Climate Vulnerability Assessment
Public Workshop #1

Date: 09 March 2023
5:30 p.m. – 7:30 p.m. PST

Meeting at: Microsoft Teams Meeting

Project: County of El Dorado General Plan Safety Element Update
Climate Vulnerability Assessment (CVA) Public Workshop #1

Agenda Topics

1. **Introductions**
   Ms. Juliana Prosperi opened the meeting by introducing herself as the project lead from WSP, and Ms. Melissa Baum as a hazard mitigation planner from WSP. Ms. Thea Graybill then introduced herself as the senior planner at El Dorado County (County) managing the project, and Ms. Anna Quan introduced herself as an associate planner at the County. Ms. Prosperi explained that the purpose of the meeting was to review the results of the Climate Vulnerability Assessment (CVA) that will inform the Safety Element update.

2. **What is a Climate Vulnerability Assessment?**
   Ms. Prosperi explained that the CVA examines what climate-related hazards could affect the County and explores how those hazards may impact people, property, buildings and infrastructure, natural resources, and the local economy. She further explained that the El Dorado CVA is being completed to bring the General Plan Safety Element into compliance with recent climate adaptation legislation.

3. **Regulatory Framework**
   Ms. Prosperi reviewed California legislation and Government Code sections related to wildfire and flood hazards, climate adaptation, and evacuation planning requirements that must be addressed in the Safety Element. The three main focus areas of this Safety Element update will be:

   - Flood and wildfire mapping, as well as policy updates related to minimizing risk to property, buildings, and essential facilities in flood and wildfire hazard areas;
   - Climate adaptation and resilience; and
   - Evacuation planning.

WSP Environment & Infrastructure, Inc.
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Rancho Cordova, CA 95670

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wsp.com

4. Overview of Planning Process

Ms. Prosperi explained where the County is in the planning process based on the California Adaptation Planning Guide process. During Phase 1, the planning team organized advisory committees and stakeholder groups to inform the development of the Safety Element update. In Phase 2, the team focused on understanding the vulnerabilities in the County due to the intersection of climate-related hazards and important community assets like sensitive populations and physical critical infrastructure and lifelines, natural resources, and key services supported by our infrastructure, such as communications, emergency services, public health and safety, and energy delivery. The team is now in Phase 3 and working with the advisory committee and stakeholders to develop adaptation goals and objectives that will make up the County's climate adaptation framework strategy; many of these goals, policies, and implementation programs will then be considered in the Safety Element Update.

The process will wrap up in Phase 4 with how the County and its stakeholder partners must implement, monitor and evaluate the actions in the adaptation strategy and ultimately the Safety Element over time.

The County used Slido.com as an engagement tool during the workshop to gather feedback and input from the public participants. Ms. Prosperi initiated a Slido poll, "Did you take the public survey?"

- 50% of participants said yes, 50% said no.

Ms. Prosperi initiated a second Slido poll, "What impacts of climate-related hazards have you already experienced? Select all that apply."

- 100% of participants selected heat waves, droughts, and severe winter storms.
- 67% of participants selected wildfire and changes in the environment.
- 33% of participants selected high winds, damage to property and infrastructure, and public health hazards.

Finally, Ms. Prosperi initiated a Slido poll, "What do you perceive as the top 5 climate stressors and climate-related hazards that should be addressed in the El Dorado County Safety Element Update?"

- 100% of participants responded increased wildfire severity, drought and water supply, flooding, and agricultural disease and tree mortality.

5. **Climate Vulnerability Assessment Overview**

Ms. Prosperi reviewed the CVA findings on primary climate stressors, including what metrics were used and explained the forecasted changes. These findings included increased average temperatures with longer stretches of extreme heat and warm nights, more extreme precipitation events (deluge and drought), less snowpack that melts more quickly, and an increase in wildfire severity.

Ms. Prosperi reviewed the CVA findings of secondary climate stressors, including agricultural and forestry disease and tree mortality, drought, extreme heat, flooding, and landslide and debris flow. She then reviewed which critical assets were vulnerable to these hazards.

Ms. Prosperi initiated a Slido poll, "How prepared are you and your family for the impacts of climate change?"

- 100% of participants responded somewhat prepared.

Ms. Prosperi elaborated on Phase 3 of the adaptation framework where a collaborative effort will result in goals set in the Safety Element. Goals are the general guidelines of what you want to achieve, objectives are strategies or steps taken to attain those goals, and that actions as part of an implementation program are completed to achieve goals and objectives.

Ms. Prosperi initiated a Slido poll, "What climate adaption strategies do you think will be most effective in El Dorado County?"

- 100% of participants responded wildfire fuels treatment projects, wildfire defensible space, forest health & watershed protection, flood mitigation, flood prone property buyout, water efficiency and conservation, slope stabilization, evacuation route development, electrical power grid resiliency, climate-smart energy sources initiatives, and prescribed burn projects.

6. **Schedule and Next Steps**

Ms. Prosperi shared a schedule of upcoming events, and ways for participants to stay involved. The meeting adjourned at 6:40 pm.

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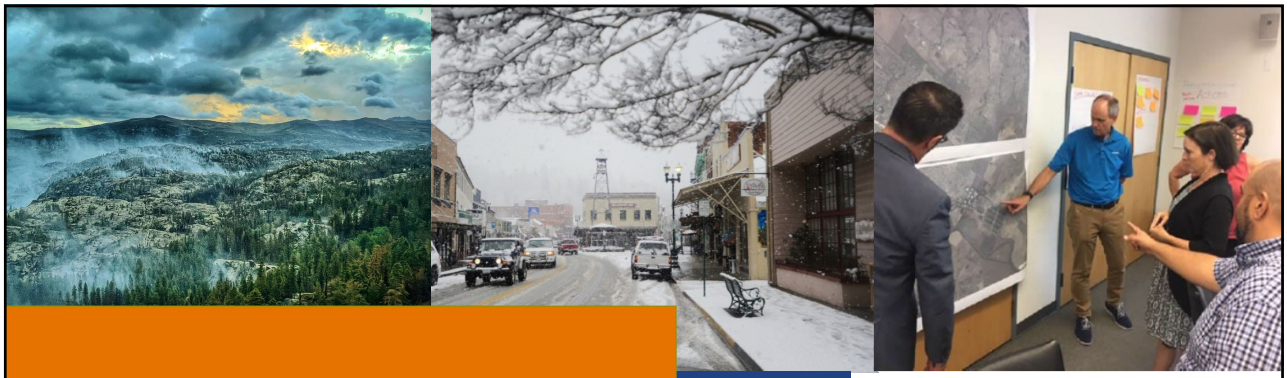

County of El Dorado Climate Vulnerability Assessment

Public Workshop – March 9, 2023

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Agenda

1. Introductions
2. What is a Climate Vulnerability Assessment?
3. Regulatory Framework
4. Overview of Planning Process
5. Climate Vulnerability Assessment Overview
6. Schedule and Next Steps
7. Questions/Answers

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Introductions

Project Team

County of El Dorado Planning & Building Department

- Bret Sampson –Planning Manager
- Thea Graybill – Senior Planner
- Anna Y. Quan, AICP – Associate Planner

WSP Environment & Infrastructure

- Juliana Prosperi, AICP – Project Manager
- Jeff Brislawn, CFM – Senior Technical Advisor
- Nick Meisinger – Associate Planner
- Mack Chambers – GIS Specialist
- Adam Qian – Environmental Planner
- Melissa Baum – Hazard Mitigation Planner

Spatial Informatics Group

- Jason Moghaddas – Director of Operations/Natural Hazards Team
- Shane Rosmos – Senior Scientist/Tahoe-Sierra Team Lead

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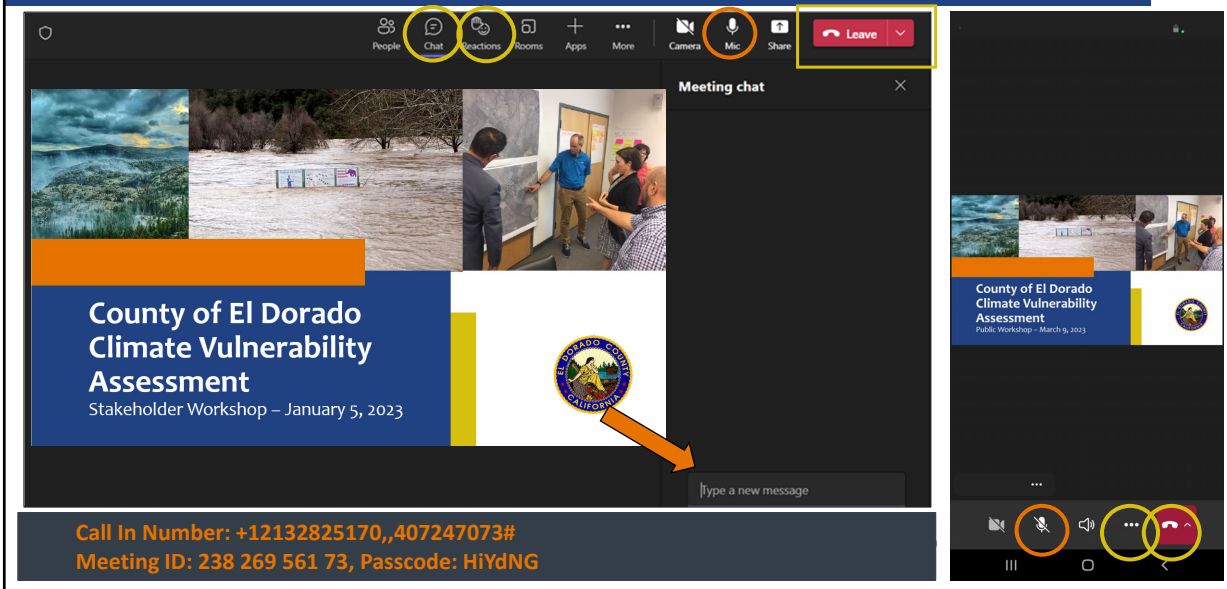
Teams Overview: How to Participate



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Meeting Etiquette

- We will provide a 30-minute presentation followed by a Q&A session.
- You can share your ideas and provide feedback by using the "Chat" log.  Everyone's ideas and input has value!
- Select "Show reactions"  and use the "Raise your hand"  button to ask questions and provide information. We also encourage everyone to participate in our polling questions through Slido.com.
- During the Q&A session, please treat everyone with respect. We all bring unique perspectives, expertise, and insight to tonight's conversation.
- This meeting is being recorded and the slides, meeting summary, and recording will be made available after the meeting.

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Workshop Intent: What we are here for today

- Promote a respectful and collaborative atmosphere of learning
- Meet the State legislature mandate
- Facilitate a mutual exchange of information

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Workshop Intent: What we are <u>not</u> here for today

- Promote a learning atmosphere that is **not** supportive of a respectful and collaborative experience for all
- Debate the efficacy of current state policy or regulations
- Change current state policies or regulations

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Join at slido.com
#CVA

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What is a Climate Vulnerability Assessment?

And why is it important?

- Identifies how local climate-related hazards may impact people, property, buildings and infrastructure, natural resources and the economy
- Shares information with the community on what populations and assets are most sensitive to climate change
- Legislation requires updated land use policies incorporate climate vulnerabilities and adaptation strategies
- Sets a foundation that will make El Dorado County safer and more resilient

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Regulatory Framework

Flood and Wildfire – Government Code § 65302(g)(2) and 65302(g)(3)	Climate Adaptation and Resilience – Government Code § 65302(g)(4)	Evacuation Planning – Government Code § 65302(g)(5)
Senate Bill (SB) 1241	SB 379 and 1035	SB 99/Assembly Bill 747
• Updated flood and wildfire mapping • Identification of responsible agencies for protecting against these hazards and ensure continued coordination • Development of policies to minimize risk for new buildings and essential facilities	• Prepare vulnerability assessment to show risks from climate change impacts • Develop adaptation and resilience goals, policies, and objectives to protect the community • Implement strategies to increase community adaptation and building resilience	• Identify residential developments in any hazard area identified in the County that does not have at least two emergency evacuation routes.
Related Effort: Establishment of the Wildfire Preparedness and Resilience Committee and an overarching Wildfire Strategy	• **Related Effort:** Climate Vulnerability Assessment (CVA) and development of a set of adaptation and resilience goals	• **Related Effort:** Greater Placerville Wildfire Preparedness and Evacuation Plan

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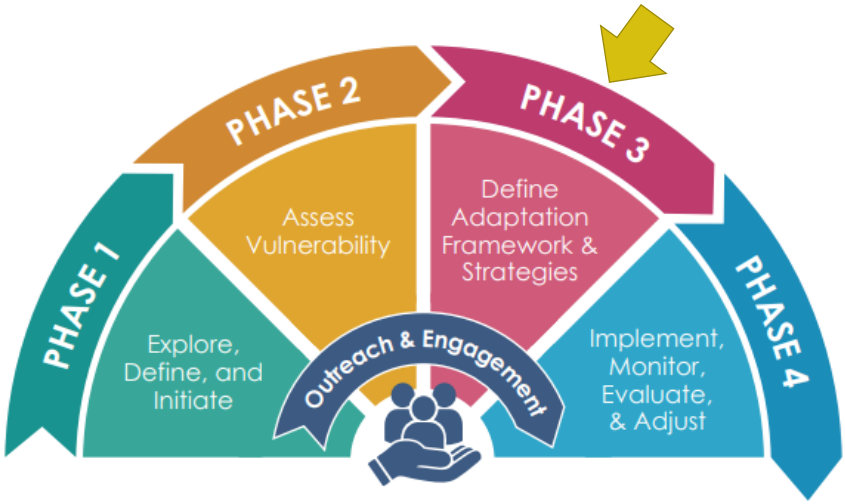
Overview of Planning Process



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Phase 1: Explore, Define, and Initiate

- Core County Planning Team
- Safety Element Advisory Committee (SEAC)
- Focused meetings with agencies and organizations
- Stakeholder engagement - share community stories to support dialogue about climate hazards
- Reliance on State resources and tools to develop the CVA Report
- Public outreach and engagement
- Review Draft CVA Report
- Review Draft Safety Element

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Did you take the public survey?

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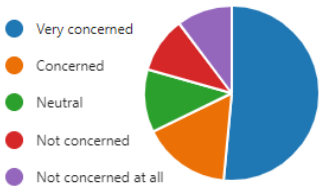
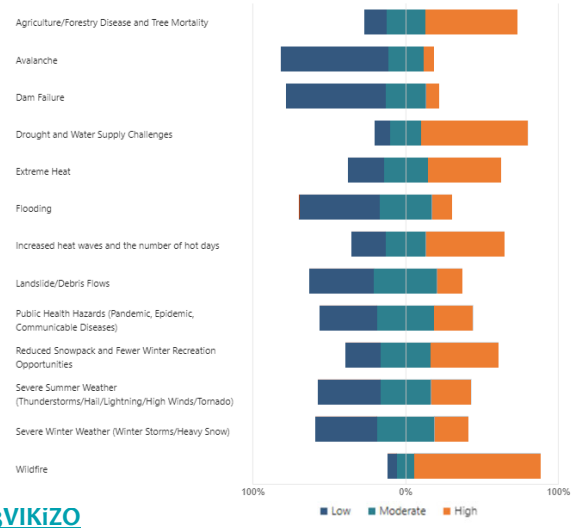
Phase 1: Public Survey and Outreach

How concerned are you about the impacts of climate change?



Have you or your family been asked to evacuate from your home during an emergency in the last 10 years?

Please indicate the level of significance you perceive each climate stressor and hazard in the community you live:



The survey is available to review here: https://bit.ly/3VIKiZO

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What impacts of climate-related hazards have you already experienced? Select all that apply.

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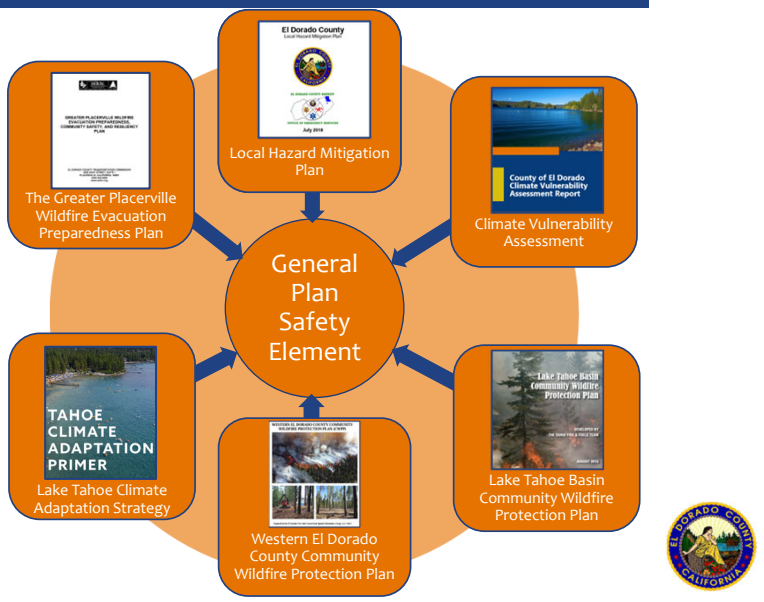
Phase 1: Foundations for the Safety Element Update

- **Adaptive Capacity:** the "combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts or moderate harm to exploit beneficial opportunities.
  - -FEMA Local Mitigation Planning Handbook 2013



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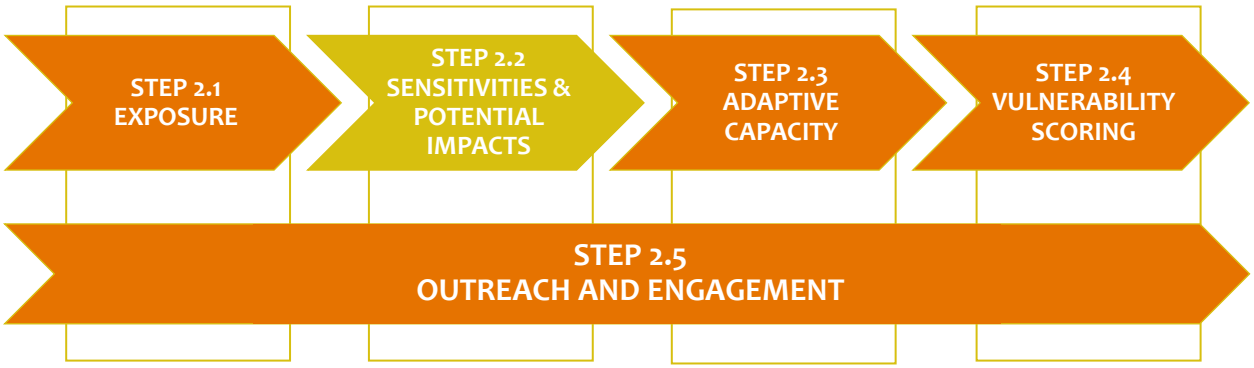
Phase 2: Assess Vulnerability & Exposure Identification



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Phase 2: What types of climate changes effects will we see?

- Increased temperatures
- Precipitation variability
- Reduced snowpack
- Increased wildfire severity
- Agriculture and forestry disease
- Drought
- Extreme heat
- Flooding
- Landslide
- Severe weather (heavy rain, high winds, winter storms)

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What do you perceive as the top 5 climate stressors and climate-related hazards that should be addressed in the El Dorado County Safety Element Update?

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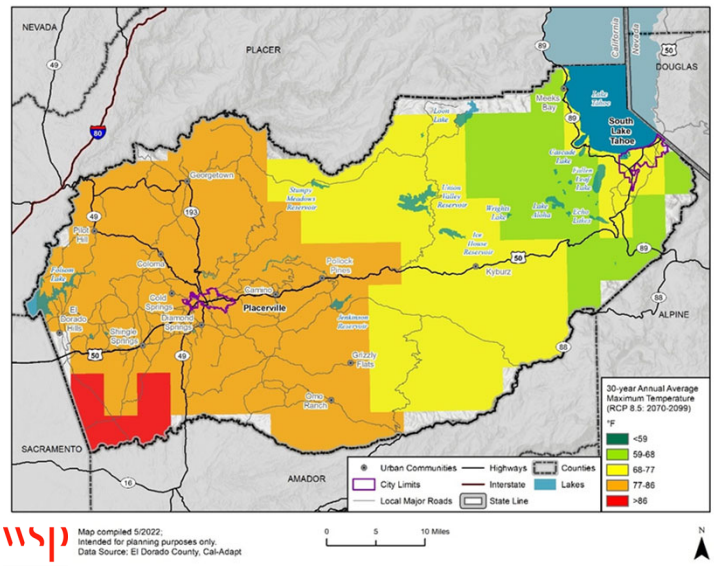
Increased Temperatures

30-Year Annual Average Maximum Temperature



- Measured based on Annual average minimum and maximum temperatures and # of Extreme Heat Days
- Historical highest 30-year annual average maximum temperature was 66.9 °F
- Highest 30-year annual average maximum temperature could reach 72.1 °F in 2050 and 83.5 °F in 2100
- Number of extreme heat days will rise by 26 days by 2050 and 54 days by 2100
- Number of warm nights is projected to rise by 23 days by 2050 and 53 days by 2100

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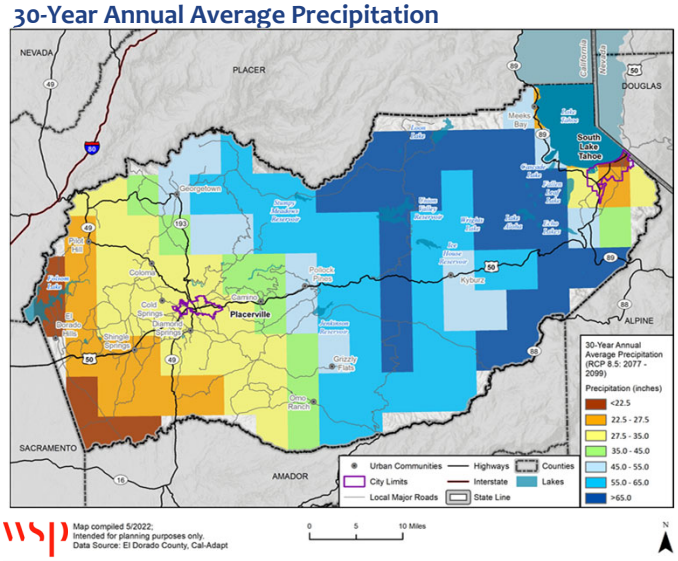
Precipitation Variability

30-Year Annual Average Precipitation



- Measured based on annual average precipitation and the maximum 1-day precipitation or maximum length of dry spell
- Expected future variability in 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 West Slope by the end of the century

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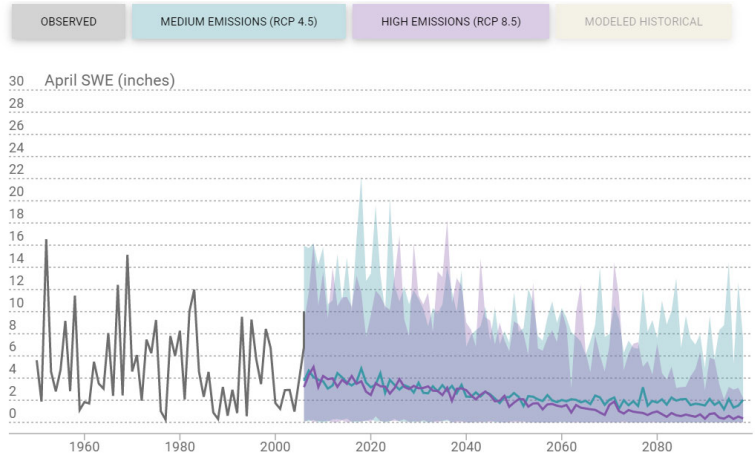
Reduced Snowpack

Predicted Snow Water Equivalent (SWE) in April through End of Century



- Measured based on the Snow Water Equivalent (SWE) – amount of liquid in snowpack
- Snowpack is predicted to decrease throughout the century.
- Changes in snowpack can affect agriculture, winter recreation and tourism in some areas, as well as hydropower production.
- Warming and earlier snowmelt also accelerates the start of the wildfire season and increase wildfire risks

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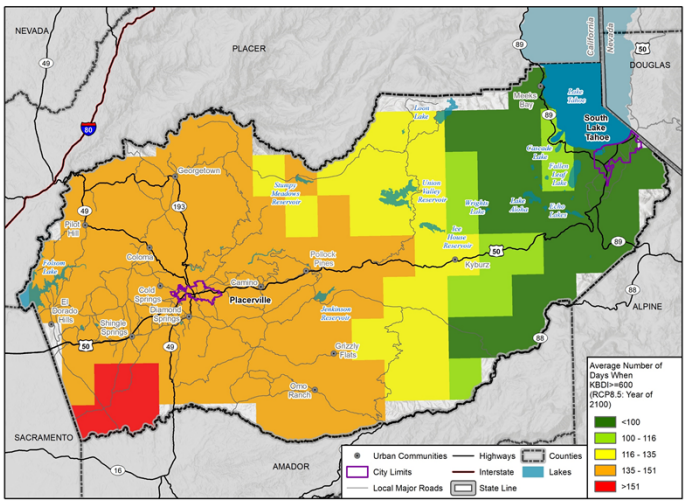
Increased Wildfire Severity

Annual number of days when KBDI > 600



- Measured by the probability of # of acres burned/year and # of days when Keetch-Byram Drought Index (KBDI) > 600 is predicted to increase throughout the century
- Annual average area burned is expected to increase by the end of the century
- Days where KDBI values exceed 600 (days with extreme wildfire occurrence) will increase by 51 days by the end of the century
- Projected changes are associated with large increases in the area burned by wildfire and the frequency of large fires

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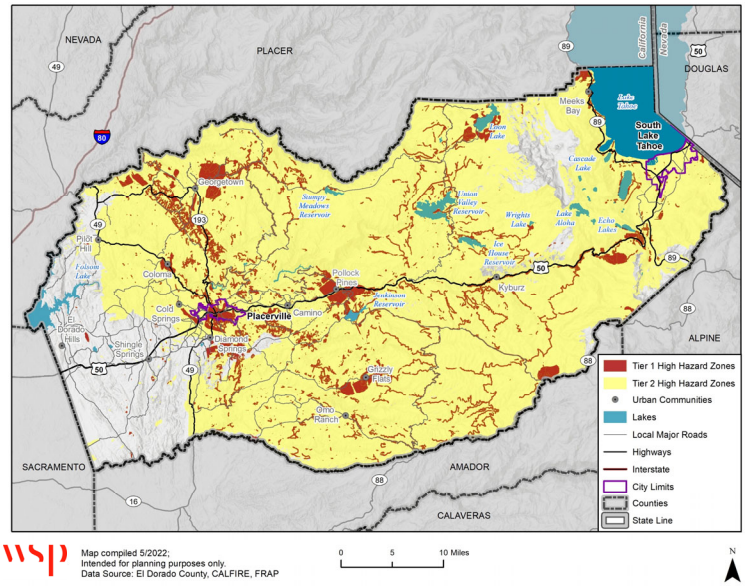
Agriculture and Forestry Disease and Tree Mortality



- Measured by the # acres in High Tree Mortality Zones and the # acres affected by pests/blight
- Agricultural pests thrive in warm weather
- Tree mortality rates between 1983 and 2004 nearly doubled while water deficit increased
- Bark beetle infestations, like the one witnessed from 2012-2016 drought, will become more frequent
- Increased stress on plants from warmer weather and drier soil increase plant susceptibility
- Altered cropping seasons

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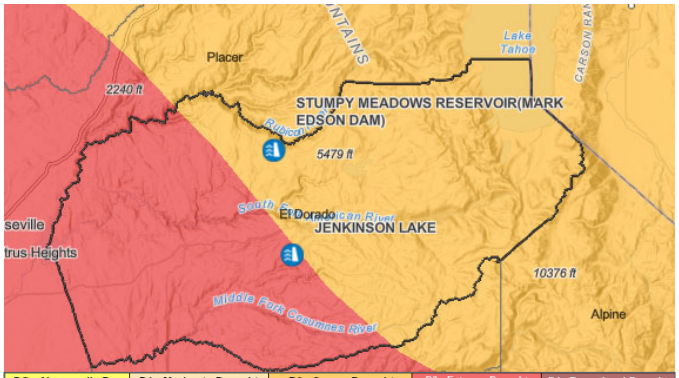
Drought

El Dorado Water Agency Drought Monitoring



DO - Abnormally Dry	D1 - Moderate Drought	D2 - Severe Drought	D3 - Extreme Drought	D4 - Exceptional Drought
• Going into drought • Coming out of drought	• Some damage to crops, pastures • Streams, reservoirs, or wells low, some water shortages developing or imminent • Voluntary water-use restrictions requested	• Crop or pasture losses likely • Water shortages common • Water restrictions imposed	• Major crop/pasture losses • Widespread water shortages or restrictions	• Exceptional and widespread crop/pasture losses • Shortages of water in reservoirs, streams, and wells creating water emergencies

Source: www.edwateragency.org/

- Measured based on the length of drought, annual average precipitation, and maximum one day precipitation
- Primary source of water in El Dorado County is snowpack runoff which is projected to decrease 85% by the end of the century
- Lack of robust groundwater resources
- Seasonal redistribution of runoff that results in more runoff into reservoirs earlier and at increased magnitudes and with increased frequency of flooding

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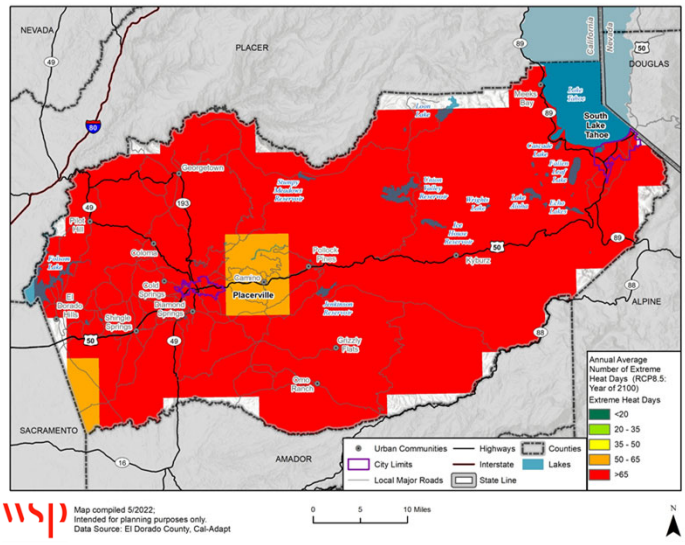
Extreme Heat

Annual Average Number of Extreme Heat Days



- Measured by #of Extreme Heat Days can exceed over 65 days/year by the end of the century
- More frequent and intense and longer heat waves
- Extreme heat days occur when daily max./min. temperature exceeds historical daily max./min. temperatures based on data from 1961-1991 from April to October
- Heat waves (durations of sustained extreme heat) lead to illness, and death, particularly among older, very young and other vulnerable populations
- Damage crops and kill livestock
- Increase likelihood of cascading hazards associated with drought, tree mortality, wildfire risk, public health hazards, and trigger for power outages

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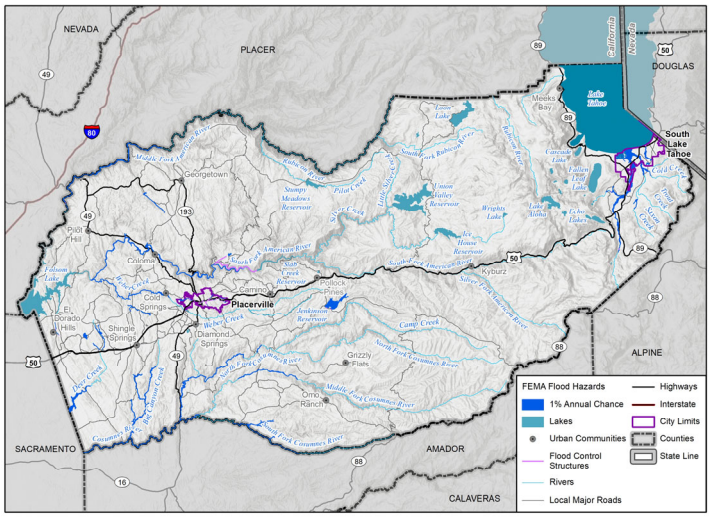
Flooding

El Dorado County FEMA 1% and 0.2% Annual Chance Floodplains

- Risk measured by the area flooded annually and
- maximum one day precipitation; SWE
- Loss of snowpack will lead to increased winter flows and flooding and reductions in warm-season flows
- Runoff to reservoirs is earlier or at an increased magnitude that could result in flooding
- Current infrastructure is not designed to capture increased runoff associated with climate change



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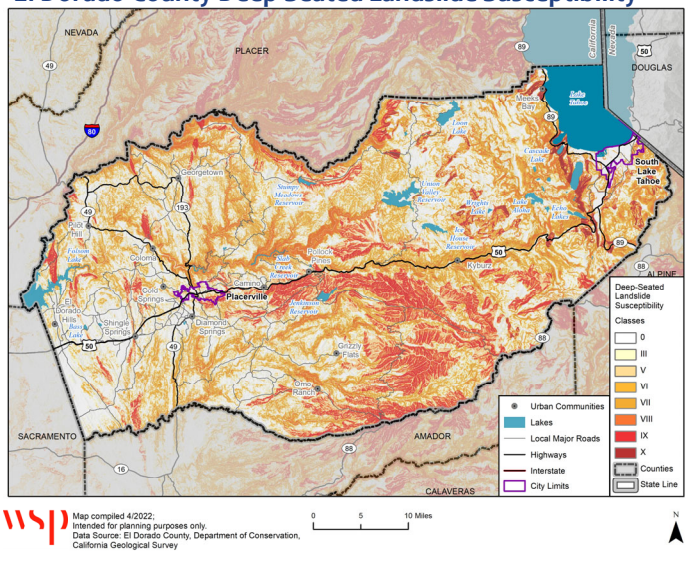
Landslide and Debris Flows

El Dorado County Deep-Seated Landslide Susceptibility



- Measured by the # of recorded landslides and debris flows and the likelihood of landslide susceptibility
- Varied landslide susceptibility across the County
- Slope instability and debris flow hazards are found in eastern El Dorado County
- Precipitation and wildfire events caused by climate change can lead to more flooding and runoff events resulting in more landslide events
- Historical and potential debris flow areas include Highway 50 east of Pollock Pines and State Route 49 north of Cool

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How prepared are you and your family for the impacts of climate change?

ⓘ Start presenting to display the poll results on this slide.

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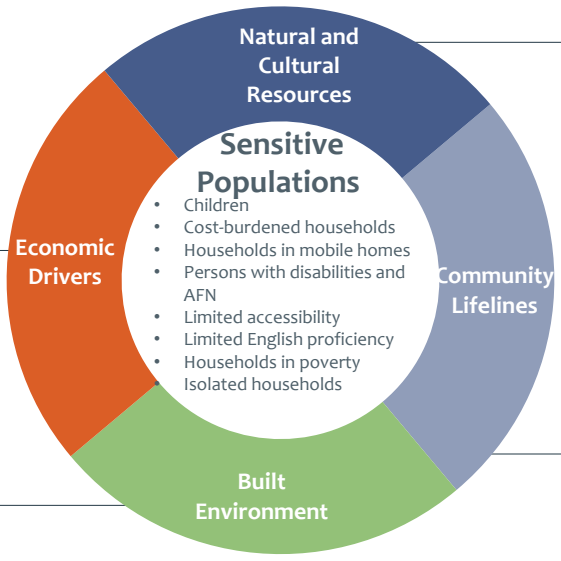
Phase 2: What Assets are vulnerable to these hazards?

- **Agriculture:** Nursery, Orchards, Vineyards, Timber Products
- **Construction:** Building Materials, Building Sector, Road Maintenance
- **Government Employment:** Police and Fire Protection
- **Information Technology:** Computer Programming
- **Leisure and Hospitality:** Resorts, Hotels/Motels, Casinos
- **Manufacturing:** Printing, Aviation
- **Professional and Business Services:** Consulting, Education, Finance, **Retail and Trade:** Food, Cars, Gas, Grocery, Home Centers
- **Tourism:** Farms, Fishing, Wineries
- **Transportation and Warehouse:** Freight Trucking, Transit Systems

- **Assessor Parcel Data:** Commercial, Industrial, Multi-Family Residential, Mobile Home Park, Residential, Miscellaneous, Unassessed



- **Water Resources:** Rivers, Creeks, Streams; Lakes; Wetlands; Riparian Areas
- **Forest Resources:** Mixed Conifer Forests, Oak Woodland, Grasslands
- **Parks and Open Space:** State Parks, County Open Space, Campgrounds, Hiking Trails, Beaches
- **Cultural and Historic Resources:** Historic Buildings and Districts, Tribal Places and Values

- **Essential Services:** Fire, Police, Shelters, Governmental Facilities
- **Population at Risk:** Public Health, Hospital, Adult Care Facility, Schools
- **Infrastructure:** Utilities: Electricity, Water Treatment, Sewer, Roads, Communication Infrastructure
- **Essential Business:** Fuel Stations, Grocery Stores, Large Employers

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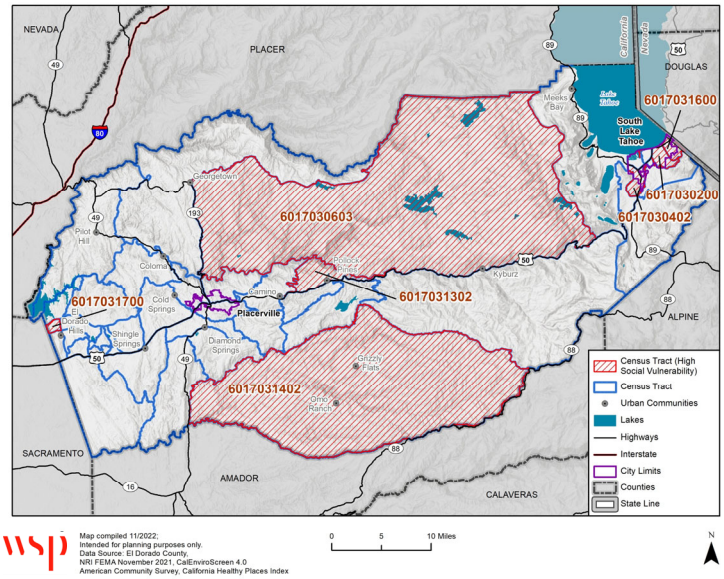
Phase 2: Who will be at most risk to climate change effects?



- Assessment of where the most sensitive and socially vulnerable populations live in the County
- Used US Census data from various sources to identify the most vulnerable census tracts
- Focuses the development of adaptation strategies to address the needs of those with the least access to resources to adapt
- Census tracts highlighted in red showed up **<u>at least twice</u>** in the different social vulnerability related data sources and tools

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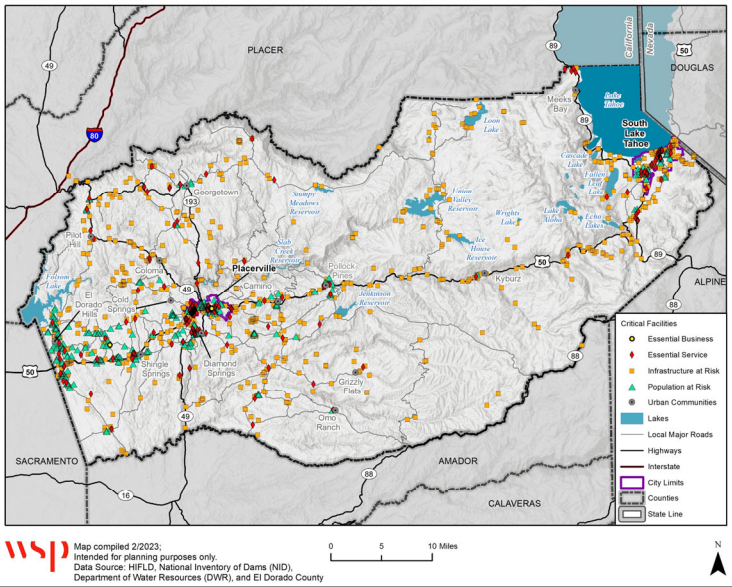
CVA Results: Which critical facilities will be affected?



County Asset Category	# Number of Facilities
Essential Service	315
Essential Business	3
Population at Risk	258
Infrastructure at Risk	698
Total	**1,274**

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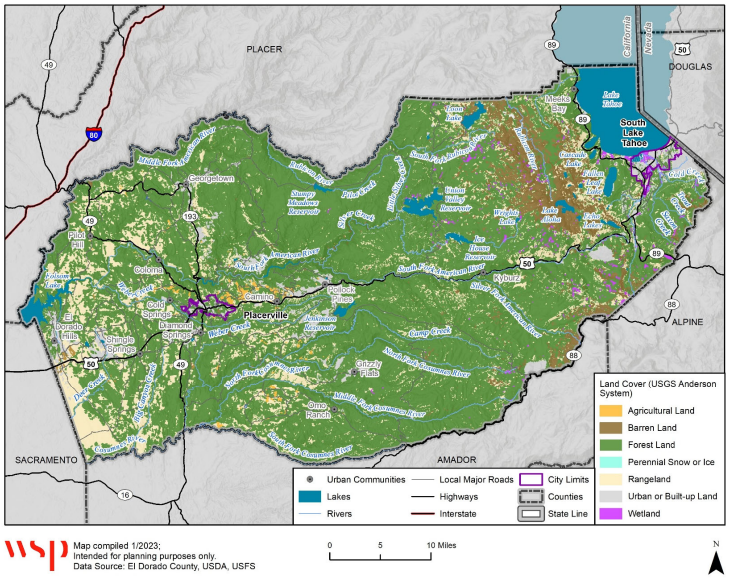
CVA Results: How will natural and cultural assets be affected?



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

- 460,000 acres include the Eldorado National Forest
  - 898,000 people visit annually and contribute $116.4 million to the local economy
- Changing conditions will alter the distribution of riparian vegetation and species
- Parks are prone to flooding, landslide, and wildfire risk; impacts are limited to temporary closures during repairs
- Shingle Springs Band of Miwok Indians and the Washoe Tribe traditional practices involve seasonal practices; these cultural heritages would be impacted

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What climate adaption strategies do you think will be most effective in El Dorado County?

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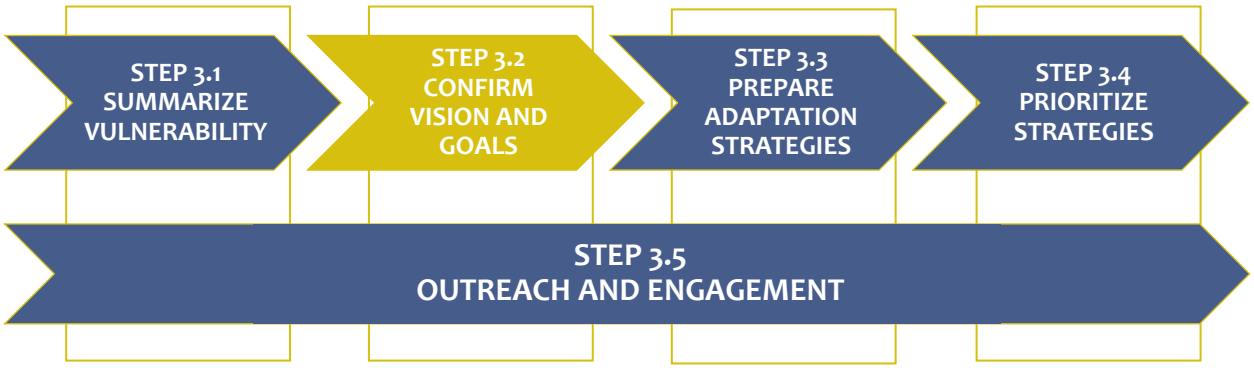
Adaptation Framework: Planning Process



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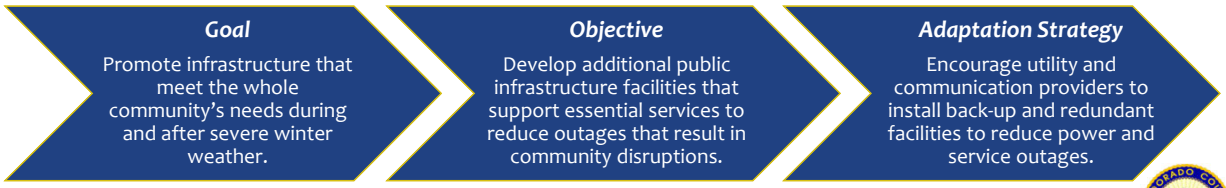
Phase 3: Adaptation Strategies

- Enhance resiliency to the natural hazards and support long-term adaptation
- Strengthen existing policies and programs already in place at the County



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Phase 3: Relationship to the Safety Element Update

Existing Topics

- Geologic and Seismic Hazards
- Fire Safety
- Flood Hazards
- Highway Safety
- Noise
- Hazardous Materials
- Air Quality
- Airport Safety

Proposed Topics

- Wildfire
- Geologic and Seismic
- Extreme Heat
- Drought
- Flooding
- Climate Change
- Tree Mortality
- Evacuation Planning

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Are there any proposed topics that are missing from the Safety Element Update?

ⓘ Start presenting to display the poll results on this slide.

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Adaptation Framework: Safety Element & LHMP Goals

Source	Goal
Safety Element	A coordinated approach to hazard and disaster response planning.
	Minimize fire hazards and risks in both wildland and developed areas.
	Minimize the threat to life and property from seismic and geologic hazards.
	Protect the residents of El Dorado County from flood hazards.
	Ensure that County residents are not subjected to noise beyond acceptable levels.
	Increase resiliency to natural hazards exacerbated by climate change by protecting lives and reducing damages and losses to property and impacts to public health and safety.
Local Hazard Mitigation Plan	Manage and control storm water runoff to prevent flooding, protect soils from erosion, prevent contamination of surface waters, and minimize impacts to exiting drainage infrastructure.
	Adequate and comprehensive emergency services, including fire protection, law enforcement, and emergency medical services.
	Conserve and protect the County's soil resources.
	Conserve, enhance, and manage water resources and protect their quality from degradation.

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Schedule and Next Steps

	Deliverable Description	Date
Climate Vulnerability Assessment	SEAC Review of CVA Report	Early March
	Virtual Public Workshop #1	March 9, 2023
	Prepare Final CVA Report	Late March
	Close CVA Public Survey	April 1, 2023
	Publish CVA Report	Mid-April
Safety Element	SEAC Draft Safety Element	Mid-May
	Review of SEAC Draft Safety Element	June
	SEAC Work Session #4	July
	Virtual Safety Element Public Workshop #1	TBD – Summer
	Revised SEAC Draft Safety Element	Late July/Early August
	Virtual Safety Element Public Workshop #2	TBD – Fall

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Stay Involved: How to continue to participate

- El Dorado County General Plan Safety Element webpage: https://www.edcgov.us/Government/longrangeplanning/Pages/General-Plan-Safety-Element-Update.aspx
- Sign up for project email notifications
- Take the Public Survey: https://bit.ly/3VIKiZO
- Attend a future virtual public workshop in Summer 2023

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Questions & Answers

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Safety Element Update Webpage:
https://www.edcgov.us/Government/longrangeplanning/Pages/General-Plan-Safety-Element-Update.aspx

Complete the Public Survey here: https://bit.ly/3VIKiZO

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