazard areas that do not have at least two emergency evacuation routes and work with affected residents to help prepare them to anticipate their evacuation alternatives (e.g., public transit, carpooling, shelter in place).

Policy 6.11.1.2 Identify rural neighborhoods, mobile home parks, including senior communities, and public facilities that support at-risk populations (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, and assisted living residential or congregate care facilities with 12 or more residents) that are located within an area classified as an SRA (Public Resources Code Section 4102) or land classified as a VHFHSZ with limited accessibility or a single access point and implement an evacuation plan that consists of evacuation zones, routes, or shelter-in-place plans depending on the hazard event.

Policy 6.11.1.3 Identify and communicate safe and viable evacuation routes in multiple languages and across various communication platforms, as appropriate, to reach at-risk and vulnerable populations.

OBJECTIVE 6.11.2: EVACUATION ROUTE MAINTENANCE

Ensure viability of future use of evacuation routes.

Policy 6.11.2.1 Development shall be served by a street system with at least two evacuation routes capable of carrying peak load traffic and have sufficient capacity to meet project needs, or they must provide the necessary capacity to ensure the development has adequate fire protection and safe ingress and egress routes in conformance with the California Fire Safe Regulations (Section 1273 and 1274) of the California Code of Regulations – Title 14, Division 1.5, Chapter 7, Articles 2 and 3).

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- Policy 6.11.2.2 Construction of new roads, streets, and evacuation routes must be adequate in terms of width, turning radius, and grade to facilitate access by firefighting apparatus. Priorities for road improvements will be based on evacuation accessibility.
- Policy 6.11.2.3 Evacuation routes and locations and their capacity, safety, and viability under a range of emergency scenarios will be identified in the County’s MJHMP update, which will then be incorporated by reference into the Safety Element. The County shall work with emergency service agencies to evaluate the evacuation route and location’s capacity, safety, and viability under a range of emergency scenarios to facilitate fire, law enforcement, and emergency medical services and resident ingress and egress, consistent with the goals and objectives of the County’s MJHMP.
- Policy 6.11.2.4 Continue to coordinate with the County Sheriff’s Department, CAL FIRE, local FPDs, and other fire agencies to identify, assess, and maintain evacuation routes to support the adequate capacity, safety, and viability of those routes under a range of emergency scenarios. Identify designated evacuation routes that are not compliant with Fire Safe Regulations (14 CCR Section 1270.00) for roadway standards and develop a plan to bring those roads into conformance to promote adequate and safe accessibility in communities.
- Policy 6.11.2.5 Collaborate with Fire Safe Councils, Community Organizations, and other local fire agencies to support the long-term maintenance of fire breaks surrounding roads and the continued clearance of private and public roads.

AGRICULTURE AND FORESTRY DISEASE AND TREE MORTALITY HAZARDS

GOAL 6.12: AGRICULTURAL AND FORESTRY DISEASE SAFETY
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Increase resistance to pests and disease on agricultural and forest lands.

OBJECTIVE 6.12.1: AGRICULTURAL AND FOREST LANDS RESILIENCY

Increase resiliency against agricultural and forestry disease and tree mortality.

- Policy 6.12.1.1 Use science-based approaches to evaluate, understand, and protect against the negative impacts of new and emerging threats such as climate change, pests, disease outbreaks, or land use changes on forest health and public safety, including the buildup of hazardous fuel conditions and resulting fire behavior.
- Policy 6.12.1.2 Continue to work with federal and state agencies to support fuel and pest management activities on federal and state lands, including areas impacted by bark beetle and other pests.

OBJECTIVE 6.12.1: REMOVAL OF TREE HAZARDS

Remove potential hazard trees to reduce disease spread and wildfire fuel.

Policy 6.12.2.1 Seek funding opportunities to support reduction in the rate of spread of forest diseases and removal of dead and dying trees.

Policy 6.12.2.2 Explore opportunities to locate facilities in the County that can store and process bark beetle-infested wood and debris from forest fuel clearing activities into useful products and biomass.

EXTREME HEAT

GOAL 6.13: EXTREME HEAT HAZARDS

Create an effective regulatory system to minimize injury and damage due to extreme heat events.

OBJECTIVE 6.13.1: MITIGATE HEAT-HEALTH EFFECTS

Mitigate Heat-Health Effects.

Policy 6.13.1.1 Support the opening of cooling centers during heat events and coordinate with transit providers to ensure adequate access for vulnerable communities.

Policy 6.13.1.2 Continue to publicize precautions for preventing heat-health effects to the most vulnerable populations such as seniors, outdoor workers, children, and those living in poverty.

HUMAN-HEALTH HAZARDS

GOAL 6.14: HUMAN HEALTH HAZARDS

Protect public health and safety through preventative intervention.

OBJECTIVE 6.14.1: PREVENTATIVE PUBLIC HEALTH SERVICES

Provide preventative public health services.

Policy 6.14.1.1 Provide and promote through a comprehensive public health infrastructure equitable access to focused clinical preventive health services, including but not limited to vaccine preventable disease mitigation, select adult and pediatric vaccination, communicable disease assessment, investigation and treatment, post-exposure assessment and treatment of vector borne disease.

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- Policy 6.14.1.2 Continue to provide vector control services to the El Dorado Vector Control District.
- Policy 6.14.1.3 Facilitate and support continued development and access to an effective and quality driven community primary care network promoting self-care management through comprehensive coordination and ongoing partnerships with community hospitals, tribal health centers, federally qualified health centers, school-based health services and rural designated community clinics.
- Policy 6.14.1.4 Facilitate and coordinate MediCal Managed Care expansion at the local level. Leverage the introduction of a public MediCal managed care plan offering to El Dorado County residents with the intent of increasing and improving available services and healthy outcomes. Facilitate and coordinate a health data assessment specific to preventive service utilization and a health outcome response with the three MediCal Managed Care Plans active.
- Policy 6.14.1.5 Facilitate ways to identify, mitigate and educate on the dangers of lead exposure to human health and sources of those exposures, including but not limited to sub-standard housing and environmental, occupational, recreational exposure pathways.

OBJECTIVE 6.14.2: PUBLIC HEALTH AND SAFETY THROUGH PREVENTIVE INTERVENTION

Protect public health and safety through preventive intervention.

- Policy 6.14.2.1 Integrate health impact evaluation that considers harmful as well as protective health effects for all intragovernmental County government policy development. Facilitate community-level dialog focusing on prevention as a means to mitigate human-health hazard with all local government agencies, special districts, and community-based organizations and supporting health care industries.
- Policy 6.14.2.2 Promote ways to protect the community population from the known hazards of tobacco exposure in the form of second and third-hand smoke where they live, work, and play.
- Policy 6.14.2.3 Promote ways to protect the community and the environment from the hazards associated with tobacco products that fall under the classification of mixed hazardous waste, subject to 22 California Code of Regulation Section 66261.9, such as single use tobacco products containing but not limited to, plastic, cellulose acetate or other fibrous plastic material, or any organic or biodegradable material, and electronic smoking devices that are mixed hazardous waste products, including cartridges that are not designed to be refilled.

HIGH WIND

<u>GOAL 6.15: HIGH WIND</u>

<u>Reduce impacts to people and property from high wind events.</u>
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OBJECTIVE 6.15.1: BUILDING CODES

Enforce building codes that protect structures against high winds.

Policy 6.15.1.1 Adopt and enforce regulations governing construction and retrofitting of residential and commercial infrastructure to prevent wind damage in high-risk areas.

SEVERE WEATHER

<u>GOAL 6.16: SEVERE WEATHER</u>

<u>Reduce impacts to people and property caused by severe weather events.</u>
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OBJECTIVE 6.16.1: INFRASTRUCTURE

Harden infrastructure to protect people and property from severe weather.

Policy 6.16.1.1 Adopt and enforce regulations governing construction and retrofitting of residential and commercial infrastructure to protect against the impacts of severe weather.

Policy 6.16.1.2 Facilitate the designation and operation of emergency centers that are both convenient and ADA accessible to prioritize and protect the needs of at-risk, vulnerable, and disadvantaged populations from severe weather hazards.

OBJECTIVE 6.16.2: EDUCATION AND OUTREACH

Conduct targeted outreach for at-risk and vulnerable populations about severe weather emergencies.

Policy 6.16.2.1 Organize inclusive outreach to at-risk, vulnerable, and disadvantaged populations to share information about emergency centers and the details and benefits of 72-hour emergency kits and to provide meaningful opportunities to engage in emergency planning efforts.

CLIMATE ADAPTATION AND RESILIENCY

GOAL 6.17: CLIMATE CHANGE ADAPTATION

Ensure the County can adapt to the hazards created or exacerbated by climate change.

OBJECTIVE 6.17.1: PROTECT COMMUNITIES

Minimize the risks and vulnerabilities associated with climate change.

- Policy 6.17.1.1 Identify natural infrastructure¹ and nature-based solutions when considering restoration, infrastructure, or engineering improvements that may be used as an adaptation project component proposed by the Transportation, Environmental Management, and Chief Administrative Office. Where feasible, the adaptation component shall use existing natural features and ecosystem processes, or the restoration of natural features and ecosystem processes, when developing alternatives for consideration.
- Policy 6.17.1.2 Implement any recommendations and mitigation actions of the LHMP that may provide climate change adaptation throughout the County.
- Policy 6.17.1.3 Continue to enforce building codes that will help ensure buildings can adequately withstand damage during hazard events.
- Policy 6.17.1.4 Locate new essential public facilities outside of areas exposed to the climatic hazards of climate change or identify methods to minimize damage if these facilities are in areas exposed to climatic hazards.
- Policy 6.17.1.5 Promote climate change and resilience awareness education about the effects of climate change-induced hazards and ways to adapt and build resiliency to climate change.
- Policy 6.17.1.6 Regularly (at minimum every 8 years) update the County's Climate Vulnerability Assessment or regularly update (at minimum every 5 years) the County's LHMP to incorporate the best available public information from federal, state, and regional agencies on the effects of climate change to keep the climate adaptation strategies in the LHMP and the Safety Element current and relevant to the community's risk.
- Policy 6.17.1.7 Partner with academic institutions and the El Dorado County Agricultural

¹ For purposes of this clause, "natural infrastructure" means using natural ecological systems or processes to reduce vulnerability to climate change related hazards, or other related climate change effects, while increasing long-term adaptive capacity by perpetuating or restoring ecosystem services. It also includes systems and practices that use or mimic natural processes, such as permeable pavements and other engineered systems, such as levees that are combined with restored natural systems, to provide clean water, conserve ecosystem values and functions, and provide a wide array of benefits to people and wildlife.

Commissioner's Office to develop monitoring projects that help agricultural operators use climate information to detect and plan for forecasted weather and climate impacts associated with extreme heat events, warm nights, periods of drought, and cold temperatures that can impact agricultural and crop commodities.

Policy 6.17.1.8 Prioritize County programs and grant opportunities and other equitable project improvements or investments that address climate change impacts and support climate resiliency for at-risk, vulnerable, and disadvantaged communities, such as seniors, children, outdoor workers, individuals with existing health conditions, those with access and functional needs, and lower-income residents.

IMPLEMENTATION PROGRAM

MEASURE HS-A

Maintain emergency response procedures and programs, including agreements with other local, state, and federal agencies, to provide coordinated disaster response and programs to inform the public of emergency preparedness and response procedures. [Policy 6.1.1.1, Policy 6.2.1.2, Policies 6.2.6.1-6.2.6.5]

Responsibility:	Sheriff's Office (Office of Emergency Services)
Primary Lead:	
Secondary Lead:	Sheriff's Department (Office of Emergency Services), Chief Administrative Officer, Department of Transportation, and Environmental Management, and General Services Department
Time Frame:	Ongoing review and updating of the Operational Area Multi-Hazard Functional Emergency Operations Plan every five years.

MEASURE HS-B

Work with the local Fire Safe Councils, FPDs, other local fire service providers, U.S. Forest Service, and ~~California Department of Forestry and Fire Protection~~ CAL FIRE to develop and implement a countywide Wildfire Safety Plan. The Wildfire Safety Plan shall focus on, but not be limited to, the following:

- Public wildfire safety education;
- Basic fire protection standards for different areas of the County;
- Appropriate mitigation for development in areas having high and very high fuel hazards;
- Opportunities for fire fuel reduction;
- Implementation of fire safe standards;
- Coordination with fire protection districts
- Fuels management standards to apply to new development adjacent to forested areas and within greenbelts;
- Appropriate standards for open space and greenbelts; and
- Regular assessments on future emergency service needs for new communities.

~~[Policies 6.2.1.1, 6.2.4.2, and 6.2.5.1]~~ [Policy 6.2.1.1, Objective 6.2.2 through 6.2.4, 6.2.2.2, 6.2.2.3, Policy 6.2.4.2, and Policy 6.2.5.1]

Responsibility:	Planning Division
Primary Lead:	
Secondary Lead:	Department of Transportation, and Building Division
Time Frame:	Develop draft plan within one year of General Plan Safety Element adoption.

MEASURE HS-C

Develop a program to collect, maintain, and update geological, seismic, avalanche, and other

geological hazard information to avoid siting development in hazard areas and to expand special standards for construction in these hazard areas. [Policy 6.3.2.1 and Policy 6.3.2.3]

<u>Responsibility:</u>	Planning Division and Sheriff's Department (Office of Emergency Services)
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Develop program within five years of General Plan adoption.

MEASURE HS-D

Develop and adopt standards to protect against seismic and geologic hazards. [Objective 6.3.1 and Objective 6.3.2]

<u>Responsibility:</u>	Planning Division
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	Planning Division, Building Division, and Department of Transportation
<u>Time Frame:</u>	Develop standards within five years of General Plan adoption.

MEASURE HS-E

The County shall adopt a Naturally Occurring Asbestos Disclosure Ordinance that includes the provisions in the policy described in Policy 6.3.1.2.

<u>Responsibility:</u>	Environmental Management Department
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Present ordinance to Board of Supervisors within three years of General Plan adoption.

MEASURE HS-F

Develop a program to track asbestos-related information as it pertains to the County. [Policy 6.3.1.3]

<u>Responsibility:</u>	Environmental Management Department
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Develop program within one year of General Plan adoption. Report results to the Board of Supervisors annually.

MEASURE HS-G

Adopt California Building Code revisions. [~~Policy 6.3.2.4~~Policy 6.2.2.3, Policy 6.2.3.7, Policy 6.3.1.4, Policy 6.3.2.5, Policy 6.10.1.5, Policy 6.15.1.1, and Policy 6.16.1.1, Policy 6.17.1.3]

<u>Responsibility:</u>	Building Division
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>

Time Frame:	Adopt revisions as Uniform Building Code (UBC) changes are promulgated (ongoing).
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MEASURE HS-H

Continue to participate in the Federal Flood Insurance Program, maintain flood hazard maps and other relevant floodplain data made available by other sources, and revise or update this information as new information becomes available. In its review of applications for building permits, discretionary project applications, and capital improvement proposals, the County shall determine whether the proposed project is within the 100-year floodplain based on these data. [Objective 6.4.1]

Responsibility:	Planning Division
Primary Lead:	
Secondary Lead:	Planning Division , Building Division, Department of Transportation
Time Frame:	Ongoing

MEASURE HS-I

To provide a comprehensive approach to noise control, adopt a Noise Ordinance that includes, but is not limited to, the following:

- A. Procedures to ensure that noise mitigation measures, as determined through an acoustical analysis, are implemented in the project review process and, if determined necessary, through the building permit process;
- B. Procedures to monitor compliance with the standards of the Noise Ordinance after completion of projects where noise mitigation measures were required; and
- C. Application of the noise standards to ministerial projects, exception for single- family residential building permits, if not in areas governed by the Airport Land Use Compatibility Plan.

[Policies 6.5.1.10, 6.5.1.13, and 6.5.1.14]

Responsibility:	Planning Division and Department of Transportation
Primary Lead:	
Secondary Lead:	N/A
Time Frame:	Develop ordinance within five years of General Plan adoption.

MEASURE HS-J

Establish a working group to address cross-jurisdictional noise issues. Members of the group should include representatives from the County, cities of Placerville and South Lake Tahoe, California Department of Transportation, ~~California Department of Forestry and Fire Protection~~ CAL FIRE, California Department of Parks and Recreation, U.S. Forest Service, U.S. Bureau of Land Management, and Tahoe Regional Planning Agency. [Policy 6.5.1.15]

<u>Responsibility:</u> <u>Primary Lead:</u>	Planning Department Division, Department of Transportation, Chief Administrative Office, and Sheriff's Department.
<u>Secondary Lead:</u>	Department of Transportation, Chief Administrative Office, and Sheriff's Department.
<u>Time Frame:</u>	Seat working group within three years of General Plan adoption.

MEASURE HS-K

Review the Zoning Ordinance and identify changes that would accomplish the following:

- A. Include an airport combining zone district for each of the Safety Zones as defined in the Airport Land Use Compatibility Plan for each of the County's public airports; and
- B. Develop and apply a combining zone district for areas within the Airport Influence Area for each of the public airports to discourage the placement of incompatible uses. [Policies 6.5.2.2 and 6.8.1.2]

<u>Responsibility:</u> <u>Primary Lead:</u>	Planning Department <u>Division</u>
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Update Zoning Ordinance within one year of General Plan adoption.

MEASURE HS-L

Update airport master plans and work with the appropriate Airport Land Use Commissions to update the Comprehensive Land Use Plans to reflect noise levels in the year 2025. [Policy 6.5.2.31, Policy 6.5.2.2]

<u>Responsibility:</u> <u>Primary Lead:</u>	Planning Department <u>Division</u> and Department of Transportation
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Revise master plans within five years of adoption of General Plan.

MEASURE HS-M

Maintain and update the Hazardous Waste Management Plan for management of hazardous waste to protect the health, safety, and property of residents and visitors, and to minimize environmental degradation. [Policy 6.6.1.1]

<u>Responsibility:</u> <u>Primary Lead:</u>	Environmental Management <u>Department</u>
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Review and update, if necessary, within five years of General Plan adoption.

MEASURE HS-N

Collect and maintain information on sites known or suspected to be contaminated by hazardous materials. The information shall include current data from the California Department of Toxic Substances Control's Hazardous Waste and Substance Sites List compiled pursuant to Section 65962.5 of the Government Code. [Policy 6.6.1.2]

<u>Responsibility:</u>	Environmental Management Department and Planning Department
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>Planning Division</u>
<u>Time Frame:</u>	Ongoing

MEASURE HS-O

Develop, implement, and update, as necessary, a plan for the storage, transport, and disposal of hazardous materials used at County-operated facilities. [Policy 6.6.1.3]

<u>Responsibility:</u>	Department of Transportation and General Services Department
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Develop plan within five years of General Plan adoption.

MEASURE HS-P

Enhance and maintain the Air Quality Management District's air quality public education program. The program will include information regarding naturally occurring asbestos. [Policies 6.3.1.3 and 6.7.2.1]

<u>Responsibility:</u>	Air Quality Management District
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Develop program within three years of General Plan adoption.

MEASURE HS-Q

Develop and implement a program to encourage use of mechanisms to reduce peak-hour vehicle trips consistent with Policy 6.7.2.2.

<u>Responsibility:</u>	Planning Division and Department of Transportation
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Develop program within three years of General Plan adoption.

MEASURE HS-R

Identify fleet vehicles that could successfully be replaced with more fuel efficient or alternative fuel vehicles. When those fleet vehicles are due for replacement, thoroughly investigate their replacement with such vehicles. [Policy 6.7.2.6]

<u>Responsibility:</u>	<u>Department of General Services Chief Administrative Office</u>
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-S

Develop and implement an incentive program to encourage homeowners to replace high-pollution emitting non-EPA-certified wood stoves. [Policy 6.7.4.7]

<u>Responsibility:</u>	<u>Planning Department, Building Department, and Environmental Management</u>
<u>Primary Lead:</u>	<u>Planning Division</u>
<u>Secondary Lead:</u>	<u>Building Division, and Environmental Management Department</u>
<u>Time Frame:</u>	<u>Develop program within four years of General Plan adoption.</u>

MEASURE HS-T

Adopt and/or update air quality regulations regarding agricultural and fuel reduction burning, construction emissions, mobile source emissions, fugitive dust, and volatile organic emissions. [Objective 6.7.5 and Policy 6.7.7.1]

<u>Responsibility:</u>	<u>Air Quality Management District</u>
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	<u>Develop standards within five years of General Plan adoption.</u>

MEASURE HS-U

Monitor existing, ongoing studies related to the effects of air pollution on vegetation. [Policy 6.7.8.1]

<u>Responsibility:</u>	<u>Air Quality Management District</u>
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-V

Amend prescriptive standard for the Fugitive Dust Prevention and Control Plan and

Contingent Asbestos Hazard Dust Mitigation Plan. [Policy 6.3.1.1]

<u>Responsibility:</u>	Environmental Management <u>Department</u>
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Adopt amendment within three years of General Plan adoption.

MEASURE HS-W

Survey and prioritize safety improvements on County roads. Develop financing programs for making necessary improvements. [Policy 6.9.1.1, Policy 6.11.2.3, Policy 6.11.2.4]

<u>Responsibility:</u>	Department of Transportation
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Secondary Lead:</u>	Complete survey within three years; Develop financing program within eight years of General Plan adoption.

MEASURE HS-X

Coordinate air quality planning efforts with other local and regional agencies. [Policies 6.7.1.1 and 6.7.1.2]

<u>Responsibility:</u>	Planning Department <u>Division</u>
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Ongoing

MEASURE HS-Y

Update the County Code of Ordinances, Chapter 8.09, Defensible Space Ordinance to incorporate fire safe regulations that meet or exceed the minimum requirements for Fire Safe Regulations (14 CCR Section 1270.00) for projects in SRAs or VHFHSZs. [Policy 6.2.1.3, Policy 6.2.1.4, Policy 6.2.1.5]

<u>Primary Lead:</u>	<u>Chief Administrative Office's OWPR</u>
<u>Secondary Lead:</u>	<u>All El Dorado County Fire Protection Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-Z

Draft development standards and coordinated emergency notification and evacuation plans and procedures that apply across jurisdictional boundaries for wildfire protection and to protect high-density residential and affordable housing developments located within infill locations that are within the WUI, SRA, or VHFHSZs and have adequate access, defined evacuation routes, and sufficient water supplies and infrastructure. [Policies 6.11.1.1, 6.11.1.2, 6.11.1.3 and Policies 6.11.2.1, 6.11.2.2, 6.11.2.3, 6.11.2.4, and 6.11.2.5]

<u>Primary Lead:</u>	<u>Chief Administrative Office's OWPR, El Dorado County Fire Protection District</u>
<u>Secondary Lead:</u>	<u>All El Dorado County Fire Protection Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-AA

The County shall coordinate climate resiliency efforts with federal, states, and local climate collaboratives, such as the Sierra Climate Adaptation and Mitigation Partnership (CAMP) and other regional organizations. [Policies 6.17.1.1 to 6.17.1.8]

<u>Primary Lead:</u>	<u>Planning Division and Chief Administrative Office</u>
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-BB

The County shall designate facilities that can be used as cooling or warming centers or resilience hubs and ensure they are equipped with backup power supplies, including on-site renewable energy generation and energy back-up storage systems. [Policy 6.1.2.1, Policy 6.13.1.1, and Policy 6.13.1.2]

<u>Primary Lead:</u>	<u>Chief Administrative Office</u>
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	<u>Within three years of General Plan Safety Element adoption</u>

MEASURE HS-CC

Continue to promote water conservation programs to reduce agricultural and residential water use in the County. [Policies 6.10.1.1 to 6.10.1.5 and Policy 6.10.2.1]

<u>Primary Lead:</u>	<u>Planning Division and EDWA</u>
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-DD

Support EDWA during updates to its County-wide water resources development and management program and Regional Drought Contingency Plans to coordinate ongoing efforts and to plan for potential water shortages and to promote sustainable, long-term drinking water supply for County residents and businesses. [Policies 6.10.1.1 to 6.10.1.2, Policy 6.10.2.2]

<u>Primary Lead:</u>	<u>Planning Division</u>
<u>Secondary Lead:</u>	<u>EDWA</u>

<u>Time Frame:</u>	<u>Within the next five years or by the County-wide water resources development and management program update cycle</u>
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MEASURE HS-EE

Support free or reduced-cost vaccinations for vector-borne diseases are made available to County residents. [Objective 6.14.1]

<u>Primary Lead:</u>	<u>Environmental Management Department</u>
<u>Secondary Lead:</u>	<u>Environmental Health Department, Public Health Department, Vector Control</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-FF

Review and update emergency operation plans, emergency response and evacuation plans, and related procedures at least every 5 years to reflect current conditions and community needs. [Policy 6.11.2.3, Policy 6.11.2.4, Policy 6.11.2.5]

<u>Primary Lead:</u>	<u>Sheriff's Office (Office of Emergency Services)</u>
<u>Secondary Lead:</u>	<u>County Administrative Officer, Department of Transportation, Environmental Management Department, and General Services Department</u>
<u>Time Frame:</u>	<u>Ongoing review and updating of emergency response and evacuation plans and procedures every five years.</u>

MEASURE HS-GG

Work with EDWA to develop Drought Task Force and implement the County El Dorado County Drought Resilience Plan [Policy 6.10.2.4, Policy 6.10.2.3]

<u>Primary Lead:</u>	<u>Planning Division</u>
<u>Secondary Lead:</u>	<u>EDWA</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-HH

Continue implementation and regular updates of the County's Stormwater Management Plan to address how existing best management practices (BMP) and stormwater design may be anticipated to change under future climate conditions. [Objective 6.4.2]

<u>Primary Lead:</u>	<u>The Regional Water Quality Control Board</u>
<u>Secondary Lead:</u>	<u>Tahoe Planning and Stormwater Management Program</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-II

Pursuant to California Environmental Quality Act (CEQA) Guidelines §15126.2, Consideration and Discussion of Significant Environmental Impacts, lead agencies should make a good faith effort to analyze potentially significant direct, indirect, and cumulative environmental impacts that a project may cause by placing projects in hazardous locations, including locations potentially affected by hazards that result from climate change. [Policy 6.15.1.1, Policy 6.17.1.3, Policy 6.17.1.4]

<u>Primary Lead:</u>	<u>Planning Division</u>
<u>Secondary Lead:</u>	<u>Other Lead Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-JJ

Educate County decision makers, departments, and staff on climate change science, climate projections, and adaptation and mitigation actions that minimize natural hazard impacts and support climate resiliency. [Policies 6.17.1.1 - Policy 6.17.1.8, Policy 6.12.1.1]

<u>Primary Lead:</u>	<u>Planning Division</u>
<u>Secondary Lead:</u>	<u>Other Lead Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-KK

Identify funding opportunities to support biomass utilization within the County and continuing to use biomass as a component in projects. [Policy 6.2.4.5, Policy 6.12.1.2, Policy 6.12.2.1, Policy 6.12.2.2]

<u>Primary Lead:</u>	<u>Chief Administrative Office's OWPR</u>
<u>Secondary Lead:</u>	<u>All El Dorado County Fire Protection Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-LL

Implement measures that support safe evacuation education and planning, including but not limited to efforts to notify residents who live in neighborhoods with one means of egress, prioritizing defensible space inspections, and implementing vegetation management and fuel reduction projects in and around identified neighborhoods. [Policy 6.11.1.1, Policy 6.11.1.2]

<u>Primary Lead:</u>	<u>Chief Administrative Office's OWPR</u>
<u>Secondary Lead:</u>	<u>All El Dorado County Fire Protection Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-MM

Conduct a survey targeting individuals and communities with access and functional needs to inform emergency evacuation and shelter requirements. This includes but is not limited to assessing needs related to transportation, access to emergency facilities, and necessary capacities. [Policy 6.1.2.1, Policy 6.11.1.2, Policy 6.16.1.2, Policy 6.16.2.1]

<u>Primary Lead:</u>	<u>Chief Administrative Office's OWPR</u>
<u>Secondary Lead:</u>	<u>All El Dorado County Fire Protection Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-NN

Develop a Mass Evacuation and Sheltering Plan that addresses the needs of at-risk, vulnerable, and disadvantaged people and individuals with disabilities and access and functional needs. [Policy 6.1.2.1]

<u>Primary Lead:</u>	<u>Sheriff's Office</u>
<u>Secondary Lead:</u>	<u>Chief Administrative Office, All El Dorado County Fire Protection Agencies</u>
<u>Time Frame:</u>	<u>Ongoing review and updating of emergency response and evacuation plans and procedures every five years.</u>

MEASURE HS-OO

Require Fire Protection Plans for new development to comply with fire protection standards and identify adequate infrastructure for the following:

- 1) Location of anticipated water supply,
 - 2) Water flow for fire suppression needs,
 - 3) Maintenance and long-term integrity of water supplies,
 - 4) Fuel modification and defensible space,
 - 5) Vegetation clearance maintenance on public and private roads,
 - 6) Visible home and street addressing and signage, and
 - 7) Community fire breaks and discussion of how those fire breaks will be maintained.
- [Policy 6.2.3.5 and Policy 6.2.3.6]

<u>Primary Lead:</u>	<u>Chief Administrative Office's OWPR</u>
<u>Secondary Lead:</u>	<u>All El Dorado County Fire Protection Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

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EL DORADO COUNTY GENERAL PLAN PUBLIC HEALTH, SAFETY, AND NOISE ELEMENT

PRINCIPLE

The Plan must identify public health and safety issues and provide guidance for protecting the health, safety, and welfare of El Dorado County residents.

INTRODUCTION

The Public Health, Safety, and Noise Element is consistent with the requirements set forth in the California Government Code Section 65302 and other applicable sections. Specifically, California Government Code Section 65302(g) requires communities to identify “any reasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence; liquefaction; and other geologic-seismic hazards identified pursuant to Chapter 7.8 (commencing with Section 2690) of Division 2 of the Public Resources Code, and other geologic hazards known to the legislative body; flooding; and wildland and urban fires.” The Public Health, Safety, and Noise Element shall include “mapping of known seismic and other geologic hazards.” It shall also address “evacuation routes, military installations, peakload water supply requirements, and minimum road widths and clearances around structures, as those items relate to identified fire and geologic hazards.”

The Public Health, Safety, and Noise Element addresses community noise problems, in accordance with Government Code Section 65302(f). The noise contour maps required by that statute are found in Appendix CE. Additionally, this element satisfies the State mandated requirements for the safety general plan element.

REGULATORY FRAMEWORK

This element addresses two of the required General Plan elements: Noise and Safety. In 1971, the State of California mandated that county and city general plans include a noise element. A noise element must contain the following information:

1. Identification of major noise sources which affect the county;
2. Mapping of noise contours for major noise producers, including roadways;
3. Policies and programs which address existing and foreseeable noise problems and minimize the exposure of community residents to excessive noise.

The Safety Element meets the requirements of Government Code Section 65302(g). A Safety Element must contain the following information:

1. Unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence; liquefaction; and other seismic hazards identified pursuant to Chapter 7.8 (commencing with Section 2690) of Division 2 of the Public Resources Code, and other geologic hazards known to the legislative body; flooding; and wildland and urban fires.
2. Mapping of known seismic and other geologic hazards.
3. Evacuation routes, military installations, peakload water supply requirements, and minimum road widths and clearances around structures, as those items relate to identified fire and geologic hazards.
4. Identify information regarding flood hazards, including, but not limited to, the following:
 - Flood hazard zones. As used in this subdivision, “flood hazard zone” means an area subject to flooding that is delineated as either a special hazard area or an area of moderate or minimal hazard on an official flood insurance rate map issued by the Federal Emergency Management Agency (FEMA). The identification of a flood hazard zone does not imply that areas outside the flood hazard zones or uses permitted within flood hazard zones will be free from flooding or flood damage.
 - National Flood Insurance Program maps published by FEMA.
 - Information about flood hazards that is available from the United States Army Corps of Engineers.
 - Designated floodway maps that are available from the Central Valley Flood Protection Board.
 - Dam failure inundation maps prepared pursuant to Section 6161 of the Water Code that are available from the Department of Water Resources.
 - Awareness Floodplain Mapping Program maps and 200-year flood plain maps that are or may be available from, or accepted by, the Department of Water Resources.
 - Maps of levee protection zones.
 - Areas subject to inundation in the event of the failure of project or nonproject levees or floodwalls.
 - Historical data on flooding, including locally prepared maps of areas that are subject to flooding, areas that are vulnerable to flooding after wildfires, and sites that have been repeatedly damaged by flooding.
 - Existing and planned development in flood hazard zones, including structures, roads, utilities, and essential public facilities.
 - Local, state, and federal agencies with responsibility for flood protection, including special districts and local offices of emergency services.
5. Establish a set of comprehensive goals, policies, and objectives for the protection of the community from the unreasonable risks of flooding, including, but not limited to:

- Avoiding or minimizing the risks of flooding to new development.
 - Evaluating whether new development should be located in flood hazard zones, and identifying construction methods or other methods to minimize damage if new development is located in flood hazard zones.
 - Maintaining the structural and operational integrity of essential public facilities during flooding.
 - Locating, when feasible, new essential public facilities outside of flood hazard zones, including hospitals and health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities or identifying construction methods or other methods to minimize damage if these facilities are located in flood hazard zones.
 - Establishing cooperative working relationships among public agencies with responsibility for flood protection.
 - Establish a set of feasible implementation measures designed to carry out the goals, policies, and objectives established.
6. Risk of fire for land classified as state responsibility areas, as defined in Section 4102 of the Public Resources Code, and land classified as very high fire hazard severity zones, as defined in Section 51177. This review shall consider the advice included in the Office of Planning and Research's most recent publication of "Fire Hazard Planning, General Plan Technical Advice Series." Information regarding fire hazards, including, but not limited to, all of the following:
- Fire hazard severity zone maps available from the Office of the State Fire Marshal.
 - Any historical data on wildfires available from local agencies or a reference to where the data can be found.
 - Information about wildfire hazard areas that may be available from the United States Geological Survey.
 - General location and distribution of existing and planned uses of land in very high fire hazard severity zones and in state responsibility areas, including structures, roads, utilities, and essential public facilities. The location and distribution of planned uses of land shall not require defensible space compliance measures required by state law or local ordinance to occur on publicly owned lands or open space designations of homeowner associations.
 - Local, state, and federal agencies with responsibility for fire protection, including special districts and local offices of emergency services.
7. A set of goals, policies, and objectives for the protection of the community from the unreasonable risk of wildfire.
8. A set of feasible implementation measures designed to carry out the goals, policies, and objectives including, but not limited to, all of the following:
- Avoiding or minimizing the wildfire hazards associated with new uses of land.
 - Locating, when feasible, new essential public facilities outside of high fire risk areas, including, but not limited to, hospitals and health care facilities, emergency shelters,

- emergency command centers, and emergency communications facilities, or identifying construction methods or other methods to minimize damage if these facilities are located in a state responsibility area or very high fire hazard severity zone.
- Designing adequate infrastructure if a new development is located in a state responsibility area or in a very high fire hazard severity zone, including safe access for emergency response vehicles, visible street signs, and water supplies for structural fire suppression.
 - Working cooperatively with public agencies with responsibility for fire protection.
 - If a city or county has adopted a fire safety plan or document separate from the general plan, an attachment of, or reference to, a city or county's adopted fire safety plan or document that fulfills commensurate goals and objectives.
9. A vulnerability assessment that identifies the risks that climate change poses to the local jurisdiction and the geographic areas at risk from climate change impacts, including, but not limited to, an assessment of how climate change may affect the risks related to flooding and wildfires. Information that may be available from federal, state, regional, and local agencies that will assist in developing the vulnerability assessment and the adaptation policies and strategies, but not limited to, all of the following:
- Information from the internet-based Cal-Adapt tool.
 - Information from the most recent version of the California Adaptation Planning Guide.
 - Information from local agencies on the types of assets, resources, and populations that will be sensitive to various climate change exposures.
 - Information from local agencies on their current ability to deal with the impacts of climate change.
 - Historical data on natural events and hazards, including locally prepared maps of areas subject to previous risk, areas that are vulnerable, and sites that have been repeatedly damaged.
 - Existing and planned development in identified at-risk areas, including structures, roads, utilities, and essential public facilities.
 - Federal, state, regional, and local agencies with responsibility for the protection of public health and safety and the environment, including special districts and local offices of emergency services.
10. A set of feasible implementation measures designed to carry out the goals, policies, and objectives, including, but not limited to, all of the following:
- Feasible methods to avoid or minimize climate change impacts associated with new uses of land.
 - The location, when feasible, of new essential public facilities outside of at-risk areas, including, but not limited to, hospitals and health care facilities, emergency shelters, emergency command centers, and emergency communications facilities, or identifying construction methods or other methods to minimize damage if these facilities are located in at-risk areas.

- The designation of adequate and feasible infrastructure located in an at-risk area.
 - Guidelines for working cooperatively with relevant local, regional, state, and federal agencies.
 - The identification of natural infrastructure that may be used in adaptation projects. Where feasible, the plan shall use existing natural features and ecosystem processes, or the restoration of natural features and ecosystem processes, when developing alternatives for consideration. For purposes of this clause, “natural infrastructure” means using natural ecological systems or processes to reduce vulnerability to climate change related hazards, or other related climate change effects, while increasing the long-term adaptive capacity of coastal and inland areas by perpetuating or restoring ecosystem services. This includes, but is not limited to, the conservation, preservation, or sustainable management of any form of aquatic or terrestrial vegetated open space, such as beaches, dunes, tidal marshes, reefs, seagrass, parks, rain gardens, and urban tree canopies. It also includes systems and practices that use or mimic natural processes, such as permeable pavements, bioswales, and other engineered systems, such as levees that are combined with restored natural systems, to provide clean water, conserve ecosystem values and functions, and provide a wide array of benefits to people and wildlife.
11. Identify residential developments in any hazard area identified in the safety element that do not have at least two emergency evacuation routes.
 12. Identify evacuation routes and their capacity, safety, and viability and evacuation locations under a range of emergency scenarios.
 13. Review and revise the safety element upon each revision of the housing element or local hazard mitigation plan, but not less than once every eight years, to identify new information relating to flood and fire hazards and climate adaptation and resiliency strategies applicable to the city or county that was not available during the previous revision of the safety element.

A complete list of acronyms used in this document is included in Appendix A. This element, in addition to a Background Information Report, included as Appendix B, meets the requirements of Government Code Section 65302(g). The Climate Vulnerability Assessment (CVA), included as Appendix C, contains detailed information regarding the existing conditions related to climate change vulnerabilities and climate change adaptation. Appendix D contains the dam inundation maps. Appendix E includes the noise contour maps.

The County Safety Element incorporates the El Dorado County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) update, which will identify specific hazard mitigation actions are developed to reduce or eliminate hazard risk. The implementation of these mitigation actions, which include both short and long-term strategies, involve planning, policy changes, programs, projects, and other activities which will further support community safety and resilience. The MJHMP is incorporated by reference into the General Plan Public Health, Safety, and Noise Element and forms the basis for many of the policies in this element. This plan alignment ensures the County follows a coordinated approach to public safety and makes the County eligible for additional funding opportunities consistent with California Government Code Section 65302.6. The MJHMP update can be found on the County’s website at [https://www.edcgov.us/Government/sheriff/Support/Pages/office_of_emergency_services_\(oes\).a.spx](https://www.edcgov.us/Government/sheriff/Support/Pages/office_of_emergency_services_(oes).a.spx). The County Safety Element acknowledges the California State Hazard Mitigation Plan. The County Safety Element also incorporates the Greater Placerville Wildfire Evacuation

Preparedness, Community Safety, and Resiliency Study for the County. The study focuses on identifying major evacuation routes and assessing their performance under various scenarios, such as estimating evacuation times and identifying potential bottlenecks using simulations. It also includes evaluating evacuation strategies and projects aimed at enhancing community safety and resilience in anticipation of future wildfire events. The Greater Placerville Wildfire Evacuation Preparedness, Community Safety, and Resiliency Study is incorporated by reference into the General Plan Public Health, Safety, and Noise Element, serving as a foundation for many wildfire and evacuation accessibility policies within this document. This alignment ensures a cohesive and coordinated County-wide approach to public safety measures, and compliance with Government Code Section 65302.15.

RELATIONSHIP TO OTHER ELEMENTS

Issues set forth in this element are closely linked to the Land Use, Conservation and Open Space, Circulation, and Public Services and Utilities elements. ~~The overall~~ focus of the Public Health, Safety, and Noise Element is to provide guidelines for protecting the residents from existing and potential hazards in El Dorado County. Table HS - 1 includes policies from other elements that address existing and potential hazards in the County, demonstrating consistency between the elements of this General Plan.

Table HS - 1	
Policies in Other Elements Addressing Adaptation and Resiliency	
<u>Land Use Element</u>	
<u>Policy 2.1.1.7</u>	<u>Development within Community Regions</u>
<u>Policy 2.2.7.2</u>	<u>Coordination with Incorporated Cities</u>
<u>Policy 2.3.1.1</u>	<u>Topography and Native Vegetation</u>
<u>Transportation and Circulation Element</u>	
<u>Policy TC-1a</u>	<u>Unified Countywide Road and Highway System</u>
<u>Policy TC-1w</u>	<u>New Development Standards and Vehicular Safety</u>
<u>Policy TC-Xa</u>	<u>Traffic Impact Mitigation</u>
<u>Policy TC-2f</u>	<u>Provision of Paratransit Services and Facilities</u>
<u>Policy TC-8b</u>	<u>Sustainable Communities Strategy Consistency</u>
<u>Housing Element</u>	
<u>Policy HO-1.3</u>	<u>Development Standards</u>
<u>Policy HO-5.2</u>	<u>Energy and Water Efficiency in New Land Use Development</u>
<u>Public Services and Utilities Element</u>	

<u>Policy 5.1.1.1</u>	<u>Development of Long-Range Plans for Services Including Water Supply</u>
<u>Policy 5.1.2.1</u>	<u>Authorization of New Development Requiring Public Services and Utilities</u>
<u>Policy 5.1.2.2</u>	<u>Prevention of Reduction of Service Standards</u>
<u>Policy 5.2.1.1</u>	<u>Water Resources Development and Management Program</u>
<u>Policy 5.2.1.2</u>	<u>Adequate Water for All Uses</u>
<u>Policy 5.2.1.7</u>	<u>Development Projects During Water Shortage</u>
<u>Policy 5.2.1.9</u>	<u>Water Supply Assessments for Building Permits</u>
<u>Policy 5.2.1.10</u>	<u>Water Conservation and Recycling Programs</u>
<u>Policy 5.2.1.12</u>	<u>Recycled Water Collaboration with El Dorado Irrigation District</u>
<u>Policy 5.2.1.13</u>	<u>Reduction of Environmental Effects of Infrastructure Projects</u>
<u>Policy 5.2.1.15</u>	<u>Acquisition of New Surface Water Sources</u>
<u>Conservation and Open Space Element</u>	
<u>Policy 7.1.2.1</u>	<u>Development Standards for Slopes</u>
<u>Policy 7.1.2.2</u>	<u>Minimization of Erosion and Sedimentation</u>
<u>Policy 7.1.2.3</u>	<u>Grading Ordinance Provisions</u>
<u>Policy 7.1.2.4</u>	<u>Cooperation with Resource Conservation Districts to Prevent Soil Erosion</u>
<u>Policy 7.1.2.5</u>	<u>Cooperation with Department of Transportation to Maintain Road Surfaces</u>
<u>Policy 7.1.2.7</u>	<u>Agricultural Grading Permits</u>
<u>Policy 7.3.1.1</u>	<u>Best Management Practices in Watershed Lands</u>
<u>Policy 7.3.1.2</u>	<u>Establishment of Water Conservation Programs</u>
<u>Policy 7.3.1.3</u>	<u>Domestic Gray Water Use</u>
<u>Policy 7.3.2.1</u>	<u>Protection of Stream and Lake Embankments</u>
<u>Policy 7.3.2.2</u>	<u>Grading Permits and Erosion Control Programs</u>
<u>Policy 7.3.2.3</u>	<u>Separation of Storm Drainage</u>

<u>Policy 7.3.3.1</u>	<u>Protection of Wetlands</u>
<u>Policy 7.3.3.4</u>	<u>Riparian and Wetland Setbacks</u>
<u>Policy 7.3.5.1</u>	<u>Drought Tolerant Plant Species</u>
<u>Policy 7.3.5.2</u>	<u>Indigenous Drought Tolerant Materials</u>
<u>Policy 7.3.5.4</u>	<u>Efficient Water Conveyance Systems in New Construction</u>
<u>Policy 7.3.5.5</u>	<u>Water Reuse Programs</u>
<u>Agriculture and Forestry Element</u>	
<u>Policy 8.2.1.3</u>	<u>Pursuit of New Agricultural Water Supplies</u>
<u>Policy 8.2.1.5</u>	<u>Adequate Water Supplies for Agricultural Uses</u>
<u>Economic Development Element</u>	
<u>Policy 10.1.4.1</u>	<u>Integration of Economic Health and Environmental Enhancement</u>
<u>Policy 10.2.4.4</u>	<u>Road and Drainage Funding</u>

ORGANIZATION OF THE ELEMENT

Consistent with the County MJHMP, this element sets forth planning strategies for fire hazards, seismic hazards, flood hazards, noise, hazardous materials, air quality, airport safety, and highway safety. drought and water supply hazards, evacuation accessibility, agriculture/forestry disease and tree mortality hazards, extreme heat, human-health hazards, high wind, severe weather, and climate change adaptation.

The Public Health, Safety, and Noise Element identifies and assesses a range of natural and human-caused hazards, air quality impacts, and noise hazards in the County and establishes goals, policies, and implementation measures to reduce those hazards and impacts to an acceptable level. The natural and human-caused hazards addressed in the element are consistent with the County's MJHMP. This element also sets forth planning strategies in the element for the following topics:

- Fire Hazards
- Geologic and Seismic Hazards
- Flood Hazards
- Noise
- Hazardous Materials
- Air Quality
- Aviation-Related Hazards
- Highway Safety
- Drought and Water Supply
- Evacuation Accessibility
- Agriculture and Forestry Disease and Tree Mortality Hazards
- Extreme Heat
- Human-Health Hazards
- High Winds
- Severe Weather
- Climate Adaptation and Resiliency

POLICY SECTION

GENERAL

GOAL 6.1: COORDINATION

A coordinated approach to hazard and disaster response planning.

OBJECTIVE 6.1.1: IMPLEMENT THE EL DORADO COUNTY MULTI-JURISDICTIONAL LOCAL HAZARD MITIGATION PLAN

The El Dorado County Multi-Jurisdictional Local Hazard Mitigation Plan shall serve as the implementation program for this Goal.

Policy 6.1.1.1 The El Dorado County Multi-jurisdictional Local Hazard Mitigation Plan (~~LHMP~~) MJHMP shall serve as the implementation program for the coordination of hazard planning and disaster response efforts within the County and is incorporated by reference to this Element. The County will ensure that the ~~LHMP~~ MJHMP is updated ~~on a regular basis~~ regularly to keep pace with the growing population.

OBJECTIVE 6.1.2: Expand community resilience to support effective emergency response and recovery during and after emergency events.

Policy 6.1.2.1 Support an emergency mass evacuation and sheltering plan that prioritizes the needs of at-risk, vulnerable, and disadvantaged people and individuals with disabilities, access and functional needs, and other special needs by providing meaningful opportunities in emergency planning efforts.

FIRE SAFETY

GOAL 6.2: FIRE HAZARDS

Minimize fire hazards and risks in both wildland and developed areas.

OBJECTIVE 6.2.1: DEFENSIBLE SPACE

All existing and new development and structures shall meet “defensible space” requirements ~~and adhere to fire code building requirements~~ to minimize wildland fire hazards.

Policy 6.2.1.1 Implement Fire Safe ordinance to attain and maintain defensible space through conditioning of tentative maps and in new development at the final map and/or building permit stage.

Policy 6.2.1.2 Coordinate with the local Fire Safe Councils, California Department of Forestry and Fire Protection (CAL FIRE), and federal and state agencies having land use jurisdiction in El Dorado County in the development of a

countywide fuels management strategy.

- Policy 6.2.1.3 Require all existing and new residential development in State Responsibility Areas (SRAs) and/or very high Fire Hazard Severity Zones (VHFHSZs) to enforce fire-resistant landscaping and defensible space requirements that meet or exceed Title 14, Code of California Regulations (CCR), Division 1.5, Chapter 7, Subchapter 2, Articles 1-5 (commencing with Section 1270) (State Minimum Fire Safe regulations) and Subchapter 3, Article 3 (commencing with Section 1299.01) (Fire Hazard Reduction around Buildings and Structures Regulations). Adequate compliance with these requirements shall be determined by the local Fire Protection Districts (FPDs) or other local fire agencies, as appropriate.
- Policy 6.2.1.4 Require consistency with fire code and development standards that ensure adequate defensible space clearance around all existing and new structures in compliance with the California Fire Code, Public Resources Code Section 4291 (ember-resistant zone), Government Code Section 51175-51188, CCR Title 14, Division 1.5, Chapter 7, Subchapter 3, Section 1299.03, and in the County Code of Ordinances Chapter 8.09.
- Policy 6.2.1.5 Maintain and enforce the County Defensible Space Ordinance and Fire Prevention Programs and Plans in coordination with local the VHFHSZs and other fire agencies and continue to support related fire prevention programs associated with defensible space inspections as detailed in County Code of Ordinances Chapter 8.09, fire development standards, and public education.

OBJECTIVE 6.2.2: LIMITATIONS TO DEVELOPMENT

Regulate development in areas of high and very high fire hazard as designated by the California Department of Forestry and Fire ~~Prevention~~ Protection Fire Hazard Severity Zone (FHSZ) Maps.

- Policy 6.2.2.1 ~~Fire Hazard Severity Zone~~ FHSZ Maps shall be consulted in the review of all projects so that standards and mitigation measures appropriate to each hazard classification can be applied. Land use densities and intensities shall be determined by mitigation measures in areas designated as high or very high fire hazard.
- Policy 6.2.2.2 The County shall preclude development, including public facilities and essential services (see definition in the Background Information Report in Appendix B), in areas of high and very high wildland fire hazard or in areas identified as Wildland Urban Interface (WUI) communities within the vicinity of Federal lands that are a high risk for wildfire, as listed in the Federal Register Executive Order 13728 of May 18, 2016, unless such development can be adequately protected from wildland fire hazard, as demonstrated in a WUI Fire Safe Plan prepared by a qualified professional as approved by the El Dorado County Fire Prevention

Officers Association. The WUI Fire Safe Plan shall be approved by the local ~~Fire Protection District~~ FPD having jurisdiction and/or CAL FIRE California Department of Forestry and Fire Protection. (Resolution 124-2019, August 6, 2019)

Policy 6.2.2.3 In the event of a major fire (defined as greater than 500 acres), the County shall evaluate redevelopment within the impacted fire areas to comply with current Fire Safe Regulations and related County standards. All development shall meet or exceed the County's Building Code, and conform to the State Fire Safe Regulations through application of the Fire Code and wildfire development standards pertaining to fuel modification and defensible space, Public Resources Code 4290, and Title 14 California Code of Regulations 1270-1276.04 referenced on the County's Building Services webpage, in addition to any applicable updates required at the state level, except where exempt by ordinance.

OBJECTIVE 6.2.3: ADEQUATE FIRE PROTECTION

Application of uniform fire protection standards to development projects by fire districts.

Policy 6.2.3.1 As a requirement for approving new development, the County must find, based on information provided by the applicant and the responsible ~~Fire Protection District~~ FPD that, concurrent with development, adequate emergency and peak load water supply, water flow, fire access, and ~~fire fighting~~ firefighting personnel and equipment will be available in accordance with applicable State and local fire district standards to support fire suppression efforts.

Policy 6.2.3.2 As a requirement of new development, the applicant must demonstrate that adequate access exists, or can be provided to ensure that emergency vehicles can access the site and private vehicles can evacuate the area.

Policy 6.2.3.3 Day care centers shall be subject to conformance with all applicable sections of Title 19 of the Fire Code.

Policy 6.2.3.4 All new development and public works projects shall be consistent with applicable State Wildland Fire Standards and other relevant State and federal fire requirements.

Policy 6.2.3.5 Identify actions to ensure noncompliant development meets current fire safe standards and road standards as defined in Title 14 CCR, Division 1.5, Chapter 7 Fire Protection, Subchapter 2, Articles 1-5, SRA Fire Safe Regulations through the WUI Fire Safe Plan review process and through collaboration with the FPDs and local fire agencies when reviewing Fire Protection Plans and provisions for new development.

Policy 6.2.3.6 All new development within an SRA or very high (VHFHSZs) shall prepare a Fire Protection Plan that complies with established fire safety standards. Ingress and egress to the new development will be constructed utilizing the most current State Fire Safe Regulations, Fire Code, and/or County Code that meets these minimum requirements. Key components of a Fire Protection Plan include:

1. risk analysis;
2. fire response capabilities;
3. fire safety requirements – defensible space, infrastructure, and building ignition resistance;
4. mitigation measures and design considerations for non-conforming fuel modification;
5. wildfire education, maintenance, and limitations; and
6. evacuation planning.

Existing development within an SRA or VHFHSZ can meet these requirements through retro-fitting and home hardening.

Policy 6.2.3.7 Enforce the most recent California Uniform Building Code Fire Code to safeguard life and property from the hazards of fires and explosions; dangerous conditions arising from the storage, handling, and use of hazardous materials and devices; and hazardous conditions in the use or occupancy of building or premises.

OBJECTIVE 6.2.4: AREA-WIDE FUEL MANAGEMENT PROGRAM

Reduce fire hazard through cooperative fuel management activities.

Policy 6.2.4.1 Discretionary development within high and very high fire hazard areas shall be conditioned to designate fuel break zones that comply with fire safe requirements to benefit the new and, where possible, existing development.

Policy 6.2.4.2 The County shall cooperate with ~~the California Department of Forestry and Fire Protection and local fire protection districts~~ CAL FIRE and local FPDs to identify opportunities for fuel breaks in zones of high and very high fire hazard either prior to or as a component of project review and will support the FPDs in tracking grants to fund fire breaks and their long-term maintenance.

Policy 6.2.4.3 Require fuel modification around homes and subdivision developments in SRAs or VHFHSZs by assisting the local FPDs and other local fire agencies.

Policy 6.2.4.4 Continue to work cooperatively and promote advocacy efforts with the US Forest Service, CAL FIRE, local FPDs, and other local fire agencies in managing wildfire hazards.

Policy 6.2.4.5 The County shall build and support biomass facilities.

OBJECTIVE 6.2.5: FIRE PREVENTION EDUCATION

Inform and educate homeowners regarding fire safety and prevention.

Policy 6.2.5.1 The County shall cooperate with the U.S. Forest Service, ~~California-Department of Forestry and Fire Protection,~~ and local fire districts CAL FIRE, local FPDs, and other local fire agencies in fire prevention education programs.

OBJECTIVE 6.2.6: FIRE PREPAREDNESS AND EVALUATION

Ensure fire preparedness and response through inter-agency and multi-governmental cooperation.

Policy 6.2.6.1 To ensure coordinated wildfire planning and response, applicable Community Wildfire Protection Plans (CWPPs) shall be implemented and consulted for all wildfire planning and disaster response within the County. The CWPPs listed in Table HS - 2 cover sections of both the incorporated and unincorporated County and will be incorporated by reference to the Safety Element.

**Table HS - 2
El Dorado County CWPPs**

<u>CWPP(s)</u>	<u>Fire Protection District</u>
<u>Western El Dorado County CWPP</u>	<u>Cameron Park Fire Department</u> <u>Diamond Springs/El Dorado Fire Protection District</u> <u>El Dorado County Fire District</u> <u>El Dorado Hills Fire Department</u> <u>Garden Valley Fire Protection District</u> <u>Georgetown Fire Protection District</u> <u>Mosquito Fire Protection District</u> <u>Pioneer Fire Protection District</u> <u>Rescue Fire Protection District</u>
<u>Lake Tahoe Basin CWPP</u>	<u>Fallen Leaf Fire Department</u> <u>Lake Valley Fire Protection District</u> <u>Meeks Bay Fire Protection District</u> <u>South Lake Tahoe Fire Department</u>

Policy 6.2.6.2 Partner with local fire agencies, state and federal agencies, and other local agencies and organizations within the County to regularly update and implement the Western El Dorado County and Tahoe Basin CWPPs.

Policy 6.2.6.3 All County-area FPDs, the County Sheriff’s Department, and Office

of Emergency Services, Office of Wildfire Preparedness and Resilience (OWPR), and other emergency services and response staff shall attend regular inter-agency training programs to effectively coordinate and provide multi-agency mutual aid in the event of a wildfire or other hazard occurrence.

Policy 6.2.6.4 Prepare future conditions studies which are comprehensive assessments of projected demographic, infrastructure, and environmental factors at smaller scales in unincorporated parts of the County that may be susceptible to evacuation constraints. These studies will aim to evaluate the specific viability and capacity of the local road and street networks serving existing and new residential developments.

Policy 6.2.6.5 Routinely evaluate the ability of the County’s essential fire and law enforcement facilities to function after a major disaster and as part of new development review to ensure adequate access for future emergency needs.

GEOLOGIC AND SEISMIC 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 very 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 California Code of Regulations (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.~~

GOAL 6.3: GEOLOGIC AND SEISMIC HAZARDS
Minimize the threat to life and property from seismic and geologic hazards.

OBJECTIVE 6.3.1: BUILDING AND SITE STANDARDS

Adopt and enforce development regulations, including building and site standards, to avoid social dislocations, which refer to the disruption or displacement of communities,

and protect against seismic and geologic hazards.

- Policy 6.3.1.1 ~~The County shall require that all discretionary projects and all projects requiring a grading permit, or a building permit that would result in earth disturbance, that are located in areas likely to contain naturally occurring asbestos (based on mapping developed by the California Department of Conservation [DOC]) have a California-registered geologist knowledgeable about asbestos-containing formations inspect the project area for the presence of asbestos using appropriate test methods. The County shall amend the Erosion and Sediment Control Ordinance to include a section that addresses the reduction of thresholds to an appropriate level for grading permits in areas likely to contain naturally occurring asbestos (based on mapping developed by the DOC). comply with the Air Quality Management District (AQMD) Rules 223, 223-1 and 223-2 requirements. The Department of Transportation and the AQMD shall consider the requirement of posting a warning sign at the work site in areas likely to contain naturally occurring asbestos based on the mapping developed by the DOC.~~
- Policy 6.3.1.2 The County shall establish a mandatory disclosure program, where potential buyers and sellers of real property in all areas likely to contain naturally occurring asbestos (based on mapping developed by ~~the California Department of Conservation [DOC]~~DOC) are provided information regarding the potential presence of asbestos subject to sale. Information shall include potential for exposure from access roads and from disturbance activities (e.g., landscaping).
- Policy 6.3.1.3 The County Environmental Management Department shall report annually to the Board of Supervisors regarding new information on asbestos and design an information outreach program.
- Policy 6.3.1.4 Enforce the California Uniform Building Code and general building design and construction requirements related to life safety to address seismic risks associated with ground shaking.
- Policy 6.3.1.5 Prohibit the construction of buildings near active faults in Earthquake Fault Zones unless a geologic investigation is performed to delineate hazards associated with surface fault ruptures and appropriate mitigation actions, based on the investigation, are included in the project design.
- Policy 6.3.1.6 Require that linear projects, including roads, streets, highways, electrical transmission and distribution corridors, water facilities, and underground oil and gas facilities avoid intersecting active faults to the extent possible. When such locations are unavoidable, the project design shall include measures to minimize the effects of fault movement.

OBJECTIVE 6.3.2: COUNTY-WIDE SEISMIC HAZARDS

Continue to evaluate seismic related hazards such as liquefaction, landslides, and-
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avalanche, and seiche, particularly in the Tahoe Basin.

Policy 6.3.2.1 Maintain updated geologic, seismic and avalanche hazard maps, and other hazard inventory information in cooperation with the State Office of Emergency Services, California Department of Conservation--Division of Mines and Geology, U.S. Forest Service, Caltrans, Tahoe Regional Planning Agency, and other agencies as this information is made available. This information shall be incorporated into the El Dorado County Operational Area Multi-Hazard Functional Emergency Operations Plans.

Policy 6.3.2.2 Future subdivision in the area around Fallen Leaf Lake shall be precluded.

Policy 6.3.2.3 An avalanche overlay zone shall be established and applied to all residential areas subject to avalanche. All new structures located within avalanche susceptible areas shall be designed to withstand the expected forces of such an event.

Policy 6.3.2.4 *intentionally blank*

Policy 6.3.2.5~~4~~ Applications for development of habitable structures shall be reviewed for potential hazards associated with steep or unstable slopes, areas susceptible to high erosion, and avalanche risk. Geotechnical studies shall be required when development may be subject to geological hazards. If hazards are identified, applicants shall be required to mitigate or avoid identified hazards as a condition of approval. If no mitigation is feasible, the project will not be approved.

Policy 6.3.2.5 Require geotechnical reports that demonstrate adequate slope stability and construction methods for buildings and road improvements that are on slopes greater than 50 percent pursuant to the California Building Code (CBC) Appendix J: Grading Section 108.1-3 on setbacks.

Policy 6.3.2.6 Development in mapped high landslide susceptibility and debris flow hazard areas shall require a geotechnical investigation and shall incorporate appropriate mitigation into the project design.

Policy 6.3.2.7 Consider the inclusion of seiche hazard areas within the Lake Tahoe Basin during the update of Area Plans and require development in potential seiche hazard areas to perform a geotechnical engineering investigation and mandate the incorporation of appropriate mitigation measures, based on the investigation, into the project design.

FLOOD HAZARDS

GOAL 6.4: FLOOD HAZARDS

Protect the residents of El Dorado County from flood hazards.

OBJECTIVE 6.4.1: DEVELOPMENT REGULATIONS

Minimize loss of life and property by regulating development in areas subject to flooding in accordance with Federal Emergency Management Agency (FEMA) guidelines, California law, and the El Dorado County Flood Damage Prevention Ordinance.

- Policy 6.4.1.1 ~~The County shall e~~Continue participation in the National Flood Insurance Program and application of flood plain zoning regulations to qualify for flood insurance and disaster assistance.
- Policy 6.4.1.2 ~~The County shall i~~Identify and delineate flood prone study areas discovered during the completion of the master drainage studies or plans.
- Policy 6.4.1.3 No new critical or high occupancy structures (e.g., schools, hospitals) shall be located in the 100-year floodplain of any river, stream, or other body of water.
- Policy 6.4.1.4 Creation of new parcels which lie entirely within the 100-year floodplain as identified on the most current version of the flood insurance rate maps provided by ~~the Federal Emergency Management Agency (FEMA)~~ or dam failure inundation areas as delineated in dam failure emergency response plans maintained by the County shall be prohibited.
- Policy 6.4.1.5 New parcels which are partially within the 100-year floodplain or dam failure inundation areas as delineated in dam failure emergency response plans maintained by the County must have sufficient land available outside the FEMA or County designated 100-year floodplain or the dam inundation areas for construction of dwelling units, accessory structures, and septic systems. Discretionary applications shall be required to determine the location of the designated 100-year floodplain and identified dam failure inundation areas on the subject property.
- Policy 6.4.1.6 Encourage the U.S. Forest Service, CAL FIRE, and other agencies and organizations to work together to treat areas burned by wildfires by planting fire-resistant vegetation to prevent erosion, protect soils, and to control stormwater runoff prior to winter storms, and areas prone to rock slides, mudslides, and landslides.

OBJECTIVE 6.4.2: DAM FAILURE INUNDATION

Protect life and property of County residents below dams.

- Policy 6.4.2.1 Apply a zoning overlay for areas located within dam failure inundation zones as identified by the State Department of Water Resources Division of Safety of Dams (DSOD).
- Policy 6.4.2.2 No new critical or high occupancy structures (e.g., schools, hospitals) should be located within the inundation area resulting from failure of dams

identified by the State Department of Water Resources ~~Division of Safety of Dams~~ DSOD.

Policy 6.4.2.3 Coordinate with the El Dorado Irrigation District, the Georgetown Divide Public Utility District, the Cameron Park Community Services District, the Sacramento Municipal Utility District, and other dam owners and operators to ensure there are plans in place for flood protection and to address risks associated with dam incidents.

NOISE

GOAL 6.5: ACCEPTABLE NOISE LEVELS

Ensure that County residents are not subjected to noise beyond acceptable levels.

OBJECTIVE 6.5.1: PROTECTION OF NOISE-SENSITIVE DEVELOPMENT

Protect existing noise-sensitive developments (e.g., hospitals, schools, churches and residential) from new uses that would generate noise levels incompatible with those uses and, conversely, discourage noise-sensitive uses from locating near sources of high noise levels.

- Policy 6.5.1.1 Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table HS-3 or the performance standards of ~~Table 6-2~~ HS-4, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.
- Policy 6.5.1.2 Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of ~~Table 6-2~~ HS-4 at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.
- Policy 6.5.1.3 Where noise mitigation measures are required to achieve the standards of ~~Tables 6-1~~ Table HS-3 and ~~6-2~~ Table HS-4, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings.
- Policy 6.5.1.4 Existing dwellings and new single-family dwellings on legal lots of record, as of the date of adoption of this General Plan, are not subject to County review with respect to satisfaction of the standards of the Public Health, Safety, and Noise Element except in areas governed by the Airport Land Use Compatibility Plan for applicable airports. (See Objective 6.5.2.)

As a ~~consequence~~ result, such dwellings may be constructed in other areas where noise levels exceed the standards of the Public Health, Safety, and Noise Element. It is not the responsibility of the County to ensure that such dwellings meet the noise standards of the Public Health, Safety, and Noise Element, or the noise standards imposed by lending agencies such as ~~HUD, FHA, and Cal Vet~~ Housing and Urban Development (HUD), Federal Housing Administration (FHA), and California Department of Veteran Affairs (Cal Vet). If homes are located and constructed in accordance with the Public Health, Safety, and Noise Element, it is expected that the resulting exterior and interior noise levels will conform to the HUD/FHA/Cal Vet noise standards.

- Policy 6.5.1.5 Setbacks shall be the preferred method of noise abatement for residential projects located along U.S. Highway 50. Noise walls shall be discouraged within the foreground viewshed of U.S. Highway 50 and shall be discouraged in favor of less intrusive noise mitigation (e.g., landscaped berms, setbacks) along other high-volume roadways.
- Policy 6.5.1.6 New noise-sensitive uses shall not be allowed where the noise level, due to non-transportation noise sources, will exceed the noise level standards of ~~Table 6-2 HS-4~~ HS-4 unless effective noise mitigation measures have been incorporated into the development design to achieve those standards.
- Policy 6.5.1.7 Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of ~~Table 6-2~~ HS-4 for noise-sensitive uses.
- Policy 6.5.1.8 New development of noise sensitive land uses will not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in ~~Table 6-1 HS-3~~ HS-3 unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels specified in ~~Table 6-1~~ HS-3.
- Policy 6.5.1.9 Noise created by new transportation noise sources, excluding airport expansion but including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in ~~Table 6-1~~ HS-3 at existing noise-sensitive land uses.
- Policy 6.5.1.10 To provide a comprehensive approach to noise control, the County shall:
- A. Develop and employ procedures to ensure that noise mitigation measures required pursuant to an acoustical analysis are implemented in the project review process and, as may be determined necessary, through the building permit process.
 - B. Develop and employ procedures to monitor compliance with the standards of the Noise Element after completion of projects where noise mitigation measures were required.
 - C. The zoning ordinance shall be amended to provide that noise

standards will be applied to ministerial projects with the exception of single-family residential building permits if not in areas governed by the Airport Land Use Compatibility Plan. (See Objective 6.5.2.)

Table 6-4 HS - 3			
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR TRANSPORTATION NOISE SOURCES			
Land Use	Outdoor Activity Areas¹ L_{dn}/CNEL, dB	Interior Spaces	
		L_{dn}/CNEL, dB	L_{eq}, dB²
Residential	60 ³	45	--
Transient Lodging	60 ³	45	--
Hospitals, Nursing Homes	60 ³	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls, Schools	60 ³	--	40
Office Buildings	--	--	45
Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Notes:

¹ In Communities and Rural Centers, where the location of outdoor activity areas is not clearly defined, the exterior noise level standard shall be applied to the property line of the receiving land use. For residential uses with front yards facing the identified noise source, an exterior noise level criterion of 65 dB L_{dn} shall be applied at the building facade, in addition to a 60 dB L_{dn} criterion at the outdoor activity area. In Rural Regions, an exterior noise level criterion of 60 dB L_{dn} shall be applied at a 100-foot radius from the residence unless it is within Platted Lands where the underlying land use designation is consistent with Community Region densities in which case the 65 dB L_{dn} may apply. The 100-foot radius applies to properties which are five acres and larger; the balance will fall under the property line requirement.

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

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

Table 6-2 HS - 4 NOISE LEVEL PERFORMANCE PROTECTION STANDARDS FOR NOISE SENSITIVE LAND USES AFFECTED BY NON-TRANSPORTATION* SOURCES						
Noise Level Descriptor	Daytime 7 a.m. - 7 p.m.		Evening 7 p.m. - 10 p.m.		Night 10 p.m. - 7 a.m.	
	Community	Rural	Community	Rural	Community	Rural
Hourly L_{eq} , dB	55	50	50	45	45	40
Maximum level, dB	70	60	60	55	55	50

Notes:
 Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).
 The County can impose noise level standards which are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site.
 In Community areas the exterior noise level standard shall be applied to the property line of the receiving property. In Rural areas the exterior noise level standard shall be applied at a point 100' away from the residence. The above standards shall be measured only on property containing a noise sensitive land use as defined in Objective 6.5.1. This measurement standard may be amended to provide for measurement at the boundary of a recorded noise easement between all effected property owners and approved by the County.
 *Note: For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways, railroad line operations and aircraft in flight. Control of noise from these sources is preempted by Federal and State regulations. Control of noise from facilities of regulated public facilities is preempted by California Public Utilities Commission (CPUC) regulations. All other noise sources are subject to local regulations. Non-transportation noise sources may include industrial operations, outdoor recreation facilities, HVAC units, schools, hospitals, commercial land uses, other outdoor land use, etc.

Policy 6.5.1.11 The standards outlined in ~~6-3, 6-4, 6-5~~ Table HS-5, Table HS-6, and Table HS-7 shall not apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally- recognized holidays. Further, the standards outlined in ~~Tables 6-3, 6-4, and 6-5~~ HS-5, HS-6, and HS-7 shall not apply to public projects to alleviate traffic congestion and safety hazards.

Table 6-3 HS - 5			
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NONTRANSPORTATION NOISE SOURCES IN COMMUNITY REGIONS AND ADOPTED PLAN AREAS—CONSTRUCTION NOISE			
Land Use Designation¹	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
Higher-Density Residential (MFR, HDR, MDR)	7 am–7 pm	55	75
	7 pm–10 pm	50	65
	10 pm–7 am	45	60
Commercial and Public Facilities (C, R&D, PF)	7 am–7 pm	70	90
	7 pm–7 am	65	75
Industrial (I)	Any Time	80	90
Note:			
¹ Adopted Plan areas should refer to those land use designations that most closely correspond to the similar General Plan land use designations for similar development.			

Table 6-4 HS - 6			
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NONTRANSPORTATION NOISE SOURCES IN RURAL CENTERS—CONSTRUCTION NOISE			
Land Use Designation	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
All Residential (MFR, HDR, MDR)	7 am–7 pm	55	75
	7 pm–10 pm	50	65
	10 pm–7 am	40	55
Commercial, Recreation, and Public Facilities (C, TR, PF)	7 am–7 pm	65	75
	7 pm–7 am	60	70
Industrial (I)	Any Time	70	80
Open Space (OS)	7 am–7 pm	55	75
	7 pm–7 am	50	65

Table 6-5 HS - 7			
MAXIMUM ALLOWABLE NOISE EXPOSURE FOR NONTRANSPORTATION NOISE SOURCES IN RURAL REGIONS—CONSTRUCTION NOISE			
Land Use Designation	Time Period	Noise Level (dB)	
		L_{eq}	L_{max}
All Residential (LDR)	7 am–7 pm	50	60
	7 pm–10 pm	45	55
	10 pm–7 am	40	50
Commercial, Recreation, and Public Facilities (C, TR, PF)	7 am–7 pm	65	75
	7 pm–7 am	60	70
Rural Land, Natural Resources, Open Space, and Agricultural Lands (RR, NR, OS, AL)	7 am–7 pm	65	75
	7 pm–7 am	60	70

- Policy 6.5.1.12 When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration.
- A. Where existing or projected future traffic noise levels are less than 60 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 5 dBA L_{dn} caused by a new transportation noise source will be considered significant;
 - B. Where existing or projected future traffic noise levels range between 60 and 65 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 3 dBA L_{dn} caused by a new transportation noise source will be considered significant; and
 - C. Where existing or projected future traffic noise levels are greater than 65 dBA L_{dn} at the outdoor activity areas of residential uses, an increase of more than 1.5 dBA L_{dn} caused by a new transportation noise will be considered significant.
- Policy 6.5.1.13 When determining the significance of impacts and appropriate mitigation to reduce those impacts for new development projects, including ministerial development, the following criteria shall be taken into consideration:
- A. In areas in which ambient noise levels are in accordance with the standards in Table ~~6-2~~ HS - 3, increases in ambient noise levels caused by new ~~nontransportation~~ non transportation noise sources that exceed 5 dBA shall be considered significant; and
 - B. In areas in which ambient noise levels are not in accordance with the standards in Table ~~6-2~~ HS - 3, increases in ambient noise levels caused by new non transportation noise sources that exceed 3 dBA shall be considered significant.
- Policy 6.5.1.14 The County will adopt a noise ordinance to resolve neighborhood conflicts and to control unnecessary noise in the County. Examples of the types of noise sources that can be controlled through the use of a quantitative noise ordinance include noisy mechanical equipment (e.g., swimming pool pumps, HVAC units), and amplified music in commercial establishments.
- Policy 6.5.1.15 The County will establish and maintain coordination among city, county, and state agencies involved in noise abatement and other agencies to reduce noise generated from sources outside the County's jurisdiction.

OBJECTIVE 6.5.2: AIRPORT NOISE GUIDELINES

The County shall recognize the Airport Land Use Compatibility Plan (ALUCP) for the Placerville Airport, the Cameron Airpark Airport, and the Georgetown Airport as the applicable guidelines for development within the Airport Noise Zones for these airports. Where there is a conflict between the County noise standards and the noise standards of the ALUCP, the standards of the ALUCP shall take precedence.

- Policy 6.5.2.1 All projects, including single-family residential, within the Airport Noise Zones of the Cameron Airpark, Georgetown, and Placerville airports shall be evaluated against the applicable policies in the ALUCP.
- Policy 6.5.2.2 The County shall develop and apply a combining zone district for areas located within the Airport Noise Zones in the ALUCP.

HAZARDOUS MATERIALS

GOAL 6.6: MANAGEMENT OF HAZARDOUS MATERIALS

Recognize and reduce the threats to public health and the environment posed by the use, storage, manufacture, transport, release, and disposal of hazardous

OBJECTIVE 6.6.1: REGULATION OF HAZARDOUS MATERIALS

Regulate the use, storage, manufacture, transport, and disposal of hazardous materials in accordance with State and Federal regulations.

- Policy 6.6.1.1 The Hazardous Waste Management Plan shall serve as the implementation program for management of hazardous waste in order to protect the health, safety, property of residents and visitors, and to minimize environmental degradation while maintaining economic viability.
- Policy 6.6.1.2 Prior to the approval of any subdivision of land or issuing of a permit involving ground disturbance, a site investigation, performed by a Registered Environmental Assessor or other person experienced in identifying potential hazardous wastes, shall be submitted to the County for any subdivision or parcel that is located on a known or suspected contaminated site included in a list on file with the Environmental Management Department as provided by the State of California and federal agencies. If contamination is found to exist by the site investigations, it shall be corrected and remediated in compliance with applicable laws, regulations, and standards prior to the issuance of a new land use entitlement or building permit.
- Policy 6.6.1.3 Provision must be made for disposal of aviation generated petroleum, oils, lubricants, and solvents at the County airports.

AIR QUALITY

GOAL 6.7: AIR QUALITY MAINTENANCE

- A. Strive to achieve and maintain ambient air quality standards established by the U.S. Environmental Protection Agency and the California Air Resources Board.**
- B. Minimize public exposure to toxic or hazardous air pollutants and air**

OBJECTIVE 6.7.1: EL DORADO COUNTY CLEAN AIR PLAN

Adopt and enforce Air Quality standards to reduce the health impacts caused by harmful emissions.

Policy 6.7.1.1 Improve air quality through land use planning decisions.

Policy 6.7.1.2 Support local and regional air quality improvement efforts.

OBJECTIVE 6.7.2: VEHICULAR EMISSIONS

Reduce motor vehicle air pollution by developing programs aimed at minimizing congestion and reducing the number of vehicle trips made in the County and encouraging the use of clean fuels.

Policy 6.7.2.1 Develop and implement a public awareness campaign to educate community leaders and the public about the causes and effects of El Dorado County air pollution and about ways to reduce air pollution.

Policy 6.7.2.2 Encourage, both through County policy and discretionary project review, the use of staggered work schedules, flexible work hours, compressed work weeks, teleconferencing, telecommuting, and carpool/van pool matching as ways to reduce peak-hour vehicle trips.

Policy 6.7.2.3 To improve traffic flow, synchronization of signalized intersections shall be encouraged-as-a means to reduce congestion, conserve energy, and improve air quality.

Policy 6.7.2.4 Encourage a local and inter-State rail system.

Policy 6.7.2.5 Upon reviewing projects, the County shall support and encourage the use of, and facilities for, alternative-fuel vehicles to the extent feasible. The County shall develop language to be included in County contract procedures to give preference to contractors that utilize low-emission heavy-duty vehicles.

Policy 6.7.2.6 The County shall investigate the replacement of its fleet vehicles with more fuel-efficient alternative fuel vehicles (e.g., liquid natural gas, fuel

cell vehicles, electric vehicles, hybrids).

OBJECTIVE 6.7.3: TRANSIT SERVICE

Expand the use of transit service within the County.

- Policy 6.7.3.1 Legally permissible trip reduction programs and the development of transit and ridesharing facilities shall be given priority over highway capacity expansion when such programs and facilities will help to achieve and maintain mobility and air quality.
- Policy 6.7.3.2 Transit Service – The County shall promote infill development that is compact, mixed used, pedestrian friendly, and transit oriented in areas identified as Transit Priority Project Areas.

OBJECTIVE 6.7.4: PROJECT DESIGN AND MIXED USES

Encourage project design that protects air quality and minimizes direct and indirect emissions of air contaminants.

- Policy 6.7.4.1 Reduce automobile dependency by permitting mixed land use patterns which locate services such as banks, child care facilities, schools, shopping centers, and restaurants in close proximity to employment centers and residential neighborhoods.
- Policy 6.7.4.2 Promote the development of new residential uses within walking or bicycling distance to the County’s larger employment centers.
- Policy 6.7.4.3 New development on large tracts of undeveloped land near the rail corridor shall, to the extent practical, be transit supportive with high density or intensity of use.
- Policy 6.7.4.4 All discretionary development applications shall be reviewed to determine the need for pedestrian/bike paths connecting to adjacent development and to common service facilities (e.g., clustered ~~mail boxes~~ mailboxes, bus stops, etc.).
- Policy 6.7.4.5 Specific plans submitted to the County shall provide for the implementation of all policies contained under Objective 6.7.4 herein.
- Policy 6.7.4.6 The County shall regulate wood-burning fireplaces and stoves in all new development. Environmental Protection Agency (EPA) approved stoves and fireplaces burning natural gas or propane are allowed. The County shall discourage the use of non-certified wood heaters and fireplaces during periods of unhealthy air quality.
- Policy 6.7.4.67 The County shall inform the public regarding the air quality effects associated with the use of wood for home heating. The program should

address proper operation and maintenance of wood heaters, proper wood selection and use, the health effects of wood smoke, weatherization methods for homes, and determining the proper size of heaters needed before purchase and professional installation. The County shall develop an incentive program to encourage homeowners to replace high-pollution emitting non-EPA-certified wood stoves that were installed before the effective date of the applicable EPA regulation with newer cleaner-burning EPA-certified wood stoves.

OBJECTIVE 6.7.5: AGRICULTURAL AND FUEL REDUCTION BURNING

Adopt and maintain air quality regulations which will continue to permit agricultural and fuel reduction burning while minimizing their adverse effects.

OBJECTIVE 6.7.6: AIR POLLUTION-SENSITIVE LAND USES

Separate air pollution sensitive land uses from significant sources of air pollution.

Policy 6.7.6.1 Ensure that new facilities in which sensitive receptors are located (e.g., schools, child care centers, playgrounds, retirement homes, and hospitals) are sited away from significant sources of air pollution.

Policy 6.7.6.2 New facilities in which sensitive receptors are located (e.g., residential subdivisions, schools, childcare centers, playgrounds, retirement homes, and hospitals) shall be sited away from significant sources of air pollution.

OBJECTIVE 6.7.7: CONSTRUCTION RELATED, SHORT-TERM EMISSIONS

Reduce construction related, short-term emissions by adopting regulations which minimize their adverse effects.

Policy 6.7.7.1 The County shall consider air quality when planning the land uses and transportation systems to accommodate expected growth, and shall use the recommendations in the most recent version of the El Dorado County Air Quality Management (AQMD) *Guide to Air Quality Assessment: Determining Significance of Air Quality Impacts Under the California Environmental Quality Act*, to analyze potential air quality impacts (e.g., short-term construction, long-term operations, toxic and odor-related emissions) and to require feasible mitigation requirements for such impacts. The County shall also consider any new information or technology that becomes available prior to periodic updates of the Guide.

OBJECTIVE 6.7.8: THE EFFECTS OF AIR POLLUTION ON VEGETATION

Monitor ongoing scientific research regarding the adverse effects, if any, of air pollution on vegetation.

Policy 6.7.8.1 The County shall monitor ongoing scientific research regarding the

adverse effects, if any, of air pollution on vegetation, including commercially valuable timber, threatened or endangered plant species, and other plant species. If and when such research conclusively determines, or if and when the weight of scientific opinion concludes, that air pollution is causing significant harm to vegetation within El Dorado County or similarly situated areas, the County, through its periodic review of the General Plan pursuant to Policy 2.9.1.2, shall consider whether to add policies to the General Plan to try to mitigate such harm.

AVIATION-RELATED HAZARDS

GOAL 6.8: AVIATION-RELATED HAZARDS

Minimize aviation-related hazards in and around existing and future airports.

OBJECTIVE 6.8.1: SAFETY HAZARDS EXPOSURE

Minimize the public’s exposure to airport-related safety hazards by requiring new development around airports to be compatible with that use.

Policy 6.8.1.1 All development within the Airport Influence Area of the Placerville Airport, the Cameron Airpark Airport, and the Georgetown Airport shall comply with El Dorado County Airport Land Use Commission’s policies and maps as set forth in the Airport Land Use Compatibility Plan for each airport. All development within the Airport Influence Area of the South Lake Tahoe Airport shall comply with the Airport Land Use Compatibility Plan (ALUCP) for the areas around the South Lake Tahoe Airport. Where there is a difference between the County development standards and the development standards of the Airport Land Use Compatibility Plan, as applied to proposed development, the standards that will most reduce airport-related hazards shall apply. (Resolution 124-2019, August 6, 2019)

Policy 6.8.1.2 The County shall develop an airport combining zone district within the El Dorado County Zoning Ordinance, for each of the Safety Zones as defined by the Airport Land Use Compatibility Plan for each of the County’s public airports. Said ordinance shall specify maximum density and minimum parcel size.

HIGHWAY SAFETY

GOAL 6.9: HIGHWAY SAFETY

Provide highways within the County that provide for the safe movement of goods and people throughout the County.

OBJECTIVE 6.9.1: SAFETY HAZARDS REDUCTION PROGRAM

Create a program to reduce safety hazards on County roadways especially at locations with a history of frequent accidents.

- Policy 6.9.1.1 The County shall identify those roadways with existing or projected safety problems, prioritize them in terms of the immediacy of the need for improvements, and develop programs for financing needed improvements.
- Policy 6.9.1.2 Recognize that substandard road conditions exist in some rural areas of the County and include feasible roadway, pedestrian, and bicyclist safety improvements in the roadway improvement priority list.
- Policy 6.9.1.3 New roads connecting to County roads shall be designed to provide safe access as required by the County Design and Improvement Standards Manual.

OBJECTIVE 6.9.2: EMERGENCIES ON STATE HIGHWAYS

The County should coordinate with Caltrans for the efficient movement of traffic on County roads in the event of closures on State highways.

DROUGHT AND WATER SUPPLY

GOAL 6.10: MANAGEMENT OF WATER RESOURCES

Provide a resilient water supply that will meet the demand of residents, businesses, and visitors.

OBJECTIVE 6.10.1: ENCOURAGE WATER EFFICIENCY

Promote cost-effective water conservation and water efficiency measures.

- Policy 6.10.1.1 Encourage structural and nonstructural flood management methods to enhance water storage and groundwater recharge.
- Policy 6.10.1.2 Continue to enforce the County Landscape and Irrigation Standards, where applicable, including parking lot shading; incorporating stormwater best management practices into landscape areas; requiring water conservation methods that encourage the use of native, drought tolerant species; and promoting knowledge of Appendix C to the Standards, El Dorado County Drought Resistant Plant List, to encourage use in private development).
- Policy 6.10.1.3 Require new development to demonstrate that adequate water is available before project approval and to fund its fair-share costs associated with the provision of water service.
- Policy 6.10.1.4 Support the integrated management of surface and groundwater, stormwater

treatment and use, and the treatment and reuse of wastewater, where feasible.

Policy 6.10.1.5 Enforce the Model Water Efficient Landscape Ordinance (MWELO) for new development and retrofitted landscapes, as referenced by Title 24, Part 11, Chapters 4 and 5 of the CalGreen Building Code.

OBJECTIVE 6.10.2: SUSTAINABLE WATER MANAGEMENT

Promote sustainable water management measures.

Policy 6.10.2.1 Encourage water suppliers, groundwater management agencies, and groundwater sustainability agencies to track and monitor the quantity and quality of the County’s water resources to ensure a sustainable water supply that serves existing and future residents, businesses, agricultural users, government services, and natural resources.

Policy 6.10.2.2 Support the diversification of water supplies from varied sources that contribute to a sustainable and diverse water supply and storage portfolio that includes, but is not limited to surface water, groundwater, recycled water, imported water, and stormwater, if these sources protect public health and natural resources.

Policy 6.10.2.3 Support regional and local water planning efforts led by the El Dorado County Water Agency (EDWA), El Dorado Irrigation District, and other water agencies and water suppliers by participating on committees and advisory groups to coordinate planning efforts related to water and land use planning decisions that may include the Urban Water Management Plan, Groundwater Sustainability Plans, the Regional Drought Contingency Plan, County-wide water resources development and management programs, and other local integrated regional water management plans.

Policy 6.10.2.4 Participate on County Drought Task Force and partner on regional drought contingency planning efforts to reduce the potential for future water shortages by cooperating with water agencies and suppliers on surface water augmentation storage projects, surface water diversions to secure water supply to smaller communities, groundwater augmentation to ensure redundant supplies when surface water supplies are limited, and to improve water infrastructure so that water is easily transferred between water agencies when supplies are constrained.

EVACUATION ACCESSIBILITY

<p><u>GOAL 6.11: EVACUATION ROUTES</u></p> <p><u>Identify and maintain adequate evacuation routes in the incorporated and unincorporated County.</u></p>
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OBJECTIVE 6.11.1: EVACUATION ROUTE IDENTIFICATION

Identify and analyze emergency evacuation routes and areas without at least two evacuation routes.

Policy 6.11.1.1 Continue to improve transportation corridors that support effective evacuation routes and access for the public and emergency responders by identifying residential developments in hazard areas that do not have at least two emergency evacuation routes and work with affected residents to help prepare them to anticipate their evacuation alternatives (e.g., public transit, carpooling, shelter in place).

Policy 6.11.1.2 Identify rural neighborhoods, mobile home parks, including senior communities, and public facilities that support at-risk populations (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, and assisted living residential or congregate care facilities with 12 or more residents) that are located within an area classified as an SRA (Public Resources Code Section 4102) or land classified as a VHFHSZ with limited accessibility or a single access point and implement an evacuation plan that consists of evacuation zones, routes, or shelter-in-place plans depending on the hazard event.

Policy 6.11.1.3 Identify and communicate safe and viable evacuation routes in multiple languages and across various communication platforms, as appropriate, to reach at-risk and vulnerable populations.

OBJECTIVE 6.11.2: EVACUATION ROUTE MAINTENANCE

Ensure viability of future use of evacuation routes.

Policy 6.11.2.1 Development shall be served by a street system with at least two evacuation routes capable of carrying peak load traffic and have sufficient capacity to meet project needs, or they must provide the necessary capacity to ensure the development has adequate fire protection and safe ingress and egress routes in conformance with the California Fire Safe Regulations (Section 1273 and 1274) of the California Code of Regulations – Title 14, Division 1.5, Chapter 7, Articles 2 and 3).

Policy 6.11.2.2 Construction of new roads, streets, and evacuation routes must be adequate in terms of width, turning radius, and grade to facilitate access by firefighting apparatus. Priorities for road improvements will be based on evacuation accessibility.

Policy 6.11.2.3 Evacuation routes and locations and their capacity, safety, and viability

under a range of emergency scenarios will be identified in the County’s MJHMP update, which will then be incorporated by reference into the Safety Element. The County shall work with emergency service agencies to evaluate the evacuation route and location’s capacity, safety, and viability under a range of emergency scenarios to facilitate fire, law enforcement, and emergency medical services and resident ingress and egress, consistent with the goals and objectives of the County’s MJHMP.

Policy 6.11.2.4 Continue to coordinate with the County Sheriff’s Department, CAL FIRE, local FPDs, and other fire agencies to identify, assess, and maintain evacuation routes to support the adequate capacity, safety, and viability of those routes under a range of emergency scenarios. Identify designated evacuation routes that are not compliant with Fire Safe Regulations (14 CCR Section 1270.00) for roadway standards and develop a plan to bring those roads into conformance to promote adequate and safe accessibility in communities.

Policy 6.11.2.5 Collaborate with Fire Safe Councils, Community Organizations, and other local fire agencies to support the long-term maintenance of fire breaks surrounding roads and the continued clearance of private and public roads.

AGRICULTURE AND FORESTRY DISEASE AND TREE MORTALITY HAZARDS

GOAL 6.12: AGRICULTURAL AND FORESTRY DISEASE SAFETY

Increase resistance to pests and disease on agricultural and forest lands.

OBJECTIVE 6.12.1: AGRICULTURAL AND FOREST LANDS RESILIENCY

Increase resiliency against agricultural and forestry disease and tree mortality.

Policy 6.12.1.1 Use science-based approaches to evaluate, understand, and protect against the negative impacts of new and emerging threats such as climate change, pests, disease outbreaks, or land use changes on forest health and public safety, including the buildup of hazardous fuel conditions and resulting fire behavior.

Policy 6.12.1.2 Continue to work with federal and state agencies to support fuel and pest management activities on federal and state lands, including areas impacted by bark beetle and other pests.

OBJECTIVE 6.12.1: REMOVAL OF TREE HAZARDS

Remove potential hazard trees to reduce disease spread and wildfire fuel.

Policy 6.12.2.1 Seek funding opportunities to support reduction in the rate of spread of forest diseases and removal of dead and dying trees.

Policy 6.12.2.2 Explore opportunities to locate facilities in the County that can store and process bark beetle-infested wood and debris from forest fuel clearing activities into useful products and biomass.

EXTREME HEAT

GOAL 6.13: EXTREME HEAT HAZARDS

Create an effective regulatory system to minimize injury and damage due to extreme heat events.

OBJECTIVE 6.13.1: MITIGATE HEAT-HEALTH EFFECTS

Mitigate Heat-Health Effects.

Policy 6.13.1.1 Support the opening of cooling centers during heat events and coordinate with transit providers to ensure adequate access for vulnerable communities.

Policy 6.13.1.2 Continue to publicize precautions for preventing heat-health effects to the most vulnerable populations such as seniors, outdoor workers, children, and those living in poverty.

HUMAN-HEALTH HAZARDS

GOAL 6.14: HUMAN HEALTH HAZARDS

Protect public health and safety through preventative intervention.

OBJECTIVE 6.14.1: PREVENTATIVE PUBLIC HEALTH SERVICES

Provide preventative public health services.

Policy 6.14.1.1 Provide and promote through a comprehensive public health infrastructure equitable access to focused clinical preventive health services, including but not limited to vaccine preventable disease mitigation, select adult and pediatric vaccination, communicable disease assessment, investigation and treatment, post-exposure assessment and treatment of vector borne disease.

Policy 6.14.1.2 Continue to provide vector control services to the El Dorado Vector Control District.

Policy 6.14.1.3 Facilitate and support continued development and access to an effective and quality driven community primary care network promoting self-care management through comprehensive coordination and ongoing partnerships

with community hospitals, tribal health centers, federally qualified health centers, school-based health services and rural designated community clinics.

Policy 6.14.1.4 Facilitate and coordinate MediCal Managed Care expansion at the local level. Leverage the introduction of a public MediCal managed care plan offering to El Dorado County residents with the intent of increasing and improving available services and healthy outcomes. Facilitate and coordinate a health data assessment specific to preventive service utilization and a health outcome response with the three MediCal Managed Care Plans active.

Policy 6.14.1.5 Facilitate ways to identify, mitigate and educate on the dangers of lead exposure to human health and sources of those exposures, including but not limited to sub-standard housing and environmental, occupational, recreational exposure pathways.

OBJECTIVE 6.14.2: PUBLIC HEALTH AND SAFETY THROUGH PREVENTIVE INTERVENTION

Protect public health and safety through preventive intervention.

Policy 6.14.2.1 Integrate health impact evaluation that considers harmful as well as protective health effects for all intragovernmental County government policy development. Facilitate community-level dialog focusing on prevention as a means to mitigate human-health hazard with all local government agencies, special districts, and community-based organizations and supporting health care industries.

Policy 6.14.2.2 Promote ways to protect the community population from the known hazards of tobacco exposure in the form of second and third-hand smoke where they live, work, and play.

Policy 6.14.2.3 Promote ways to protect the community and the environment from the hazards associated with tobacco products that fall under the classification of mixed hazardous waste, subject to 22 California Code of Regulation Section 66261.9, such as single use tobacco products containing but not limited to, plastic, cellulose acetate or other fibrous plastic material, or any organic or biodegradable material, and electronic smoking devices that are mixed hazardous waste products, including cartridges that are not designed to be refilled.

HIGH WIND

<p><u>GOAL 6.15: HIGH WIND</u></p> <p><u>Reduce impacts to people and property from high wind events.</u></p>

OBJECTIVE 6.15.1: BUILDING CODES

Enforce building codes that protect structures against high winds.

Policy 6.15.1.1 Adopt and enforce regulations governing construction and retrofitting of residential and commercial infrastructure to prevent wind damage in high-risk areas.

SEVERE WEATHER

GOAL 6.16: SEVERE WEATHER

Reduce impacts to people and property caused by severe weather events.

OBJECTIVE 6.16.1: INFRASTRUCTURE

Harden infrastructure to protect people and property from severe weather.

Policy 6.16.1.1 Adopt and enforce regulations governing construction and retrofitting of residential and commercial infrastructure to protect against the impacts of severe weather.

Policy 6.16.1.2 Facilitate the designation and operation of emergency centers that are both convenient and ADA accessible to prioritize and protect the needs of at-risk, vulnerable, and disadvantaged populations from severe weather hazards.

OBJECTIVE 6.16.2: EDUCATION AND OUTREACH

Conduct targeted outreach for at-risk and vulnerable populations about severe weather emergencies.

Policy 6.16.2.1 Organize inclusive outreach to at-risk, vulnerable, and disadvantaged populations to share information about emergency centers and the details and benefits of 72-hour emergency kits and to provide meaningful opportunities to engage in emergency planning efforts.

CLIMATE ADAPTATION AND RESILIENCY

GOAL 6.17: CLIMATE CHANGE ADAPTATION

Ensure the County can adapt to the hazards created or exacerbated by climate change.

OBJECTIVE 6.17.1: PROTECT COMMUNITIES

Minimize the risks and vulnerabilities associated with climate change.

- Policy 6.17.1.1 Identify natural infrastructure¹ and nature-based solutions when considering restoration, infrastructure, or engineering improvements that may be used as an adaptation project component proposed by the Transportation, Environmental Management, and Chief Administrative Office. Where feasible, the adaptation component shall use existing natural features and ecosystem processes, or the restoration of natural features and ecosystem processes, when developing alternatives for consideration.
- Policy 6.17.1.2 Implement any recommendations and mitigation actions of the LHMP that may provide climate change adaptation throughout the County.
- Policy 6.17.1.3 Continue to enforce building codes that will help ensure buildings can adequately withstand damage during hazard events.
- Policy 6.17.1.4 Locate new essential public facilities outside of areas exposed to the climatic hazards of climate change or identify methods to minimize damage if these facilities are in areas exposed to climatic hazards.
- Policy 6.17.1.5 Promote climate change and resilience awareness education about the effects of climate change-induced hazards and ways to adapt and build resiliency to climate change.
- Policy 6.17.1.6 Regularly (at minimum every 8 years) update the County’s Climate Vulnerability Assessment or regularly update (at minimum every 5 years) the County’s LHMP to incorporate the best available public information from federal, state, and regional agencies on the effects of climate change to keep the climate adaptation strategies in the LHMP and the Safety Element current and relevant to the community’s risk.
- Policy 6.17.1.7 Partner with academic institutions and the El Dorado County Agricultural Commissioner’s Office to develop monitoring projects that help agricultural operators use climate information to detect and plan for forecasted weather and climate impacts associated with extreme heat events, warm nights, periods of drought, and cold temperatures that can impact agricultural and crop commodities.
- Policy 6.17.1.8 Prioritize County programs and grant opportunities and other equitable project improvements or investments that address climate change impacts

¹ For purposes of this clause, “natural infrastructure” means using natural ecological systems or processes to reduce vulnerability to climate change related hazards, or other related climate change effects, while increasing long-term adaptive capacity by perpetuating or restoring ecosystem services. It also includes systems and practices that use or mimic natural processes, such as permeable pavements and other engineered systems, such as levees that are combined with restored natural systems, to provide clean water, conserve ecosystem values and functions, and provide a wide array of benefits to people and wildlife.

and support climate resiliency for at-risk, vulnerable, and disadvantaged communities, such as seniors, children, outdoor workers, individuals with existing health conditions, those with access and functional needs, and lower-income residents.

IMPLEMENTATION PROGRAM

MEASURE HS-A

Maintain emergency response procedures and programs, including agreements with other local, state, and federal agencies, to provide coordinated disaster response and programs to inform the public of emergency preparedness and response procedures. [Policy 6.1.1.1, Policy 6.2.1.2, Policies 6.2.6.1-6.2.6.5]

<u>Responsibility:</u> <u>Primary Lead:</u>	Sheriff's Office (Office of Emergency Services)
<u>Secondary Lead:</u>	Sheriff's Department (Office of Emergency Services), Chief Administrative Officer, Department of Transportation, and Environmental Management, and General Services Department
<u>Time Frame:</u>	Ongoing review and updating of the Operational Area Multi-Hazard Functional Emergency Operations Plan every five years.

MEASURE HS-B

Work with the local Fire Safe Councils, FPDs, other local fire service providers, U.S. Forest Service, and ~~California Department of Forestry and Fire Protection~~ CAL FIRE to develop and implement a countywide Wildfire Safety Plan. The Wildfire Safety Plan shall focus on, but not be limited to, the following:

- Public wildfire safety education;
- Basic fire protection standards for different areas of the County;
- Appropriate mitigation for development in areas having high and very high fuel hazards;
- Opportunities for fire fuel reduction;
- Implementation of fire safe standards;
- Coordination with fire protection districts
- Fuels management standards to apply to new development adjacent to forested areas and within greenbelts;
- Appropriate standards for open space and greenbelts; and
- Regular assessments on future emergency service needs for new communities.

~~{Policies 6.2.1.1, 6.2.4.2, and 6.2.5.1}~~ [Policy 6.2.1.1, Objective 6.2.2 through 6.2.4, 6.2.2.2, 6.2.2.3, Policy 6.2.4.2, and Policy 6.2.5.1]

<u>Responsibility:</u> <u>Primary Lead:</u>	Planning Division
<u>Secondary Lead:</u>	Department of Transportation, and Building Division
<u>Time Frame:</u>	Develop draft plan within one year of General Plan Safety Element adoption.

MEASURE HS-C

Develop a program to collect, maintain, and update geological, seismic, avalanche, and other

geological hazard information to avoid siting development in hazard areas and to expand special standards for construction in these hazard areas. [Policy 6.3.2.1 and Policy 6.3.2.3]

<u>Responsibility:</u>	Planning Division and Sheriff's Department (Office of Emergency Services)
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	N/A
<u>Time Frame:</u>	Develop program within five years of General Plan adoption.

MEASURE HS-D

Develop and adopt standards to protect against seismic and geologic hazards. [Objective 6.3.1 and Objective 6.3.2]

<u>Responsibility:</u>	Planning Division
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	Planning Division, Building Division, and Department of Transportation
<u>Time Frame:</u>	Develop standards within five years of General Plan adoption.

MEASURE HS-E

The County shall adopt a Naturally Occurring Asbestos Disclosure Ordinance that includes the provisions in the policy described in Policy 6.3.1.2.

<u>Responsibility:</u>	Environmental Management Department
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	N/A
<u>Time Frame:</u>	Present ordinance to Board of Supervisors within three years of General Plan adoption.

MEASURE HS-F

Develop a program to track asbestos-related information as it pertains to the County. [Policy 6.3.1.3]

<u>Responsibility:</u>	Environmental Management Department
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	N/A
<u>Time Frame:</u>	Develop program within one year of General Plan adoption. Report results to the Board of Supervisors annually.

MEASURE HS-G

Adopt California Building Code revisions. [~~Policy 6.3.2.4~~Policy 6.2.2.3, Policy 6.2.3.7, Policy 6.3.1.4, Policy 6.3.2.5, Policy 6.10.1.5, Policy 6.15.1.1, and Policy 6.16.1.1, Policy 6.17.1.3]

<u>Responsibility:</u>	Building Division
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	N/A

Time Frame:	Adopt revisions as Uniform Building Code (UBC) changes are promulgated (ongoing).
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MEASURE HS-H

Continue to participate in the Federal Flood Insurance Program, maintain flood hazard maps and other relevant floodplain data made available by other sources, and revise or update this information as new information becomes available. In its review of applications for building permits, discretionary project applications, and capital improvement proposals, the County shall determine whether the proposed project is within the 100-year floodplain based on these data. [Objective 6.4.1]

Responsibility:	Planning Division
Primary Lead:	
Secondary Lead:	Planning Division , Building Division, Department of Transportation
Time Frame:	Ongoing

MEASURE HS-I

To provide a comprehensive approach to noise control, adopt a Noise Ordinance that includes, but is not limited to, the following:

- A. Procedures to ensure that noise mitigation measures, as determined through an acoustical analysis, are implemented in the project review process and, if determined necessary, through the building permit process;
- B. Procedures to monitor compliance with the standards of the Noise Ordinance after completion of projects where noise mitigation measures were required; and
- C. Application of the noise standards to ministerial projects, exception for single-family residential building permits, if not in areas governed by the Airport Land Use Compatibility Plan.

[Policies 6.5.1.10, 6.5.1.13, and 6.5.1.14]

Responsibility:	Planning Division and Department of Transportation
Primary Lead:	
Secondary Lead:	N/A
Time Frame:	Develop ordinance within five years of General Plan adoption.

MEASURE HS-J

Establish a working group to address cross-jurisdictional noise issues. Members of the group should include representatives from the County, cities of Placerville and South Lake Tahoe, California Department of Transportation, ~~California Department of Forestry and Fire Protection~~ CAL FIRE, California Department of Parks and Recreation, U.S. Forest Service, U.S. Bureau of Land Management, and Tahoe Regional Planning Agency. [Policy 6.5.1.15]

<u>Responsibility:</u> <u>Primary Lead:</u>	Planning Department Division, Department of Transportation, Chief Administrative Office, and Sheriff's Department.
<u>Secondary Lead:</u>	Department of Transportation, Chief Administrative Office, and Sheriff's Department.
<u>Time Frame:</u>	Seat working group within three years of General Plan adoption.

MEASURE HS-K

Review the Zoning Ordinance and identify changes that would accomplish the following:

- A. Include an airport combining zone district for each of the Safety Zones as defined in the Airport Land Use Compatibility Plan for each of the County's public airports; and
- B. Develop and apply a combining zone district for areas within the Airport Influence Area for each of the public airports to discourage the placement of incompatible uses. [Policies 6.5.2.2 and 6.8.1.2]

<u>Responsibility:</u> <u>Primary Lead:</u>	Planning Department <u>Division</u>
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Update Zoning Ordinance within one year of General Plan adoption.

MEASURE HS-L

Update airport master plans and work with the appropriate Airport Land Use Commissions to update the Comprehensive Land Use Plans to reflect noise levels in the year 2025. [Policy 6.5.2.31, Policy 6.5.2.2]

<u>Responsibility:</u> <u>Primary Lead:</u>	Planning Department <u>Division</u> and Department of Transportation
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Revise master plans within five years of adoption of General Plan.

MEASURE HS-M

Maintain and update the Hazardous Waste Management Plan for management of hazardous waste to protect the health, safety, and property of residents and visitors, and to minimize environmental degradation. [Policy 6.6.1.1]

<u>Responsibility:</u> <u>Primary Lead:</u>	Environmental Management <u>Department</u>
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Review and update, if necessary, within five years of General Plan adoption.

MEASURE HS-N

Collect and maintain information on sites known or suspected to be contaminated by hazardous materials. The information shall include current data from the California Department of Toxic Substances Control's Hazardous Waste and Substance Sites List compiled pursuant to Section 65962.5 of the Government Code. [Policy 6.6.1.2]

Responsibility:	Environmental Management Department and Planning Department
Primary Lead:	
Secondary Lead:	<u>Planning Division</u>
Time Frame:	Ongoing

MEASURE HS-O

Develop, implement, and update, as necessary, a plan for the storage, transport, and disposal of hazardous materials used at County-operated facilities. [Policy 6.6.1.3]

Responsibility:	Department of Transportation and General Services Department
Primary Lead:	
Secondary Lead:	<u>N/A</u>
Time Frame:	Develop plan within five years of General Plan adoption.

MEASURE HS-P

Enhance and maintain the Air Quality Management District's air quality public education program. The program will include information regarding naturally occurring asbestos. [Policies 6.3.1.3 and 6.7.2.1]

Responsibility:	Air Quality Management District
Primary Lead:	
Secondary Lead:	<u>N/A</u>
Time Frame:	Develop program within three years of General Plan adoption.

MEASURE HS-Q

Develop and implement a program to encourage use of mechanisms to reduce peak-hour vehicle trips consistent with Policy 6.7.2.2.

Responsibility:	Planning Division and Department of Transportation
Primary Lead:	
Secondary Lead:	<u>N/A</u>
Time Frame:	Develop program within three years of General Plan adoption.

MEASURE HS-R

Identify fleet vehicles that could successfully be replaced with more fuel efficient or alternative fuel vehicles. When those fleet vehicles are due for replacement, thoroughly investigate their replacement with such vehicles. [Policy 6.7.2.6]

<u>Responsibility:</u>	Department of General Services <u>Chief Administrative Office</u>
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Ongoing

MEASURE HS-S

Develop and implement an incentive program to encourage homeowners to replace high-pollution emitting non-EPA-certified wood stoves. [Policy 6.7.4.7]

<u>Responsibility:</u>	Planning Department, Building Department, and Environmental Management
<u>Primary Lead:</u>	<u>Planning Division</u>
<u>Secondary Lead:</u>	<u>Building Division, and Environmental Management Department</u>
<u>Time Frame:</u>	Develop program within four years of General Plan adoption.

MEASURE HS-T

Adopt and/or update air quality regulations regarding agricultural and fuel reduction burning, construction emissions, mobile source emissions, fugitive dust, and volatile organic emissions. [Objective 6.7.5 and Policy 6.7.7.1]

<u>Responsibility:</u>	Air Quality Management District
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Develop standards within five years of General Plan adoption.

MEASURE HS-U

Monitor existing, ongoing studies related to the effects of air pollution on vegetation. [Policy 6.7.8.1]

<u>Responsibility:</u>	Air Quality Management District
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Ongoing

MEASURE HS-V

Amend prescriptive standard for the Fugitive Dust Prevention and Control Plan and

Contingent Asbestos Hazard Dust Mitigation Plan. [Policy 6.3.1.1]

<u>Responsibility:</u>	Environmental Management <u>Department</u>
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Adopt amendment within three years of General Plan adoption.

MEASURE HS-W

Survey and prioritize safety improvements on County roads. Develop financing programs for making necessary improvements. [Policy 6.9.1.1, Policy 6.11.2.3, Policy 6.11.2.4]

<u>Responsibility:</u>	Department of Transportation
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Secondary Lead:</u>	Complete survey within three years; Develop financing program within eight years of General Plan adoption.

MEASURE HS-X

Coordinate air quality planning efforts with other local and regional agencies. [Policies 6.7.1.1 and 6.7.1.2]

<u>Responsibility:</u>	Planning Department <u>Division</u>
<u>Primary Lead:</u>	
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	Ongoing

MEASURE HS-Y

Update the County Code of Ordinances, Chapter 8.09, Defensible Space Ordinance to incorporate fire safe regulations that meet or exceed the minimum requirements for Fire Safe Regulations (14 CCR Section 1270.00) for projects in SRAs or VHFHSZs. [Policy 6.2.1.3, Policy 6.2.1.4, Policy 6.2.1.5]

<u>Primary Lead:</u>	<u>Chief Administrative Office's OWPR</u>
<u>Secondary Lead:</u>	<u>All El Dorado County Fire Protection Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-Z

Draft development standards and coordinated emergency notification and evacuation plans and procedures that apply across jurisdictional boundaries for wildfire protection and to protect high-density residential and affordable housing developments located within infill locations that are within the WUI, SRA, or VHFHSZs and have adequate access, defined evacuation routes, and sufficient water supplies and infrastructure. [Policies 6.11.1.1, 6.11.1.2, 6.11.1.3 and Policies 6.11.2.1, 6.11.2.2, 6.11.2.3, 6.11.2.4, and 6.11.2.5]

<u>Primary Lead:</u>	<u>Chief Administrative Office's OWPR, El Dorado County Fire Protection District</u>
<u>Secondary Lead:</u>	<u>All El Dorado County Fire Protection Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-AA

The County shall coordinate climate resiliency efforts with federal, states, and local climate collaboratives, such as the Sierra Climate Adaptation and Mitigation Partnership (CAMP) and other regional organizations. [Policies 6.17.1.1 to 6.17.1.8]

<u>Primary Lead:</u>	<u>Planning Division and Chief Administrative Office</u>
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-BB

The County shall designate facilities that can be used as cooling or warming centers or resilience hubs and ensure they are equipped with backup power supplies, including on-site renewable energy generation and energy back-up storage systems. [Policy 6.1.2.1, Policy 6.13.1.1, and Policy 6.13.1.2]

<u>Primary Lead:</u>	<u>Chief Administrative Office</u>
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	<u>Within three years of General Plan Safety Element adoption</u>

MEASURE HS-CC

Continue to promote water conservation programs to reduce agricultural and residential water use in the County. [Policies 6.10.1.1 to 6.10.1.5 and Policy 6.10.2.1]

<u>Primary Lead:</u>	<u>Planning Division and EDWA</u>
<u>Secondary Lead:</u>	<u>N/A</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-DD

Support EDWA during updates to its County-wide water resources development and management program and Regional Drought Contingency Plans to coordinate ongoing efforts and to plan for potential water shortages and to promote sustainable, long-term drinking water supply for County residents and businesses. [Policies 6.10.1.1 to 6.10.1.2, Policy 6.10.2.2]

<u>Primary Lead:</u>	<u>Planning Division</u>
<u>Secondary Lead:</u>	<u>EDWA</u>

<u>Time Frame:</u>	<u>Within the next five years or by the County-wide water resources development and management program update cycle</u>
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MEASURE HS-EE

Support free or reduced-cost vaccinations for vector-borne diseases are made available to County residents. [Objective 6.14.1]

<u>Primary Lead:</u>	<u>Environmental Management Department</u>
<u>Secondary Lead:</u>	<u>Environmental Health Department, Public Health Department, Vector Control</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-FF

Review and update emergency operation plans, emergency response and evacuation plans, and related procedures at least every 5 years to reflect current conditions and community needs. [Policy 6.11.2.3, Policy 6.11.2.4, Policy 6.11.2.5]

<u>Primary Lead:</u>	<u>Sheriff's Office (Office of Emergency Services)</u>
<u>Secondary Lead:</u>	<u>County Administrative Officer, Department of Transportation, Environmental Management Department, and General Services Department</u>
<u>Time Frame:</u>	<u>Ongoing review and updating of emergency response and evacuation plans and procedures every five years.</u>

MEASURE HS-GG

Work with EDWA to develop Drought Task Force and implement the County El Dorado County Drought Resilience Plan [Policy 6.10.2.4, Policy 6.10.2.3]

<u>Primary Lead:</u>	<u>Planning Division</u>
<u>Secondary Lead:</u>	<u>EDWA</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-HH

Continue implementation and regular updates of the County's Stormwater Management Plan to address how existing best management practices (BMP) and stormwater design may be anticipated to change under future climate conditions. [Objective 6.4.2]

<u>Primary Lead:</u>	<u>The Regional Water Quality Control Board</u>
<u>Secondary Lead:</u>	<u>Tahoe Planning and Stormwater Management Program</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-II

Pursuant to California Environmental Quality Act (CEQA) Guidelines §15126.2, Consideration and Discussion of Significant Environmental Impacts, lead agencies should make a good faith effort to analyze potentially significant direct, indirect, and cumulative environmental impacts that a project may cause by placing projects in hazardous locations, including locations potentially affected by hazards that result from climate change. [Policy 6.15.1.1, Policy 6.17.1.3, Policy 6.17.1.4]

<u>Primary Lead:</u>	<u>Planning Division</u>
<u>Secondary Lead:</u>	<u>Other Lead Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-JJ

Educate County decision makers, departments, and staff on climate change science, climate projections, and adaptation and mitigation actions that minimize natural hazard impacts and support climate resiliency. [Policies 6.17.1.1 - Policy 6.17.1.8, Policy 6.12.1.1]

<u>Primary Lead:</u>	<u>Planning Division</u>
<u>Secondary Lead:</u>	<u>Other Lead Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-KK

Identify funding opportunities to support biomass utilization within the County and continuing to use biomass as a component in projects. [Policy 6.2.4.5, Policy 6.12.1.2, Policy 6.12.2.1, Policy 6.12.2.2]

<u>Primary Lead:</u>	<u>Chief Administrative Office’s OWPR</u>
<u>Secondary Lead:</u>	<u>All El Dorado County Fire Protection Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-LL

Implement measures that support safe evacuation education and planning, including but not limited to efforts to notify residents who live in neighborhoods with one means of egress, prioritizing defensible space inspections, and implementing vegetation management and fuel reduction projects in and around identified neighborhoods. [Policy 6.11.1.1, Policy 6.11.1.2]

<u>Primary Lead:</u>	<u>Chief Administrative Office’s OWPR</u>
<u>Secondary Lead:</u>	<u>All El Dorado County Fire Protection Agencies</u>
<u>Time Frame:</u>	<u>Ongoing</u>

MEASURE HS-MM

Conduct a survey targeting individuals and communities with access and functional needs to inform emergency evacuation and shelter requirements. This includes but is not limited to assessing needs related to transportation, access to emergency facilities, and necessary capacities. [Policy 6.1.2.1, Policy 6.11.1.2, Policy 6.16.1.2, Policy 6.16.2.1]

Primary Lead:	<u>Chief Administrative Office’s OWPR</u>
Secondary Lead:	<u>All El Dorado County Fire Protection Agencies</u>
Time Frame:	<u>Ongoing</u>

MEASURE HS-NN

Develop a Mass Evacuation and Sheltering Plan that addresses the needs of at-risk, vulnerable, and disadvantaged people and individuals with disabilities and access and functional needs. [Policy 6.1.2.1]

Primary Lead:	<u>Sheriff’s Office</u>
Secondary Lead:	<u>Chief Administrative Office, All El Dorado County Fire Protection Agencies</u>
Time Frame:	<u>Ongoing review and updating of emergency response and evacuation plans and procedures every five years.</u>

MEASURE HS-OO

Require Fire Protection Plans for new development to comply with fire protection standards and identify adequate infrastructure for the following:




- 1) Location of anticipated water supply,
 - 2) Water flow for fire suppression needs,
 - 3) Maintenance and long-term integrity of water supplies,
 - 4) Fuel modification and defensible space,
 - 5) Vegetation clearance maintenance on public and private roads,
 - 6) Visible home and street addressing and signage, and
 - 7) Community fire breaks and discussion of how those fire breaks will be maintained.
- [Policy 6.2.3.5 and Policy 6.2.3.6]

Primary Lead:	<u>Chief Administrative Office’s OWPR</u>
Secondary Lead:	<u>All El Dorado County Fire Protection Agencies</u>
Time Frame:	<u>Ongoing</u>

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El Dorado County Draft Public Health, Safety, and Noise Element List of Acronyms

May 2024

Final Draft – Appendix A

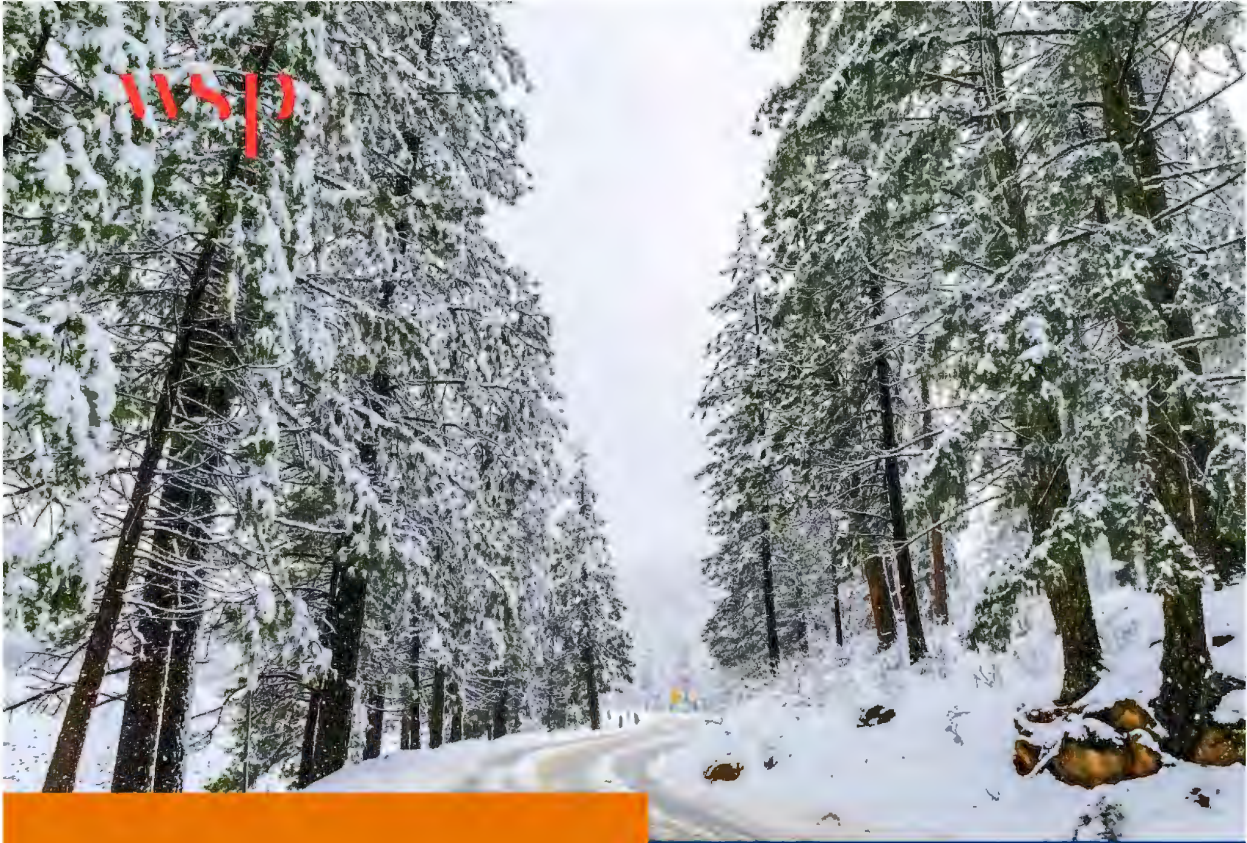
Acronyms

AEU – Amador El Dorado Unit
AL – Agricultural Lands
ALUCP – Airport Land Use Compatibility Plan
AQMD – El Dorado County Air Quality Management District
CAL FIRE – California Department of Forestry and Fire Protection
Cal Vet – California Department of Veteran Affairs
Caltrans – California Department of Transportation
CAMP – Sierra Climate Adaptation and Mitigation Partnership
CBC – California Building Code
CCR – Code of California Regulations
CEA – County Emphasis Area
CEQA – California Environmental Quality Act
CNEL – Community Noise Equivalent Level
CPUC – California Public Utilities Commission
CSD – Community Services District
CVA – Climate Vulnerability Assessment
CWD – County Water District
CWPP – Community Wildfire Protection Plans
dB – Decibel
DOC – California Department of Conservation
DWR – California Department of Water Resources
EDCWA – El Dorado County Water Agency
EID – El Dorado Irrigation District
EMS – Emergency Medical Service
EOP – Emergency Operations Plan
EPA – Environmental Protection Agency
FEMA – Emergency Management Agency
FHA – Federal Housing Administration
FHSZ – Fire Hazard Severity Zone
FIRM – FEMA Flood Insurance Rate Map
FLLFD – The Fallen Leaf Lake Fire Department
FMP – Fire Management Plan
FPD – Fire Protection Districts
FRAs – Federal Responsibility Areas
GDPUD – Georgetown Divide Public Utility District
GFCSO – Grizzly Flats Community Services



HDR – High Density Residential
HUD – Housing and Urban Development
HVAC – Heating, Ventilation, and Air Conditioning
JPA – Joint Powers Authority
LDR – Low Density Residential
LHMP – Local Hazard Mitigation Plan
LRAs – Local Responsibility Areas
MDR – Medium Density Residential
MFR – Multifamily Residential
MJHMP – County Multi-Jurisdictional Hazard Mitigation Plan
MWELo – Model Water Efficient Landscape Ordinance
NFIP – National Flood Insurance Program
NFPA – National Fire Protection Association
NGO – Non-Governmental Organizations
NR – Natural Resources
OPR – Governor’s Office of Planning and Research
OS – Open Space
OS – Open Space
OWPR – El Dorado County Office of Wildfire Preparedness & Resilience
PF – Public Facilities
PM – Particulate Matter
PSPS – Public Safety Power Shutoffs
RCD – Resource Conservation District
RCP – Representative Concentration Pathway
RR – Rural Land
SFHA – Special Flood Hazard Areas SFHA
SOI – Sphere of Influence
SR – State Routes
SRA – State Responsibility Area
STPUD – South Lake Tahoe Public Utility District
THA – Target Hazard Areas
TR – Tourist Recreational
UBC – Uniform Building Code
USACE – The United States Army Corps of Engineers
VHFHSZ – Very High Fire Hazard Severity Zone
WUI – Wildland Urban Interface





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

May 2024

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. 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

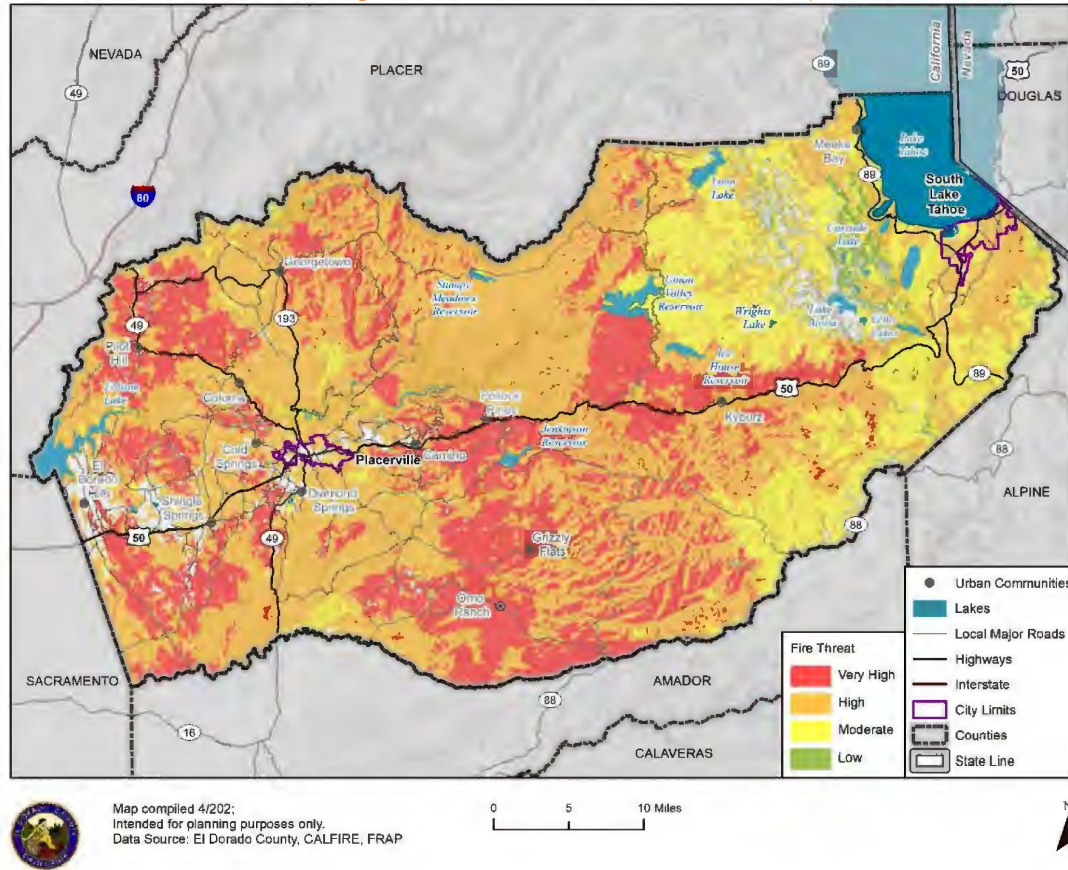
Structural fires occur within the built environment in both urban and rural areas and are due to a number of causes, including electrical or mechanical issues and homeowner accidents. These fires are more common within older buildings or structures that lack fire alarms or sprinkler systems.

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.

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Figure HS - 1 Wildfire Threat Areas in El Dorado County



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

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

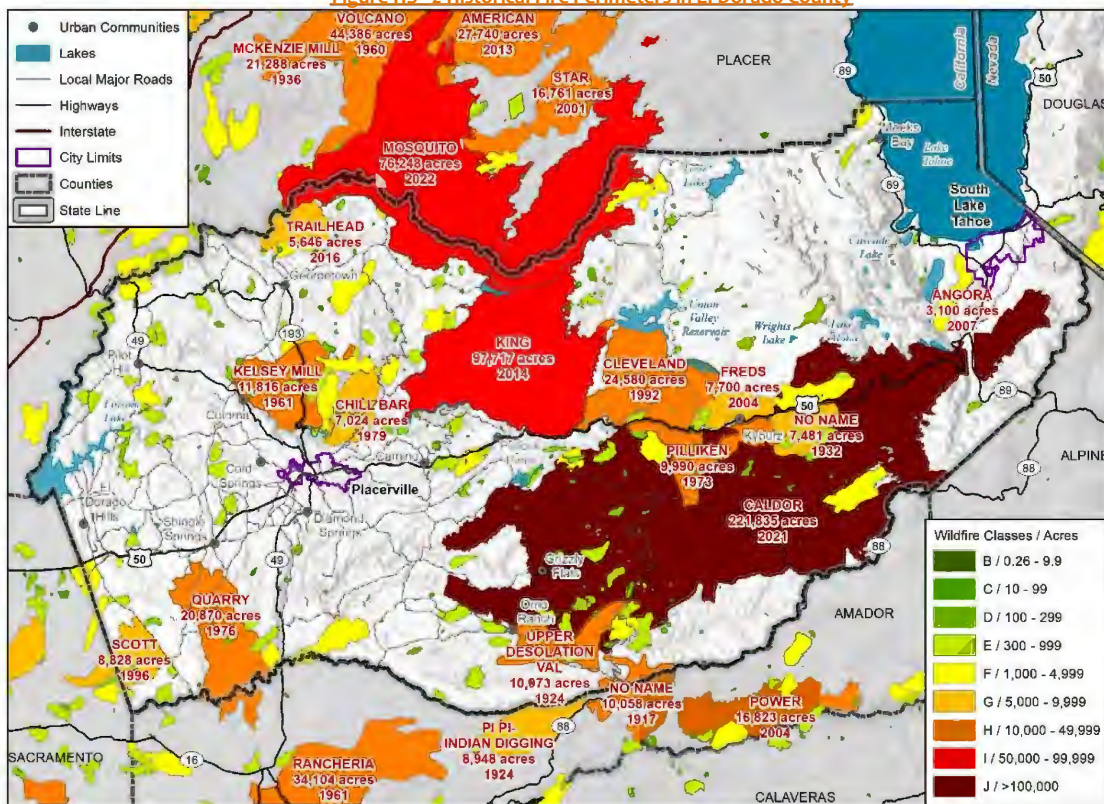
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1923	-	Miscellaneous	1,106
1922	-	Miscellaneous	2,450
1920	Bryants Mill	Miscellaneous	1,665
1919	Sand Mt	Miscellaneous	1,874
1919	-	Miscellaneous	603
1919	-	Unknown / Unidentified	505
1918	-	Unknown / Unidentified	1,013
1917	-	Unknown / Unidentified	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

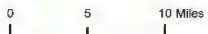
Source: CAL FIRE 2023

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

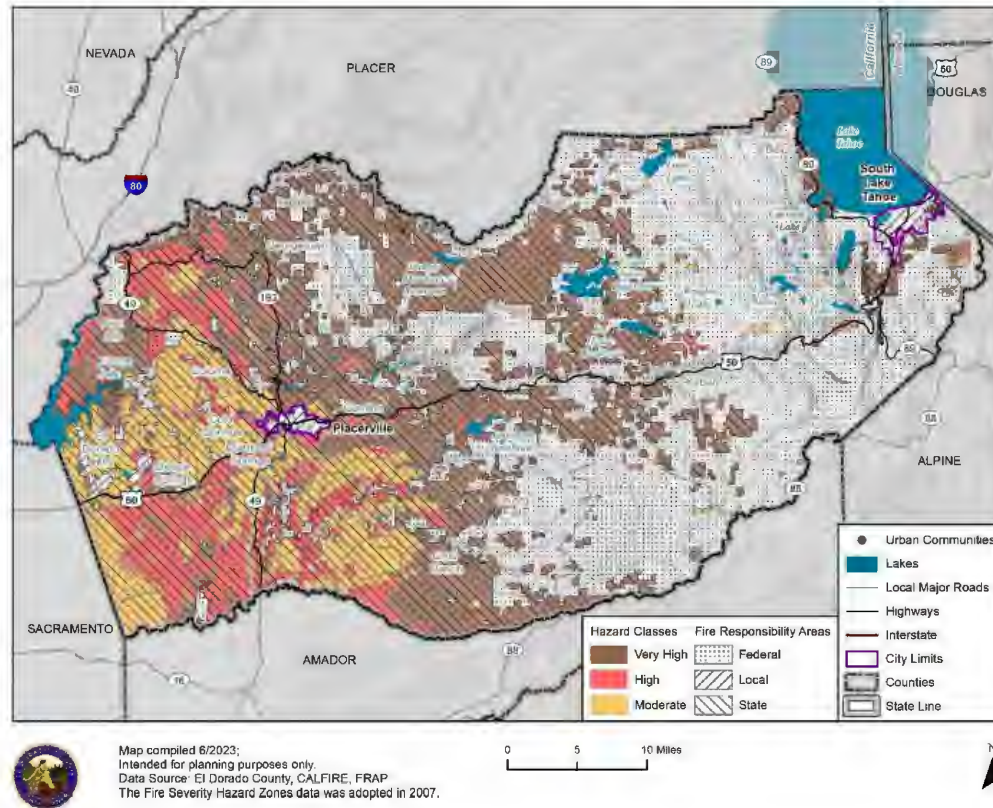
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Regulations Title 14 Natural Resources Division 1.5 Department of Forestry Chapter 7 - Fire Protection Subchapter 2 State Minimum Fire Safe Regulations Articles 1-5. These requirements address ingress and egress, signing and building numbering, emergency 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



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.

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

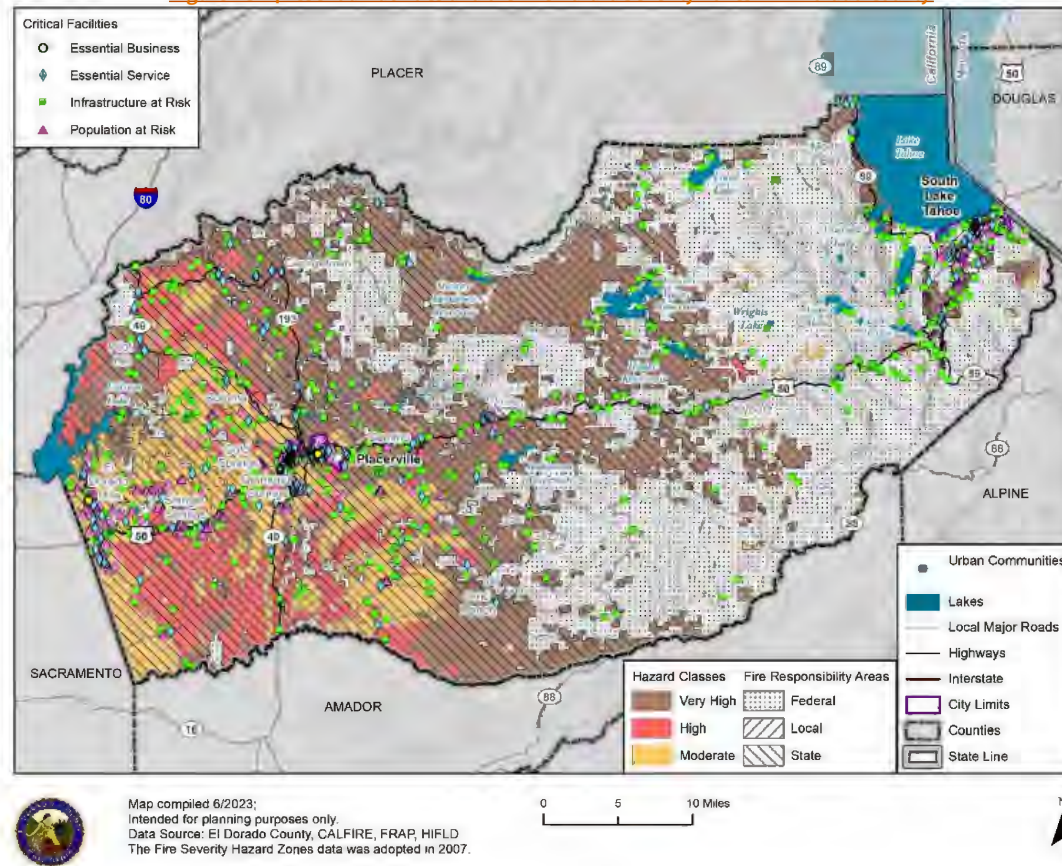
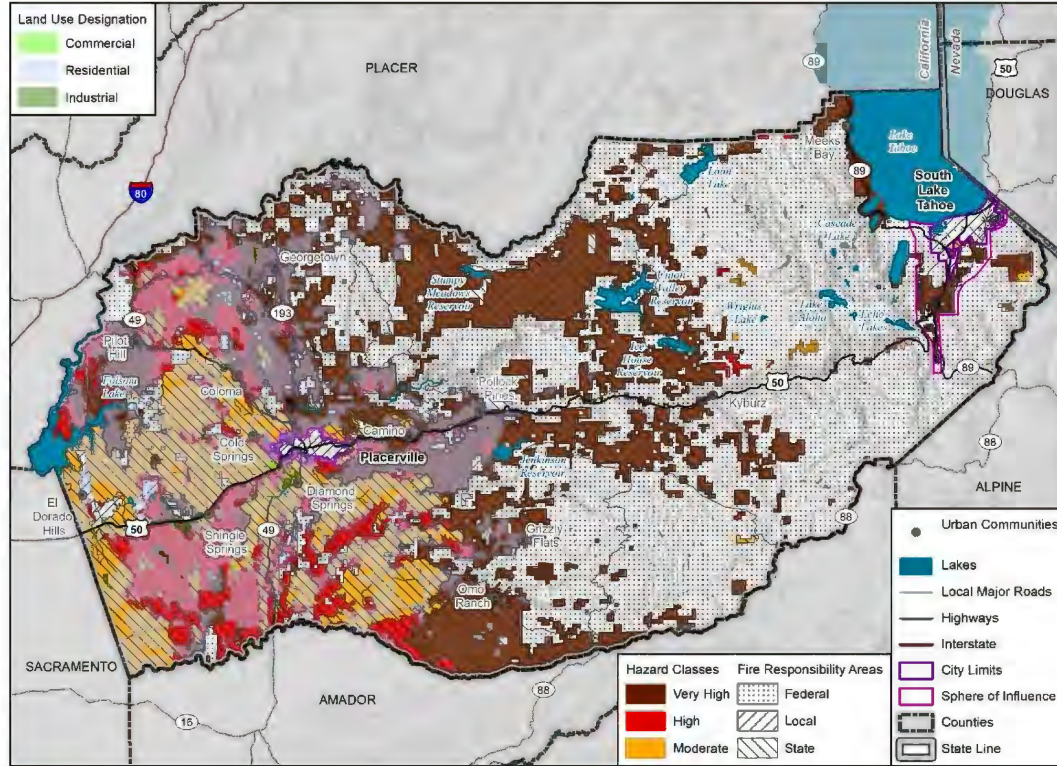


Figure HS - 5 Existing and Planned Development in relation to Fire Hazard Severity Zones in El Dorado County

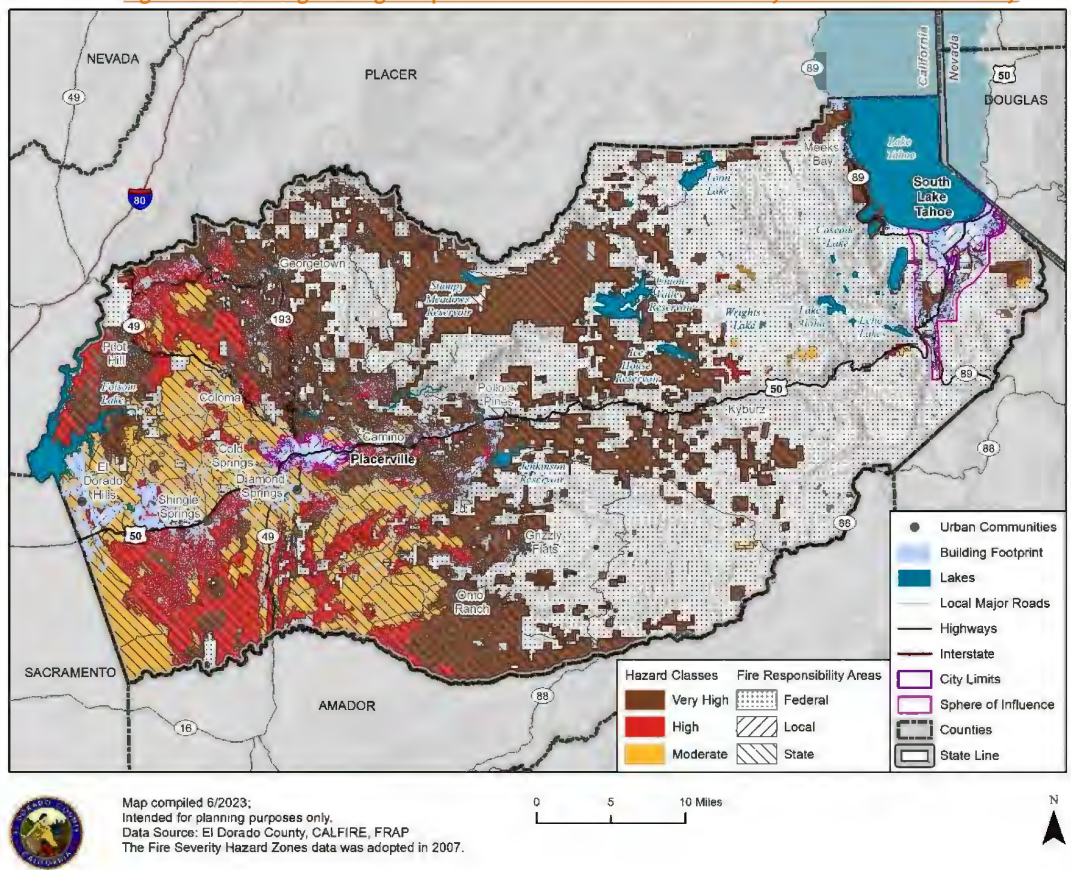


Map compiled 6/2023;
 Intended for planning purposes only.
 Data Source: El Dorado County, CALFIRE, FRAP
 The Fire Severity Hazard Zones data was adopted in 2007.

0 5 10 Miles



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



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

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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 Finner 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

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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.

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

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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

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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

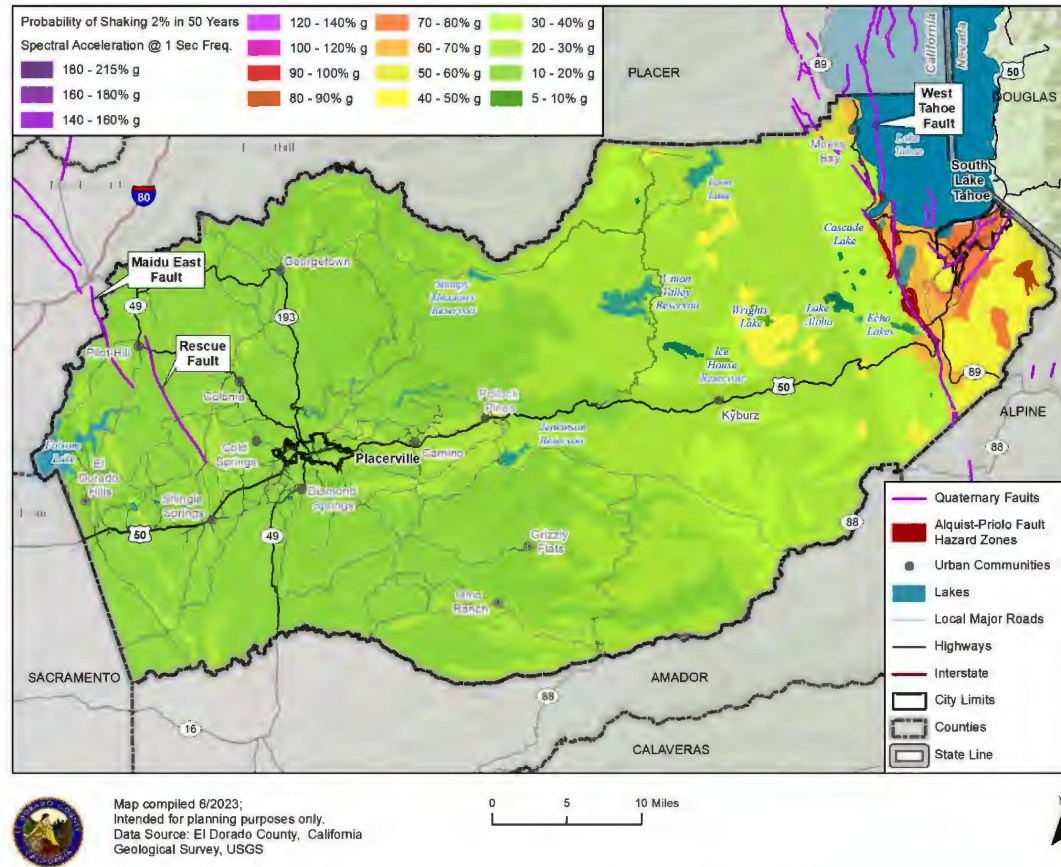
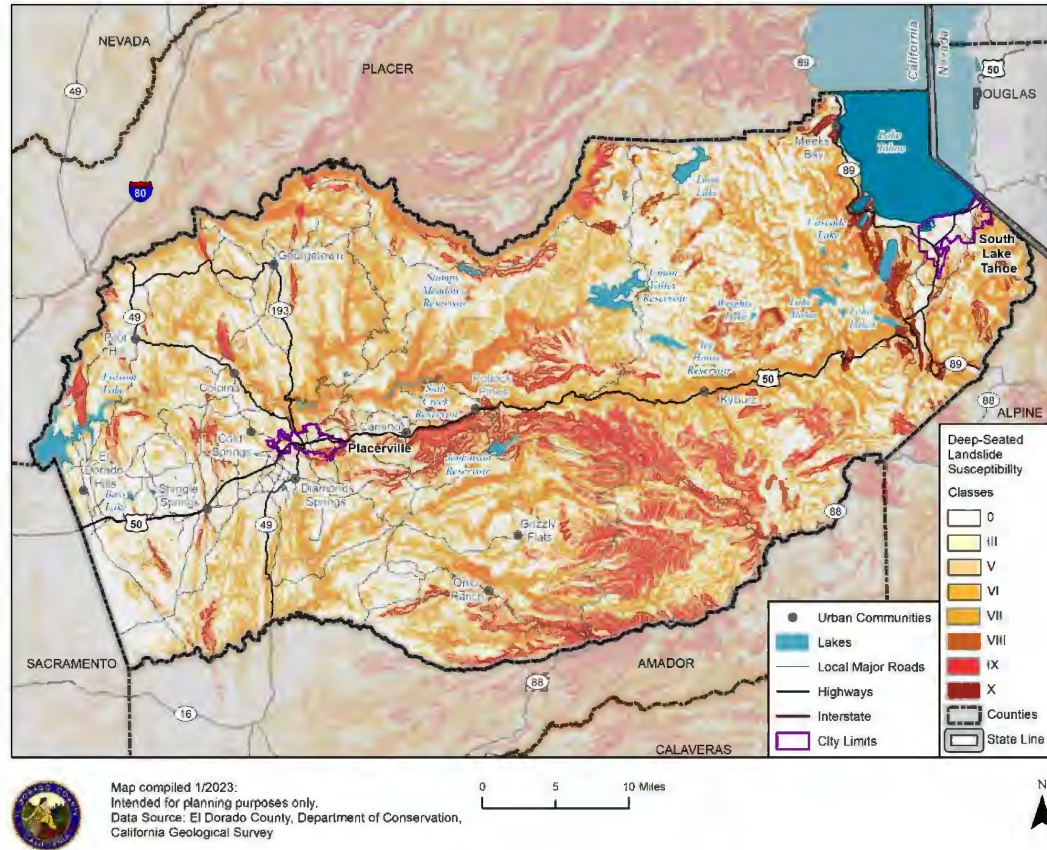



Figure HS - 8 Deep-Seated Landslide Susceptibility in El Dorado





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.

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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.

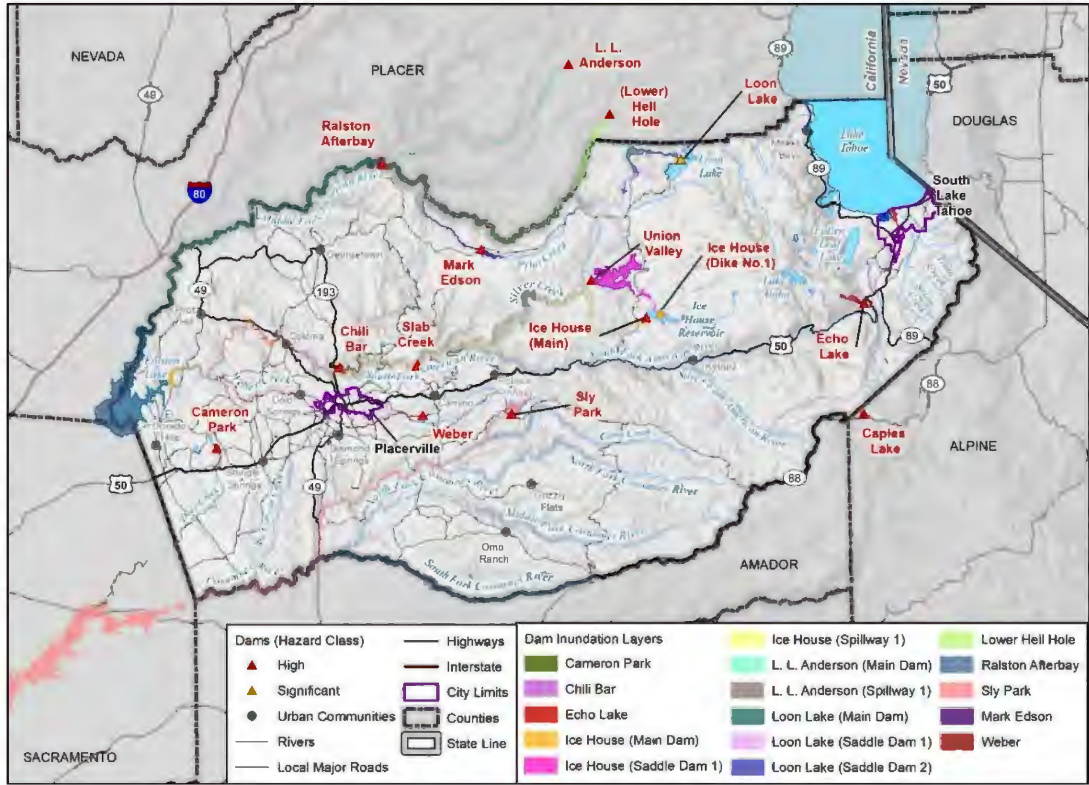
Flooding is one of the most frequent natural hazards in the County during the winter and spring (November through April) when waterways fill with surface water runoff and snowmelt. Where it occurs depends on the issues in each community. Flooding is also costly to recover from based on substantial damage 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)

0 5 10 Miles





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.

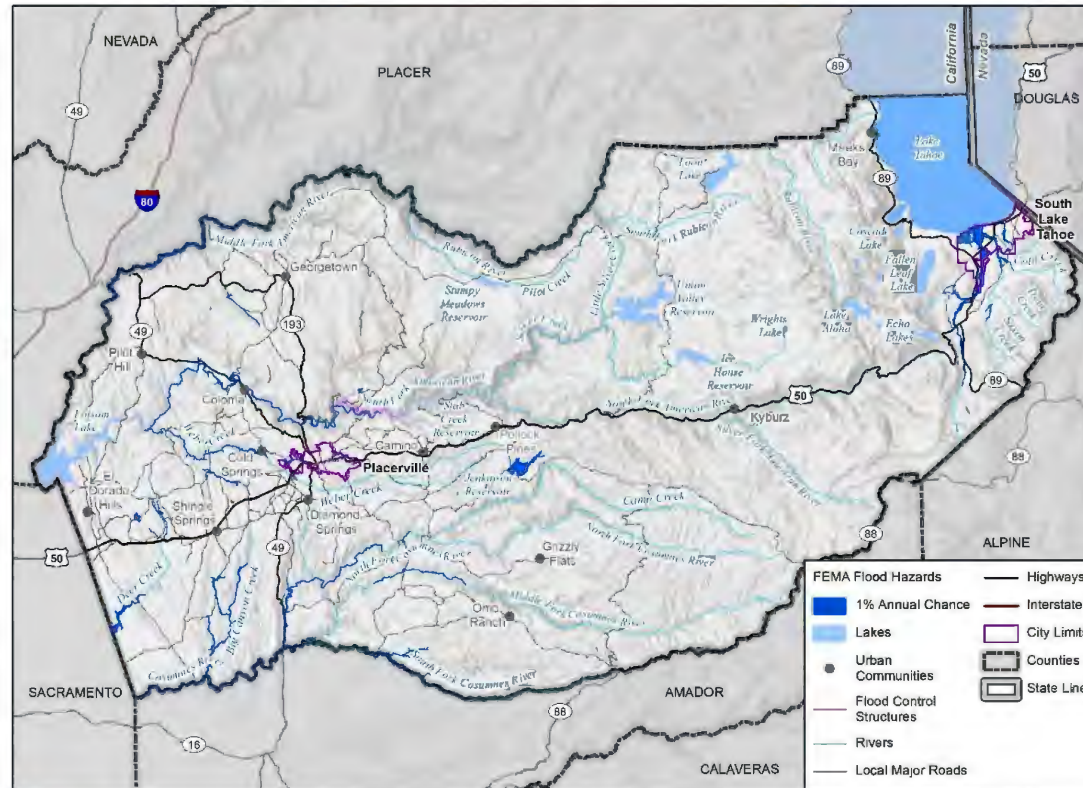
No USACE 200-year flood zones are mapped in the County. There are also no levees or levee protection zones and areas subject to inundation in the event of a levee or failure of a floodwall. Refer to the County LHMP for historical data on flooding, areas that are vulnerable to post-wildfire flooding,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

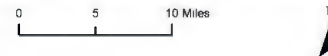
Additionally, climate change is projected to lead to increased wildfire severity. More intense and frequent wildfires may result in a loss of vegetation and rapid runoff. The loss of vegetation following wildfires can also lead to post-wildfire debris flows, rock falls, mudslides, and other soil instabilities. 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.



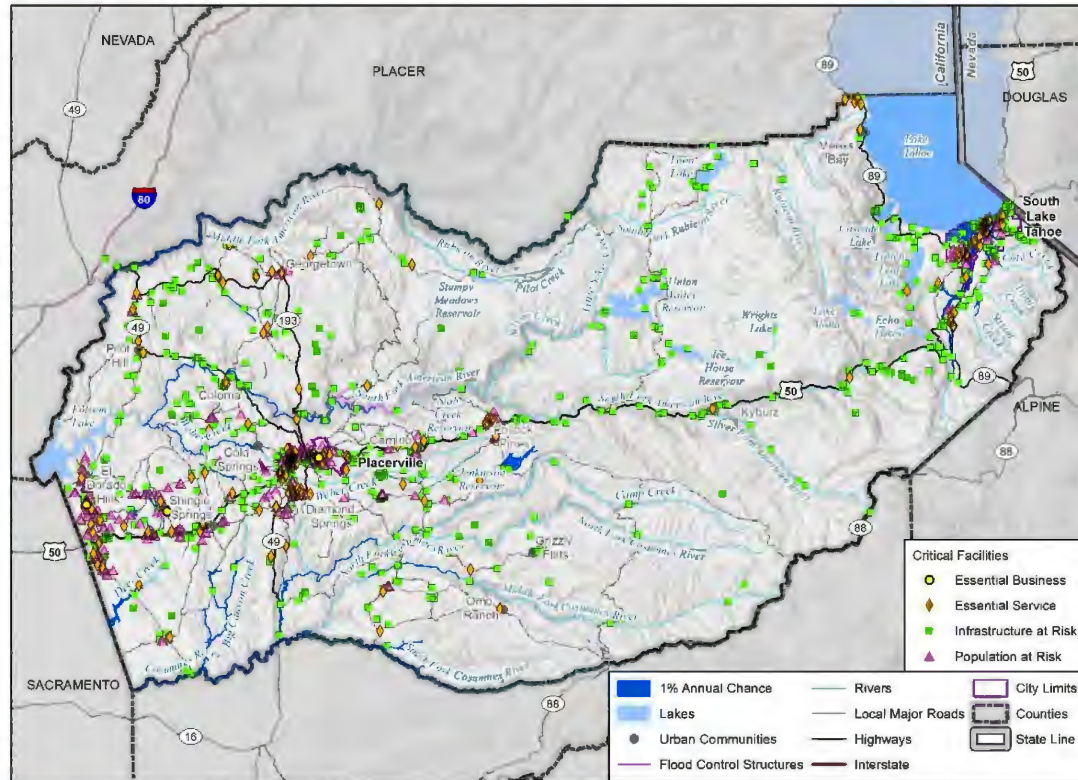


In 1974, the County became a participating community in the National Flood Insurance Program (NFIP). The NFIP provides County property owners and renters with federal flood insurance, reduces flood damage through a mandatory local floodplain management ordinance, and identifies and maps County flood 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.

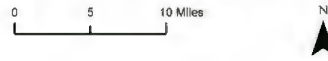
The County has a defined regulatory floodplain that consists of areas with an elevated risk of flooding where additional development regulations are enforced to reduce exposure to flood hazards. These regulations are summarized in the County's Flood Damage Prevention Ordinance (Chapter 130.32 of the 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.




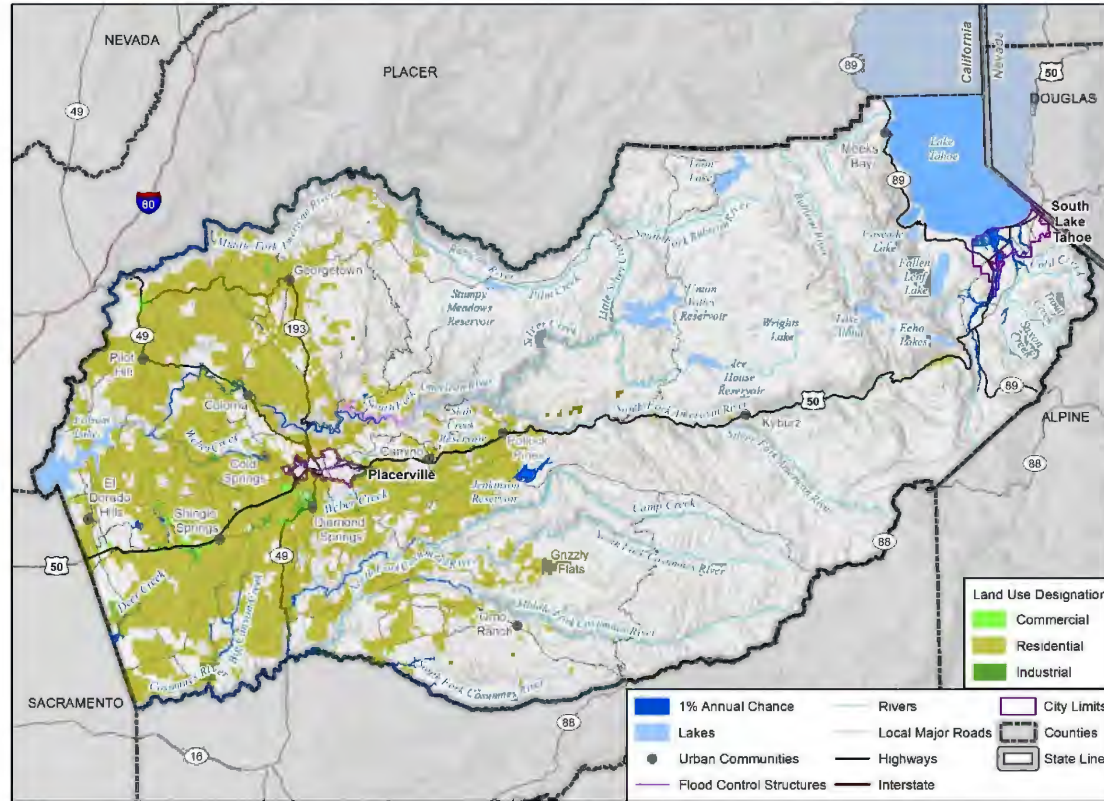


Figure HS - 12 and Figure HS - 13 provide the location and distribution of existing development in the 1% annual chance floodplains (Refer to the CVA [Appendix C] and LHMP for additional details on the specific essential public facilities within the floodplain). The existing development pattern is based 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.

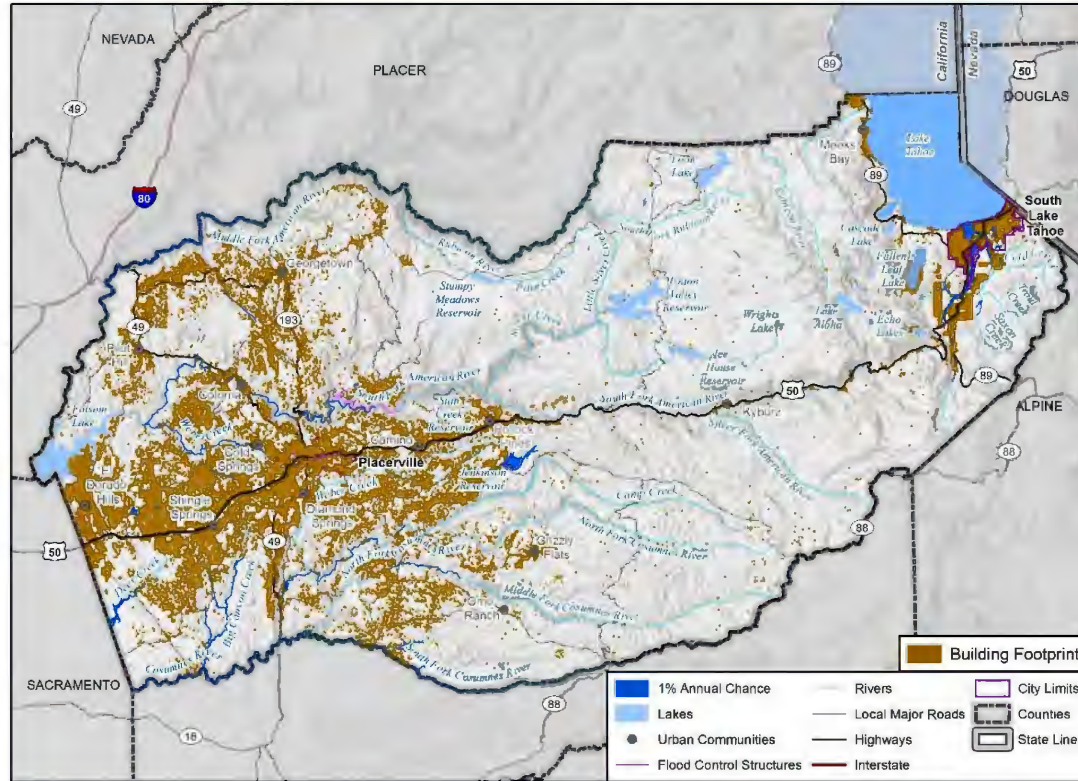
Figure HS - 12 Existing and Planned Development in relation to the 1% Annual Chance Floodplains in



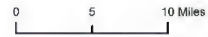
Map compiled 1/2023:
 Intended for planning purposes only.
 Data Source: El Dorado County,
 FEMA NFHL 4/3/2012
 *0.2% Annual chance floodplains are not shown due to not being able to show up at the current map scale.



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 PM2.5.. 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.

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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).¹ 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

¹ 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

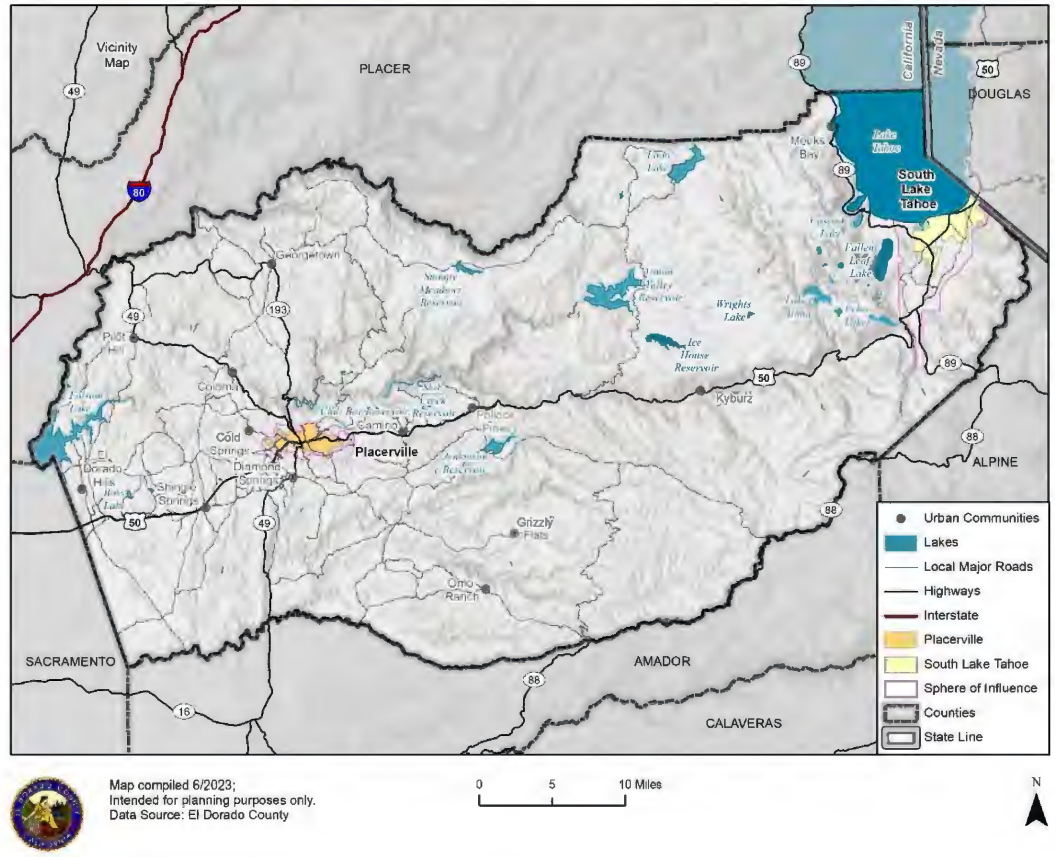
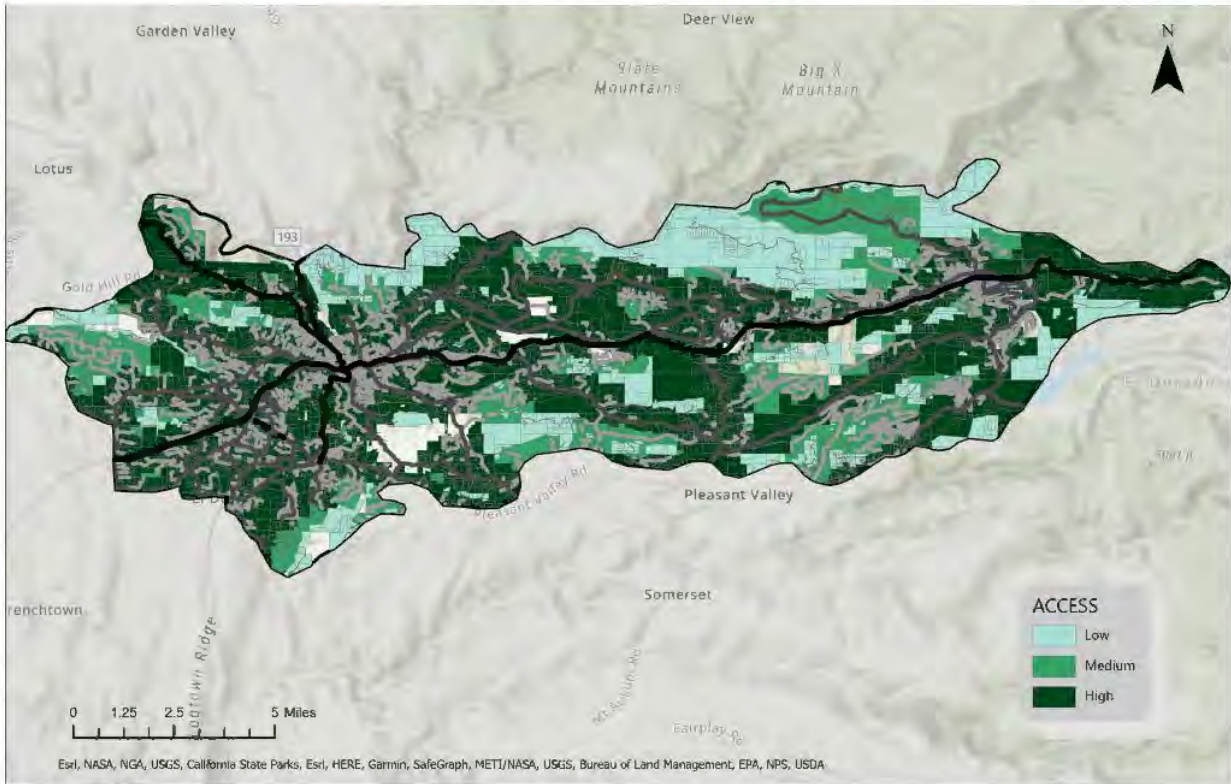


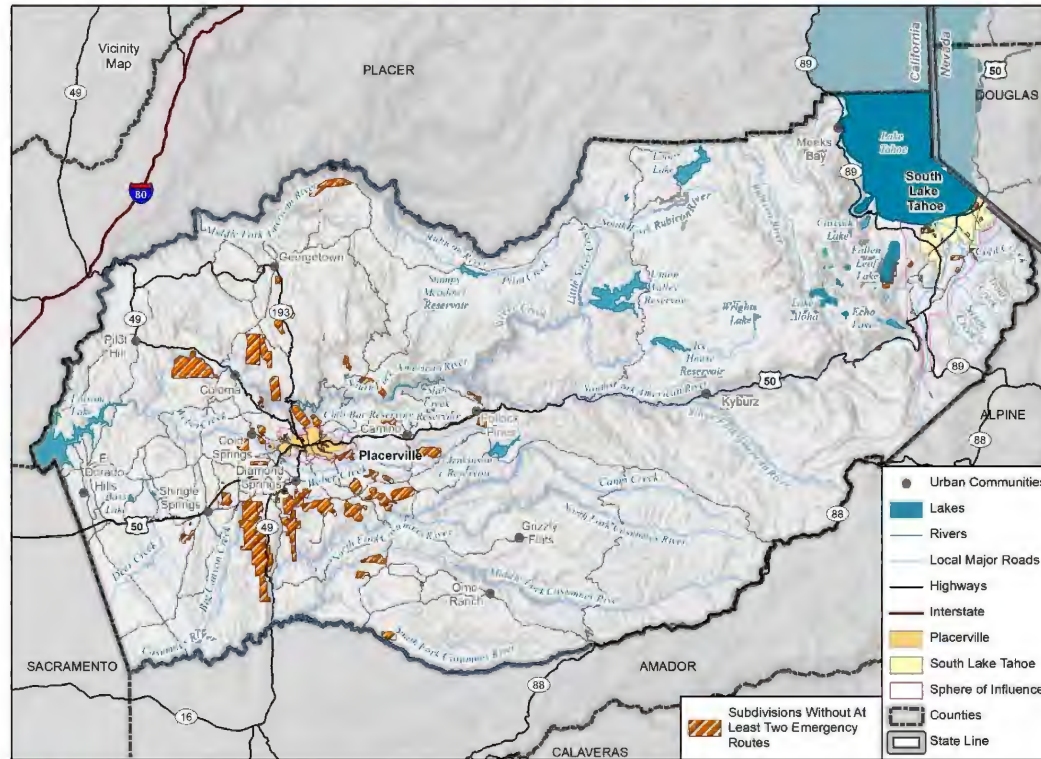


Figure HS - 15 Areas with Low, Medium, and High Accessibility Within the Greater Placerville Region



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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

0 5 10 Miles



Agriculture and Forestry Disease and Tree Mortality Hazards

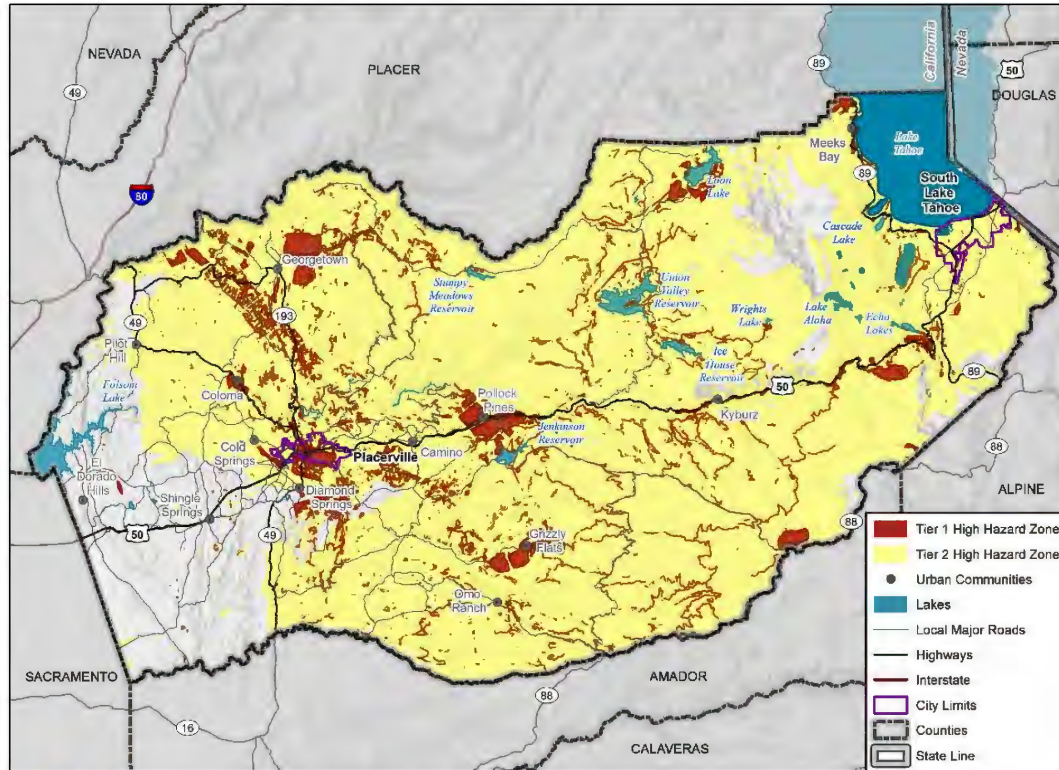
Climate change may contribute to an increase in agricultural and forestry disease and tree mortality throughout California and the County. Warmer temperatures can extend the geographic range of pests and result in longer active seasons. Long and severe droughts weaken forests, making them more susceptible 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.

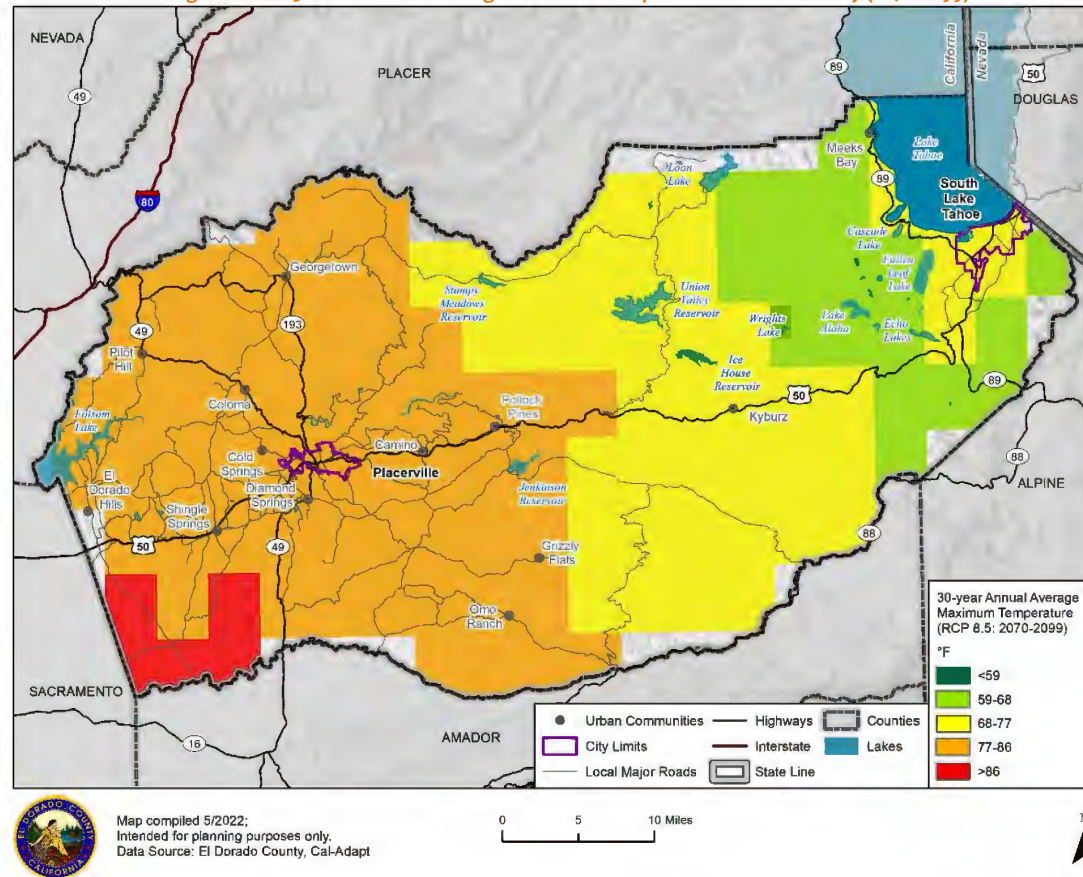
Rising temperatures can also influence the migration patterns of invasive agricultural species. Additionally, shifts in precipitation patterns and temperature can impact other disease vectors relevant to El Dorado County, such as deer mice, which serve as vectors for Hantavirus in the higher elevations. 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)



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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El Dorado County Climate Vulnerability Assessment

May 2024

Final Draft – Appendix C



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Executive Summary

Purpose of the Climate Vulnerability Assessment

In the past decade, El Dorado County (County) has experienced increased temperatures, prolonged drought and extreme levels of precipitation and severe heavy snow events, widespread flooding, landslides, and larger and more severe wildfires. Each hazard event has impacted the communities in the County differently through direct impacts to property and infrastructure and people's well-being to indirect impacts associated with public service disruptions, power outages, school closures, economic hardship due to unemployment, loss of natural resources. These climate-related hazard events are projected to become more frequent and more severe by mid-century and the end-of-the-century. The County's Climate Vulnerability Assessment (CVA) addresses how people, property, critical infrastructure, and key economic and natural assets are vulnerable to climate change. Through a common understanding of climate change and its effects on natural hazards, the County, its stakeholders, and the community can work towards how to adapt to these changing climate stressors.

Assets in the County that are highly vulnerable to climate change are based on a combination of those assets with more exposure and higher sensitivity to climate hazards and an overall lower adaptive capacity or ability to manage and recovery from exposure impacts. The CVA builds on climate change science research and publications from publicly available tools, like Cal-Adapt and California's Fourth Climate Change Assessment to local assessments to evaluate vulnerability. Through this research and the local data, climate stressors to the County's more sensitive assets, like people with increased susceptibility due to factors such as age, income levels, education, language barriers, and underlying health conditions are examined and summarized through collaborative planning process and detailed vulnerability assessment.

Organization of the Climate Vulnerability Assessment

The County's Planning and Building Department developed the CVA in coordination with a Safety Element Advisory Committee (SEAC), a wide range of stakeholders, and the community. It consists of an introduction on the purpose of a CVA, a profile of the County, the methodology followed to develop the CVA (identify exposure, analyze sensitivity and impacts, evaluate adaptive capacity, and complete vulnerability scores), and a summary of the planning process. The CVA itself is organized into four key sections:

Exposure Identification. This section examines potential changes in the frequency and severity of climate-related hazards, such as increased temperatures, precipitation variability, drought, flooding, and wildfires.

Asset Inventory. The asset inventory looks at climate risk across the County to identify specific populations and infrastructure types that are more vulnerable to climate-related hazards. These are the groups of people, places, and key infrastructure assets that are likely to experience greater exposure to climate stressors. The inventory included an analysis of 20 sensitive population groups who are likely to experience disproportionate impacts from climate change.

- Children (under 14)
- Cost-burdened households
- Ethnic minorities
- High-pollution burdened communities
- Households in mobile homes
- Households in poverty
- Isolated and rural communities
- Low-income households
- Outdoor workers
- Overcrowded households
- Persons with disabilities and access and functional needs
- Persons with limited English proficiency (linguistically isolated)
- Persons with limited accessibility (no access to transportation)
- Persons experiencing homelessness
- Persons living in single-access roads (limited roads for evacuation)
- Renters

- People with chronic health conditions
- Unemployed persons
- Seniors
- Seniors living alone

The CVA also evaluated vulnerabilities for the following key assets:

- 88,437 improved parcels and
- 1,274 critical facility and infrastructure lifelines.

Natural and cultural resources and economic drivers and other key services in the County are assessed qualitatively but evaluated specific resource categories and economic sectors.

Vulnerability Assessment. The vulnerability assessment focuses on climate equity by explaining how climate change will impact sensitive populations, property, critical facilities and infrastructure, economic sectors, and natural resource assets. This means the assessment emphasizes understanding how climate change and a lack of adaptation capacity may impact certain groups of people and certain systems differently. Through this assessment, direct impacts associated with climate-related hazards are discussed and what types of indirect impacts may occur associated with cascading hazards given the interconnectedness of our communities and the infrastructure systems.

The vulnerability assessment relies on both quantitative and qualitative methods. It highlights the vulnerable census tracts, critical facilities, and property in the County using spatial geographic information systems (GIS) tools and modelling with anecdotal stories, experiences and feedback from technical committee participants shared during work sessions, stakeholder group workshops, and public meetings.

Adaptive Capacity Assessment. The adaptive capacity assessment looks at the ability for communities in the County to manage and recover from exposure to climate-related hazards. Adaptive capacity consists of many different plans and programs from building code policies to social services for socially vulnerable populations. While adaptive capacity is a key component of the climate vulnerability process, on its own, it does not fully reduce climate-related hazards. Therefore, this section focuses on information already in place at the County-level to help communities adapt to climate change and ensure our infrastructure is more resilient to withstand the increasing stressors associated with climate-related weather events. The concept of adaptive capacity and resilience is integrated throughout the CVA to inform the Safety Element update.

Key Findings

Climate stressors are conditions or trends related to climate variability, such as precipitation variability or warming temperatures that can exacerbate natural hazards. **Table ES-1** summarizes the 14 climate stressors and the key findings on the effects of the climate stressors in the County. The effects associated with cascading impacts that can link together and multiply hazards is also summarized.

Table ES-1 Primary Climate Stressors

Hazard	Key Findings
Increased Temperatures	<ul style="list-style-type: none"> • Historically, the highest 30-year annual average maximum temperature in the County was 66.9 °F and the projected 30-year annual average maximum temperature could reach 72.1 °F by 2050 and 83.5 °F by 2100. • The number of extreme heat days (>92.4 °F) is projected to rise by 26 days by 2050 and 54 days by 2100. • The number of warm nights (>60.4 °F) is projected to rise by 23 days by 2050 and 53 days by 2100. • The greatest increases in temperature will occur along the West Slope of the

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Hazard	Key Findings
	<p>County and will jeopardize the health of sensitive populations with existing respiratory conditions.</p> <ul style="list-style-type: none"> Critical facilities and infrastructure will be vulnerable to increasing temperatures, particularly the energy grid during heat waves when there is an increased demand associated with cooling loads.
Precipitation Variability	<ul style="list-style-type: none"> Precipitation trends are expected to swing toward extreme values from both directions (drought and deluge). Maximum 1-day precipitation could hit 5.5 inches by mid-century. Maximum length of dry spell could reach more than 130 days in the West Slope by the end of the century. Precipitation will change over time with an overall concentration of events over a shorter period that will increase the likelihood of flooding.
Reduced Snowpack	<ul style="list-style-type: none"> The Sierra Nevada snowpack is critical for water supply and acts as a natural reservoir. Increasing temperatures cause earlier snowmelt, accelerates the start of the wildfire season, and results in negative impacts on water-dependent sectors and natural resources. Snowpack is predicted to decrease throughout the century and rising temperatures will raise the snow line – the average lowest elevation at which snow falls. Changes in snowpack can affect agriculture, winter recreation, and tourism in some areas, as well as hydropower production.
Increased Wildfire Variability	<ul style="list-style-type: none"> The annual average area burned is expected to increase by the end of the century. The number of days where KDBI values exceed 600 (days with extreme wildfire susceptibility) is expected to increase by 51 days by the end of the century. Projected changes include large increases in the area burned by wildfire and increased frequency of large fires. The 2020 fire season broke records, as five of the State’s six largest wildfires burned at the same time throughout California, destroying homes, forcing people to evacuate, and exposing millions of people to poor air quality. In 2021, the County was impacted by the Caldor Fire and in 2022, the Mosquito Fire.

Table ES-2 summarizes the key finding of secondary climate stressors in the County.

Table ES-2 Secondary Climate Stressors

Hazard	Key Findings
Agricultural and Forest Disease and Tree Mortality	<ul style="list-style-type: none"> Agricultural pests thrive in warm weather. Tree mortality rates between 1983 and 2004 nearly doubled while the water deficit increased. Bark beetle infestations, like the one witnessed during the 2012-2016 drought, will become more frequent. Increased stress on plants from warmer weather and drier soil increases plant susceptibility to disease and mortality. As of December 2022, total tree mortality increased across California’s

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Hazard	Key Findings
	<p>forested areas and in the County, approximately 78,000 acres were impacted by tree mortality with an estimated 1,400,000 dead trees.</p> <ul style="list-style-type: none"> Declining forest health can result in environmental, social, and economic impacts, such as increased wildfire risk from more dead and dry fuel accumulation and the loss of critical wildlife habitat, threats to public safety and infrastructure from falling trees, and lost revenue from tourism and recreation as facilities are closed.
Avalanche	<ul style="list-style-type: none"> Since 1950, there have been 18 avalanches that resulted in 9 deaths and 12 injuries in the County. During the 2022-2023 season, there were five avalanche incidents in El Dorado County; none resulted in deaths or injuries. As winters become shorter, the potential for weak snow accumulations at the bottom of the snowpack increases, increasing the likelihood of an avalanche. More extreme precipitation events that deposit large amounts of snow in a short period may also increase the potential for recurrent large avalanches.
Drought and Water Supply Changes	<ul style="list-style-type: none"> The primary source of water in the County is snowpack runoff, which is projected to decrease by 85% by the end of the century. Some of the most severe droughts coincided with years of abnormally low snowpack accumulation during the winter months, particularly in combination with record warm years like those in 2014 and 2015. This led to one of the most severe droughts in California and the County from 2012 to 2016. The County lacks a robust storage of groundwater resources. Seasonal redistribution of runoff results in more runoff earlier in the season, and at increased magnitudes, resulting in an increased frequency of flooding.
Extreme Heat	<ul style="list-style-type: none"> Heat ranks among the deadliest of all climate-related hazards; the County is expected to experience more frequent, more intense, and longer heat waves by mid-century. Heat waves lead to illness and death, particularly among the elderly, the young, and other vulnerable populations. Extreme heat damages crops and kills livestock.
Flooding	<ul style="list-style-type: none"> Flooding is one of the most serious climate-related hazards, and extreme precipitation due to atmospheric river events often results in localized rain on snow flooding across the County. Current infrastructure is not designed to capture the increased runoff associated with climate change. Loss of snowpack will lead to increased winter flows and flooding, and reductions in warm season flows. Snow water runoff to reservoirs is expected to occur earlier in the season and at an increased magnitude that will likely result in flooding.
Human Health Hazards	<ul style="list-style-type: none"> Climate change is likely to contribute to the next pandemic through the emergence of new pathogens like viruses. Warmer temperatures in the spring and later into the fall months will enable animals to be more active for a longer period, which increases the

Hazard	Key Findings
	<p>time a disease can be transmitted.</p> <ul style="list-style-type: none"> Bacteria, viruses, parasites, and other organisms that cause disease and illness are also more likely to persist in a warmer climate.
High Wind	<ul style="list-style-type: none"> High winds can cause significant property, infrastructure, and crop damage related to downed trees, damaged power lines, and agricultural loss. High winds can threaten public safety and have adverse economic impacts from business closures and power losses associated with Public Safety Power Shutoffs (PSPS). High wind events that are combined with other natural hazards, such as hail, can disrupt daily activities, cause damage to buildings and structures, and increase the potential for other hazards.
Landslides and Debris Flow	<ul style="list-style-type: none"> Historical and potential debris flow areas include Highway 50 east of Pollock Pines and State Route 49 north of Cool. Precipitation and wildfire events and a loss of vegetation caused by climate change can lead to more flooding and runoff events, resulting in more landslide events. Slope instability and debris flow hazards are found in eastern portion of the County.
Severe Weather: Thunderstorms, Heavy Rain, Lightning, and Hail	<ul style="list-style-type: none"> 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, and downed power lines.
Severe Weather: Winter Storms and Heavy Snow	<ul style="list-style-type: none"> Annual average maximum temperature for the County is expected to increase by 5.4 °F to 8.9 °F by the end-of-century, resulting in less precipitation falling in the form of ice or snow, but increased precipitation falling in the form of rain. Increased temperatures and altered precipitation patterns are likely to lead to an increase in rain-on-snow flooding. The rapidly melting snow combined with heavy rainfall can overwhelm both natural and manmade drainage systems, causing overflow, localized flooding, and property destruction. If the snow load exceeds the weight the building was designed to withstand, the roof or the entire structure can fail. Increased snow loads are exacerbated by higher moisture content in the snow that increases the weight of the snow on structures.
Cascading Impacts	<ul style="list-style-type: none"> The increasing interdependence of systems of modern life, on both a local and global scale, can cause a chain of impacts beyond the scope of the original event. Subsequent impacts have the capacity to cause more destruction than the original hazard event. Cascading impacts occurred in the County following the 2021 Caldor Fire; extreme heat, a lack of precipitation, and dry fuels in the Eldorado National Forest resulted in a fire that became one of the largest in State history, which resulted in structure losses, road closures, downed trees, and lost revenue.



Table ES-3 summarizes the key findings of the vulnerability assessment on property, critical facilities, and sensitive populations, natural and cultural resources, and economic services in the County.

Table ES-3 Key Vulnerability Assessment Findings

Assessment	Findings
Property	<ul style="list-style-type: none"> • A total of 2,042 parcels, worth over \$485 million, along with 4,415 people, are located within the 1% annual chance floodplains. • A total of 83 parcels, worth over \$15.7 million, along with 206 people, are located within the 0.2% annual chance floodplains. • 57,430 parcels are exposed to landslide hazard areas, worth almost \$20 billion of property improvements. • 133,652 people are in landslide-prone areas, but direct impacts to people are expected to be minimal as it is unlikely that landslides will occur without warning. • Almost \$22 billion worth of property and approximately 64,892 parcels are exposed to wildfire risk countywide. Most of these buildings are in high to very high wildfire threat areas. • Residential parcels constitute most of the number of parcels and the projected losses. • 150,955 people reside in areas that have moderate, high, and very high fire threat; this means that 78% of the County is comprised of areas that have some level of wildfire threat.
Sensitive Populations	<ul style="list-style-type: none"> • Of the 20 sensitive populations assessed, 18 had high or severe vulnerability (V4 or V5) for one climate-related hazard. • People are generally the most vulnerable to extreme heat, human health hazards, wildfire, and severe weather. • The most vulnerable sensitive populations are low-income households, seniors, children, and outdoor workers. • Sensitive populations are concentrated in 16 of the 42 census tracts in the County with the highest proportions located in Pollock Pines, Grizzly Flats, Omo Ranch, Diamond Springs, Kyburz, north and south of Placerville, and within the Al Tahoe, Bijou, and Stateline neighborhoods in South Lake Tahoe.
Critical Facilities	<ul style="list-style-type: none"> • The most vulnerable critical facilities and infrastructure in the County are water and electrical infrastructure, such as water treatment and storage facilities, water conveyance systems, electrical infrastructure, sewer lifts, and telecommunication facilities. • The County's transportation infrastructure, particularly State highways and County roads are particularly vulnerable to flood, landslide, and wildfire hazards. • There is only one essential business within the 1% annual chance floodplains and no essential businesses in the 0.2% annual chance floodplains. • There are 39 essential services exposed to potential landslide hazards.



Assessment	Findings
	<ul style="list-style-type: none"> No essential business facilities are in any wildfire threat zones; however, 35 essential services are located in areas that have some level of wildfire threat. Based on wildfire hazard risk by modeled flame length within 100 feet of critical facilities in the County, 11 of the 258 essential services facilities are exposed to high flame length hazards, 108 of the 698 infrastructure at risk facilities are exposed to high flame length hazards, and 10 of the 315 population at risk facilities are exposed to high flame length hazards. Most critical facilities in the County that have a moderate or high hazard (flame lengths greater than 4 feet) are located on federal and private non-industrial lands.
Natural and Cultural Resources	<ul style="list-style-type: none"> Water resources are vulnerable to increased temperatures and precipitation variability if changes alter the ecosystem and the native plant composition. Extreme heat can result in harmful algal blooms in public parks and open spaces that could in turn impact public health. Vegetation communities are vulnerable to extreme heat, drought, pest infestations like bark beetle, and wildfire and often replaced by new communities following hazards events, like wildfires. State and County parks and open space facilities and campgrounds can be damaged and inundated by flooding, which would be exacerbated by more intense storms, further impacting regional recreation opportunities in the County. Entire historic towns and districts can be lost during catastrophic events like wildfires. The Shingle Springs Band of Miwok Indians and the Washoe Tribe of Nevada and California traditional practices and social systems involved seasonal movements around the County for hunting and gathering. Climate change may affect these Tribe's cultural heritage, in addition to culturally and historically significant buildings, resources, places, practices, properties, districts, and other non-tangible values.
Economic Services	<ul style="list-style-type: none"> Drought impacts can be extensive on the economy depending on the circumstances during and after a severe drought event. If water resources are limited, effects would be more severe for industries that rely on large amounts of water like the agriculture sector The construction industry is dependent on raw materials and skilled labor, making them vulnerable to hazards that may affect the availability of lumber or the workers who turn the raw materials into products. Government employment is dependent upon revenue from taxes, and a climate-hazard that decreases tourism, forces people to relocate, or causes a work shortage, will affect the ability of the government to continue normal operations. Leisure and hospitality businesses will be affected by climate-related



Assessment	Findings
	<p>hazards because people will not be able to easily access establishments, whether it is a result of road washout or pandemic protocols.</p> <ul style="list-style-type: none"> • Tourism opportunities like whitewater rafting, are dependent on specific environmental conditions and easily interrupted by climate-hazards like poor air quality caused by nearby wildfires; these conditions may dissuade tourists from doing outdoor recreational activities.

Of the 14 climate stressors evaluated in the CVA, agricultural pests and disease and tree mortality, drought, extreme heat, flooding, severe winter weather, and wildfires resulted in the highest vulnerabilities. The County also has existing adaptive capacity in place to address these hazards, including forestry health programs; water management and drought contingency plans; flood ordinances; and proposed, ongoing, and completed fuels reduction projects; and vegetation and defensible space ordinances. The Safety Element update process will provide the County an opportunity to move forward with the revised and new set of goals and policies focused on adaptation to address these issues and enhance the County’s resilience to climate change.

Table ES-3 summarizes the key findings of the County’s adaptive capacity assessment.

Table ES-4 Key Adaptive Capacity Assessment Findings

Assessment	Findings
Community Resilience Score	<ul style="list-style-type: none"> • The County is rated as “relatively high” based on FEMA’s National Risk Index (NRI) Community Resilience rating. This means that the County have a relatively high ability to prepare for anticipated natural hazards, changing climate conditions, and ability to withstand and recover rapidly from disruptions when compared to the rest of the United States.
Plans and Programs	<ul style="list-style-type: none"> • The County has a number of regulatory plans and programs in place based on existing planning and land use management tools used to protect public health and safety. These include, but are not limited to the General Plan, Zoning Ordinance, Floodplain Ordinance, other ordinances (e.g., Vegetation Management and Defensible Space Ordinance), Building Code, Local Emergency Operation Plan (EOP), and Local Hazard Mitigation Plan (LHMP).
Administrative and Technical Capacity	<ul style="list-style-type: none"> • Administrative and technical capacity is defined as the level of County personnel in place and working on activities related to public health and safety; disaster prevention, response, and recovery emergency preparedness; and long-range planning. The County has numerous personnel resources that support adaptive capacity, including planning, engineering, emergency managers, and building official staff. There are also 12 fire districts in the County and 10 that have active Community Wildfire Protection Plans (CWPPs).
Fiscal Capacity	<ul style="list-style-type: none"> • There are numerous federal fiscal capacity tools, resources, and grants opportunities the County could use to help fund climate adaptation, hazard mitigation, and flood management activities. There are also a

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Assessment	Findings
Outreach and Organizational Capacity	range of state grant opportunities available.
	<ul style="list-style-type: none"> The County has various organizational and collaborative partnership opportunities that enhance education, outreach, and engagement related to climate change, wildfire safety, and neighborhood planning. These include the Neighborhood Radio Watch Groups, Fire Safe Councils, and Firewise USA® programs.
	<ul style="list-style-type: none"> The Sierra Business Council (SBC) partnered with the Sierra Institute for Community and Environment and conducted workshops in 2021 to rate community capacity. Based on the SBC's CVA, the County has a Climate Hazard Risk Score of 6.48/10 and found that communities on the western side of the County had higher capacity scores compared to the eastern side of the County, but overall, the County has a medium capacity score of 3 out of 5 in responding to climate stressors. The American River Canyon, Cedar Grove, Grizzly Flats/Omo, Mosquito/Swansboro, Pollock, Volcanoville/Quinette, and Outingdale/Somerset communities ranked as more vulnerable to climate change given lower capacity scores.
	<ul style="list-style-type: none"> The key takeaways from over 900 public survey responses received on the CVA included the fact that respondents were most interested in climate adaptation strategies focused on wildfire protection.
	<ul style="list-style-type: none"> The public survey showed that the community relies on the County to implement community-scale adaptation strategies and projects related to fuels reduction, evacuation planning, and snow removal and road maintenance.
<ul style="list-style-type: none"> The public survey input also shows that there are limited opportunities and financial incentives for homeowners, renters, and individual households to make improvements to their homes and to adapt at an individual scale besides mandatory defensible space maintenance and basic emergency planning. 	

1. Introduction



The County has prepared this CVA to support the unincorporated County community in preparing for, responding to, and recovering from hazard events intensified by climate change. The CVA provides a framework for understanding climate change science and modelling forecasts and for the consideration of incorporating adaptation and resilience goals and policies to include in the County's General Plan Noise, Public Health, and Safety Element (Safety Element). The CVA sets this framework by identifying climate stressors and the County's population and asset vulnerabilities that face the greatest risk and assessing areas for building adaptive capacity to ensure the community can withstand these vulnerabilities in the future. The County has prepared the CVA in accordance with California Government Code Section 65302(g)(4), which mandate that the County's Safety Element addresses climate change vulnerabilities and assesses a range of climate adaptation and resilience goals and projects. The CVA also presents the regulatory framework and methods used to prepare the vulnerability assessment, the climate-related hazards affecting the County's population and assets, a summary of key findings, and policy considerations for the Safety Element update that will build resiliency through the unincorporated County.

A. Climate Change Primer – What is Climate Change?

Climate change refers to a long-term change in average meteorological conditions due to natural internal processes and persistent increases in greenhouse gas (GHG) emissions that trap heat near the Earth's surface and change the composition of the atmosphere. These changes are attributed directly and indirectly to human activity, in addition to natural climate variability observed over comparable time periods. Climate change is attributable to human activities in how it alters the atmospheric composition, whereas climate variability is attributable to natural causes (UNFCCC 2018).

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Sensitive Populations

Sensitive populations, also called socially vulnerable populations or frontline communities, are groups of people who experience heightened risk and increased sensitivity to climate change, and who have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts.

These disproportionate effects are caused and exacerbated factors including:

- Inequalities in access to support such as economic opportunity, social capital, or social services.
- Political and economic exclusion based on institutionalized bias.
- Physical barriers including age, health, and infrastructure connectivity.
- These groups may include but are not limited to the young and elderly, those with mobility challenges, individuals with limited English proficiency, immigrants and refugees, LGBTQ individuals, women, minorities, people of color, or combinations of these groups.

- CA Office of Planning and Research

According to the 2020 California Adaptation Planning Guide (APG), climate change is already impacting California and will continue to affect the State for the foreseeable future. The average temperature in most areas of California is already 1°F higher than historical levels, and some areas have seen average increases of over 2°F (Bedsworth et al 2018). The observed changes in the warming of the climate system since the 1950s are unprecedented (IPCC 2014). The primary effects of climate change include increased temperatures, reduced snowpack, increased wildfire severity, and altered precipitation patterns. Impacts from these primary climate stressors will also result in more frequent and longer droughts, more frequent extreme heat days with higher temperatures, increased flooding earlier in spring with a decrease in water supply as the year progresses, more frequent and extreme severe weather events, an increase in the total acres burned annually, increases in both agricultural and forestry disease, an increased risk of avalanche, which will decrease as more snow falls as rain, and increases in landslides and debris flow due to increases in wildfire and changes in precipitation patterns (Bedsworth et al 2018).

B. What is a Climate Vulnerability Assessment?

A CVA identifies the risks that climate change poses to the County and the geographic areas at risk from climate change impacts, based on the guidance found within Senate Bill (SB) 379 and other relevant vulnerability assessment tools and guides. A CVA is an emerging tool that can be used as an initial step in the climate adaptation planning process. The CVA will identify how the County is vulnerable to primary and secondary climate stressors that are the most likely to affect the County's sensitive populations, property, and community assets. The CVA will also help inform the development of new and revised goals and policies in the Safety Element that respond to these climate changes and focus on climate adaptation consistent with California Government Code §65302(g)(4).

Climate adaptation is the process of making changes in response to current or future conditions, usually to reduce harm or take advantage of new opportunities. In summary, a CVA identifies how climate change may affect the County by analyzing potential impacts and adaptive capacity to determine the vulnerability of populations, natural resources, and community assets.

C. Purpose of the Climate Vulnerability Assessment

The County has prepared this CVA as an important step in improving resiliency in the region by analyzing how climate change may affect people, property, important community assets, and critical facilities. The CVA emphasizes equity by examining impacts to sensitive populations, as well as the lifelines and infrastructure necessary for ensuring the continuity of essential services during and after a major hazard event.

Based on the results of the vulnerability assessment, a set of adaptation strategies can be developed to support the County's Safety

Element update. These strategies outline how the County will address the potential for harm identified in the CVA, given the community’s resources, goals, values, needs, and regional context.

The CVA will play a role in determining the priorities for public health preparedness, response planning, and investments in various aspects of community planning and infrastructure protection. It will shape priorities for upgrading buildings, protecting critical facilities, making changes to zoning and building codes, and utilizing regulatory tools.

D. Regulatory Framework

The County Safety Element update will include new and expanded goals, policies, and implementation programs covering wildfire and flood risk, climate-related hazards, and evacuation planning based on the results of the CVA, updates to the County’s Emergency Operations Plan (EOP), and findings from the Greater Placerville Emergency Preparedness and Evacuation Plan. The Safety Element update will address several revisions to the California Government Code Section 65302 based on State legislation summarized in **Table 1-1**.

Table 1-1 State Legislative Requirements for a General Plan Safety Element

Legislative Bill	Legislative Requirements
AB 2140	Links Local Hazard Mitigation Plans (LHMPs) and Safety Elements by encouraging the adoption of LHMPs into Safety Elements in return for an increased cost share of State disaster assistance funding (2006).
SB 379	Requires inclusion of a CVA and integration of adaptation strategies in the Safety Element and encourages climate change discussion in LHMP. Assessment must be complete by January 1, 2017, or after the adoption of the LHMP. These requirements are included in Government Code Section 65302(g)(4) (2015).
SB 1241	Requires Safety Element to address wildfire risks in State Responsibility Areas (SRAs) and very high Fire Hazard Severity Zones (FHSZs) pursuant to Government Code Section 65302(g)(3), develop policies to mitigate wildfire risk, and includes review by the State Board of Forestry and Fire Protection (2012).
SB 1000	Requires inclusion of environmental justice and equity goals and policies in the Safety Element – “Climate Equity”. Identification of Disadvantaged Communities (DACs) and policies to reduce health risks, promote engagement, and address needs pursuant to Government Code Section 65302.10 (2016).
SB 1035	Addresses climate adaptation strategies in Safety Element and an update of climate data at least every 8 years (2018).
AB 747 SB 99	AB 747 requires Safety Element update to identify evacuation routes and evaluate their capacity, safety, and viability under a range of emergency scenarios. Requirements are included in Government Code Section 65302.15 related to land use (2019). SB 99 requires Safety Element to identify residential developments in hazard areas that do not have at least two emergency evacuation routes (2019).

AB 2140 – Plan Integration (2006)

Assembly Bill (AB) 2140 ties the related legislation together by linking LHMPs and General Plan Safety Elements and encouraging the adoption of LHMPs into General Plan Safety Elements. The California Disaster Assistance Act (CDAA) limits the state share for any eligible project to no more than 75 percent of total state-eligible costs. However, if a local agency has adopted an LHMP following the federal Disaster Mitigation Act of 2000 as part of the General Plan Safety Element, the CDAA may then provide for a state share of local costs that exceed 75 percent of total state-eligible costs.

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SB 1241 – Fire Hazard Safety (2012)

SB 1241 mandates Safety Elements to be revised upon the next update of the Housing Element to address wildfire risk by mapping wildfire risk in SRAs and very high FHSZs. The revision must include information about wildfire hazards and develop goals, objectives, policies, and feasible implementation programs to mitigate wildfire risk and protect the community from the unreasonable risk of wildfire pursuant to Government Code Sections 65302(g)(3), 65302.5, and 66474.02.

SB 379 – Climate Change Adaptation (2015)

SB 379 requires General Plan Safety Elements to be reviewed and updated to include climate adaptation and resiliency strategies. The review and update must consist of the following components:

- Inclusion of CVA that identifies the risks climate change poses to the local jurisdiction and the geographic areas at risk from climate change;
- A set of adaptation and resilience goals, objectives, and policies based on the information specified in the vulnerability assessment; and
- Feasible implementation measures designed to carry out the goals, objectives, and policies identified in the adaptation objectives. This will support the State’s overall adaptation strategy, “Safeguarding California,” by ensuring counties and cities are providing for the safety of their communities and planning for adaptation to climate change impacts.

Key Terms

Resiliency is the ability of a community to withstand, recover, and learn from past disasters and to strengthen future response and recovery efforts.

Adaptation is the process of making changes in response to current and future conditions to reduce harm and take advantage of new opportunities.

SB 1000 (2016)

SB 1000 requires the inclusion of environmental justice and equity goals and policies in the Safety Element if there are DACs identified in the County. Tools used to identify DACs in California include the California Department of Water Resources (DWR) DAC Mapping Tool and the California Office of Environmental Health Hazard Assessment (OEHHA) CalEnviroScreen 4.0 Mapping Tool. The DWR defines a DAC as a community with an annual median household income (MHI) that is less than 80% of the State-wide annual MHI. Those census tracts with an annual MHI that is less than 60% of the State-wide annual MHI are considered “Severely Disadvantaged Communities.” The CalEnviroScreen 4.0 scores are calculated by two groups of indicators, pollution burden and population characteristics, which account for sensitive populations and socioeconomic factors.

At a national scale, the Centers for Disease Control and Prevention (CDC) Agency for Toxic Substances and Disease Registry (ATSDR) developed a Social Vulnerability Index (SoVI) to portray communities’ capacities to prepare for and respond to natural and man-made disasters. This Social Vulnerability Index (SVI) index combines the following four main themes of vulnerability: socioeconomic status, household composition and disability, minority status and language, and housing and transportation characteristics. This tool has been used to identify socially vulnerable and sensitive populations more broadly in communities.

Similarly, the Federal Emergency Management Agency (FEMA) developed the National Risk Index (NRI), into which it incorporated the University of South Carolina’s SVI, to address social vulnerability. The NRI dataset and online tool illustrates communities most at risk for 18 natural hazards. It was designed and built by FEMA in close collaboration with various stakeholders and partners, by considering the likelihood and consequences of natural hazards with social factors and resilience capabilities. NRI SVI scores and ratings represent the relative level of a community’s social vulnerability compared to other communities at the same geographic level.

The 2022 Sierra Nevada Regional Climate Vulnerability Assessment (Regional CVA) was also used as a

reference to understand DACs in the Sierra Nevada. The Regional CVA states that more than half of the people that live within the Sierra Nevada region, which includes most of the County, are underserved or disadvantaged. Groups most vulnerable to climate impacts have been historically marginalized, underserved, and underrepresented. These groups include people of color, California Native American tribes, individuals in poverty, and the disabled community. Socially vulnerable communities assessed in the Regional CVA were identified based on communities with lower adaptive capacity. Taken together, these federal, state, and regional resources will be used to inform the development of environmental justice and equity goals and policies related to public health and safety for inclusion in the Safety Element update.

AB 747/SB 99 – Evacuation Route Planning (2019)

AB 747 requires Safety Elements to identify evacuation routes and evaluate their capacity, safety, and viability under a range of emergency scenarios. SB 99 requires that upon the next revision of the Housing Element on or after January 1, 2020, the Safety Element must identify residential developments in any hazard area that do not have at least two emergency evacuation routes.

E. Organization of the CVA

The sections that comprise the County's CVA include:

Executive Summary – This section includes the executive summary of the CVA.

Introduction – This section explains the purpose of the CVA, which topics are addressed in the assessment, and the key state regulatory requirements driving the need to address climate change and develop a set of adaptation strategies.

Methodology – This section describes how the vulnerability assessment was developed based on the California APG, which local governments can follow to identify and reduce climate change hazards. This consists of a four-step process, including identifying exposure, analyzing sensitivity and potential impacts, evaluating adaptive capacity, and conducting vulnerability scoring. The best publicly available science and data from global, national, state, and local sources used to support impact and vulnerability conclusions is also briefly summarized.

County of El Dorado Profile – This section profiles the geography, population trends, demographics, and economic conditions of the County.

Planning Process and Outreach and Engagement – This section describes the planning process, the SEAC members, stakeholder groups, and the planning sessions, workshops, and meetings held as part of the planning process. It also documents the outreach and engagement efforts.

Exposure Identification – This section covers the climate stressors within the region and the four climate scenarios that reflect different levels of global GHG emissions and atmospheric GHG concentrations. The section describes four primary climate stressors, multiple secondary climate stressors, and the cascading effects that may happen in the County.

County Population and Assets – This section identifies and describes the population and assets categories evaluated in the CVA. These assets are focused on socially vulnerable communities, followed by property, critical facilities and infrastructure, environmental resources, and economic drivers. Data limitations are also summarized.

Vulnerability Assessment – The Vulnerability Assessment covers all climate-related hazards and considers impacts on the following assets: sensitive populations, property, critical facilities and infrastructure, environment, economic conditions, and the continuity of operations and continued delivery of services. The quantitative and spatial analysis methods are described, in addition to the qualitative analysis used to address asset impacts not easily understood using data and mapping resources.

Evaluation of Adaptation Capacity – Based on the findings from the Vulnerability Assessment, this section will summarize the County's adaptive capacity based on existing plans, programs, tools, projects, and partnerships in place that are related to climate adaptation, hazard mitigation, and emergency preparedness, response, and recovery. This section will also summarize key takeaways from the bi-lingual



public survey circulated for the CVA.

Key Findings & Vulnerability Scores – This section will provide a detailed analysis of the assets and sensitive populations at most risk from climate-related hazards.

Acronyms and Abbreviations – This section defines acronyms and abbreviations used in the document.

Acknowledgements – This section highlights key contributors that supported the development of the CVA.

References – This section lists the sources cited in the CVA.

2. Methodology

A. Adaptation Planning Guide Methodology

The California APG provides guidance to support communities in addressing consequences of climate change by establishing a planning framework that governments can follow for adaptation and resiliency planning projects. The APG is designed to be flexible and guide communities in adaptation planning in a way that best suits their needs, whether it is taking a preliminary broader look at adaptation issues or conducting a detailed formal planning process. As illustrated in **Figure 2-1**, the APG presents a step-by-step, four-phase process that communities may use to plan for climate change.



Figure 2-1 California APG Planning Process



Climate adaptation planning allows communities to identify ways that they might be harmed by future climate conditions, including those unique to their communities, and to prepare for these conditions before they happen. Climate adaptation planning can be conducted on its own or integrated with other planning efforts across programs, departments, and sectors to develop a comprehensive and connected adaptation system. Climate adaptation activities can also have several benefits, such as increased public health and safety, reduced GHG emissions, greater economic stability, reduced cost savings of healthcare and infrastructure, increased resiliency of housing, improved air and water quality, and better stormwater management. The desired outcome is a locally focused, easy-to-follow process that summarizes vulnerabilities in a community as well as strategies and implementation actions that can be integrated into general plans, LHMPs, and other planning efforts.

The four phases of the adaptation planning process the County followed to develop the CVA are summarized below.

Phase 1: Explore, Define, and Initiate: This phase includes scoping the process for the development of the CVA, such as identifying the potential climate change effects and important physical, social, and natural assets in the unincorporated County. It identifies key stakeholders in government and throughout the community. The four steps in Phase 1 are described below.

Step 1.1 Confirm Motivation and Scope of the Process and Outcome

Preliminary steps conducted as part of this process included defining the motivation behind the development of the CVA. The County is conducting this assessment to comply with State legislative requirements related to climate change adaptation; respond to recent natural disaster events and ongoing climate-related stressors, such as wildfires, severe winter storms, drought, and flooding; and to address community concerns. Initial steps also involve defining the desired outcomes of the process, which is the comprehensive update of the General Plan Safety Element.

California Government Code Section 65302(g)(4) allows for any plan or document containing information on climate vulnerabilities and a set of adaptation strategies to meet the state's requirements. The general plan, climate action and adaptation plans, or LHMP are the most used planning mechanisms to ensure that climate adaptation is addressed in an integrated way.

Adaptation involves improving the community in the face of climate change and adjusting in response to new information and opportunities. Resiliency refers to being prepared for current and future hazard conditions in a way that allows communities to recover more quickly and rebuild in a way that accounts for a changing climate. In other words, the County will continue to work toward resiliency through holistic approaches that account for future needs, so that all members of the community are able to prepare for a recovery from climate impacts. The County can also accomplish this by ensuring the community is connected to a system of assets that can withstand climate stressors.

As part of this effort, the County participated in early visioning exercises during work sessions and workshops, using polling questions to help draft a vision statement shared with stakeholders and members of the public throughout the planning process for ongoing input and feedback. Additional steps during the scoping process set the geographic planning area, which is coterminous with the County's jurisdictional boundaries. The County also set the timeframe for the planning process, which occurred over a two-year period that relied on staff commitment, stakeholder engagement, and state agency review.

The timeframe for the Safety Element update also consists of an approximate 30- to 50-year timeframe that incorporates climate projections used to inform policies through mid-century (2050) and to the end-of-the-century (2100).

Step 1.2 Assemble Project Teams and Resources

The County assembled three main project teams, which included a combination of staff, subject-matter experts, and community representatives, to encourage community involvement: the internal County team, SEAC, and a stakeholder group.

California has developed an integrated set of policies and tools to support communities like El Dorado County in addressing the consequence of climate change:

- California Adaptation Planning Guide
- Safeguarding California Plan: California's Climate Adaptation Strategy
- California's Climate Change Assessment
- Cal-Adapt
- State of California General Plan Guidelines
- Adaptation Clearinghouse
- FEMA Local Mitigation Planning Handbook
- State Hazard Mitigation Plan

Internal County Team: This team consists of Planning and Building Department staff, who provide technical resources, along with an in-depth understanding of long-range planning, climate adaptation, and environmental compliance.

SEAC: The SEAC consists of subject-matter experts in wildfire risk, drought planning, transportation and evacuation planning, environmental health, and forestry management from an array of different County departments, outside agencies, and districts. County participants represent the El Dorado County Chief Administrative Office, Office of Wildfire Preparedness and Resilience, El Dorado County Transportation Commission (EDCTC), Department of Transportation, Sheriff's Office, El Dorado County Emergency Medical Services, and El Dorado Emergency Preparedness and Response. State participants represent the California Department of Forestry and Fire Protection (CAL FIRE). Other participants represent El Dorado County Water Agency (EDWA), U.S. Forest Service, El Dorado County Fire Prevention Officer's Association (FPOA), and 10 local fire protection districts.

Stakeholder Group: The County invited a diverse set of stakeholders to participate in the process based on an inclusive and multi-disciplinary stakeholder mapping process. The stakeholder groups included over 140 agencies and organizations, with a focus on organizations that represent sensitive and vulnerable populations, such as populations dependent on medical care/devices, elderly and seniors, low-income persons, persons experiencing homelessness, persons in designated DACs, persons with access and functional needs, and visitors and seasonal residents.

Federal agencies included but were not limited to the National Oceanic and Atmospheric Administration (NOAA), Bureau of Reclamation, and FEMA Region IX.

State agencies included but were not limited to the California Geological Survey (CGS), CAL FIRE, California Department of Transportation (Caltrans), Office of Planning and Research (OPR), California Office of Emergency Services (Cal OES), and California State Parks.

Regional and local agencies and organizations included the Sacramento Area Council of Governments (SACOG), Tahoe Regional Planning Agency (TRPA), Tahoe Transportation District, several Resource Conservation Districts (RCDs), neighboring counties, and the cities of Placerville and South Lake Tahoe.

Academic institutions like Folsom Lake College and Lake Tahoe Community College were included, as well as the local school districts. Public utility providers, such as Pacific Gas & Electric (PG&E), El Dorado Irrigation District (EID), and Liberty Utilities were invited. The Shingle Springs Band of Miwok Indians and the Washoe Tribe of Nevada and California were invited. Numerous non-profit organizations (NGOs) and community-based organizations (CBOs), such as Firewise USA communities, environmental organizations, climate collaboratives, faith-based groups, and hospital affiliations were also invited and participated in the planning process. Focused discussion and interview-based meetings were held with the TRPA, Tahoe RCD, and SBC.

Resources: Adaptation planning also depends on four key resources: time, technical capability, financial capability, administrative resources, and subject-matter knowledge from experts and specialists. The County used a simple matrix worksheet tailored from the Adaptation Capability Advancement Toolkit (Adapt-CA) to identify its capacity for adaptation planning to help assess its leadership and organizational culture, staffing and technical capability, stakeholder and engagement partnerships, and operations and institutional processes. The matrix worksheet measured capacity based on a four-point scale of levels from initiation (lowest level of capacity) to optimization (highest level of capacity).

Numerous tools and resources were used throughout the planning process, from the scientific datasets available through Cal-Adapt on future climate conditions to resiliency strategies and implementation considerations provided through the California Adaptation Clearinghouse. The County team worked with the regional climate collaborative, such as the Sierra Climate Adaptation and Mitigation Partnership (Sierra CAMP) (part of the SBC) and reviewed neighboring jurisdictions' vulnerability assessments to avoid the duplication of efforts and to maximize resources on existing regional efforts (Regional CVA). Primary tools and resources included Cal-Adapt, California's Fourth Climate Change Assessment, Adaptation Clearinghouse, the California State Hazard Mitigation Plan (SHMP), the U.S. Resilience Toolkit, Regional Resilience Toolkit, and Guide to Equitable Community-Driven Climate Preparedness Planning.

What is a Critical Asset?

A critical asset is any feature of a community that is not a person or a group of people. Critical assets include key buildings and infrastructure systems in the built environment and the natural environment. They are the most fundamental services in a community. Like community lifelines, they enable the continuous operational of critical government and business functions that are essential to human health and safety or economic security.

- U.S. Climate Resilience Toolkit, FEMA

Step 1.3 Identify Climate Effects and Community Elements

This step includes identifying a list of potential climate change stressors and effects and selecting populations and assets in the community that will be affected more severely than others to evaluate in the CVA. While the vulnerability assessment is completed in Phase 2, this step involves developing a preliminary list of primary climate stressors, and climate change effects beyond the primary consequences, such as human health hazards, agriculture and forestry pests, and other compounded hazards. Primary climate stressors that are highlighted based on input from the first SEAC work session included increased precipitation and variability, increased temperatures, reduced snowpack, and wildfire risk. Secondary climate stressors included avalanche, agriculture and forestry disease, drought and water supply challenges, extreme heat, flooding, landslides, public health hazards, high winds, and severe weather.

Climate change does not affect all parts of a community the same. Sensitive populations and critical facilities and assets can be affected more severely than others. The County selected segments of the population consisting of sensitive communities more susceptible to climate change hazards. This was done to ensure the County developed adaptation policies that addressed specific vulnerabilities, those at most risk and the critical assets most needed during and after a disaster event. As part of this process, the County developed a list of sensitive populations and critical facilities in the early stages of the planning process.

Critical assets were assigned to four categories: essential services (fire stations, emergency evacuation shelters, etc.), populations at risk (medical health facility, adult residential care facility, childcare facility, schools), infrastructure at risk (communication facilities, transportation infrastructure, water treatment plants, electrical transmission lines), or essential business (fuel stations, grocery stores, recreational facilities, large employers). This organization structure is consistent with the County's Focus Area Pre-Fire Planning efforts. Each critical asset was also organized according to FEMA's Community Lifelines to align with future updates to the County's LHMP.

Step 1.4 Prepare an Equitable Outreach and Engagement Approach

The County developed an Outreach Strategy early in the planning process. Public involvement should at a minimum provide an opportunity for the public to comment on a plan during the drafting stages and prior to plan approval. Public involvement and engagement included inviting the public to provide input throughout the planning process and ensuring there was adequate time to respond to the planning document and incorporate feedback. The County's Outreach Strategy was developed based on public involvement requirements for LHMPs, guidance from the U.S. Environmental Protection Agency (EPA) Regional Resilience Toolkit that is applicable to adaptation planning, and principles of outreach and engagement focused on inclusivity and the "whole community."

Phase 2: Assess Vulnerability: This phase includes analysis of potential impacts and adaptive capacity to determine the vulnerability for populations, natural resources, and community assets. The vulnerability assessment identifies exposure and how climate change could affect the community. The County assessed sensitivities by building on sensitive populations and assets, focusing on the climate impacts of greatest concern, reviewing documents, and completing worksheets to understand adaptive capacity. The five steps in Phase 2 are described below.

Step 2.1 Exposure

The first step is to characterize the community's exposure to current and projected climate hazards. The County confirmed hazards based on those addressed in the Public Health, Safety, and Noise Element and the natural hazards addressed in the County's LHMP risk assessment. These two lists were later expanded based on input from the SEAC, stakeholder groups, and public survey input. Climate-related hazards addressed in the Public Health, Safety, and Noise Element include fire safety, flood hazards, and air quality. Geologic and seismic hazards are not known to be linked to climate change; human-caused hazards addressed in the existing Safety Element were not included in the CVA. Instead, additional hazards considered for inclusion as a hazard topic in the Safety Element update include avalanche, agriculture and forestry pests (tree mortality), climate change, drought, extreme heat, landslides, public health hazards, and severe weather. Other key topics covered and discussed during SEAC work sessions related to climate adaptation planning were post-disaster recovery, evacuation planning, and energy shortages and resiliency.

Step 2.1B: Describe historical hazards

Historical hazards in the community are briefly described to provide context for assessing project climate-related changes. While historical extreme heat, drought, flooding, and wildfire events are listed, emphasis is put on the most recent of these events based on input and stories from stakeholders and the public. A detailed list of historical hazards is referenced in the LHMP.

Step 2.1C: Describe how climate hazards and other climate change effects are projected to change

The CVA describes two GHG emissions scenarios that reflect different projections for how global emissions and atmospheric GHG concentrations may change over time but selects a high emissions scenario (Representative Concentration Pathway [RCP] 8.5) for each primary climate stressor. The Governor's OPR recommends that agencies use RCP 8.5 for analyses considering impacts through 2050 because there are minimal differences between emissions scenarios during the first half of the century. The County's CVA also uses Cal-Adapt's default settings that provides outputs for subsets of 10 and 4 global climate models (GCMs) and integrates projections for mid-century (2040-2060) and through the end-of-century (2070-2090).

Step 2.1D: Map hazards and other climate change–related effects

The County mapped most climate-related hazards based on available GIS data sources and climate hazard projections for temperature increases, precipitation variability, hydrologic change, and wildfire risk from Cal-Adapt’s downloadable data. These climate-related hazards layers were then overlaid with community population data and assets.

Step 2.2 Sensitivities & Potential Impacts

Prior to evaluating the sensitivity and potential impacts to future climate impacts, a final list of top indicators for sensitive populations was developed based on County and SEAC input.

Step 2.2A: Confirm community populations and assets

The County’s list of critical facilities was organized and validated by the County’s GIS team to confirm the accuracy of the location of the critical facility and to limit the scope to critical community assets. During the validation of the critical facility database, the County and consultant team redefined certain building and infrastructure assets, limited hazardous material facilities to Tier II facilities (facilities with hazardous chemicals present according to 40 Code of Federal Regulations (CFR) Part 370), focused only on linear transportation infrastructure, and expanded the list of community resources related to mental health, well-being, recovery, and shelter facilities. The asset location sources were based on a combination of Homeland Infrastructure Foundation-Level Data (HIFLD) Open Data, State, and County data sources. The scope of the critical facilities database is large, and the organization of the dataset was aligned with the County’s asset categories and for most facilities, with the FEMA Community Lifeline categories, to focus on mitigation by sectors in later planning phases.

Step 2.2B. Identify climate impacts to community populations and assets to determine which are sensitive to climate change effects

Examining historical climate impacts is useful for establishing context and better understanding present-day vulnerability. The County considered both historical and projected impacts by collecting information on past impacts and augmenting this with future projection information from Cal-Adapt. This step involved desktop research on historical climate change effects (e.g., historical wildfire impacts) and potential future climate impacts.

Step 2.2C: Identify potential climate impacts of greatest concern

Through an iterative process and ongoing discussions with County staff, SEAC participants, stakeholder group, and the public, it was determined that the climate-related hazards that pose the greatest risk to the County include drought, extreme heat, flooding, severe winter storms, and wildfire.

Step 2.3 Adaptive Capacity

Adaptive capacity is the ability to moderate the potential damages or take advantage of the opportunities from climate change. Communities have adaptive capacity in the form of policies, plans, programs, or institutions. Understanding this adaptive capacity entails identifying existing resources and assessing the community’s ability to cope with potential climate impacts.

Step.3A: Review documents to collect information on adaptive capacity

The County reviewed relevant information on government policies, plans, and programs to enhance adaptive capacity. This included local plans, like the LHMP, General Plan, and Area and Specific Plans. regional and sector-based plans were reviewed, such as Urban Water Management Plans (UWMPs), Emergency Operation Plans (EOPs), Fire Management Plans, and Community Wildfire Protection

Plans (CWPPs). Local ordinances and programs were reviewed, such as the County Building Code, Zoning Code, Fire Code and Floodplain Ordinance. Federal, state, and regional plans and grant programs were also reviewed such as the FEMA Hazard Mitigation Assistance (HMA) grant programs, CAL FIRE California Fire Plans, and TRPA Regional Plan.

Step 2.3B: Interview local agencies on their current ability to enhance adaptive capacity

As part of the CVA, Adaptive Capacity worksheets were distributed to County departments and partner agencies and organizations on the SEAC to better understand their adaptive capacity and to elicit information on existing and planned efforts to manage current and future climate impacts. The stakeholder group was also asked about adaptive capacity during its workshop. In addition, the County team integrated key findings from workshop input gathered on the public's perception of adaptive capacity during the development of the Regional CVA.

Step 2.4 Vulnerability Scoring

The County team completed a systematic scoring exercise to identify priority climate vulnerabilities, which are summarized in a table showing key vulnerabilities and the overall vulnerability score for each climate stressor. The vulnerability scores are qualitative, based on the combination of potential impact and adaptive capacity and a process that encouraged the SEAC and stakeholder groups to provide input.

Step 2.4A: Summarize vulnerability

Vulnerability is summarized based on the status of specific population and community assets and the consequences to public safety, human health, and continuity of public services due to exposure to climate change effects. This summary considers the County's ability to manage the impacts (adaptive capacity).

Step 2.4B: Score vulnerability

A rubric was used to score potential impact and adaptive capacity based on three scoring levels. The scoring process was based on an iterative process that considers County staff determination, GIS analysis, SEAC and stakeholder group feedback, and general input and opinions from the public.

Step 2.5 Outreach and Engagement

The County informed and engaged with community members throughout the vulnerability assessment phase to confirm climate stressors, identify sensitive populations and community assets, and improve understanding of community capacity. Outreach during this phase involved bi-weekly team coordination calls with the core County team and consultant staff, focused stakeholder interviews and meetings with government and organization groups (e.g., EDCTC, TRPA, TRCD, SBC, CAL FIRE, etc.). The public survey was open during this phase for a three-month period to gather public input, and the County publicized the survey through ongoing press releases, newspaper notices, and social media postings on the CVA process and Safety Element update. Community engagement during this phase was designed to help refine the assessment and ensure it accurately reflected on-the-ground conditions for both the West Slope of the County and the Tahoe Basin.

Phases 3 and 4 are associated with the development of an adaptation framework, strategies, and implementation programs and will be the focus of the Safety Element update.

B. Background Reports and Modelling Sources

The RCP 4.5 and RCP 8.5 climate change scenarios available on the Cal-Adapt web platform are best suited for California projections as they have been downscaled to the California State level. The GCMs are meant to simulate conditions across the globe. The models break out the surface of the

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Earth into grid cells, which are used to forecast conditions in each grid cell. While these global models are good indicators for projecting global conditions, the scale is too large to model the climate differences across local areas in California. As a result, these models have been “downscaled” to more granular grid cells to display projections on a county level.

The Cal-Adapt web platform and California Fourth Climate Change Assessment was developed and updated through collaboration between the California Governor’s OPR, California Natural Resources Agency (CNRA), California Energy Commission (CEC), and University of California, Berkeley, and provides the foundation of climate change science and modelling for the State. The State has also developed a comprehensive list of reports and tools that local jurisdictions can use to assess climate change hazards and prepare for these hazards. The key background reports, models, and tools used and referenced in the CVA include:

- Cal-Adapt Web Platform (cal-adapt.org)
- California Climate Adaptation Strategy (2021)
- California’s Wildfire and Forest Resilience Action Plan (2021)
- California’s Extreme Heat Action Plan (2022)
- California Adaptation Planning Guide (2020)
- Tahoe Climate Adaptation Prime (2021)
- California 4th Climate Change Assessment (2018)
- Defining Vulnerable Community in the Context of Climate Adaptation (2018)
- Planning and Investing for a Resilient California (2017)
- California Building Resilience Against Climate Effects (2018)
- Sierra Nevada Regional Climate Vulnerability Assessment (2022)

Several of these tools were reviewed as reference guides, used to inform the planning process, while others were reviewed to integrate state and local information related to climate-related hazards into the summaries on the primary and secondary climate stressors, and the potential climate vulnerabilities to socially vulnerable populations, critical assets and infrastructure, and natural resources. Additional County-specific scientific studies and plans included the EDWA’s Water Resources Development and Management Plan (2019) and the Bureau of Reclamation American River Basin Study findings on increasing temperatures and changing precipitation through the 21st century.

C. Data Limitations

The climate change projections and data used to profile and describe several of the secondary climate stressors have data limitations. The CVA includes projections for the years 2035-2065 and 2070-2099 to identify how climate change hazards are likely to affect the County by the mid-century and end-of-century. The CVA focuses on the mid-century and end-of-century projections to understand how soon sensitive populations and critical assets will experience climate-related hazard impacts. However, historical climate conditions and future climate conditions were not available for all the secondary hazards addressed in the CVA. These historical and future condition scenarios were only available for air temperature, precipitation, extreme heat, severe weather, snowpack, and wildfire. Additional data limitations are due to the lack of spatial GIS datasets. For these secondary climate stressors, the CVA references and supplements the discussion with information from the California Fourth Climate Change Assessment and the NOAA National Centers for Environmental Information State Climate Summaries (Bedsworth et al 2018, Frankson et al 2022).

Two ways suggested by the APG to address uncertainty are the “low/no regrets” principle,” and a “triggers approach.” The “low/no regrets” principle asks if the project would still be beneficial to a community if the expected environmental impacts do not occur. For example, flood mitigation could be addressed by conserving open land in a floodplain, which would still benefit the community if increased flooding did not occur as precipitously as expected. A flood control structure in the same scenario, however, may cause habitat disruption with no additional benefit.

The “triggers approach” considers future scenarios under which an adaptation strategy might fail. A stormwater management system, for example, may fail if increased deluge overwhelms the capacity of the system. This would then set a “trigger” point, which would indicate the need for a modified or new strategy. The goal would be to develop a mitigation strategy that was robust enough to adapt to future conditions, or that may be modified without significant cost, although future conditions may still require a complete policy shift.

What is Uncertainty?

Uncertainty in climate adaptation planning comes from three sources.

- First, because climate change is largely driven by the amount of GHGs in the atmosphere, the extent of warming will largely depend upon the success of GHGs limiting policies.
- Second, while climate models are constantly evolving and improving, the impacts of any given amount of GHGs on human and natural systems are ultimately unknown.
- The final source of uncertainty is introduced by uncertainty about innovations, changing technology, economic conditions, population, human behavior, and other factors.



View from the Upper Truckee Marsh looking west towards the Sierra Nevada.

Photo Credit: The Tahoe Resource Conservation District

3. County of El Dorado Profile



A. Geographic Setting

The County spans the eastern part of the Central Valley of California and increases in elevation from urban Western El Dorado across the Sierra Nevada crest to high-alpine City of South Lake Tahoe and the Nevada state line. The County comprises 1,708 square miles of land and 78 square miles of water. The County is generally divided into two geographically distinct areas, the Western Slope – El Dorado Hills to Strawberry – and the Tahoe Basin – Strawberry to South Lake Tahoe. The Western Slope includes the rolling foothills and agricultural lands in the lower elevations near Sacramento County, and the Tahoe Basin contains the mountainous terrain over the Sierra Nevada crest to Lake Tahoe.

B. Population

The County comprises two incorporated cities and 13 census designated places; in 2022, the County had a population of approximately 193,211 people. Of the two cities, the City of South Lake Tahoe is the most populous with an estimated 21,414 residents in 2022. However, most county residents live outside the incorporated areas, and this percentage continues to increase. In 2000, 78.7% of the County’s residents lived outside the incorporated areas, compared to 82.4% in 2010, and 83.4% in 2022. **Table 3-1** below shows the distribution of the population of the County during each of the last three decennial Census counts.

Table 3-1 El Dorado County Population

	Total Population		
	2000	2010	2020
South Lake Tahoe	23,639	21,403	21,330
Placerville	9,724	10,389	10,747
Unincorporated County	122,936	149,266	159,108
County Total	156,299	181,058	191,185

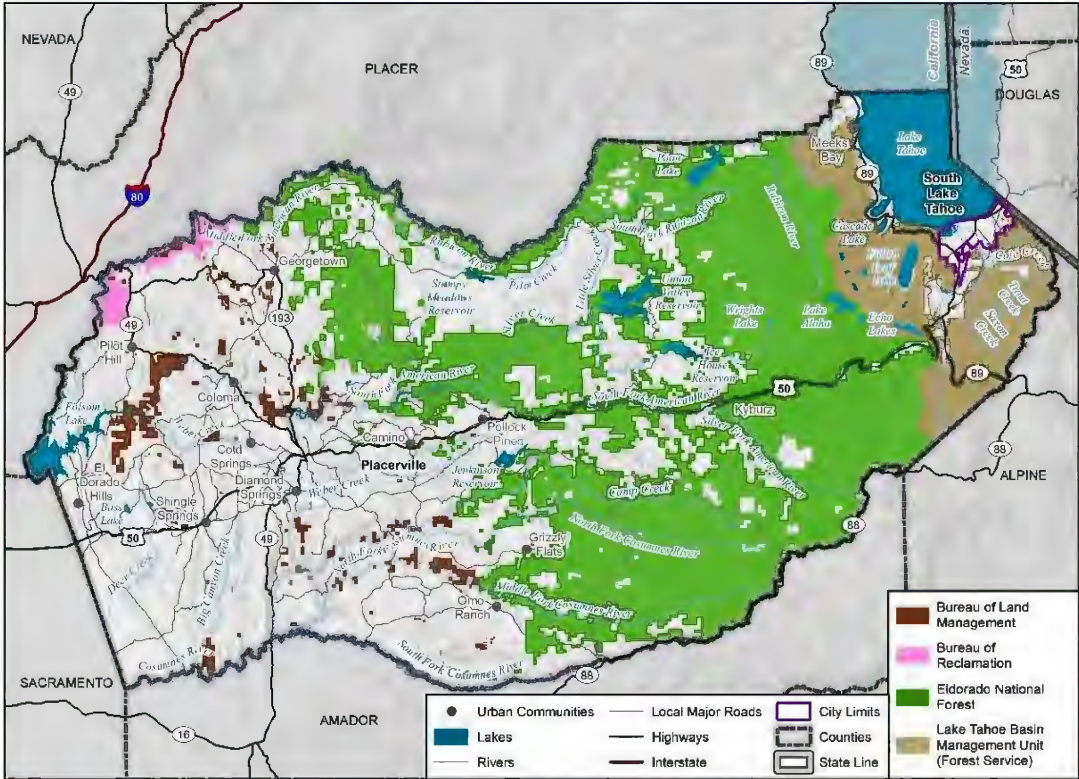
Source: U.S. Census Bureau Decennial Census

C. Land Ownership

Large expanses of the County are public land. The Eldorado National Forest comprises approximately 43% of the County’s total acreage, primarily on the Western Slope. A large portion of the Tahoe Basin consists of federally owned land that is part of the U.S. Forest Service, Lake Tahoe Basin Management Unit (LTBMU). **Figure 3-1** shows the extent of federal land ownership in the County. Additional land is owned by the State of California, including the California Department of Fish and Wildlife, California State Parks, California State Lands Commission, and the California Tahoe Conservancy. The large amount of preserved and open spaces provides the County with an abundance of adaptive capacity for floodplain management, drought and water supply projects, and forestry and vegetation and fuels reduction opportunities. These opportunities also come with challenges, as federal and state land managers must collaborate with private landowners and developers.



Figure 3-1 El Dorado County Federal Land Ownership



wsp Map compiled 1/2023, intended for planning purposes only. Date Source: El Dorado County, BLM, DoD, USFS, USFWS, NPS, PADUS 2.1

0 5 10 Miles



D. Climate

The climate varies throughout the County, primarily based on elevation, which ranges from 700 feet above sea level to more than 10,800 feet, in the peaks of the Sierra Nevada. Summers are long and dry throughout the County, although temperatures are relatively hot in the lower elevations and relatively cool in the higher elevations. Winters in the lower elevations are short, and precipitation is primarily in the form of rain. In higher elevations, winters vary from short and mild with moderate snowfall to moderately severe with frequent snowfall. Most of the precipitation throughout the County occurs between October and April. **Table 3-2** shows the differences in climate between the Western Slope and the Tahoe Basin.

Table 3-2 El Dorado County Temperature and Precipitation Summary

	The Tahoe Basin (Station No. 048762, South Lake Tahoe)	The West Slope (Station No. 046962, Placerville)
Period of record	1968-2016	1955-2012
Winter Average Minimum Temperature	16.7°F	38.4°F
Winter Mean Temperature	29.3°F	46.4°F
Summer Average Maximum Temperature	76.6°F	87.8°F
Summer Mean Temperature	58.2°F	74.8°F
Average Annual Number of Days >90°F	1.5	57.1
Average Annual Number of Days <32°F	198.1	27.3
Mean Total Precipitation (in.)	16.27	38.76
Mean Snow Depth (in.)	2	0
Maximum Temperature	99°F on July 22, 1988	109°F on July 14, 1972
Minimum Temperature	-29°F on December 9, 1972	11 °F on February 5, 1989

Source: Western Regional Climate Center (WRCC)

Winter is defined as December, January, February; Summer is defined as June, July, August

E. Transportation System

The County's transportation system includes a regional roadway system, public transportation systems, a non-motorized transportation system, and an aviation system. 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 an additional four State Routes (SR) (SRs 49, 89, 153, and 193) and a network of local public and private roads.

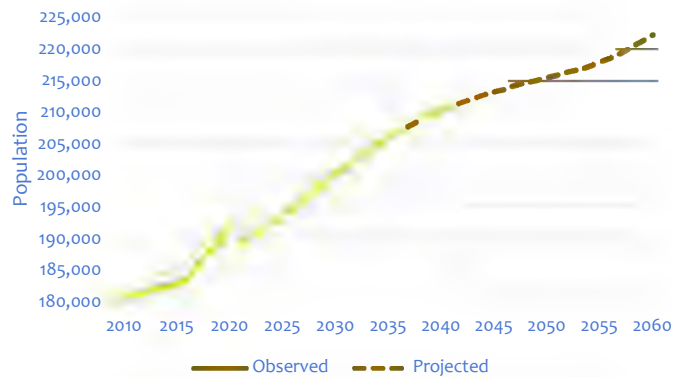
Public transportation in the West Slope is provided by the El Dorado County Transit Authority, and public transportation in the Tahoe Basin is provided by Tahoe Transportation District. Additional public transit options in the unincorporated County includes Amtrak, two taxi services in the West Slope and seven services in the Tahoe Basin, and carpools/vanpools provided by the State of California.

While regional bikeways and trails do exist in the County, due to the low-density development pattern and lack of investment in bicycle and pedestrian infrastructure, non-motorized forms of transportation are used mainly for recreation and not as a mode of transit. Additionally, four general aviation airports used by the public and government are located within the County's boundaries, including the Placerville Airport, Lake Tahoe Airport, Cameron Park Airport, and Georgetown Airport.

F. Population and Projected Growth

According to the Department of Finance (DOF) the 2020 population of the County was 193,098 (DOF 2022). The DOF projects the total population will increase by 7% to 207,496 by 2030 (DOF 2020). While total households in the County are also projected to increase from 191,428 in 2020 to 205,592 in 2030, people per household is projected to slightly decrease from 2.54 in 2020 to 2.42 persons per household in 2030 (DOF, 2020). These projections are shown in **Figure 3-2**.

Figure 3-2 El Dorado County Projected Population



Source: DOF

G. Development Trends

The Sphere of Influence (SOI) for each incorporated jurisdiction consist of areas that each city plans to grow into and are slated for potential development. Identifying the potential climate hazards in each area can help to mitigate the impacts before development occurs in these areas. Due to growth management regulations, most residential development is limited within the city limits of each jurisdiction. Neighborhoods and certain residences in the County recently impacted by wildfire are also being rebuilt.

H. Demographics

Select demographic and social characteristics for the County from the 2016-2020 American Community Survey (ACS) and the California DOF are shown in **Table 3-3**. Additional information on social vulnerability demographic indicators is provided in Section 6.B.

Table 3-3 El Dorado County Select Demographic and Social Characteristics

Characteristic	Percent
Gender/Age	
Male	49.8%
Female	50.2%
Median age (years)	46.3
Under 5 years	4.5%
Under 18 years	19.9%
65 years and over	21.2%
Race/Ethnicity	
White	77.2%

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Characteristic	Percent
Asian	4.7%
Black or African American	0.8%
American Indian/Alaska Native	0.5%
Hispanic or Latino (of any race)	13.0%
Native Hawaiian and Other Pacific Islander	0.2%
Some other race	0.2%
Two or more races	3.5%
Education*	
% High school graduate or higher	94.0%
% with Bachelor's Degree or Higher	35.2%
Social Vulnerability	
% with Disability	13.1%
% Language other than English spoken at home**	11.7%
% Speak English less than "Very Well"***	3.5%
% of households with a computer	94.0%
% of households with an Internet subscription	88.1%
% of households with no vehicle available	4.3%
* Population 25 years and over	
** Population 5 and over	

Source: U.S. Census Bureau, 2020 ACS 5-Year Estimates

The following sections examine and analyze the demographics used to collect and assess the County's sensitive populations based on several social vulnerability indicators.

U.S. Census ACS

Socially vulnerable populations identified by using the U.S. Census Bureau data were broadly classified into the following categories: demographics, employment and education, or connectivity. As defined in the introduction, socially vulnerable populations, referred to as sensitive populations in the CVA, are groups of people who experience heightened risk and increased sensitivity to climate change, and who have less capacity and fewer resources to cope with, adapt to, or recover from climate impacts. These disproportionate effects are caused by factors including inequalities in access to support such as economic opportunity, social capital, or social services; political and economic exclusion based on institutionalized bias; and physical barriers such as age, health, and infrastructure connectivity. **Table 3-4** summarizes the metrics (indicators) for these three categories and the percentage of the population in the County represented by these characteristics that define the socially vulnerable populations. These indicators were also identified and reviewed during the SEAC work sessions. The U.S. Census Bureau ACS is the source for 15 of the 20 indicators for sensitive populations.

Table 3-4 Socially Vulnerable Populations Identified by SEAC

Characteristic	Metric	Value
Demographics	Percent of population equal or under the age of 14	16.6%
	Percent of households where householders (65+) live alone	0.34%
	Number of unhoused individuals in 2019*	613
	Percent of housing units that are mobile homes	5.4%

Characteristic	Metric	Value
	Percent of population with disability	13.1%
Employment & Education	Unemployment Rate	4.7%
	Percent of population 25 years and over without high school degree or equivalent	6.0%
	Percent of people whose income in the past 12 months is below the poverty level	8.5%
	Percent of population that speak English less than “very well”	3.5%
	Number of outdoor workers**	5,308
Connectivity	Percent of population in Unincorporated County	83.4%
	Percent of households with no vehicles available	4.1%
	Percent of households with no internet subscription	7.5%
	Percent of occupied households with no telephone service available	1.2%
	Percent of population without health insurance coverage	4.3%

Source: US Census Bureau 2020 ACS 5-Year Estimates

* = 2019 Applied Survey Research Point-in-Time Count

** = data from ACS 2010

The young and the old, the unhoused, those with disabilities, and those who reside in mobile homes may have more difficulty preparing for, or evacuating from, dangerous situations and may become stranded. These groups may be more likely to need special medical attention, which may not be readily available during natural disasters due to isolation caused by the event. The unemployed, those without a high school degree, those living below the poverty line, and those who are not proficient in English are less likely to have the tools necessary to prepare for a climate-related hazard. Additionally, those who work outdoors in the agricultural industry or in recreational tourism are the most likely to be exposed to climate related hazards. Populations who reside in the rural, unincorporated County, and those without access to vehicles, internet, or telephones are more difficult to reach in an emergency event and may not have access to the most recent safety information. Finally, those without health insurance are more vulnerable to the lasting effects of a climate-related hazard.

Table 3-5 lists the census tracts with the highest concentrations of sensitive populations in the unincorporated County based on ACS data. Some of the census tracts overlap with the cities of Placerville and South Lake Tahoe because the census tracts do not align with city limits. If a census tract overlaps with a city, data from both the unincorporated County and within the city limits were included.

Table 3-5 Census Tracts with the Highest Concentration of Socially Vulnerable Communities from the ACS

Census Tract	Percentage	Population Indicators
6017031800	28.2%	% of population that are children
6017031700	27.4%	
6017031700	22.1%	% of population without a high school diploma
6017031100	19.1%	
6017031302	21.3%	% of population with a disability
6017031504	21%	% of population over 65
6017031600	21.8%	% of population that speak



Census Tract	Percentage	Population Indicators
6017030200	17.4%	English less than “very well”

Source: U.S. Census ACS

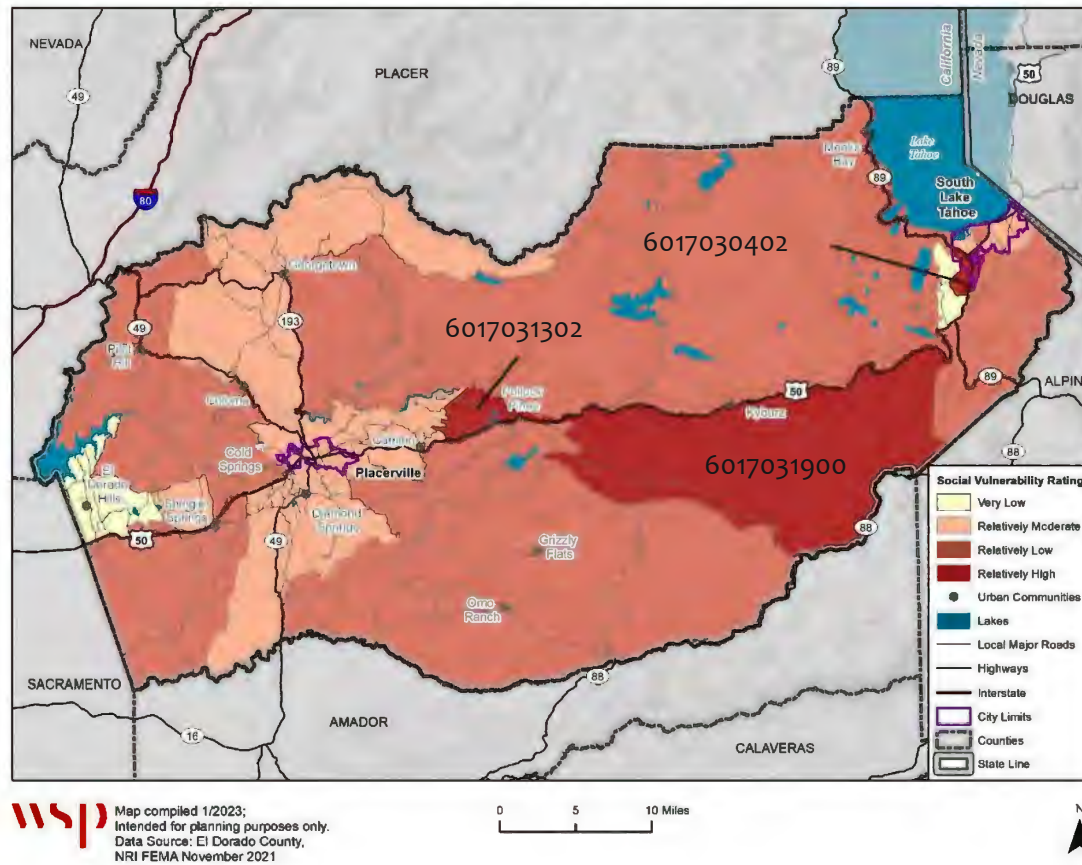
FEMA NRI

FEMA NRI SoVI rating utilizes 29 socioeconomic variables deemed to contribute to a community’s ability to prepare for, respond to, and recover from hazards. The data for these socioeconomic variables are pulled from the ACS and are similarly organized into the broader categories used in the ACS: wealth, race and social status, age, ethnicity and lack of health insurance, special needs populations, service sector employment, race, and gender.

Figure 3-3 below shows the FEMA SoVI rating for the County by census tract level. Census tracts with a high social vulnerability rating are more likely to be adversely affected during a hazard event and less likely to recover as quickly as other communities.



Figure 3-3 El Dorado County Census Tract FEMA SoVI Rating



The census tracts that are shown to have a relatively high social vulnerability rating are further discussed in **Table 3-6** below.

California Healthy Places Index

The California Healthy Places Index (HPI), developed by the Public Health Alliance of Southern California and visualized by Axis Maps, is a tool to explore the community conditions that impact life expectancy. The HPI helps prioritize public and private investments, resources, and programs in communities where they are needed most.

The HPI combines 25 community characteristics, including access to healthcare, housing, education, and more, into a single indexed HPI score. These community characteristics include aspects such as economic, education, social (2020 census response rate, voting), transportation, neighborhood (park access, retail density, tree canopy), housing, and clean environment. The healthier a community, the higher the HPI score. The HPI applies a positive frame focusing on assets a community has that they can build on, rather than what is lacking.

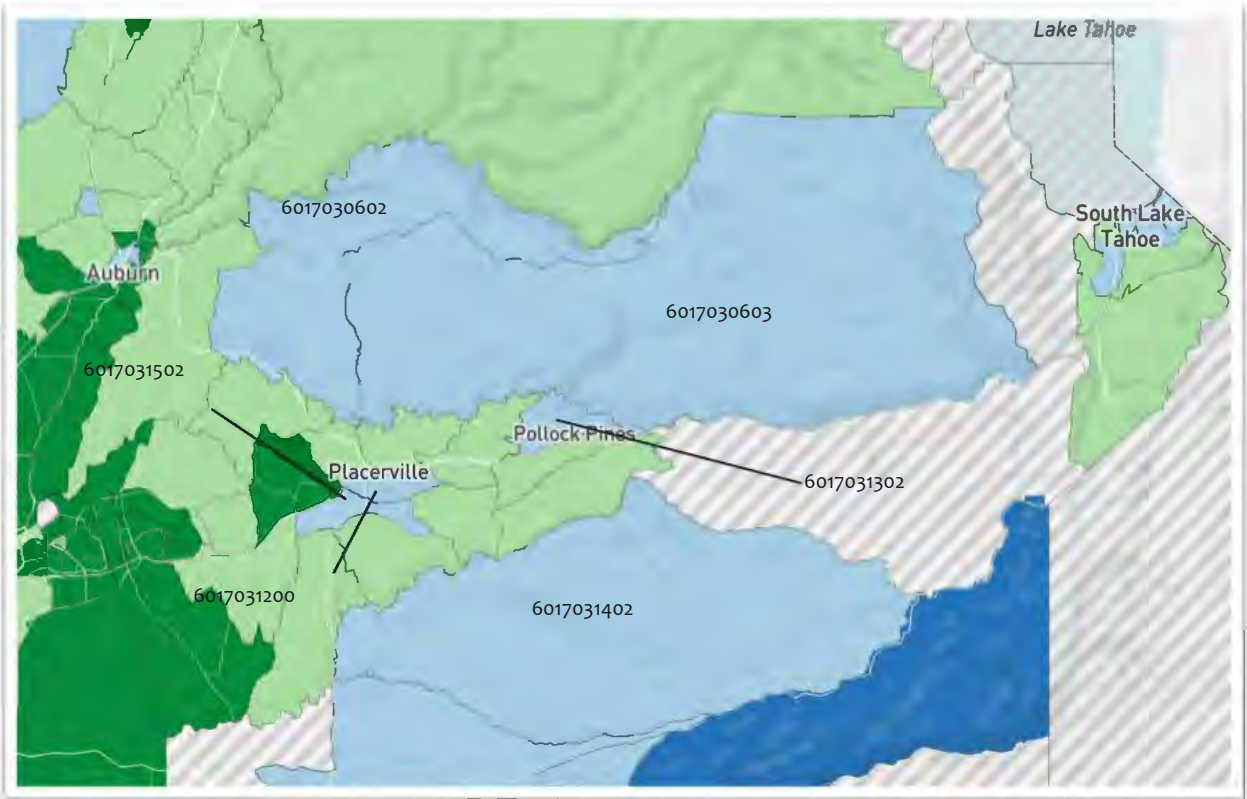
Figure 3-4 below shows the HPI results for the County also by census tract. The blue census tracts are less healthy when compared to other California tracts. The light green and green census tracts are healthier than other California tracts. The census tracts that are shown to be less healthy are further discussed in **Table 3-6**.

CalEnviroScreen

The California OEHHA CalEnviroScreen tool is available to show census tracts that have a higher percentage of housing-burdened low-income households. Housing-burdened low-income households are households that are both low-income (making lower than 80% of the Housing and Urban Development Area Median Family Income) and severely burdened by housing costs (paying higher than 50% of income to housing costs). These households spend a larger proportion of their income on housing and may suffer from housing-induced poverty. These households are also more likely to be adversely affected during a hazard event and less likely to recover as quickly as other communities. As shown in **Figure 3-5**, census tracts that are dark purple have a higher percentage of housing-burdened low-income households.



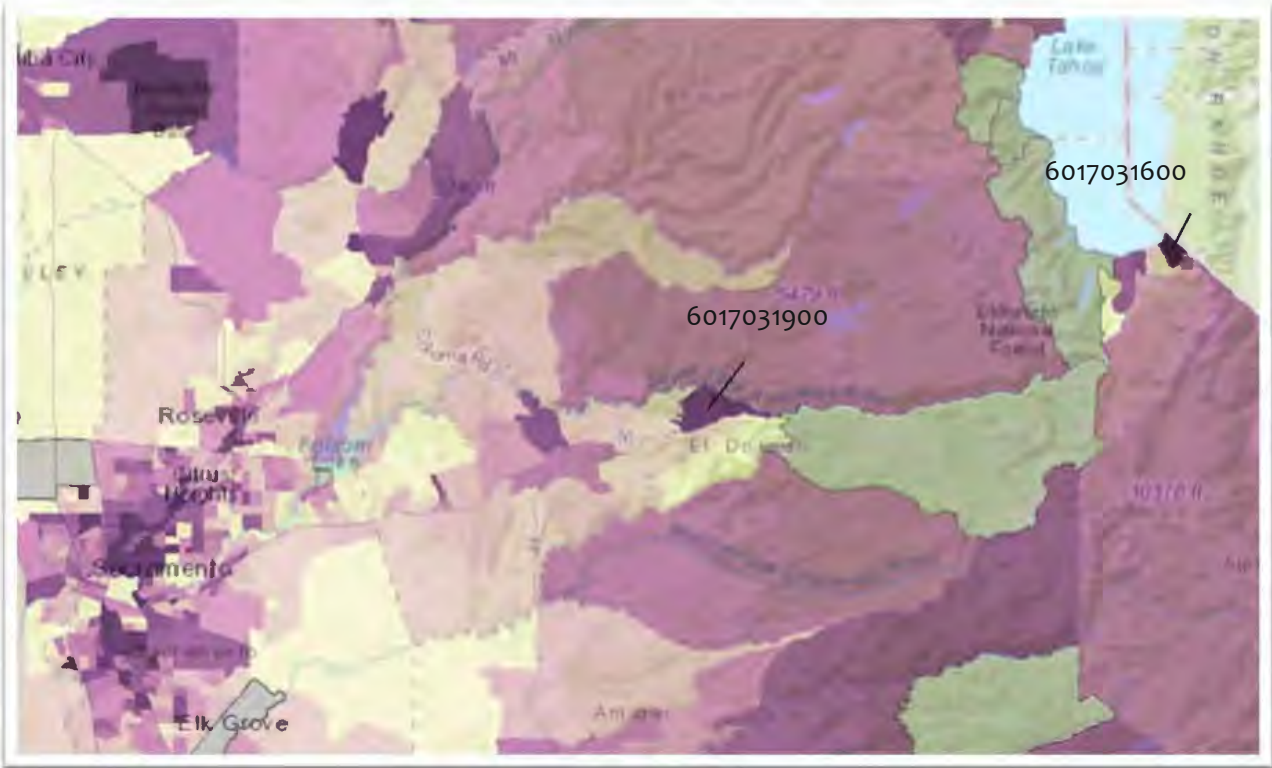
Figure 3-4 El Dorado County HPI Ratings



Source: California HPI; www.healthypacesindex.org



Figure 3-5 CalEnviroScreen Housing-Burdened Low-income Households



Source: CalEnviroScreen



Table 3-6 below lists the census tracts that are shown to have a higher social vulnerability based on three sources: FEMA NRI, California HPI, and CalEnviroScreen.

Table 3-6 Census Tracts with High Concentration of Socially Vulnerable Communities from FEMA NRI, California HPI, and CalEnviroScreen

Source	Census Tract
FEMA NRI	6017031900
	6017031302
	6017030402
California HPI	6017030602
	6017030603
	6017031402
	6017031200
	6017031502
	6017030402
	6017030200
	6017031600
CalEnviroScreen 4.0*	6017031302
	6017031600
	6017031000
	6017030402
	6017030603
	6017031402

Sources: FEMA NRI SoVI, CDC ATSDR SVI, OEHHA CalEnviroScreen 4.0, DWR DAC Mapping Tool, and California HPI
 * The percentage of such households in these tracts is higher than at least 50% of the other tracts in the State.

Furthermore, census tracts that appeared at least twice in **Table 3-5** and **Table 3-6** are shown in **Table 3-7** as the census tracts that have the highest concentration of sensitive populations and social vulnerability. **Table 3-7** also shows further details on these census tracts together with their related primary indicators and relevant sources.

Table 3-7 Census Tracts with the Highest Concentration of Sensitive Populations and Social Vulnerability

Census Tract	Primary Indicators	Source
6017031600	<ul style="list-style-type: none"> Housing-Burdened Low-income Households Persons with Limited English Proficiency 	<ul style="list-style-type: none"> ACS California HPI FEMA NRI
6017030402	<ul style="list-style-type: none"> Housing-Burdened Low-income Households 	<ul style="list-style-type: none"> California HPI FEMA NRI
6017031402	<ul style="list-style-type: none"> Low-Income Households Cost-burdened Households 	<ul style="list-style-type: none"> California HPI CalEnviroScreen
6017031302	<ul style="list-style-type: none"> Low-Income Households Persons with Disabilities and 	<ul style="list-style-type: none"> California HPI FEMA NRI



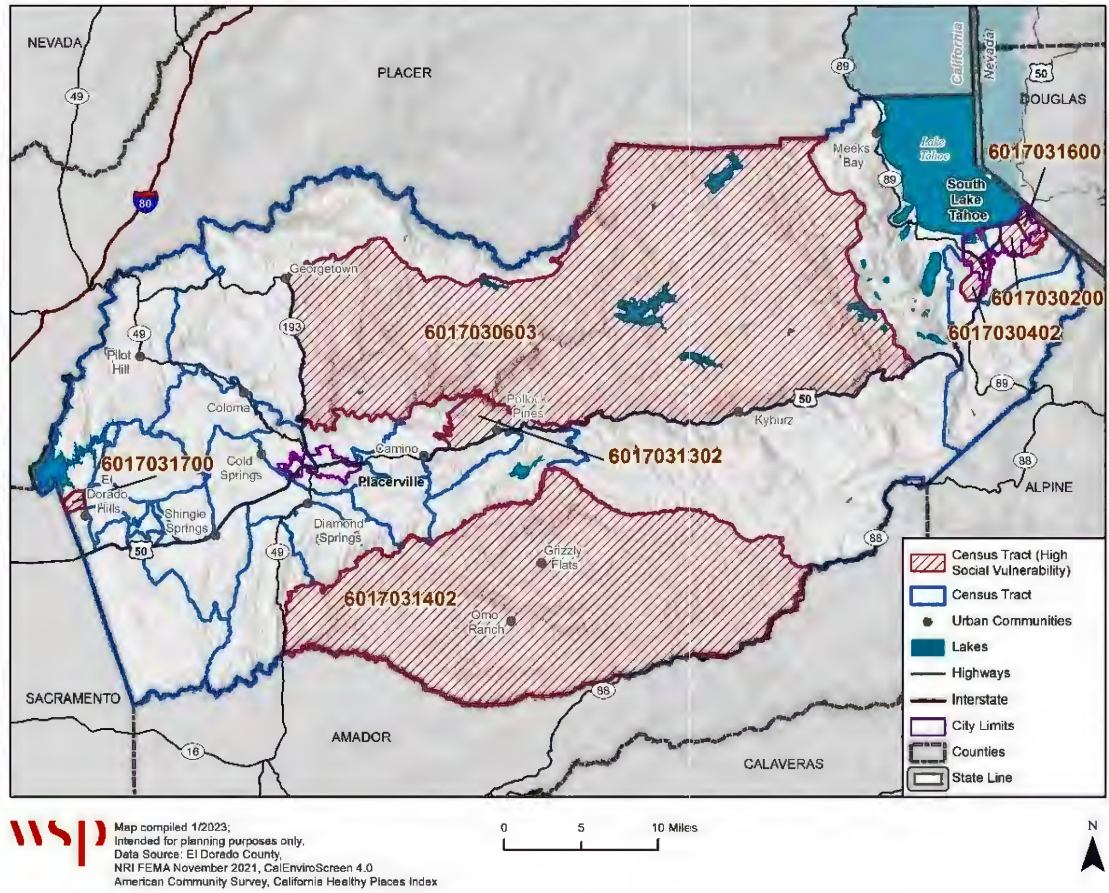
Census Tract	Primary Indicators	Source
	Access and Functional Needs	<ul style="list-style-type: none">• CalEnviroScreen
6017030603	<ul style="list-style-type: none">• Low-Income Households	<ul style="list-style-type: none">• California HPI• CalEnviroScreen
6017030200	<ul style="list-style-type: none">• Low-Income Households• Cost-burdened Households• Persons with Limited English Proficiency	<ul style="list-style-type: none">• ACS• California HPI
6017031700	<ul style="list-style-type: none">• Percent of population that are children• Percent of population without a high school diploma	<ul style="list-style-type: none">• ACS

Sources: US Census Bureau ACS, FEMA NRI SoVI, OEHHA EnviroScreen, WSP Analysis 2022

NOTES: FEMA's NRI SoVI is a location-specific assessment of social vulnerability that utilizes 29 socioeconomic variables that contribute to a community's reduced ability to prepare for, respond to, and recover from hazards, therefore not every specific indicator is listed.

Figure 3-6 shows where these census tracts are located within the County.

Figure 3-6 El Dorado County Census Tracts with the Highest Concentration of Sensitive Populations and Social Vulnerability





It should be noted that during the development of the CVA, additional federal climate and economic justice tools have become available that were not part of the GIS analysis used to define sensitive populations in the County. The Climate and Economic Justice Screening Tool is one such tool that identifies census tracts that are overburdened and underserved and highlighted as being disadvantaged. This tool identifies Census Tract 06017030602, which has a population of 7,911 residents spread across the rural communities of Greenwood, Buckeye, Spanish Flat, Lotus, Coloma, and Kelsey (CEQ 2023). Ten percent of the population in this census tract is Hispanic or Latino, the area has a high expected economic loss related to agriculture each year, a higher-than-normal loss to building values resulting from natural hazards each year, and the community spends more money and time on transportation (CEQ 2023). Many of these burdens are also associated with a higher risk to wildfire.

I. Economy

According to the California Employment Development Department, the County’s economy is heavily dependent on recreation and tourism. Eldorado National Forest, which takes up a significant portion of the County’s land, is one of the most heavily used wilderness areas in the nation. The Sierra Nevada, the south fork of the American River, and Lake Tahoe are also some of the County’s natural attractions.

As mentioned on the County’s “Elevate to El Dorado” website, the County is part of the six-county Sacramento Region, one of the fastest-growing regions in California. The County enjoys an economy as diverse as its landscape. A recent county-wide analysis concluded that major employment sectors with room for growth include Health & Social Services, Accommodation & Food Services, Retail Trade, Construction, Administration & Waste Services, Finance & Industry, Manufacturing, and Arts, Entertainment & Recreation. Estimates of select economic characteristics for the County are shown in **Table 3-8**.

Table 3-8 El Dorado County Economic Characteristics, 2016-2020

Characteristic	Percent
Families below Poverty Level (%)	5.6%
All People below Poverty Level (%)	8.5%
Median Family Income	\$ 105,391
Median Household Income	\$ 83,710
Per Capita Income	\$ 44,651
Population in Labor Force	57.3%
Population Employed*	54.5%
Unemployment Rate**	2.7%

Source: U.S. Census Bureau, California DOF, 2016-2020 ACS 5-Year Estimates
 *Excludes armed forces.
 **Does not reflect unemployment numbers due to COVID-19 Pandemic

The most common industries within a five-mile radius of the County are educational services and health care (a combined average of 18 percent of workers). Professional, scientific, and management services and arts; entertainment; recreation; and accommodation and food services are two other major industries. **Table 3-9** and **Table 3-10** below show the labor force breakdown by occupations and industry based on estimates from the 2016-2020 5-Year ACS.

Table 3-9 El Dorado County Employment by Industry, 2016-2020

Occupation	# Employed	% Employed
Agriculture, forestry, fishing and hunting, and mining	1,178	1.4%
Construction	7,290	8.5%
Manufacturing	5,582	6.5%
Wholesale trade	1,661	1.9%
Retail trade	8,153	9.5%
Transportation and warehousing, and utilities	3,326	3.9%
Information	1,431	1.7%
Finance and insurance, and real estate and rental and leasing	6,477	7.5%
Professional, scientific, and management, and administrative and waste management services	11,467	13.3%
Educational services, and health care and social assistance	17,778	20.7%
Arts, entertainment, and recreation, and accommodation and food services	11,301	13.2%
Other services, except public administration	3,918	4.6%
Public administration	6,337	7.4%
Total	85,899	100.0%

Source: U.S. Census Bureau, California DOF, 2016-2020 ACS, 5-Year Estimates
 *Excludes armed forces

Table 3-10 El Dorado County Employment by Occupation, 2016-2020

Occupation	# Employed	% Employed
Management, business, science, and arts occupations	41,612	46.5%
Service occupations	15,303	17.1%
Sales and office occupations	18,703	20.9%
Natural resources, construction, and maintenance occupations	7,607	8.5%
Production, transportation, and material moving occupations	6,264	7.0%
Total	89,489	100%

Source: U.S. Census Bureau, California DOF, 2016-2020 ACS, 5-Year estimates
 *Excludes armed forces

J. Housing Characteristics

In the United States, individual households are expected to use private resources for climate adaptation to some extent. This means that households living in poverty are automatically disadvantaged when preparing for hazards. Additionally, low-income populations typically occupy more inadequately built and improperly maintained housing. Mobile or modular homes, for example, are more susceptible to damage in floods and less equipped to protect against extreme heat than other types of housing. Mobile homes represent 5.3% of the total housing stock in the County (US Census ACS 2020).

Table 3-11 shows select housing characteristics from the ACS 5-Year Estimates for 2020 for the County.

Table 3-11 El Dorado County Select Housing Characteristics, 2016-2020

Housing Characteristic	Estimate	Percentage
Total Housing Units	91,569	100%

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Units Occupied	73,078	79.8%
Vacant	18,491	20.2%
Owner Occupied	55,193	75.5%
Renter Occupied	17,885	24.5%
1-unit detached	72,846	79.6%
1-unit attached	2,416	2.6%
2 units	1,669	1.8%
3 or 4 units	3,166	3.5%
5-9 units	2,101	2.3%
10-19 units	1,585	1.7%
20 or more units	2,768	3.0%
Mobile Home	4,861	5.3%
Boat, RV, van etc.	157	0.2%

Source: U.S. Census Bureau, California DOF, 2016-2020 ACS 5-Year Estimates

K. Natural and Recreation Resources

Nearly half of the County (about 460,000 acres) consists of the Eldorado National Forest. The Forest supplies and regulates water from upper watersheds and meadows, providing over 527 billion gallons per year to downstream systems – enough to provide California’s population with drinking water for more than 45 years. It is estimated that over 898,000 people visit the Eldorado National Forest annually to engage in recreation such as camping, hiking, and fishing and hunting. These visitors contribute an estimated \$116.3 million to the local economy. Timber harvesting also occurs in the forest to prevent fires and provide for the sustainable production of timber and biomass.

A significant portion of Lake Tahoe resides in the County. Lake Tahoe is the largest freshwater lake in California and is well-known for its clear waters, pristine beaches, and abundance of outdoor recreation activities. In addition to being the second deepest lake in the United States, it is the sixth largest by volume, trailing only the five Great Lakes. It contains enough water, about 39 trillion gallons, to cover an area the size of California to a depth of 14.5 inches. While the estimated number of annual visitors varies, the Tahoe Transportation District estimates that 24 million people visit Lake Tahoe annually (TMPO 2017).

The Folsom Lake State Recreation Area spans about 19,500 acres and encompasses two reservoirs, Folsom Lake and Lake Natoma. The reservoirs were created by the Bureau of Reclamation as part of the Central Valley Project, a system of dams, canals, and aqueducts designed to move water throughout the Central Valley. In addition, the dams provide flood protection, drinking water, hydroelectric power, and recreation opportunities such as camping, aquatic sports, and equestrian, hiking, and biking trails.

Three RCDs operate in the County: the Tahoe RCD, Georgetown Divide RCD, and the El Dorado RCD. RCDs are special districts in the State of California, which aim to develop innovative conservation solutions. They are composed of leaders appointed or elected locally, who live in their respective districts and are well-versed in local issues. RCDs are a link between federal, state, and local programs, who engage in conservation through education and programs on public and private lands.

The Tahoe RCD spans approximately 236 square miles on the California side of the Tahoe Basin. Through education, restoration, monitoring, and management, the Tahoe RCD addresses water quality, wildlife habitat, fire defensible space, sustainable recreation, water conservation, and community enhancement in the Tahoe Basin area.

The Georgetown Divide RCD spans the northern portion of the County, abutting the Tahoe RCD on the eastern side of the Tahoe RCD and covering almost 540 square miles. The El Dorado County RCD covers the rest of the County, approximately 340 square miles, from the Georgetown Divide RCD to the southern end

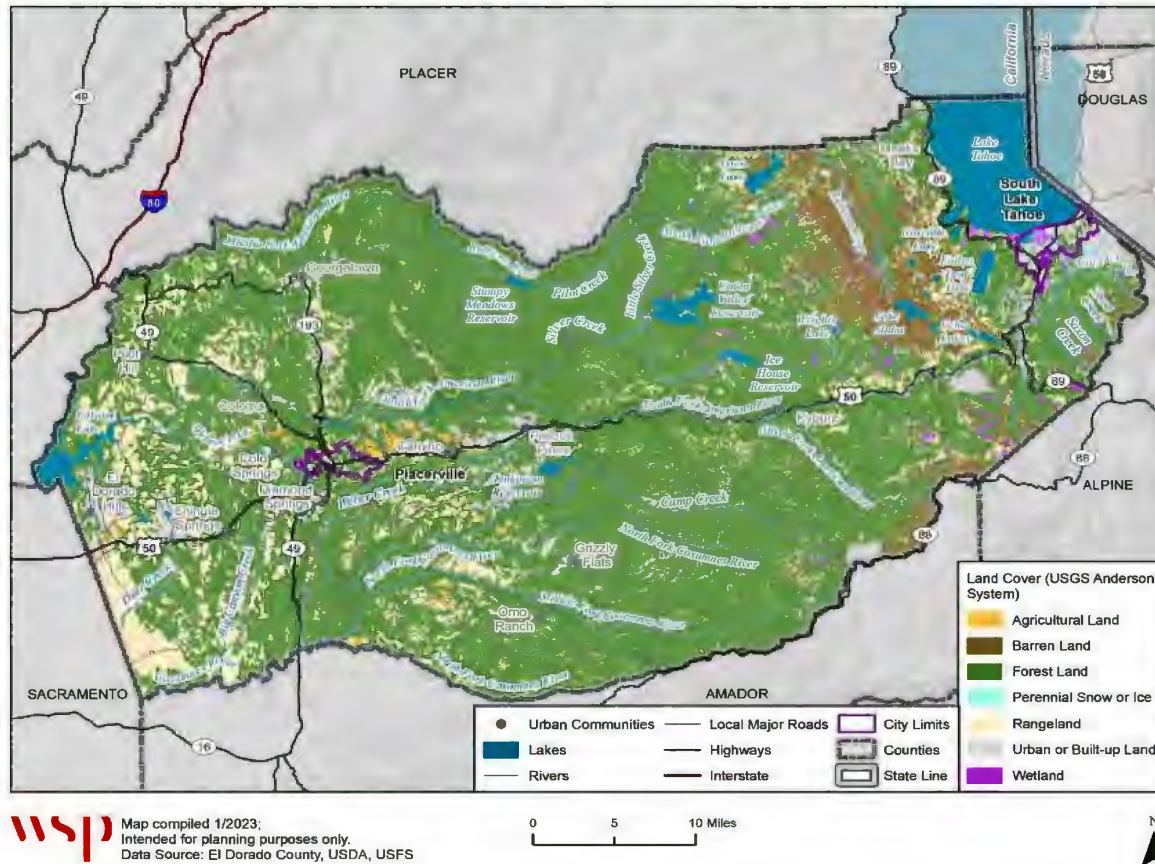
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of the County, and from the eastern county line to the Tahoe RCD boundary. The joint mission of the Georgetown Divide and El Dorado RCDs is to enhance the quality of life in the County through effective natural resource management.

Other natural and recreation resources in the County include the American River, Marshall Gold Discovery State Historic Park, and Sly Park Reservoir. The diverse terrain hosts several habitat types – aquatic, wetland, riparian, oak woodland, grassland, shrublands, and mixed conifer forests. **Figure 3-7** below illustrates the diverse land cover across the County.

Figure 3-7 El Dorado County Land Coverage





View of Lovers Leap in looking east following the 2022-2023 winter season. The Lover's Leap area near the unincorporated community of Strawberry on the South Fork American River and along U.S. Highway 50 provides a gateway to recreational activities in the County, including rock climbing, fishing, hiking, and skiing. The area became a popular resort in the 1850s and a stop along the Central Overland Pony Express. It is also home to the Historic Strawberry Lodge.

Photo Credit: Lovers Leap Guides, April 2023

4. Planning Process and Outreach and Engagement

A. Planning Process Method

This CVA follows the Phase 2, “Assess Vulnerability” planning process provided in the APG. The steps involved in Phase 2 are shown in **Figure 4-1**.



Figure 4-1 Steps in Phase 2 of the APG Planning Process



Source: APG 2020

Exposure Identification

Exposure is the presence of people, property, buildings, critical infrastructure, natural and cultural resources, or economic drivers in areas that may be subject to hazards. The goal of exposure identification is to recognize a community’s exposure to current and projected climate-related hazards, defined as events or physical conditions that have the potential to cause harm to people or loss of property.

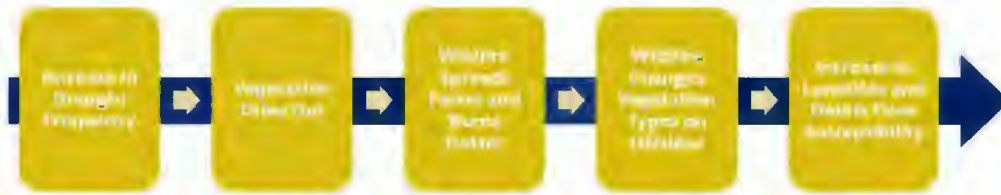
To gain a broad understanding of exposure in the County, historic hazards and hazard events were assessed, the ways in which climate hazards are projected to change were examined, and hazards and other climate change effects were mapped. The CVA includes climate-related hazard data from best available public sources of downscaled climate projections. Statistical downscaling is a technique by which large-scale global climate models are translated into small spatial scales (see Section 2 Methodology). In addition, the SEAC was consulted for input on past hazard exposures in the County.

Climate-related hazards profiled in the CVA include:

- Agriculture and Forestry Disease and Tree Mortality
- Avalanche
- Drought and Water Supply
- Extreme Heat
- Flooding
- Human-health Hazards
- High Wind
- Landslide and Debris Flows
- Severe Weather: Thunderstorms, Heavy Rain, Lightning, and Hail
- Severe Weather: Winter Storms and Heavy Snow
- Wildfire

Many of these hazards have the capacity to become “cascading” or “compounding” hazards. A cascading hazard is one that can lead to another, causing a cascading chain of events. **Figure 4-2** below shows an example of a cascading climate-related hazard.

Figure 4-2 Example of a Cascading Hazard



Analyze Sensitivity and Potential Impacts

Sensitivity is defined as the level to which changing climate conditions affect a community, critical facilities, wildlife, or natural systems. Potential impacts are the effects of probable climate-related hazards, or the combination of exposure and sensitivity. As each population and critical facility asset in the County is likely to experience a different sensitivity to potential impacts, the CVA includes an assessment of the sensitivities and potential impacts from each priority climate-related hazard on each socially vulnerable population and critical facility asset.

Analyzing sensitivity in the County necessitated the development of two datasets: one of the County’s sensitive populations, and one of the County’s key critical facilities and infrastructure (such as buildings, essential services, and essential businesses). The sensitivity of each dataset was evaluated both quantitatively and qualitatively. The quantitative process involved spatial overlay analysis using GIS to determine the number of people that would be impacted by climate-related hazards, as well as the critical facility and infrastructure assets directly impacted by certain hazards.

The qualitative process addressed questions to assess the sensitivity and potential impacts of climate-related hazards, such as:

- What types of direct impacts may occur?
- Are the impacts likely to result in physical injury, damage, or loss? If not, are indirect effects likely to result in economic loss, non-physical impacts, or mental or well-being impairment?
- How quickly will the impacts happen and how long will they last?
- Is there a significant chance of substantial destruction?

Based on the results of the qualitative and quantitative assessments, each climate related hazard was assigned a low, medium, or high impact score. A higher impact score means that there is a higher potential for harm to the asset, while a lower impact score means that there is a lower potential for harm. **Table 4-1** provides a rubric from the APG to aid in the determination of scores. These scores are then used to determine potential climate impacts of greatest concern.

Table 4-1 Impact Scoring Matrix

Impact Score	Definition for Population Assets	Definition for Critical Facilities and Infrastructure Assets
Low Impact	Change is not noticeable. If there is a noticeable effect, it is minor and consists of temporary disruptions.	Slight damage, temporary disruption in service, impacts on the economy is minor or intermittent enough that it is unnoticed, and overall effects are minor.
Medium Impact	Change is noticeable. Well-being and quality of life may decline. Impacts may also be ongoing and substantial.	Moderate damage, considerable service disruptions, impacts on the economy that are significant, and overall effects are modest.
High Impact	Change is readily apparent. Well-being and quality of life decline significantly.	Substantial damage to buildings, severe and long service disruptions due to critical assets

Impact Score	Definition for Population Assets	Definition for Critical Facilities and Infrastructure Assets
	Impacts are severe due to widespread injury and death to people.	that cannot function, impacts on the economy that result in major loss and hardship, and overall effects are significant.

Source: California APG; Modified by WSP

Assess Adaptive Capacity

Adaptive capacity is the ability to moderate the potential damage and impacts from climate-related hazards by taking advantage of opportunities and resources such as policies, plans, programs, or institutions. Examples of adaptive capacity include retrofitting buildings to diminish the effects of extreme heat or translating emergency response plans into multiple languages. This step focuses on the County’s existing adaptive capability to cope with impacts. Phase 3 focused on the expansion of adaptive capacity and mitigation through new adaptation actions.

A thorough review of documents provided by federal, state, regional, and local agencies, as well as NGOs and CBOs, was conducted to assess the adaptive capabilities present in the County. The review of these documents focused on existing and planned climate adaptation strategies, the extent to which these strategies are expected to manage current and future climate impacts, as well as opportunities to build on and strengthen these strategies. SEAC work sessions and stakeholder workshops further supported this assessment through project-specific efforts and local knowledge about smaller communities. As mentioned in Section 1, the County used a matrix worksheet to identify its capacity for adaptation planning. The goal of this worksheet and the stakeholder workshop was to elicit further information on existing policies and programs, their effectiveness, and potential barriers that may prevent vulnerable populations from reaping the benefits of these policies and programs. The County also integrated information from the SBC’s Regional CVA.

Based on the adaptive capacity assessment and SEAC and stakeholder input, each socially vulnerable population, critical facility, and infrastructure asset was assigned an adaptive capacity score of low, medium, or high. Adaptive capacity is a positive outcome, so a higher adaptive capacity score means a sensitive population or critical facility asset may be more adaptable to the climate-related hazard. A lower adaptive capacity score means a population or asset may need more resources to adjust to changing climate conditions. **Table 4-2** shows the Adaptive Capacity Scoring Matrix.

Table 4-2 Adaptive Capacity Scoring

Adaptive Capacity Score	Definition of Adaptive Capacity
High Adaptive Capacity	Adaptation capacities and opportunities are feasible for most populations and assets. There may be occasional challenges to implementing new adaptation strategies due to technical, capacity, or funding challenges, but populations and assets generally adapt with little to no effort. Many alternatives and redundancy options also exist that can provide similar services.
Medium Adaptive Capacity	Some adaptation capacities and opportunities are available for populations and assets but are not always feasible. There may be significant challenges to implementing new adaptation strategies due to substantial technical, capacity, or funding limitations, making it difficult for populations and assets to adapt. Some alternatives and redundancy options exist to provide similar services.
Low Adaptive Capacity	Adaptive capacities are available, but they are not accessible or feasible because of significant technical needs, lack of staff capacity, funding and cost constraints, technological limitations, and/or other resource barriers, such as lack of political

Adaptive Capacity Score	Definition of Adaptive Capacity
	support from decision-making bodies or the community. Few alternatives or redundancy options exist, or assets may not have feasible methods to adapt.

Source: California APG; Modified by WSP

Vulnerability Scoring

Vulnerability is defined as the exposure of sensitive people, property, and critical facility assets to climate change impacts, and is determined by differences in exposure, sensitivity, and adaptive capacity. Vulnerability scoring is a quantitative process to identify priority hazard vulnerabilities. The overall vulnerability score reflects how susceptible the sensitive population or critical facility asset is to harm from a particular hazard.

An overall vulnerability score was determined based on the combination of the impact scoring and adaptive capacity scoring for each sensitive population and asset for each relevant climate-related hazard in the County. Initial scoring was completed by the core County team; and impact, adaptive capacity, and vulnerability scores were adjusted in response to County, SEAC, and stakeholder input. This resulted in an iterative process to ensure the SEAC, stakeholder, and public input was thoughtfully integrated into the CVA, and to ensure the CVA accurately reflects the conditions in the County.

Table 4-3 shows how the combined impact and adaptive capacity scores translate into a vulnerability score of 1 to 5 (1 – Minimal Vulnerability, 2 – Low Vulnerability, 3 – Moderate Vulnerability, 4 – High Vulnerability, and 5 – Severe Vulnerability).

Table 4-3 Vulnerability Score Matrix

	Low Impact	Medium Impact	High Impact
Low Adaptive Capacity	V3	V4	V5
Medium Adaptive Capacity	V2	V3	V4
High Adaptive Capacity	V1	V2	V3

Source: California APG; Modified by WSP

These scores help the County determine which vulnerabilities are the most pressing and those that should be prioritized for adaptation strategies.

Outreach and Community Engagement

Community outreach was a key component of the CVA planning process. Community members provide valuable on-the-ground information and personal experience with both the County and the climate vulnerabilities it faces. Community members can best identify priority climate vulnerabilities and practical capacities. Soliciting input from all segments of the population ensures that the resulting CVA and Safety Element is inclusive and representative of the needs of every resident. Outreach opportunities included SEAC work sessions, focused stakeholder interview and meetings, stakeholder workshops, public workshops, and a bilingual public survey.

The following is a summary of formal stakeholder and community outreach events.

- **Core County Team Meetings** – The project team held ongoing bi-weekly meetings throughout the planning process from March 2022 through February 2023 to review and provide feedback on the CVA and discuss ongoing and parallel planning efforts, like the Greater Placerville Wildfire Emergency Evacuation and Preparedness Plan.
- **SEAC Work Sessions** – The SEAC served as a liaison to the Core County planning team throughout

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the CVA and Safety Element update process. They encouraged public participation by sharing outreach strategies provided by WSP to their departments and agencies, and by coordinating stakeholder workshops, as well as by sharing community stories to encourage dialogue between the internal teams and the public. The four SEAC Work Sessions were instrumental in reviewing and evaluating the data that informed the CVA and Safety Element update.

- **Stakeholder Interviews** – The core County team coordinated five stakeholder interviews and meetings from November 2022 through February 2023 as part of the impact assessment and adaptive capacity evaluation process. Stakeholder groups included the County’s Office of Wildfire Preparedness and Resiliency, the EDCTC, TRPA, Tahoe RCD, and SBC. The purpose of the interviews and meetings was to develop a better understanding about related planning efforts, County expertise related to the CVA, and opportunities to enhance engagement based on previous or parallel planning efforts. Each stakeholder group provided information on the specific planning efforts and the assets they manage that relate to the CVA.
- **Stakeholder Workshop** – One virtual stakeholder workshop was held with relevant federal, state, and local stakeholders. Stakeholders were consulted to clarify decision-making needs, to balance adaptation measures with County economic development goals, and to determine trade-offs. These meetings focused on the next steps, effective execution of monitoring strategies, relevant climate thresholds, and incremental steps of implementation.
- **Public Workshops** – One virtual public workshop was held to inform the public about the planning process and solicit input from residents who may not otherwise be involved. The workshop covered background on climate adaptation planning, the CVA results, and the purpose and components of the CVA and Safety Element update. A second public workshop is planned once the Public Review CVA is ready for circulation.



Tallac Historic Site at South Lake Tahoe
Photo Credit: Chris Mansker

5. Exposure Identification

A. Identification of Key Hazards and Climate Stressors

Climate stressors are conditions that exacerbate climate-related hazards, such as changes in frequency or severity of extreme weather events due to natural climate variability (i.e., episodes of El Niño and La Niña) as well as through human-caused climate change. They fall into two categories: primary climate stressors and secondary climate stressors.



Concentrations of heat trapping GHGs are increasing in the Earth's atmosphere, causing average temperatures at the Earth's surface to increase and continue rising; these changes in air temperature, precipitation variability, reduced snowpack, and wildfire risk are primary climate stressors in the County that are expected to become more frequent and severe. These primary climate stressors can also lead to secondary climate stressors or climate-related hazards that can cause death and injuries to sensitive populations, property damage, infrastructure impacts, business interruptions, and damage to the environment.

Sensitive populations and assets in the County are also subject to non-climate stressors. Non-climate stressors include occurrences such as changes in land cover (for instance, when natural vegetation is cleared and replaced with roads and buildings), construction projects that disrupt natural water drainage or common traffic patterns, and population growth (U.S. Resilience Toolkit 2022). These are generally conditions unrelated to climate that can exacerbate climate-related hazards.

B. Climate Scenarios

The profiles for the primary and secondary climate stressors are based on current public information from the Cal-Adapt database, APG, and California's Fourth Climate Change Assessment. State climate information from the NOAA NCEI is also summarized. Climate change projections rely on multiple climate scenarios that reflect different levels of global GHG emissions and atmospheric GHG concentrations. The Intergovernmental Panel on Climate Change (IPCC) uses RCPs or climate scenarios. RCPs are labeled with numbers that refer to the increase in the amount of energy that reaches each square meter of Earth's surface under the respective scenario. While there are now updated climate scenarios referenced in the IPCC's Sixth Assessment Report, these updated projections are not yet available at a local scale within the Cal-Adapt tool. The two RCPs available used in the Cal-Adapt tool and discussed in the Fourth Climate Change Assessment are:

- RCP 4.5 – global GHG emissions peak around 2040 and then decline, and
- RCP 8.5 – global emissions continue to rise until the end-of-century.

The Cal-Adapt tool provides California-specific climate changes projections and uses RCP 4.5 for a low emissions scenario and RCP 8.5 for a high emissions scenario. OPR's "Planning and Investing for a Resilient California" and APG recommend using RCP 8.5 for analyses that consider impacts through 2050, because there are minimal differences between the emission scenarios for the first half of the century. It also recommends using RCP 8.5 for end-of-century projections for a more conservative and risk-adverse approach (OPR 2020, APG 2020). As a result, all maps, graphs, and model summaries are based on the RCP 8.5 GHG emission scenario. Future modeled conditions in the County area are also based on an average of multiple climate models: averages of the CanESM2 (average), CNRM-CS5 (cooler/wetter), HadGEM2-ES (warm/drier), and the MIROC5 (complement) models. For those climate stressors where spatial data is available, maps of the primary and secondary climate stressors and projected changes for the years 2050 (2035-2064), and 2100 (2070-2099) are included.

The following sections describe four primary climate stressors: increased temperatures, precipitation variability, reduced snowpack, and wildfire severity. Nine secondary climate stressors are described, including the cascading effects. Each climate stressor summary profiles the hazard and summarizes the

projected trends and change, and where possible, characterizes the general trend differences between the West Slope and the Tahoe Basin portions of the County.

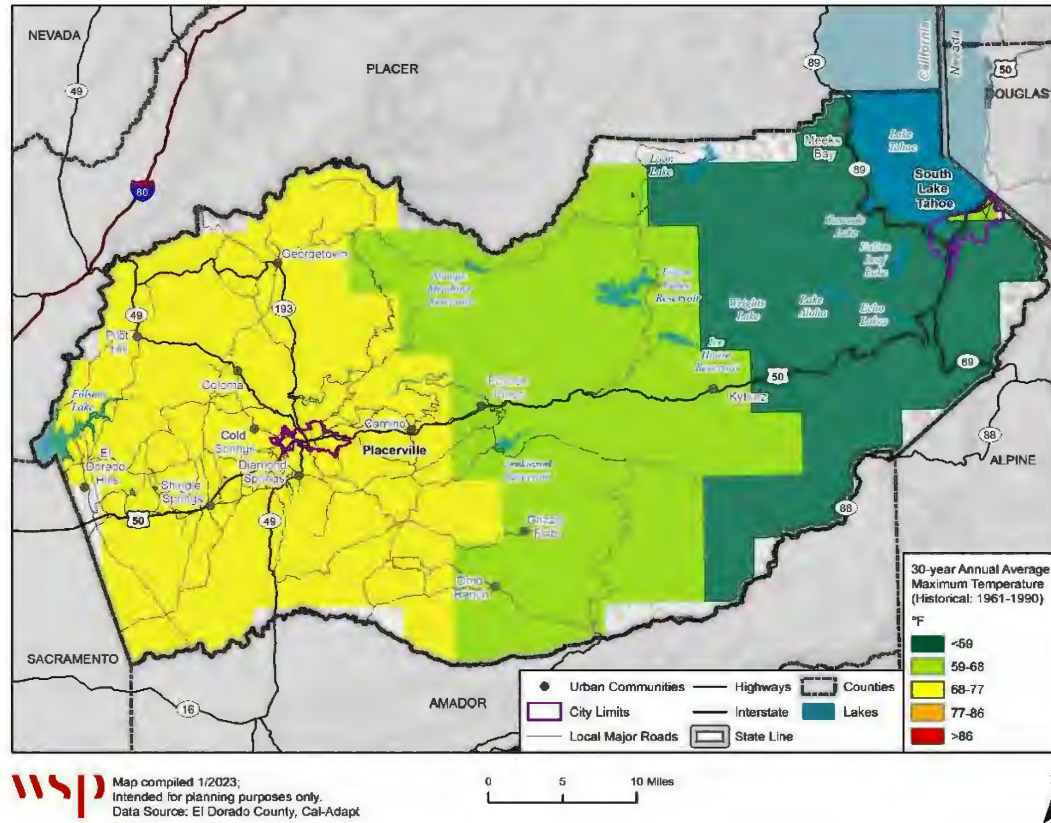
C. Primary Climate Stressors

Increased Temperatures

Temperatures in California have risen almost 3° Fahrenheit since the beginning of the 20th century and the six warmest years on record have all occurred since 2014 (NOAA NCEI 2023). Increases in air temperature will rise in the County during the next century when compared to the historical annual average temperatures. These increased temperatures can lead to more intense extreme heat events, which can cause illness and death, especially in sensitive populations.

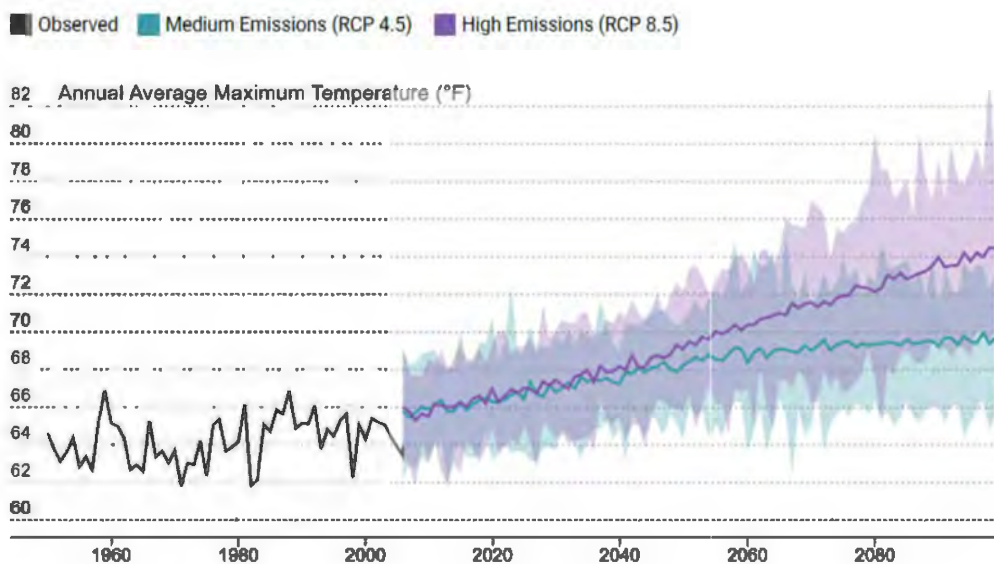
Annual average maximum temperature, an average of all the hottest daily temperatures in a year, is used to measure temperature trends and projections in the County. Other climate metrics related to temperature include the number of extreme heat days and warm nights per year, defined as temperature exceeding the 98th percentile value of historical temperatures for a given location (Cal-Adapt, 2023). The County had a historical annual average maximum temperature of 63.4 °F in 2005. The year 2005 is selected because the observed temperatures within Cal-Adapt are currently compiled through mid-2005. Any data beyond 2005 are projections generated based on climate models and therefore, are not the actual observed data. This also applies to the other primary climate stressors discussed in this section where data from the year 2005 are referenced. **Figure 5-1** illustrates the historical 30-year annual average maximum temperatures in the County from 1961 to 1990.

Figure 5-1 30-Year Annual Average Maximum Temperature: Historical (1961-1990)



Projections for annual average maximum temperature in the County show a substantial rise during the next century as global temperatures rise. As shown in [Figure 5-2](#) and based on data from Cal-Adapt, under the RCP 8.5 scenario, the annual average maximum temperature will rise by 5.2 °F by mid-century and 8.9 °F by end-of-century. The observed temperatures within Cal-Adapt are currently compiled through mid-2005.

Figure 5-2 Annual Average Maximum Temperature in El Dorado County



Source: Cal-Adapt 2022

[Figure 5-4](#) below illustrate the 30-year annual average maximum temperatures under the RCP 8.5 scenario for the predicted mid-century and end-of-century in the County. As shown in [Figure 5-3](#), maximum temperatures are likely to increase gradually by mid-century. The highest temperature increases are projected to occur more rapidly towards the end-of-century, particularly in the southwestern portion of the County, with maximum temperatures likely to increase to 86°F, as shown in [Figure 5-4](#).

Furthermore, the County is divided into two geographical areas to depict differences in future predicted annual average maximum temperature: the West Slope, which is predominantly below an elevation of 4,000 feet above mean sea level (msl) and includes the community of Camino, the City of Placerville, and all land west of the crest of the Sierra Nevada; and the Tahoe Basin, which is generally above 4,000 feet above msl, receives snowfall, and includes the City of South Lake Tahoe and all of the County east of Echo Summit and south of the community of Tahoma and north of Hope Valley. As shown in [Figure 5-3](#) and [Figure 5-4](#), both the western and eastern County are predicted to have increased 30-year annual average maximum temperatures by mid-century and end-of-century, while [Table 5-1](#) demonstrates the details on the temperature increase based on [Figure 5-3](#) and [Figure 5-4](#). Note that the Countywide data in [Table 5-1](#) is based on [Figure 5-2](#).

The increase in average maximum temperature will result in an increase in agricultural pests and disease, human health hazards, and increased wildfire severity. The Extreme Heat section addresses these secondary hazards.

Figure 5-3 30-Year Annual Average Maximum Temperature: Mid-Century (2035-2064)

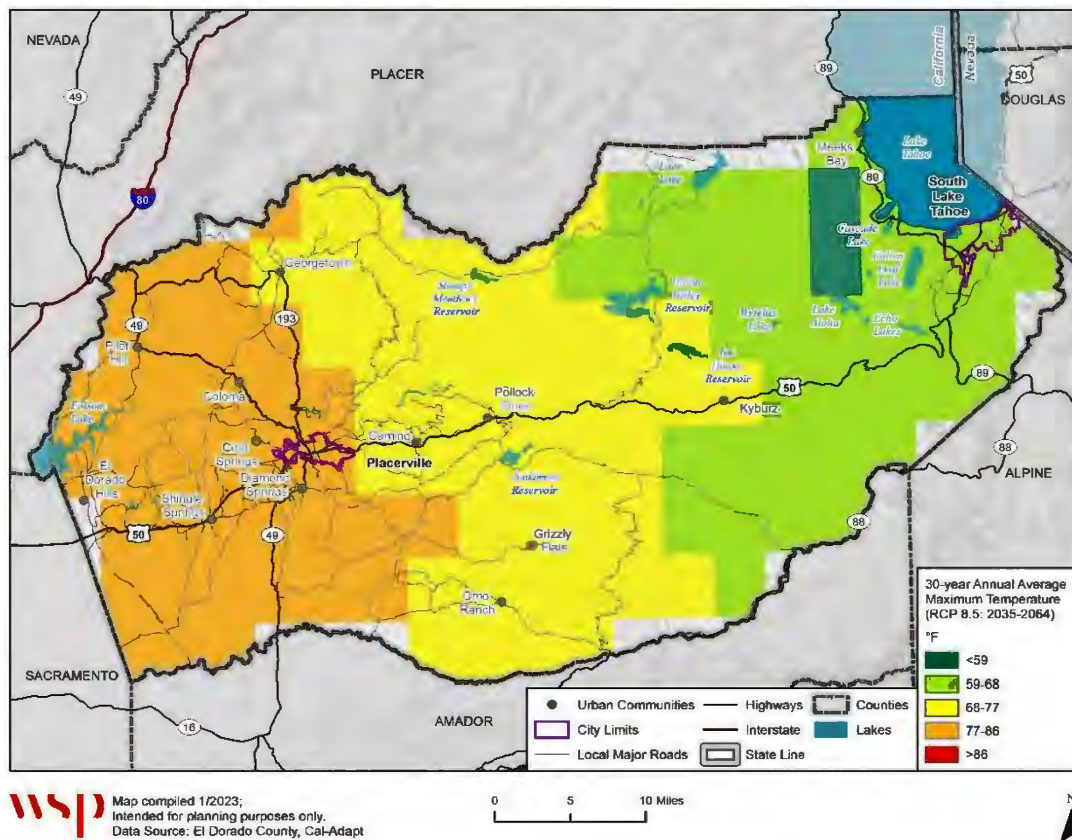


Figure 5-4 30-Year Annual Average Maximum Temperature: End-of-century (2070-2099)

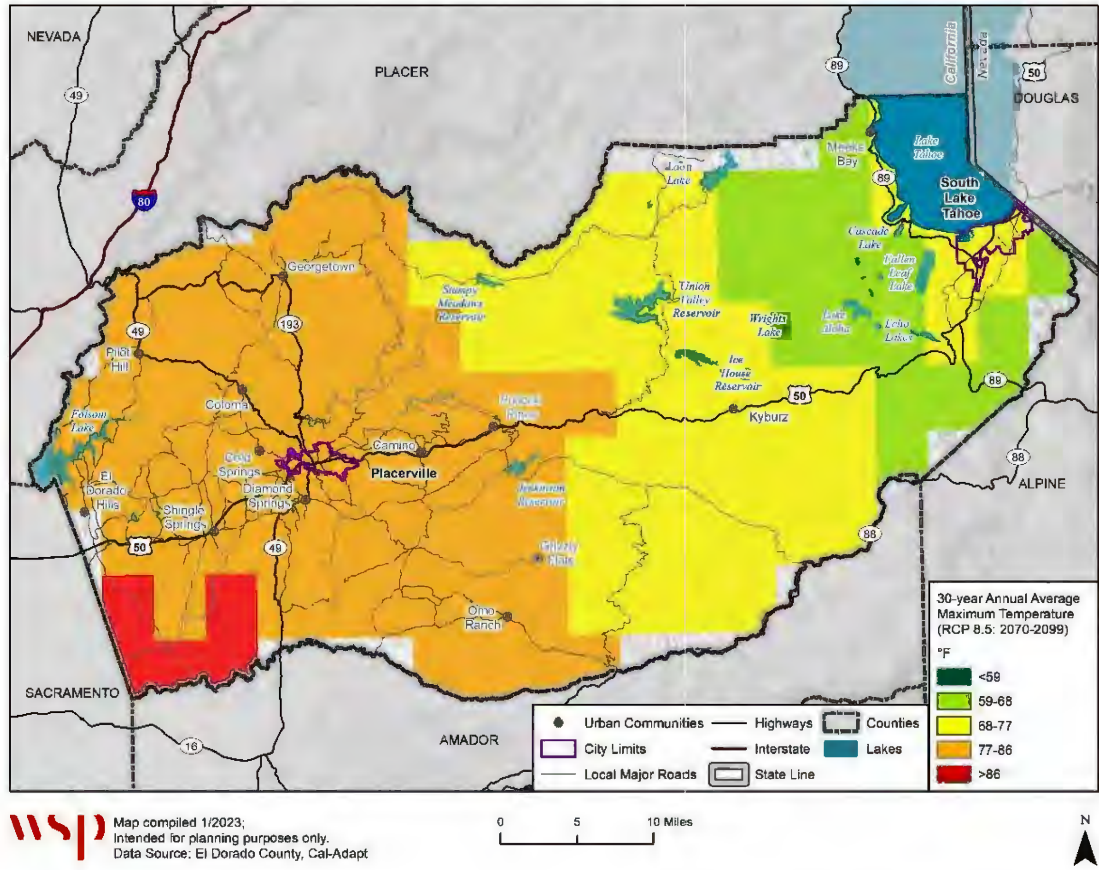


Table 5-1 Historical and Projected 30-year Annual Average Maximum Temperatures (°F) under RCP 8.5 Scenario

Geography	Historical	Mid-Century	End-of-Century
West Slope	59-68°F	68-86°F	77-88°F
Tahoe Basin	51-68°F	51-77°F	59-86°F
Countywide	64°F	69.7°F	73.5°F

Source: Cal-Adapt 2022

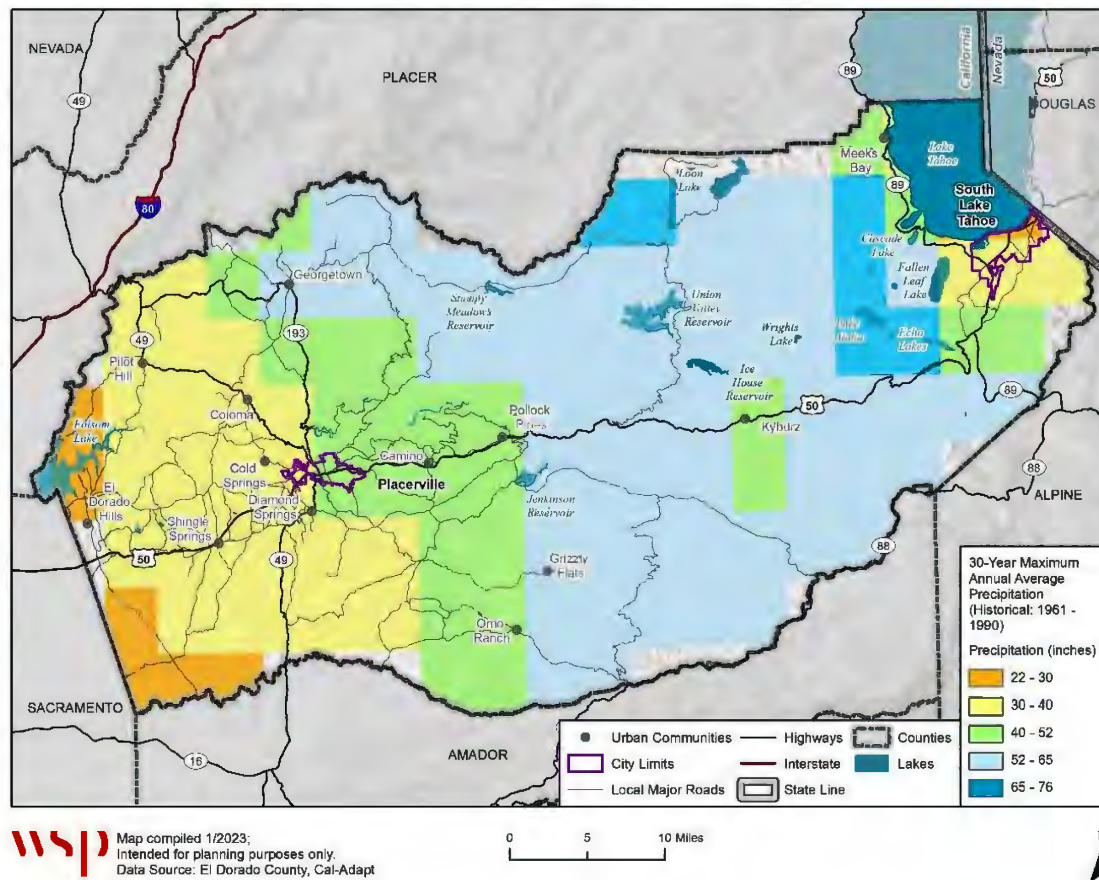
Precipitation Variability

Annual precipitation shows wide variability but has been below average since 2000 for California and this variability is expected to continue to be highly variable from year to year (NOAA NCEI 2023). Extreme precipitation often results in damaging flooding and atmospheric rivers, a weather phenomenon in which a narrow band of moist air is transported from tropical latitudes of the Pacific Ocean to the West Coast, can causing torrential rainfall (NOAA NCEI 2023). From December 1996 to January 1997, heavy rains and snow fell in northern California with particularly large amounts of precipitation in The County. The large amounts of rainfall and warm temperatures caused tremendous snowmelt and Lake Tahoe reached its highest level since 1917 (NOAA NCEI 2023).

Annual precipitation, maximum one day precipitation, and maximum length of dry spell are metrics used by Cal-Adapt to measure precipitation trends and projections in California. According to Cal-Adapt, the historical average precipitation, also known as the total precipitation projected for a year, for the County is 43.3 inches (Cal-Adapt 2022). Projections show a small increase in precipitation to 44.9 inches by mid-century, and 45.0 inches by the end-of-century. **Figure 5-5** below illustrates the historical 30-year maximum annual average precipitation in the County from 1961 to 1990.

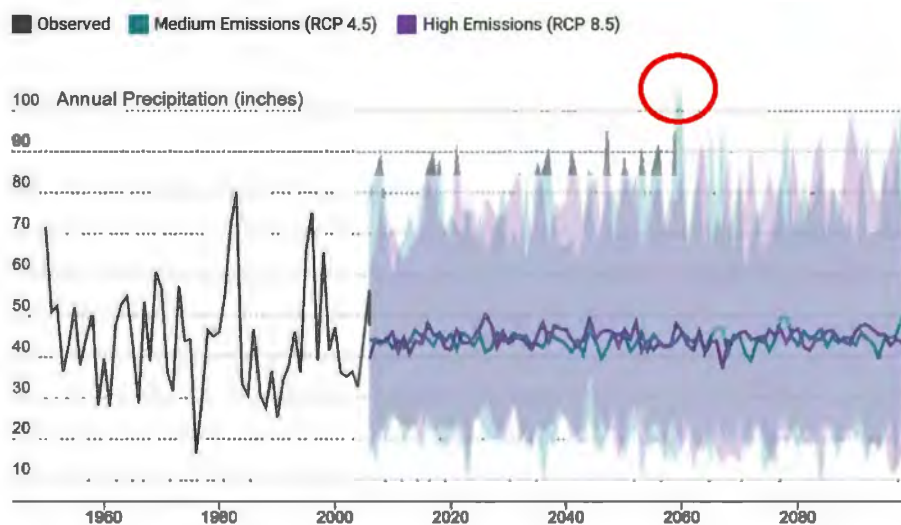
While the total annual precipitation in the County is not expected to change significantly, fluctuations in seasonal variation of precipitation due to climate change are already being observed. Increasing temperatures have resulted in a diminished snowpack that melts earlier in the year. This in turn results in diminished water availability during the warm growing season, which can cause an abundance of secondary climate impacts including food and water scarcity, as well as increased tree mortality due to pests and wildfire susceptibility. Additionally, as more precipitation is falling as rain instead of snow, precipitation is being delivered in more intense storms and within a shorter wet season, which can cause flash flooding and subsequent landslide and debris flow events.

Figure 5-5 El Dorado County 30-Year Maximum Annual Average Precipitation: Historical (1961 – 1990)



As shown in **Figure 5-6**, there will be subtle annual precipitation fluctuations in the County throughout the 21st century. The shaded area in the graph, however, shows that there will be increased variability in future annual precipitation, with both high and low values becoming more extreme. Historically, according to Cal-Adapt, the County's 30-year annual average precipitation based on all climate models has ranged from 41.5 to 48.6 inches. Under the RCP 8.5 scenario, the County's 30-year annual average precipitation based on all climate models could range between 32.6 and 59.8 inches by the end-of-century (Cal-Adapt 2022). Furthermore, the peak high value circled in red in **Figure 5-6** around the year 2060 shows that the annual precipitation during that year could exceed 100 inches.

Figure 5-6 Projected Annual Precipitation in El Dorado County



Source: Cal-Adapt 2022

Like the methodology used above to discuss regional differences in annual average maximum temperature, the County is divided into two geographical areas to depict differences in projected annual precipitation. The Tahoe Basin and the West Slope share similar future trends in annual precipitation changes. As shown in **Table 5-2**, both regions are predicted to have increased annual precipitation by mid-century and end-of-century. The increase in precipitation, however, is not very significant. An example of an annual precipitation increase would be from 52 to 65 inches per year to 65 to 76 inches per year. In other words, the County will experience greater future variability in annual precipitation, instead of an overall annual precipitation change. Also, because the County will experience a slight increase in precipitation through the end-of-century, this may change the seasonality of precipitation and water resource related events, such as the timing of spring snowmelt in any given year. As further discussed in the California 4th Climate Change Assessment Sierra Nevada Region report, there could be more dry days punctuated by increased precipitation intensities when precipitation occurs, contributing to the overall increase in annual variability.

Table 5-2 Historical and Projected Annual Average Precipitation under the RCP 8.5 Scenario

Geography	Summary
West Slope	This region is predicted to generally receive more annual precipitation by mid-century. For example, places that historically received a maximum 22 – 30 inches of annual precipitation, will receive 30 – 40 inches of annual precipitation by mid-century, but may receive similar amounts of annual precipitation by the end-of-century.
Tahoe Basin	This region is predicted to generally receive more annual precipitation by mid-century. For example, places in this region that historically received 65 – 76 inches of annual precipitation, may receive a maximum of 76 – 95 inches of annual precipitation by mid-century, and may receive similar amounts of annual precipitation by the end-of-century. However, there are a few areas that historically received a maximum 52 – 65 inches of annual precipitation, which will receive 65 – 76 inches of annual precipitation by mid-century and will receive further increased precipitation: 76 – 95 inches of annual precipitation by the end-of-century.

Source: Cal-Adapt 2022

Figure 5-7 and **Figure 5-8** below illustrate the predicted mid-century and end-of-century 30-year maximum annual average precipitation under the RCP 8.5 scenario for the County. Both figures show the increased precipitation variability modeled for the County throughout the century.

Figure 5-7 El Dorado County 30-Year Maximum Annual Average Precipitation: Mid-Century (2035-2064)

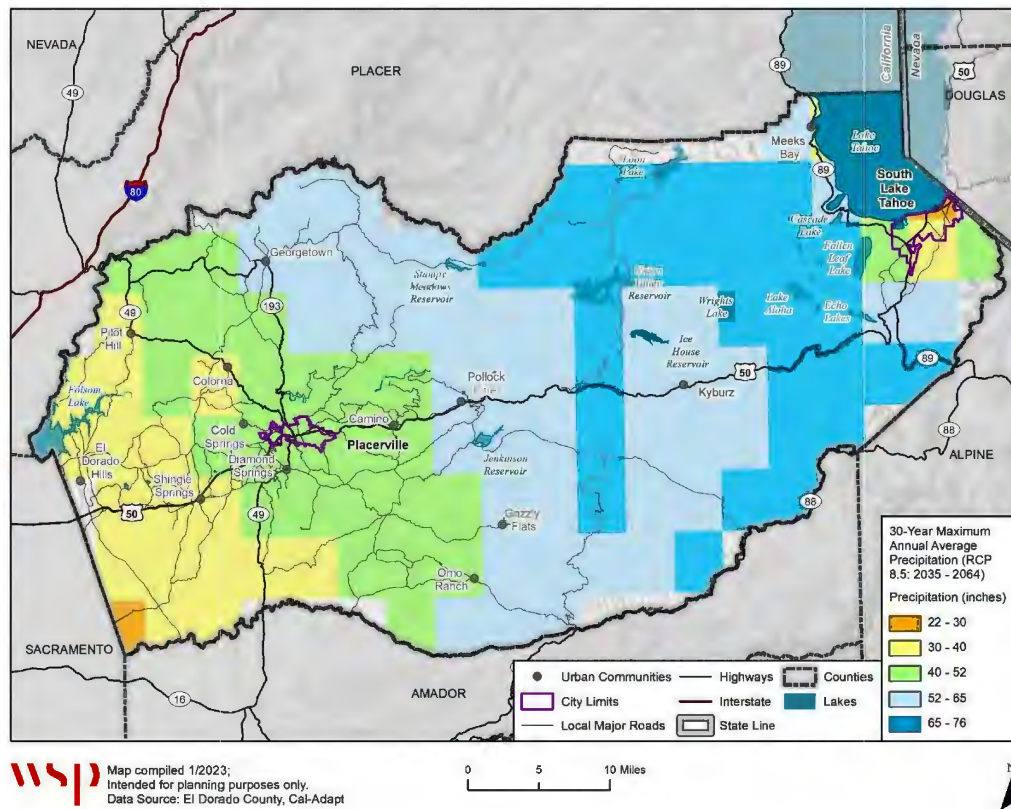
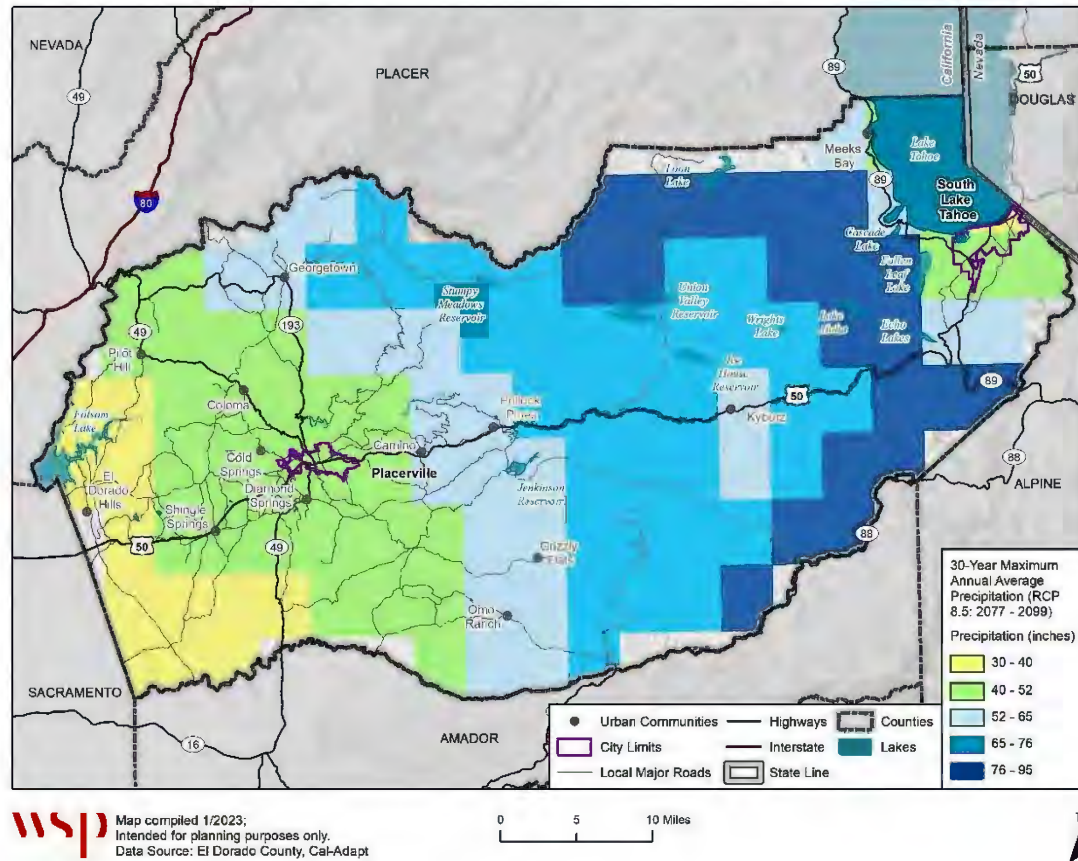
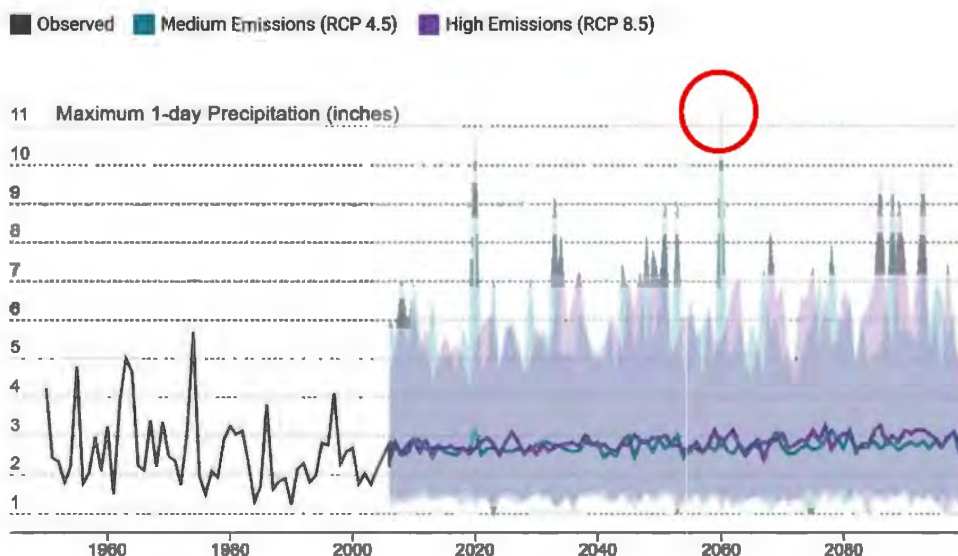


Figure 5-8 El Dorado County 30-Year Maximum Annual Average Precipitation: End-of-Century (2070-2099)



Maximum 1-day precipitation, or the greatest amount of rain or snow over a 24-hour period for a given year, is another metric used to illustrate precipitation variability in the County. As shown in **Figure 5-9**, the projected maximum 1-day precipitation in the County will not change significantly throughout the 21st century. Instead, there will be a slight overall increase but with peak values that are predicted to be more extreme. The peak high value circled in red shows that the maximum 1-day precipitation could exceed 11 inches around the year 2060. Note that this spike is for the RCP 4.5 medium emissions scenario around mid-century, further explaining the minimal differences between the emission scenarios through the first half of the century.

Figure 5-9 Projected Maximum 1-day Precipitation in El Dorado County

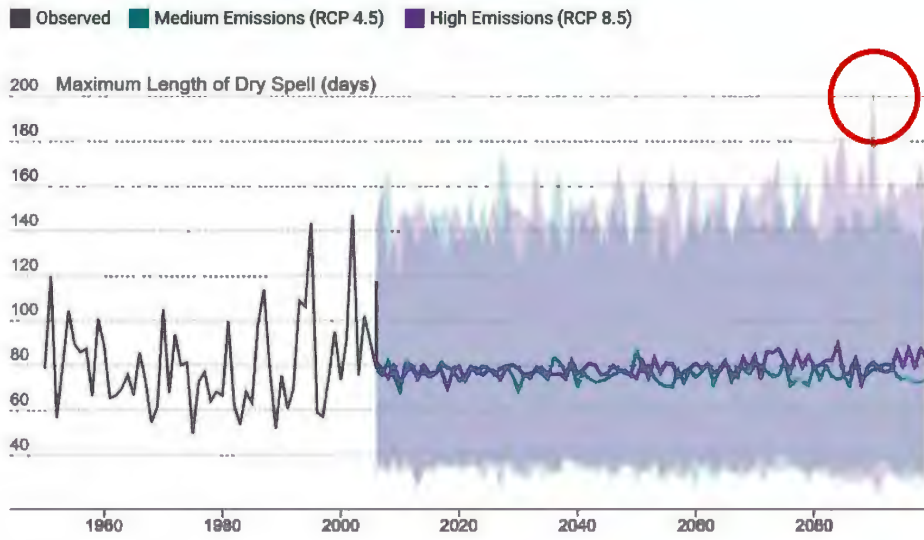


Source: Cal-Adapt 2022

The maximum length of dry spell is defined as the number of consecutive days with precipitation that is < 1 millimeter (mm). As shown in **Figure 5-10**, the projected maximum length of dry spell in the County will not change significantly throughout the 21st century, although there is expected to be increased variability in the future maximum lengths of dry spells, with both high and low values becoming more extreme. According to the Cal-Adapt tool, the historical maximum length of dry spell in the County ranges from 61 to 87 days (Cal-Adapt 2022). Under the RCP 8.5 scenario, the mid-century maximum length of dry spell is projected to be between 61 and 99 days, while the end-of-century maximum length is projected to be between 46 and 114 days. The peak value circled in red in **Figure 5-10** shows that the maximum length of dry spell could exceed 200 days by the end-of-century.



Figure 5-10 Projected Maximum Length of Dry Spell in El Dorado County



As shown in [Figure 5-11](#), no area in the County had a historical annual average maximum length of dry spell that exceeded 130 days. However, as shown in

[Figure 5-13](#), areas of the West Slope near El Dorado Hills and Shingle Springs are predicted to have their maximum length of dry spell exceed 130 days towards the end-of-century.

Figure 5-11 El Dorado County 30-Year Annual Average Maximum Length of Dry Spell: Historical (1961-1990)

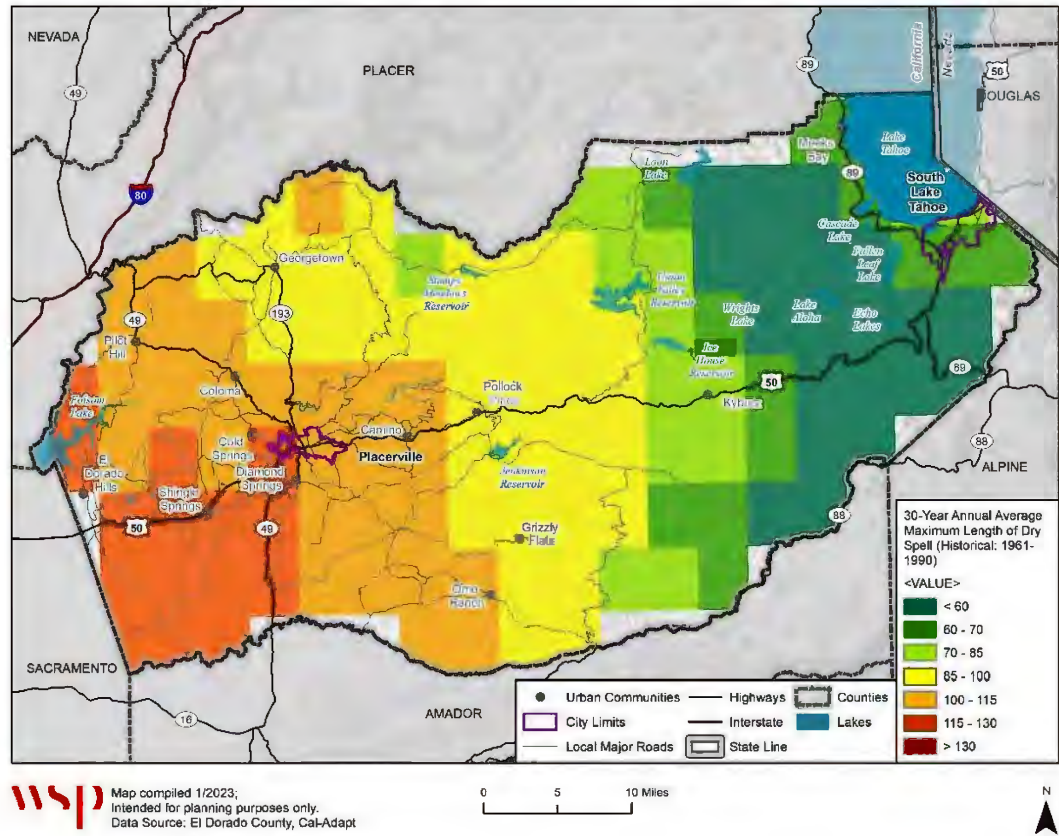


Figure 5-12 El Dorado County 30-Year Annual Average Maximum Length of Dry Spell: Mid-of-Century (2035-2064)

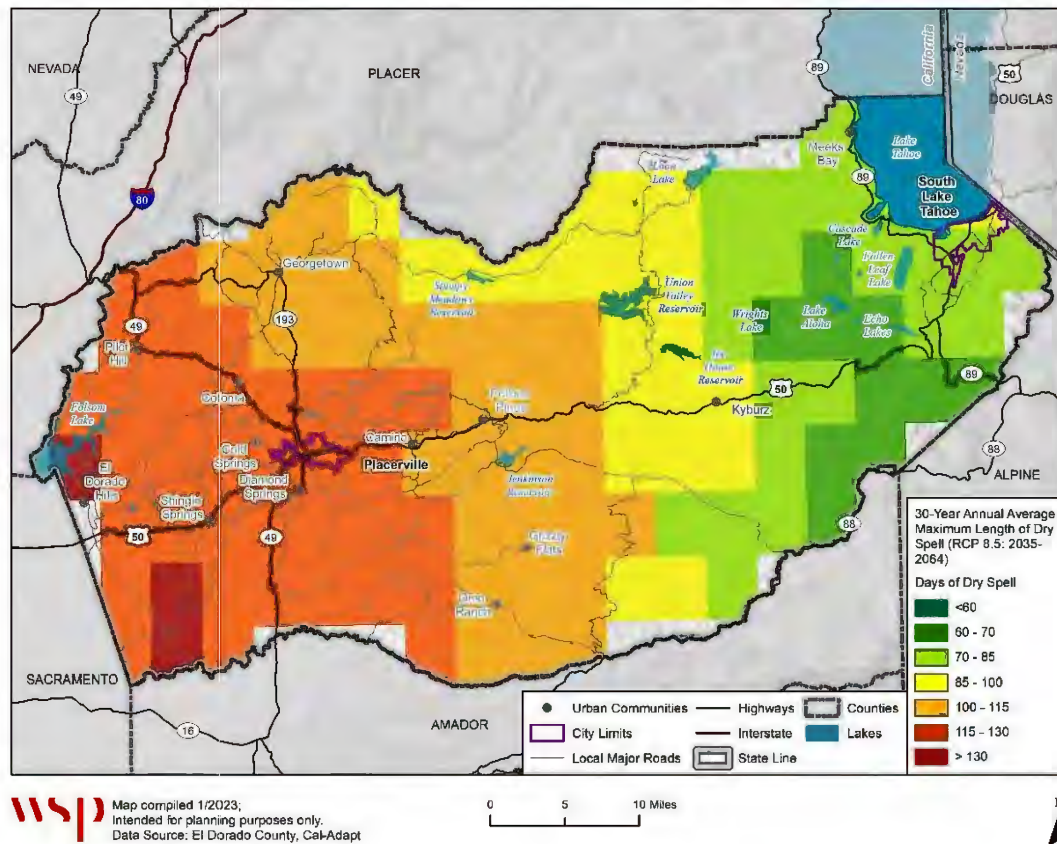
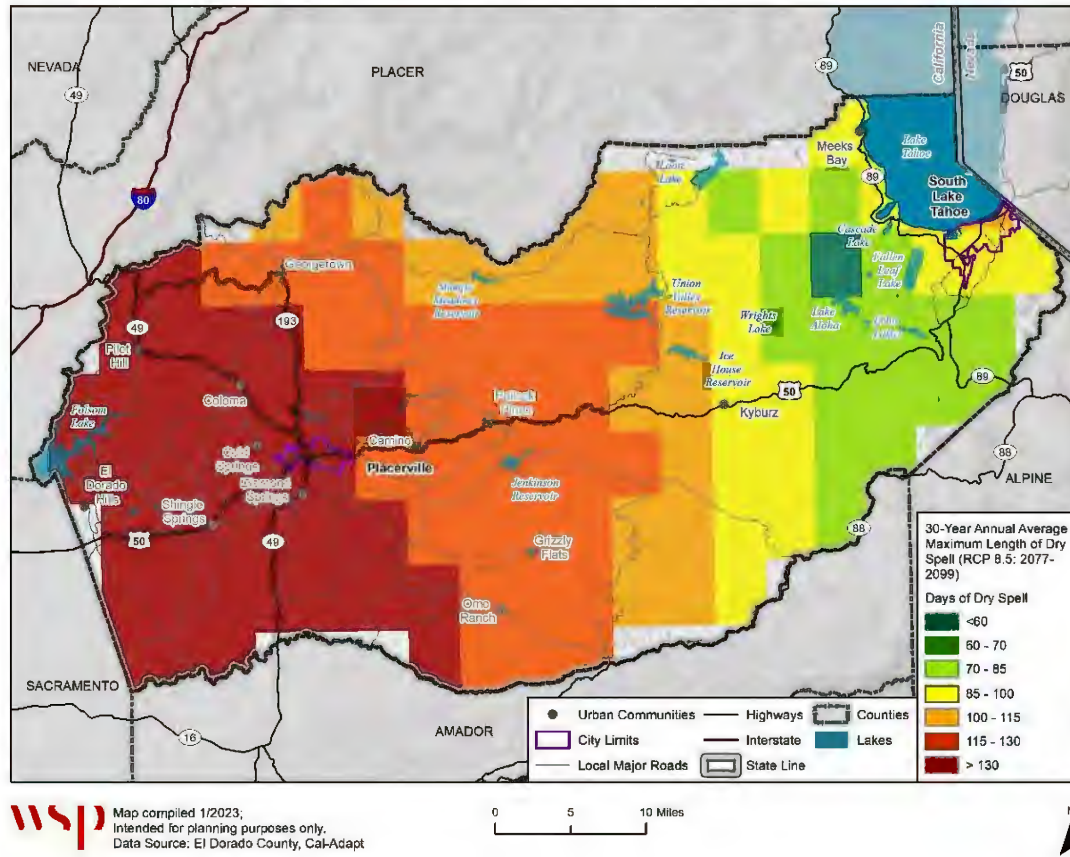


Figure 5-13 El Dorado County 30-Year Annual Average Maximum Length of Dry Spell: End-of-Century (2070-2099)



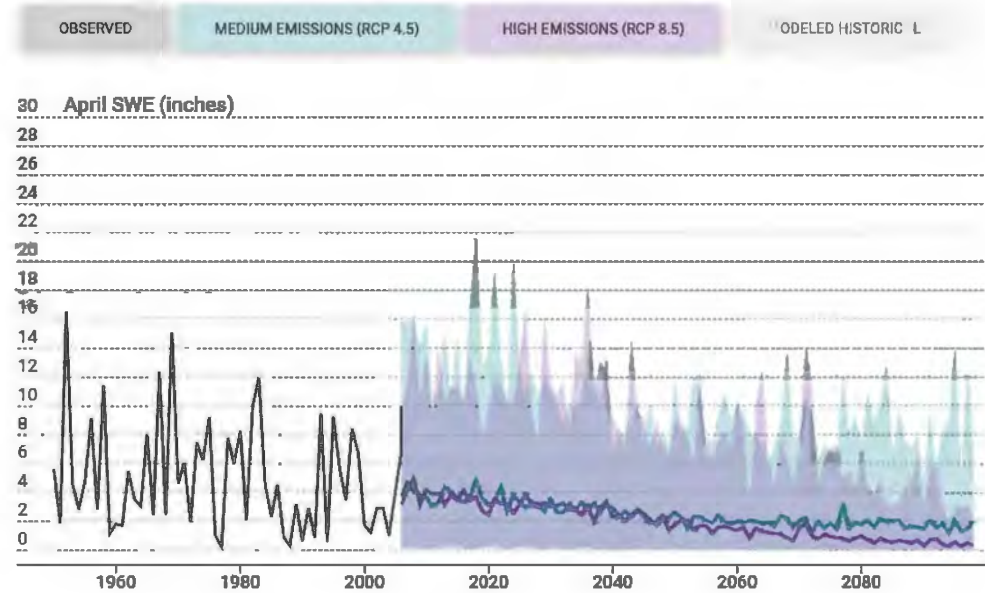
In summary, the County’s precipitation extremes (both deluge and drought) are expected to increase markedly as a result of climate change, which can directly and indirectly worsen other climate-related hazards. High precipitation delivered in the form of intense storms, and within a shorter wet season, may cause flash flooding and subsequent landslide and debris flow events. Extremely low precipitation would result in long periods of drought or extreme drought situations, which can then lead to water supply shortages and increased wildfire risk.

Reduced Snowpack

Snowpack is the accumulated snow that defines the dramatic peaks of the Sierra Nevada. In a warming climate, less precipitation is expected to fall as snow, leading to a reduced snowpack and a higher snow line (the elevation above which rainfall gives way to snowfall) over time. The snowpack plays a key role in the water cycle in western North America, storing water in the winter when the snow falls and releasing it as runoff in spring and summer when the snow melts. Millions of people in the West depend on the melting of mountain snowpack for hydropower, irrigation, and drinking water. In most western river basins, snowpack is a larger component of water storage than human-constructed reservoirs.

Snow Water Equivalent (SWE) is a measurement used to determine trends in snowpack. It is equal to the amount of water contained within the snowpack if it were to melt. SWE is often measured in April to determine changes in precipitation, although measurements may be taken throughout the year to gauge variability in seasonality. Spring snowpack at Donner Summit reached record-low levels in 2014, which were exceeded in 2015 by a SWE value of only 5% of average; however, as of March 2023 these levels are now above average (NRCS NWCC n.d.). Historically, the April SWE in the County has ranged from 4.1 to 6.6 inches (Cal-Adapt 2022). **Figure 5-14** shows how the County’s SWE is projected to gradually drop throughout the century, resulting in an estimated SWE of 0.1 to 3.1 inches by the end-of-century.

Figure 5-14 El Dorado County Projected SWE in April



Source: Cal-Adapt 2022



Increased Wildfire Severity

Wildfire is a complex and regular occurrence within the County's landscape. It is a significant concern throughout California as the frequency, intensity, and size of wildfires has increased over the last 25 years throughout the State. The frequency, severity, and impacts of wildfire are influenced by climate change and many other factors, including development patterns, temperature increases, wind patterns, precipitation change, and pest infestations, making it difficult to project exactly where and how fires will burn. Instead, climate models estimate the likely risk of wildfire. Historically, wildfires have started from lightning, but more and more wildfires are now human-caused and ignited by equipment malfunctions, vehicles, electrical infrastructure, and arson. Many areas within the County landscape are prone to wildfires. Winter snowmelt and rain in the lower elevations support vegetation growth, and then the summer dry season and drought periods dry out the vegetation, thereby increasing the potential for ignition and wildfire risk during the summer and fall months when temperatures are the highest and there are high wind days that can quickly spread the fires. [Figure 5-15](#) below shows the fire history in the County from 1911 to 2022.

[Figure 5-16](#) shows the annual burn probability in the County.

Figure 5-15 El Dorado County Fire History: 1911 to 2022

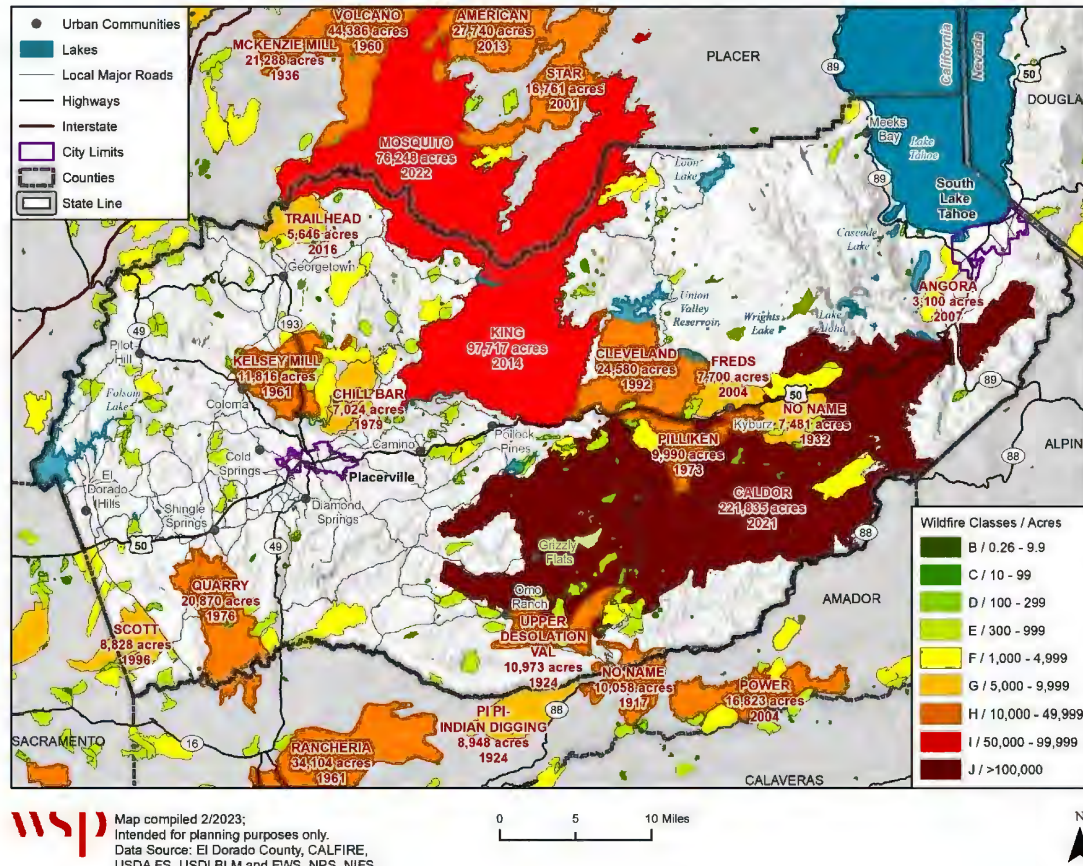
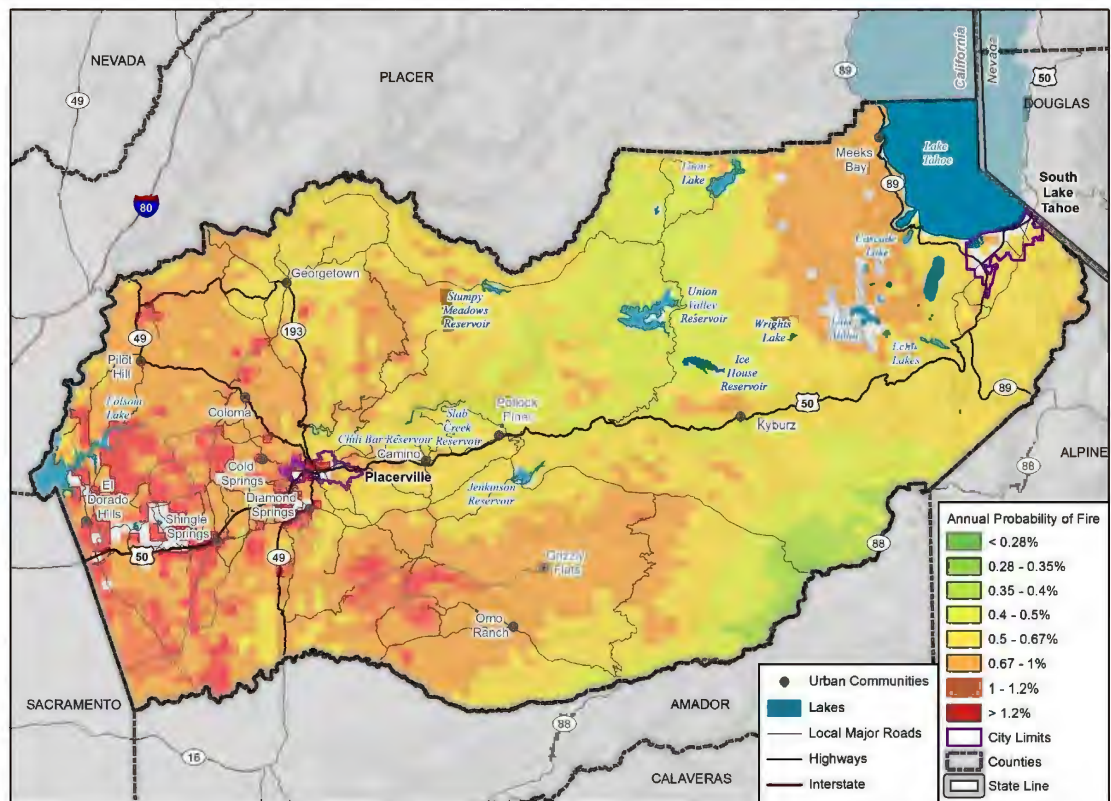


Figure 5-16 El Dorado County Annual Probability of Fire: 2021 – 2050



wood Map compiled 4/2022:
 Intended for planning purposes only.
 Data Source: El Dorado County, CALFIRE, FRAP

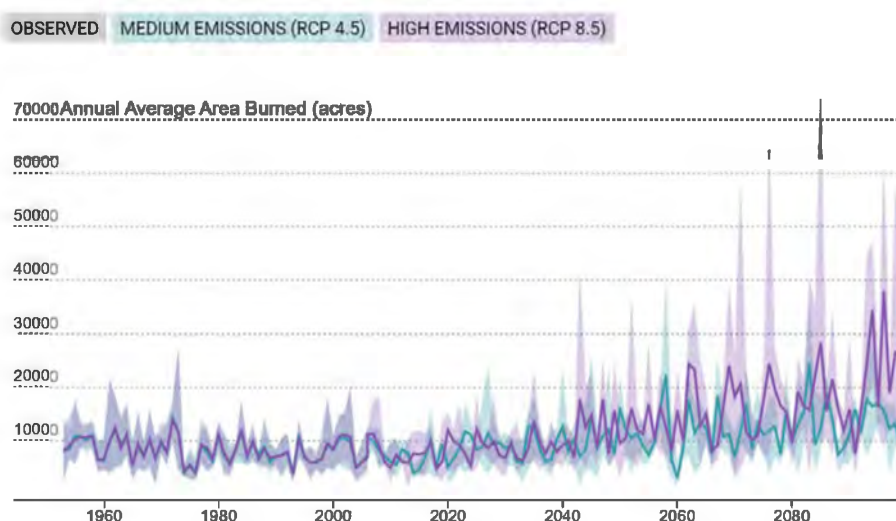
0 5 10 Miles



The frequency, severity, and impacts of wildfire are influenced by climate change, but also many other factors, including development patterns, temperature increases, wind patterns, precipitation variability, and pest infestations. It is therefore difficult to project where and how wildfires will burn (Cal-Adapt 2022). Therefore, climate models estimate increased risk of wildfire.

Wildfire risk is measured by the annual average area burned and by the Keetch-Byram Drought Index (KBDI). The annual average area burned is the projected area at risk of burning each year and can show at a high level if wildfire activity is likely to increase. The projections are robust for the Sierra Nevada region compared to other parts of California, based on detailed model inputs. **Figure 5-17** shows that the annual average area burned for the County is projected to increase throughout the 21st century. Historically, the County has had around 8,350 acres at risk of burning annually (Cal-Adapt 2022). According to the Cal-Adapt tool, the 30-year average annual area at risk of burning under the RCP 8.5 climate scenario, or the average of RCP 8.5 climate projections shown on the graph below between the years of 2070 and 2099, is expected to more than double to around 18,850 acres annually.

Figure 5-17 El Dorado County Projected Annual Average Area Burned



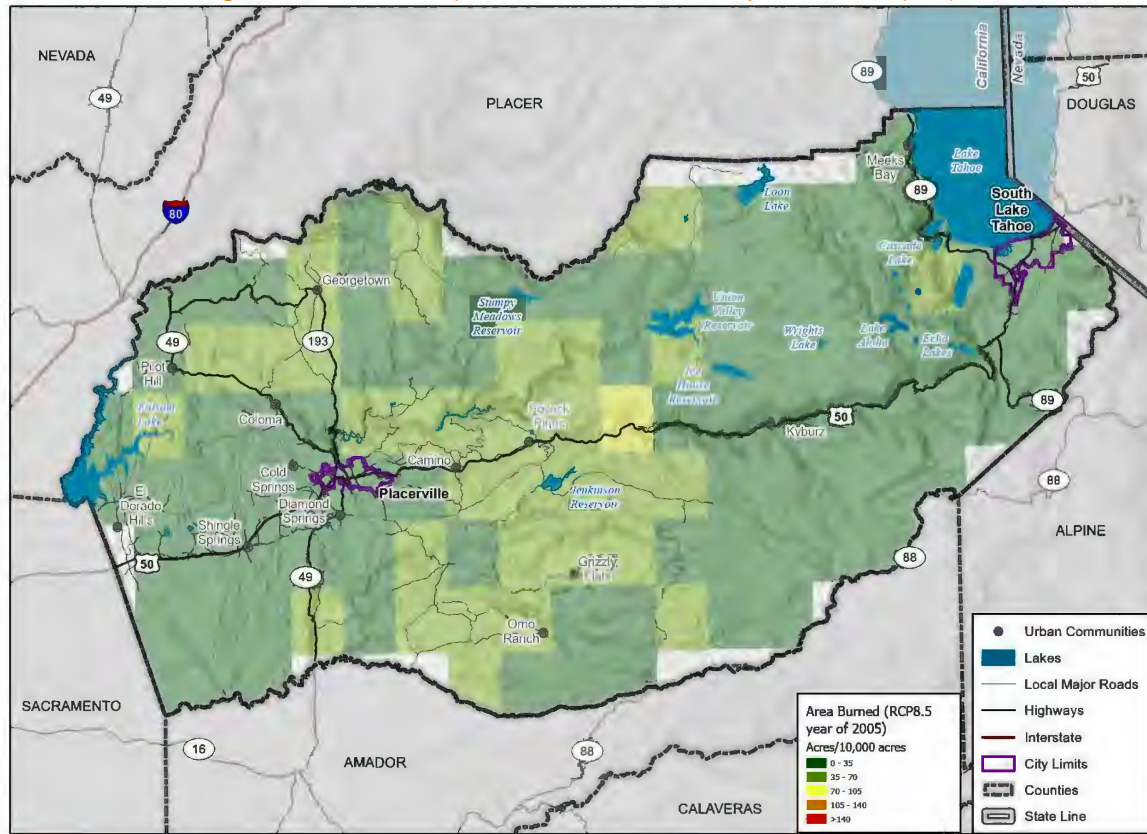
Source: Cal-Adapt 2022

Future wildfire acres burned per 10,000 acres were assessed using data obtained through Cal-Adapt (Westerling 2018; UC Merced 2018) under RCP 8.5. Over the period of 2005-2099, the area burned is modeled to increase throughout the entire county, with most of increase in the foothills and mid-elevation areas from Coloma and Placerville to Coloma. **Figure 5-21** shows the modeled annual acres burned in the County per 10,000 acres for the year 2005. As shown in the graph above, the average annual acres burned in 2005 was under 10,000 acres. In

Figure 5-19 and

Figure 5-20, the modeled annual acres burned in the County gradually increases through mid-century and the end-of-the-century, or over the next two 30-year time periods from 2035-2065 and 2070-2099, respectively (Cal-Adapt 2022). Under the RCP 8.5 scenario and based on the 30-year averages, which represents the average of the most likely outcome over a 30-year period, by mid-century the average annual acres burned is projected to increase to 12,658 acres and by the end-of-the-century to 18,843 acres (Cal-Adapt 2022).

Figure 5-18 El Dorado County Modeled Annual Acres Burned per 10,000 Acres (2005)



wsp Map compiled 4/2022.
 Intended for planning purposes only.
 Data Source: El Dorado County, Cal-Adapt

Figure 5-19 El Dorado County Modeled Annual Acres Burned per 10,000 Acres (2050)

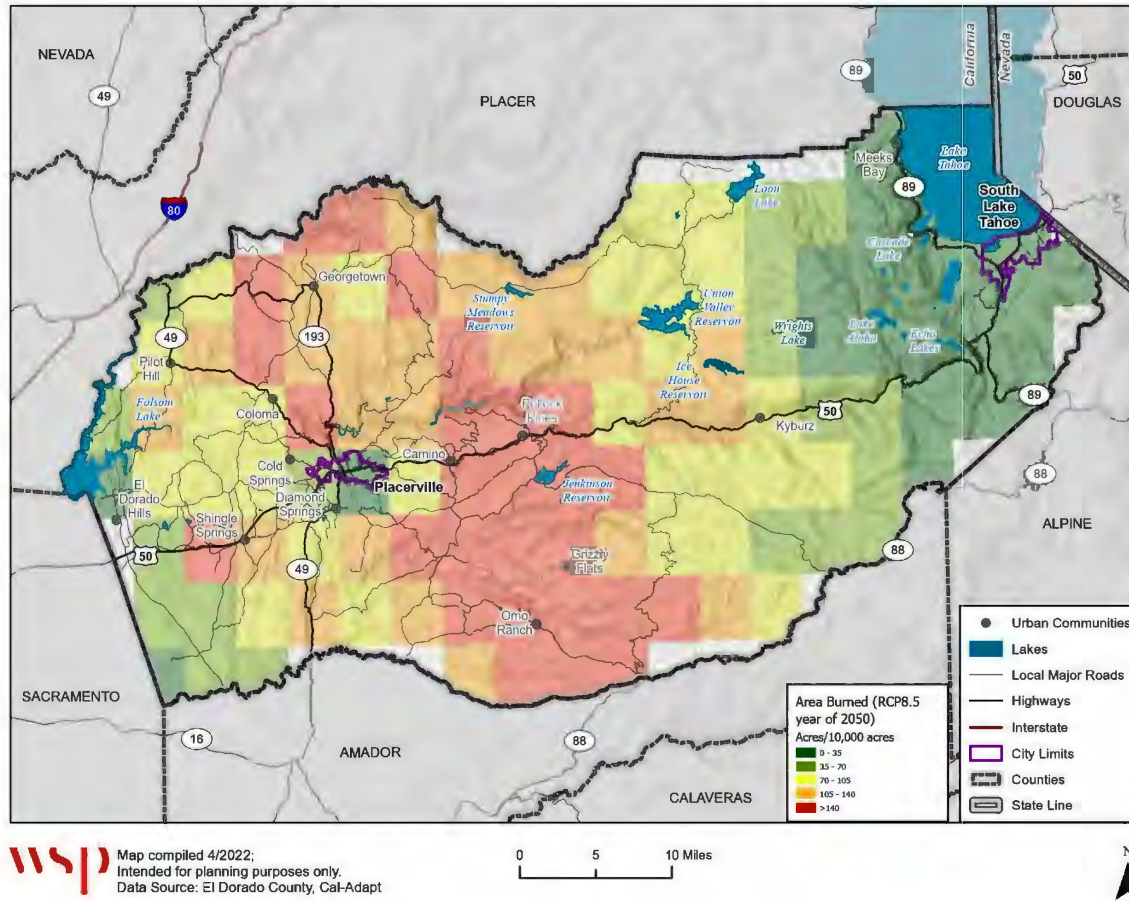
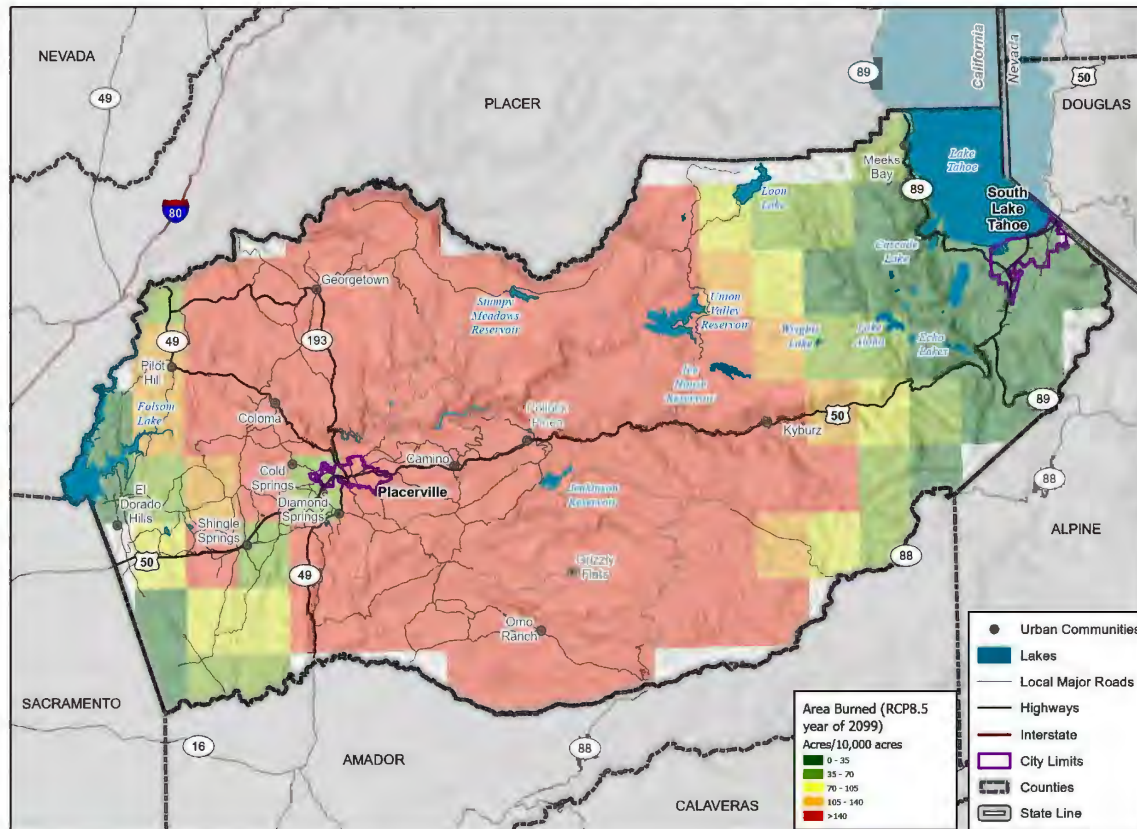


Figure 5-20 El Dorado County Modeled Annual Acres Burned per 10,000 Acres (2099)



Map compiled 4/2022:
 Intended for planning purposes only.
 Data Source: El Dorado County, Cal-Adapt

0 5 10 Miles



The KBDI is a measure of the amount of precipitation required to return soil to full moisture capacity. A KBDI of zero indicates a total lack of moisture deficiency, while 800 represents drought conditions deep within soil layers. KBDI is cumulative, meaning values will increase on dry and warm days and decrease during rainy periods. It is a simplified proxy for favorability of occurrence and spread of wildfire but is not itself a predictor of fire. KBDI values are briefly explained in [Table 5-3](#).

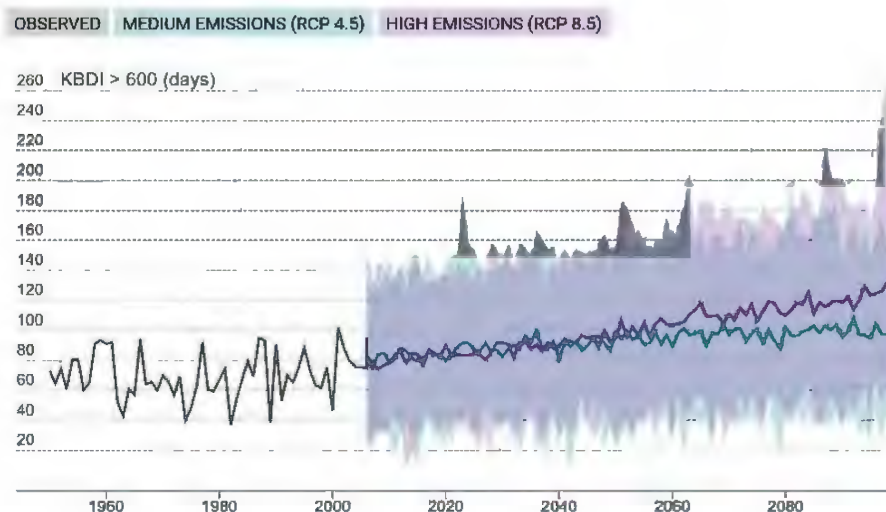
Table 5-3 KBDI Values and Descriptions

Index Range	Description
0-200	Soil Moisture and fuel moisture are high, low wildfire risk.
200-400	Soil and fuels start to dry, average wildfire risk.
400-600	Onset of drought with moderate to serious wildfire risk.
600-800	Severe drought, extreme wildfire risk and increased wildfire occurrence.

Source: Cal-Adapt 2022

Figure 5-21 below shows the number of days in the County where KBDI is greater than 600. These are days when severe drought conditions and wildfire risk are present. Cal-Adapt projections show that the number of days in a year where KBDI is greater than 600 in the County will nearly double under the RCP 8.5 scenario by the end-of-century, from 67 days to 118 days.

Figure 5-21 Projected Number of Days where KBDI > 600 in El Dorado County



Source: Cal-Adapt 2022

Figure 5-22 illustrates the historical annual number of days when KBDI exceeds 600 in the County. The annual number of days when KBDI exceeds 600 varied geographically but was less than 116 days throughout the County (Cal-Adapt 2022).

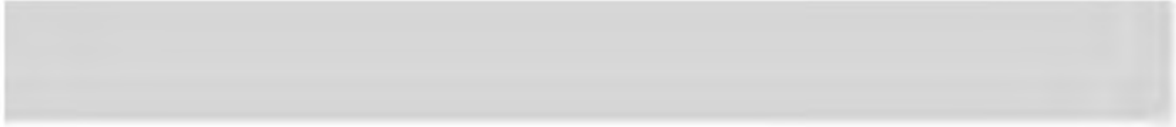


Figure 5-23 and

Figure 5-23 below show the projected mid-century and end-of-century annual number of days when KBDI exceeds 600 under the RCP 8.5 scenario for the County. As is the case in the historical model, KBDI values are highly dependent on location in both the mid-century and end-of-century models. The end-of-century KBDI values for the Tahoe Basin remain largely the same, although variations too subtle for the model to predict may occur. The KBDI values for the West Slope, however, are expected to increase rapidly throughout the 21st Century.

Figure 5-22 El Dorado County Annual Number of Days when KBDI > 600: Historical (2005)

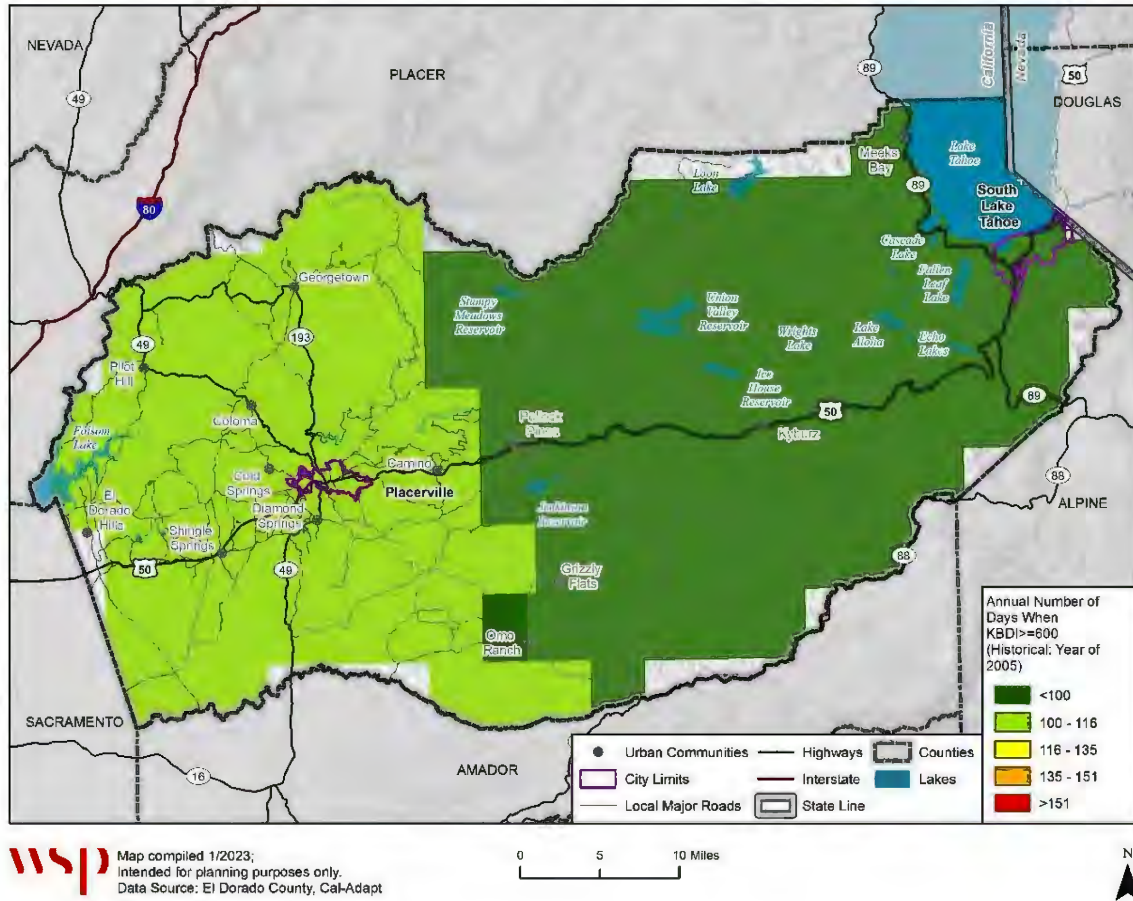


Figure 5-23 El Dorado County Annual Number of Days when KBDI > 600: Mid-Century (2050)

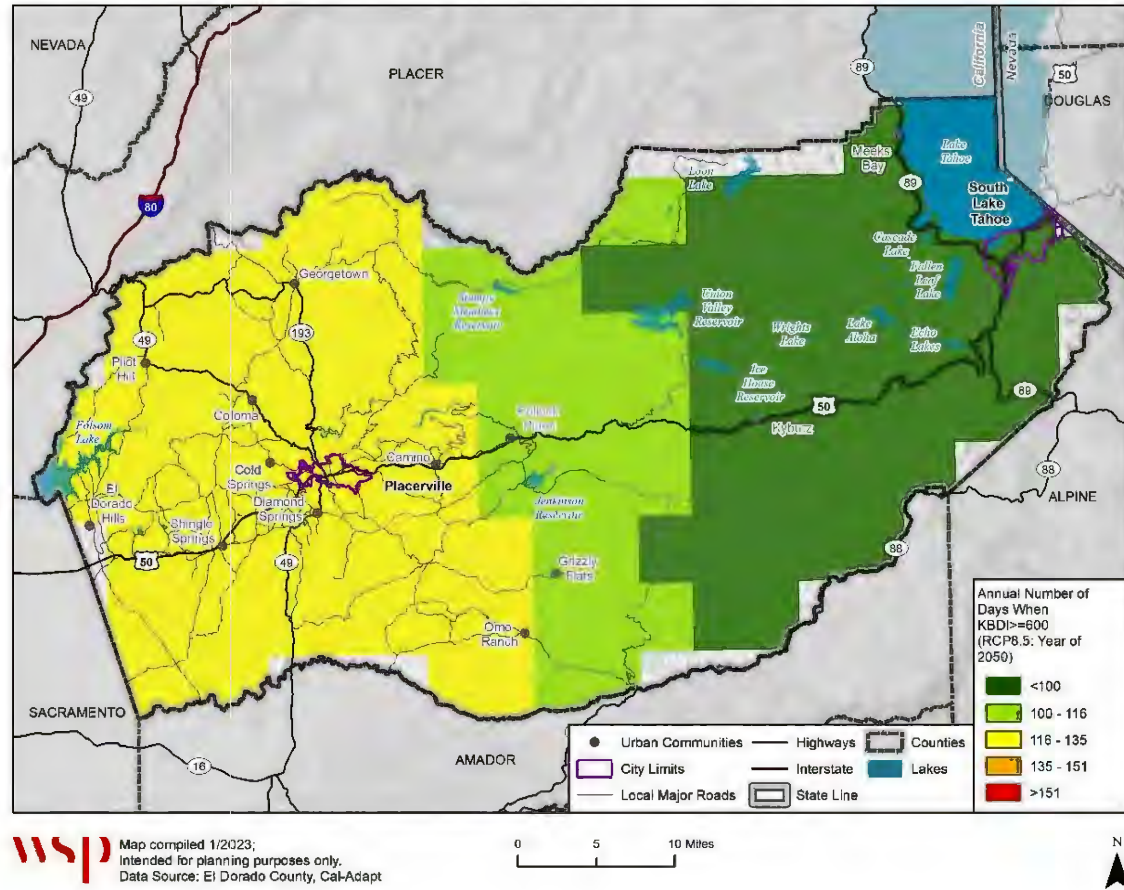
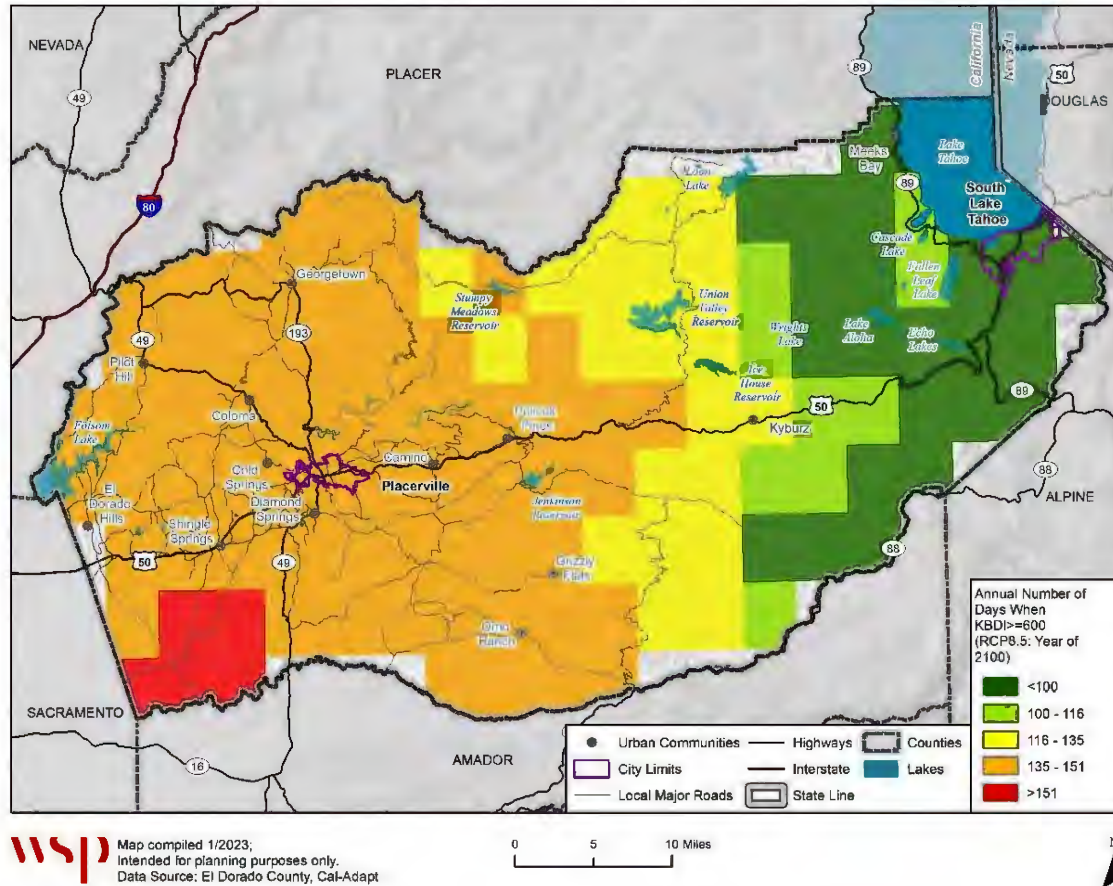


Figure 5-24 El Dorado County Annual Number of Days when KBDI > 600: End-of-Century (2100)



Federal, State, and local governments, as well as the citizens of the County, pay a price to mitigate the risk of wildfire. Fuels reductions programs are an ongoing effort, and grants and incentives are provided to those who can afford to reinforce their property against future fires. However, the risk of wildfire cannot be eliminated completely, and additional recovery and rebuilding costs remain after wildfire events.

In addition to the direct costs resulting from human injury and property destruction, secondary effects have the potential to continue impacting the community for years. Wildfires release gaseous pollutants, such as carbon monoxide and hazardous air pollutants, such as particulate matter (i.e., polycyclic aromatic hydrocarbons composed of acids, molds, metals, or soot), into the air where they can drift long distances, affecting millions of people (Borgschulte et al 2022). These small particles easily slip into homes, where they are inhaled, causing negative cardiovascular and respiratory conditions. These effects are felt most acutely by first responders and sensitive populations, such as children and seniors.

D. Secondary Climate Stressors

Secondary climate stressors are the result of complex interactions between primary climate stressors, and primary climate stressors can contribute to the development of secondary climate stressors when other external variables are considered. This section profiles 10 secondary climate-related stressors relevant to the County, including metrics used to measure current trends and climate change projections.

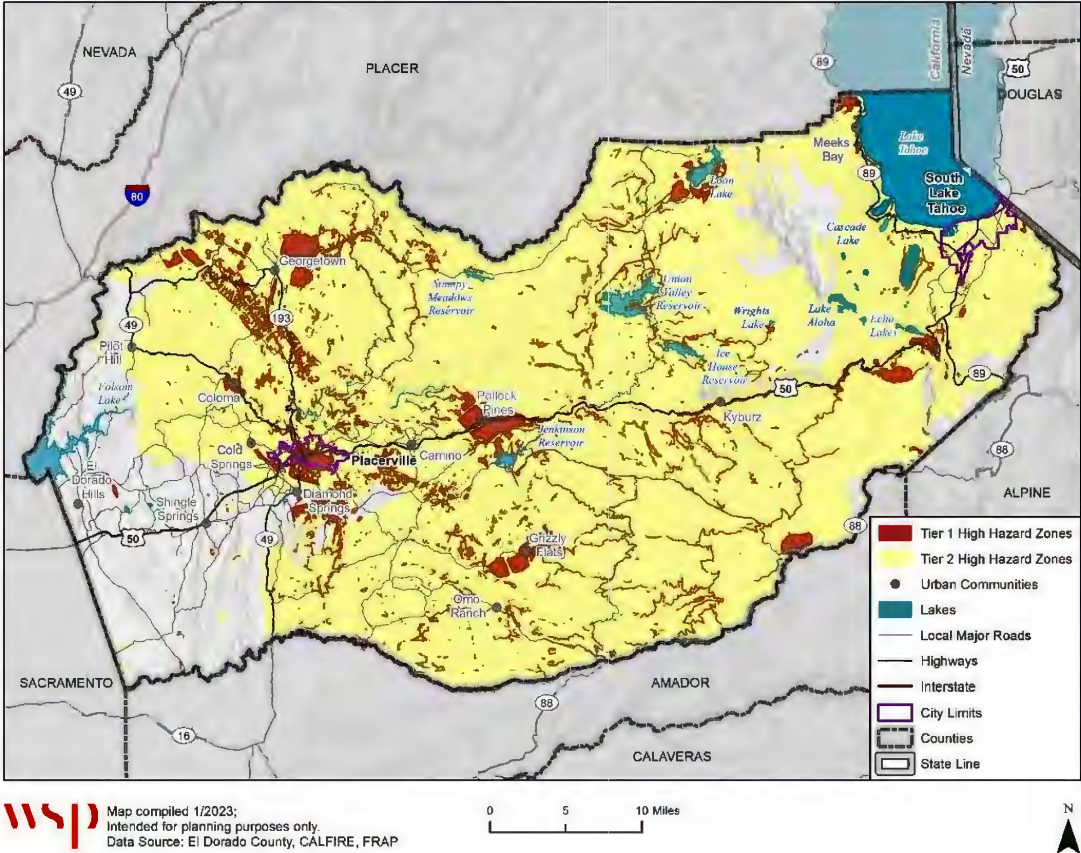
Agriculture and Forestry Disease and Tree Mortality

The County is particularly vulnerable to the threat posed by agricultural and forestry disease, and tree mortality. According to the 2020 County of El Dorado Crop Report, agriculture, livestock, and timber harvest products had a gross crop value of \$72.2 million, with apples and apple products representing the leading crop with a value of \$22 million. It is estimated that the total impact of agriculture to the County equaled \$730 million in 2020. The County is also in the heart of one of the most diversified recreational areas in California, with approximately one million acres of National Forest land. Desolation Wilderness is a popular wilderness area (63,960 acres) in Eldorado National Forest that consists of chaparral, conifer, fir, and high-alpine sub-alpine forests. Additionally, the promotion and expansion of agriculture, recreation, and tourism and their related businesses is a key goal in the County's 2021 Strategic Plan. Each of these industries would be heavily impacted by outbreaks of agricultural and forestry disease like bark beetle infestations and related tree mortality.

Many species of bark beetles are native to the Sierra Nevada. Historically, they have been a part of a healthy ecosystem, feeding on small numbers of damaged trees (Sierra Nevada Conservancy 2017). However, the recurring and intensifying droughts in California have weakened trees, making them more susceptible to infestation. The population of bark beetles has therefore dramatically increased. When populations of bark beetles are high, even healthy trees are not able to fend off infestation. In addition to direct damage done to trees, bark beetles can also be carriers of fungi and disease that may further impair trees. In 2016, a severe bark beetle infestation, which was intensified by persistent drought, caused a massive increase in tree mortality, prompting the County Board of Supervisors to declare a state of emergency. As of 2017, drought-related mortality has killed almost 110 million trees in the Sierra Nevada region (Sierra Nevada Conservancy 2017). As of December 2022, total tree mortality increased across California's forested areas, and in the County approximately 78,000 acres were impacted with tree mortality with an estimated 1,400,000 dead trees (USFS 2022).

Figure 5-25, 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 5-25 El Dorado County Tree Mortality Related High Hazard Zones



As temperatures rise, pest and disease incidents are likely to get worse as many pests are most active in warm weather. Currently, the average annual minimum temperature in the County is 38.7°F. Based on modeling from the Cal-Adapt Tool, using the RCP 8.5 scenario, this temperature could be as high as 49.9°F by the end-of-century. Additionally, the County currently experiences about four “warm nights” (see [Increased Temperatures](#)) per year. Using the same modeling scenario, that number is expected to increase to up to 53 days per year by the end-of-century. These rising temperatures will increase the extent of pest habitat and the duration of the year during which bark beetles can thrive. This shift toward an increased warm season and a more accommodating environment for disease and infestations will alter the cropping patterns of agricultural plants. Crops such as walnuts, which require a long, cool winter, may no longer be viable in the County. Increased stress on plants from warmer weather, infestations, and disease will likely reduce agricultural yield.

Changes in water supply are likely to affect agricultural resiliency. While the overall average precipitation level in the County is not expected to change dramatically, the distribution of precipitation will change. Currently, the average length of dry spells in the County is 72 days (Cal-Adapt 2022). Using the RCP 8.5 scenario, the maximum length of dry spell is expected to increase to up to 114 days. Plants that have been weakened by drought are more susceptible to disease and infestations.

Diseased trees also pose a threat to infrastructure resiliency. Deteriorated trees or limbs can fall and damage homes and other facilities, including electrical infrastructure. The 2021 Dixie Fire, which destroyed over 1,300 structures, was started when a tree fell on an electrical line (CAL FIRE 2022a). While wildfire is a regular occurrence in California, rising temperatures and damaged trees threaten to increase the severity of future catastrophic fires. Fires that may have previously burned a small area can be fueled by weakened vegetation and result in much more destructive fires



Tree mortality in the Sierra Nevada in 2015 was the worst in recorded history. The U.S. Forest Service estimated 129 million trees in California died after four years of extreme drought. Results from a 2022 U.S. Forest Service surveys and field observations suggest additional tree mortality is evident in dying coniferous trees (USFS 2022). Increased tree mortality is an indicator for other climate-related hazards, as dead trees provide fuels for wildfires and elevated rates of mortality change vegetation type and characteristics and composition of the forest.

Photo Credit: California Tahoe Conservancy

Avalanche

An avalanche is a fall, release, or slide of a mass of snow in a sufficient enough amount to cause damage to infrastructure or to threaten the safety of people. Avalanches are possible when weak layers of snow within the cumulative seasonal snowpack fail to support the weight of the snow above and collapse. The result causes the overlying snow to break free and flow downhill. There are two destructive elements at work within an avalanche. Primarily, the actual impact of the displaced snow and ice is a concern. Embedded within the snow, debris such as broken-off trees, branches, and rocks are just as dangerous as the snow itself.

Secondly, the avalanche wind, caused by air pushed ahead of the moving mass of snow, can cause additional damage. The effects of an avalanche are confined to the areas within and around the avalanche path.

Avalanches can be triggered by human activity or environmental factors, such as wind loading, precipitation, or warm weather, and they are usually isolated occurrences that happen in the backcountry. The terrain most susceptible to avalanches is typically in sheltered regions of mountains where snow is most prone to accumulate, and along steep slope angles ranging from 30 to 45 degrees. The most sheltered aspects in the Sierra Nevada, where snow can most greatly accumulate, are upon north and northeast-facing slopes.

The Sierra Avalanche Center (SAC) keeps records of snow conditions, avalanche observations, and other avalanche related incidents, recorded from a variety of professional sources, mountain guides, and the public. The SAC designated an Avalanche Zone in 2018 that encompasses the eastern portion of the County, including the entire City of South Lake Tahoe. Since 1950, there have been 18 avalanches that resulted in nine deaths and 12 injuries in the County, according to NOAA's National Centers for Environmental Information. Recently, there have been additional avalanches that resulted in injuries during the 2022-2023 winter season and a particularly high number of incidents in March 2023.

The likelihood and nature of future avalanches in the County may be affected by climate change. As winters become shorter, the potential for weak snow accumulations at the bottom of the snowpack increases. As snow piles on top of the weak layer, and temperatures remain warm, the upper, moisture-laden layers become vulnerable to sliding. More extreme precipitation events that deposit large amounts of snow in a short period may also increase the potential for recurrent large avalanches. Research suggests that with ongoing climate change, the characteristics of avalanches may change, affecting the rates of avalanche burial and survival (Strapazzon et al 2021). With a wetter and warmer snow climate, the consequences of burial may become more severe. Higher snow densities in avalanche debris may interfere with the respiration of completely buried victims, and blunt trauma and secondary injuries may become more frequent as snow cover becomes thinner (Strapazzon et al. 2021).



State Highway 50 along Echo Pass closed in April 2019 after an avalanche occurred and caused a collision.

Photo Credit: El Dorado County Sheriff's Office 2019

Drought and Water Supply Challenges

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 because of water sources being depleted faster than they can recharge. According to DWR, a singular dry year will not constitute a drought in California due to its extensive water supply infrastructure.

Drought can be defined based on its causes or effects:

- Meteorological drought is usually defined by a period of below-average water supply.
- Agricultural drought occurs when there is an inadequate water supply to meet the needs of the State's crops and other agricultural operations such as livestock.
- Hydrological drought is defined as deficiencies in surface and subsurface water supplies. It is generally measured by streamflow, snowpack, and as lake, reservoir, and groundwater levels.
- Socioeconomic drought occurs when a drought impacts health, well-being, and quality of life, or when a drought starts to have an adverse economic impact on a region.

In 2016, Governor Jerry Brown declared the severe 2012-2016 drought a state of emergency. The official declaration was lifted in 2017, and the need for municipalities and water agencies to reinforce water supplies and enhance long term resiliency to drought was made clear. The County faces difficulties conserving water supplies, as some of its residents are supplied by disparate public water purveyors or small private water companies, and some rely primarily on surface water, or in some cases groundwater, with no alternative water supplies during dry years. The public West Slope water purveyors have established agency-specific drought plans that define water use reductions and ways to respond to varying conditions during emergency drought conditions. However, these public water agencies on the West Slope only serve a small portion of the residential and agricultural water demands. Numerous small and rural water purveyors have experienced hardships because they do not have secure water supplies and rely on water from small water systems or domestic wells that are predominately supplied by low-yield fractured rock groundwater or local springs that have limited capacity (EDWA 2023). These rural water purveyors are commonly served by small water systems or individual self-supply users with domestic wells (EDWA 2023). Additionally, existing infrastructure does not allow for much exchange of water supplies between the public water agencies and those served by the rural water purveyors (EDWA 2023).

The water supply, water quality, and public safety issues vary from the West Slope to the Tahoe Basin. The West Slope lacks a consistent groundwater supply, making it vulnerable due to its reliance on surface water; there are also more than 100 small water public water systems susceptible to drought because they lack reliable and alternative supply sources (EDWA 2023; EDWA 2019). Demand projections and climate hydrology also suggest a significant water supply-demand imbalance during drought conditions based on existing facilities and operations (EDWA 2019). During drought events, surface water supplies, and reservoir storage levels are expected to decrease. Limited areas of the water infrastructure on the West Slope also includes historic unlined ditches and wooden flumes used for conveyance that are susceptible to wildfire and landslide impacts exacerbated by climate change.

The Upper American River Basin Regional Drought Contingency Plan (RDCP), completed in March 2023, aims to improve resiliency to droughts in the West Slope (EDWA 2023). To reinforce drought resiliency in the West Slope, the RDCP conducted a thorough vulnerability assessment and identified and prioritized mitigation actions and funding sources. The RDCP lays out a plan for regional implementation and collaboration, focusing on sustainable water resources management and aligning water management planning of the Bureau of Reclamation, EID, Georgetown Divide Public Utility District, and Grizzly Flats Community Services District. The plan is set to be revisited and reassessed every five years, or when

occurrences trigger an update.

The TRPA Regional Plan in the Tahoe Basin has set strict growth and land use restrictions to reduce the risk of water supply and demand imbalances (TRPA 2012). The Tahoe Basin is less susceptible to drought given the community relies on both surface water and groundwater; however, there are small water systems that are vulnerable to the effects of drought in the event of a temporary loss of water supply. Long-term groundwater availability is also less of a concern because runoff and snowmelt are adequate for recharge (EDWA 2019). However, the increased frequency of wildfires can degrade long-term water quality.

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. For example, the runoff midpoint (when 50 percent of the total annual runoff has occurred) may shift from March to between 30 to 35 days earlier by mid-century and the end-of-century projections (EDWA 2023, Bureau of Reclamation 2022, EDWA 2019). Currently, the average SWE is about 5.2 inches for the County in April. Based on the RCP 8.5 scenario, that number could be as low as 0.8 inches by the end-of-century. At the same time, the County may experience “flashier” hydrology due to increased precipitation variability or short-periods of time when there is more snow or rainfall, which could overwhelm existing facilities that were designed to operate based on historical hydrology (EDWA 2023).

Additionally, increased temperatures lead to increased water demand. Warmer temperatures also cause water to evaporate quicker, resulting in more demand for outdoor water use. Vegetation that is dehydrated is more susceptible to pest infestation and lends itself to becoming a wildfire risk.

Wildfire poses an especially devastating threat to the County as the EID still employs wooden flumes to deliver water across steep and hard-to-access terrain along Highway 50 (Abercrombie 2023). These are liable to be destroyed directly by wildfire, or by the secondary effects of wildfire such as erosion and post-fire landslides and slope instability. Several of these flumes were damaged during the Caldor Fire in August 2021. These flumes were reconstructed and repaired as emergency projects in May 2022. In 2023, EID announced plans to replace an additional 3,339 feet of wooden Flume 46 with a more permanent material as part of their five-year Capital Improvement Plan (2023-2027) (Abercrombie 2023, EID 2023). Lastly, drought conditions may affect the water quality of surface water supplies. Reduced stream and river flows during drought periods can increase the concentration of pollutants or contaminants. Reservoirs are also susceptible to water quality impacts from wildfires because these events can reduce potable water quality following increased runoff and increased erosion and sedimentation.


Extreme Heat

Summers in the County tend to be hot, arid, and mostly clear, and winters are cold, wet, and partly cloudy. On average, the summer season lasts for three months, from June to September, with an average daily



The Caldor Wildfire burned through EID’s Flume 4, 5, 6, and 30 in August 2021. Reconstruction of these flumes began in September 2021 and are now complete.

Photo Credit: EID 2022



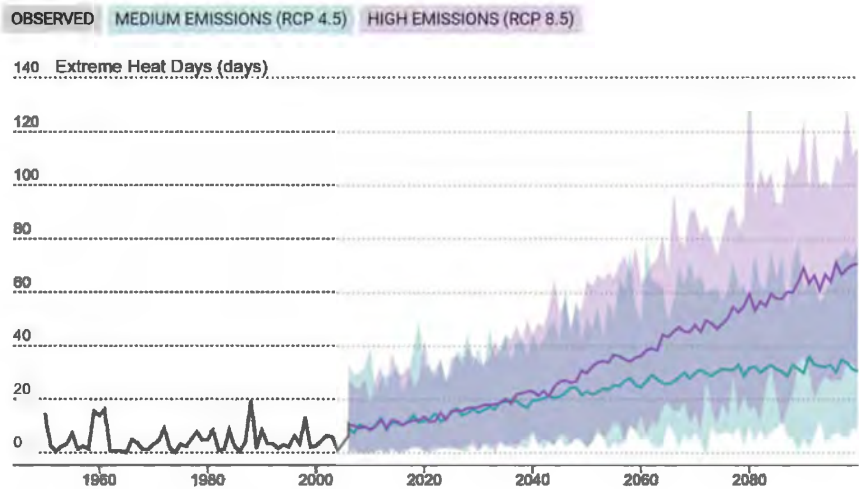
high temperature above 86°F. The hottest month of the year is July with an average high of 93°F and low of 63°F. The winter season lasts for three months, from November to February, with an average daily high temperature below 61°F. The coldest month is December, with an average low of 39.6°F and high of 54°F.

Extreme heat hazards are measured by the number of extreme heat days or events per year and the duration of a heat wave event. Extreme heat days are defined as days when the maximum temperature exceeds the 98th percentile values of the historic daily maximum temperatures of a given location from 1961 – 1990, between April and October (Cal-Adapt 2022). Extreme heat is also defined by FEMA as temperatures that are over 10 degrees or more above the average high temperature for the region and last for several weeks. In other words, heat waves are periods of abnormally hot weather lasting days to weeks. In the County, an extreme heat day is defined as a day when the maximum temperature exceeds 92.4 °F (Cal-Adapt 2022).



Figure 5-26 shows how the number of extreme heat days in the County is projected to increase towards the end-of-century.

Figure 5-26 Forecasted Number of Extreme Heat Days in El Dorado County



Source: Cal-Adapt 2022

Figure 5-27 shows the historical number of extreme heat days per year for the County, which is fewer than 20 days, and Figure 5-28 and Figure 5-29 show the predicted mid-century and end-of-century number of extreme heat days per year under the RCP 8.5 scenario for the County. While the historic number of extreme heat days was four, the County is predicted to have between 20 and 35 extreme heat days by the year 2050, and most of the County is predicted to have more than 65 extreme heat days by 2100 (Cal-Adapt 2022).

Figure 5-27 El Dorado County Average Number of Extreme Heat Days: Historical (2005)

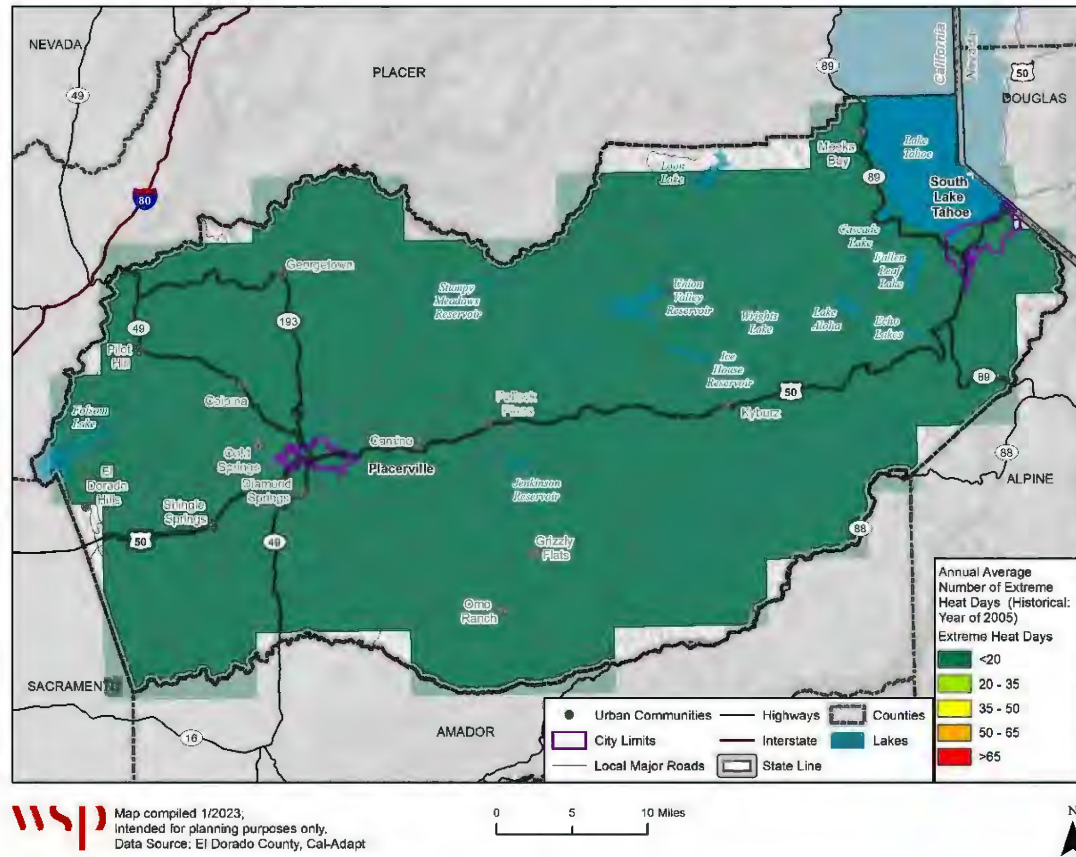


Figure 5-28 El Dorado County Average Number of Extreme Heat Days: Mid-Century (2050)

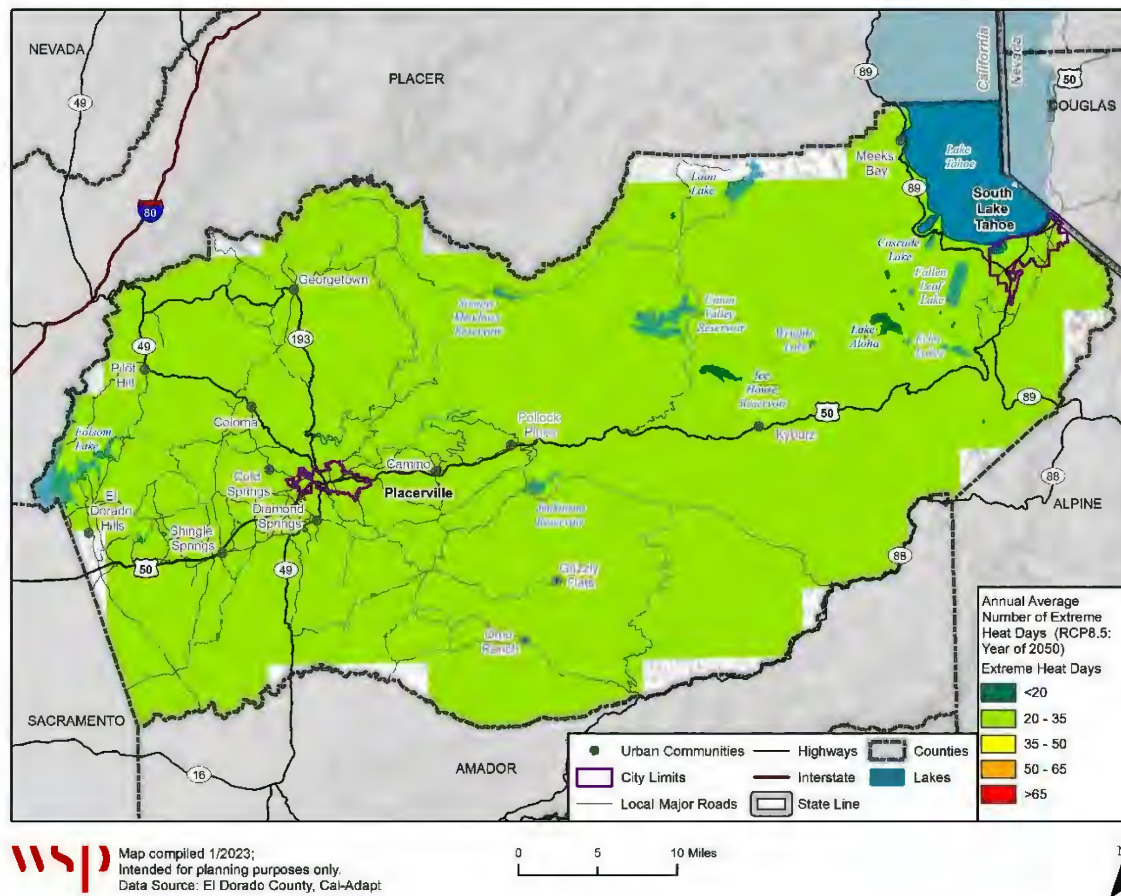
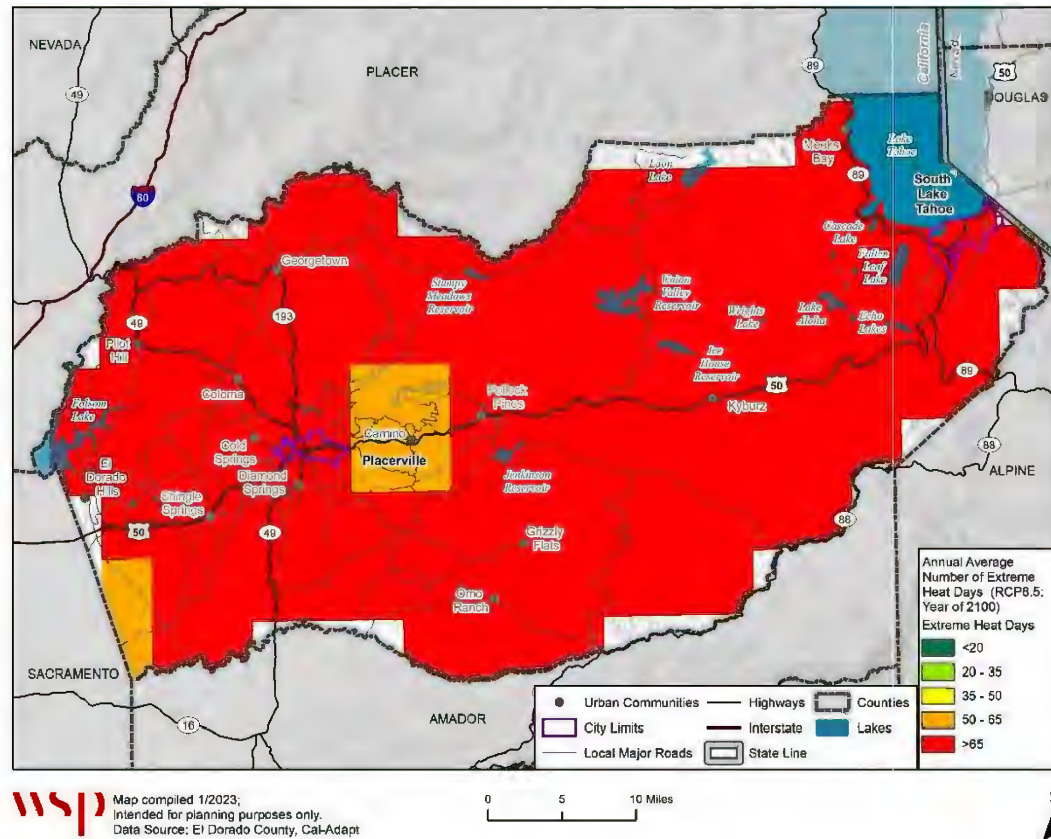
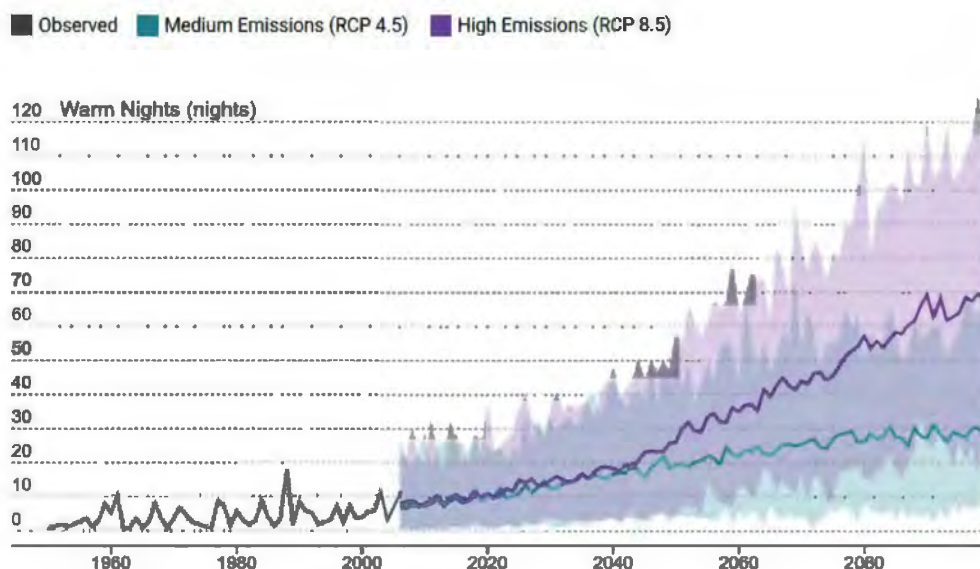


Figure 5-29 El Dorado County Average Number of Extreme Heat Days: End-of-Century (2100)



While climate change is making days hotter, it is also making nights warmer. This trend deprives people’s bodies and minds of the opportunity to cool off, which is detrimental for overall human health (Dahl 2022). The number of warm nights is the number of nights where the maximum temperature exceeds the 98th percentile values of the historic nightly maximum temperatures in each location from 1961 – 1990, between April and October. In the County, the threshold temperature for warm nights is 60.4 °F and is determined to be four nights annually (Cal-Adapt 2022). That number is projected to rise by a 30-year average of 23 nights by mid-century and a 30-year average of 53 nights by the end-of-century, as shown as an average of the values correlated with the years between 2035-2064 and 2070-2099 respectively, in [Figure 5-30](#).

Figure 5-30 Projected Number of Warm Nights in El Dorado County



Source: Cal-Adapt 2022

The County’s overall temperature, number of extreme heat days, and number of warm nights are projected to rise throughout the 21st century. These increases will result in drier soils, increased drought conditions, greater tree mortality, increased risk of public health hazards, and increased wildfire risk. As the climate changes in California, one of the most serious threats to the public health of Californians will stem primarily from the higher frequency of extreme conditions, especially longer, more frequent, intense heat waves. Extreme summer heat is increasing in the United States, and climate projections indicate that extreme heat events will be more frequent and intense in coming decades.

Heat may kill by taxing the human body beyond its abilities, usually from heat stroke and related conditions. Heat waves are also associated with increased hospital admissions for cardiovascular, kidney, and respiratory disorders. In a typical year, about 175 Americans die from summer heat. The daily maximum average temperature, an indicator of extreme temperature shifts, is expected to rise 4.4°F – 5.8°F by 2050 and 5.6°F – 8.8°F by 2100, further exacerbating the frequency and duration of these events (CNRA 2022).

Heat-health events, which are public health impacts caused by heat waves, are also projected to worsen. According to the National Weather Service (NWS), among natural hazards, only the cold effects of winter take a greater toll, surpassing that of lightning, hurricanes, tornadoes, floods, or earthquakes. As a comparison, in the 40-year period from 1936 through 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. In the heat wave of 1980, more than 1,250 people died. The

2018 California State Hazard Mitigation Plan notes that the 2006 heat wave led to 650 deaths in a 13-day period (Cal OES 2018) and in the past 15 years, heat waves have claimed more lives in California than all other declared disaster events combined (California Climate Adaptation Strategy 2018).

According to the State's Extreme Heat Action Plan, extreme heat ranks amongst the deadliest of all climate change-driven hazards in California (CNRA 2022). Prolonged exposure to excessive heat can lead to other impacts, such as damaging crops, injuring or killing livestock, and increasing the risk of wildfires. Power outages may also occur as heavy demands for air conditioning strain the power grid. In summary, extreme heat events can have severe impacts on public health and safety, economic prosperity, natural systems, and communities and lead to disproportionate consequences on vulnerable populations.

Flooding


Floods occur when infrastructure does not have adequate capacity to manage water levels, resulting in normally dry areas that inundated with water. While floods are usually caused by increased precipitation, they can also be caused by dam or levee failure. The risk of flood by infrastructure damage is increasing as current infrastructure in the United States is aging and, in many cases, has reached or exceeded its expected lifespan.

The County has a diverse geography with varying amounts of precipitation. Rainfall averages range from 30 inches a year at the western end of the county, to 70 inches a year at the Crystal Basin. Historical annual precipitation in the American River Basin, which is the upper watershed within the West Slope, has fluctuated between 50 to 200 percent of average (EDWA 2019). Snowfall averages span from 20 inches per year at an elevation of 3,500 ft., to 250 inches in the areas immediately surrounding the Crystal Basin at the Sierra Nevada crest.

The County is prone to four types of flooding:

- General rain floods are likely to occur in the County from November to May. They are characterized by prolonged, heavy rainfall and a large volume of runoff with high peaks and moderate durations.
- Cloudburst storms are likely to occur from early fall to late spring. They can last up to three hours and are characterized by high peak flows, equal to or greater than the peak flow of general rainstorms, short duration of flood flow, and small volume of runoff.
- Snowmelt floods are prone to occur in the Upper Truckee River Basin between May and June. They last longer and consist of larger volumes than general rain floods, although they do not have the high peak flows typically seen with those floods.
- Thunderstorm flooding may occur from late spring to early fall and usually lasts about 15 to 20 minutes. Although they may produce three inches or more of precipitation, their short duration and small extent make their runoff relatively small.

While climate change is not expected to drastically alter the overall amount of precipitation received by the County, warming temperatures are expected to shift precipitation patterns, resulting in both more droughts and flooding events. Precipitation that had previously fallen as snow is expected to increasingly fall as rain, triggering increased runoff during winter months and decreased snowmelt water supply during warmer months. Secondary effects of this cycle are likely to result in increased flooding. Soil that has been dried out and hardened by drought is less adept at absorbing water, resulting in a greater volume of runoff. Vegetation, which may have slowed water flow, will likely be weakened or killed by drought. Damaged vegetation also becomes fuel for wildland fire, which in turn dries out soil, hardening it and making the area more prone to flooding. The combination of West Slope hydrology, soils and topography may cause areas to experience frequent and localized flooding. Drainage problems and flooding have occurred in low-lying areas around Cameron Park, and areas where culverts are undersized or blocked with debris can intensify flooding (EDWA 2019). The Tahoe Basin experiences flooding because of rain-on-snow events, particularly when severe storms start warm with rain and later, snow. For example, residential neighborhoods and



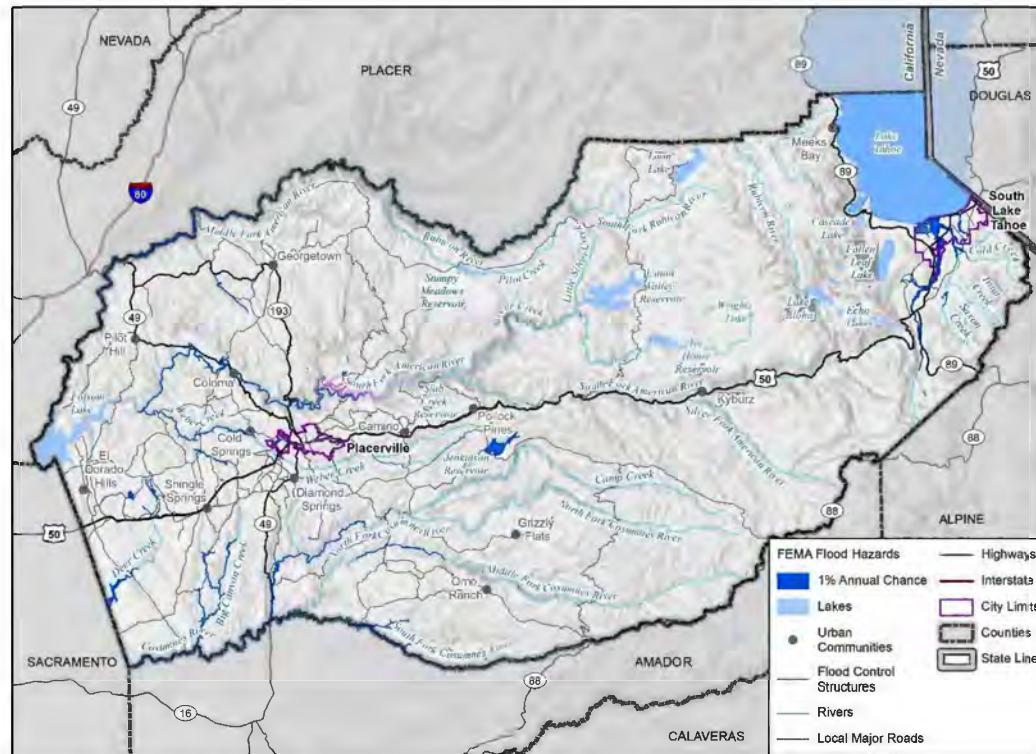
roads that are routinely plowed for snow removal still experience flooding during rain events when runoff pools because it cannot infiltrate through the snow or the densely packed surfaces. Much of this flooding has also occurred in neighborhoods near the floodplain (e.g., Truckee River).

Current water infrastructure was designed to manage historic levels of runoff. As such, it is not able to capture the increased levels of runoff expected with climate change or to offer adequate protection against intensified flooding. Much flood related damage in the County is associated with transportation. Road washout is common, and damages and closures prevent the flow of people, supplies, and emergency services throughout the County. During a flood, water can move swiftly and powerfully enough to remove buildings from their foundations. Slow-moving or still flood water can leach asbestos from buildings and soak structures in untreated sewage and mold. Floodwaters can pick up residues of gasoline, mercury, and other contaminants and carry them into waterways.

A flood vulnerability assessment was performed for the County. The County's parcel layer and associated assessor's building improvement valuation data were provided by the County and were used as the basis for the inventory. The County's effective FEMA Digital Flood Insurance Rate Map (DFIRM) dated April 3, 2012, was used as the hazard layer. A DFIRM is FEMA's flood risk data that depicts the 1% annual chance (100-year) and the 0.2% annual chance (500-year) flood events. This data is incorporated into the National Flood Hazard Layer (NFHL).

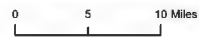
Figure 5-31 summarizes the flood zones in the County. As shown, the floodplains closely follow the major rivers and tributaries on the West Slope; Truckee River, Cold Creek, and Trout Creek in the Tahoe Basin; and the area around Lake Tahoe. The 0.2% annual chance floodplains, however, are not shown on the map because they are not very visible at the current map scale. Reports of localized 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.

Figure 5-31 El Dorado 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.



Human Health Hazards: Pandemic/Epidemic

The scale of a human health hazard is described by the prevalence of a disease within a community, or the geographic extent of its transmission.

- An endemic is defined as something natural to, or characteristic of, a particular place, population, or climate.
- An outbreak results when there is a higher number of cases than expected in an area over a certain time.
- An epidemic is like an outbreak, but with a larger number of cases, or a larger geographic extent, or a combination of the two.
- A pandemic can be defined as a public health emergency that spans several countries or continents, usually affecting many people.

While many diseases are spread through ingestion or insects, airborne diseases and those spread through physical contact pose higher risks to the community as they are difficult to control. Diseases such as influenza, pertussis, tuberculosis, and meningitis are all spread through these methods and pose a threat to communities. Health agencies closely monitor for diseases with the potential to cause an epidemic and seek to develop and promote immunizations.

Pandemics are most often caused by new subtypes of viruses or bacteria to which humans have little or no natural immunity. A pandemic disease may easily spread person-to-person, causing serious illness. Even when there is a strong healthcare system in place, disease outbreaks can strain and overwhelm community resources. Impacts could range from school and business closings to the interruption of basic services such as public transportation, health care, and the delivery of food and essential medicines. An especially severe pandemic could lead to high levels of illness, death, social disruption, and economic loss.

Due to the process utilized to prepare vaccines, it is impossible to have vaccines prepared in advance to combat pandemics. Additionally, for novel viruses, identification of symptoms, mode of transmission, and testing/identification may require development, causing significant delays in response actions. A portion of the human and financial cost of a pandemic is related to the lag time to prepare a vaccine to prevent the future spread of the novel virus. In some cases, current vaccines may have limited efficacy against novel strains.

Since March 2020, the County, the nation, and the world have been dealing with the COVID-19 pandemic. The COVID-19 virus has a much higher rate of transmission than the seasonal flu, primarily by airborne transmission. While most people have mild symptoms, some people develop acute respiratory distress syndrome, with roughly one in five requiring hospitalizations. A key challenge in containing the spread has been the fact that it can be transmitted by asymptomatic people.

According to the County of El Dorado Health and Human Services, as of January 3, 2023, there have been 33,865 positive cases of COVID-19 in the County since the beginning of the pandemic. Of those cases, a confirmed 236 cases have resulted in death. The County's vulnerable populations – young children, the elderly, under-resourced households, and those with underlying health conditions – are likely to be hardest hit during any pandemic or disease outbreak.

Changes in temperature and precipitation variability can increase the potential for human health hazards because animals are more likely to carry diseases during warmer weather. Warmer temperatures in the spring and later into the fall months will enable animals to be more active for a longer period, which increases the time a disease can be transmitted. Bacteria, viruses, parasites, and other organisms that cause disease and illness are also more likely to persist in a warmer climate.

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 1 hour or longer, or winds of 58 mph or greater last for any duration. Strong winds are directly caused by large differences in atmospheric pressure from a storm and the surrounding environment. Winds can be further enhanced in localized areas on the leeward side of mountain ranges in what is called a downslope windstorm. Wind gusts in these situations can exceed 80 mph, reaching nearly 100 mph in the most extreme cases.

Thunderstorms, which were rated a hazard of high concern in the County's 2018 LHMP, can cause high wind events called downbursts and microbursts. Downbursts may reach speeds of 125 mph while microbursts are more concentrated and can reach up to 150 mph. Typically, both last five to seven minutes. Winter storms in the Sierra Nevada also produce periods of high wind. Winds of 40-60 miles mph typically precede the snow portion of winter storms; however, during the 2022-2023 winter storms wind gusts along the Sierra Nevada crest were reported between 60-80 mph, although maximum wind gusts measured at the Central Sierra Snow Lab on Donner Summit between November 2002 and November 2022 (latest date of publicly available data) ranged from 35 to 59 mph (WRCC 2022b)

High winds can cause significant property, infrastructure, and crop damage related to downed trees, damaged power lines, and agricultural loss. High winds can also threaten public safety and have adverse economic impacts from business closures and power losses associated with both intentional and unintentional PSPS. High wind events that are combined with other natural hazards, such as hail, can disrupt daily activities, cause damage to buildings and structures, and increase the potential for other hazards. High wind events combined with snow can cause highway closures due to low visibility and induce avalanches. Additionally, flying debris from high wind events can result in injuries and deaths.

High wind events are not uncommon in the County. According to the National Centers for Environmental Information database, since 1950, there have been 173 reports of high winds that led to \$13.58 million in property loss, and \$48,000 in crop loss. Additionally, one death and three injuries have been reported. 173 reports of high winds equate to 2.5 high wind events every year, making it highly likely that a high wind event will happen in the County in any given year.

California's Fourth Climate Assessment indicated that extreme fire weather, particularly in the form of hot and dry winds, can strongly influence shrub-land fire regimes. Strong winds have been associated with severe forest fires in California, meaning that climate change impacts on wind patterns may also affect forest health and wildfire susceptibility. Winds have the critical effect of drying out the air as the air descends after passing over mountain peaks. When the ultradry air overlays parched vegetation, tinderbox conditions develop, which facilitate extreme fire growth.

According to CalFire, climate change is considered a key driver of California's flare-up fire activities in the past decade (CALFIRE 2021). Changes in Santa Ana and Diablo winds, which led to some of the most devastating wildfires in California, were assessed as evidence that climate change is worsening their effects. At this time, these changing factors are not well understood and are currently incorporated into state and regional research and risk analysis.

Landslides and Debris Flows

A landslide may be defined as the downward sliding of a relatively dry mass of earth and rock, or as a "slope failure," which may include landslides, mudflows, post-fire debris flows, and rockfalls. Gravity is the primary factor involved in landslides and the constant in any equation trying to quantify the stability of a slope face. Slope angle, slope material, and the amount of water present also affect slope stability when combined with gravity. Other factors that can affect the stability of a slope to a lesser degree are vegetation and climate.

Landslides are categorized into groups by movement and type of material that is involved. The types of movement are falls, slides, and flows. The amount of water is usually the defining component when classifying a movement. In “falls,” very little water is present. In “flows,” there is a substantial amount of water involved. The type of material involved can be soil, rock, or debris. These groups help identify rockfalls, earthflows, or debris slides. A rockfall is dry and fast while a debris slide is wet and slow.

While a mudslide is defined as a mass of water and fine-grained earth that flows, if more than half of the solids in the mass are larger than sand grains (rocks, stones, boulders), the event is called a debris flow. Two types of debris flows are common in the County, those related to shallow landslides and those that occur post-wildfire. A debris flow associated with a shallow landslide may occur where soil liquefies and runs downhill. These tend to occur following periods of heavy rainfall when soil is saturated. Post-wildfire debris flows occur when rain follows the destruction of vegetation that serves to stabilize soil from erosion. Without the stabilizing vegetation, runoff increases and picks up debris as it moves downslope. Heavy rains on the denuded landscape can lead to rapid development of destructive mudflows. Slope failures are likely to become more frequent as more precipitation falls during fewer storms, particularly as higher temperatures, droughts, and wildfires impact the vegetation that holds soil in place, making it unable to absorb water and decreasing the stability of the slope.

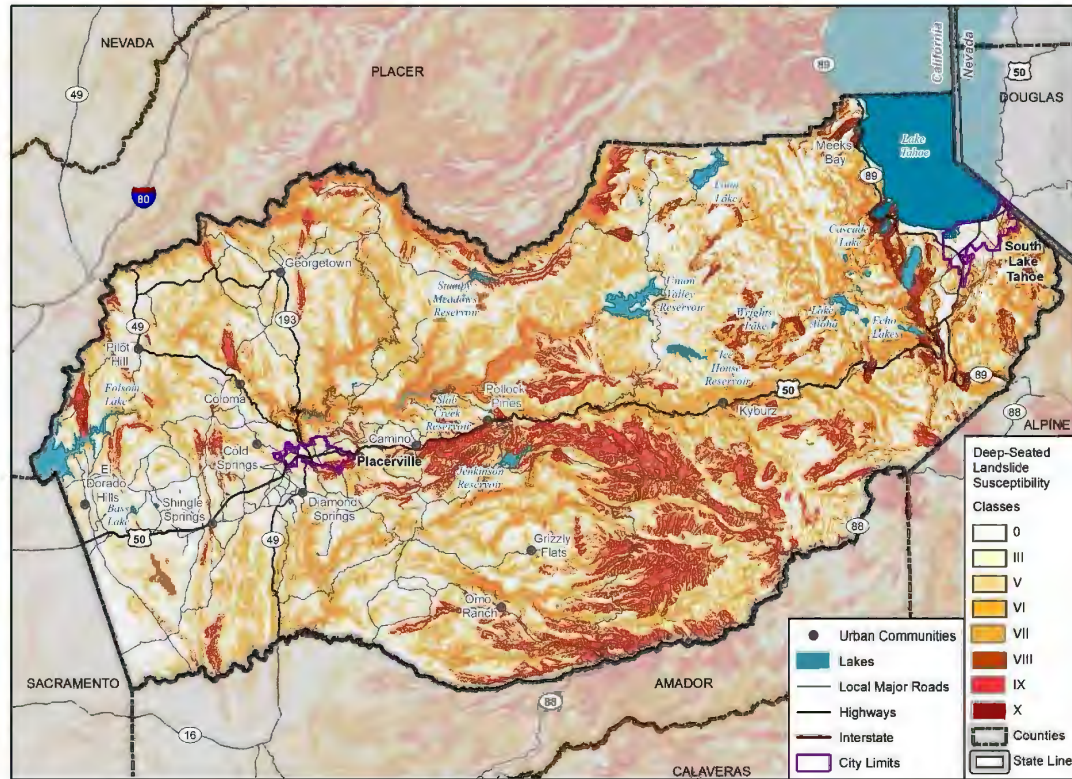
Two debris flows have occurred outside the County, but in neighboring counties. A large debris flow occurred near Topaz Lake in Douglas County, Nevada along a portion of U.S. 395 in May 2018; over 200 people in Topaz Lake Lodge needed to shelter in place on the second floor after mud inundated the first floor. A mudslide also occurred along State Route 89 north of Markleeville in Alpine County in August 2022 following the July 2021 Tamarack Fire; the mud and debris flowed into the road during a severe rainstorm after flowing through the hillsides in the areas affected by the recent wildfire.

Landslides are a natural process and are unavoidable in the long term, due to the patient nature of gravity and the gradual weathering of the earth’s surface. Landslides commonly result in disruptions in public services and emergency response, blocked transportation routes, diverted water flow in creeks and drainage ways, and contamination of water supplies. According to the United States Geological Survey (USGS), they cause more than \$1 billion dollars in damage annually in the U.S., in addition to 25 and 50 deaths (USGS, n.d.).

There are areas in the County that are particularly prone to debris flows. Slope instability and debris flow hazards are generally found in areas of the eastern portion of the County, as seen in active and inactive landslide deposits. Historical and potential debris flow areas also include Highway 50 east of Pollock Pines and State Route 49 north of Cool. There have also been rock falls and other slope failures along Highway 50 at Echo Summit.

As shown in [Figure 5-32](#), the entire County is exposed to landslide hazards with different levels of susceptibility. The southern part of the County has contiguous areas that show high susceptibility to landslide hazards. Several areas in the eastern County near Lake Tahoe show high to extremely high susceptibility. Areas along the northern boundary of the County show medium to high susceptibility. Moreover, a few scattered areas in the western County also show high landslide susceptibility.

Figure 5-32 Deep-Seated Landslide Susceptibility In El Dorado County



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

0 5 10 Miles



According to FEMA, there have been seven federal landslides and mudflow disaster declarations associated with severe winter storms, severe storms, and flooding in the County since 1953 (1995 (twice), 1997, 2006 (twice), 2017 and 2019). The California Department of Conservation's Geological Survey keeps a database of reported California Landslides. The County is expected to continue to experience extreme precipitation events and face increased wildfire severity in the future. Variances in precipitation may result in more high-intensity events, including flash flooding and dry-mantle flooding, which may increase landslide frequency. As climate change affects the length of the wildfire season, a higher frequency of large fires may occur in late fall, when conditions remain dry, followed immediately by intense rains early in the winter, increasing the likelihood of landslide and debris flow events.



State Highway 50 along Echo Pass closed in April 2019 after a rockslide occurred and caused a collision.

Photo Credit: El Dorado County Sheriff's Office

Severe Weather: Thunderstorms, Heavy Rain, Lightning, and Hail

Severe weather includes thunderstorms, heavy rain, lightning, and hail. Thunderstorms are formed from a combination of moisture, rapidly rising warm air, and a force capable of lifting air, such as warm and cold fronts or a mountain. Thunderstorms may occur alone, in clusters, or in lines. As a result, several thunderstorms can affect one location in a few hours. A thunderstorm can produce lightning, thunder, and rainfall and may also lead to the formation of tornadoes, hail, downbursts, and microbursts of wind. Electricity can be interrupted by lightning strikes, and property damage can occur if hailstones reach a large diameter. Severe weather is measured by the number of events per year, which is likely to increase because of climate change.

During the summer, climatic factors combine to promote the development of thunderstorms. As heated air from lower elevations rises and rapidly cools, intense thunderstorm cells can develop in high elevation landscapes. These thunderstorms often generate hailstones as large as golf balls. Severe thunderstorms also introduce lightning hazard events.

Hail forms on condensation nuclei such as dust or ice crystals, when supercooled water freezes on contact. In clouds containing large numbers of supercooled water droplets, these ice nuclei grow quickly. Once a hailstone becomes too heavy to be supported by the storm's updraft it falls out of the cloud. Hailstones usually range from the size of a pea to the size of a golf ball. The NWS in Reno issues Severe Thunderstorm Warnings for thunderstorms capable of producing large hail (above 1-inch diameter) and/or high winds (above 58 mph).

Lightning is an electrical discharge between positive and negative regions of a thunderstorm. A lightning flash is composed of a series of strokes with an average of about four strokes per flash. The length and duration of each lightning stroke vary but typically average about 30 microseconds. As mentioned above, thunderstorms can form downbursts and microbursts of wind. Downbursts may reach speeds of 125 mph while microbursts are more concentrated and can reach up to 150 mph. Typically, both last five to seven minutes.

Additionally, winter storms produce periods of high winds in the Sierra Nevada. Winds of 40-60 mph that typically precede the snow portion of a winter storm are the most common, starting from late fall through spring. Strong winds are the direct result of large differences in atmospheric pressure from the storm itself and the surrounding environment. Winds can be further enhanced in localized areas on the leeward side of mountain ranges in what is called a downslope windstorm. Wind gusts in these situations can exceed 80 mph, reaching nearly 100 mph in the most extreme cases.

Over 70 years of recordkeeping, 20 hail events and 173 high winds events have occurred in the County, which is the equivalent of one hail event every 3.5 years and 2.5 high wind events every year (NOAA NCEI 2022). 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, and downed power lines.

Violent summer thunderstorms can result in localized dry-mantle flash-flooding events that threaten life and property. Landslides occur when heavy and prolonged rains cause soil on slopes to become oversaturated and ultimately fail. Landslides can block roads and affect transportation infrastructure. Lightning strikes can also spark wildfires, while high winds may exacerbate wildfires. High winds in the winter can turn a small amount of snow into a complete white-out and create drifts in roadways. Debris carried by high winds can also result in injury or damage to property.

Severe Weather: Winter Storms and Heavy Snow

Winter snowstorms often originate as systems of low pressure from the Gulf of Alaska that move into the western United States. As the moist air masses push across the Sierra Nevada and Great Basin mountains, the air masses cool and the water condenses as snow. Some winter storms are accompanied by strong winds, creating blizzard conditions, severe drifting, and dangerous wind chills. In some instances, freezing rain may occur when very cold inland arctic air becomes trapped under warm moist air.

Winter storms can produce periods of widespread high winds. These winds of 40-60 mph typically precede the snow portion of a winter storm by a day or so and are most common from late fall through spring. Strong winds with these intense storms and cold fronts can knock down trees, utility poles, and power lines. Blowing snow can reduce visibility to only a few feet in areas where there are no trees or buildings. Heavy snow can cause avalanches in areas along steep terrain.

Heavy snow can immobilize a region, stranding commuters, stopping the flow of supplies, and disrupting emergency and medical services. Accumulations of snow can collapse roofs and knock down trees, power lines, electrical wires, and communication towers that result in long-term power outages; many of these impacts were evident during the recent snowstorm events in December 2021 and in December 2022 through January 2023. Communications and power may be disrupted for days until the damage can be repaired. In rural areas, homes and farms may be isolated for days, and unprotected livestock may be lost.

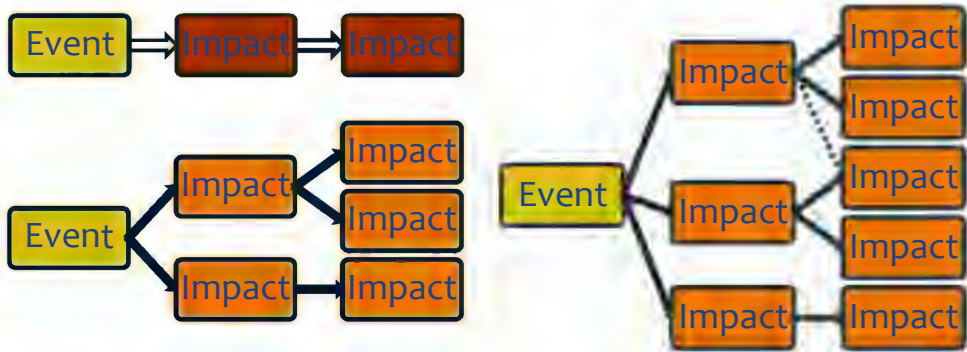
Even small accumulations of ice may cause extreme hazards to motorists and pedestrians. The cost of snow removal, damage repair, and business losses can have a tremendous impact on the County. The County has experienced 25 state emergency declarations from 1950 to 2017 (FEMA 2022). Of the 25, 18 were associated with severe winter storms, heavy rains, or flooding, and one was for a severe freeze event (FEMA 2022). Given this historical data, it is highly likely that both winter storms and heavy snow events will occur in the future.

According to the Cal-Adapt tool, the annual average maximum temperature for the County is expected to increase by 5.4 °F to 8.9 °F by the end-of-century. The annual average minimum temperature is expected to rise by the same values. This will result in less precipitation falling in the form of ice or snow, but increased precipitation falling in the form of rain. This is likely to lead to an increase in rain-on-snow flooding, an event which occurs when heavy snow precedes warm rain, resulting in mass snowmelt and rain runoff. The rapidly melting snow combined with heavy rainfall can overwhelm both natural and manmade drainage systems, causing overflow, localized flooding, and property destruction.

Cascading Impacts

Hazard events rarely happen in isolation. The increasing interdependence of systems of modern life, on both a local and global scale, can cause a chain of impacts beyond the scope of the original event. Intense rainfall can trigger landslides that dam rivers and cause catastrophic flooding. Flooding could then wash out evacuation routes and down electrical systems. Without electricity, all forms of mass communication become inoperable, cutting people off from crucial information when they need it most. Such chains of events are referred to as “cascading impacts,” or “cascading disasters,” and these subsequent impacts have the capacity to cause more destruction than the original hazard event. **Figure 5-33** illustrates examples of cascading impacts.

Figure 5-33 Examples of Cascading Impact Structures



Source: Adapted from Pescaroli and Alexander, 2019

Natural Examples

The water-year 2021 was the second driest on California record. Extreme heat, lack of snowfall, and lack of rain parched the overgrown and thick vegetation in the Eldorado National Forest and the Sierra Nevada. Vegetation weakened by the environmental conditions withered or were left susceptible to further damage from pests and disease. A small fire that started just south of Grizzly Flats on August 14, 2021, became the Caldor Fire, the 16th largest fire to date in California that expanded across three counties and burned over 221,000 acres (CAL FIRE 2022b). Damages to structures and properties are obvious impacts, though cascading effects on the economic sectors include road closures due to direct damages, downed trees, or

other hazards, lower revenue to the County based on reduced tourism and visitation, and excessive costs of firefighting and relocating people or natural and manmade resources. **Table 5-4** lists examples of cascading hazard impacts in the County by climate stressor.

Table 5-4 Cascading Hazard Impacts in the County of El Dorado

Secondary Climate Stressor	Cascading Hazard Impacts
Agricultural Pests and Disease	<ul style="list-style-type: none"> Weakens trees and agricultural crops Causes more susceptibility to extreme heat, prolonged drought, and wildfire
Avalanche	<ul style="list-style-type: none"> Results in loss of vegetation that stabilize the slopes and greater likelihood of surface water runoff during spring and summer months
Drought and Water Supply	<ul style="list-style-type: none"> Dries out vegetation, which increases natural fuel for wildfire Degrades water quality
Extreme Heat	<ul style="list-style-type: none"> Increases evaporation and evapotranspiration rates, which dries out vegetation, increasing wildfire risk Makes crops and livestock more susceptible to agricultural pests and disease Results in cardiovascular and respiratory disease in sensitive populations Places higher demand on electricity-generating equipment, which increases the potential for intentional or unintentional planned power outages (PSPS events) in the summer months
Flooding	<ul style="list-style-type: none"> Increases in intense precipitation can trigger cascading flood hazards along waterways causing impacts to neighborhoods and loss of crops Impacts sensitive populations with lower-income households being displaced from their homes
High Wind	<ul style="list-style-type: none"> Spread wildfires and increase their intensity Results in PSPS events to reduce the risk of wildfires caused by energized powerlines
Human Health Hazards	<ul style="list-style-type: none"> Impacts the economy if people are unable to perform their jobs
Landslide and Debris Flows	<ul style="list-style-type: none"> Alters waterways or drainage areas and basins, which can lead to flood risk in new locations
Severe Weather	<ul style="list-style-type: none"> Causes flooding Ignites wildfires Spreads wildfires and increase their severity
Wildfire	<ul style="list-style-type: none"> Burns vegetation and forests in mountains areas and rolling hillsides, and the lack of vegetation destabilizes the slopes and contributes to landslides or post-fire debris flows and flooding

Source: WSP Analysis 2023

Energy Shortages

Energy shortage hazards can include energy disruptions related to electricity, renewable energy, natural gas, and gasoline and diesel fuels. Based on the energy types, electrical power outages, both planned and unscheduled disruptions, can result in cascading hazards related to traffic, economic losses, other utility

disruptions, and public health hazards. There are few areas of modern life that are not impacted by electrical failure. Tap water, sewage plants, cellphone and internet infrastructure, are all dependent on electricity. A major hazard event that damages infrastructure and electrical systems will present compounding problems as a lack of electricity will impede restoration efforts. Electricity-dependent individuals will be at elevated risk until electricity is returned.

Energy shortages, specifically PSPS, are unpredictable but recurrent experiences in the County. Each of these events can result in a range of cascading impacts on local businesses and the continuity of operations in the County. Businesses can no longer use cash registers or process payment transactions. Gasoline pumps no longer operate, limiting accessibility for travelers and visitors. Restaurants may close because kitchen appliances and other equipment, such as lighting, cannot work without power. Hotels may also have limited accommodations due to lack of heating supplies, lighting, and other needs. These impacts indirectly lead to economic losses in the commerce, tourism, and recreation industries in the County.

Post Wildfire Recovery

Wildfires create short, long, and cumulative impacts to ecosystems, communities, and individuals. Recent studies have summarized some of these impacts (Western Forest Leadership Coalition 2022). Beyond the dollar cost of large wildfires, local county and community support organizations can be overwhelmed by the wildfire recovery process. Preparing for a major wildfire may include the need to review existing county policies and procedures which may impede post wildfire recovery. These include current building permit procedures, accessory dwelling unit laws, temporary residence (trailer) locations, and rules governing inhabiting burned properties after post wildfire debris removal is completed but before and during home rebuilding. In addition, having a plan to address large numbers of persons becoming homeless in a short period is critical. This includes sheltering and caring for the post-wildfire physical, emotional, and mental health issues for at-risk populations, seniors, and children. Finally post-wildfire vegetation recovery strategies that facilitate long term resiliency, particularly in the Wildland Urban Interface, are key for long term sustained recovery.



In August 2021, the Caldor Fire burned through the Sierra at Tahoe Resort in the County and destroyed and damaged approximately 1,600 acres of the 2,000-acre ski resort. Lift towers, haul ropes, terrain parks, snowcats, a maintenance building, and other infrastructure were destroyed. Beginning in 2022 agencies, organization, and volunteer partners came together to begin the process of restoring the forests and ski facilities and during the first phase, over 14,000 fire damaged trees were removed. The resort re-opened for the 2022/2023 season after being closed due to the damage sustained by the Caldor Fire.

Photo Credit: Sierra at Tahoe; Brian Walker 2022.

6. County Population and Assets

The County's key assets were organized into five categories: property, populations, critical facilities and lifelines, natural and cultural resources, and economic drivers. These five categories generally align with the four focus categories the County uses to organize critical facilities: essential service, population at risk, infrastructure at risk, and essential business.

The property dataset consists of 2022 County Assessor data. Sensitive population data came from a variety of federal and state datasets, primarily the U.S. Census ACS. The critical facility database was developed with the County's GIS team and involved an internal validation process to refine the types of facilities included and to confirm the accuracy of the locations of the point data. Natural and cultural resource data was illustrated spatially in maps but did not include a quantitative dataset or analysis. Similarly, the data on economic drivers was summarized based on a qualitative understanding of essential businesses and economic impacts that could occur because of climate-related hazards. In total, the CVA evaluated vulnerabilities for the following key assets:

- 88,437 improved parcels,
- 20 sensitive population indicators, and
- 1,274 critical facility and infrastructure lifelines.

Natural and cultural resources and economic drivers and other key services in the County are assessed qualitatively but included specific resource categories and economic sectors.

A. Property

Building value assessments in the CVA are based on data from the County's Assessor's Office. This data provided the baseline for an inventory of the total exposure of developed properties within the County and helps to ensure that the CVA reflects the vulnerability of existing development and changes in development patterns and potential future development vulnerability. It is important to note that depending on the nature and type of hazard event or disaster, it is generally the value of the infrastructure or improvements to the parcels (properties) that are of concern or at risk. Generally, the land itself is not a total loss, but may see a reduction in value. Thus, the parcel analysis excludes land value.

The 2022 El Dorado County Assessor data was used to inventory the total number and types of parcels with improvements, defined as parcels with an improvement value greater than zero in the County. Building content values are defined by FEMA as furniture, equipment, computers, and other supplies and non-structural components like lights and mechanical and electrical equipment that are not integral to a structure (FEMA 2022). These values were estimated based on methods and formulas developed by FEMA: a) Residential, including Multi-Family Residential and Mobile Home Park properties received content values worth 50% of the improved values; b) Commercial, Miscellaneous, Unassessed properties received content values worth 100% of the improved values; and c) Industrial properties received content values worth 150% of the improved values.¹ Adding up these content and original improved values yields the Total Value of Improved Parcels, which is an estimation of the total property exposure within the County. Since the CVA focuses on the vulnerability of the unincorporated County, the parcels within the cities of Placerville and South Lake Tahoe are excluded. **Table 6-1** summarizes the property inventory for the unincorporated County with detail by property type.

¹ The parcel-level analysis was conducted according to flood loss and earthquake loss estimation methodology developed by FEMA and summarized in the Hazus 5.1 Flood and Earthquake Model Technical Manuals. A companion document, the Hazus Inventory Technical Manual provides additional methodology and data descriptions.

Table 6-1 Total Unincorporated Area Exposure Summary by Property Type Jurisdiction

Property Type	Improved Parcel Count	Improved Value	Estimated Content Value	Total Value
Commercial	1,064	\$632,111,386	\$632,111,386	\$1,264,222,772
Industrial	1,176	\$717,611,990	\$1,076,417,985	\$1,794,029,975
Multi-Family Residential	546	\$499,699,938	\$249,849,969	\$749,549,907
Mobile Home Park	48	\$47,256,698	\$23,628,349	\$70,885,047
Miscellaneous	2,896	\$175,478,813	\$175,478,813	\$350,957,626
Residential	80,986	\$20,629,099,188	\$10,314,549,594	\$30,943,648,782
Unassessed	1,721	\$19,195,651	\$19,195,651	\$38,391,302
Total	88,437	\$22,720,453,664	\$12,491,231,747	\$35,211,685,411

Source: El Dorado County Assessor's Office, WSP Analysis

B. Sensitive Populations

Most of the demographic data on populations in the County comes from the U.S. Census Bureau's ACS. This data represents residents or households in the County, but in some cases, may not include all people living in the County. There are also data limitations given the population statistics only count certain population groups where credible data sources are available, and this may not account for undocumented persons in the County and other socially vulnerable groups.

Of the total population, the unincorporated areas of the County comprises several sensitive populations and communities that include people or households who experience heightened risk and increased sensitivity to climate change. These people or households may need additional resources to prepare for, respond to, cope with, adapt to, and recover from climate-related hazards. They may live in rural parts of the unincorporated County, have low-incomes or are "income restrained," be housing cost burdened (defined by the U.S. Housing and Urban Development as spending more than 30% of total income on housing), experience chronic health conditions, or live alone.

Sensitive populations may include groups based on age that are more vulnerable to climate-related hazards. They may also include groups with chronic health conditions, access and functional needs, and households in mobile homes, poverty, or located in rural and isolated areas. Many of these sensitive populations have characteristics that also fall into multiple indicator categories. The core County team evaluated each population group, indicator, and definition based on information from the U.S. Census Bureau, and other federal and state resources applicable to the County. The following 20 sensitive populations listed in alphabetical order by indicator were identified by the SEAC and are addressed in the CVA:



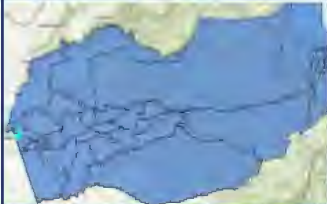

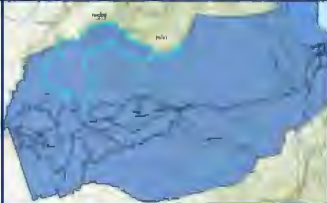

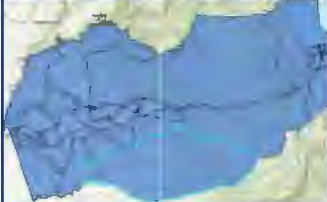

- Children (under 14)
- Cost-burdened households
- Ethnic minorities
- High-pollution burdened communities
- Households in mobile homes
- Households in poverty
- Persons with disabilities and access and functional needs
- Persons with limited English proficiency (linguistically isolated)
- Persons with limited accessibility (no access to transportation)







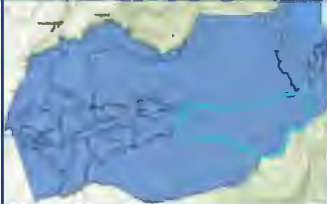

- Isolated and rural communities
- Low-income households
- Outdoor workers
- Overcrowded households
- People with chronic health conditions
- Unemployed persons
- Persons experiencing homelessness
- Persons living in single-access roads (limited roads for evacuation)
- Renters
- Seniors
- Seniors living alone

Each indicator has been reviewed by the County and SEAC to determine what types of sensitive populations would experience non-climate stressors that would make them more vulnerable to climate-related hazards. The team reviewed U.S. Census data from the 5-Year ACS, the FEMA NRI SoVI Tool, the OEHHA CalEnviroScreen 4.0 mapping tool, and the California HPI to determine which sensitive populations exist in the County. Findings were also supplemented with data from the Climate and Economic Justice Screening Tool.

Table 6-2 shows 16 of the 42 census tracts in the County with the highest concentrations of sensitive populations and social vulnerability in both the incorporated and unincorporated County. These are census tracts defined as socially vulnerable based on their occurrence in both the U.S. Census Bureau ACS and other sources and tools (described in the next section). Some of the census tracts overlap with incorporated areas like the cities of Placerville and South Lake Tahoe and were therefore included here given the high number of disadvantaged and socially vulnerable communities in these areas.

Table 6-2 Vulnerable Census Tracts in El Dorado County

Census Tract Number and Location Description	Census Tract on Map	Census Tract Number and Location Description	Census Tract on Map
6017031302 West of Pollock Pines		6017031600 Northeastern part of South Lake Tahoe but extends north and south beyond the City Limits	
6017031700 Near El Dorado Hills		6017030402 Southern part of South Lake Tahoe, extends west beyond the City Limits	
6017030602 North County		6017030603 Significant portion of the Northern County	
6017031402 Southern County, includes both Grizzly Flats and Omo Ranch		6017030200 South Lake Tahoe, extends east and west beyond the City Limits	

Census Tract Number and Location Description	Census Tract on Map	Census Tract Number and Location Description	Census Tract on Map
6017031200 Southern portion of Placerville, extends beyond the City Limits		6017031800 Near El Dorado Hills	
6017031502 South of Placerville and north of Diamond Springs		6017031100 North part of Placerville	
6017031504 South and Southeast of Diamond Springs		6017030302 South Lake Tahoe	
6017031900 South of Kyburz		6017031000 Western Placerville, extends north and northwest beyond the City Limits	

Sources: US Census ACS 2020, WSP Analysis

C. Critical Facilities

A detailed critical facilities and community lifeline database that includes 1,274 facilities was developed in GIS based on a combination of County-provided data, HIFLD, and local and jurisdiction-specific input. The County's GIS Department was then able to review and validate the critical facility data, edit descriptive attributes, address information, and add new critical facilities. The critical facilities database was organized by County asset categories (focus areas) and by FEMA Community Lifeline (where appropriate). For the purposes of the CVA, a critical facility is defined as a building structure, infrastructure, or system that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. The County organizes critical facilities into four categories (focus areas): essential service, population at risk, infrastructure at risk, and essential business, as shown in **Table 6-3**.

Table 6-3 County of El Dorado Facility Type Categories

Facility Type	Essential Service	Population at Risk	Infrastructure at Risk	Essential Business
Fire Station	X			
Police Station	X			
Emergency Evacuation Shelter*	X			
Government Facilities	X			
General Acute Care Hospital	X			
Medical Health Facility		X		
Adult Residential Care Facility		X		
Child Care Facility		X		
Adult Care Facility		X		
Public Elementary School		X		
Private Elementary School		X		
Public Middle School		X		
Private Middle School		X		
Public High School		X		
Private High School		X		
College / University		X		
Vulnerable Population Centers**		X		
Water Treatment Plant			X	
Water Storage Facility			X	
Water Conveyance System			X	
Electrical Transmission Lines			X	
Electrical Substation			X	
Sewer Lift Station			X	

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Facility Type	Essential Service	Population at Risk	Infrastructure at Risk	Essential Business
Telecommunications Facilities			X	
Corporation Yard	X			
Vehicle Fuel Stations				X
Grocery Stores				X
Recreational Facilities				X
Large Employers				X

Source: County of El Dorado 2022

* Includes General Population, Access/Functional Needs Shelters and Animal Shelters

** Includes Disadvantaged, Disabled and Low-Income Census Areas

FEMA sorts critical facilities into seven lifeline categories as shown in **Figure 6-1**. These lifeline categories standardize the classification of critical facilities and infrastructure that provide indispensable service, operation, or function to a community. A lifeline is defined as providing indispensable service that enables the continuous operation of critical business and government functions, and is critical to human health and safety, or economic security. These categorizations are particularly useful as they:

- Enable effort consolidations between government and other organizations (e.g., infrastructure owners and operators);
- Enable integration of preparedness efforts among plans, easier identification of unmet critical facility needs;
- Refine sources and products to enhance awareness, capability gaps, and progress towards stabilization;
- Enhance communication amongst critical entities, while enabling complex interdependencies between government assets; and
- Highlight lifeline related priority areas regarding general operations and response efforts.



Figure 6-1 Lifeline Categories



Source: FEMA 2020

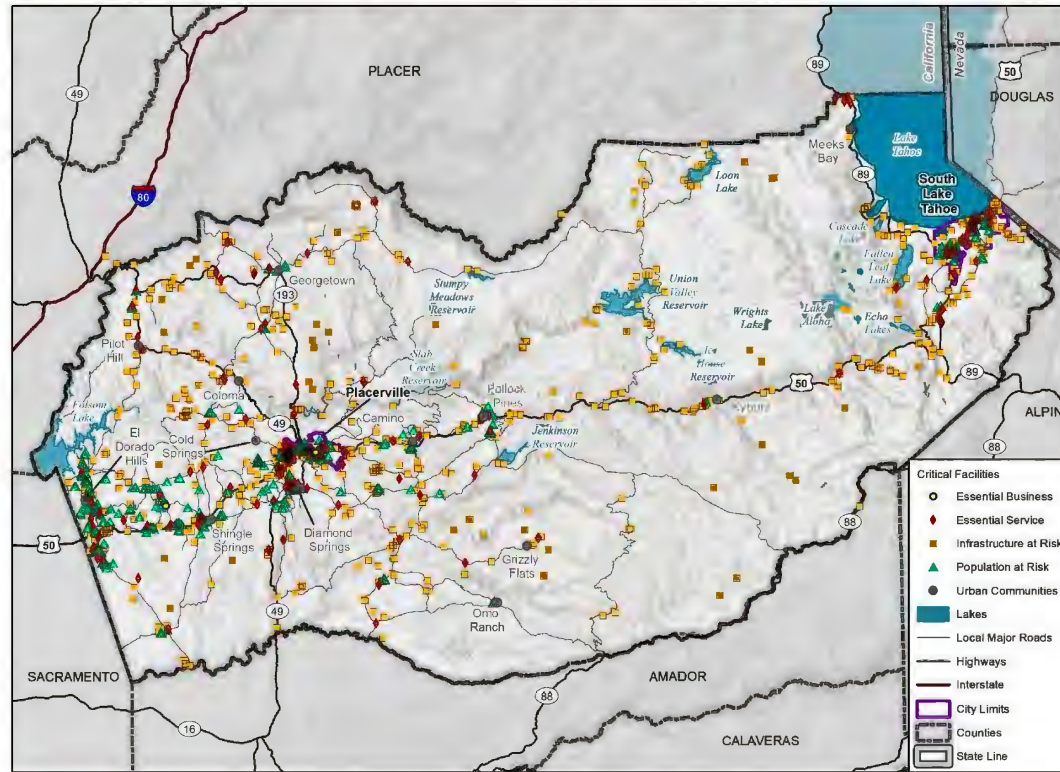
Table 6-4 shows a summary of the critical facilities inventory grouped by focus areas. Figure 6-2 shows the locations of the critical facilities across the County.

Table 6-4 Summary of Critical Facilities by Focus Area

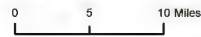
Jurisdiction	Essential Service	Population at Risk	Infrastructure at Risk	Essential Business	Total
City of Placerville	1	93	24	60	178
City of South Lake Tahoe	0	47	62	40	149
Unincorporated County	2	118	612	215	947
Total	3	258	698	315	1,274


Sources: HIFLD, National Inventory of Dams (NID), DWR, and the County

Figure 6-2 Critical Facilities in the County of El Dorado



wsp Map compiled 2/2023;
 Intended for planning purposes only.
 Data Source: HIFLD, National Inventory of Dams (NID),
 Department of Water Resources (DWR), and El Dorado County





Key facilities included key safety and security facilities and lifelines, specifically County fire and police stations and Emergency Operation Centers. Other essential food, water, and shelter services included community facilities like emergency shelters, water and wastewater treatment plans and related infrastructure, and regional parks. Health and medical facilities included hospitals, medical clinics, and health centers. Essential services related to energy included stationary and point data for electrical substations, electric vehicle charging stations, and power plants; linear electrical transmission and distribution line infrastructure was not included, nor were natural gas pipelines. Essential businesses like gas station locations were also not included, primarily to focus the assessment on specific facilities that served populations at risk and to facilitate adaptation strategy and mitigation project development. Transportation facilities included major airports, railways, and bridges, but did not include State and County highways and roads. Some of these linear facilities are also already being addressed by the power utilities, Caltrans, and the EDCTC. Finally, hazardous material facilities primarily include facilities that store, handle, or transport major hazardous materials, specifically those facilities that operate under a Risk Management Program (RMP) and Tier II facilities that must report the amount of hazardous chemicals used at the facility as defined by 29 CFR 1910.1201).

D. Natural and Cultural Resources

Natural and cultural resources generally include farms and vineyards; agricultural lands; federal, state, and local recreation lands; private timberlands; ski resorts; and large water infrastructure, like reservoirs used for recreation purposes.

Assessing the County's vulnerability to disaster also involves inventorying the natural, historical, and cultural assets of the area. This step is important for the following reasons.

- The community may decide that these types of resources warrant a greater degree of protection due to their unique and irreplaceable nature and contribution to the overall economy.
- In the event of a disaster, an accurate inventory of natural, historical, and cultural resources allows for more prudent care in the disaster's immediate aftermath when the potential for additional impacts is higher.
- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources.
- Natural resources can have beneficial functions that reduce the impacts of natural hazards. For example, wetlands and riparian habitat help absorb and attenuate floodwaters and thus, support overall mitigation objectives.

Historical resources are buildings, structures, objects, places, and areas that are eligible for listing in the National Register of Historic Places (NRHP), the California Register of Historic Resources (CRHR), or the County's List of Historic Resources; have an association with important persons, events in history, or cultural heritage; or have distinctive design or construction method.

For purpose of federal actions, a qualified historic resource is defined as a property listed in or formally determined eligible for listing in the NRHP before a disaster occurs. The NRHP is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect historic and archaeological resources. Properties listed include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. The National Register is administered by the U.S. Department of the Interior, National Park Service. Local and state agencies may consider a broader definition of qualified historic properties in the review, evaluation, and treatment of properties damaged during a disaster.

The State of California Office of Historic Preservation can provide technical rehabilitation and preservation services for historic properties affected by a natural disaster. Depending on the hazard, protection could range from emergency preparedness, developing a fire safe zone around sites susceptible to wildfires, or

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seismically strengthening or structurally reinforcing structures.

State and local registers of historic resources provide designated Historical Landmarks, Points of Historical Interest, and Historic Buildings. These resources include, but are not limited to:

- The California Register of Historical Resources,
- The California Historical Landmarks,
- The California Inventory of Historical Resources, and
- The California Points of Historical Interest.

Historical Landmarks designated on a federal or state level are listed in [Table 6-5](#).

Table 6-5 El Dorado County Historical Resources

Register	Location	Property Name	
National Historic Landmarks	Cedar Grove	Sportsman's Hall Overland Pony Express Route in California	
	Clarksville	Mormon Tavern-Overland Pony Express Route in California	
	Coloma	Marshall Monument	
		Gold Discovery Site	
		Coloma Road-Coloma	
		Coloma Road-Rescue	
	Diamond Springs	Diamond Springs	
	El Dorado	El Dorado (Originally Mud Springs)	
	El Dorado	El Dorado-Nevada House (Mud Springs) -Overland Pony Express Route in California	
	3 miles NE of Folsom	Mormon Island	
	4 miles NE of Folsom	Negro Hill	
	0.1 miles NE of El Dorado-Sacramento County Line	Salmon Falls	
	0.1 miles NE of El Dorado-Sacramento County Line	Condemned Bar	
	Georgetown	Georgetown	
	Gold Hill	Wakamatsu Tea And Silk Farm Colony	
	Greenwood	Greenwood	
	Kelsey	Marshall's Blacksmith Shop	
	Kyburz	Mores (Riverton)-Overland Pony Express Route in California	
		Websters (Sugar Loaf House)-Overland Pony Express Route in California	
		Strawberry Valley House-Overland Pony Express Route in California	
Meyers	Hanks Station-Overland Pony Express Route in California		
Pilot Hill	Site of California's First Grange Hall		
Placerville	Hangman's Tree		
	Studebakers Shop		
	Old Dry Diggins-Old Hangtown-Placerville		

Register	Location	Property Name
		Placerville-Overland Pony Express Route In California
		Methodist Episcopal Church
	Rescue	Pleasant Grove House Overland Pony Express Route In California
		Coloma Road-Rescue
	Shingle Springs	Shingle Springs
	South Lake Tahoe	Site of Echo Summit
National Park Service National Historic Landmarks	Coloma	Coloma

Sources: California Office of Historic Preservation, National Park Service National Historic Landmarks

Lists of designated historical resources change periodically, and they may not include those currently in the nomination process and not yet listed. Additionally, as defined by the National Environmental Policy Act (NEPA), any property over 50 years of age is considered a historic resource and is potentially eligible for the National Register. Thus, if the property is to be altered, or has been altered, as the result of a major federal action, the property must be evaluated under the guidelines set forth by NEPA. Structural mitigation projects are considered alterations for the purpose of this regulation.

Cultural resources defined in California Environmental Quality Act (CEQA) Section 15064.5 include prehistoric and historic archaeological resources and historic-period resources (buildings, structures, area, place, or objects). Archaeological resources reflect past human activity extending from Native American prehistoric cultures through the early 20th century. Many cultural and historical resources in the County are vulnerable to several hazards due to location and the nature of their construction. Some of these risks include earthquakes, wildfires, or adverse weather.

E. Economic Services

The economic drivers consist of essential businesses in the County. These drivers are discussed qualitatively based on how they would be potentially impacted by climate-related hazards. Primary economic drivers in the County include the agricultural economy, forestry products, retail and hospitality industry, tourism, and recreation-based economy.



View of residential development in the El Dorado Hills community.

Photo Credit: Stephen Leonardi

7. Vulnerability Assessment

A. Community Assets

As a starting point for analyzing the County's vulnerability to identified hazards, the SEAC used a variety of data to define a baseline against which all climate-related impacts could be compared. If a catastrophic disaster or ongoing climate shocks and stressors were to occur over time in the County, this section describes significant assets exposed or at risk in the planning area. Data used in this baseline assessment included:

- Total parcel assets at risk;
- Sensitive populations at risk;
- Critical facility inventory;
- Cultural and natural resources; and
- Economic services.

Several of these assets represent similar County vulnerabilities, specifically for sensitive and underserved people living and working in the County. For example, sensitive populations are assessed based on the location of census tracts in the County. Sensitive populations' homes and properties are also assessed as part of a parcel-level analysis. Similarly, critical facilities are assessed based on whether the buildings or infrastructure could be exposed to and damaged by climate-related hazards. Critical facilities are also assessed based on the services they provide. For example, a fire station would be directly impacted by a wildfire, and the emergency response and fire suppression services would also be disrupted.

These effects are described separated in the following section because climate change affects property, population, and critical facilities differently. These different types of effects may be evident during a wildfire that results in damaged water line infrastructure in a rural area. If there is a temporary disruption in water delivery systems, this would have a significant impact on a rural community, particularly if there are no redundant back-up water supplies. However, the temporary loss of water deliveries to a rural community would not directly impact the other critical facilities, as there would be no physical damage related to infrastructure like a water treatment plant.

B. Non-Climate Stressors

Non-climate stressors refer to conditions that are not related to climate change but can still have an impact on a community and make certain groups more vulnerable. These stressors can include factors such as poverty, limited access to transportation, language barriers, and other societal inequalities. Non-climate stressors can be problematic because they increase the vulnerability of already sensitive populations to climate-related hazards, which can further decrease their ability to prepare for, respond to, and recover from these hazards. For example, a low-income community with limited access to transportation may have a harder time evacuating before a wildfire or accessing emergency services in the aftermath of a flood.

In many cases, the same indicators used to define sensitive populations are also used to identify non-climate stressors. These indicators can include poverty, income level, educational level, burdened households, language barriers, age, persons with access and functional needs, disabilities, and health conditions. When these non-climate stressors are combined, they can further increase the sensitivity of a population and decrease their adaptive capacity to climate change. Non-climate stressors can include the following factors:

- Education attainment
- Language barrier
- Income status
- Housing affordability
- Limited community resources
- Unreliable electrical supply

- Lack of accessibility
- Disability
- Citizenship
- Access to healthcare and resources

In summary, the non-climate stressors can have the greatest impact on sensitive populations, as the factors define several of the same characteristics that make certain socially vulnerable and underrepresented populations more susceptible to climate-related hazards. These institutional and social factors create and contribute to many of these disparities and inequities, and climate change hazards will likely worsen these effects.

Critical facilities, such as buildings and infrastructure, face non-climate stressors due to the need for operation and maintenance upgrades, improvements, and rehabilitation beyond the expected lifespan of a facility. The absence of timely retrofits, repairs, and routine upgrades may be due to a lack of funding or financial capability. Without these timely upgrades and improvements, these buildings and infrastructure may experience greater climate change effects. This is problematic in rural areas of the County where there are limited community resources, and where water supplies lack alternatives if a water supply line is disrupted. Key services are also dependent on critical facilities. For example, water supply must be delivered through an underground water system, and electrical supply is delivered through the energy grid. Other services heavily dependent on infrastructure include services delivered by air, road, or water transportation.

Natural and cultural resources can also be affected by non-climate stressors related to development patterns that result in impacts to habitat, plant and wildlife, and water and air quality. These human-influenced impacts can in turn affect the ability of these natural resources to provide ecosystem services and the resiliency of natural resources to the effects of climate change.

The County's economic health depends on thriving industries (e.g., recreation; agriculture, orchards, and wineries; and tourism) and healthy residents and workers. Many of these services rely on access to healthy forests and land, clean water and air quality, and healthy people. Therefore, impacts to any of these resources or the neighborhoods where the County's employees and staff reside following a severe storm, flood, wildfire, or other event can severely impact the viability of community businesses and services.

C. Key Vulnerabilities by Asset Type

The CVA looked at the impacts and adaptive capacity of property, sensitive populations, critical facilities, natural and cultural resources, and economic assets in the County for the following climate-related hazards:

- Agriculture Pests and Disease
- Avalanche
- Drought and Water Supply
- Extreme Heat
- Flooding
- Public Health Hazards
- Landslide and Debris Flows
- Severe Weather
- Wildfire

Severe weather includes high wind; thunderstorms, heavy rain, lightning, and hail; and winter weather and heavy snow for purposes of the assessment.

Vulnerability scores summarized the combination of the impact and adaptive capacity to show the level of susceptibility of each asset to the exposure to the nine climate-related hazards based on the methodology outlined in the California APG. These scores were assigned on a scale of 1 to 5 and adjusted for the risk and onset of the exposure based on a combination of a quantitative and qualitative analysis. The quantitative analysis consisted of GIS analysis for flood, landslide and debris flow, and wildfire risk. The qualitative analysis consisted of a series of questions selected to assess the sensitivity and potential impacts of climate-related hazards (see Section 4). The scores reflect how susceptible the asset category is to the harm posed by climate change. Assets are grouped by property; 20 sensitive population indicators; and 4 critical facility category types. Vulnerability scores are assigned to 1,098 combinations of exposures and

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sensitivities to climate change. Scores were not provided if the exposure was not considered a threat to the asset. **Table 7-1** illustrates the five vulnerability scores:

Table 7-1 Vulnerability Scores

Score	Vulnerability Type
V1	Minimal Vulnerability
V2	Low Vulnerability
V3	Moderate Vulnerability
V4	High Vulnerability
V5	Severe Vulnerability

Source: APG 2021

A score of V4 or V5 is considered significant. Assets that score at least a V4 for one or more exposures are considered vulnerable. The summaries in the CVA focus only on scores of at least V4 or above. The vulnerability scores are organized for each asset category except property. The properties in the County were assessed using a parcel-level analysis, as described in the first section below.

Property

Flood Hazards

El Dorado County Assessor parcel data was used to estimate flood hazard impacts to parcels with improvement values greater than zero. This method assumes that improved parcels have a structure of some type. FEMA’s NFHL flood zones were overlaid in GIS on the parcel boundaries to identify parcels that would likely be inundated during a 1% annual chance and 0.2% annual chance flood event. Building improvement values and counts for those parcels were then extracted from the parcel/assessor’s data and summed for the unincorporated County. Results of the overlay analysis area are shown in **Table 7-2** for the 1% annual chance flood and **Table 7-3** for 0.2% annual chance flood.

Property type refers to the land use of the parcel and includes Commercial, Industrial, Multi-Family Residential, Mobile Home Park, Miscellaneous, Residential, and Unassessed. Contents values were estimated as a percentage of improved values based on their occupancy type, using FEMA/Hazus estimated content replacement values. This includes 100% of the improved value for commercial, miscellaneous, and unassessed parcels; 50% for multi-family residential, mobile homes parks and residential parcels; and 150% for industrial parcels. Building and contents values were then totalled to obtain total exposure. In addition, populations that are at risk of flood hazards are estimated by multiplying the average number of persons per household in the County (2.54) with the number of residential, multi-family residential and mobile home park parcels in floodplain areas. The populations at risk are also included in **Table 7-2** and **Table 7-3**.

Table 7-2 1% Annual Chance Floodplain Exposure and Loss by Jurisdiction

Property Type	Improved Parcel Count	Improved Value	Estimated Content Value	Total Value	Population
Commercial	18	\$3,670,832	\$3,670,832	\$7,341,664	-
Industrial	10	\$3,846,739	\$5,770,109	\$9,616,848	-
Multi-Family Residential	17	\$9,823,139	\$4,911,570	\$14,734,709	43

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Property Type	Improved Parcel Count	Improved Value	Estimated Content Value	Total Value	Population
Mobile Home Park	2	\$457,591	\$228,796	\$686,387	5
Miscellaneous	105	\$12,147,941	\$12,147,941	\$24,295,882	-
Residential	1,719	\$285,012,765	\$142,506,383	\$427,519,148	4,366
Unassessed	171	\$444,378	\$444,378	\$888,756	-
Total	2,042	\$315,403,385	\$169,680,007	\$485,083,392	4,415

Sources: County of El Dorado 2020; WSP Analysis 2022

Table 7-3 0.2% Annual Chance Floodplain Exposure and Loss by Jurisdiction

Property Type	Improved Parcel Count	Improved Value	Estimated Content Value	Total Value	Population
Multi-Family Residential	2	\$663,497	\$331,749	\$995,246	5
Miscellaneous	2	\$-	\$-	\$-	
Residential	79	\$9,821,254	\$4,910,627	\$14,731,881	201
Total	83	\$10,484,751	\$5,242,376	\$15,727,127	206

Sources: County of El Dorado 2020; WSP Analysis 2022

It is important to note that there could be more than one structure or building on an improved parcel (i.e., a condo complex occupies one parcel but might have several structures). The flood loss assessment also does not account for business disruption, emergency services, environmental damages, or displacement costs; thus, actual losses could exceed the estimate shown. Conversely, this analysis does not differentiate parcels that may have been developed since the County adopted floodplain regulations, which would be mitigated to the 1% annual chance flood if developed in accordance with local floodplain regulations.

As shown, a total of 2,042 parcels, worth over \$485 million, along with 4,415 people, are located within 1% annual chance floodplains. A total of 83 parcels, worth over \$15.7 million, along with 206 people, are located within 0.2% annual chance floodplains. Also, of the 2,042 parcels in the floodplain, 1,719 are single-family residential structures. However, the number of residential parcels at risk to flooding represents just under 2% of the total parcels (88,437 parcels) assessed in the County.

Landslide

A GIS analysis of exposure to landslide hazard areas was performed. GIS was used to intersect the parcel boundaries with a deep-seated landslide susceptibility layer to obtain the number of parcels exposed to different classes of deep-seated landslide. The GIS analysis indicates that a total of 57,430 parcels are exposed, worth almost \$20 billion of property improvements. **Table 7-4** summarizes landslide exposure by parcel property type. Only parcels with improvement values greater than zero were used in the analysis. This method assumes that improved parcels have a structure of some type. There is a high level of uncertainty as to the actual risk to these exposed parcels, thus a more specific loss estimation is not provided. A more detailed, site-specific analysis would be needed to assess actual risk within the identified

parcels. 133,652 people are in landslide-prone areas, but direct impacts to people are expected to be minimal as it is unlikely that landslides will occur without warning.

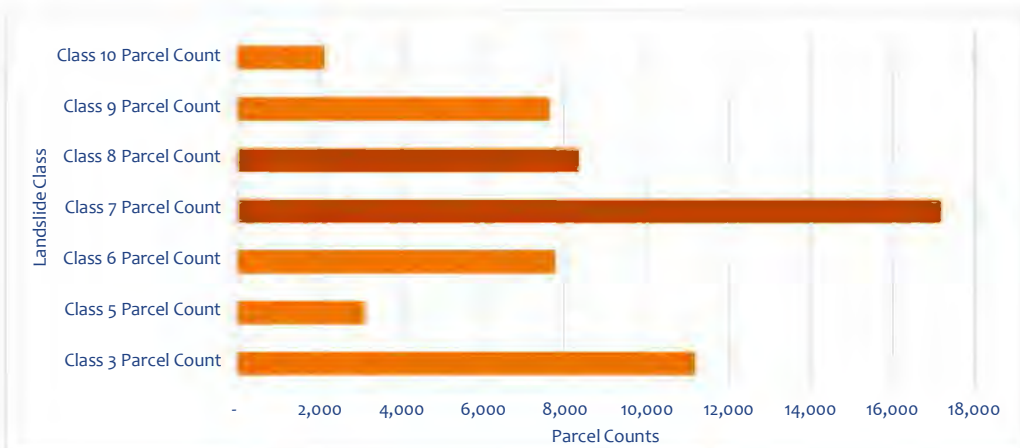
Table 7-4 Landslide Exposure by Parcel/Property Type

Property Type	Improved Parcel Count	Improved Value	Total Value	Population
Commercial	372	\$205,752,901	\$411,505,802	-
Industrial	326	\$167,855,782	\$419,639,455	-
Multi-Family Residential	250	\$225,004,598	\$337,506,897	635
Mobile Home Park	37	\$32,175,343	\$48,263,015	94
Miscellaneous	2,695	\$146,394,103	\$292,788,206	-
Residential	52,332	\$12,222,627,237	\$18,333,940,856	132,923
Unassessed	1,418	\$6,308,948	\$12,617,896	-
Total	57,430	\$13,006,118,912	\$19,856,262,126	133,652

Sources: County of El Dorado 2020; WSP Analysis 2022

Figure 7-1 below further breaks down the numbers of exposed parcels by landslide class. The higher the class the greater the susceptibility (see **Figure 5-32**). The classes are based on a combination of slope and rock strength and express the generalization that on very low slopes, landslide susceptibility is low even where there are weak rock and soil materials, and that landslide susceptibility increases with slope and weaker rock and soil materials (USGS 2011). Very high landslide susceptibility includes classes VIII, IX, and X (Classes 8 and above) and includes very steep slopes in hard rocks and moderate to very steep slopes in weak rocks (USGS 2011). As shown, the highest number of susceptible parcels fall under Class 7, with over 16,000 parcels with exposure to landslide that could be influenced by climate change.

Figure 7-1 Total Parcel County by Landslide Class



Sources: County of El Dorado 2020; WSP Analysis 2022



Wildfire

A wildfire threat assessment was performed for the County using the following GIS methodology. The Assessor's parcel layer was overlaid on the wildfire threat layer from CAL FIRE. For the purposes of this analysis, the wildfire hazard class that intersected each Assessor's parcel was assigned as the hazard class for the entire parcel. It was assumed that every parcel with an improved value greater than zero was developed in some way; thus, only improved parcels and their values were analyzed.

An analysis of the value of those parcels – the improvement value plus estimated value of building contents – quantifies the potential losses from wildfires by wildfire class. The results in [Table 7-5](#) show that almost \$22 billion worth of property and approximately 64,892 parcels are exposed to wildfire risk countywide. Most of these buildings are in high to very high hazard areas. Residential parcels constitute most of the number of parcels and the projected losses. The total values shown also include both structure value and contents and can be used as an estimate of potential losses since wildfires typically result in a total loss.

Table 7-5 Wildfire Hazard Parcel Exposure Summary by Parcel Type and Fire Threat Class

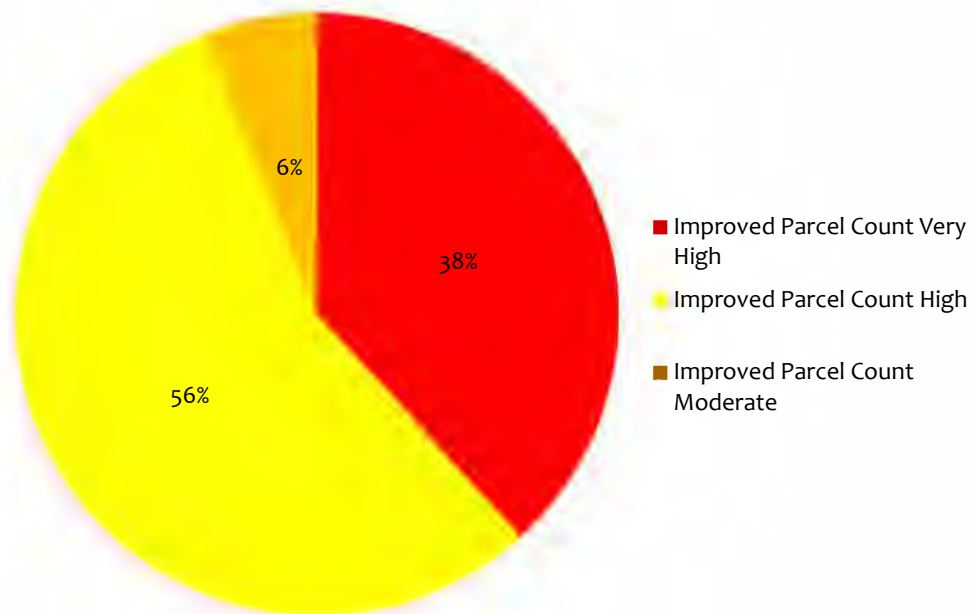
Parcel Type	Parcel Count Very High	Parcel Count High	Parcel Count Moderate	Total Parcel Count	Improved Value	Estimated Content Value	Total Value	Population
Commercial	150	362	39	551	\$244,394,585	\$244,394,585	\$488,789,170	-
Industrial	135	357	72	564	\$383,850,541	\$575,775,812	\$959,626,353	-
Multi-Family Residential	76	222	17	315	\$290,356,434	\$145,178,217	\$435,534,651	800
Mobile Home Park	17	22	2	41	\$40,808,824	\$20,404,412	\$61,213,236	104
Miscellaneous	1,537	1,239	54	2,830	\$146,047,945	\$146,047,945	\$292,095,890	-
Residential	21,966	33,389	3,720	59,075	\$12,990,899,399	\$6,495,449,700	\$19,486,349,099	150,051
Unassessed	917	576	23	1,516	\$11,520,096	\$11,520,096	\$23,040,192	-
Total	24,798	36,167	3,927	64,892	\$14,107,877,824	\$7,638,770,766	\$21,746,648,590	150,955

Note: In addition to Very High, High and Moderate, CalFire offers the highest fire threat level as "Extreme". However, the County does not have parcels that are within Extreme Fire Threat Zones.

Sources: CAL FIRE, El Dorado County Assessor, WSP GIS analysis

Figure 7-2 shows the composition of improved parcels that are exposed to wildfire threats within the unincorporated County, categorized by fire threat zone. More than half of the parcels have a high wildfire threat. The rest of the parcels are mostly very high fire threat. Only a small portion of the total parcels are moderate fire threat.

Figure 7-2 Unincorporated County Parcels in Fire Threat Classes



Source: CAL FIRE, El Dorado County Assessor, WSP GIS analysis

In addition, as shown in Table 7-5, a total of 150,955 people reside in areas that have moderate, high, and very high fire threat. Based on the DOF 2020 population estimate (193,098) this means that 78% of the County comprises areas that have some level of wildfire threat.

Sensitive Populations

The most sensitive populations are those with limited mobility and resources, existing economic and financial disparities, and those who are directly exposed to climate-related hazards. Residing in rural and isolated areas of the County, limited accessibility to health, language barriers, and a lack of emergency, and support services makes it more difficult to prepare for, respond to, and recover from disasters and climate-related shocks and stresses. Of the 20 sensitive populations assessed, 18 had high or severe vulnerability (V4 or V5) for one climate-related hazard. People are generally the most vulnerable to extreme heat, human health hazards, wildfire, and severe weather. The most vulnerable sensitive populations are low-income households, seniors, children, and outdoor workers. People of color who lack resources are also vulnerable. These populations are concentrated in neighborhoods around the City of South Lake Tahoe (Al Tahoe and Stateline neighborhoods), Kyburz, Pollock Pines, Cedar Grove, Georgetown, and Coloma. Table 7-6 summarizes the high and severe vulnerabilities and impacts in the County.

Table 7-6 Sensitive Populations with High to Severe Vulnerability to Climate-related Hazards

Population Indicator	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
Limited Mobility and Communications	Children (under 14)	<ul style="list-style-type: none"> • Mobility challenges • Dependency on others for transportation • Lack of access to communication services • Financial instability 	<p>Persons with limited mobility will experience delays in receiving communications during hazard events and greater challenges during evacuations. These persons may be unable to prepare for emergencies from their homes during events. Children are often less aware about avoiding heat-related illnesses due to extreme heat without the support of an adult, and not all children may have access to air-conditioned spaces. Seniors are also more likely to be impacted the greatest by heat-related illnesses, as well as poor air quality due to wildfires. Seniors may also have existing health conditions that can worsen with certain climate-related hazards, like extreme heat. Like children, seniors may also have less awareness about extreme heat days, wildfires, and other hazards. Decreased access to transportation and physical disabilities also make it more difficult for seniors to take actions to evacuate. Persons living in areas with limited access and communications in combination with language barriers could become isolated if hazards result in road closures, preventing them from evacuating or receiving services. Further, disruptions can last days when public services are disrupted in these communities, and these persons have a lack of backup supplies.</p>	<ul style="list-style-type: none"> • Drought and Water Supply • Extreme Heat • Flooding • Human Health Hazards • Landslide and Debris Flows • Severe Weather • Wildfire
	Seniors			
	Seniors Living Alone			
	Persons with Disabilities and Access and Functional Needs			
	Persons with Limited English Proficiency			
	Persons with Limited Accessibility			
	Persons Living on Single-Access Roads			
	Isolated and rural communities			
Income	Cost-burdened Households	<ul style="list-style-type: none"> • Lack of affordable housing • Financial instability • Lack of air 	<p>Households with income constraints are one of the most vulnerable populations in the County. All climate-related hazards pose threats to this population indicator as these households have limited financial resources. This makes it cost-</p>	<ul style="list-style-type: none"> • Drought and Water Supply • Extreme Heat • Flooding
	Households in Poverty			

Population Indicator	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
Constrained	Low-Income Households	<ul style="list-style-type: none"> conditioning 	prohibitive to retrofit their homes and purchase equipment or other supplies to resist climate-related hazards. These households are also less likely to be able to absorb the costs of recovery, repair, and rebuild activities.	<ul style="list-style-type: none"> Human Health Hazards Landslide and Debris Flows Severe Weather Wildfire
	Unemployed			
	Ethnic Minorities			
Poor Housing Conditions	Overcrowded Households	<ul style="list-style-type: none"> Lack of affordable housing Poor housing Constraints related to home ownership 	Households in mobile homes also face increased vulnerabilities from flooding, severe weather, and wildfires. These homes lack structural integrity when compared to permanent homes, making them more susceptible to damage and loss. Households living in mobile homes typically have lower income levels. Because renters and sometimes, households in mobile homes, do not own the land their home sits on, they lack the incentive to invest in maintenance and in protective improvements to make their home more resilient to hazards. Overcrowded households may also include rental situations and generally unhealthy housing conditions that are not safe due to the number of people residing in them or due to mold, lack of air conditioning, or close living quarters.	<ul style="list-style-type: none"> Extreme Heat Flooding Human Health Hazards Severe Weather Wildfire
	Households in Mobile Homes			
	Renters			
Outdoor Exposure	High-pollution burdened communities	<ul style="list-style-type: none"> Lack of mobility Lack of air conditioning Lack of access to healthcare Limited transportation 	Pollution-burdened communities, outdoor workers, and people experiencing homelessness have longer exposure outside, making them more susceptible to illnesses associated with extreme heat and poor air quality due to wildfires. Agriculture and forestry pests and diseases can also be harmful to outdoor workers who depend on the agriculture or recreation industry for work. Persons experiencing homelessness can also lose belongings during climate-related hazards.	<ul style="list-style-type: none"> Extreme Heat Human Health Hazards Severe Weather Wildfire
	People with Chronic Health Conditions			
	Outdoor workers			
	Persons experiencing Homelessness			

Critical Facilities

The most vulnerable critical facilities and infrastructure in the County are water and electrical infrastructure, such as water treatment and storage facilities, water conveyance systems, electrical infrastructure, sewer lifts, and telecommunication facilities. These facilities also do not include the major transportation roads and transit infrastructure within the County, which have multiple uses beyond worker commute trips, such as the transport of major goods and services, bus routes, and evacuation routes. Water and wastewater infrastructure can also be impacted by flooding, severe weather, landslides and debris flows, and wildfires. Linear transportation facilities, such as highways, major local roads, and minor local roads compiled from the County GIS data portal were included in early critical facility databases but given the high number of linear road features (and hazardous material facilities), these were excluded for purposes of focusing the analysis. Most of these facilities also consisted of complex underground and aboveground infrastructure, and for many of the rural communities, there are no back-up alternatives to move water and wastewater to and from these neighborhoods.

The list of critical facilities included critical buildings and infrastructure in both the unincorporated County and the two incorporated cities, given that many key assets and community services were located within the two cities. Therefore, the critical facility analysis summarizes the facilities by jurisdiction whereas the parcel-level analysis only included the parcels within the unincorporated County. A GIS analysis of exposed critical facilities was conducted, like the parcel analysis. The master list of critical facilities and those with high or severe vulnerability to climate-related hazards is included in the Appendix.

Flood

FEMA's NFHL flood zones were overlaid in GIS with critical facility point data to identify critical facilities that would likely be inundated during a 1% annual chance and 0.2% annual chance flood event. The results of critical facilities throughout the County that are exposed to the various flood hazards are shown in **Table 7-7** and **Table 7-8** below and organized by the jurisdiction they are located in and the focus area they are classified in. There is only one essential business within the 1% annual chance flood event, and no essential businesses in the 0.2% annual chance flood event.

Table 7-7 Critical Facilities Within the 1% Annual Chance Flood Hazard by Focus Area and Jurisdiction

Jurisdiction	Essential Business	Essential Service	Infrastructure at Risk	Population at Risk	Grand Total
Placerville	0	5	8	3	16
South Lake Tahoe	0	0	1	0	1
Unincorporated area	1	0	31	0	32
Grand Total	1	5	40	3	49

Sources: HIFLD, NID, National Bridge Inventory (NBI), the County, NFHL Effective date 4/3/2012, FEMA; WSP GIS Analysis

Table 7-8 Critical Facilities Within the 0.2% Annual Chance Flood Hazard by Focus Area and Jurisdiction

Jurisdiction	Infrastructure at Risk	Population at Risk	Grand Total
Placerville	2	0	2
South Lake Tahoe	2	0	2
Unincorporated area	2	2	4
Grand Total	6	2	8

Sources: HIFLD, NID, NBI, DWR, El Dorado County, NFHL Effective date 4/3/2012, FEMA; WSP GIS Analysis

Landslide

A deep-seated landslide susceptibility layer was overlaid in GIS with critical facility point data to identify critical facilities that are exposed to potential landslide hazards. **Table 7-9** below summarizes the results of the critical facilities analysis, highlighting the exposure of critical facilities throughout the County to landslide hazards.

Table 7-9 Critical Facilities Exposed to Deep-seated Landslide Hazard by Landslide Class

Jurisdiction	Landslide Class	Essential Service	Infrastructure at Risk	Population at Risk	Grand Total
Placerville	3	17	4	8	29
	6	6	0	2	8
South Lake Tahoe	7	1	6	1	8
Unincorporated area	3	1	76	6	83
	5	9	41	13	63
	6	1	38	4	43
	7	4	45	0	49
	8	0	11	4	15
	9	0	15	0	15
	10	0	6	0	6
Grand Total	-	39	242	38	319

Sources: HIFLD, NID, NBI, Department of Conservation, CGS, the County, WSP GIS Analysis

Wildfire

Wildfire threat areas GIS layer was overlaid in GIS with critical facility point data to identify critical facilities that are exposed to various wildfire threat levels. **Table 7-10** through **Table 7-12** below summarize the results of the critical facilities analysis, highlighting the exposure of critical facilities throughout the County to various levels of wildfire threat. No essential business facilities are in any wildfire threat zones.

Table 7-10 Critical Facilities Within the Moderate Wildfire Threat by Jurisdiction and Focus Area

Jurisdiction	Essential Service	Infrastructure at Risk	Population at Risk	Grand Total
Placerville	0	0	1	1
South Lake Tahoe	0	1	1	2
Unincorporated area	3	79	5	87
Grand Total	3	80	7	90

Sources: HIFLD, NID, NBI, CAL FIRE, Fire and Resource Assessment Program (FRAP), the County, WSP GIS Analysis

Table 7-11 Critical Facilities Within the High Wildfire Threat by Jurisdiction and Focus Area

Jurisdiction	Essential Service	Infrastructure at Risk	Population at Risk	Grand Total
Placerville	0	4	1	5
South Lake Tahoe	5	21	14	40
Unincorporated area	22	223	18	263
Grand Total	27	248	33	308

Sources: HIFLD, NID, NBI, CAL FIRE, FRAP, the County, WSP GIS Analysis

Table 7-12 Critical Facilities Within the Very High Wildfire Threat by Jurisdiction and Focus Area

Jurisdiction	Essential Service	Infrastructure at Risk	Population at Risk	Grand Total
Unincorporated area	5	80	13	98
Grand Total	5	80	13	98

Sources: HIFLD, NID, NBI, CAL FIRE, FRAP, the County, WSP GIS Analysis

Wildfire Assessment for Critical Facilities

Spatial Informatics Group (SIG) completed an additional assessment of wildfire hazard impacts on critical facilities. The assessment is based on the average flame length in feet within 100 feet, 100 to 300 feet, and 300 to 1,000 feet buffers around each critical facility. 100 feet is the legal minimum distance for defensible space per California law (Public Resources Code [PCR] 4921). Beyond the 100 foot minimum, managing an additional 100 to 300 feet of fuels where hazard is high can provide additional protection for structures during a wildfire. A larger buffer (300 feet to 1,000 feet) was assessed to define the relative hazard of the extended areas surrounding the facility and allowing comparison with fire hazard in the immediate vicinity of the facility. These buffers can also represent different defensible space maintenance areas that may be suitable for the facilities based on surrounding flame length risk. Flame lengths were produced by Pyrologix (pyrologix.com) for the Pyrengence Consortium (pyrengence.org) in 2021 and is an update of the 2020 dataset developed by Pyrologix for the USFS Pacific Southwest Region.

Increased flame lengths increase the likelihood of torching events and crown fires and require increased suppression intensity. Flame length is influenced in part by fuel type, potential for crown fire, and weather conditions. Fuel type and crown fire potential, in turn, influence the rates at which fire lines can be constructed by different fire resources, including hand crews and mechanical equipment. Flame lengths above 4 feet will present serious control problems. They are too dangerous to be directly contained by hand crews (NWCG 2004). Flame lengths over 8 feet are generally not controllable by ground-based equipment or aerial retardant and present serious control problems, including torching, crowning, and spotting.


Based on the flame length information and the relationship between flame length and potential for success for suppression shown in **Table 7-13**, average flame lengths less than or equal to 4 feet, which can be attacked directly with hand tools are classified as low hazard. Average flame lengths greater than 4 feet to 8 feet, which are too large to attack directly, but can still be suppressed using heavy equipment, are classified as moderate hazard. Flame lengths greater than 8 feet are classified as high hazard as control efforts will probably be ineffective.

Table 7-13 Relationship between Flame Length and Potential for Success of Active Suppression

Fire Hazard Rating	Flame Length	Description
Low	Less than 4 feet	Fires can generally be attacked at the head or flanks by firefighters using hand tools. A hand line should hold the fire.
Moderate	4–8 feet	Fires are too intense for direct attack at the head with hand tools. A hand line cannot be relied on to hold the fire. Bulldozers, engines, and retardant drops can be effective.
High	8–11 feet	Fire may present serious control problems: torching, crowning, and spotting. Control efforts at the head will probably be ineffective.
Extreme	Greater than 11 feet	Crowing, spotting, and major fire runs are probable. Control efforts at the head of the fire are ineffective.

Source: NWCG 2004.

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Most critical facilities in the County that have a moderate or high hazard (flame lengths greater than 4 feet) are located on private non-industrial lands based on a GIS overlay of the critical facilities and the land uses contained in the California Protected Areas Database. **Figure 7-3** through



Figure 7-9 show the wildfire hazard by average flame length for critical facilities located in seven geographic areas of the County.

Table 7-14 lists the wildfire hazard by modeled flame length within 100 feet of critical facilities in the County. As shown in this table, 11 of the 258 essential services facilities are exposed to high flame length hazards, 108 of the 698 infrastructure at risk facilities are exposed to high flame length hazards, and 10 of the 315 population at risk facilities are exposed to high flame length hazards. Of these 129 critical facilities at risk to high flame length hazards, 83 are located on private lands, 40 are located on federal lands, and the remaining are on State and local lands. In summary, the assessment shows that a substantial number of critical facilities at risk to high flame length hazards are located on federal and private lands. Enhanced coordination with federal agencies on defensible space maintenance and improved enforcement of the County’s Hazardous Vegetation and Defensible Space Ordinance (Chapter 8.09 of Code of Ordinances) can minimize risks to these critical facilities.

Table 7-15 summarizes the critical facilities with high and severe vulnerability to climate-related hazards.

Figure 7-3 Wildfire Hazard for Critical Facilities in El Dorado County (Northwest - Inset 1)

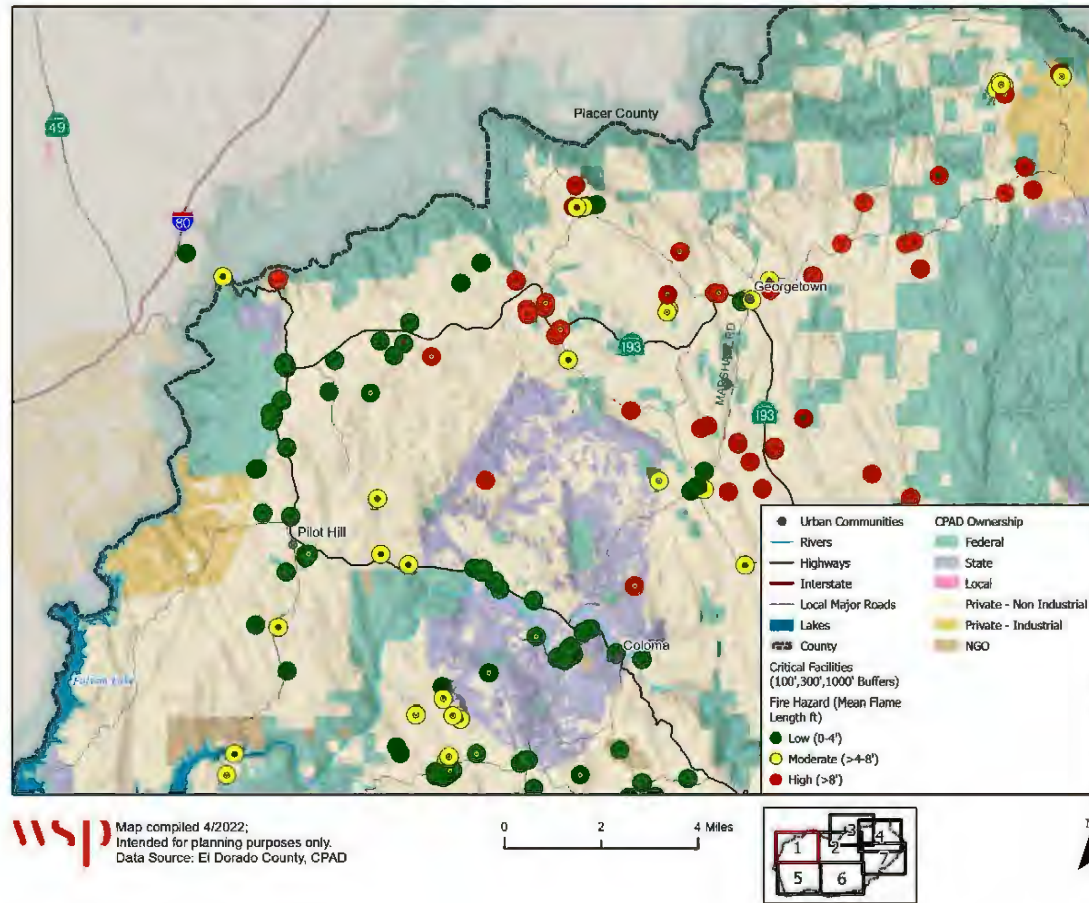


Figure 7-4 Wildfire Hazard for Critical Facilities in El Dorado County (North Central – Inset 2)

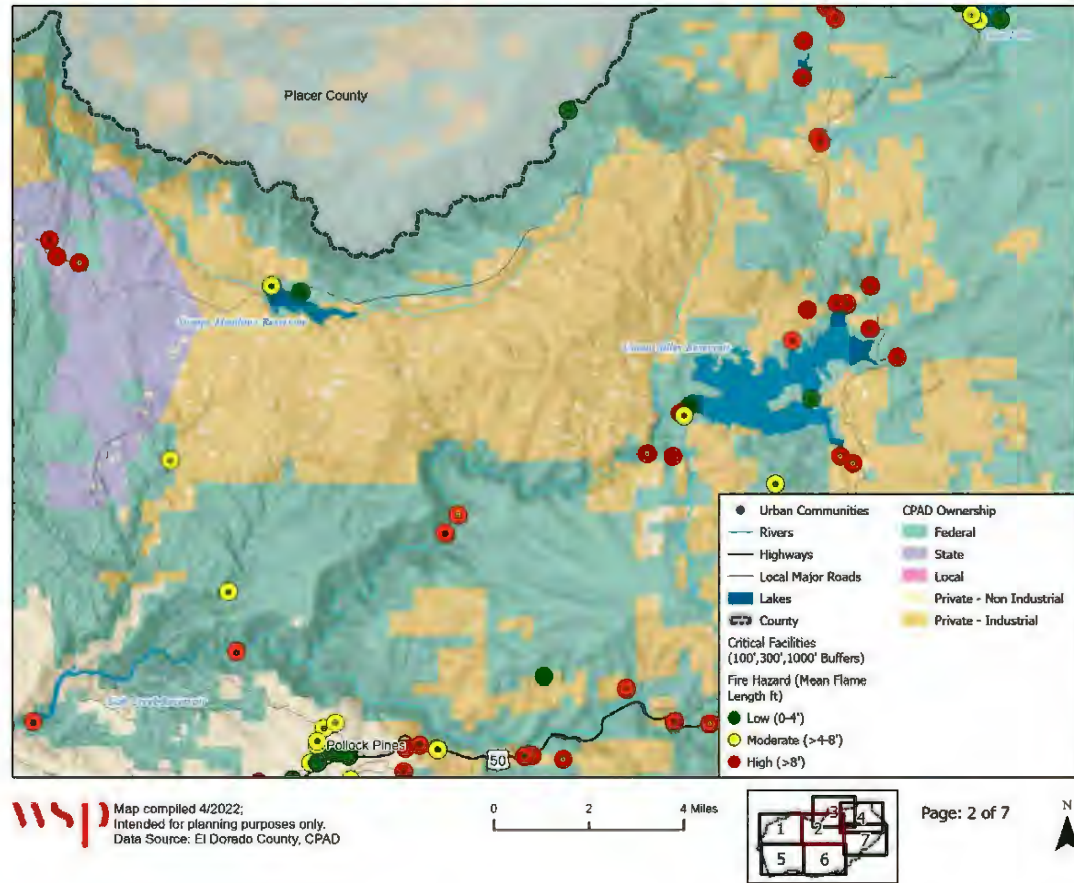


Figure 7-5 Wildfire Hazard for Critical Facilities in El Dorado County (North – Inset 3)

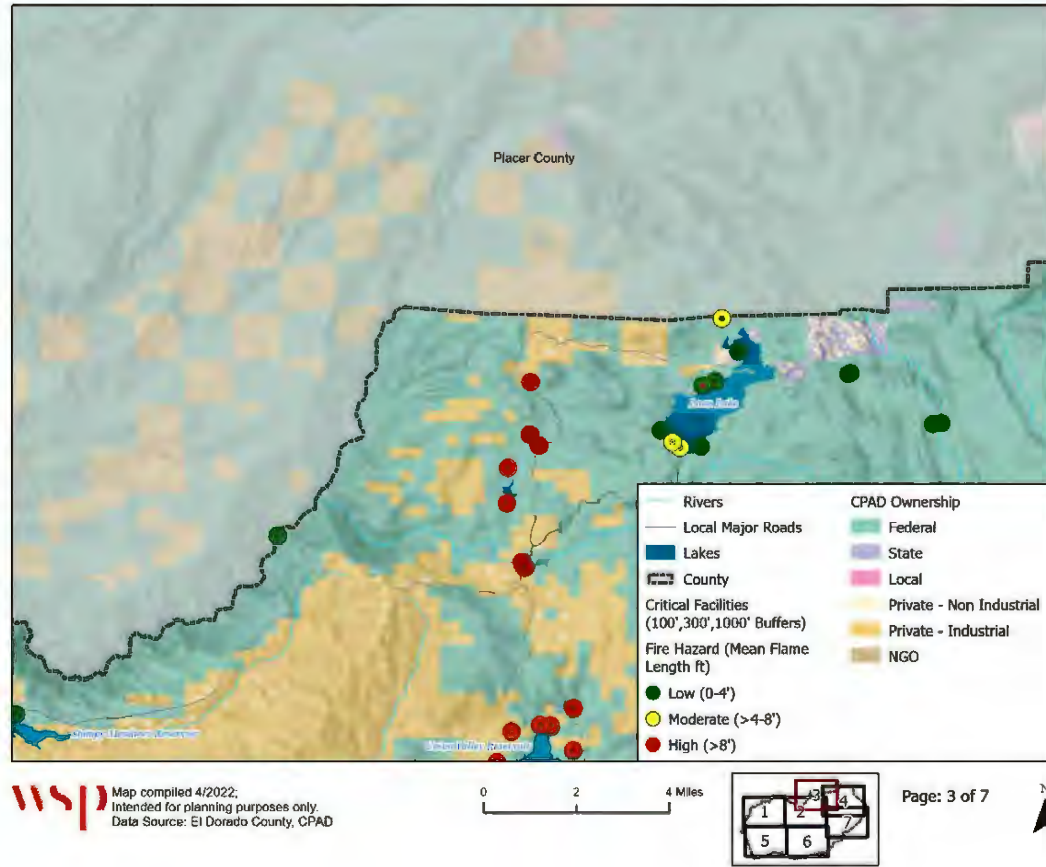


Figure 7-6 Wildfire Hazard for Critical Facilities in El Dorado County (Northeast – Inset 4)

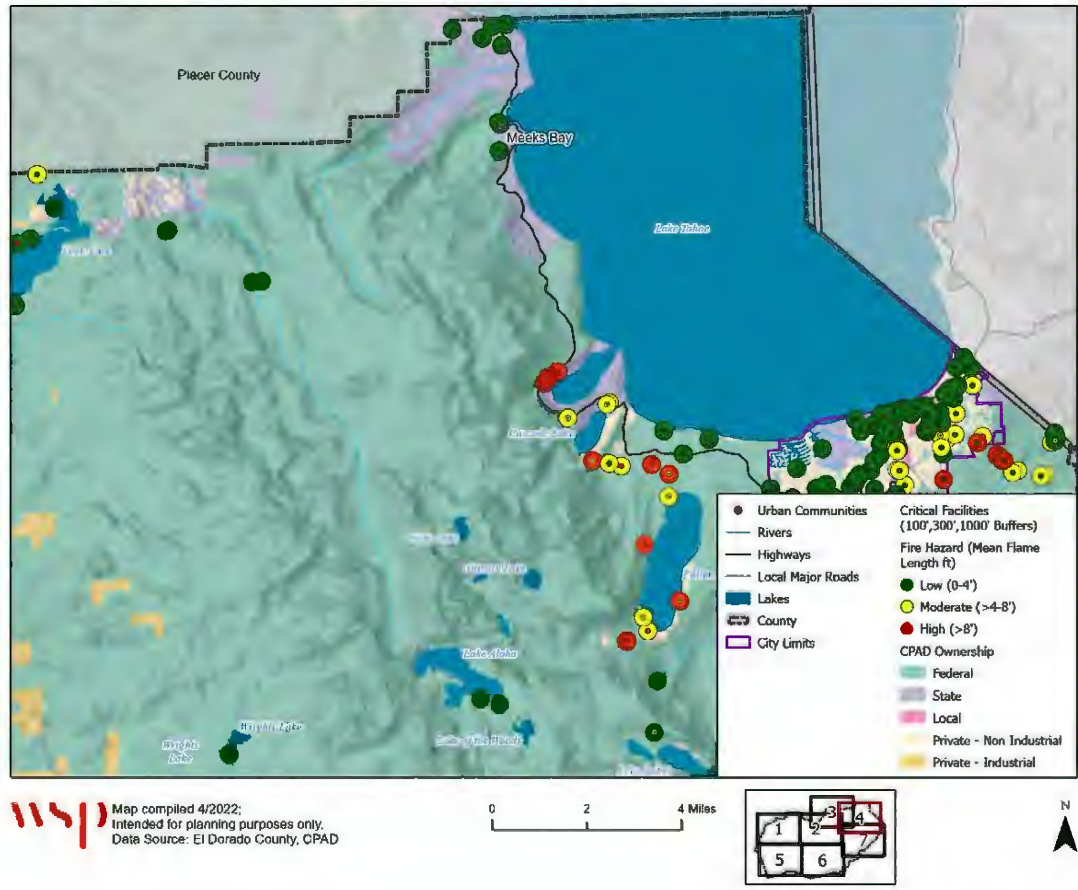


Figure 7-7 Wildfire Hazard for Critical Facilities in El Dorado County (West – Inset 5)

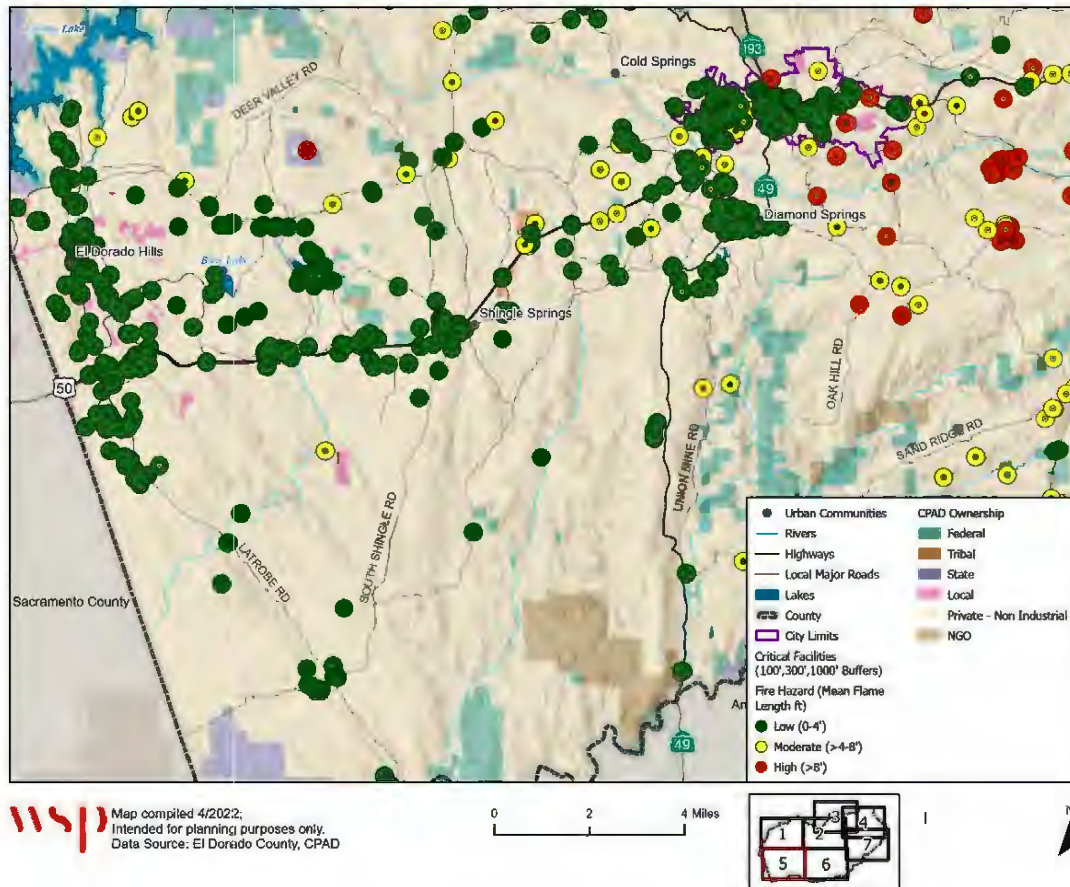


Figure 7-8 Wildfire Hazard for Critical Facilities in El Dorado County (South Central – Inset 6)

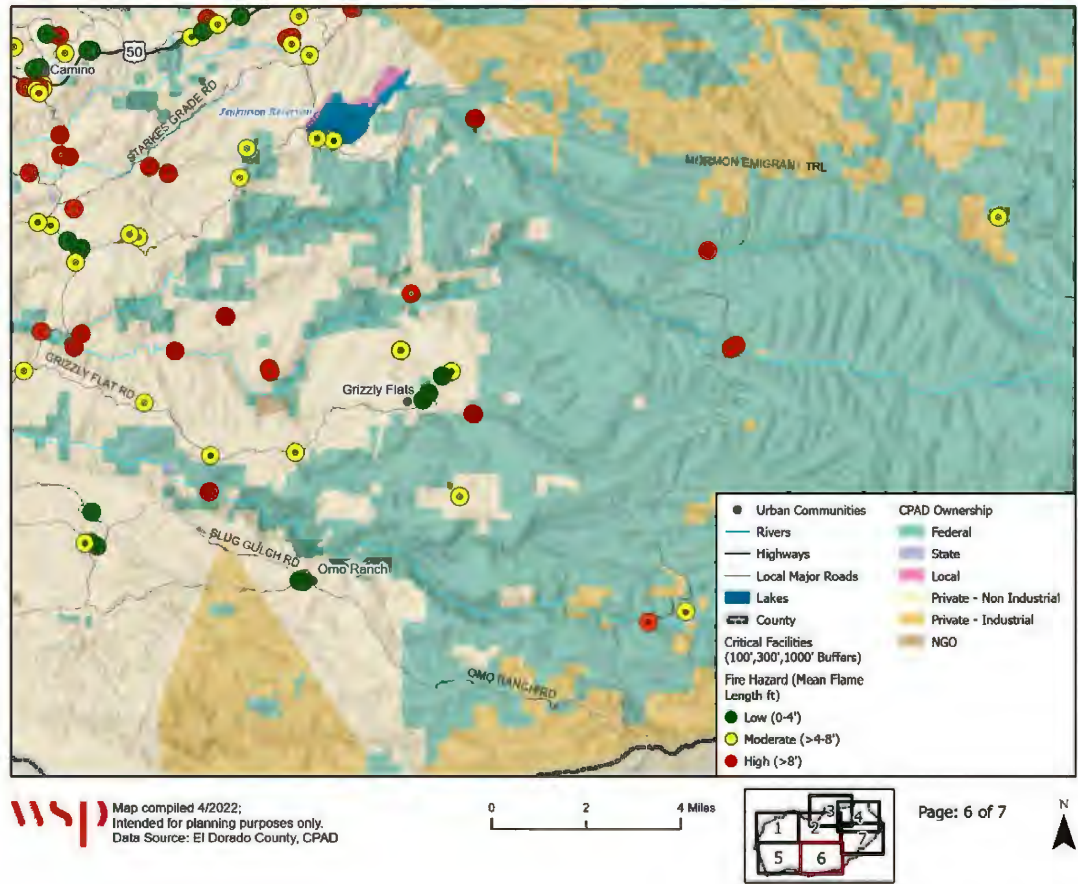


Figure 7-9 Wildfire Hazard for Critical Facilities in El Dorado County (Southeast – Inset 7)

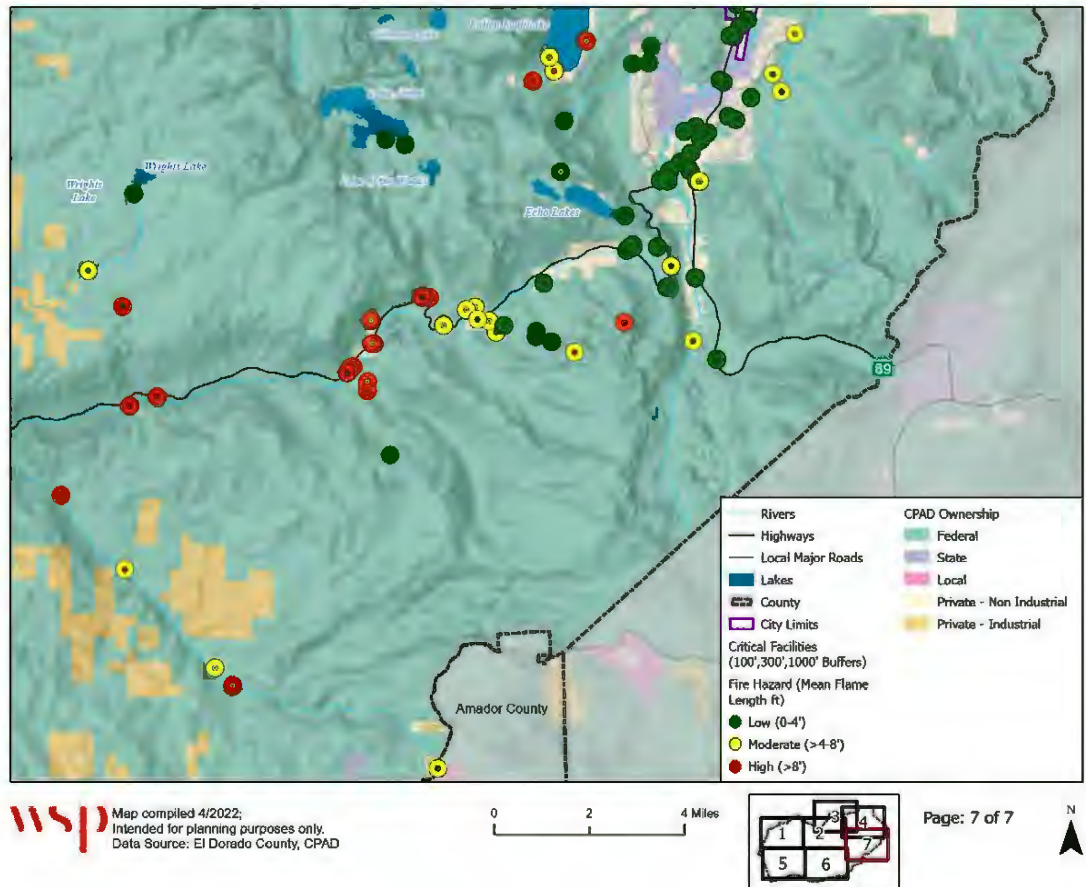


Table 7-14 Wildfire Hazard (within 100 feet) for Critical Facilities in El Dorado County

Critical Facility Type by Ownership	Fire Hazard (Flame Length in Ft)			Total Facilities
	Low Hazard (0'-4' FL)	Moderate Hazard (4'-8' FL)	High Hazard (>8' FL)	
Essential Business	3			3
Private – Non Industrial	3			3
Essential Service	236	11	11	258
Federal	1	1		2
Local	4			4
Private – Industrial	1		1	2
Private – Non Industrial	225	10	10	245
State	4			4
Tribal	1			1
Infrastructure at Risk	492	98	108	698
Federal	93	24	40	157
Local	9			9
NGO	1			1
Private – Industrial	15	4	7	26
Private – Non Industrial	360	69	56	485
State	14	1	5	20
Population at Risk	288	17	10	315
Local	2		1	3
Private – Non Industrial	284	17	9	310
State	1			1
Tribal	1			1
Grand Total	1019	126	129	1,274

Sources: El Dorado County 2022; WSP 2022; SIG GIS Analysis 2023

Table 7-15 Critical Facilities with High and Severe Vulnerability to Climate-related Hazards

Critical Facility Category	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
Water and Wastewater	Dam	<ul style="list-style-type: none"> Lack of funding for repairs and retrofits Lack of feasible back-up alternatives Relocation challenges Engineering constraints 	Water and wastewater infrastructure may receive the greatest impact in the County from climate-related hazards, particularly because of the aging infrastructure and systems that exist beyond their normal lifespan. The structures can be damaged from ground movement or inundation. Drought and flooding conditions can prevent dams and wastewater infrastructure from functioning properly, causing secondary impacts and contamination of the soil and water. *68% of small water systems are in at least moderate fire threat zones.	<ul style="list-style-type: none"> Flooding Human Health Hazards Severe Weather Wildfire
	Water Station			
	Water System			
	Wastewater Treatment Plant			
	Water Treatment Plant			
Water & Power Authority				
Electrical Infrastructure	Electrical substation	<ul style="list-style-type: none"> Lack of funding for repairs and retrofits Lack of feasible back-up alternatives Relocation challenges Engineering constraints 	Electrical transmission lines that run through areas with slope instability or landslide and avalanche potential can be damaged during such events. Alternatives, like solar power and other renewables are not readily available, and accessing remote locations for repairs and routine maintenance is difficult.	<ul style="list-style-type: none"> Extreme Heat Severe Weather Wildfire
	Power Plant			

Critical Facility Category	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
Communications	Telecommunication / Cellular Tower	<ul style="list-style-type: none"> Lack of staffing and funding for timeline repairs and response related to disruptions Few redundancies in the communication systems 	<p>Communication systems that are in hazard-prone areas in the County, particularly in rural areas, are most vulnerable if they are damaged during climate-related hazard events because it would take time to address and respond to the situation and repair the system. Severe winds and weather can also damage these facilities. Also, planned and unplanned PSPS can result in power outages that cause limited means of communication.</p> <p>*65% of the communication towers are in at least moderate wildfire threat zones.</p>	<ul style="list-style-type: none"> Severe Weather (Heavy Snow, Rain, Wind) Wildfire
Transportation Infrastructure	Aviation Facility	<ul style="list-style-type: none"> Limited financial and staffing resources for timing repairs Need for alternative modes of transportation Ongoing repairs needed due to aging roads in rural areas 	<p>Of the transportation infrastructure, roads are the most vulnerable given they are the most exposed to climate-related hazards like flooding, landslides, and wildfires. Severe weather also damages roads since these hazards can block or close a road, even if there is no physical damage to the road (e.g., potholes). Road closures that limit accessibility or isolate communities have the most severe safety risks. The remote and rural roads in the County are at the highest risk because access for repairs and maintenance is difficult and may be limited to only summer months. Other vulnerable infrastructure includes bridges vulnerable to flooding and severe weather.</p> <p>*65% of the bridges are in at least moderate wildfire threat zones.</p>	<ul style="list-style-type: none"> Extreme Heat Flooding Human Health Hazards Severe Weather Wildfire
	Amtrak Station			
	Bridge			
	Government Transportation			
	Transit Station			
Educational Facilities	School			<ul style="list-style-type: none"> Extreme Heat
	Colleges/University			

Critical Facility Category	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
	Child Care Provider/Service	<ul style="list-style-type: none"> Lack of funds or bond measures to make retrofits and modernizations Aging buildings 	Educational facilities, like school buildings can be directly damaged by climate-change hazards, particularly flooding and wildfires. They may also be indirectly impacted by extreme heat and cold temperatures during severe weather. These facilities need routine modernizations associated with heating, cooling, ventilation, and thermal comfort amenities like operable windows to maintain healthy learning environments. For example, public health hazards may require buildings to have increased ventilation. *UCCE (UC Cooperative Extension) is in Class 6 deep-seated landslide hazard zone.	<ul style="list-style-type: none"> Flooding Human Health Hazards Severe Weather Wildfire
Public Safety Buildings	Fire Station	<ul style="list-style-type: none"> Limited financial and staffing resources for timing repairs, relocated facilities, and new facilities 	Fire and police stations in the County could be damaged or lost during flooding and wildfire events. Indirect impacts may result in mold and smoke damage. Repairs and upgrades may cause facilities to be unavailable during emergencies. Medical facilities may also need to be routinely upgraded. *33% of police stations are in at least moderate wildfire threat zones.	<ul style="list-style-type: none"> Extreme Heat Flooding Human Health Hazards Severe Weather Wildfire
	Police Station			
	Emergency Operations Center			
Government Facilities	Community Resources (child support, library, museum, event center, etc.)	<ul style="list-style-type: none"> Limited financial and staffing resources for timing repairs, relocated facilities, and new facilities 	Government facilities in the County are highly and severely vulnerable to flooding, severe weather, and wildfire. Damage to these facilities results in indirect impacts to the community that rely on them for public services and important resources. Some of these facilities in the Tahoe Basin may also lack air conditioning, making them more vulnerable to extreme heat.	<ul style="list-style-type: none"> Extreme Heat Flooding Severe Weather Wildfire
	Government Building/Department/Office (Superior) Court			
	Jail			
	Shelter			

Critical Facility Category	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
			<p>*The law library of South Lake Tahoe is in high fire threat zone.</p> <p>*Pollock Pines Camino Community Center is in very high fire threat zone.</p>	
Medical and Long-Term Healthcare Facilities	Clinic	<ul style="list-style-type: none"> Limited financial and staffing resources for timing repairs, relocated facilities, and new facilities 	<p>Hospitals must be designed and constructed to specific building standards and should be able to withstand climate-related hazards. Medical clinics, emergency medical facilities, and long-term care facilities would be more vulnerable if not routinely upgraded. This category also covers other aspects of medical services required during a hazard event including survivor care, fatality management, public health, and the distribution of medical supplies making any one of these services also vulnerable.</p> <p>*Placerville's emergency medical services center is located within 1% annual chance floodplain.</p> <p>*Three senior care facilities are located within very high fire hazard zones.</p>	<ul style="list-style-type: none"> Extreme Heat Flooding Human Health Hazards Severe Weather Wildfire
	Community Nursing & Family Service			
	Emergency Medical Service			
	Health Support & Recovery & Prevention Service			
	Hospital			
	Senior Care Facility/Senior Community Service			
	Veteran Service			
	RMP/Tier II Facility			<ul style="list-style-type: none"> Extreme Heat

Critical Facility Category	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
Hazardous Material Facilities	Toxic Release Inventory Facility	<ul style="list-style-type: none"> Lack of staffing and funding for timeline repairs and response related to disruptions Few redundancies in the communication systems 	<p>There are facilities that store, handle, dispose, and transport hazardous materials in the County and former facilities that are being remediated. Existing facilities that use hazardous materials in hazard-prone area can have the highest vulnerability to climate-related hazards, especially if this means the hazardous materials at the facility itself are at risk. Flooding, landslides and debris flows, and wildfires would pose the most risk. While most of these facilities are highly regulated by the State and go through regular inspections and permitting processes to stay in operation, increased maintenance and repairs must be in place to minimize increased hazard potential.</p> <p>*67% of the RMP facilities are in at least moderate fire hazard zones.</p>	<ul style="list-style-type: none"> Flooding Severe Weather Wildfire

Sources: HIFLD, NID, NBI, El Dorado County, NFHL Effective date 4/3/2012, FEMA, Department of Conservation, CGS, CAL FIRE, FRAP, WSP GIS Analysis

Natural and Cultural Resources

Natural and cultural resources, such as waterways and bodies of water (reservoirs, lakes), aquatic habitat and wetlands, forests, protected areas, parks and open spaces, and historic buildings and sensitive cultural resources would experience varying impacts from climate-related hazards. Some hazard interactions like drought and extreme heat over time are likely to result in cascading hazards related to increased wildfire severity and susceptibility to landslides and debris flows. Ecosystems can also be disrupted by increased temperatures and changes in precipitation that reduce water resources, cause harmful algae blooms, change the conditions of dissolved oxygen and nutrients in waterways, and result in increased susceptibility to agricultural and forestry pests and disease.

All four natural resource types scored high or severely vulnerable to climate-related hazards. Agricultural pests and disease, drought, extreme heat, and wildfire would have the greatest impact on natural and cultural resources in the County. Water resources would face the greatest threat from climate hazards due to existing issues such as degraded air, soil, and water quality, as well as urban and rural development and timber harvesting. Forest resources would experience the second highest exposure to climate-related hazards. Cultural resources, including cultural heritages, traditional practices, sacred places, buildings, and other values would be equally impacted, meaning no single aspect of cultural resources is more or less vulnerable than the others, and are expected to experience similar levels of vulnerability and exposure to climate-related hazards.

Water Resources

With climate change and its effects on precipitation variability and snowpack levels, groundwater levels may drop and change the distribution of wetland and riparian vegetation and species. Wetlands and riparian ecosystems occur at the interface between uplands and lakes, rivers, and streams. While riparian habitats are limited across the County, they are ecologically important because they provide connections within the watershed and support a diversity of animal and plant species. While higher elevation groundwater-dependent ecosystems may be more resilient because snowpack will persist longer, lower elevation resources will experience more runoff, erosion, and declining groundwater levels. Groundwater levels and natural recharge typically can buffer the impacts of drought conditions, but more frequent and larger precipitation events over shorter periods of time will decrease the total amount of rainwater that infiltrates to groundwater. The encroachment of conifer species (i.e., lodgepole) into riparian areas due to the lack of wildfire, drought, and reduced snowpack levels also threatens the persistence of aspen groves. However, increased wildfires in forested areas, if not too frequent, can provide an opportunity for aspen to regenerate in the riparian areas (California Tahoe Conservancy 2020).

As primarily natural processes, landslides and debris flows can have varying impacts on water resources; however, debris flows have the potential to permanently alter the natural landscape, as was the case in Santa Barbara County following the Thomas Fire. Climate change studies indicate the likelihood that increasingly unpredictable flash flooding and uncertainty in storm occurrence will lead to a worsening in erosion and sedimentation conditions. However, natural areas within the floodplain often benefit from periodic flooding as a naturally recurring phenomenon, and these natural areas often reduce flood impacts by allowing absorption and infiltration of floodwaters.

Forest Resources

The County supports a high diversity of sensitive species and vegetation types. Historically, the County land managers have been working to restore the watersheds and forest communities by minimizing grazing in the Tahoe Basin and promoting forest regeneration on the West Slope. Today, urbanization is highly regulated, and natural and ecologically beneficial fire regimes are allowed to occur within the forest landscape. Climate change still has the potential to directly affect the characteristics of the forest primarily through increased temperatures and changes in precipitation patterns that will exacerbate soil water deficits during droughts that gradually shift the composition of the forest and the historical range of

species habitat (California Tahoe Conservancy 2020). Droughts and wildfires are also expected to be more frequent and severe, which will further alter the forest composition across the County. Tree mortality due to an increase in disease and insect outbreaks like bark beetle infestations will occur, and invasive non-native plants could also increase, spread, and out-compete native species. These changes can also alter atmospheric conditions that could influence the carbon storage capacity (carbon sequestration) of the forests in the County. Avalanches are a natural event, but they can also negatively affect forest resources, including trees located on steep slopes. A large avalanche can knock down many trees and kill the wildlife that lives in and under them. In spring, this loss of vegetation on the mountains may weaken the soil, causing landslides and mudflows. Taken together, climate-related hazards can result in numerous impacts. However, given the scale of forest resources, they also have the capacity to mitigate impacts and create refugia for sensitive species (California Tahoe Conservancy 2020).

Parks and Open Space

State and County parks and open spaces are prone to flooding, landslide, and wildfire risk. Developed parks along the South Fork of the American River can be damaged during high flood events, and all facilities are susceptible to wildfires. The undeveloped areas of the parks that burn during wildfire can also be lost, but direct impacts would be generally limited to temporary closures during repair and reconstruction. Various parklands in the County are also susceptible to landslides, and biking and hiking trails can be buried during these events. While facilities within park and open space areas, such as parking areas, trailheads, bathrooms, and picnic ramadas may contain irrigated landscaping for protection, these alternatives are limited in rural areas with no water supply connection. Also, the natural park and open space lands will eventually recover following flood, landslide, and wildfire events.

Cultural and Historic Resources

The County is home to several Tribal nations, including the Shingle Springs Band of Miwok Indians (Miwok Indians) and the Washoe Tribe of Nevada and California (Washoe Tribe). Traditionally, these Tribes' practices and social systems involved seasonal movements around the County, as both the Miwok Indians and Washoe Tribe travelled to and from summer camps in the high Sierra Nevada and Lake Tahoe region for hunting and gathering. Indigenous burning was also an important practice for the Tribes that is no longer a part of the fire regime. Climate change may affect these Tribes' cultural heritage, in addition to culturally and historically significant buildings, resources, places, practices, properties, districts, and other non-tangible values. Climate-related hazards like agricultural pests and disease, drought, extreme heat, and wildfire can all negatively affect the cultural heritages of the Tribes by directly reducing the diversity of plants, traditional foods, medicinal and artisanal plants, and other culturally important resources. Landslides and wildfires could also degrade and damage archaeological artifacts and sacred cultural sites. Historic buildings may be more vulnerable to wildfires due to their age. These buildings may also be less able to withstand significant heat levels both associated with fires but also extreme heat. The increase and severity of wildfires would also result in poor air quality that affects the health of Tribal communities and those with pre-existing health conditions.

In summary, drought, extreme heat, severe weather (wind), wildfire, and post-fire landslides and debris flow have the potential to result in the greatest impacts to natural resources through direct damage and indirectly, through the loss of valuable ecosystem services.

There are approximately four discrete natural and cultural resources within the County: water resources (rivers, streams, lakes, wetlands, riparian areas), forests (coniferous and oak woodland forests), parks and open space, and historic buildings and cultural resources. Of these four resource categories, all were highly or severely vulnerable (score of V4 or V5) for at least one hazard type. Water and forest resources are the most vulnerable to drought and wildfire. [Table 7-16](#) highlights the natural resources that are highly and severely vulnerable to climate-related hazards and summarizes the impacts.

Table 7-16 Natural Resources with High and Severe Vulnerability to Climate-related Hazards

Natural Resource Category	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
Water Resources	Rivers, Creeks, Streams	<ul style="list-style-type: none"> • Urban encroachment • Existing habitat fragmentation • Poor water quality due to existing soil erosion and sedimentation and pollutant runoff 	<p>Water resources are vulnerable to increased temperatures and precipitation variability if changes alter the ecosystem and the native plant composition. Extreme heat can result in harmful algal blooms in public parks and open spaces that could in turn impact public health. Other hazards like wildfires and landslides can cause more pollutants and sedimentation in waterways, which will affect aquatic wildlife.</p>	<ul style="list-style-type: none"> • Agricultural Pests and Disease • Extreme Heat • Flooding • Landslides and Debris Flows • Severe Weather • Wildfire
	Lake and Reservoirs			
	Aquatic Resources			
	Wetlands and Wet Meadows			
	Riparian Areas			
Forest Resources	Mixed Conifer Forests	<ul style="list-style-type: none"> • Habitat fragmentation • Poor water and soil quality 	<p>The forests in the County range from grasslands, oak woodland, and chamise chaparral along the West Slope to lodgepole pine, white fir, and sierran mixed conifer forests along the Sierra Nevada crest and Tahoe Basin. These ecosystems and specific vegetation communities are vulnerable to extreme heat, drought, pest infestations like bark beetle and wildfire. These vegetation communities are also replaced by new communities following climate-related hazards (aspen forests replaced by lodgepole pine and oak woodlands replaced by shrublands or grasslands).</p>	<ul style="list-style-type: none"> • Agricultural Pests and Disease • Extreme Heat • Flooding • Landslides and Debris Flows • Severe Weather • Wildfire
	Oak Woodland			
	Mixed Chaparral			
	Shrublands			
	Annual Grasslands			
Parks and Open Space	State Parks and Recreation Areas	<ul style="list-style-type: none"> • Limited funding to maintain and upgrade recreational amenities in parks and open spaces • Lack of staffing capacity to 	<p>State and County parks and open space facilities and campgrounds can be directly damaged and inundated by flooding, which would be further exacerbated by climate change and more</p>	
	County Parks and Open Space			
	Fairgrounds			

Natural Resource Category	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
	Campgrounds	<ul style="list-style-type: none"> plan for and implement needed retrofits and upgrades Feasibility challenges associated with relocation of trails and campgrounds 	<p>intense storms. This would disrupt and directly impact regional recreation opportunities in the County. While most of this flooding may occur on the West Slope along major waterways like the South Fork of the American River, flooding can also impact the open space, public lands, and waterways around Lake Tahoe. Biking and hiking routes can be impacted by severe weather that results in soil erosion. Beaches may also be impacted by drought and fluctuating water levels, evident along Lake Tahoe, that can result in harmful algal blooms and public health hazards related to warming temperatures and toxic algae.</p>	<ul style="list-style-type: none"> Agricultural Pests and Disease Drought Extreme Heat Flooding Landslides and Debris Flows Public Health Hazards Severe Weather Wildfire
	Greenways			
	Bicycle Trails			
	Hiking Trails			
	Beaches			
Cultural and Historic Resources	Historic Buildings	<ul style="list-style-type: none"> Lack of funding Limited cultural protections Aging buildings 	<p>Cultural and historic resources can also be damaged by climate-related hazards; entire historic towns and districts can also be lost during catastrophic events like wildfires. Direct losses to historic buildings result in the greatest impact and these can occur from landslides and wildfires. Cultural resources are also directly impacted during flood events, landslides, and wildfires; however, some of these resources are within areas that are commonly inundated during flooding.</p>	<ul style="list-style-type: none"> Agricultural Pests and Disease Drought Extreme Heat Flooding Landslides and Debris Flows Public Health Hazards Severe Weather Wildfire
	Historic Districts			
	Cultural Resources			

Sources: County of El Dorado natural resource categories are adapted from the General Plan 2004; WSP Analysis 2022.



Economic Services

Drought impacts on the economy can be extensive depending on the circumstances during and after a severe drought event. If water resources are limited, effects would be more severe for industries that rely on large amounts of water like the agriculture sector, and any prolonged drought would intensify these impacts. Sectors critical to the economy such as commerce, distribution, agriculture, related environmental resources, municipal and industrial water supply, key city assets, energy generation, and even socioeconomic aspects can be affected by climate-related hazards due to lack of or reduced quality of water resources. **Table 7-17** highlights the economic services that are highly and severely vulnerable to climate-related hazards and summarizes the impacts.

Table 7-17 Economic Services with High and Severe Vulnerability to Climate-related Hazards

Economic Sectors	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
Agriculture	Apiary	<ul style="list-style-type: none"> Fluctuations in demand for products Pesticide overuse and related plant mortality 	The effects of most climate-related hazards will be felt acutely by the agricultural industry. Lack of water or decreased quality of water will be experienced by all sectors. An especially virulent pest or disease could wipe out an entire harvest. Extreme heat exacerbates drought conditions and damages young or sensitive plants. While some agriculture is protected from the elements, most products are tended to outdoors and are therefore vulnerable to any extreme or dangerous weather condition.	<ul style="list-style-type: none"> Agricultural Pests and Disease Drought and Water Supply Extreme Heat Flooding Landslides and Debris Flows Severe Weather Wildfire
	Grazing/Pastures			
	Livestock			
	Nursery			
	Orchards			
	Timber Products			
	Vineyards			
Construction	Building Materials	<ul style="list-style-type: none"> Fluctuations in demand for products Limited staffing resources for timing repairs, relocated facilities, and new facilities Supply shortages Aging infrastructure 	The construction industry is heavily dependent on raw materials and skilled labor. This makes it vulnerable to hazards that may affect the availability of construction materials, such as lumber, or the supply of workers, who turn the raw materials into products; therefore, climate change may exacerbate public health hazards. The outputs of the construction industry are also threatened by climate-related hazards, such as flooding, debris flow, and severe weather, especially before a product is finished.	<ul style="list-style-type: none"> Agricultural Pests and Disease Drought Extreme Heat Flooding Landslides and Debris Flows Public Health Hazards Severe Weather Wildfire
	Non-residential Building			
	Outdoor Recreation Development			
	Power and Communication Systems			
	Residential Building			
	Road Development and Maintenance			
	Water and Sewer Systems			
	Government Employment			
County Government General Offices				
Police and Fire Protection				
Transportation Program Regulation				

Economic Sectors	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
Information Technology	Computer Programming Services	<ul style="list-style-type: none"> Fluctuations in availability of raw materials Fluctuations in demand of products Automation of tasks 	Any climate-hazard that affects the transport or connectivity of people, or the electric grid, will affect the information technology sector. Extreme heat conditions can also affect the efficacy of some technology.	<ul style="list-style-type: none"> Extreme Heat Human-health Hazards
	Publishing, Production, and Broadcasting			
Leisure and Hospitality	Bars	<ul style="list-style-type: none"> Limited staffing resources Inflation Aging infrastructure 	Climate-related hazards will primarily affect leisure and hospitality when they physically prevent people from accessing establishments, whether it is a result of road washout or pandemic protocols. If climate hazards decrease the availability of raw inputs and contribute to increased prices of non-essential goods and services, this industry will experience the impacts indirectly, which include decreased demand for luxury goods.	<ul style="list-style-type: none"> Avalanche Drought and Water Supply Flooding Human-health Hazards Landslide and Debris Flows Severe Weather Wildfire
	Casinos			
	Hotels/Motels			
	Resorts			
	Restaurants			
Manufacturing	Aviation Accessory Products	<ul style="list-style-type: none"> Fluctuations in availability of raw materials Fluctuations in demand of products 	The manufacturing industry is heavily dependent on raw materials and skilled labor. This makes it vulnerable to hazards that may affect the availability of raw materials or the supply of workers, who turn the raw materials into products. Any climate related hazard that interferes with the transportation of people or goods, or that may affect the electrical grid, could affect manufacturing.	<ul style="list-style-type: none"> Drought and Water Supply Extreme Heat Human-health Hazards High Wind Wildfire
	Commercial Printing			
	Computer Parts			
	Microwave and Millimeter Wave Products			
	Sign Manufacturing			
Professional and Business Services	Consulting Services	<ul style="list-style-type: none"> Fluctuations in availability of raw materials Fluctuations in demand of products Limited financial and staffing resources for timing repairs, relocated facilities, and new facilities 	Many climate-related hazards have the capacity to interfere with professional and business services. As the industry is highly reliant on human capital, any hazard that interferes with the mobility or connectivity of a population, will affect the professional and business services industry.	<ul style="list-style-type: none"> Extreme Heat Human-health Hazards High Wind Landslide and Debris Flows Severe Weather: Heavy Rain, Thunderstorms,
	Education Services			
	Financial Sector			
	Hospitals			
	Insurance			

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Economic Sectors	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
	Research Services			<ul style="list-style-type: none"> Heavy Snow, Lightning/Hail Wildfire
Retail and Trade	Bakeries and Food Manufacturing	<ul style="list-style-type: none"> Fluctuations in availability of raw materials Fluctuations in demand of products Limited staffing resources 	<p>Climate-related hazards primarily affect retail and trade by preventing consumers from accessing services, such as grocery centers or home improvement stores. However, retail and trade can also be affected through the damage of raw materials or forced closure of brick-and-mortar stores due to damage from a climate hazard.</p>	<ul style="list-style-type: none"> Agricultural Pests and Disease Drought Extreme Heat Flooding Landslides and Debris Flows Public Health Hazards Severe Weather Wildfire
	Car Dealerships			
	Gas Stations			
	Grocery Stores			
	Home Centers			
Tourism	Farms	<ul style="list-style-type: none"> Limited staffing resources Inflation Over extraction Fluctuations in demand for products Poor water quality 	<p>Many of the tourism opportunities in the County are dependent on specific environmental conditions, and therefore are easily interrupted by climate-hazards. For example, whitewater rafting represents an important source of economic revenue and jobs in the Coloma area of the County and peak day river use in summer months can exceed 3,000 people with over 105,000 total boaters on the South Fork of the American River being recorded in some years (El Dorado County 2017). Climate conditions, such as poor air quality caused by nearby wildfires, may dissuade tourists from partaking in outdoor activities. Climate hazards also may physically prevent customers from accessing businesses or impede the ability of businesses to remain open.</p>	<ul style="list-style-type: none"> Agricultural Pests and Disease Extreme Heat Flooding Landslides and Debris Flows Severe Weather Wildfire
	Whitewater Rafting			
	Wine Tasting Rooms			
	Fishing			
	Marinas			
	Ski Resorts			
Transportation and Warehouse	General Freight Trucking	<ul style="list-style-type: none"> Fluctuations in demand for products Limited financial and staffing resources for timing repairs 	<p>Any climate-related hazard that affects road conditions, from snow that causes decreased visibility to debris flow that destroys entire expanses of roads, will affect the transportation industry. Climate hazards, such as extreme heat, severe weather, or public health</p>	<ul style="list-style-type: none"> Avalanche Extreme Heat Flooding Human-health
	Household and Office Goods Moving			

Economic Sectors	Type	Non-Climate Stressors	Impact Description	Climate-Related Hazards
	Long-distance trucking		restrictions, are likely to affect transit system operations by decreasing transit use.	Hazards <ul style="list-style-type: none"> • High Wind • Landslide and Debris Flows • Severe Weather • Wildfire
	Transit Systems Employment			

Sources: U.S. Census Tract ACS Economic Sector Categories; WSP Analysis 2023.

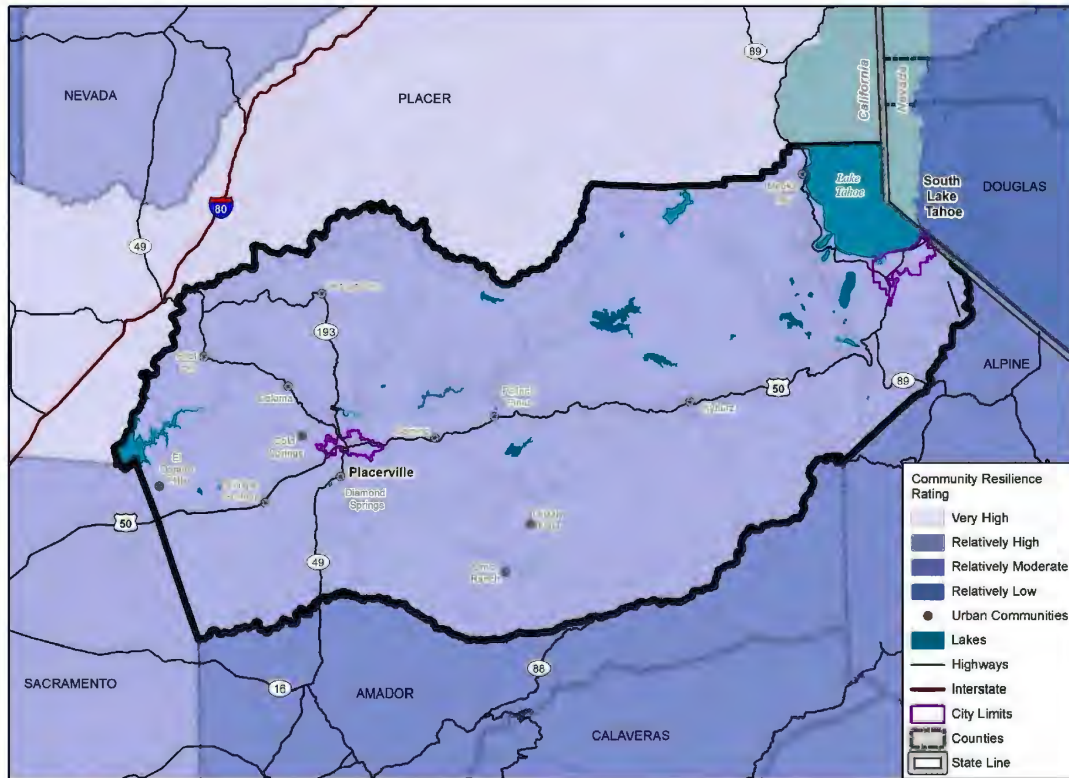
8. Adaptive Capacity

Adaptive capacity is the ability of a community to respond to, recover from, and adapt to climate-related hazards using existing programs and plans, tools, resources, and funding opportunities. It reflects the existing strengths of the County in meeting climate challenges and recognizes the resilience of the community in learning how to respond to and recover from recent hazard events associated with severe weather, flooding, and wildfires. In other words, it describes the ability and resources available to the County to implement changes that will make people and assets better prepared for a changing climate.

By understanding existing capabilities, the County can determine how these programs and tools influence the level of risk the communities face due to climate-related hazards. However, measuring adaptive capacity is a challenge, because it is particular to each community within the County and is not assessed the same way sensitivity and exposure to climate stressors is estimated, based on numerical and spatial GIS data available to quantify impacts. There is no set standard to measure the capacity of a community, which makes it difficult to compare capacity among communities. National tools, like FEMA's NRI, provide useful comparisons by using adaptive capacity scores based on plans and programs in place, the presence of planning department staff and floodplain administrators, and other community-based resources. The NRI uses a top-down approach and indices based on recommendations from the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI) Baseline Resilience Indicators for Communities (HVRI BRIC) index (FEMA 2022). The HVRI BRIC dataset includes a set of 49 indicators that represent 6 types of resilience: social, economic, community capital, institutional capacity, housing/infrastructure, and environmental. It uses a local scale within a nationwide scope, and the national dataset serves as a baseline for measuring relative resilience (FEMA 2022).

Figure 8-1 shows the community resilience rating for the County based on FEMA's NRI. This community resilience ranking ranges from very low, relatively low, relatively moderate, to relatively high and very high (FEMA 2023). The County is rated as "relatively high", meaning that the communities in the County have a relatively high ability to prepare for anticipated natural hazards, changing climate conditions, and ability to withstand and recover rapidly from disruptions when compared to the rest of the United States (FEMA 2023). More specifically, the County scored in the 67.6th percentile for the United States, meaning that only 32.4% of counties in the U.S. have a higher resiliency rating. This score also puts the county in the 70th percentile for California counties, meaning that only 30% of the counties in California have a higher resiliency rating.

Figure 8-1 FEMA NRI Community Resilience Rating for El Dorado County



wsp Map compiled 3/2023;
 Intended for planning purposes only.
 Data Source: El Dorado County
 NRI FEMA November 2021, CalEnviroScreen 4.0
 American Community Survey, California Healthy Places Index
 Source: FEMA NRI 2023.

By inventorying the County resources and national tools, the adaptive capacity assessment provides useful information because it shows a snapshot in time on how the County is currently coping with stressors and sets a baseline upon which to measure the effectiveness of future interventions to increase a community's overall resilience to climate change.

The purpose of the adaptive capacity assessment is to understand how ready the County is to respond and adjust to climate change based on input provided by the core County team, SEAC, stakeholder group, and community members. The adaptive capacity assessment for the County was examined based on existing federal, state, regional, and local policies and programs that help the communities in the County adapt to climate-related hazards. The policies and programs were organized by scale, starting with existing local plans and programs at the County-level administrative and technical level, existing programs at the State-level, and the federal funding opportunities available to the County, local communities, homeowners, and businesses.

Plans and programs consist of local plans, policies, programs, zoning ordinances, building and design standards, and key federal and state grant funds. The adaptive capacity assessment was also based on the public survey input and how the public perceives they are coping with climate change hazards; this input is important because it reflects a sample of individual and households in the County and their experiences adapting to climate change.

Public input from the survey, work sessions and workshops, and key feedback from the SBC's CVA process is also summarized to help inform policy development for climate adaptation in the County's General Plan Safety Element update. Drawing on existing plans and tools available to the public, the County can gain insight on the strategies people are currently using to cope with climate hazards, policies and programs' degree of effectiveness and how to prioritize investments. Taken together, the plans and public input provide direction on which policies should be implemented based on the most vulnerable communities and assets. Also, the combination of the adaptive capacity assessment with the County's climate vulnerability assessment results in the County's "net vulnerability" to climate-related hazards.

The adaptive capacity assessment is organized into four sections: plans and program capacity, administrative and technical capacity, fiscal capacity, and outreach and partnership capacity, which includes the feedback from the public survey.

A. Plans and Programs Capacity

The regulatory plans and programs incorporate existing planning and land use management and regulatory tools to protect public health and safety. **Table 8-1** outlines the plans and programs in place in the County.

Table 8-1 Regulatory Plans and Programs

Regulatory Tool	Active in County	Summary of Tool
General plan	Yes	Adopted July 19, 2004; Amended December 10, 2019
Zoning ordinance	Yes	Adopted August 14, 2018; Amended August 23, 2022
Subdivision ordinance	Yes	Amended February 10, 2009
Growth management ordinance	Yes	Development is guided by the Lake Tahoe Regional Plan and the County's General Plan. While not referenced as a growth management ordinance, development is controlled by established growth caps that regulate development over time through development rights.
Floodplain ordinance	Yes	Addressed in Chapter 130.32 of County code
Other special purpose ordinance (storm water, steep slope, wildfire)	Yes	Chapter 8.09 Vegetation Management and Defensible Space specifies the process to remove hazardous vegetation and combustible materials situated in the unincorporated areas of

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Regulatory Tool	Active in County	Summary of Tool
		the County to reduce the potential for fire and to promote the safety and welfare of the community.
Building code	Yes	Adopted 2010 edition of California Building Standards Code, Chapter 110.16
Fire department ISO rating	Not Available	An ISO score reflects how prepared a community and area is for fires. While it mainly focuses on the local fire departments and water supply, there are other factors that contribute to an area's score. A fire department with a strong score may result in lower insurance premiums.
Erosion or sediment control	Yes	Addressed in Chapter 110.14 of County Code
Storm water management program	Yes	Storm Water Management Plan adopted 2004.
Site plan review requirements	Yes	Revised January 2004
Capital improvements plan	Yes	Adopted 2022
Economic development plan	No	A strategic plan developed to promote economic growth and development; aims to increase employment opportunities, improve the standard of living, and enhance the competitiveness of the region.
Local EOP	Yes	Adopted August 2022
Other special plans	Yes	The 2022 Strategic Plan lays out the County's roadmap to goals and objectives, and strategies to achieve economic development, good governance, healthy communities, infrastructure, and public safety.
Flood insurance study	Yes	Effective April 2012
Elevation certificates	No	Per County Code, elevation certificates are only required when unable to determine if project is in a flood zone.
Climate Action / Adaptation Plan	No	A practical tool to address the challenges posed by climate change; outlines strategies, policies, and actions to mitigate the causes of climate change while adapting to its impacts.
LHMP	Yes	Adopted 2018
Evacuation Plan	No	Ensures the safe and efficient evacuation of people during an emergency event or disaster; outlines specific procedures, protocols, and resources to be used during an evacuation, including transportation, sheltering, and communication.
Sustainability Plan	No	Outlines strategies, policies, and actions to promote sustainable development; may include specific targets and goals for reducing environmental impacts, improving social equity, and promoting economic prosperity in a way that balances the needs of the present with those of the future.
Community Health Plans & Assessments	No	Outlines goals, strategies, and actions to promote the health and well-being of community members; typically includes specific goals for improving community health outcomes, reducing health disparities, and enhancing access to health services.

Regulatory Tool	Active in County	Summary of Tool
Transportation Plan/Sustainable Communities Strategy	No	The West Slope is covered by SACOG's 2020 MTP/SCS and the Tahoe Basin is covered by the RTP/SCS developed by TMPO and TRPA.
Drought Contingency Plans	Yes	The El Dorado County Water Agency has developed an Upper American River Basin Regional Drought Contingency Plan

Sources: El Dorado County 2023, WSP Analysis 2023.

Local Plans and Programs

El Dorado County General Plan (2004)

The General Plan is the fundamental policy document of the County. It provides the guiding framework for the management and use of the County's physical, economic, and environmental resources. It also provides the basis for land use, design, open space conservation, existing housing and the provision of new housing, the provisions of supporting infrastructure and public services, the protection of environmental resources, and the protection of the residents and property from natural and human-caused hazards.

The General Plan outlines the goals, policies, and priorities for land use, growth, and development in the County. As an important component of the General Plan, the Safety Element identifies and addresses potential hazards, such as natural disasters, public health emergencies, and other threats to public safety.

Local Hazard Mitigation Plan (2018)

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 (HMA) grant funding. The LHMP 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).

Emergency Operations Plan (2023)

The Emergency Operations Plan establishes a structured and collaborative approach, from the initial response of on-site units to the functions of the Emergency Operations Center to the recovery phase. Its aim is to identify ways to address the needs of all members of the community throughout all stages of the emergency response process.

West Slope Community Wildfire Protection Plan

The El Dorado County Fire Safe Council recently developed a comprehensive CWPP for the West Slope of the County. This plan will rely on the outcomes of a large-scale community risk evaluation and prioritization approach, with a focus on creating practical fuel management zones that align with the current treatment network. The treatment initiatives will be designed to safeguard the community while considering the expected expenses and will offer a standardized format to help communities with financing and grant applications.

Tahoe Basin Community Wildfire Protection Plan

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

El Dorado County Regional Transportation Plan 2020-2040

The RTP is designed to be a guide for the systematic development of a balanced, comprehensive, multi-modal transportation system. This system includes but is not limited to highways, streets and interregional roadways, public transit, aviation, freight/goods movement, active transportation (bikeways and pedestrian facilities), transportation systems management, and intelligent transportation systems. The RTP is action-oriented and pragmatic, considering both the short-term (up to 10 years) and long-term (10 to 20 year) periods.

Vegetation 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.

Integrated Natural Resource Plan

The Integrated Natural Resources Management Plan (INRMP) identifies important habitat in the County and establishes a program for effective habitat management. The goal of the INRMP is to mitigate impacts (direct, indirect, and cumulative) on biological resources that result from land use decisions associated with implementing the 2004 General Plan, to the extent that is economically, technically, and practically feasible. The INRMP also serves to fulfil project-level CEQA requirements for cumulative impacts from habitat loss and fragmentation.

El Dorado County Water Agency Water Resources Development and Management Plan

To achieve the County's General Plan vision, the WRDMP links the identified water resource-related challenges with the EDCWA's implementation programs through an assortment of resource management strategies. These strategies provide strategic directives that can mitigate the identified challenges through the collective and coordinated efforts of all responsible parties. The plan establishes key actions, specifies the primary responsible agency, and clarifies the Agency's corresponding roles in leading, facilitating, or supporting each activity in line with its authority.

El Dorado Irrigation District Urban Water Management Plan

The Urban Water Management Plan (UWMP) integrates local and regional land use planning, regional water supply, infrastructure, and demand management projects, as well as accounting for statewide challenges that may manifest through climate change and evolving regulations. Thoughtful urban water management planning provides an opportunity for the supplier to integrate supplies and demands in a balanced and methodical planning platform that addresses short-term and long-term planning conditions. In brief, the UWMP gathers, characterizes, and synthesizes water related information from numerous sources into a plan with local, regional, and statewide practical utility.

State and Regional Plans and Programs

2018 Safeguarding California

The California Climate Adaptation Strategy, also known as "Safeguarding California," is a comprehensive plan developed by the State to address the impacts of climate change on the State's economy, public health, natural resources, and infrastructure. The strategy includes measures to reduce greenhouse gas emissions and adapt to the effects of climate change that are already occurring, such as sea-level rise, more frequent and intense wildfires, and changes in precipitation patterns. It identifies best practices for varying regions and sectors, and provides resources, tools, guidance documents, and funding opportunities.

State Hazard Mitigation Plan

The California SHMP establishes statewide goals and objectives for hazard mitigation and provides guidance on mitigation strategies and access to resources. This information can be synthesized and used to guide local mitigation actions. The State recently released their Draft SHMP in March 2023.

California Wildfire and Forest Resilience Action Plan

The California Wildfire and Forest Resilience Action Plan is a comprehensive strategy developed by the State to address the increasing threat of wildfires in the State. The plan includes a wide range of measures beneficial to the County, including increasing investments in forest management, implementing measures to reduce the risk of catastrophic wildfires, and expanding the use of prescribed fire.

Tahoe Regional Planning Agency (TRPA) Regional Plan

The Regional Plan sets forth measures to achieve specific benchmarks that will revive Lake Tahoe's condition while also considering the economic and social well-being of the community. To accomplish this, the Regional Plan makes use of collaborations between private and public entities and offers incentives to property owners who undertake initiatives to preserve the lake. Additionally, the Regional Plan encourages sustainable renovation of older structures into compact, mixed-use town centers that allow residents and tourists to access work, home, and nature without relying on personal vehicles.

California Tahoe Conservancy Integrated Vulnerability Assessment of Climate Change in the Lake Tahoe Basin

The California Tahoe Conservancy created an Integrated Vulnerability Assessment of Climate Change in the Lake Tahoe Basin in 2020. The Integrated Vulnerability Assessment of Climate Change in the Lake Tahoe Basin provides residents, visitors, businesses, and public agencies with state-of-the-art information on how patterns of temperature and precipitation will change, and how these patterns will affect the things people care about. The common scenarios and analyses provided will help public agencies and stakeholder organizations anticipate climate change implications, and better design and maintain their future projects that improve the quality of life, land, and waters in Tahoe.

Bureau of Reclamation American River Basin Study

The Basin Study developed data, tools, analyses, and climate change adaptation strategies for the American River Basin. Strategies were examined to integrate and better coordinate local and federal water management practices to improve regional water supply reliability while enhancing Reclamation's flexibility in operating Folsom Reservoir to meet flow and water quality standards.

Fire Adapted 50 Project

The objective of this project is to return forests and wildlands along the Highway 50 corridor to a more natural, fire resilient condition. The strategic fuel management project aims to help contain wildfires and facilitate long-term stewardship through practices such as continued mechanical and hand treatment and prescribed fire.

South County Fuels Reduction Project

The El Dorado County Fire Safe Council will receive more than \$3.3 million to reduce fire fuels along roads and remove trees destroyed by bark beetles. The treatment zone encompasses 845 acres, where 4,813 residences within the vicinity of the project are expected to benefit. Communities within the project area include Diamond Springs, Omo Ranch, and Outingdale.

Additional Plans and Regulations

- 2021 California Climate Action Plan for Transportation Infrastructure
- Fire Code
- Fire Management Plans
- CAL FIRE California Fire Plans

Additional County Area and Specific Plans

- Meyers Area Plan
- Carson Creek Specific Plan
- Promontory Specific Plan
- Valley View Specific Plan
- El Dorado Hills Specific Plan
- Town Center West Development Plan
- Town Center East Development Plan
- Bass Lake Hills Specific Plan
- North West El Dorado Hills Specific Plan

Related Local Agency Plans

- El Dorado Irrigation District Plans
- Lake Tahoe Community College Plans and Programs
- South Tahoe Public Utility District UWMP
- South Tahoe Public Utility District LHMP

B. Administrative and Technical Capacity

Administrative and technical capacity is defined as the level of County personnel in place and working on activities related to public health and safety; disaster prevention, response, and recovery emergency preparedness; and long-range planning. **Figure 8-2** outlines the administrative and technical positions, tools, and services in place in the County.

Table 8-2 Administrative and Technical Personnel Resources

Personnel Resources	Yes/No	Department
Planner/engineer with knowledge of land development/land management practices	Yes	Planning and Building Department
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Planning and Building Department
Planner/engineer/scientist with an understanding of natural hazards	Yes	Planning and Building Department
Personnel skilled in GIS	Yes	County Surveyor's Office
Full-time building official	Yes	Planning and Building Department
Floodplain manager	Yes	Building Services Department, Deputy Director of Building/Building Official
Emergency manager	Yes	Sherriff's Office
Grant writer	No	
Other personnel	Yes	Environmental Management Department
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)	Yes	County Surveyor's Office

Personnel Resources	Yes/No	Department
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	No	

Sources: El Dorado County 2023, WSP Analysis 2023.

Air Quality Management District

The County Air Quality Management District (AQMD) works to improve air quality and quality of life for El Dorado County residents. The AQMD’s primary goal is to ensure that the air in the County meets state and federal standards for clean air.

Animal Services

The agency works to promote responsible pet ownership and to ensure that domestic animals are properly cared for and protected. The agency provides support and assistance to animals during disasters and emergencies, including evacuation and sheltering services.

Area Agency on Aging

The Area Agency on Aging (AAA) is responsible for the administration of programs for County residents 60 years of age and older. The AAA services include aid weatherizing and fire-protecting homes, as well as transit services and information and assistance services.

Building Services

The Building Services agency is responsible for ensuring that buildings in the County are constructed and maintained in a safe and code-compliant manner. They conduct permits and inspections so ensure that buildings meet hazard mitigation requirements and work closely with local fire departments to ensure that buildings are constructed and maintained in a manner that reduces the risk of fire and promotes fire safety.

Chief Administrative Office

The CAO's primary role is to provide strategic leadership and management support to the County's Board of Supervisors and its departments. The CAO plays a central role in the County's emergency management efforts through its emergency preparedness and response program, which works to provide information to residents and coordinate resources to respond to crises and disasters.

Department of Agriculture

The County Department of Agriculture oversees ranch marketing and winery ordinances, industrial hemp, agricultural water stewardship and water quality management, as well as invasive weed information.

Department of Transportation

The County Department of Transportation (DOT) is responsible for managing and maintaining the County's transportation infrastructure, including roads, bridges, and public transit. The DOT roles include infrastructure planning and design, alternative transportation options, and emergency response facilitation.

Environmental Health

The Environmental Health Department is responsible for protecting public health and the environment in the County. The department plays an important role in climate adaption efforts through public education and outreach, ensuring water quality and supply, and providing proper channels to dispose of toxic waste.

Environmental Management

The mission of the Environmental Management Department is to protect, preserve, and enhance the public health, safety, and environment through a balanced program of environmental monitoring and

enforcement, innovative leadership, community education, customer service, and emergency response. The department is responsible for hazardous materials waste management and emergency plans.

Housing, Community, and Economic Development

The El Dorado County Housing, Community, and Economic Development Department is responsible for promoting affordable housing, economic development, and community revitalization in the County. The department provides grants and other funding opportunities to community organizations to support a range of activities, including infrastructure improvements, economic development projects, and community revitalization efforts. The division also provides technical assistance to help organizations plan and implement community development projects.

Long-Range Planning

The Long-Range Planning Department is tasked with ensuring that development in the County is consistent with the County's General Plan and zoning ordinances, and that it meets the needs of the community while also protecting the County's natural resources. The department conducts environmental reviews to ensure they meet CEQA requirements, and develops and implements land use plans such as the General Plan,

Office of Wildfire Preparedness and Resilience

The Office of Wildfire Preparedness and Resilience was established to facilitate the planning and implementation of wildfire mitigation activities across jurisdictions and land ownership in the County, and to support the creation and maintenance of fire-adapted communities through a countywide wildfire protection strategy. This effort is in response to the ever-increasing frequency and intensity of wildfires in California, which have resulted in the destruction of thousands of homes and hundreds of thousands of acres every year.

The County Wildfire Preparedness and Resilience Advisory Committee comprises the Chief Administrative Office, El Dorado County Fire Safe Council, CAL FIRE – Amador El Dorado Unit, USFS – El Dorado National Forest, El Dorado County Fire Chiefs Association, El Dorado County Fire Prevention Officers Association and the El Dorado and Georgetown Divide Resource Conservation Districts. Its purpose is to incorporate the interests and leverage the resources of stakeholders to create a fire-adapted and resilient County guided by a comprehensive wildfire prevention and preparedness strategy.

Parks, Trails, and River Management

The Parks, Trails, and River Management Department oversees recreation resources in the County. The department implements both the County and South Lake Tahoe Parks and Trails Master Plans, as well as the 2018 River Management Plan.

Public Health Division

The Public Health Division promotes the health and safety of individuals, communities, and animals in El Dorado County. The division works to protect public health by monitoring and regulating the County's food and water supply, air quality, and hazardous waste, and works to prepare for and respond to public health emergencies, such as disease outbreaks or natural disasters.

Sheriff's Office

The El County Sheriff's Office of Emergency Services (OES) is the emergency management agency for the County. Working in partnership with cities, fire departments, and law enforcement agencies, the office delivers countywide emergency services. Among its responsibilities are overseeing the County's response to both natural and human-caused disasters, delegating emergency duties to County departments, and supervising the County's emergency operations center. In addition, the OES disseminates current emergency-related information to the public through the County's website

Tahoe Planning and Stormwater Department

The Tahoe Planning & Stormwater Management division is responsible for planning and managing development in the Tahoe Basin area of the County, which is subject to unique environmental regulations due to its proximity to Lake Tahoe. It conducts environmental reviews, issues permits, and provides public outreach and education. It is also responsible for the Stormwater Management Program and West Slope development and redevelopment standards.

Vector Control

The Environmental Management Environmental Control District provides quality Vector Control services and protect the public health and safety with minimal impact to the environment over 195 square miles from the crest of the Sierra Nevada mountain range near Echo Summit to the shore of Lake Tahoe in both the City of South Lake Tahoe and the unincorporated area of El Dorado County

County Fire Protection Districts

There are several fire protection districts in the County. Some, but not all, have participated in creating a Community Wildfire Protection Plan (CWPP). Participation in a CWPP makes a district more prepared to prevent and respond to wildfires and can help to secure access to wildfire prevention and preparedness grants. **Table 8-3** lists the 12 fire districts in the County and shows whether they participated in the development of and are covered by a CWPP.

Table 8-3 County Fire Protection Districts and Community Wildfire Protection Plans

Fire Protection District	CWPP (Yes/No)	CWPP Name
Cameron Park Fire Department	No	
Diamond Springs/El Dorado Fire Protection District	Yes	Diamond Springs/El Dorado Fire Protection District CWPP
El Dorado County Fire District	Yes	El Dorado County Fire District Wildfire Protection Plan Auburn Lake Trails Property Owners Association CWPP Goldbug Park CWPP Logton CWPP
El Dorado Hills Fire Department	Partial	Lakehills/Southpointe CWPP
Garden Valley Fire Protection District	No	
Georgetown Fire Protection District	Yes	Georgetown Fire Protection District CWPP
Lake Valley Fire Protection District	Yes	Lake Tahoe CWPP
Latrobe Fire Protection District	No	
Meeks Bay Fire Protection District	Yes	Lake Tahoe CWPP
Mosquito Fire Protection District	No	
Pioneer Fire Protection District	Partial	Grizzly Flats CWPP
Rescue Fire Protection District	Partial	Gold Hill Estates CWPP

Sources: El Dorado County 2023, WSP Analysis 2023.

C. Fiscal Capacity

Table 8-4 identifies federal fiscal capacity tools, resources, and grant opportunities the County could potentially use to help fund climate adaptation, hazard mitigation, and floodplain management activities.

Table 8-4 Summary of Federal Grants related to Climate Adaptation

Federal Grants	Eligible Applicants	Summary of Grant
Building Resilient Infrastructure and Communities (BRIC)	State agencies, federally recognized tribes, local governments/communities	BRIC funds may be used for capability and capacity-building activities, mitigation projects, and management projects. Projects must reduce or eliminate risk and damage from future natural hazards.
Hazard Mitigation Grant Program (HMGP)	State agencies, federally recognized tribes, local governments/communities, private non-profit organizations	HMGP funding is available, when authorized under a Presidential major disaster declaration, in the areas of the State requested by the Governor. The key purpose of HMGP is to ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster.
EPA Green Infrastructure	State, tribal and local governments, regional councils, Water utilities	The EPA Green Infrastructure Grant Program provides funding to support the implementation of green infrastructure projects that can help communities manage stormwater and reduce combined sewer overflows, which can pollute waterways and cause flooding.
Pre-Disaster Mitigation (PDM) Program	State agencies, federally recognized tribes, local governments/communities	PDM is designed to assist implementation of a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on federal funding in future disasters.
Flood Mitigation Assistance (FMA) Program	State agencies, federally recognized tribes, local governments/communities	FMA funding is available through the National Flood Insurance Fund (NFIF) for flood hazard mitigation projects as well as plan development and is appropriated by Congress.
Fire Management Assistance Grant (FMAG) Program	State agencies, local governments, and tribal governments	Under the FMAG Program, FEMA provides grants for equipment, supplies, and personnel costs for the mitigation, management, and control of any fire on public or private forest land or grassland

Federal Grants	Eligible Applicants	Summary of Grant
		that threatens such destruction as would constitute a major disaster.
Community Development Block Grant (CDBG) Mitigation program	State agencies, local governments, non-profit organizations	The CDBG Mitigation program provides resources to assist communities in reducing the risks and impacts of natural disasters. The program is intended to help communities build resilience and mitigate future risks by supporting a variety of activities, including infrastructure projects, public facilities improvements, and community planning.
Assistance to Firefighters Grant (AFG)	Fire departments, non-affiliated EMS organizations, state fire training academies, non-federal airport and/or port authority fire or EMS organizations	The AFG Program provides financial assistance to provide critically needed resources that equip and train emergency personnel to recognized standards, enhance operational efficiencies, foster interoperability, and support community resilience.

Sources: El Dorado County 2023, WSP Analysis 2023.

Table 8-5 identifies state fiscal capacity tools, resources, and grant opportunities the County could potentially use to help fund climate adaptation, hazard mitigation, and floodplain management activities.

Table 8-5 Summary of State Grants

State Grants	Eligible Applicants	Summary of Grant
DWR Water Resource Grants	Water districts	The California DWR offers various grant programs to support water resource management in California. These grants are aimed at improving water supply reliability, protecting the environment, and enhancing the resilience of California's water systems.
Prepare California	Tribal Governments, local governments/ communities/ special districts, private non-profit organizations	The Prepare California Initiative is aimed at reducing long-term risks from natural disasters, such as flooding, earthquakes, wildfires, landslides, extreme heat, and drought by investing in local capacity building and mitigation projects designed to protect communities. This program is designed to unlock federal matching funds for community mitigation projects and is intended for communities that are the most socially vulnerable and at the highest risk for future natural hazard events.
California Wildfire	Local governments (including	CWMP is a state-funded grant program

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State Grants	Eligible Applicants	Summary of Grant
Mitigation Program (CWMP)	cities, counties, and special districts), resource conservation districts, fire protection districts and fire departments	designed to reduce the risk of wildfire in California. The program provides funding for projects that improve forest health, reduce fuel loads, and increase the resiliency of communities to wildfires.
Adaptation Planning Grant Program (APGP)	Local public entities, California Native American Tribes, community-based organizations, and non-profits	The APGP helps fill local, regional, and tribal planning needs, provide communities the resources to identify climate resilience priorities, and support the development of a pipeline of climate resilient infrastructure projects across the state.
Regional Resilience Planning and Implementation Grant Program (RRGP)	Local public entities, California Native American tribes, community-based organizations	The RRGF will fund projects that advance climate resilience and respond to the greatest climate risks in their regions through three major activities: capacity building, planning (including identifying climate resilience priorities), and project implementation.
Water Recycling Funding Program (WRFP)	Local agencies and other stakeholders	WRFP provides funding for construction loans and grants, and planning grants.
Forest Health Grants	Local, state, and federal agencies, universities, special districts, Native American tribes, private forest landowners, and non-profit organizations	CAL FIRE's Forest Health Program funds active restoration and reforestation activities aimed at providing for more resilient and sustained forests to ensure the future existence of forests in California while also mitigating climate change, protecting communities from fire risk, strengthening rural economies, and improving California's water and air.
Environmental Enhancement and Mitigation Grant Program	Local, state, and federal governmental agencies	The California Natural Resources Agency EEM Program offers grants for projects to mitigate the environmental impacts caused by new or modified public transportation facilities.
Regional Forest and Fire Capacity Program (RFFC)	California Department of Conservation	The RFFC Program supports regional leadership to build local and regional capacity, and to develop, prioritize, and implement strategies and projects that create fire-adapted communities and landscapes by improving ecosystem health, community wildfire preparedness, and fire resilience.
Small Community	Public agencies, public utilities,	The Program aims to implement needed

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State Grants	Eligible Applicants	Summary of Grant
Drought Relief Program	special districts, colleges and universities, mutual water companies, non-profit organizations, federally or locally recognized tribes	resiliency measures and infrastructure improvements for small water suppliers and rural communities. The Program will support projects and programs that provide immediate and near-term water supply reliability benefits and improve small communities' drought and water shortage resiliency and preparedness.
Drinking Water State Revolving Fund (DWSRF)	Non-profits, public agencies, tribal governments	DWSRFs fund a wide range of drinking water infrastructure projects. Six categories of projects are eligible to receive DWSRF assistance: treatment, transmission and distribution, source, storage, consolidation, and creation of new systems.
Sierra Nevada Conservancy (SNC) Wildfire Recovery and Forest Resilience Program	Public agencies, non-profit organizations, federally or locally recognized tribe	The Program prioritizes planning and implementation of forest health projects that promote wildfire and forest resilience and support the goals of California's Wildfire and Forest Resilience Action Plan and the SNC Watershed Improvement Program.
Regional Climate Collaboratives Resources	California Tribes, CBOs, foundations, joint-powers agreements, non-profits, small businesses, local governments	The program funds Collaboratives to conduct place-based capacity building activities, within a three-year grant term, that support under-resourced communities in accessing funding and resources to plan and implement climate mitigation, adaptation, and resiliency projects.
Transformative Climate Communities (TCC) Program	CBOs, local governments, non-profits, philanthropic organizations and foundations, faith-based organizations, coalitions or associations of non-profits, community development finance institutions, community development corporations, joint powers authorities, California Native Tribes	The TCC Program funds community-led development and infrastructure projects that achieve major environmental, health, and economic benefits in California's most DACs. TCC empowers the communities most impacted by pollution to choose the strategies and projects best suited to achieve their community vision and enact transformational change with data-driven milestones and measurable outcomes.

Sources: El Dorado County 2023, WSP Analysis 2023.

Table 8-6 identifies additional grant opportunities the County could potentially use to help fund climate adaptation, fuel reduction and vegetation management, and air quality improvement projects.

Table 8-6 Summary of Additional Grants

Additional Grants	Eligible Applicants	Summary of Grant
Air Quality Management District (AQMD) Grant/Incentive Programs	Citizens, private and public entities	The County AQMD offers a large variety of grants to aid in the improvement of air quality and quality of life for County residents.
The El Dorado County Fire Safe Council (EDCFSC) Defensible Space Assistance Program	Senior, veterans, and those with low incomes in the western slope of the County.	ECFSC has been awarded funding to help those who are both financially and physically unable to develop defensible space around their homes to improve fire suppression efforts and improve likelihood of surviving a fire.

Sources: El Dorado County 2023, WSP Analysis 2023.

D. Organizational and Outreach Capacity

Table 8-7 summarizes other organizational and collaborative partnership opportunities in the County that enhance education, outreach, and engagement related to climate change, wildfire safety, and neighborhood planning.

Table 8-7 Organizational and Outreach Capacity Summary

Organization	Available in County	Description
Neighborhood Radio Watch	Yes	Neighborhood Radio Watch Groups are informal groups made up of residents. Their mission is to stay connected through the use of radios, establish a radio communications system to educate residents on security and safety, and to provide back-up communication when traditional communication methods fail or are not available.
Fire Safe Council	Yes	Fire Safe Councils are grassroots, community-led organizations that mobilize residents to protect their homes, communities, and environments from catastrophic wildfire. Fire Safe Councils educate homeowners about community wildfire preparedness activities while working with local fire officials to design and implement projects that increase the wildfire survivability of their communities.
FAIR Plan	Yes	The FAIR Plan is a syndicated fire insurance pool that comprises all insurers licensed to conduct property/casualty business in California. The FAIR Plan provides basic fire insurance for high-risk properties when this coverage is not available from a traditional carrier.
Firewise	Yes	Firewise USA® program teaches people how to adapt to living with wildfire and encourages neighbors to work together and take ongoing action to prevent losses.

Sources: El Dorado County 2023, WSP Analysis 2023.

Sierra Business Council

The Sierra Business Council (SBC) is a non-profit that assists communities throughout the Sierra Nevada in planning for climate change by reducing greenhouse gas emissions and adapting to changes already impacting the region. In 2021, the SBC conducted a CVA for rural communities throughout the Sierra Nevada to prepare for climate change by examining social, economic, and environmental vulnerabilities

specific to the region and by providing climate planning technical assistance.

The primary intent of the report was to provide an understanding of climate risks within the Sierra Nevada Conservancy region (not including Lake Tahoe Basin), and to technically assist with implementation of SB 379, as many communities in the region do not have a hazard mitigation plan or an updated safety element as required by SB 379. The CVA provides specific indicators and hazards at the jurisdictional level, and explains how Sierra ecosystems, economies, and communities will be impacted by those hazards. The assessment can be used to inform hazard mitigation plans and safety elements for counties within the SNC region.

The SBC partnered with the Sierra Institute for Community and Environment to conduct workshops to rate community capacity based on five capitals: physical, human, social, cultural, and financial. Risk profiles were developed for each of the 22 counties within the SNC region, using climate and population data at the county level. The Potential Impact and Adaptive Capacity Scoring Rubric was used to determine impact and capacity scores for climate hazards facing different populations in the Sierra. Capacity scores can vary greatly even among neighboring communities within the same county. The County met with the SBC during the development of their CVA to leverage information in the SBC’s CVA and specifically, the input gathered during a series of public workshops held in 2021.

The County has a Climate Hazard Risk Score of 6.48/10. Tourism could be significantly affected by increased extreme heat and reduced snowpack. Drought and heat-related illnesses could also lead to public health threats. Additionally, 45% of the population lacks high-speed internet access, which could hinder communication during emergencies such as floods, fires, or extreme heat. Communities on the western side of the County tend to have higher capacity scores compared to the eastern side of the County, but overall, the County has a medium capacity score of 3 out of 5 in responding to climate stressors.

Table 8-8 outlines the capacity scores for the communities in the County. As shown, the American River Canyon, Cedar Grove, Grizzly Flats/Omo, Mosquito/Swansboro, Pollock, Volcanoville/Quinette, and Outingdale/Somerset were ranked as more vulnerable to climate change given their lower capacity scores.

Table 8-8 SBC Community Capacity Scores for El Dorado County

Community	Overall Capacity Score
American River Canyon	1
Auburn Lake Trails	4
Camino	4.5
Cedar Grove	2
Cameron Park	4
Coloma/Lotus	4
Cool/Pilot Hill	3
Diamond Springs	3.5
El Dorado Hills	5
El Dorado/Nashville	2.5
Fair Play	3.5
Georgetown	3
Gold Hill	3

Community	Overall Capacity Score
Garden Valley/Greenwood	3.5
Grizzly Flats/Omo	2
Kelsey	3
Latrobe	2.5
Mosquito/Swansboro	1.5
Newton/Sly Park	3
Placerville	4
Pleasant Valley	4
Pollock	2
Rescue	3.5
Shingle Springs	3.5
Volcanoville/Quinette	2
Outingdale/Somerset	1.5

Source: SBC 2022.

El Dorado Community Foundation

The El Dorado Community Foundation’s goal is to improve the community for present and future generations by supporting non-profits in their efforts to improve public health, safety, and welfare. One of the ways the foundation accomplishes its goal is through the Endow El Dorado grant cycle, which provides large capacity-building grants to organizations to support their growth. The foundation is prepared to respond to community needs as a partner, convener, and funder, without directing the community but instead supporting its direction.

The South Fork of the American River (SOFAR)

SOFAR Cohesive Strategy project aims to promote a healthy, productive forest ecosystem across all lands and to create a fire-resilient ecosystem that supports viable populations of all native species, sustainable fisheries, functioning and restored watersheds and water quality, protected cultural resources, and diverse recreational opportunities.

Tahoe Central Sierra Initiative (TCSI)

The TCSI is the first pilot project under the Watershed Improvement Program (WIP) and aims to restore the resilience of 2.4 million acres of Sierra Nevada forests and watersheds. It focuses on developing and demonstrating innovative planning, investment, and management tools across all lands.

Better Together Caldor Recovery

The mission of Better Together is to assist in identifying the unmet needs of those affected by the Caldor Fire and work toward disaster recovery, and to coordinate access to resources that would provide relief. The Better Together Caldor Fire Relief Long Term Recovery Group is a community-led collaboration of non-profit, faith-based, local, county, state, and national organizations that works to share information and resources that can help address the needs of individuals, families and children in the County, California, all of whom have been affected by the Caldor Fire disaster.

E. Opportunities for Adaptive Capacity Building

Based on the adaptive capabilities assessment, the County has several existing mechanisms that already help to mitigate hazards. In addition to these existing capabilities, the County has opportunities to expand or improve on these policies and programs to further protect the community. These adaptation opportunities are organized into short-term and long-term strategies. Short-term future adaptation strategies are opportunities the County could consider promoting and implementing in the next 1 to 3 years, such as evacuation planning efforts, defensible space maintenance, and home hardening incentives. Long-term adaptation strategies are opportunities the County could consider in the future like increasing public education, discouraging future development in flood-prone areas, and expanding vegetation management programs. These longer-term strategies often contain benefits that require initial investment and time to grow. For example, tree planting in public spaces and parks may be less desired than cooling centers on the West Slope when considered with a short-term lens, because it takes time for trees to mature and provide adequate shade. However, these trees will provide a whole host of benefits to the community when they mature. Below is a summary of additional short-term and long-term adaptation strategies.

Short-Term Adaptation

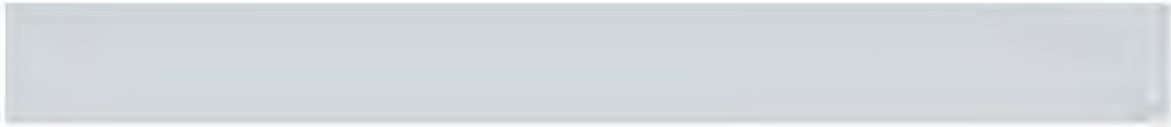
- Energy efficient appliances
- HVAC upgrades
- Home hardening
- More shelters
- Defensible space
- Better utilization of material generated from fuels reduction – biomass, saw logs
- Prescribed fire projects
- Generators for critical facilities

Long-Term Adaptation

- Tree planting
- Shade structures
- Roof/snow load inspections
- Cooling centers
- Wildfire fuels treatment projects (i.e. mechanical, prescribed burning, thinning, etc.)
- Electrical power grid resiliency programs
- Forest health and watershed protection projects
- Evacuation route development
- Water efficiency and conservation
- Ordinance enhancements
- Energy independence initiatives/ energy efficiency upgrades
- Critical facilities protection

Barriers

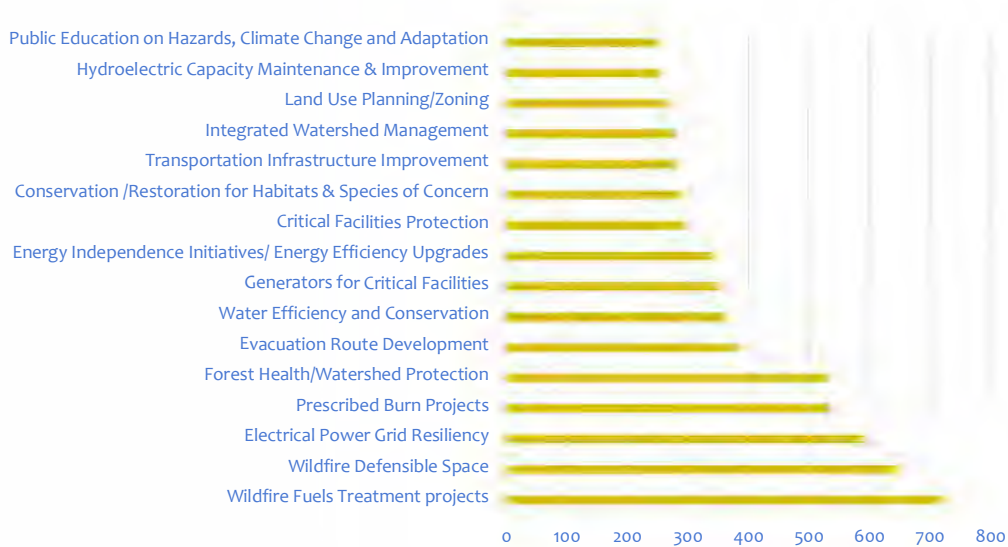
- Cost of retrofits
- Regulatory approvals
- Homeowners vs. renters (who can do what based on lease, ownership, etc.)
- Utility options (electric vs. community-scale options)
- Education not available



F. Public Survey Results and Recommendations

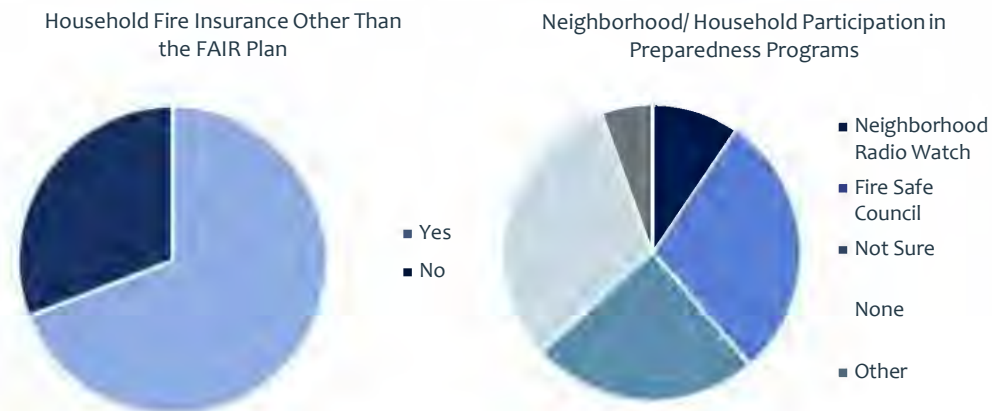
The key takeaways from over 900 public survey responses received on the CVA included the fact that respondents were most interested in climate adaptation strategies focused on wildfire protection. **Figure 8-2** and **Figure 8-3** summarize the public survey input.

Figure 8-2 Top Adaptation Strategies from the Public Survey



Sources: County CVA Public Survey 2023

Figure 8-3 Current Public Participation in Adaptation Measures



Sources: County CVA Public Survey 2023

In summary, the key takeaways from the survey show that the community relies on the County to implement community-scale adaptation strategies and projects related to fuels reduction, evacuation

planning, and snow removal and road maintenance. The survey input also shows that there are limited opportunities and financial incentives for homeowners, renters, and individual households to make improvements to their homes and to adapt at an individual scale besides mandatory defensible space maintenance and basic emergency planning. Local training through FireWise and Fire Adapted Communities programs and individual grants to homeowners and renters currently provide incentives for retrofitting existing neighborhoods based on the number of residents participating in these programs. Scaling up these individual and community incentives should be considered as policies and programs in the Safety Element update.



Localized flooding associated with numerous rain on snow events occurred during the 2022-2023 winter season in the County. These events involved multiple warm and wet multi-day storms with heavy snow at high elevations and rain at lower elevations.

Photo Credit: Tahoe Daily Tribune, Bill Rozak 2023.

9. Key Findings and Vulnerability Scores

The CVA process helps County staff, the SEAC, stakeholder groups, elected and appointed officials, and members of the public understand the vulnerabilities of key community assets exposed to climate change. As part of this assessment, the County and SEAC developed the vulnerability scores to identify populations and assets in the County that have a high and severe vulnerability to climate-related hazards. This scoring tool serves to support the County and its socially vulnerable populations by informing future planning efforts associated with the health, safety, and well-being of the County. The results of the vulnerability scores highlight the sensitive populations, critical facilities, natural resources, and economic services that are highly and severely vulnerable to climate-related hazards.

Table 9-1 shows the 20 sensitive populations that are highly or severely vulnerable to each climate-related hazard. These sensitive populations are based on the indicators that were found to best represent the socially vulnerable communities in the County based on the various sources referenced in Section 4. Of the 180 combinations of sensitive populations and climate-related hazards, 47 were highly or severely vulnerable (score of V4 or V5).

The 1,274 critical facilities were categorized into 42 categories based on the critical facility database categories. Among these 42 categories, 22 are highly or severely vulnerable (score of V4 or V5) for at least one hazard type. Water and wastewater and electrical transmission infrastructure was the most vulnerable to flooding, landslides, and wildfire hazards, followed by communication, transportation, and education facilities and infrastructure. **Table 9-2** shows the critical facility categories that are highly or severely vulnerable to each climate-related hazard. The vulnerabilities scores for the critical facilities is also based on a combination of the quantitative GIS analysis, the wildfire assessment for critical facilities, and the qualitative assessment. Of the 279 combinations of the critical facilities and climate-related hazards, 30 were highly or severely vulnerable.

Table 9-3 shows the natural resource categories that are highly or severely vulnerable to each climate related hazard. The vulnerability scores for natural resources were based on a qualitative assessment. Of the 189 combinations of natural resource types, 45 were highly or severely vulnerable.

Table 9-4 shows the economic service sectors that are highly or severely vulnerable to each climate related hazard. The vulnerability scores for economic service categories were based on a qualitative assessment. Of the 450 combinations of economic service sectors, 51 were highly or severely vulnerable.

Vulnerability scores were not completed for private and commercial properties in the County.

Table 9-1 Vulnerability Scores for Sensitive Populations to Climate-Related Hazards

Population Indicator	Agriculture Pests and Disease	Avalanche	Drought	Extreme Heat	Flooding	Public Health Hazards	Landslide and Debris Flow	Severe Weather	Wildfire
Children (under 14)	V1	--	V1	V5	V2	V3		V4	V4
Cost-burdened households	V2	--	V2	V4	V3	V3	V2	V4	V5
Ethnic minorities	V2	--	V1	V1	V2	V2	--	V2	V2
High-pollution burdened households	V2	--	V2	V2	V2	V5	--	V3	V3
Households in mobile homes	V1	--	V2	V4	V4	V3	V2	V4	V5
Households in poverty	V2	--	V2	V4	V3	V3	V2	V4	V5
Isolated and rural communities	V1	V2	V5	V4	V3	V3	V2	V3	V5
Low-income households	V2	--	V2	V4	V3	V3	V2	V4	V5
Outdoor workers	V2	--	V2	V5	V2	V4	V2	V2	V4
Overcrowded households	V2	--	V2	V4	V2	V3	--	V3	V3
People with chronic health conditions	V2	--	V2	V2	V2	V5	--	V3	V3
Unemployed persons	V2	--	V2	V4	V3	V3	V2	V4	V5
Persons with disabilities and access and functional needs	V1	--	V2	V3	V2	V3	V1	V5	V5
Persons with limited English proficiency	V2	--	V2	V3	V2	V3	--	V4	V4
Persons with limited accessibility	V1	--	V2	V4	V3	V3	--	V5	V5
Persons experiencing homelessness	V1	--	V3	V5	V3	V3	--	V5	V5
Persons living in single-access roads	V1	--	V2	V2	V3	V3	--	V3	V5
Renters	V1	--	V2	V3	V2	V2	--	V3	V3
Seniors	V1	--	V2	V5	V3	V5	--	V5	V5
Seniors living alone	V1	--	V2	V5	V3	V5	--	V5	V5

Sources: California APG 2020; WSP Analysis 2022.

NOTES: * Blank cells with dashes indicate that the climate-related hazard is not applicable to the sensitive population indicator. Vulnerability Scores based on methodology summarized in the California APG and based on a combination of quantitative GIS analysis completed by WSP and qualitative analysis completed by the County team.

Table 9-2 Vulnerability Scores for Critical Facilities and Infrastructure Highly and Severely Vulnerable to Climate-Related Hazards

Critical Facility Type	Agriculture Pests and Disease	Avalanche	Drought	Extreme Heat	Flooding	Public Health Hazards	Landslide and Debris Flows	Severe Weather	Wildfire
Water infrastructure	V1	V2	V3	V2	V1	V1	V3	V4	V5
Wastewater treatment system	V1	V2	V3	V2	V1	V1	V1	V4	V2
Dam	--	V1	--	--	V2	--	V4	V3	V4
Substation	--	V1	--	V2	V2	--	V3	V3	V2
Power plant	--	V1	V2	V4	V2	--	V3	V4	V2
Communication tower	--	V1	--	--	V1	--	V3	V4	V4
Amtrak station & transit station	--	V1	--	--	V3	--	V1	V3	V1
Aviation facility	--	V1	--	--	V1	--	V1	V1	V2
Bridge	--	V2	--	--	V1	--	V3	V4	V4
Government transportation	--	V1	--	--	V1	--	V1	V3	V2
Marina*	--	--	V4	--	V4	--	--	V3	V1
Child care provider/service	--	--	--	V4	V1	V4	V2	V4	V3
School	--	--	--	V4	V1	V4	V2	V4	V3
College/university	--	--	--	V4	V1	V4	V3	V4	V1
Emergency operations center	--	--	--	--	V1	--	V1	V1	V1
Fire station	--	V1	V1	--	V1	--	V2	V2	V3
Police station	--	V1	--	--	V1	--	V1	V2	V1
Community resource	--	--	--	V4	V1	V2	V2	V2	V3
Government facility	--	--	--	V3	V1	V2	V3	V2	V1
Jail	--	--	--	V1	V1	V2	V1	V2	V1
Shelter	--	--	--	V4	V1	V2	V2	V2	V3
Court (including Superior Court)	--	--	--	V1	V1	V2	V2	V2	V1
Clinic	--	--	--	V1	V1	V3	V1	V1	V1

Critical Facility Type	Agriculture Pests and Disease	Avalanche	Drought	Extreme Heat	Flooding	Public Health Hazards	Landslide and Debris Flows	Severe Weather	Wildfire
Community nursing & family service	--	--	--	V1	V1	V3	V2	V1	V2
Emergency medical service	--	--	--	V1	V4	V3	V4	V1	V1
Health support & recovery & prevention service	--	--	--	V1	V2	V3	V3	V1	V3
Hospital	--	V1	--	V1	V1	V3	V1	V1	V1
Senior care facility/senior community service	--	--	--	V1	V2	V3	V3	V1	V4
Veteran service	--	--	--	V1	V1	V1	V1	V1	V1
RMP/tier II facility	--	--	--	V1	V1	--	V4	V2	V4
Toxic release inventory facility	--	--	--	V1	V1	--	V1	V2	V4

Sources: HIFLD, NID, NBI, El Dorado County, NFHL Effective date 4/3/2012, FEMA, Department of Conservation, CGS, CAL FIRE, FRAP, WSP GIS Analysis
 NOTES: *Refers to Tahoe Keys Marina.

Table 9-3 Vulnerability Scores for Natural Resources Highly and Severely Vulnerable to Climate-Related Hazards

Natural Resource Types	Agriculture Pests and Disease	Avalanche	Drought	Extreme Heat	Flooding	Public Health Hazards	Landslide and Debris Flows	Severe Weather	Wildfire
Rivers, creeks, streams	V1	V1	V4	V4	V1	--	V3	V2	V5
Lake and reservoirs	V1	V1	V4	V4	V1	--	V3	V2	V5
Aquatic resources	V1	V1	V4	V4	V2	--	V4	V2	V5
Wetlands and wet meadows	V1	V1	V4	V4	V2	--	V4	V2	V5
Riparian areas	V1	V1	V4	V4	V2	--	V4	V2	V5
Mixed conifer forests	V1	V1	V4	V4	V2	--	V4	V3	V5
Oak woodland	V1	V1	V4	V4	V2	--	V4	V2	V5
Mixed chaparral	V1	V1	V4	V4	V2	--	V4	V2	V5
Shrublands	V1	V1	V4	V4	V2	--	V4	V2	V5
Annual grasslands	V1	V1	V4	V4	V2	--	V4	V2	V5
State parks and recreation areas	--	--	V1	V1	V3	--	V2	V2	V4

Natural Resource Types	Agriculture Pests and Disease	Avalanche	Drought	Extreme Heat	Flooding	Public Health Hazards	Landslide and Debris Flows	Severe Weather	Wildfire
County parks and open space	--	--	V2	V1	V3	--	V2	V2	V4
Fairgrounds	--	--	V2	V1	V3	--	V2	V1	V3
Campgrounds	--	--	V2	V1	V3	--	V2	V1	V4
Greenways	--	--	V1	V1	V2	--	V1	V1	V3
Bicycle trails	--	--	V1	V1	V2	--	V1	V1	V3
Hiking trails	--	V4	V1	V1	V2	--	V1	V1	V3
Beaches	--	--	V4	V1	V3	--	V1	V1	V2
Historic buildings	--	--	V1	V2	V2	--	V2	V3	V4
Historic districts	--	--	V1	V2	V2	--	V2	V3	V4
Cultural resources	--	--	V2	V2	V2	--	V2	V2	V2

Sources: El Dorado County, WSP GIS Analysis
 NOTES: Includes marinas on Natomas Lake and Lake Tahoe.

Table 9-4 Vulnerability Scores for Economic Sectors Highly and Severely Vulnerable to Climate-Related Hazards

Economic Services	Agriculture Pests and Disease	Avalanche	Drought	Extreme Heat	Flooding	Public Health Hazards	Landslide and Debris Flows	Severe Weather	Wildfire
Apiary	V4	--	V5	V4	V1	--	V1	V2	V4
Grazing/pastures	V2	--	V5	V5	V1	--	V1	V1	V4
Livestock	V2	--	V4	V4	V2	--	V2	V2	V4
Nursery	V5	--	V4	V3	V1	--	V2	V1	V5
Orchards	V5	--	V4	V3	V1	--	V2	V1	V5
Timber products	V5	V1	V5	V4	V1	--	V3	V1	V5
Vineyards	V5	--	V5	V4	V1	--	V2	V3	V5
Wineries	V5	--	V5	V4	V2	V4	V4	V2	V5
Building materials	V3	--	V2	V1	--	V3	--	--	V3
Non-residential building	--	--	--	V2	--	V3	--	V3	V4
Outdoor recreation development	--	V2	--	V3	V1	V3	V1	V2	V4
Power and communication systems	--	V2	--	V3	V1	V3	--	V5	V5

Economic Services	Agriculture Pests and Disease	Avalanche	Drought	Extreme Heat	Flooding	Public Health Hazards	Landslide and Debris Flows	Severe Weather	Wildfire
Residential building	--	--	--	V2	V1	V3	--	V3	V4
Road development and maintenance	--	--	--	V2	V1	V3	--	V3	V4
Water and sewer systems	--	--	--	V1	V1	V3	--	V1	V4
Government offices	--	--	--	V1	V1	V3	--	V3	V3
Police and fire protection	--	--	--	--	V1	V3	--	V4	V4
Transportation program regulation	--	--	--	V1	V1	V3	--	V3	V3
Computer programming services	--	--	--	--	--	V3	--	--	--
Publishing, production, and broadcasting	--	--	--	--	--	V3	--	--	--
Bars	--	--	--	--	--	V5	--	V3	V3
Casinos	--	--	--	--	--	V5	--	V3	V3
Hotels/motels	--	--	--	--	--	V4	--	V3	V3
Resorts	--	--	--	--	--	V4	--	V3	V3
Restaurants	--	--	--	--	--	V4	--	V3	V3
Ski resorts	--	V2	--	--	--	V3	--	V3	V5
Aviation accessory products	--	--	--	--	--	V3	--	--	--
Commercial printing	--	--	--	--	--	V3	--	--	--
Computer parts	--	--	--	--	--	V3	--	--	--
Microwave and millimeter wave products	--	--	--	--	--	V3	--	--	--
Sign manufacturing	--	--	--	--	--	V3	--	--	--
Consulting services	--	--	--	--	--	V3	--	--	--
Education services	--	--	--	--	--	V4	--	--	--
Financial sector	--	--	--	--	--	V3	--	--	--
Hospitals	--	--	--	--	--	V5	--	--	--
Insurance	--	--	--	--	--	V3	--	--	--
Research services	--	--	--	--	--	V3	--	--	--
Bakeries and food manufacturing	--	--	--	--	--	V4	--	--	--

Economic Services	Agriculture Pests and Disease	Avalanche	Drought	Extreme Heat	Flooding	Public Health Hazards	Landslide and Debris Flows	Severe Weather	Wildfire
Car dealerships	--	--	--	--	--	V3	--	--	--
Gas stations	--	--	--	--	--	V2	--	--	--
Grocery stores	--	--	--	--	--	V4	--	--	--
Home centers	--	--	--	--	--	V3	--	--	--
Farms	V3	--	V3	V1	--	V4	--	V1	--
Fishing	--	--	V1	V1	--	V1	--	--	--
Trucking and Transport	--	--	--	--	--	V2	--	V1	--

Sources: El Dorado County, WSP GIS Analysis

10. Acronyms and Abbreviations

AAA - Area Agency on Aging
AB – Assembly Bill
ACS – American Community Survey
ADU – Accessory dwelling unit
APG – The California Adaptation Planning Guide
AQMD – Air Quality Management District
ATSDR – Agency for Toxic Substances and Disease Registry
CAL FIRE – California Department of Forestry and Fire Protection
Cal OES – California Office of Emergency Services
Caltrans – California Department of Transportation
CBO – Community-based organization
CDC – Centers for Disease Control and Prevention
CDDA – The California Disaster Assistance Act
CEC – California Energy Commission
CEQA – California Environmental Quality Act
CFR – Code of Federal Regulations
CGS – California Geological Survey
CRHR – California Register of Historic Resources
CRNA – California Natural Resources Agency
CVA – Climate vulnerability assessment
DACs – Disadvantaged communities
DFIRM – Digital Flood Insurance Rate Map
DOF – Department of Finance
DOT – Department of Transportation
DWR – Department of Water Resources
EDCTC – El Dorado County Transportation Commission
EDWA – El Dorado County Water Agency
EID – El Dorado Irrigation District
EOC – Emergency Operation Centers
EOP – Emergency operations plan
FEMA – Federal Emergency Management Agency
FHSZs – Fire Hazard Severity Zones
FPOA – Fire Prevention Officer’s Association



FRAP – Fire and Resource Assessment Program
GHG – Greenhouse gas
HIFLD – Homeland Infrastructure Foundation-Level Data
HMA – Hazard Mitigation Assistance
HPI – Healthy Places Index
HVRI – Hazards and Vulnerability Research Institute
HVRI BRIC – Hazards and Vulnerability Research Institute Baseline Resilience Indicators for Communities
INRMP – Integrated Natural Resources Management Plan
IPCC – International Panel on Climate Change
ISO – Insurance Services Office
KDBI – Keetch-Byram Drought Index
LHMP – Local hazard mitigation plan
LTBMU – Lake Tahoe Basin Management Unit
MHI – Median household income
Miwok Indians – The Shingle Springs Band of Miwok Indians
mm – Millimeter
mph – Miles per hour
msl – Mean sea level
MTP/SCS – Metropolitan Transportation Plan/Sustainable Communities Strategy
NBI – National Bridge Inventory
NEPA – National Environmental Policy Act
NFHL – The National Flood Hazard Layer
NGO – Non-profit organization
NID – National Inventory of Dams
NOAA – National Oceanic and Atmospheric Administration
NRHP – National Register of Historic Places
NRI – National Risk Index
NWS – The National Weather Service
OEHHA – California Office of Environmental Health Hazard Assessment
OPR – Office of Planning and Research
PG&E – Pacific Gas & Electric
PRC – Public Resources Code
PSPS – Public Safety Power Shutoff
RCD – Resource Conservation District
RCP – Representative Concentration Pathway



RMP – Risk Management Program
RTP/SCS – Regional Transportation Plan/Sustainable Communities Strategy
SAC – The Sierra Avalanche Center
SACOG – The Sacramento Area Council of Governments
Safety Element – General Plan Noise, Public Health, and Safety Element
SB – Senate Bill
SBC – Sierra Business Council
SEAC – Safety Element Advisory Committee
SHMP – State Hazard Mitigation Plan
Sierra CAMP – Sierra Climate Adaptation and Mitigation Partnership
SIG – Spatial Informatics Group
SOI – Sphere of Influence
SoVI – Social Vulnerability Index
SR – State Route
SRAs – State Responsibility Areas
SVI – Social Vulnerability Index
SWE – Snow water equivalent
TFFT – Tahoe Fire & Fuels Team
TRPA – Tahoe Regional Planning Agency Tahoe Transportation District
UCCE – University of California Cooperative Extension
UNFCCC – The United Nations Framework Convention on Climate Change
USGS – United States Geological Survey
UWMP – Urban Water Management Plan
Washoe Tribe – The Washoe Tribe of Nevada and California
WRCC – Western Regional Climate Center
WRDMP – Water Resources Development and Management Plan
WUI – Wildland urban interface

11. Acknowledgements

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WSP



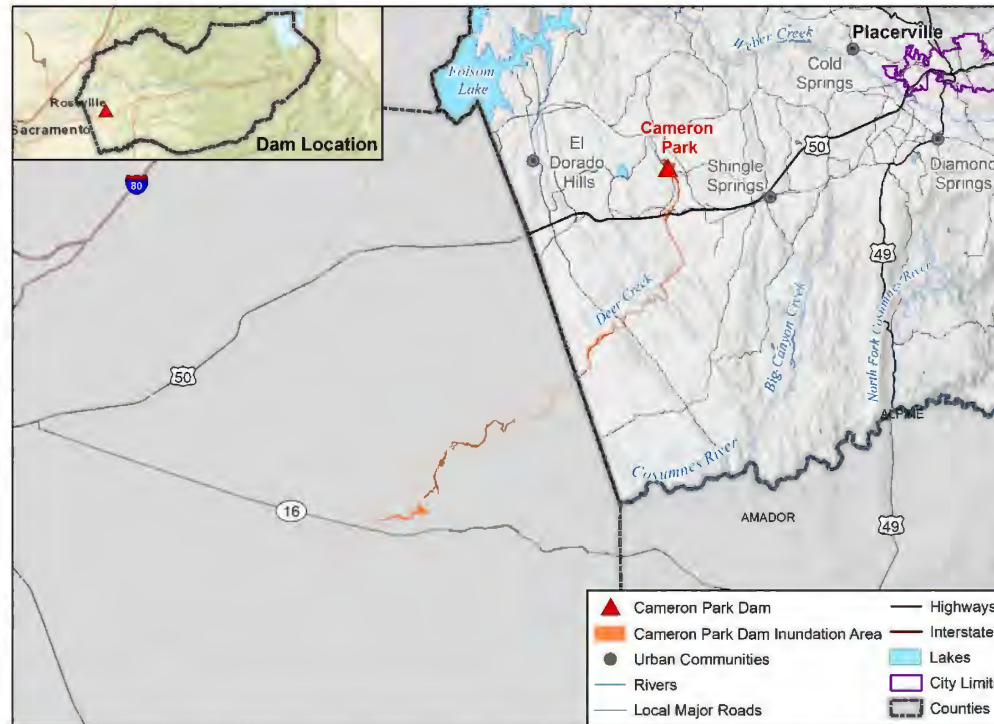
El Dorado County Draft Public Health, Safety, and Noise Element Dam Inundation Maps

May 2024

Final Draft – Appendix D

Cameron Park Dam Inundation Area

The Cameron Park Dam is a public utilities dam operated by the Cameron Park Community Services District (CSD). It is a high-hazard, earth type dam on Deer Creek used for water supply and irrigation. It can hold 97,800 cubic yards of water.



Map compiled 6/2023;
Intended for planning purposes only.
Data Source: El Dorado County,
Department of Water Resources,
Division of Safety of Dams (DSOD)

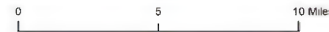


Exhibit G - Appendix D - Dam Inundation Maps

Chili Bar Dam Inundation Area

The Chili Bar Dam is a private dam operated by Pacific Gas and Electric (PG&E) Company. It is a concrete, hydroelectric dam on the South Fork of the American River that can hold 54,000 cubic yards of water.

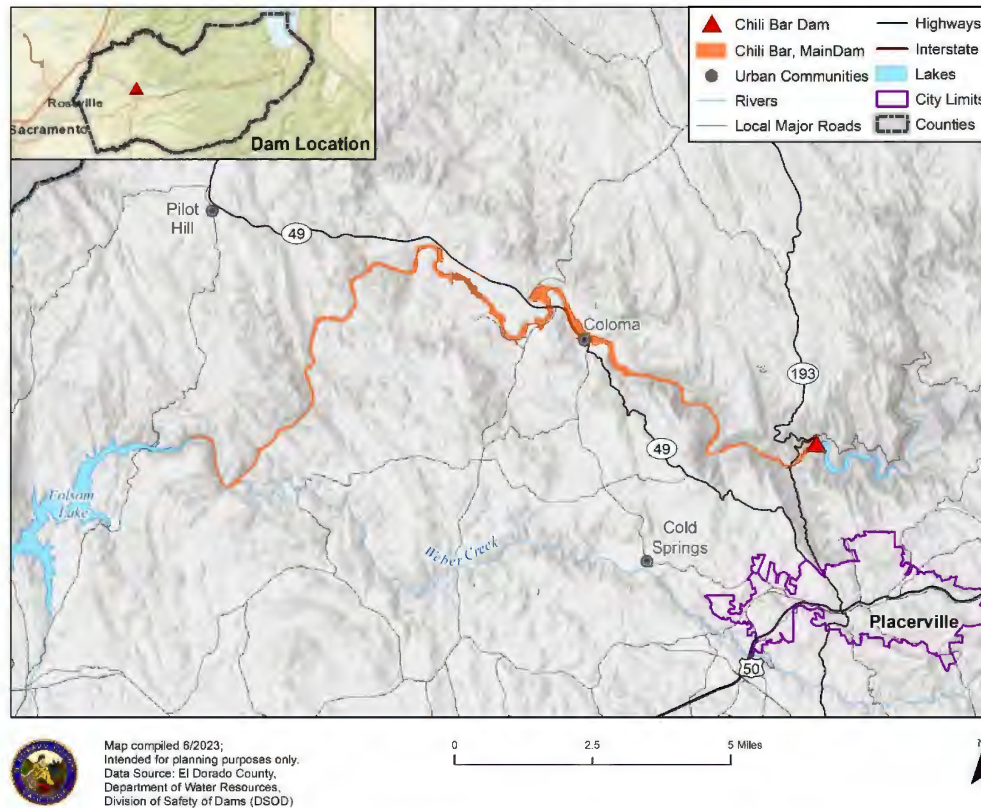
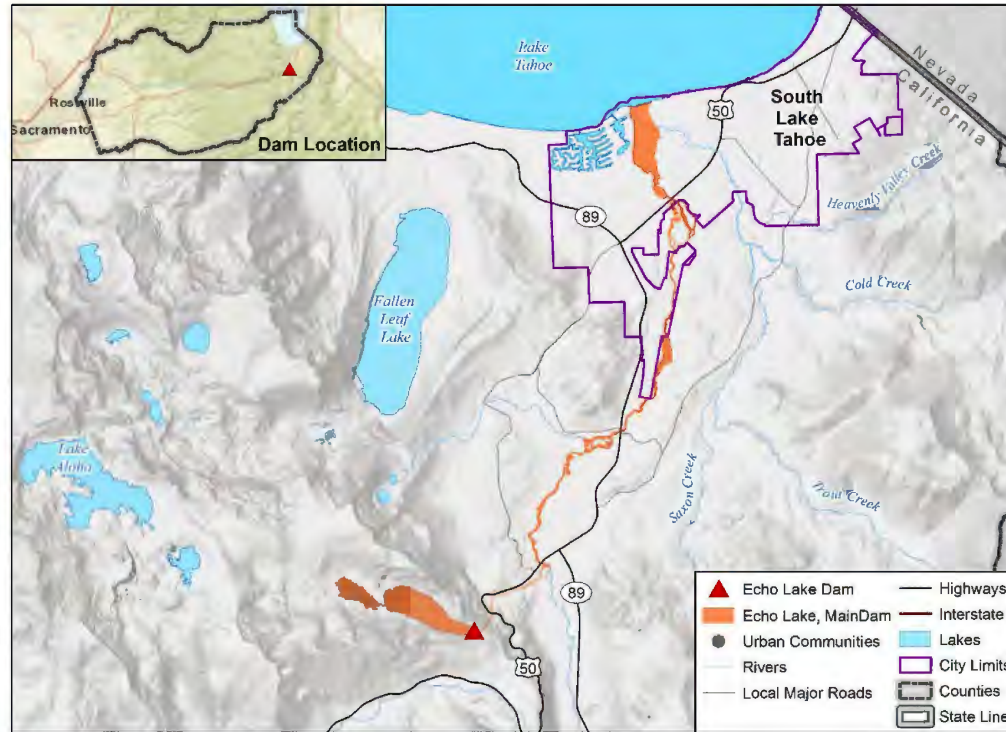


Exhibit G - Appendix D - Dam Inundation Maps

Echo Lake Dam Inundation Area

The Echo Lake Dam is a private dam operated by the El Dorado Irrigation District (EID). It is a roller-compacted concrete dam on Echo Creek used for hydroelectricity, recreation, and debris control.



Map compiled 6/2023;
Intended for planning purposes only.
Data Source: El Dorado County,
Department of Water Resources,
Division of Safety of Dams (DSOD)

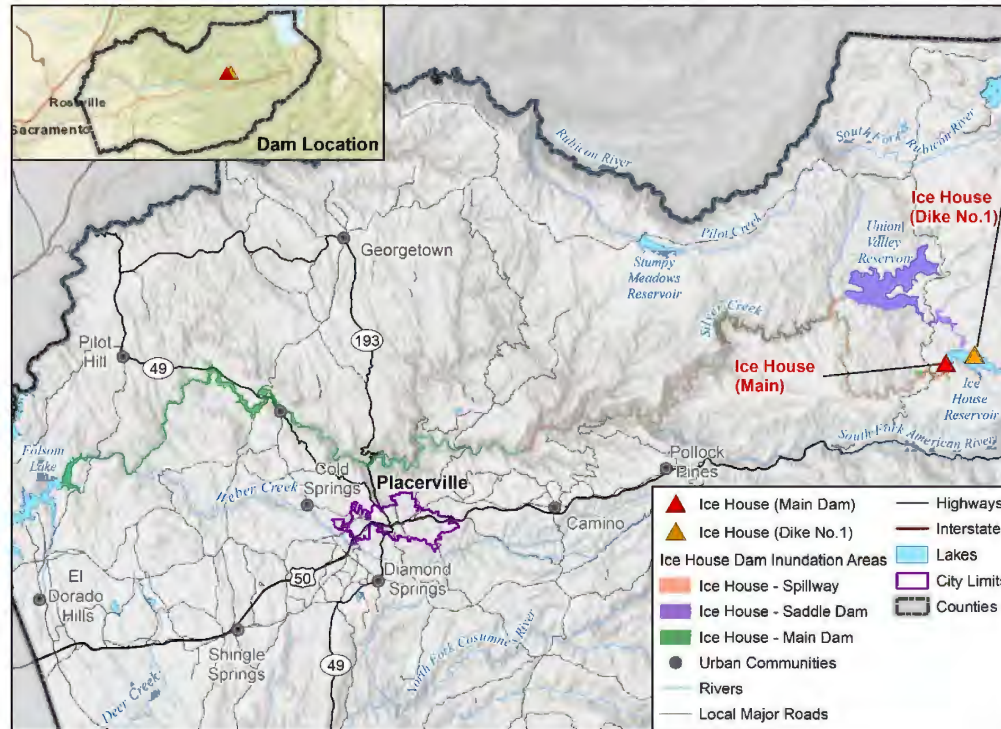
0 2 4 Miles



Exhibit G - Appendix D - Dam Inundation Maps

Ice House Dam Inundation Area

The Ice House dam is a public utility dam operated by Sacramento Municipal Utility District (SMUD). It is a rockfill and earth type dam on the South Fork of Silver Creek, used for hydroelectricity and recreation. It can hold 610,000 cubic yards of water.



Map compiled 6/2023;
Intended for planning purposes only.
Data Source: El Dorado County,
Department of Water Resources,
Division of Safety of Dams (DSOD)

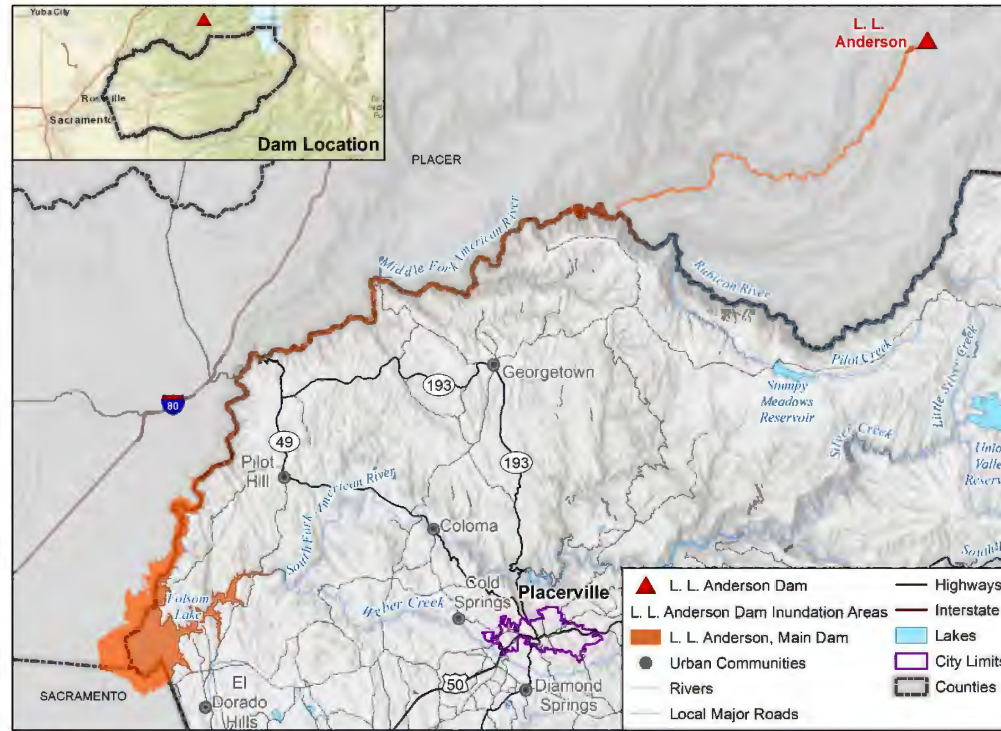
0 5 10 Miles



Exhibit G - Appendix D - Dam Inundation Maps

LL Anderson Dam Inundation Area

The LL Anderson Dam, operated by the Placer County Water Authority, is an earth and rock type dam on the Middle Fork of the American River in Placer County. It can hold 179,616,972 cubic yards of water and is used for hydroelectricity and recreation.



Map compiled 6/2023;
Intended for planning purposes only.
Data Source: El Dorado County,
Department of Water Resources,
Division of Safety of Dams (DSOD)

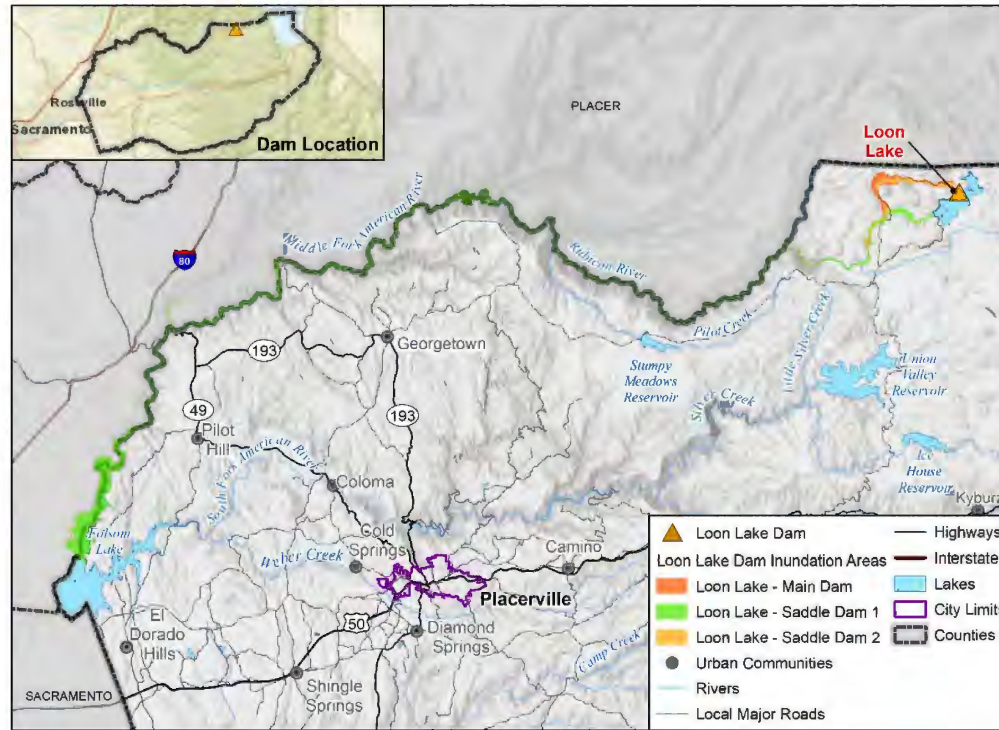
0 5 10 Miles



Exhibit G - Appendix D - Dam Inundation Maps

Loon Lake Dam Inundation Area

The Loon Lake Dam is a public utility dam operated by SMUD. It is a rockfill dam on Gerle Creek used for hydroelectricity and recreation. It can hold 800,000 cubic yards of water.



Map compiled 6/2023;
 Intended for planning purposes only.
 Data Source: El Dorado County,
 Department of Water Resources,
 Division of Safety of Dams (DSOD)

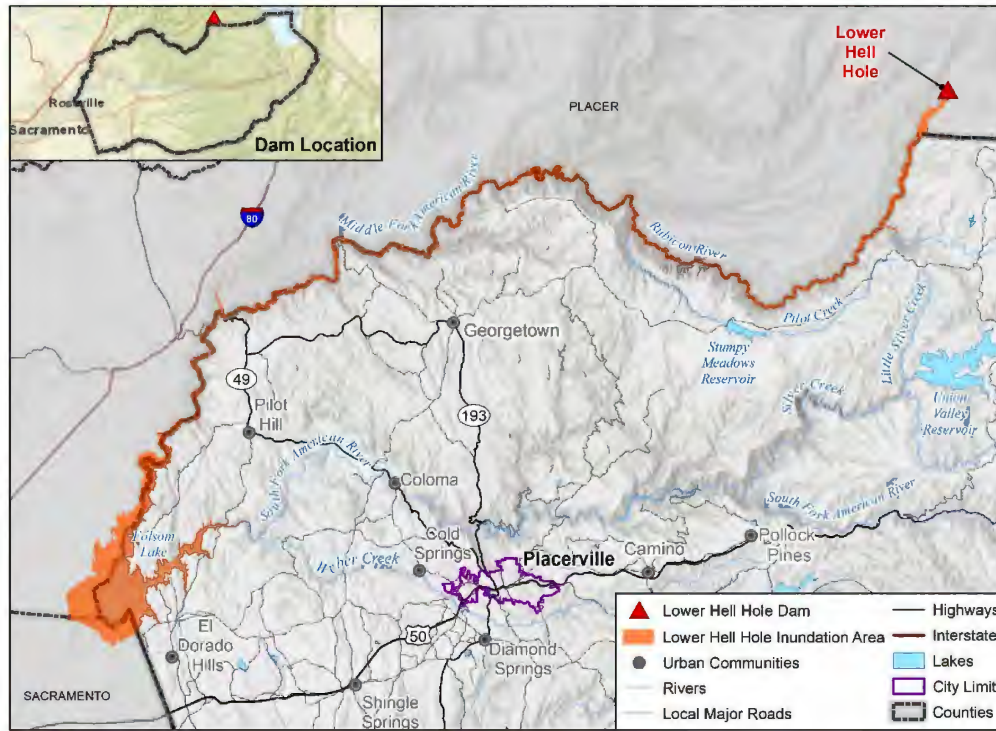
0 5 10 Miles



Exhibit G - Appendix D - Dam Inundation Maps

Lower Hell Hole Dam Inundation Area

The Lower Hell Hole Dam, operated by the Placer County Water Authority, is a rock-fill dam on the Rubicon River in Placer County. It can hold 336,218,166 cubic yards of water and is used primary for water supply, hydroelectricity, and recreation.



Map compiled 6/2023;
Intended for planning purposes only.
Data Source: El Dorado County,
Department of Water Resources,
Division of Safety of Dams (DSOD)

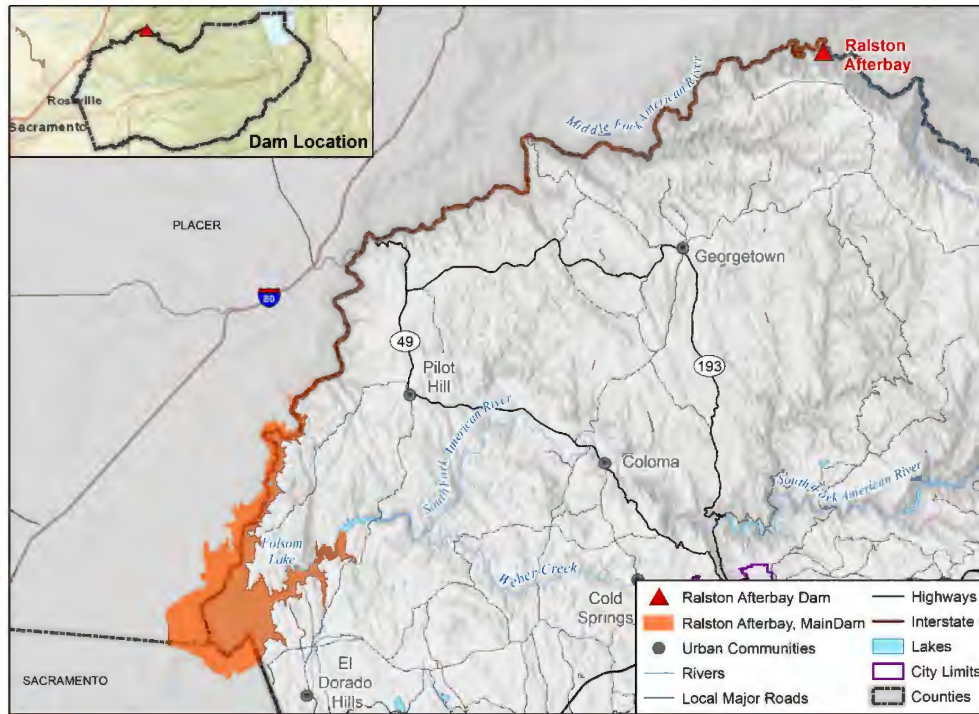
0 5 10 Miles



Exhibit G - Appendix D - Dam Inundation Maps

Ralston Afterbay Dam Inundation Area

The Ralston Afterbay Dam is a high-hazard dam operated by Placer County Water Agency on the Rubicon River in Placer County. It is a concrete dam used for irrigation, recreation, hydroelectricity, and water supply, and can hold 4,485,060 cubic yards of water.

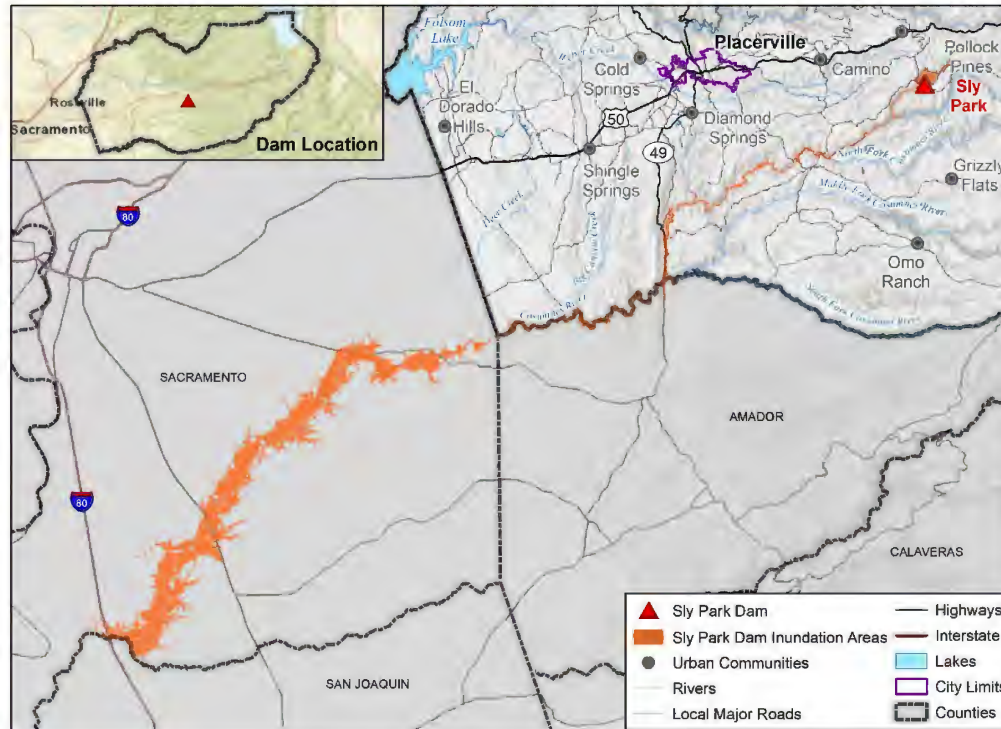


Map compiled 6/2023;
 Intended for planning purposes only.
 Data Source: El Dorado County,
 Department of Water Resources,
 Division of Safety of Dams (DSOD)

Exhibit G - Appendix D - Dam Inundation Maps

Sly Park Dam Inundation Area

The Sly Park Dam is a public utility dam operated by EID. It is an earth-type dam on Sly Park Creek, used for water supply, irrigation, and recreation. It can hold 41,000 cubic yards of water.

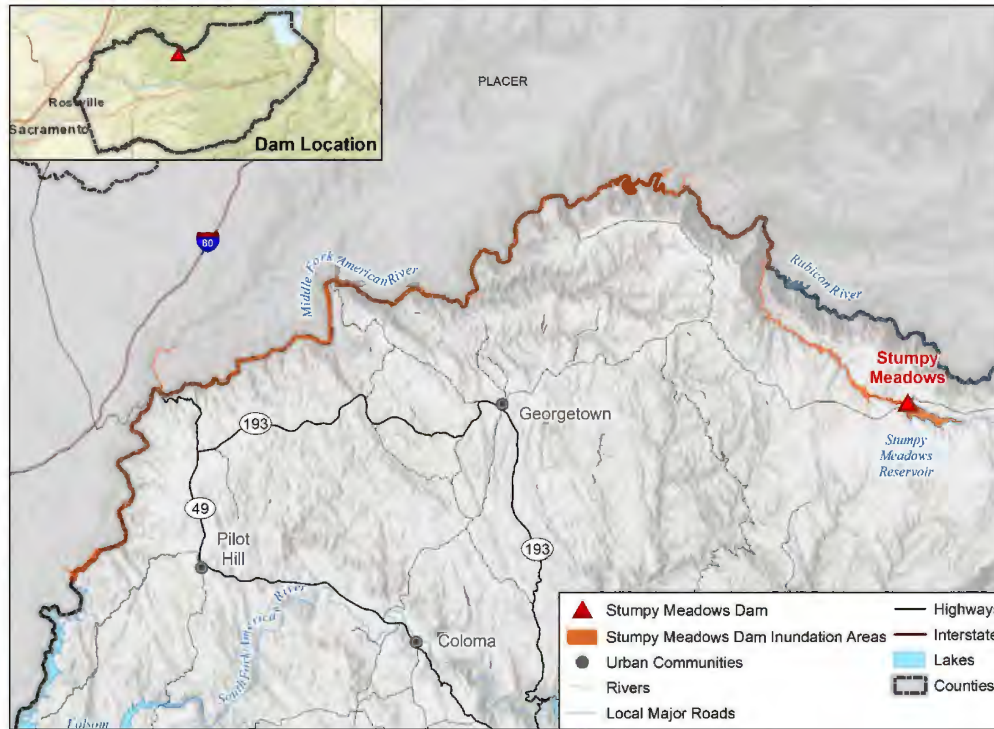


Map compiled 6/2023;
 Intended for planning purposes only.
 Data Source: El Dorado County,
 Department of Water Resources,
 Division of Safety of Dams (DSOD)

Exhibit G - Appendix D - Dam Inundation Maps

Stumpy Meadows Dam Inundation Area

The Stumpy Meadows Dam, also called the Mark Edson Dam, is a public utility dam operated by the Georgetown Divide Public Utility District. It is an earth-type dam on Pilot Creek, used for water supply, tailings, irrigation, and recreation. It can hold 897,000 cubic yards of water.



Map compiled 6/2023;
Intended for planning purposes only.
Data Source: El Dorado County,
Department of Water Resources,
Division of Safety of Dams (DSOD)

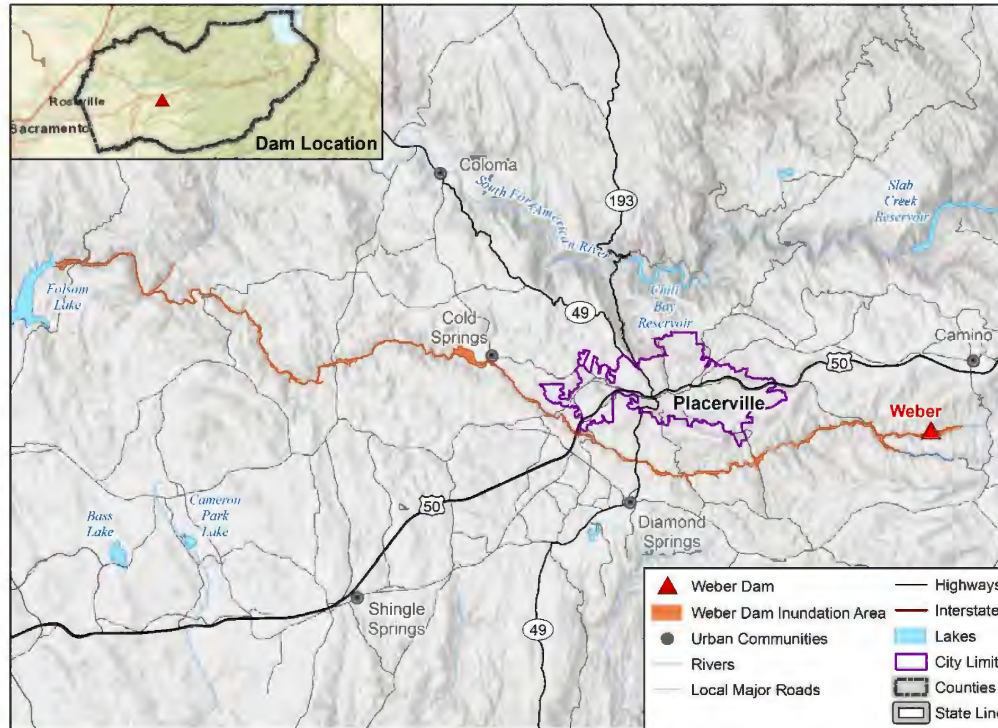
0 5 10 Miles



Exhibit G - Appendix D - Dam Inundation Maps

Weber Dam Inundation Area

The Weber Dam is a public utility dam operated by EID. It is a multi-arch dam on the North Fork of Weber Creek, used for water supply and irrigation. It can hold 5,600 cubic yards of water.



Map compiled 6/2023;
 Intended for planning purposes only.
 Data Source: El Dorado County,
 Department of Water Resources,
 Division of Safety of Dams (DSOD)

Exhibit G - Appendix D - Dam Inundation Maps