



## Chapter 5

# Health and Safety

Public Hearing Draft – June 2026

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## INTRODUCTION

The Health and Safety Element includes the County’s goals, policies, and actions to minimize health and safety hazards and increase resilience in Lake County. Section 65302(g) of the California Government Code requires that the Health and Safety Element contain background information to describe natural hazards likely to occur in the community; a summary of the county’s climate vulnerability analysis; an assessment of residential areas with evacuation constraints; and a comprehensive set of goals, policies, and actions to address hazard and safety concerns, including the effects of climate change.

The air, lands, and waters of Lake County hold profound cultural, historical, and spiritual significance to local Tribes, including those with ancestral and contemporary ties to Clear Lake and its surrounding watershed. The County acknowledges that effective health and safety planning must reflect collaborative relationships with Tribal governments to ensure that hazard mitigation, emergency preparedness, and climate adaptation efforts respect and protect Tribal Cultural Resources, ~~traditional~~ Tribal eEcological ~~\*K~~nowledge (TEK), and community well-being.

This element is supported by the following appendices:

- Lake County 2050 General Plan Health and Safety Element Background Report (**Appendix B**), which provides detailed information for each of the health and safety issue topics.
- Lake County Evacuation Study (**Appendix C**), which provides a broad assessment of the capacity of the transportation system during evacuation scenarios.
- Lake County Climate Vulnerability Analysis (**Appendix D**), which evaluates how people and key community assets may be affected by climate change.

## Lake County Hazard Mitigation Plan

Lake County’s Office of Emergency Services coordinates the local hazard mitigation plan development and maintenance in accordance with the federal Disaster Mitigation Act of 2000 and Federal Emergency Management Agency’s (FEMA’s) hazard mitigation assistance guidance. The Lake County Multi-Jurisdictional Hazard Mitigation Plan examines natural hazards of concern specific to Lake County including wildfire, earthquake, aquatic biological hazards, drought, flood, levee failure, dam failure, severe weather (extreme heat and storms), tree mortality, and volcanic activity. These hazards are analyzed through extensive collaboration between County departments, incorporated cities, Tribal Nations, fire districts, special districts, and other governmental and community partners, with significant public input gathered through surveys, public information sessions, and community meetings.

### ELEMENT CONTENTS

Introduction

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Goals, Policies, and  
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The current Lake County Multi-Jurisdictional Hazard Mitigation Plan, as approved by FEMA and adopted by the Board of Supervisors, is incorporated into this Safety Element by reference, as permitted by California Government Code Section 65302.6. The ~~complete plan is~~ County provides a link to the plan available online through the Office of Climate Resiliency: <https://www.lakecountyca.gov/1861/Lake-County-Hazard-Mitigation-Plan>. ~~The Additional details about the planning process are available online at the~~ Lake County Sheriff's Office of Emergency Services ~~website provides the current, approved, and adopted Hazard Mitigation Plan and all annexes on its website:~~ <https://lakecountyca.gov/924/OES-Plans>.

## Climate Vulnerability Analysis Summary

Changes to the global climate system are expected to affect future occurrences of natural hazards in and around Lake County. Many hazards are projected to become more frequent and intense in coming years and decades, and in some cases, these trends have already begun. Primary climate change stressors affecting Lake County include increasing temperatures and shifts in precipitation patterns. These primary climate stressors contribute to a range of secondary climate stressors, or hazards, affecting the county, including agriculture and forestry pests and diseases, drought, extreme temperatures, human health hazards, flooding, landslides, severe weather, and wildfire (including and wildfire smoke). According to *California's Fourth Climate Change Assessment*, Lake County can expect to experience various changes from climate-related hazard events. These changes will continue to affect the frequency, intensity, and distribution of hazards throughout the unincorporated areas of the county in the coming decades.

### What Is Vulnerability?

Vulnerability is the degree to which natural, built, and human systems are susceptible to harm from exposure to stresses associated with environmental and social change and from the absence of a capacity to adapt.

*Source: California Governor's Office of Emergency Services. 2020. California Adaptation Planning Guide. <https://resilientca.org/apg/>.*

Under California Government Code Section 65302(g), the Health and Safety Element is required to include a vulnerability assessment of how people, buildings, infrastructure, and other key community assets may be affected by climate change. Lake County prepared a comprehensive Climate Vulnerability Analysis based on guidance from the *California Adaptation Planning Guide* to evaluate how climate change hazards could harm the unincorporated areas of the County as well as the cities of Clearlake and Lakeport. The Climate Vulnerability Analysis (**Appendix D**) was prepared as part of the Lake County General Plan Update and Climate Adaptation Plan (2026). ~~The Climate Vulnerability Analysis~~ It incorporates the Pillars of Resilience, a framework adopted by the Lake County Office of Climate Resiliency to enhance community resilience. ~~The Climate Vulnerability Analysis~~ It evaluates the vulnerability of 91 different population groups and community assets to eight climate hazards, listed above. Each population or asset received a score of low, medium, or high vulnerability for each climate-related hazard.

The Climate Vulnerability Analysis found that wildfire and wildfire smoke are responsible for the greatest number of vulnerabilities countywide, followed by severe weather, flooding, and drought. The populations facing the greatest risk from climate change are households in poverty, people of color and immigrant

communities, people with high outdoor exposure, persons with chronic illnesses and/or disabilities, Tribal communities, and older adults (age 65 or older). Several key community assets were found to be highly vulnerable, such as the energy and communication infrastructure and services, homes, transportation infrastructure, and the agriculture industry, which can be disrupted by flooding, landslides, severe weather, and wildfire. This Health and Safety Element provides goals, policies, and actions to address populations and assets identified as highly vulnerable.

A full description of the vulnerability analysis process and detailed results can be found in the Climate Vulnerability Analysis Report (**Appendix D**).

### California's Climate Change Assessments

California's Climate Change Assessments are mandated by state law to occur at least every five years and provide the scientific foundation for understanding climate-related vulnerability throughout California. The Fourth Climate Change Assessment (2018) produced more than 50 reports covering topics such as extreme heat, wildfires, sea level rise, and sector-specific impacts. California's Fifth Climate Change Assessment, ~~is currently underway~~, led by the Governor's Office of Land Use and Climate Innovation, ~~is with findings expected in by mid- to late-2026~~.

## SAFETY ELEMENT TOPICS

### Emergency Preparedness and Response

Emergency preparedness and response in Lake County involves coordinated efforts between multiple agencies to address both natural and human-caused disasters. The Lake County Sheriff's Office of Emergency Services is the lead emergency management agency in the county. The County Office of Emergency Services maintains the Emergency Operations Center, monitors incidents 24/7 to ensure emergency public information is disseminated in a timely manner and supports response efforts through coordination and collaboration. Lake County Office of Emergency Services is responsible for County emergency management plans including the Emergency Operations Plan and annexes, exercising the Emergency Operations Plan and ensuring County staff are trained and ready to respond in the Emergency Operations Center and bringing training to the Operations Area. Lake County Office of Emergency Services conducts public outreach and education to increase public awareness of hazards and how to prepare. Additionally, in accordance with the California Emergency Services Act (California Government Code Section 8610), Lake County established the Lake County Disaster Council to develop and recommend emergency and mutual aid plans, agreements, ordinances, and resolutions to the Board of Supervisors. The Emergency Services Council consists of representatives from the Board of Supervisors, the Sheriff's Office/Office of Emergency Services, Emergency Services Directors from incorporated cities, the Health Services Director, fire district

### Operational Area Emergency Coordinators

The Lake County Operational Area Emergency Coordinators forum is a working group of representatives from cities, County departments, State agencies, special districts, utilities, and disaster response organizations that coordinate emergency response efforts, preparedness, training, and disaster recovery activities.

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chiefs, and representatives from organizations with official emergency responsibilities. The County Office of Emergency Services maintains the local Emergency Operations Plan and Annexes, the Multi-Jurisdictional Hazard Mitigation Plan, and other emergency management plans.

Fire protection services in the unincorporated areas of Lake County are provided by six fire protection districts—the Lake County Fire Protection District, Northshore Fire Protection District, Lakeport Fire Protection District, Kelseyville Fire Protection District, Lake Pillsbury Fire Department, and South Lake County Fire Protection District—with CAL FIRE and the U.S. Forest Service providing wildland fire protection on State and federal lands, as well as some unincorporated areas of the county. These districts conduct regular fire prevention inspections, provide educational programs, and maintain mutual aid agreements to enable resource sharing during large-scale emergencies. Additionally, North Coast Opportunities provides a Community Emergency Response Training (CERT) program, educating and training volunteers on disaster preparedness and response for hazards that may affect their area.

The Lake County Sheriff’s Office of Emergency Services maintains LakeCoAlerts and coordinates multiple alert and warning systems to alert residents about emergencies and provide critical information. The primary system is a countywide emergency alert system, which enables residents and businesses to receive alerts quickly through multiple communication methods about critical information for various situations, including evacuation orders and warnings, shelter in place orders, and urgent incident information. In addition to the primary alert system, Lake County uses multiple alert and warning mechanisms depending on the threat and time availability. These include the Integrated Public Alert and Warning System (iPAWs), California Health Alert Network, media broadcast alerts, social media notifications, and rapid field warnings using response personnel. The effectiveness of any warning depends on available time, initial notice of threat, time of day, language barriers, and receiving challenges for hearing and sight impaired.

### LakeCoAlerts

LakeCoAlerts serves as Lake County's primary emergency notification system, operated by the Lake County Sheriff's Office. The system enables residents and businesses to receive alerts for up to five locations through multiple methods including text messages, phone calls, emails, and TeleType /Telecommunication Devices for the Deaf. Alerts are based on the geographic location of the emergency and addresses provided by registrants and are also available in Spanish. The system is used for various situations including evacuation orders and advisories, shelter in place orders, and urgent incident information such as law enforcement activity or severe weather.

With advanced warning, evacuation can be effective in reducing injury and loss of life during a catastrophic event. Lake County uses the Genasys EVAC (<https://protect.genasys.com/>) platform (formerly known as Zonehaven) to manage evacuations during emergencies. The system divides the county into distinct zones, allowing emergency managers to issue targeted evacuation orders and communicate specific instructions to affected areas. These pre-established zones provide clear geographic boundaries to help coordinate evacuation. Additional evacuation zone information is available to the public through various methods, including the Ready.LakeCountyCA.gov website, the Lake County Sheriff's Office website at lakesheriff.com, and through mobile applications.

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With Clear Lake at its center and mountainous terrain throughout, Lake County has unique evacuation challenges. Additionally, there are very few roads traveling in and out of the county, creating congestion on evacuation routes during emergencies. As shown on **Figure HS-1**, potential evacuation routes through and out of the county include state highways and major county roads. The state highways are SR-20, which traverses east-west along Clear Lake's north shore; SR-29, which runs north-south through the county; SR-53 connecting Clearlake to Lower Lake; and SR-175 connecting Middletown to Lakeport via Cobb [and continuing southwest to Hopland, providing an additional route out of the county](#). These highways and several major county roads, including Scotts Valley Road, Butts Canyon Road, and Morgan Valley Road. These state and county roadways face potential disruption from various hazards, including flooding, wildfire, or geologic events that may block roadways or damage infrastructure.

Under California Government Code Section 65302(g)(5), as amended by Senate Bill 99 (2019), jurisdictions are required to identify residential developments in hazard areas that do not have at least two emergency evacuation routes as part of the Safety Element. This requirement ensures communities understand evacuation limitations and can plan accordingly for emergency response and future development. **Figure HS-2** shows unincorporated residential parcels with evacuation constraints, including those with fewer than two evacuation routes and those more than one mile from the nearest evacuation route. These constraints are most severe in the southeastern mountainous regions around Cobb and Middletown; northwestern forested areas; and along Clear Lake's shoreline communities of Nice, Lucerne, and parts of Clearlake Oaks. Occupants and residents of these parcels may be unable to evacuate quickly in the event of an emergency and are therefore more vulnerable to sudden or fast-spreading emergency conditions such as flash floods and wildfire.

Additional information on evacuation and evacuation-constrained residential areas can be found in **Appendix C**, Lake County Evacuation Study.

Figure HS-1 Potential Evacuation Routes

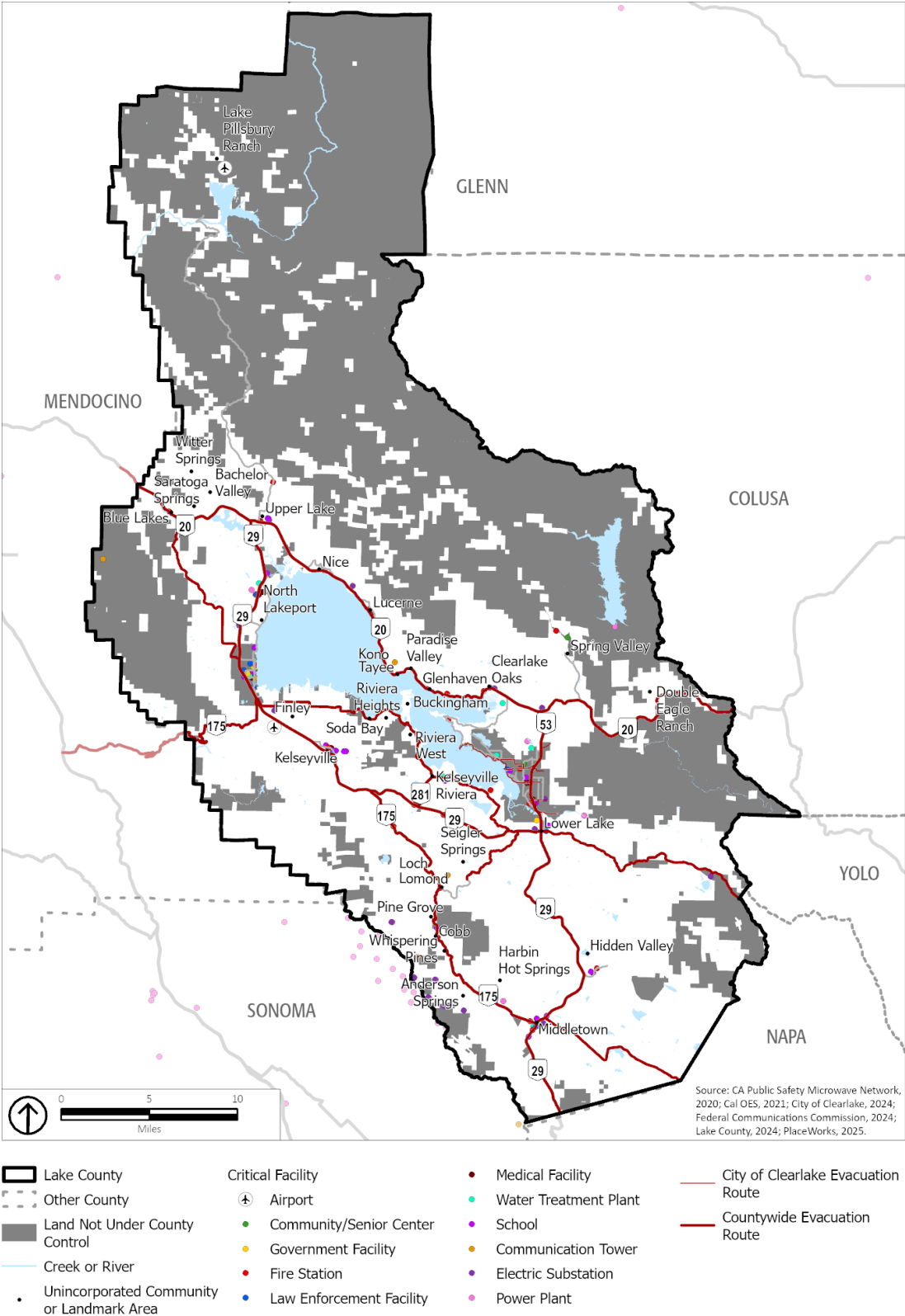
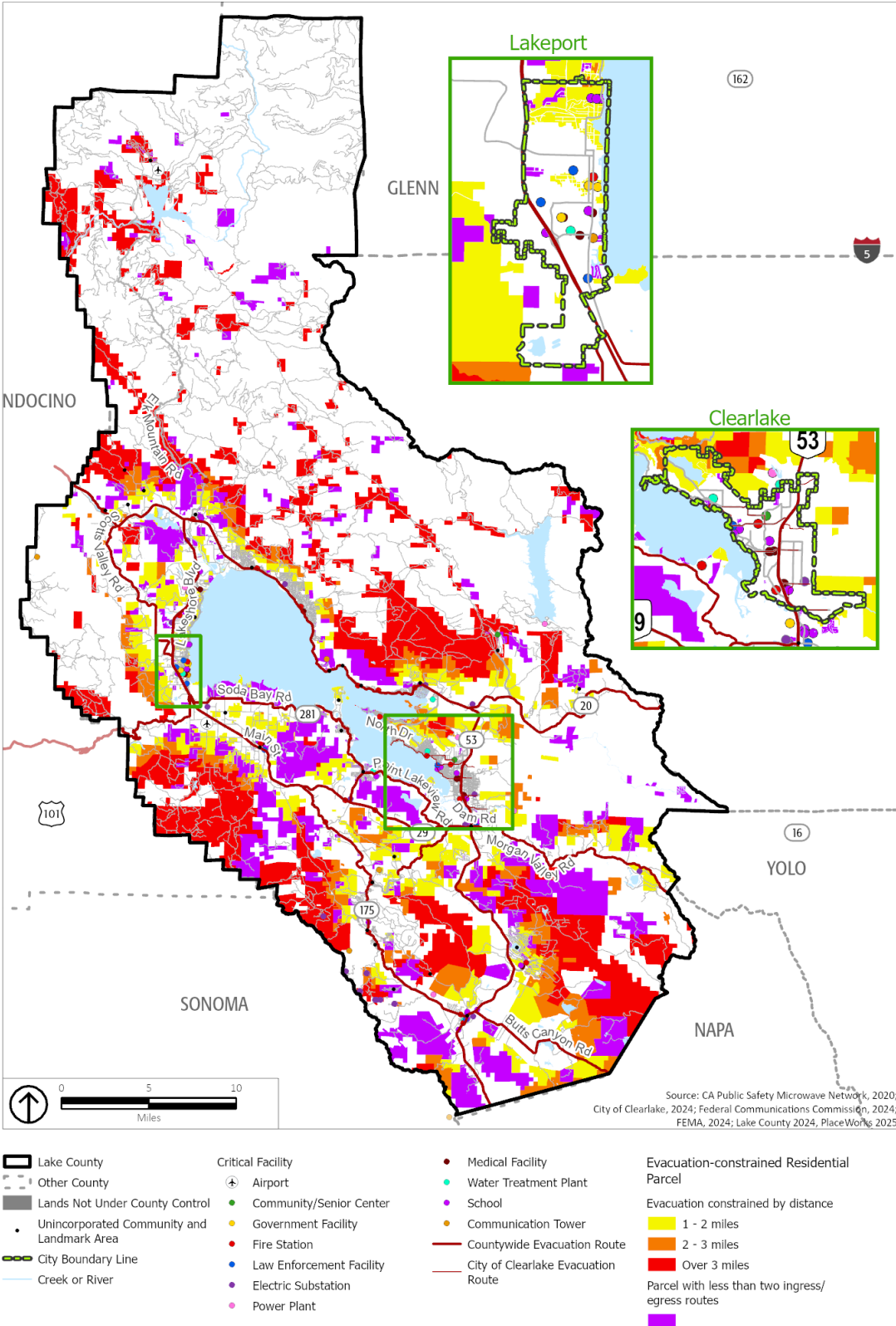


Figure HS-2 Evacuation Constrained Residential Parcels



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## Goals, Policies, and Actions

### Goal HS-1

To effectively prepare for and respond to natural and human-caused disasters, avoid the loss of life, and minimize the impacts to health, property, and Tribal Cultural Resources in the event of an emergency.

#### Policies

##### HS-1.1

~~Discourage~~ Require appropriate design and hazard mitigation provisions for proposed development in hazard-prone areas, ~~unless appropriate design and hazard mitigation provisions are included,~~ to prevent potential danger to the health and safety of people.

##### HS-1.2

Maintain current and effective mutual aid and Joint Power Agreements (JPA) for fire, police, medical response, hazardous materials, mass ~~care~~casualty, heavy rescue, or other functions as appropriate.

##### HS-1.3

Work with ~~other~~ federal, state, Tribal, and ~~other~~ local agencies to ensure the continued presence and operation of services essential to public health and safety during times of emergency, including maintaining emergency facilities and adequate response times.

#### Critical Facilities

Critical facilities are structures or infrastructure vital for community health, safety, and well-being, especially during or after hazard events. These can include community centers, fire stations, medical facilities, utility infrastructure, schools, and government facilities.

##### HS-1.4

Ensure that during and after natural catastrophes and emergency situations, the County can continue to provide essential emergency services by maintaining critical facilities in full operational condition through regular maintenance and upgrades to the highest feasible level of resilience.

##### HS-1.5

Discourage the location of new critical facilities and infrastructure within mapped hazard areas. When no feasible alternative location exists, require that new critical facilities be designed and constructed to withstand hazard events without loss of operation.

##### HS-1.6

Incorporate the Lake County Multi-Jurisdictional Hazard Mitigation Plan, as approved by the Federal Emergency Management Agency (~~FEMA~~), into this Health and Safety Element by reference, as permitted by California Government Code Section 65302.6.

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### HS-1.7

Maintain and regularly update the Emergency Operations Plan to meet current federal and state emergency requirements, conform with the California Standardized Emergency Management System (SEMS), and address current and anticipated community needs in the event of a major disaster or hazardous event.

### HS-1.8

Maintain, update, and practice interim disaster plans assuming that many bridges and highway overpasses will not be functional following a major earthquake due to collapse and that roads and highways in hillside areas will be blocked.

### HS-1.9

Ensure community education and outreach programs focus on all-hazards preparedness, promoting awareness of natural hazards, such as soil conditions, earthquakes, flooding, naturally occurring asbestos, fire hazards, and emergency procedures.

### HS-1.10

Prepare emergency preparedness materials in English, Spanish, and other languages to accommodate Access and Functional Needs and distribute to appropriate foreign language populations.

### HS-1.11

Collaborate with the Lake County Community Risk Reduction Authority and community-based organizations to evaluate and promote opportunities to preserve and improve the cost and quality of rental and homeowner property insurance for community members.

### HS-1.12

~~Coordinate with the cities, school districts, utility providers, Tribal governments, and community-based organizations to e~~Establish and maintain equitably located emergency shelters, community resilience centers, and alternate care sites throughout the county for natural disasters and other highly hazardous conditions, ensuring they are outside of areas at risk from hazards. Such facilities should be in easily accessible locations, available to all community members, served by alternate independent drinking water systems and cooling water systems for electric generators, and equipped with renewable energy generation ~~and~~, backup power supplies, and reliable communication systems.

### HS-1.13

Engage the food growers in emergency preparedness and resiliency planning to support ongoing agricultural operations and local food distribution during hazard events. Strategies may include increasing access to backup power, water, and storage and establishing relationships between local food growers to emergency preparedness and response networks, including community resilience centers.

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#### **HS-1.14**

Prioritize access to cooling and clean-air facilities for seniors, people with disabilities, and the outdoor agricultural workforce, who are uniquely vulnerable to extreme heat and wildfire smoke events. Community resilience centers shall provide bilingual services and multilingual materials and offer to connect residents to mental health support services.

#### **HS-1.13HS-1.15**

~~Collaborate~~ Coordinate with Tribal governments regarding emergency planning, hazard mitigation, emergency response, and evacuation-related improvements to protect or mitigate impacts to Tribal Cultural Resources and ensure the safety of all residents.

### **Actions**

#### **HS-1.a**

Maintain ongoing training and emergency response readiness by continuing disaster preparedness programs for County staff and conducting periodic exercises to test interdepartmental coordination, emergency communications, and system functionality.

#### **HS-1.b**

Encourage participation in Community Emergency Response Team (CERT) program training on an annual basis to prepare residents for disaster response.

#### **HS-1.c**

Review and update the County's Multi-Jurisdictional Hazard Mitigation Plan to maintain federal certification.

#### **HS-1.d**

Provide emergency preparedness education and tools to the community using the County website, social media, and other communication channels to share safety tips and readiness information.

#### **HS-1.e**

Conduct outreach to educate and inform the community about the community resilience centers, when established.

#### **HS-1.f**

Encourage and support community emergency preparedness drills and safety exercises to increase participation, build community support, and improve disaster readiness throughout the county. Encourage volunteer opportunities from community organizations that provide disaster related services.

#### **HS-1.g**

Work with other local agencies and Tribal governments, including cities within the county, to develop coordinated geographical information systems (GIS) planning for emergency response services.

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#### HS-1.h

Work with Lake Transit to provide transit services to and from resilience centers for older adults and people with disabilities in the county.

#### HS-1.i

Coordinate with local healthcare providers, hospitals, and clinics to establish protocols that ensure the continuity of essential medical services for residents during and after disasters, with particular attention to older adults, people with disabilities, and medically vulnerable populations.

#### HS-1.j

Incorporate critical facilities into contingency plans for disaster response and recovery and develop a prioritized program to retrofit or relocate vulnerable facilities to enhance their resilience to all hazards.

#### HS-1.k

Maintain a multi-platform emergency alert system to provide timely and accurate updates during emergencies. The system should include text messages, email, social media, radio, and other communication tools to ensure all residents receive critical information. When feasible, prioritize platforms that can be monitored and updated directly by County staff to ensure accuracy and trust.

#### HS-1.l

~~Continue to assess, and consider for possible implantation, the FLASHES (Firefighting Linked Auxiliary Supply Hydraulic Energy Storage) project options~~ to provide enhanced water storage capacity and supply renewable energy to communities as both firefighting and emergency resources (i.e., FLASHES project).

### Goal HS-2

To ensure safe and effective evacuation throughout Lake County during emergencies and disasters.

#### Policies:

##### HS-2.1

Implement and maintain public education efforts to promote awareness of evacuation zones, alerts, and evacuation procedures, including designated evacuation routes and plans, using multiple formats and languages to the greatest extent practicable.

##### HS-2.2

Require new residential development of 10 units or more in High and Very High Fire Hazard Severity Zones identified on **Figure HS-3** or in flood-prone areas identified on **Figure HS-56** to have access to at least two points of ingress and egress.

##### HS-2.3

Coordinate with Caltrans, emergency responders, and surrounding jurisdictions to properly design and maintain the accessibility, viability, and capacity of roads serving as potential evacuation routes.

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## HS-2.4

Coordinate staged evacuation procedures in flood-prone areas based on water levels to allow more orderly movement of lakefront and creek-adjacent communities.

## HS-2.5

In mapped hazard-prone areas where development is served by roads that do not meet minimum road standards for emergency equipment, or where it does not have at least two ingress/egress routes (refer to **Figure HS-2**), identify opportunities to improve evacuation, such as:

- Additional vehicle pullouts at key hillside locations.
- Limiting or restricting on-street parking at key locations.
- Leveraging existing alternative or secondary routes, including fire roads, trails, and easements.

## HS-2.5HS-2.6

When evaluating proposals for new subdivisions, ensure that road patterns ~~both~~ facilitate access for fire protection vehicles and establish secondary access routes ~~for~~ to support both emergency evacuation and recovery operations.

## HS-2.7

Maintain a program of standardized, secure re-entry procedures for all commercial agricultural operators, including state-licensed cannabis facilities, to safely secure highly regulated inventory, manage livestock, and protect critical infrastructure (i.e., Ag Pass program).

### **Actions:**

#### HS-2.a \*<sup>1</sup>

Regularly review and update emergency evacuation plans for all identified hazards, at least every five years, and following any major emergency event, to ensure alignment with current best management practices and evolving hazard conditions.

#### HS-2.b

Coordinate with the Lake County Transit Agency, school districts, community service organizations, and faith-based organizations to assist with evacuation efforts, to provide evacuation services to those with limited mobility or limited access to transportation, communication, and other lifeline resources.

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<sup>1</sup> General Plan policies and actions marked with an asterisk (\*) denote policies and actions that work to mitigate effects of cumulative development expected during the life of the General Plan, identified in the General Plan Environmental Impact Report (EIR).

### HS-2.c

Implement public awareness campaigns encouraging residents to limit the number of vehicles used during evacuations to reduce roadway congestion and encourage development of community-based assistance networks to connect neighbors who need transportation with those who have extra vehicle capacity.

### HS-2.d

Conduct targeted outreach to evacuation-constrained residential neighborhoods to promote preparation of household evacuation plans, go-bags, and shelter-in-place plans.

### HS-2.e

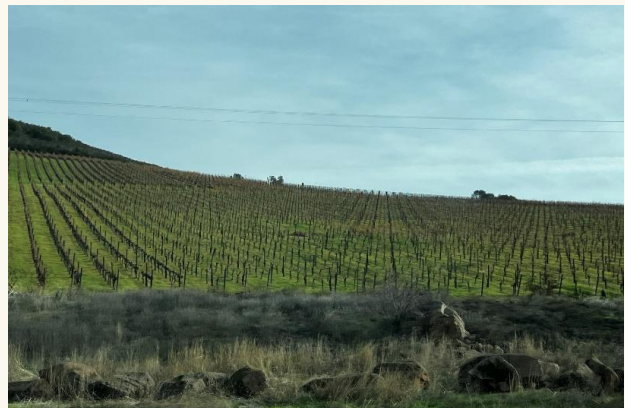
Develop public-private partnerships with local businesses and organizations to support evacuation operations, including fuel availability during emergencies.

### HS-2.f

Support regional coordination to develop traffic control strategies for different hazard scenarios, including procedures for initiating signal power backup and strategic placement of traffic control personnel during evacuation events.

## Agriculture and Forestry Pests and Diseases

Agriculture and forestry pests and diseases include invasive plant and animal species, insects, and pathogens that can harm Lake County's agricultural lands, forests, and natural ecosystems. Agricultural and forested lands are interspersed throughout the county, with agricultural lands primarily surrounding Clear Lake and creeks, and forested lands between the agricultural areas and the county boundaries. Much of the forested lands are within the Mendocino National Forest, Bureau of Land Management lands, or Boggs Mountain State Demonstration Forest. However, some forested lands are privately owned and include timber harvesting operations, especially in northern Lake County, and the Cobb Mountain community.



*Vineyards in Lake County.*

Pests and diseases can negatively affect the county's agricultural economy, which includes major crops like wine grapes and pears; its cannabis production; forest lands that support the timber industry; and natural areas supporting outdoor recreation and tourism across the county. Lake County's agricultural and forest ecosystems are closely connected because many agricultural areas border or intermingle with forested lands, particularly in the foothill regions. This proximity means pests and diseases can readily spread between managed agricultural lands and natural forest areas. Forestry pests and diseases, such as bark beetles, ambrosia beetles, sudden oak death, and other insect species, can severely damage tree

populations, leading to large-scale forest die-offs, which in turn affect wildlife habitat, carbon sequestration, and water availability. They also harm agriculture by degrading soil quality and competing with crops and can cause the restriction of movement of agricultural products.

On May 3, 2022, the Lake County Board of Supervisors declared a local state of emergency due to pervasive tree mortality after extreme drought conditions, groundwater depletion, and widespread multi-species bark beetle infestation. According to the United States Forest Service's annual aerial surveys, the estimated number of dead trees in Lake County increased from 3,000 in 2019 to over one million in 2024, with the estimated number of acres with tree mortality increasing from 1,000 to 69,000 acres over the same period.

The Lake County Department of Agriculture implements several key programs to monitor and respond to these threats. Through its Pest Detection Program, insect traps are maintained and monitored throughout the county, and the Pest Exclusion Program conducts inspections of nursery shipments and agricultural products to prevent the introduction of new pests. The Resource Conservation District also provides technical assistance to landowners for pest management and forest health projects.

Climate change is already affecting the timber and agricultural industries in Lake County. Rising temperatures are lengthening growing seasons, allowing pest populations to reproduce more per year and expand their ranges. Drought and extreme heat weaken trees and crops, making them more susceptible to pest infestation and disease. These changes create considerable economic challenges for the agriculture and timber industries.

## Goals, Policies, and Actions

### Goal HS-3

To ensure that forests and agricultural lands in the county can better adapt to agriculture and forestry pests and diseases. (New)

#### Policies

##### HS-3.1

Participate in collaborative efforts amongst growers, UC Cooperative Extension, Lake County Resource Conservation District, and agricultural companies to share data on pest outbreaks and trends to improve monitoring.

##### HS-3.2

In partnership with UC Cooperative Extension, the Lake County Resource Conservation District, tribal agencies, and other local agricultural agencies, support educational programs and technical assistance that

### What Is Regenerative Agriculture?

Regenerative agriculture refers to farming practices that focus on restoring and enhancing soil health and ecosystem functioning. This holistic approach to farming works to improve soil quality, increase biodiversity, enhance water retention, sequester carbon, and strengthen the health and vitality of farming systems. Common practices include minimizing soil disturbance, maintaining living root systems in soil, integrating livestock, maximizing crop diversity through rotations and cover crops, and reducing synthetic inputs.

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promote sustainable and adaptive farming practices. These efforts should help farmers and ranchers respond to climate change impacts such as extreme temperatures and drought, protect environmental health, and remain economically viable.

### HS-3.3

Promote regenerative agriculture techniques that improve soil health and ecosystem functioning, enhance groundwater recharge, and improve stormwater management.

### HS-3.4

Encourage the use of integrated pest management methods to reduce the exposure of farm workers and nearby communities to pesticides.

### HS-3.5

Promote polyculture, agroecology, and agroforestry systems that integrate trees, shrubs, and other crop varieties into agricultural landscapes to increase biodiversity and ecosystem health.

### HS-3.6

Prioritize fire-resistant, California native, and noninvasive plant species adapted to future climate conditions in habitat restoration projects.

### HS-3.7

~~Collaborate-Coordinate~~ with local Tribes to incorporate ~~traditional~~Tribal ~~e~~Ecological ~~k~~Knowledge and cultural heritage into the selection of native plant species for public landscaping, co-management of habitat restoration, and infrastructure projects.

### HS-3.8

Anticipate and accommodate ecosystem changes caused by climate change in land use planning and management practices, ensuring long-term ecological health, community safety, and climate resilience.

### HS-3.9

Implement pest and disease management practices that minimize impacts to Clear Lake's water quality and aquatic ecosystems, with special attention to preventing pesticide runoff and protecting native species from invasive aquatic pests.

### HS-3.10

Support educational outreach about the potential harm of transporting untreated firewood from areas outside the county into the county and promote efforts to minimize exposure and threat to forests from invasive insects and pests.

### ~~HS-3.10~~HS-3.11

~~Collaborate-Coordinate~~ with Tribal governments and property owners to encourage the preservation and continued availability of existing cultural plant communities.

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### ~~HS-3.11~~HS-3.12

Ensure that pest management, habitat restoration, soil treatment, and vegetation management, including mechanical vegetation control avoid impacts to Tribal Cultural Resources through early coordination with Tribes when work occurs in culturally sensitive areas.

#### **Actions**

##### **HS-3.a**

~~Collaborate~~ Coordinate with Tribal governments to develop educational programs that include ~~traditional Tribal e~~Ecological ~~k~~knowledge ~~(TEK)~~ relevant to culturally important plant species and traditional cultural practices.

##### **HS-3.b**

Partner with UC Cooperative Extension to develop demonstration sites showcasing climate-adapted crop varieties suited to Lake County's current and projected growing conditions. Include opportunities for Tribal participation in demonstration sites, training programs, and regenerative agriculture recognition, particularly where projects involve native or culturally important species.

##### **HS-3.c**

Coordinate with the Lake County Resource Conservation District to create a recognition program for local farms implementing regenerative agriculture practices that enhance soil health, water retention, and ecosystem resilience. The program should highlight farms that use integrated pest management strategies to minimize pesticide use and reduce exposure risks for farm workers and surrounding communities.

##### **HS-3.d**

Work with UC Cooperative Extension and Lake County Resource Conservation District to provide regular integrated pest management training sessions for growers to reduce pesticide use, improve early detection, and maintain effective pest control.

##### **HS-3.e**

Support and expand early detection and rapid response efforts led by the Lake County Department of Agriculture to prevent the introduction and spread of invasive species and plant diseases that threaten local agriculture and ecosystems.

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## Goal HS-4

To promote forest health and resilience through sustainable timber harvesting practices and active forest management that reduces vulnerability to pests, diseases, and wildfires.

### Policies

#### HS-4.1

Support sustainable forest management practices on lands under County jurisdiction ~~to~~ improve forest health, reduce pest vulnerability, and decrease wildfire fuel loads while maintaining ecological functions and protecting Tribal Cultural Resources.

#### HS-4.2

Collaborate with federal, Tribal, State, and regional partners to proactively manage forested lands to reduce fire risks and pest outbreaks.

#### HS-4.3

Collaborate with local Tribal governments to incorporate ~~traditional~~ Tribal ~~e~~Ecological ~~k~~Knowledge and cultural heritage into the management for forested lands throughout the county.

#### HS-4.4

Coordinate with timber companies, State agencies, and federal land managers to ensure timber harvest plans incorporate pest-resistant species selection and climate adaptation strategies and avoid or mitigate impacts to Tribal Cultural Resources.

#### HS-4.5

Protect economically productive forest lands and support the development of sustainable, locally based forest products industries.

#### HS-4.6

Recognize tree mortality from pests, disease, drought, and climate-driven stressors as a countywide public health, safety, and ecological emergency. The County shall support monitoring, rapid response, and long-term forest resilience strategies that account for both known and emerging threats to Lake County's oak woodlands, mixed conifer forests, and other tree communities over the planning horizon.

#### HS-4.7

Support reforestation, replanting, and native tree establishment efforts on public and private lands to offset carbon losses from tree mortality, restore ecosystem function, and reduce long-term wildfire and erosion risk. Prioritize species and planting strategies suited to projected climate conditions through 2050 and beyond.

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## **Actions**

### **HS-4.a**

Continue implementing the Tree Mortality Program as funding allows to coordinate pest management activities across jurisdictions, support early detection of forest pests, and develop rapid response protocols for emerging forest health issues.

### **HS-4.b**

Explore opportunities to establish facilities in Lake County that can process pest-damaged and fuel-reduction wood into usable products, supporting both forest health and local economic development. This includes pursuing grant opportunities, public-private partnerships, and coordination with local Tribal governments and timber operators.

### **HS-4.c**

Coordinate with CAL FIRE to ensure enforcement of the Forest Practice Act and associated rules, including regulations governing Less Than Three-Acre Conversion Exemptions under California Public Resources Code Section 4584(g) and California Code of Regulations Section 1104.1.

## **Air Quality**

Air quality in Lake County is influenced by its unique topography, local emission sources, and regional weather patterns. The county's mountainous terrain surrounding the Clear Lake basin can trap air pollutants during certain weather conditions, particularly during winter temperature inversions, which can lead to smog and poor air quality. While Lake County generally experiences good air quality compared to other California regions, certain areas and populations remain vulnerable to air quality impacts, especially during regional wildfires.

The Lake County Air Quality Management District is responsible for protecting public health by monitoring and regulating air pollution sources in the county. The district maintains air monitoring stations throughout the county, implements air quality regulations, and coordinates with the California Air Resources Board. The district also oversees programs to reduce emissions from various sources, including residential wood burning, agricultural burning, prescribed fire, and industrial operations.

Historically, Lake County has been designated as the only air district in the state to be in attainment with all state and federal ambient air quality standards. However, the county still faces air quality challenges. Transportation emissions from vehicles traveling along major highways, particularly during peak tourist seasons, contribute to localized air pollution. Agricultural activities like prescribed burning and equipment operations can also affect air quality during certain times of the year. Additionally, Lake County's air quality can be significantly impacted by wildfire smoke from regional wildfires and fires throughout California, which can travel hundreds of miles and degrade air quality for extended periods.

Climate change is expected to influence air quality conditions through increased temperatures. Higher temperatures can increase surface ozone concentrations, which is associated with reduced lung function, pneumonia, asthma, and cardiovascular diseases. During cooler months, near-ground particulate matter

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can become trapped in the air for longer periods due to temperature inversions, particularly in the valleys around Clear Lake. These conditions can disproportionately affect sensitive populations, including children, older adults, individuals with respiratory conditions, outdoor workers, and others who spend significant time outdoors.

## Goals, Policies, and Actions

### Goal HS-5

To reduce the generation of air pollutants and promote non-polluting activities to minimize impacts on human health and the economy of the county.

#### Policies

##### HS-5.1

Monitor new and existing air pollution point sources for compliance with County, State, and federal air quality regulations and standards.

##### HS-5.2

Require the use of the best available air pollution control technologies to maintain healthy air quality and high visibility standards, along with continuing compliance with State and federal ambient air quality standards.

##### HS-5.3

Require that all new roads and driveways for new projects that are adjacent to residences or sensitive receptors be paved or treated to reduce dust generation, consistent with development standards in the Lake County Zoning Ordinance. Unpaved roads, driveways, and parking areas should be considered for surfacing improvements when permits are granted for expanded use.

##### HS-5.4

Cooperate with local and regional agencies to develop an effective approach to regional air quality planning management and solicit and consider comments from local and regional agencies on proposed projects that may affect regional air quality. Continue to submit development proposals to the Lake County Air Quality Management District for review and comment, in compliance with the California Environmental Quality Act (CEQA), prior to consideration for approval by the County.

##### HS-5.5

Require developments to be located, designed, and constructed in a manner that minimizes air pollutant emissions through project design and implementation of feasible alternatives and amendments identified during development review.

##### HS-5.6 \*

Require project applicants of discretionary projects, as appropriate, to prepare technical assessments evaluating potential project construction and operation phase-related air quality impacts to Lake County for review and approval prior to project approval. Such evaluations shall be prepared in

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conformance with the Lake County Air Quality Management District (LCAQMD) or Bay Area Air District criteria and methodology in assessing air quality impacts. If air pollutants are found to have the potential to exceed the LCAQMD or Bay Area Air District thresholds of significance, ensure mitigation measures, such as those listed in the General Plan Environmental Impact Report, are incorporated to reduce air pollutant emissions during construction or operational activities.

#### **HS-5.7 \***

Require project applicants of discretionary projects on sites greater than one acre, within 1,000 feet of sensitive land uses (e.g., residences, schools, day care facilities, and nursing homes, etc.) as measured from the property line of the project, that utilize off-road equipment of 50 horsepower or more and that occur for more than 12 months of active construction (i.e., exclusive of interior renovations), to prepare a construction health risk assessment (HRA) in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment and Lake County Air Quality Management District (LCAQMD). If the construction HRA shows that the incremental cancer risk exceeds 10 in a million, the appropriate noncancer hazard index exceeds 1.0, or the thresholds as determined by the LCAQMD, require the project applicant to identify and demonstrate measures, such as those listed in the General Plan Environmental Impact Report, that can reduce potential cancer and noncancer risks to an acceptable level.

#### **HS-5.8 \***

Require project applicants of discretionary projects to prepare an operational health risk assessment (HRA) for industrial or warehousing land uses and commercial land uses that would generate substantial diesel truck travel (i.e., 100 diesel trucks or 40 or more trucks with diesel-powered transport refrigeration units per day based on the California Air Resources Board recommendations for siting new sensitive land uses) prior to project approval. The operational HRA shall be prepared in accordance with policies and procedures of the State Office of Environmental Health Hazard Assessment and the Lake County Air Quality Management District (LCAQMD). If the operational HRA shows that the incremental cancer risk exceeds 10 in a million, the appropriate noncancer hazard index exceeds 1.0; or the thresholds as determined by the LCAQMD, require the project applicant to identify and demonstrate measures, such as those listed in the General Plan Environmental Impact Report, that can reduce potential cancer and noncancer risks to an acceptable level.

#### **HS-5.9**

Require that any mitigation of air quality or greenhouse gas emission impacts from new projects occur on-site to the extent feasible to provide the greatest benefit to residents in the most-impacted neighboring communities. For mitigation that relies on offsets, require that the offsets be obtained from sources as near to the project site as possible or from sources that would improve air quality in an Equity Priority Area. If the project site is within or adjacent to an Equity Priority Area, require offsets/mitigation within that community unless determined infeasible by the County.

#### **HS-5.10 \***

Require dust-suppression measures for grading activities and asbestos-dust hazard mitigation plans for projects in areas of naturally occurring asbestos, including areas with serpentine soils, as part of the project approval process.

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#### HS-5.11 \*

Require that all projects requiring a grading permit or a building permit that would result in earth disturbance or would be in areas likely to contain naturally occurring asbestos to use approved asbestos-dust mitigation measures as required by the Lake County Air Quality Management District, California Air Resources Board, and the Lake County Community Development Department.

#### HS-5.12

Work with local agencies and community-based organizations to provide resources to help residents respond to poor air quality events (e.g., transportation to resilience centers ~~and supply~~, free distribution of N95 masks, and mobile clean-air resources deployed to rural and isolated communities).

#### HS-5.13

Support and secure funding for clean air facilities that provide refuge during poor air quality events. This includes incorporating air filtration systems in new and renovated resilience centers, supporting comparable private facilities, and prioritizing locations accessible to transit-dependent and vulnerable populations.

#### HS-5.14

Encourage the Lake County Air Quality Management District to work in partnership with fire districts through noticing of burn permits to balance natural resource needs (e.g., prescribed burning) with air quality needs.

#### HS-5.15

Require new potential sources of toxic air pollutants to demonstrate compliance with the permitting requirements of the Lake County Air Quality Management District and Section 44300 et. seq. of the California Health and Safety Code prior to project approval.

#### HS-5.16

Require discretionary residential projects with wood-burning devices to demonstrate compliance with the current Environmental Protection Agency certifications prior to project approval.

#### HS-5.17

Require new residential projects and other development with sensitive receptors be located 500 feet or more from stationary air pollutant sources.

#### HS-5.18

Incorporate ~~traditional Tribal~~ ~~e~~Ecological ~~k~~knowledge where appropriate, when planning air quality management projects.

#### HS-5.19

~~Include-Coordinate with~~ Tribal members and communities practicing outdoor cultural activities in Equity Priority Areas in air quality advisories, N95 mask distribution, and access to clean air facilities.

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#### HS-5.20

~~Include~~ **Coordinate with** Tribes ~~to develop and conduct~~ educational outreach programs on air quality hazards, hazard reduction strategies, and emergency response during poor air quality events.

#### HS-5.21

~~Work collaboratively~~ **Coordinate** with Tribal governments to protect Tribal Cultural Resources, including culturally important landscapes and traditional gathering areas from impacts of dust, smoke, pesticide, and other airborne pollutants.

### Actions

#### HS-5.a

Adopt a mandatory disclosure program by 2030, requiring all potential buyers and sellers of real property in all areas likely to contain naturally occurring asbestos, including areas underlain by serpentine soils, be provided with clear and accessible information regarding the potential presence of asbestos subject to sale. Information shall include potential for exposure from access roads and disturbance activities (e.g., landscaping) and shall also include typical mitigation measures and legal requirements.

#### HS-5.b

Require paving or treatment of roads in the development, subdivision, use permit, grading, or air quality permit process to reduce the dust impacts of new development on adjoining residences. Existing roads may be resurfaced through capital improvement plans, redevelopment plans, special assessment districts, County Service Area Zones of Benefit, or as part of existing County road maintenance activities.

#### HS-5.c

Require development projects (hospitals, schools, high-occupancy public facilities, and industrial/commercial facilities over 20,000 square feet) to mitigate air quality impacts from increased traffic. Mitigation may include, but is not limited to:

- Providing bicycle access and parking facilities,
- Providing preferential parking for high-occupancy vehicles and carpools, and
- Establishing telecommuting programs or satellite work centers.
- Installing electric vehicle charging infrastructure.

#### HS-5.d \*

Require development projects to implement dust suppression measures during excavation, grading, and site preparation activities. Measures shall be identified on construction site plans, and may include, but are not limited to:

- Site watering or application of dust suppressants,

- Phasing or extension of grading operations,
- Covering of stockpiles,
- Suspension of grading activities during high wind periods (typically winds greater than 25 miles per hour), and
- Revegetation of graded site.

#### HS-5.e

Develop an educational outreach program designed to educate the community on serpentine soils and dust mitigation.

#### HS-5.f

Establish a program to retrofit existing public buildings with high-efficiency air filtration systems, prioritizing facilities serving vulnerable populations.

#### HS-5.g

Work with Lake County Department of Agriculture and community partners to implement pesticide drift standards near places already overburdened by pesticide pollution, such as Equity Priority Areas.

## Airport Hazards

Lake County is served by two public-use airports: Lampson Field Airport, approximately three miles south of the Lakeport city center, and Gravelly Valley Airport near Lake Pillsbury in the Mendocino National Forest. Lampson Field airport is owned by Lake County and operated by the Public Works Department, primarily serving general aviation needs. Lampson Field features a single, 3,600-foot asphalt runway and hangars available for general aviation. Gravelly Valley Airport is a small public facility owned by the U.S. Forest Service, featuring a 2,240-foot dirt/gravel runway serving recreational users for Lake Pillsbury and the surrounding Mendocino National Forest as well as emergency services when needed.



*Lampson Field Airport south of Lakeport.*

The Lake County Airport Land Use Plan establishes policies and criteria for determining land use compatibility in the vicinity of Lampson Field Airport and establishes special requirements for development in “airport approach” zones. The Federal Aviation Administration provides oversight of airport operations and establishes standards for airport safety through Federal Aviation Regulations.

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According to National Transportation Safety Board records, five incidents have occurred at or near Lake County airports since 2000. These incidents include a 2003 deer strike during landing, a 2008 post-takeoff crash, a 2016 runway excursion, a 2017 hard landing at Gravelly Valley Airport, and a 2021 emergency landing due to engine trouble. None of these incidents resulted in fatalities.

Future development in Lake County, particularly in areas surrounding Lampson Field, will need to adhere to established airport land use compatibility criteria. The limited scale of operations at both airports suggests that airport hazard exposure will likely remain low, though regular monitoring of airport operations and periodic updates of relevant plans and regulations will help ensure continued safety for both aviation users and nearby communities.

## Goals, Policies, and Actions

### Goal HS-6

To avoid the loss of life, injury, or damage to property as a result of airport hazards.

#### Policies

##### HS-6.1

Require that development around the Lampson Field Airport be consistent with the safety policies and land use compatibility guidelines in the adopted Lake County Airport Land Use Compatibility Plan.

##### HS-6.2

Require that development within the airport approach and departure zones comply with Part 77 of the Federal Aviation Administration Regulations (FAA regulations that address objects affecting navigable airspace).

##### HS-6.3

Require new development within 3,000 feet of Lampson Field to investigate whether lead levels are present in soil above State and federal health standards. If levels are above State or federal health standards, require remedial actions to the satisfaction of the oversight agency prior to the issuance of building permits.

##### HS-6.4

Work collaboratively with Tribal governments to avoid or mitigate impacts to Tribal Cultural Resources from development project in the airport and surrounding area.

#### Actions

##### HS-6.a

Review all development projects within the vicinity of Lampson Field Airport for consistency with the Lake County Airport Land Use Compatibility Plan, ensuring projects comply with height restrictions, density requirements, and other safety criteria.

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## HS-6.b

Refer projects within the Airport Influence Area that require General Plan amendments, zoning changes, or other discretionary entitlements to the Airport Land Use Commission for review and consistency determination with the Airport Land Use Compatibility Plan.

## HS-6.c

Maintain current Geographic Information System (GIS) data showing airport safety zones, approach and departure corridors, and height restriction areas to assist in development review and long-range planning activities.

# Extreme Temperatures

Extreme temperatures include extended periods of both extreme heat and extreme cold that can significantly impact public health and infrastructure. California Public Resources Code Section 71410 defines extreme heat as increasing temperatures or other meteorological conditions that could result in any of the following: extreme heat wave, heat health event, or heat watch, warning, or advisory from the National Weather Service, the Office of Emergency Services, or a county health officer, or a proclamation of a state of emergency by the Governor pursuant to Section 8625 of the Government Code. According to Cal-Adapt, extreme heat days are defined as temperatures exceeding 98 percent of historical highs. An extreme heat day in Lake County occurs when temperatures reach at least 97.1 degrees Fahrenheit countywide, and warm nights occur when temperatures remain above 55.6 degrees, preventing relief from daytime heat. An extreme cold day in Lake County is when temperatures do not exceed 37.9 degrees.

### California Heat Action Plan

As defined by the California Heat Action Plan, extreme heat refers to temperatures that are well above normal conditions, and extreme heat events are consecutive unusually hot days and nights for a given area. The California Heat Action Plan outlines the State's all-of-government approach to reducing the health, economic, cultural, ecological, and social impacts of higher temperatures and heat waves.

Lake County's inland location and Mediterranean climate makes it particularly susceptible to extreme temperatures. Historically, the county experienced an average of 4 extreme heat days annually, but climate projections indicate this could increase to 20 days by midcentury and 42 days by late century. The county is already experiencing the effects of extreme heat. Between 2020 and 2022, the National Weather Service, Eureka office, issued 26 heat advisories and warnings for Lake County. Notable events included a prolonged heat wave in July of 2024 and September 2022 that prompted the opening of temporary Resilience Centers and public facility cooling options throughout the county.

The Lake County Sheriff's Office of Emergency Services maintains a Severe Weather: Extreme Heat Annex and a Severe Weather: Heavy Rains, Snow and Storms Annex to the Emergency Operations Plan dedicated to extreme temperature and weather events. The Office of Emergency Services coordinates response among all County departments, cities, special districts, and community groups during extreme temperature events, with Lake County Health Services providing public health recommendations and the

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Department of Social Services assisting vulnerable populations through programs like In-Home Supportive Services and Area Agency on Aging.

Extreme temperatures pose significant risks for vulnerable populations, including older adults, people with disabilities, and outdoor workers. During extreme heat events, increased demand for air conditioning can strain electrical systems and lead to power outages. Transportation infrastructure can also degrade under extreme heat. Rising temperatures affect water temperatures in lakes and streams, affecting water quality and aquatic ecosystems, while extreme cold can decrease electrical transmission efficiency and degrade infrastructure. Cold weather events often occur in conjunction with other severe weather conditions like storms and high winds, compounding their impacts and creating additional challenges for emergency response and infrastructure reliability. [See also the Agricultural Resources Element \(Goals 3 and 5\) for policies addressing farmworker housing, working conditions, and employer outreach.](#)

## Goals, Policies, and Actions

### Goal HS-7

To minimize risk of loss of life, injury, and property damage from extreme temperatures.

#### Policies

##### HS-7.1

Encourage and coordinate with Lake Transit Authority and other transit providers to increase shading and use of heat-mitigating materials on pedestrian walkways and at transit stops.

##### HS-7.2

Install and maintain drought-tolerant trees, shade structures, and landscaped areas, consistent with fire safe landscaping and defensible space requirements, as part of cooling strategies in public and private spaces, especially in Equity Priority Areas.

##### HS-7.3

Ensure that local businesses employing outdoor workers, [including farmworkers, agricultural laborers, forestry and landscaping workers](#), and those in spaces without air conditioning develop workplace heat [and wildfire smoke](#) safety protocols and provide training [and protective equipment](#) for employers and employees in heat-exposed occupations, as required by the California Office of Environmental Health Hazard Assessment.

##### HS-7.4

Ensure local businesses employing outdoor workers, [including farm workers, agricultural laborers, forestry and landscaping workers, and workers in unheated indoor spaces](#) develop extreme cold protocols for those employees directly exposed to cold temperatures.

##### HS-7.5

Pursue partnerships and funding opportunities with regional, State, Tribal, and federal agencies, as well as private and nonprofit sectors, to implement heat-effective resilience strategies.

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## HS-7.6

~~Collaborate~~ Coordinate with Tribal governments to develop cooling strategies using Tribal Ecological Knowledge practices.

### Actions

## HS-7.a

Seek funding to develop mobile providers of water, backup power, and medical supplies that can be deployed to vulnerable communities during extreme heat events, power outages, and other emergencies.

## HS-7.b

Retrofit existing critical infrastructure and public facilities to be resilient to extreme temperatures and severe weather events.

## HS-7.c

Develop an extreme heat action plan in collaboration with neighboring jurisdictions. The plan will include the establishment of community cooling centers, temperature thresholds for activating cooling centers, and targeted cooling strategies to protect outdoor workers and individuals experiencing homelessness.

## HS-7.d

Develop and implement multi-lingual public outreach campaigns to educate residents about the risks of extreme heat, effective heat-mitigation strategies, and available resources during heat events.

## HS-7.e

Pursue grant funding and other financial resources to support the development of County-owned ~~Co~~mmunity ~~R~~esilience ~~C~~enters designed to serve as multi-purpose facilities that provide cooling, warming, clean air, and evacuation shelter functions during extreme weather events, poor air quality days, and emergencies. Prioritize access for seniors, people with disabilities, and the outdoor agricultural workforce, who face heightened vulnerability to extreme heat, extreme cold, and smoke exposure.

## HS-7.f

Develop a local program that provides incentives or support for businesses and property owners to install cool roofs, reflective pavements, or energy-efficient cooling systems.

## HS-7.g

Support local community-based organization to implement a “neighbor check-in” program during extreme temperature events, prioritizing seniors, people with disabilities, those living alone, and Tribes.

## HS-7.h

Explore grant opportunities for nonprofits to pilot innovative community cooling strategies.

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## Fire Hazards

Lake County's Mediterranean climate, steep topography, Konocti wind events, and diverse vegetation create ideal wildfire conditions. Fire season historically occurred from early summer through late fall but has become a year-round threat due to rising temperatures, lower moisture content, and increased vegetation accumulation. Since 2015, approximately 70 percent of the county's landmass has burned, destroying nearly 1,950 housing units and creating recurring poor air quality from wildfire smoke.

Four primary factors influence Lake County's fire risk—fuel conditions, topography, weather conditions, and human actions. The county contains various fuel sources, from dead vegetation to standing trees and human-made structures. The terrain ranges from 1,300 feet near Clear Lake to 7,000 feet in the Mendocino National Forest, with broad ridges running north-south around Clear Lake that affect fire behavior. Weather conditions, particularly high temperatures and the Konocti Wind, and human activities are significant ignition sources.

~~The State designates lands into three responsibility areas: federal, state, and local. Lake County contains Local Responsibility Areas (LRAs) are; where municipalities manage fire protection. State Responsibility Areas (SRAs) are; where CAL FIRE or contracted fire districts provides fire management protection. Federal Responsibility Areas (FRAs) are; where federal agencies manage fire protection. Within the State Responsibility Areas and Local Responsibility Areas, the Office of the State Fire Marshal identifies Moderate, High, and Very High Fire Hazard Severity Zones based on fuel loading, slope, fire weather, and other relevant factors including areas where winds have been identified by the Office of the State Fire Marshal as a major cause of wildfire spread. The Local Responsibility Area Fire Hazard Severity Zones in Lake County were recommended by the Office of the State Fire Marsal and adopted by the Lake County Board of Supervisors in June 2025 without changes. Many unincorporated communities are in State Responsibility Areas, making CAL FIRE a critical partner in wildfire prevention and emergency response. As shown in Figure HS-3.~~

Lake County contains extensive Moderate, High, and Very High Fire Hazard Severity Zones ~~designated by the Office of the State Fire Marshal and CAL FIRE in State Responsibility Areas and Local Responsibility Areas.~~ The Very High and High Fire Hazard Severity Zones include remote mountainous areas and communities like Cobb, Clearlake Oaks, Spring Valley, and Lake Pillsbury. Very High Fire Hazard Severity Zones are concentrated in the mountainous northern region surrounding Lake Pillsbury Ranch, western portions near Blue Lakes and Upper Lake, areas surrounding Clear Lake, and the southern region encompassing Cobb Mountain and Middletown. Many critical facilities and infrastructure are located within or adjacent to these zones, including fire stations, community centers, major transportation corridors, and power infrastructure. ~~Many unincorporated communities are in State Responsibility Areas, making CAL FIRE a critical partner in wildfire prevention and emergency response.~~

~~These areas are also in the wildland-urban interface. The State's Wildfire-Urban Interface Code CAL FIRE defines the wildland-urban interface, in Chapter 49 of the California Fire Code, as a geographical area within a Fire Hazard Severity Zone in a State Responsibility Area or Local Responsibility Area, as established by Public Resources Code Sections 4201 through 4204 and Government Code Sections 51175~~

through 51189. Development in these areas must meet the applicable requirements of ~~California Public Resources Code Section 4291, State Responsibility Area and Very High Fire Hazard Severity Zone Fire Safe Regulations, the~~ California Building Code, ~~the~~ California Fire Code, and the California Wildland-Urban Interface Code (Title 24, Part 7) as adopted by the County, ~~Chapter 7A, and California Fire Code Chapter 49, in addition to among~~ other applicable State codes and regulations ~~regulations~~ for fire-resistant construction, defensible space, ingress and egress, water supply, and vegetation management.

In Lake County, CAL FIRE in the State Responsibility Area and fire districts in Local Responsibility Areas review development projects for compliance with these requirements prior to County issuance of land use and building permits. CAL FIRE also has the discretion to review residential subdivisions in these areas of 30 units or more for potential fire and evacuation risks.

~~In Lake County, the wildland-urban interface is also defined in the Lake County Community Wildfire Protection Plan as areas with dense housing adjacent to vegetation that can burn in a wildfire, and the wildland-urban intermix is defined as housing development interspersed in areas dominated by wildland vegetation subject to wildfire.~~ The County, Lake County Fire Chiefs' Association, Lake County Fire Safe Council, and Lake County Resource Conservation District collaborated to prepare the Community Wildfire Protection Plan in accordance with the federal Healthy Forest Restoration Act. The most recent version was updated in 2025, and it must be approved by a representative from CAL FIRE. The intent of this plan is to help the community prioritize wildfire risk reduction activities and access funds to carry them out. ~~As shown in Figure HS-4, the wildland-urban interface and intermix identified in the Community Wildfire Protection Plan overlap substantially with the CAL FIRE designated Fire Hazard Severity Zones. Figure HS-4 was developed using CAL FIRE's wildland urban interface designation, Mendocino National Forest's Proposed Wildland Urban Interface Defense Zones, Community-Identified High Risk and Project Areas, Community-Identified Values and Assets, and issues of topography, landscape characteristics, access, fire threat designation, and fire weather. Therefore, the figure shows both CAL FIRE and U.S. Forest Service zones. Figure HS-4 is provided in this Element for informational purposes only and references to the wildland urban interface in the policies and program below refer to the CAL FIRE definition of these areas.~~

**Figure HS-45** illustrates the perimeters of major wildfires that have affected Lake County since 1950. Recent major fires demonstrate the county's vulnerability, including the 2015 Valley Fire, which burned 76,067 acres; the 2015 Rocky Fire (69,438 acres); the 2016 Clayton Fire; and the 2018 Mendocino Complex fires, which burned 459,123 acres across four counties. Historically (1961 to 1990), an annual average of 7,849 acres burned in Lake County, but this is projected to increase by 35 percent to 10,632 acres by midcentury (2035 to 2064) and by 50 percent by late century (2070 to 2099).

No parts of the unincorporated county lack fire protection services. Fire protection services in the unincorporated county are adequately provided by six fire protection districts: Lake County Fire Protection District, Lakeport Fire Protection District, Northshore Fire Protection District, Kelseyville Fire Protection District, Lake Pillsbury Fire Department, and South Lake County Fire Protection District. These districts provide essential fire prevention, suppression, and emergency medical services across their jurisdictions. CAL FIRE provides wildland fire protection throughout State Responsibility Areas, which include much of the county's unincorporated areas and can extend into the Cities of Clearlake and Lakeport. The U.S. Forest Service manages fires services on federal lands, including the Mendocino National Forest.

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The Lake County Fire Safe Council coordinates with these agencies to implement protective measures identified in the Community Wildfire Protection Plan, with many of these projects incorporated as mitigation actions in the Multi-Jurisdictional Hazard Mitigation Plan. [See also the Agricultural Resources Element for policies addressing Ag Pass program coordination, livestock evacuation, and agricultural land protection from wildfire.](#)

Figure HS-3 Fire Hazard Severity Zones

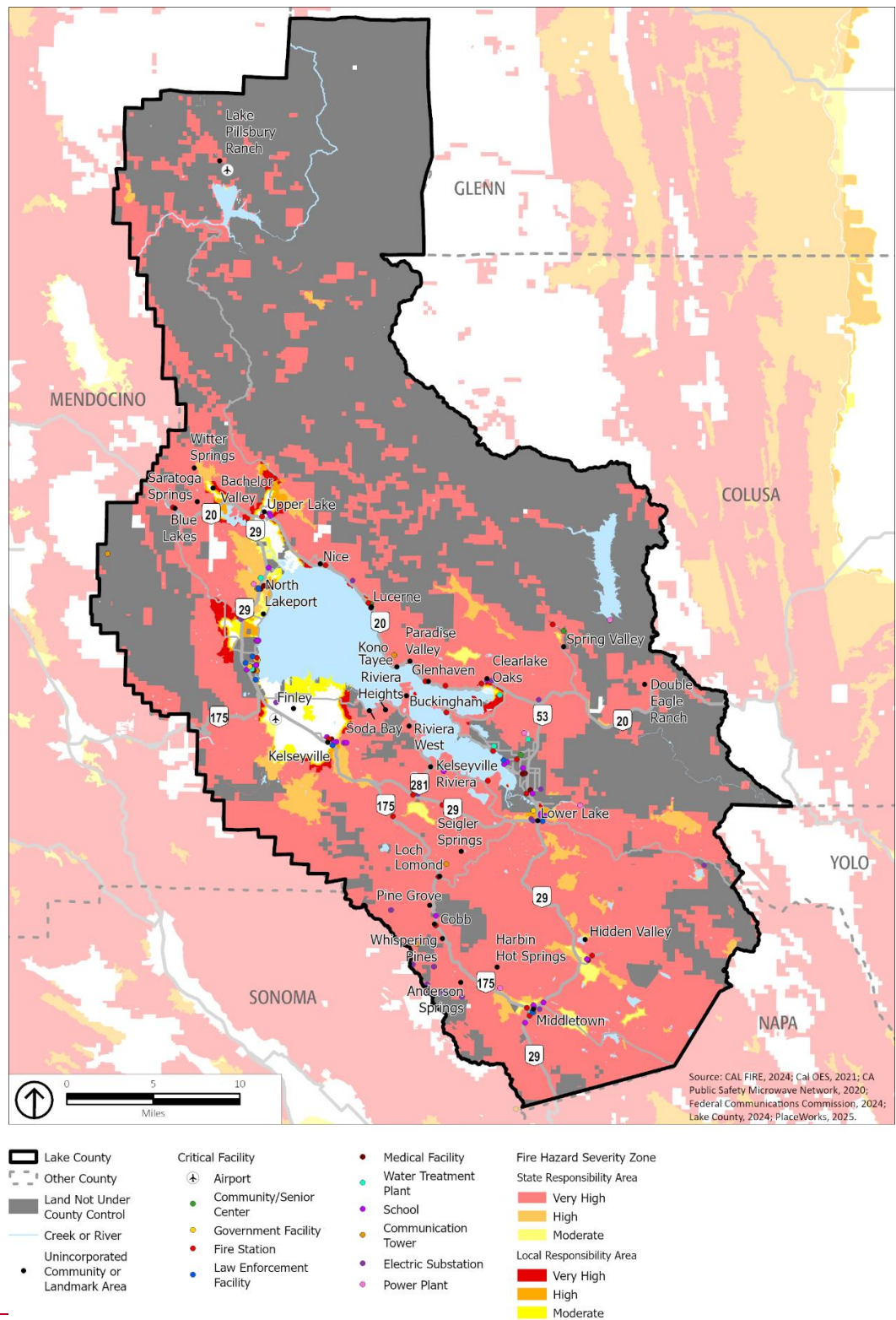


Figure HS-4  
Wildland-Urban Interface

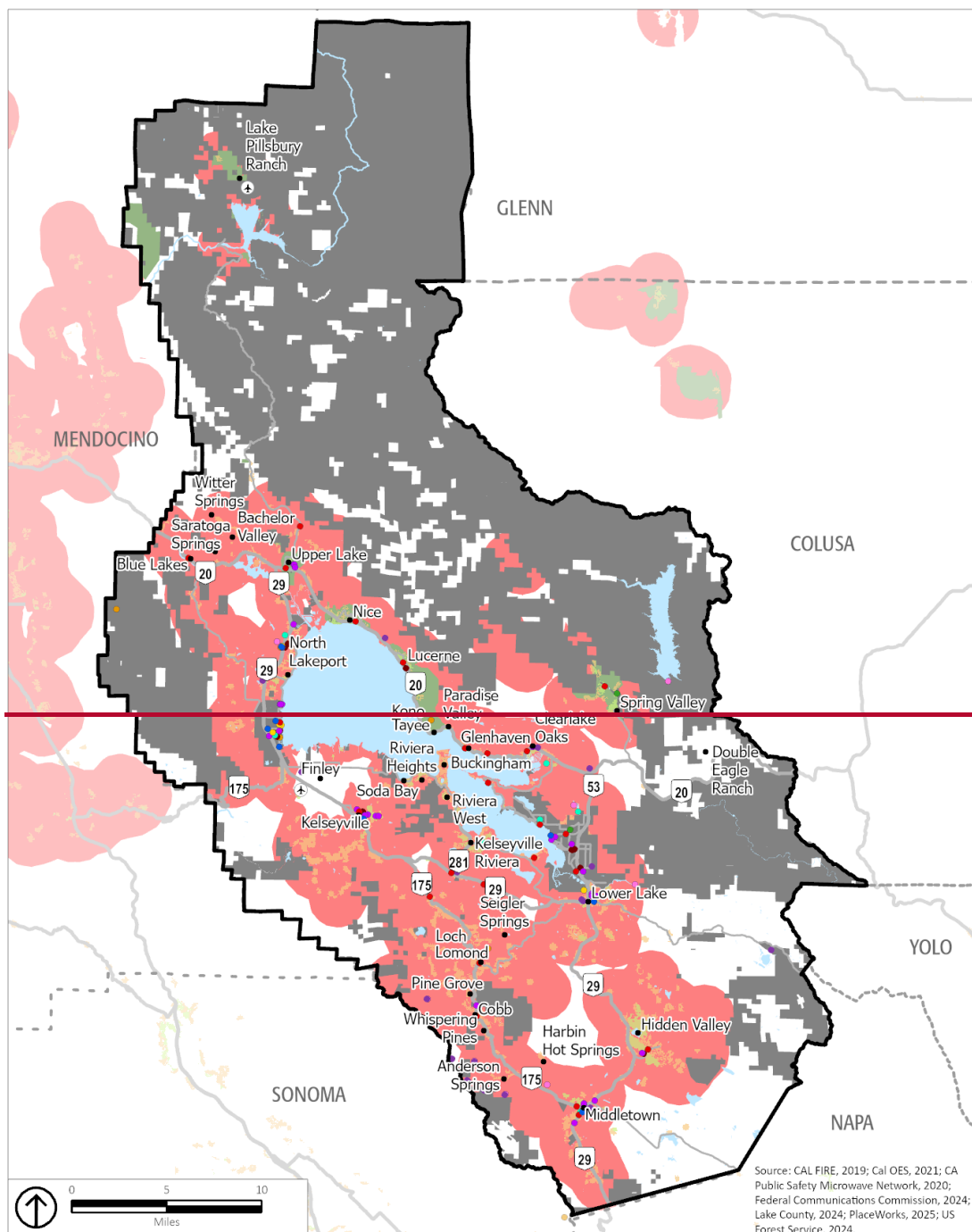
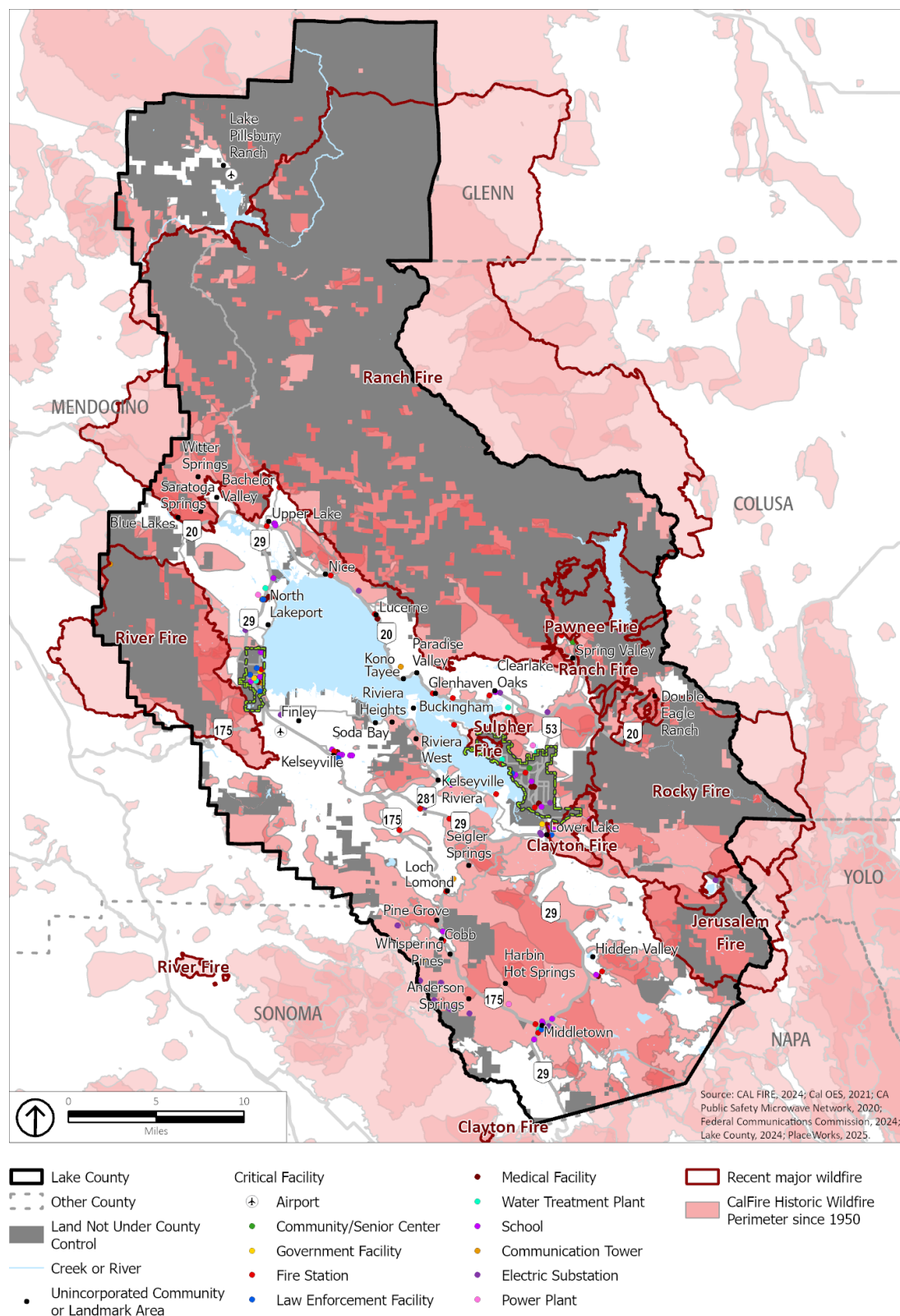


**Figure HS-5** ~~Figure HS-4~~ **Historic Wildfire Perimeters**



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## Goals, Policies, and Actions

### Goal HS-8

To avoid and minimize risk of loss of life, injury, and property damage from fire hazards.

#### Policies

##### HS-8.1

Support ongoing education for residents about wildfire risks, wildfire safety, and fire inspections.

##### HS-8.2

Consult with the appropriate fire service district or CAL FIRE in areas designated as Moderate, High, and Very High Fire Hazard Severity Zones for applicable fire regulations and design requirements prior to issuance of a building permit, grading permit, land use permit, or approval of subdivisions (refer to **Figure HS-3**).

##### HS-8.3

Require all development to comply with the California Building Standards Code, including the California Fire Code (Title 24, Part 9) and the California Wildland-Urban Interface Code (Title 24, Part 7), in addition to the County's codes and ordinances, as applicable.

##### HS-8.4 \*

Require that new structures within a Moderate, High, or Very High Fire Hazard Severity Zone comply with the California Building Code, California Fire Code, and California Wildland-Urban Interface Code, and other applicable State codes, and incorporate fire-resistant building materials and defensible space through site design, landscaping plans, maintenance, and other measures as appropriate.\*

##### HS-8.5 \*

Require projects in Moderate, High, and Very High Fire Hazard Severity Zones to include the following as required by State law in their project applications and site plans, at a minimum, in addition to any other applicable requirements in State and local codes and regulations:

- Site plan, planting plan, planting palette, and irrigation plan to reduce the risk of fire hazards and with consideration to site conditions, including slope, structures, and adjacencies.
- Identification of defensible space onsite, including defensible space within 100 feet of all structures, stricter vegetation management within 0 to 30 feet of a structure, and an ember resistant zone within 5 feet of all structures, as defined by California Government Code, Sections 51181 to 51189, and California Code of Regulations, Title 14, Division 1.5, Chapter 7, Subchapter 3.
- A long-term defensible space maintenance plan.
- More than one point of ingress and egress to improve evacuation, emergency response, and fire equipment access, and

- Adequate water infrastructure for water supply, flow, and pressure that meets or exceeds the standards in the California State Minimum Fire Safe Regulations.
- Class A roofing assembly materials for new and replacement roofs.
- Location and source of anticipated water supply to ensure adequate water supply for firefighting purposes. \*

for construction and adequacy of water flow and pressure, ingress/egress, and other measures to ensure adequate fire protection.

#### ~~HS-8.2~~HS-1.1

~~Coordinate with fire districts serving the unincorporated areas of the county to upgrade and retrofit existing development related to vegetation management around homes, adequacy of existing and future water supplies, fire flow tests, fire hydrants, routes or throughways for fire equipment access, clarity of addresses and street signs, and long-term maintenance in compliance with California Fire Safe Regulations, California Fire Code, and local ordinances for the populated areas of the county.~~

#### ~~HS-8.3~~

~~Require that new structures within a High or Very High Fire Hazard Severity Zone or wildland-urban interface comply with California Building Code Chapter 7A, California Fire Code, and California Fire Safe Regulations, or equivalent standards, to ensure fire-resistant building materials and landscaping.~~

#### ~~HS-8.4~~HS-8.6 \*

Limit new development in the High or Very High Fire Hazard Severity Zones ~~or wildland-urban interface identified by CAL FIRE~~ (see **Figure HS-3** and **Figure HS-4**). If development is proposed in these zones, require review and approval by the Community Development Department and appropriate fire service district prior to the issuance of development permits for proposed development projects and conceptual landscaping plans and ensure compliance with applicable local and State fire protection, risk reduction and access (ingress/egress and evacuation) regulations, including this Health and Safety Element. Plans for proposed development in such areas shall include, at a minimum:

Site plan, planting plan, planting palette, and irrigation plan to reduce the risk of fire hazards and with consideration to site conditions, including slope, structures, and adjacencies.

Development and maintenance of defensible space, including defensible space within 100 feet of all structures, stricter vegetation management within 0 to 30 feet of a structure, and an ember resistant zone within 5 feet of all structures, as defined by California Government Code, Sections 51181 to 51189, and California Code of Regulations, Title 14, Division 1.5, Chapter 7, Subchapter 3.

More than one point of ingress and egress to improve evacuation, emergency response, and fire equipment access, and

Adequate water infrastructure for water supply and fire flow that meets or exceeds the standards in the California State Minimum Fire Safe Regulations.

Glass A roofing assembly materials for new and replacement roofs.

~~Location and source of anticipated water supply to ensure adequate water supply for firefighting purposes.~~

~~Require new construction to install alternative water storage for interior sprinkler systems if new construction is connected to a public water system.~~

~~\*~~

#### ~~HS-8.5~~ **HS-8.7 \***

~~Require discretionary project applicants in High or Very High Fire Hazard Severity Zones (see Figure HS-3) to prepare fire protection plans consistent with State requirements. Fire protection plans shall include in Chapter 49 of the California Fire Code, including a risk analysis, fire response capabilities, fire safety requirements (defensible space, infrastructure, and building ignition resistance), fire hazard mitigation measures and design considerations for non-conforming fuel modifications, wildfire education maintenance and limitations, and evacuation plans, in addition to any other components required by State codes and regulations or as requested by the County or a fire protection district, for new development in High or Very High Fire Hazard Severity Zones \* or wildland urban interface designated by the County and CAL FIRE (see Figure HS-3 and Figure HS-4).~~

#### ~~HS-8.6-~~

~~Require new developments and major remodels or renovations to comply with the California Building Code, California Fire Code, and local adopted ordinances for construction and adequacy of water flow and pressure, ingress/egress, and other measures to ensure adequate fire protection.~~

#### HS-8.8

Coordinate with fire protection districts serving the unincorporated county to minimize risks to existing development by identifying existing non-conforming development and assisting property owners to upgrade and retrofit existing development to meet current State and County fire safe regulations related to vegetation management around homes, adequacy of existing and future water supplies, fire flow tests, fire hydrants, routes or throughways for fire equipment access, clarity of building and street signages, and long-term maintenance in compliance with State and local codes and ordinances for the populated areas of the unincorporated county.

~~\*~~

~~Work with fire protection districts and departments to minimize risks to existing development by identifying existing non-conforming development and assisting property owners to upgrade buildings and properties to current fire safe standards, in terms of road standards, vegetative hazards, and street and building signage, requiring all development to meet or exceed State Responsibility Area and Very High Fire Hazard Severity Zone Fire Safe Regulations.~~

#### ~~HS-8.7~~ **HS-8.9**

~~In Moderate, High, and Very High Fire Hazard Severity Zones, R~~require the establishment and long-term maintenance of defensible space around all structures in accordance with the Building Code, Wildland-Urban Interface Code, California Public Resources Code Section 4291, or other and applicable regulations established by CAL FIRE, including requirements for Zone 0 (0 to 5 feet), Zone 1

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(5 to 30 feet), and Zone 2 (30 to 100 feet) where applicable. ~~\*In High or Very High Fire Hazard Severity Zones, the ember-resistant Zone 0 must be maintained free of combustible materials such as plants, mulch, wood piles, and flammable fencing.~~

#### ~~HS-8.8~~HS-8.10

Actively support fuel modification and reduction programs on public and private lands throughout the county.

#### ~~HS-8.9~~HS-8.11

Locate and manage parks, golf courses, utility corridors, roads, and greenbelts so that they can serve a double function as fuel breaks.

#### ~~HS-8.10~~HS-8.12

Continue to coordinate with CAL FIRE and fire districts to maintain existing fuel breaks and emergency access routes for effective fire suppression.

#### ~~HS-8.11~~HS-8.13 \*

Require existing public and private roadways in Moderate, High, and Very High Fire Hazard Severity Zones ~~for the wildland-urban interface~~ be maintained to comply with street signage and vegetation management fire safety regulations, including vegetation management fuel reduction within 50 feet of roadways on either side. ~~.\*~~

#### ~~HS-8.12~~HS-8.14

Require the use of fire-smart landscaping in public and private developments.

#### ~~HS-8.15~~

Develop and update County programs as needed to ensure recovery and redevelopment after a large wild fire and that reduce future vulnerabilities to fire hazard risks through site preparation, redevelopment layout design, fire-resistant landscape planning, and home hardening building design and materials.

#### ~~HS-8.13~~HS-8.16

Collaborate with Pacific Gas & Electric Company to underground electrical transmission infrastructure throughout the county, prioritizing high-voltage transmission lines in High or Very High Fire Hazard Severity Zones.

#### ~~HS-8.14~~HS-8.17

Coordinate with fire districts and departments to support fire prevention, public education, early detection programs, and property inspections to identify and avoid fire hazards.

#### ~~HS-8.18~~

Collaborate with the Bureau of Land Management, U.S. Forest Service, and other federal agencies to establish and maintain fuel breaks on federal lands in the county.

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**~~HS-8.15~~HS-8.19**

Support programs for ongoing staff training focused on understanding fire hazard risks posed by older structures and infrastructure, including risk reduction activities.

**~~HS-8.16~~HS-8.20**

Coordinate with water providers to maintain and enhance water supply infrastructure to ensure adequate, long-term water supplies for existing and future daily demands and firefighting suppression requirements.

**~~HS-8.17~~HS-8.21**

Support measures that help firefighting crews and emergency response teams respond to fire hazards or work under low-visibility conditions, such as high-visibility signage for streets and building addresses that meets or exceeds the standards in the California Fire Safe Regulations.

**~~HS-8.18~~HS-8.22**

Encourage installation of electronic evacuation wayfinding signage and barriers to direct evacuees clearly and prevent congestion at critical junctions.

**~~HS-8.19~~HS-8.23**

~~Work collaboratively~~**Coordinate** with Tribal governments to avoid or mitigate impacts to Tribal Cultural Resources when developing fire hazard reduction programs.

**~~HS-8.20~~HS-8.24**

~~Collaborate~~**Coordinate** with Tribal governments to incorporate Tribal Ecological Knowledge into fire hazard reduction programs.

**Actions**

**HS-8.a**

Coordinate with fire districts and **fire** departments to review all development plans and subdivision maps and provide recommendations for fire prevention and protection, including but not limited to safe circulation, ingress and egress, sprinkler requirements, water storage and flows, and water pressure requirements.

**HS-8.b**

Maintain a current, online version of CAL FIRE's Office of the State Fire Marshal Fire Hazard Severity Zone maps.

**HS-8.c**

Prepare and implement plans to repair and maintain County-owned roadways as needed to meet current standards and encourage private property owners to do the same, to the extent feasible and given the absence of other site constraints. These standards include road standards for evacuation and emergency vehicle access, vegetation clearance, and other requirements of the California Fire Safe Regulations.

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#### HS-8.d

Identify and improve areas lacking adequate water service for firefighting, including capacity for peak load under a reasonable worst-case wildfire scenario determined by the appropriate fire service district.

#### HS-8.e

Seek designation as a Fire Risk Reduction Community through CAL FIRE and Fire Wise Communities through the National Fire Protection Association.

#### HS-8.f

Consider the development of a countywide ridgetop fuel break program in consultation with local Tribal governments for the protection of Tribal Cultural Resources.

#### HS-8.g

Coordinate with fire districts, fire departments, and community-based organizations to identify incentives to support and encourage private landowners to invest in fire-hardening infrastructure improvements.

#### HS-8.h

Coordinate with fire districts and the State Fire Marshal to develop and disseminate guidance on lithium-ion battery fire risks, including safe storage, charging, and disposal of batteries used in electric vehicles, e-bikes, e-scooters, and residential energy storage systems.

#### HS-8.i

Investigate options to incentivize and collaborate with agricultural operators to install dry hydrants and standard CAL FIRE-compatible drafting connections on existing agricultural ponds and water storage tanks, integrating private agricultural infrastructure into the local fire suppression network as community defense assets.

#### HS-8.j

Collaborate with fire districts, fire departments, private landowners, and interested parties to identify barriers created by conflicting County codes, programs, ordinances, or processes to meeting defensible space and fuel break requirements on private property and revise County codes, programs, ordinances, or processes if needed and as feasible, to remove County-related barriers.

## Flood and Inundation Hazards

Flooding occurs when normally dry land is covered by water. In Lake County, flooding primarily happens during the winter and spring months (November through April) when stream systems and Clear Lake swell with heavy rainfall. The county's primary source of flooding is Clear Lake and its tributary streams, particularly Scotts Creek, Cole Creek, Kelsey Creek, and Adobe Creek. These creeks not only experience significant flooding themselves but also contribute to high lake stages and lakeshore flooding. Clear Lake's limited outlet capacity at Cache Creek, restricted by the natural Grigsby Riffle rock formation, can prolong flood conditions along the lakeshore for up to 90 days.

As shown on **Figure HS-56**, flood hazard zones in Lake County primarily follow Clear Lake's shoreline and the county's major waterways. The California Department of Water Resources Awareness 100-year flood zone and Federal Emergency Management Agency (FEMA) 100-year flood zone (area with a one percent annual chance of flooding) encompass areas immediately adjacent to Clear Lake, particularly around Nice, Lucerne, Clearlake Oaks, and the Clearlake Riviera area. These zones also follow creek corridors, most notably along the waterways near Upper Lake through Middletown, and in the Coyote Valley area. The Federal Emergency Management Agency FEMA 500-year flood zone extends beyond these areas into broader low-lying regions, including parts of Kelseyville and areas east of the North Lake Communities area.

Dam inundation poses an additional flood risk in Lake County. As shown in **Figure HS-67**, the county contains several significant dams, including Cache Creek Dam, Indian Valley Dam, and Highland Creek Dam. While dam failure is extremely rare, areas downstream of dam structures could experience severe flooding in the unlikely event of a failure. These areas of inundation include parts of the Kelseyville area, Lower Lake area, and East County Communities.

In Lake County, flood control ~~and involves multiple agencies and property owners. Levees in Scotts Valley are privately owned and maintained. The Putah Creek levees are owned and maintained by the Hidden Valley Lake Homeowners Association. The Upper Lake levees are owned by the U.S. Army Corps of Engineers and the State of California, while the Lake County Water Resources Department is contracted with the State to perform maintenance on the State-owned levees. The Army Corps of Engineers does not actively maintain its levees in the county, which has contributed to the Watershed Protection District pursuing property buy-back funding in the Middle Creek Restoration Area management is primarily overseen by the Lake County Watershed Protection District, which maintains approximately 10.5 miles of levees along Middle Creek, Alley Creek, Clover Creek, and the Clover Creek Diversion Channel. The U.S. Army Corps of Engineers maintains one levee (Maintenance Area 17) in the county. These various~~

### Special Flood Hazard Area (SFHA)

A Special Flood Hazard Area is the land subject to inundation by the 100-year flood (a flood with a one percent chance of being equaled or exceeded in any given year). SFHAs are designated by FEMA on Flood Insurance Rate Maps (FIRMs) as Zone A, AO, AE, AH, A1-A30, and A99. Properties located within an SFHA are subject to the National Flood Insurance Program's minimum floodplain management regulations and the mandatory flood insurance purchase requirement. In Lake County, compliance with SFHA regulations is also required under the County Code as a condition of NFIP participation.

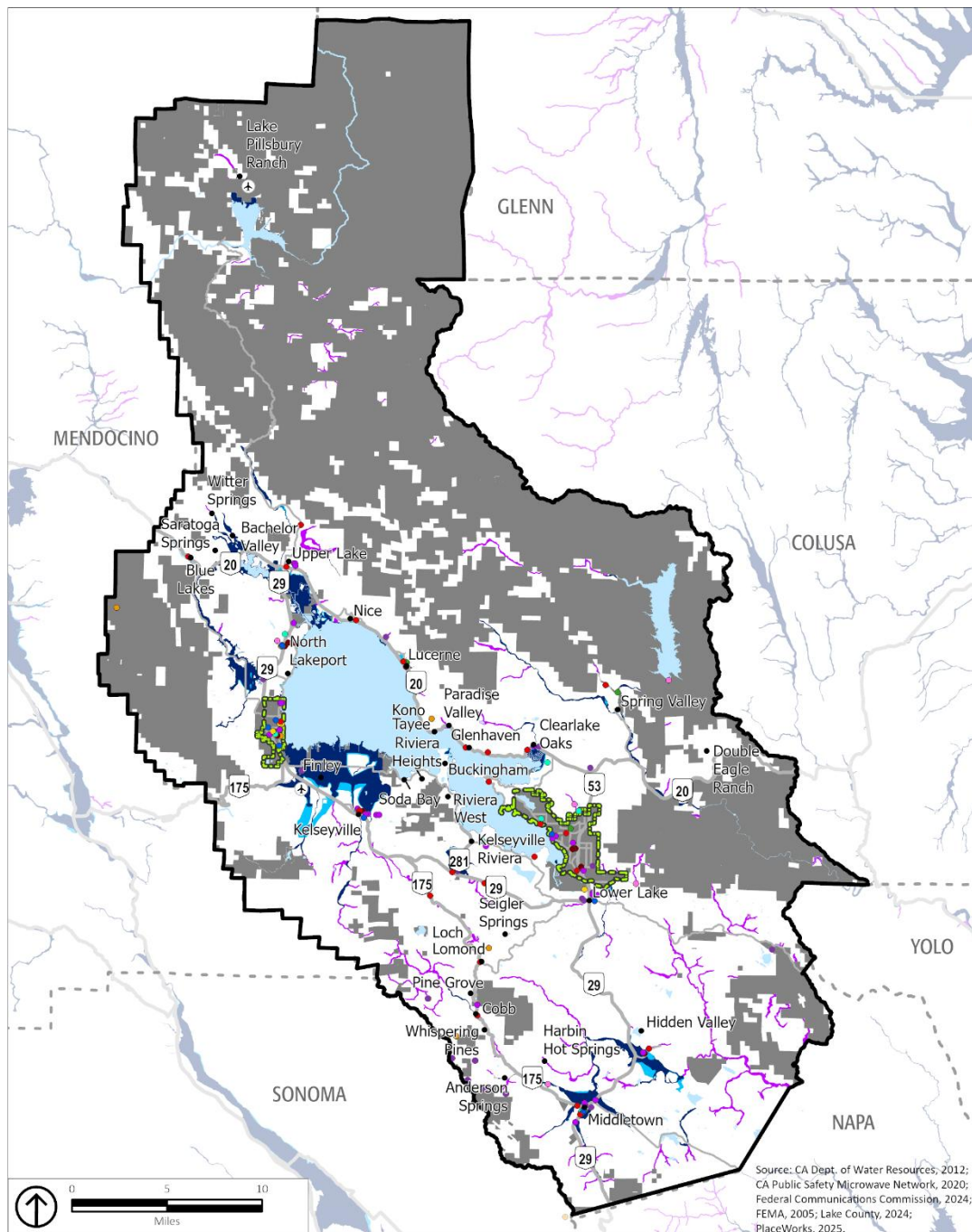
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**organizations and** agencies work to reduce flood risks through infrastructure maintenance, monitoring, and emergency response coordination.

The county has experienced several significant flooding events throughout its history. Notable events include the 1998 floods that caused over \$5 million in damages and flooded over 60 homes, with Clear Lake reaching 2.5 feet above flood stage (11.44 on the Rumsey scale); the January 2006 storms that led to a federal disaster declaration; and the February 2017 flooding that caused extensive damage to county roads and required mandatory evacuations in parts of Lakeport. During the 2017 event, early assessments suggested damage to County-maintained roads ranged between \$5 million and \$7 million.

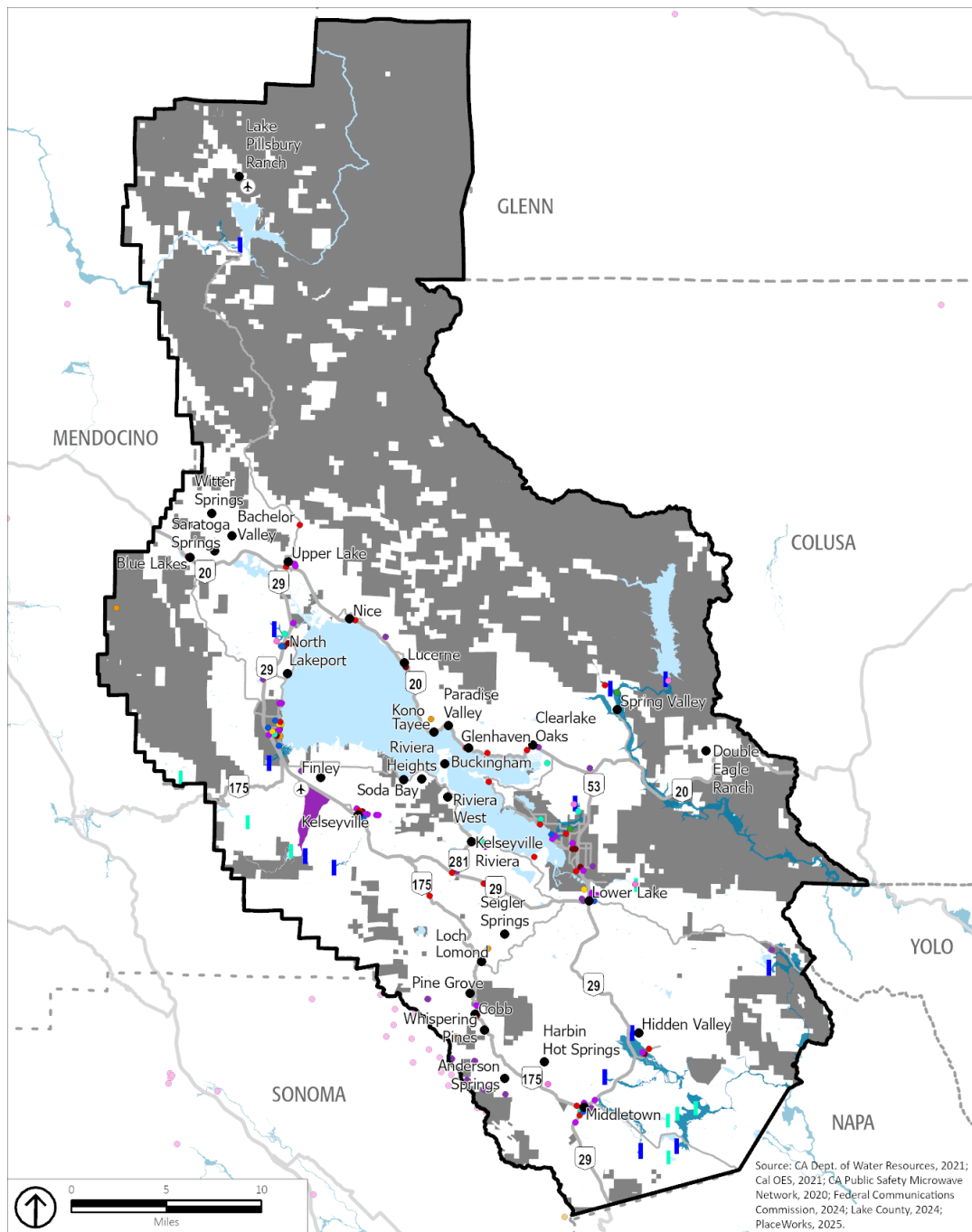
Climate change is expected to worsen flood events through fewer yet more intense storms in the form of atmospheric rivers. For example, what is currently a 100-year storm could occur every 40 to 50 years by 2100. As shown on **Figure HS-56**, areas most at risk from flooding include areas around the shoreline of Clear Lake; the unincorporated communities of Upper Lake, North Lakeport, Finley, Kelseyville, Clearlake Oaks, Lower Lake, Middletown, and Cobb; and the cities of Clearlake and Lakeport.

**Figure HS-6** ~~Figure HS-5~~ **Flood Hazard Zones**



- |                                           |                          |                       |                                   |
|-------------------------------------------|--------------------------|-----------------------|-----------------------------------|
| Lake County                               | Critical Facility        | Medical Facility      | DWR Awareness 100 Year Flood Zone |
| Other County                              | Airport                  | Water Treatment Plant | FEMA 100 Year Flood Zone          |
| Land Not Under County Control             | Community/Senior Center  | School                | FEMA 500 Year Flood Zone          |
| City Boundary Line                        | Government Facility      | Communication Tower   |                                   |
| Creek or River                            | Fire Station             | Electric Substation   |                                   |
| Unincorporated Community or Landmark Area | Law Enforcement Facility | Power Plant           |                                   |

**Figure HS-7** **Figure HS-6** **Dam Inundation Areas**



- |                                                                                                                                                                                                       |                                                                                                                                                                                                          |                                                                                                                                                                                                  |                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Lake County</li> <li>Other County</li> <li>Land Not Under County Control</li> <li>Creek or River</li> <li>Unincorporated Community or Landmark Area</li> </ul> | <b>Critical Facility</b> <ul style="list-style-type: none"> <li>Airport</li> <li>Community/Senior Center</li> <li>Government Facility</li> <li>Fire Station</li> <li>Law Enforcement Facility</li> </ul> | <ul style="list-style-type: none"> <li>Medical Facility</li> <li>Water Treatment Plant</li> <li>School</li> <li>Communication Tower</li> <li>Electric Substation</li> <li>Power Plant</li> </ul> | <b>Dam in Lake County</b> <ul style="list-style-type: none"> <li>Dam with Available Inundation Data</li> <li>Dam without Available Inundation Data</li> <li>Federally Controlled Dam Inundation Area</li> <li>State Controlled Dam Inundation Area</li> </ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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## Goals, Policies, and Actions

### Goal HS-9

To avoid and minimize risk of loss of life, injury, and property damage that may result from flood hazards.

#### Policies

##### HS-9.1

Require all development within the Special Flood Hazard Area to minimize flood risks to structures and infrastructure, and to ensure safe access during flood conditions through compliance with ~~Federal Emergency Management Agency~~ regulations and the Lake County Floodplain Management regulations, Chapter 25 of the County Code Ordinance.

##### HS-9.2

Require new residential subdivisions within mapped floodplains ~~or floodways~~ to minimize flood risk to structures and infrastructure, ensuring safe access during flood conditions by incorporating flood-resistant site design, elevating structures above base flood elevations, and providing multiple ingress and egress routes. Subdivision design shall comply with applicable ~~Lake County Floodplain Management~~ regulations and prioritize long-term resilience to future flood conditions.

##### HS-9.3

~~Locate n~~New critical facilities (those facilities which should be open and accessible during emergencies) ~~shall not be permitted in mapped floodplains or floodways outside of flood hazard zones,~~ as indicated on **Figure HS-56**, ~~or the most recent maps prepared for the Lake County Flood Insurance Program, where feasible~~. Where not feasible, ensure critical facilities can maintain operations and services during and after flood events.

##### HS-9.4

Encourage and support passive recreational activities (those not requiring intensive development, such as hiking, horseback riding, picnicking) in areas prone to flooding, as shown on **Figure HS-56** ~~or as mapped by the Federal Emergency Management Agency~~, where such uses are compatible with periodic inundation and do not require intensive development.

##### HS-9.5 \*

Require stringent controls on approvals of septic systems where there is a substantial likelihood of infiltration of floodwater into the systems, and/or the discharge from the systems into floodwaters.

##### HS-9.6

Coordinate with regional, State, and federal agencies ~~and private landowners~~ to ensure dams, levees, and canals throughout the county are properly maintained and retrofitted to meet current requirements and are easily adaptable to future conditions, including ability to withstand atmospheric rivers.

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#### HS-9.7

Incorporate flood control measures into community development planning in a manner that also supports recreation opportunities, resource conservation, preservation of natural riparian habitat, protection of Tribal Cultural Resources, and protection of the scenic values of the county's streams, creeks, and lakes.

#### HS-9.8

Promote low impact development, which uses vegetation and soil to capture, treat, and retain stormwater runoff, such as green infrastructure, pervious surfaces, and green street, in new and existing development.

#### HS-9.9

Ensure projects proposed within potential dam inundation zones are reviewed by the Lake County Sheriff's Office of Emergency Services and checked against evacuation plans on file for the area. If a project presents a direct threat to human life, appropriate hazard mitigation actions should be taken, including restriction of development in the subject area.

#### HS-9.10 \*

Require project applicants to demonstrate that urban development project sites and projects within floodplain areas will not adversely impact downstream properties or contribute to flooding hazards, including the release of hazardous materials due to a flood, prior to the approval.

#### HS-9.11

Continue to participate in the National Flood Insurance Program (NFIP).

#### HS-9.12

Require that tentative and final subdivision maps and approved site plans delineate areas subject to flooding during a 100-year flood event.

#### HS-9.13

~~Avoid Keep riparian areas and drainages and areas defined as 100-year floodplains free from development in riparian areas and drainages and areas defined as 100-year flood hazard zones~~ that would adversely impact floodway capacity or characteristics, natural/riparian areas, or natural groundwater recharge areas, including the release of hazardous materials due to flooding.

#### HS-9.14

Restore and maintain the natural functions of riparian corridors and water channels throughout the county to reduce flooding and convey stormwater flows through removal of invasive species, restoration of native vegetation, and stream bank stabilization using natural materials.

#### ~~HS-9.15-~~

~~Require all development to conform to the "FF" zoning combining district when applicable. Require the review by the Floodplain Manager, or their designee, for compliance with the County's Floodplain Management Ordinance (Chapter 25 of the County Code).~~

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## ~~HS-9.16~~HS-9.15

~~Work collaboratively~~**Coordinate** with Tribal governments to avoid or mitigate impacts to Tribal Cultural Resources when designing flood control projects.

### **Actions**

#### **HS-9.a**

Investigate and address causes of flooding in Scotts Valley.

#### **HS-9.b**

Co-create flood preparation and response action plans with community members to increase resilience of communities to flood events, complementing technical expertise of flood hazards and emergency response with local knowledge of what happens in the community during a flood emergency.

#### **HS-9.c**

Maintain and regularly assess the structural and operational integrity of critical facilities and infrastructure in flood hazard zones. Identify and implement necessary improvements to ensure continuity of operations during flood events.

#### **HS-9.d**

Inventory areas with flooding potential and drainage facility deficits and develop a plan and funding strategy to complete drainage facility improvements, prioritizing areas with the worst flooding potential and need.

#### **HS-9.e**

Partner with community-based organizations to provide financial assistance to low-resourced households to harden homes against flooding.

#### **HS-9.f**

Explore educational and cost-share methods of increasing uptake in flood insurance in households that are not required to purchase insurance, but that reside in areas with increasing flood risk.

#### **HS-9.g**

Support efforts to improve the County's rating in FEMA's National Flood Insurance Program Community Rating System by implementing best practices that exceed the minimum requirements of the National Flood Insurance Program. These may include enhanced public outreach, higher regulatory standards, improved stormwater management, and protection of open space in flood-prone areas.

#### **HS-9.h**

Regularly review local County floodplain management regulations to ensure that they align with FEMA's minimum criteria to reduce or avoid future flood damage in order to qualify for the sale of federally subsidized flood insurance through FEMA's National Flood Insurance Program.

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### HS-9.i

Consider developing a comprehensive plan to guide ongoing improvements to the Community Rating System score, including regular self-assessments and interdepartmental coordination.

### HS-9.j

Review new development proposals to determine if they are within a mapped floodplain and require compliance with the Lake County [Floodplain Management regulations and](#) Hydrology Design Standards.

## Hazardous Waste and Materials

Hazardous materials are substances that pose a significant risk to public safety, human health, or environmental health. These include toxic chemicals, flammable or corrosive materials, petroleum products, unstable substances, and dangerously reactive materials. In Lake County, hazardous materials risks include transportation routes and fixed facilities. The potential for a major transportation incident exists along the county's main east-west thoroughfare, SR-20, as well as SR-29, SR-53, and SR-175, and Bottle Rock Road. Vehicles traveling these routes carry materials for facilities within the county and pass through to points beyond.

The Lake County Environmental Health Department serves as the Certified Unified Program Agency and manages hazardous materials, waste, and permitting in Lake County. The department consolidates several regulatory programs, including hazardous materials management, accidental release prevention, waste management, and storage tank oversight. A key component of the Certified Unified Program Agency is the California Accidental Release Prevention initiative, which focuses on preventing releases of high-risk substances through required accident prevention programs and risk management plans from regulated facilities.

Lake County has experienced several ~~minor~~ hazardous materials release events over the past five years, primarily related to small-scale sewage overflows, petroleum product spills from vehicles, and household chemical releases. ~~Most of t~~These incidents have been successfully managed through standard response protocols and have not resulted in any major evacuations or significant public health impacts. [A notable exception is the Robin Lane sewage spill in January 2026, in which approximately 2.9 million gallons of sewage were released, representing a significant public health and environmental event that required a more substantial response than routine incidents.](#)

Of concern in Lake County is the volume of freight and delivery transporters carrying quantities of hazardous materials below reporting thresholds, which therefore do not require warning placards. For example, freight deliveries to local hardware stores may contain various hazardous materials like retail-packaged herbicides, pesticides, paint products, and motor oils. [See also the Agricultural Resources Element for policies on pesticide use and integrated pest management \(AR Goal 3\).](#)

Several cleanup sites in Lake County are identified in the Department of Toxic Substances Control's EnviroStor database and the State Water Control Board's GeoTracker database, including several that are closed or inactive. According to the EnviroStor databased, as of 2025, in addition to the Sulphur Bank

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Mercury Mine Superfund Site, there are ten active hazardous material cleanup sites in Lake County. Several of these sites are mines or quarries scattered throughout the county. The GeoTracker database lists 13 cleanup sites within the county, several of which are mines, quarries, and underground storage tanks. Major concerns at these sites include impacts on drinking water, mercury in soils and waterways, and gasoline and other fuels in soils and groundwater.

The Sulphur Bank Mercury Mine Superfund Site is a hazardous materials concern in Lake County. Located on the eastern shore of the Oaks Arm of Clear Lake, this 150-acre former mine operated from 1856 to 1957 and was one of the largest producers of mercury in California. The site was designated a National Priorities List (Superfund) site in 1990 due to high levels of mercury and arsenic contamination in mine waste, soil, and nearby sediments. Contamination from the site also affects the wetland area north of the mine and Clear Lake itself. The contamination affects the Elem Indian Colony and surrounding residential areas, creating environmental justice concerns for Tribal members and residents who may be exposed to elevated metal concentrations. The Environmental Protection Agency has conducted several removal actions since 1992 and is currently implementing cleanup efforts through the Superfund process.

Brownfields are a subset of contaminated properties distinct from active cleanup sites and Superfund designations, defined by the U.S. Environmental Protection Agency as a property where the presence or potential presence of a hazardous substance, pollutant, or contaminant complicates the property's expansion, redevelopment, or reuse. In Lake County, brownfields are likely to include former mining sites, abandoned gas stations and underground storage tank sites, legacy industrial parcels, and other previously disturbed lands where historical uses have left residual contamination. These sites can appear in the EnviroStor and GeoTracker databases as closed or inactive, but residual contamination concerns may still affect the properties' reuse potential. Unlike Superfund sites, which are subject to federal cleanup authority, brownfields often fall into a regulatory gap where contamination levels do not trigger mandatory remediation. The EPA's Brownfields Program provides assessment, cleanup, and revolving loan fund grants that can support voluntary remediation and redevelopment of these properties.

## Goals, Policies, and Actions

### Goal HS-10

To protect residents, visitors, and property from hazardous materials release.

#### Policies

##### HS-10.1

Require that hazardous materials ~~are-be~~ used, transported, and disposed of within the county in a safe manner and in compliance with local, State, and federal safety standards. Investigations and enforcement actions shall be taken as necessary for any illegal hazardous waste disposal or other violations of federal, State, or local hazardous materials laws and regulations.

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### HS-10.2

Work with Caltrans and the California Highway Patrol to ensure that hazardous materials transported within the county are restricted to routes that have been designated for such transport.

### HS-10.3

Investigate the anticipated hazardous waste disposal needs of local enterprises, including agricultural, geothermal, and mining industries, to ensure that safe and adequate disposal sites are carefully planned.

### HS-10.4

Prohibit new facilities that will be involved in the production, use, storage, transport, or disposal of hazardous materials within identified hazard zones or within 1,000 feet of existing land uses that may be adversely impacted by such activities.

### HS-10.5

Prohibit any new facilities that use or store hazardous materials in quantities that would list them in the State's Toxics Release Inventory or Small Quantity Generators databases from being located in high-risk hazard areas, including areas within a high or very high fire hazard severity zone, 100- or 500-year floodplains, and areas with high landslide susceptibility, except for agricultural operations where no feasible alternative location exists and where all applicable hazardous materials storage and containment requirements are met.

### HS-10.6

Review new development proposals to ensure that soils, surface water, and groundwater are protected from contamination.

### HS-10.7 \*

Require that developers have a Phase I environmental site assessment (ESA) performed during the design phase on sites known to contain hazardous materials or which had previously been utilized for the handling or storage of hazardous materials. Require a Phase II ESA shall be prepared for mitigation prior to issuance of building permits.

### HS-10.8

Ensure all evacuation routes and emergency access roads meet applicable State safety standards, including Public Resources Code Sections 4290 and 4291 requirements for width, clearance, and surface conditions.

### HS-10.9

~~Work collaboratively~~ **Coordinate** with Tribal governments to avoid or mitigate impacts to Tribal Cultural Resources when designing public projects to address hazardous materials.

### HS-10.10

Incorporate Tribal environmental knowledge and monitoring programs into toxic site restoration planning to ensure culturally and ecologically sound outcomes.

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#### HS-10.11

Support Tribal participation in State and federal cleanup funding opportunities to address legacy contamination on or affecting culturally significant lands.

#### **Actions**

#### HS-10.a

Conduct a study to determine the needs for hazardous waste disposal sites and update the County's solid waste management plan.

#### HS-10.b

Develop standards for the type, location, and intensity of development adjacent to sites and facilities for the production, use, storage, and disposal of toxic and hazardous materials.

#### HS-10.c

Continue to cooperate with the California Highway Patrol to establish procedures for the movement of hazardous waste within the county.

#### HS-10.d

Continue to educate the public about the types of household hazardous waste and the proper method of disposal and encourage household hazardous waste to be disposed of properly.

#### HS-10.e

Inspect hazardous material handlers and hazardous waste generators to ensure full compliance with laws and regulations.

#### HS-10.f

Evaluate road conditions throughout the county for compliance with Public Resources Code Sections 4290 and 4291, including assessment of width, surface compaction, and accessibility. Identify roads currently designated as two-lane that may functionally operate as one-lane or one-way under emergency conditions and prioritize improvements or signage accordingly.

#### HS-10.g

Coordinate with the Environmental Protection Agency, State agencies, and Tribal governments to support communities most impacted by the Sulphur Bank Mercury Mine Superfund Site and other legacy contamination sites, including facilitating access to health services, environmental monitoring information, and cleanup updates.

#### HS-10.h

Pursue Environmental Protection Agency Brownfields Program grants and other available funding to assess, inventory, and support voluntary cleanup of brownfield properties in Lake County, particularly in communities adjacent to legacy contamination sites.

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## Human Health Hazards

Human health hazards encompass a range of bacteria, viruses, parasites, and other organisms that can cause diseases and illnesses affecting Lake County residents. While some of these diseases may cause only mild symptoms, others can be life threatening. Many of these diseases are vector-borne, meaning they are transmitted by animals such as mice, rats, ticks, and mosquitos. The county's Mediterranean climate, extensive agricultural areas, and rural nature create favorable conditions for human exposure to vector activity throughout the year, particularly in areas near water bodies.

The Lake County Public Health Department monitors and responds to various human health hazards affecting the community. Vector-borne diseases of particular concern include West Nile virus (transmitted by mosquitos), Lyme disease (spread by ticks), and hantavirus pulmonary syndrome (carried by rodents). Additionally, the department tracks and responds to foodborne illnesses, waterborne diseases, and emerging infectious diseases, coordinating with regional and state agencies to monitor disease trends and implement prevention and response measures.

Lake County has experienced several significant health challenges since the early 2000s, including periodic cases of West Nile virus (first detected in 2004), Lyme disease, and most recently, COVID-19, which resulted in 13,860 total cases and 192 deaths as of February 2024. Valley Fever cases have also been detected in Lake County, representing the northward expansion of this disease which was historically limited to central and southern California. Harmful algal blooms in Clear Lake have created recurring health concerns, with community members reporting skin rashes, respiratory issues, and other health effects. These blooms have prompted multiple health advisories and raised concerns about drinking water safety, particularly for residents on private or small state water systems.

Climate change is expected to significantly influence human health hazards through rising temperatures and changing precipitation patterns. These changes are likely to expand the range and populations of disease vectors while also affecting the frequency and intensity of harmful algal blooms in Clear Lake. Harmful algal blooms are the overgrowth of different species of toxic cyanobacteria or algae that pose a risk to humans, animals, and the environment, and are distinct from the normal algal blooms that are a natural feature of the lake. This may disproportionately affect vulnerable populations, including older adults, individuals with chronic health conditions, outdoor workers, and low-resourced households.

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## Goals, Policies, and Actions

### Goal HS-11

To effectively protect the health of Lake County residents by reducing exposure to human health hazards.

#### Policies

##### HS-11.1

Work with the Lake County Department of Public Health to identify and track vectors and disease conditions that may affect Lake County residents and visitors.

##### HS-11.2

Continue to implement coordinated monitoring and response to disease outbreaks or other public health hazards across jurisdictional boundaries that consider the needs of vulnerable populations.

##### HS-11.3

Work with healthcare providers to support free or reduced-cost vaccinations for vector-borne diseases for Lake County residents.

##### HS-11.4

Work with the Lake County Vector Control District to maintain comprehensive vector control efforts that address changing environmental conditions and disease patterns.

##### HS-11.5

Ensure proper drainage of stormwater to reduce instances of standing water that can harbor pests and vectors.

##### HS-11.6

Look for opportunities to ensure that workers in outdoor industries have the training and resources to be adequately protected from environmental hazards, including extreme heat, poor air quality, pests, and diseases.

##### HS-11.7

Work with local community groups, providers of senior services, and childcare workers to raise awareness about disease prevention and response.

##### HS-11.8

Continue enforcement of the Lake County Uniform Abatement of Public Nuisances Code to minimize trash build up on properties and reduce vermin associated with trash and rubbish.

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## Actions

### HS-11.a

Continue to work with the Lake County Vector Control District to monitor mosquito, tick, and rodent populations, particularly in response to changing climate conditions and near water bodies.

### HS-11.b

Support existing coordinated monitoring systems for harmful algal blooms in Clear Lake and other water bodies, with an alert protocol to notify residents, especially those on private or small state water systems, when unsafe conditions are detected.

### HS-11.c

Collaborate with local healthcare providers, including Tribal health providers, to offer training on identifying and treating climate-sensitive diseases, including vector-borne illnesses and conditions related to harmful algal bloom exposure.

### HS-11.d

Distribute educational materials, such as the California Department of Public Health's Lyme Disease brochure, to raise awareness about prevention and post-bite steps, especially for residents in high-risk areas.

## Seismic and Geologic Hazards

Lake County faces various geologic and seismic hazards due to its diverse topography and location in a seismically active region of California. As shown on **Figure HS-78**, the county contains multiple active fault systems, including the Bartlett Springs Fault System running through the eastern portion of the county, the Konocti Bay Fault Zone extending through the southern shoreline of Clear Lake, and the Hunting Creek-Berryessa Fault Zone in the southern portion of the county. Additionally, the county lies within the broader influence zone of the San Andreas Fault System, approximately 30 miles to the west. These faults can generate earthquakes of magnitude 6.0 to 7.0, similar to the August 2014 South Napa earthquake (magnitude 6.0) felt throughout the region.

The Clear Lake Volcanic Field, one of the most recently active volcanic areas in California, has shaped much of the county's topography. According to the U.S. Geological Survey, this volcanic field remains potentially active, with the last eruptions occurring approximately 10,000 years ago. While the probability of an eruption in the near future is low, the presence of active geothermal systems and periodic seismic activity indicates ongoing volcanic processes beneath the

### Induced Seismicity

Induced seismicity refers to earthquakes triggered by human activities rather than natural tectonic processes. Common causes include the injection or extraction of fluids into or from the earth, such as occurs during wastewater disposal from oil and gas operations, hydraulic fracturing, and geothermal energy production. In geothermal operations, the injection of water into hot rock formations to generate steam can alter subsurface pressure and lubricate existing fault lines, potentially triggering small seismic events.

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surface. The volcanic field contributes to regular seismic activity, particularly in the geothermal areas of southern Lake County near the Geysers, where minor earthquakes occur multiple times per day, though these events typically register at magnitude 4.0 or less.

Lake County seismic activity within the past two hundred years shows few major or damaging earthquakes on fault lines within county boundaries. According to the U.S. Geological Survey's National Earthquake Information Center database, three earthquakes greater than magnitude 5.0 have been centered within 100 miles of Clear Lake in the past 40 years: the August 2014 South Napa earthquake (magnitude 6.0), the August 2016 earthquake centered north-northeast of Upper Lake (magnitude 5.1), and the December 2016 earthquake centered west of Cobb (magnitude 5.0).

Lake County's varied topography, from the Clear Lake basin to mountainous regions reaching elevations over 7,000 feet, creates conditions for various geologic hazards, particularly landslides and debris flows. As shown on **Figure HS-89**, a majority of the county is at high risk of landslides, especially in the hillsides. Areas throughout the county that have historically experienced landslides include Clearlake Oaks, Lucerne, Clearlake Riviera, Cobb Mountain, and Bartlett Springs. These landslides can travel significant distances, accumulating debris and amplifying their destructive impact as they move downslope. The most significant landslides include the Spring Valley Landslide (also known as the Cache Creek Slide), located approximately 1.5 miles downstream of Indian Valley Dam. The Cache Creek Slide poses a very high risk of failure during major storm events. The Anderson Springs landslide, which developed during the 2017 winter storms and resulted in road closures, continues to pose risks to the community. Landslide risk is generally low to moderate near the shoreline of Clear Lake, with unincorporated areas having little to no risk, including agricultural areas in Upper Lake, North Lakeport, Kelseyville, and Hidden Valley.

The numerous water bodies in Lake County, including Clear Lake, Lake Pillsbury, Blue Lakes, and Indian Valley Reservoir, create potential for seiche hazards during significant seismic events, which could damage shoreline structures and potentially cause flooding in low-lying areas. A seiche is a standing wave in an enclosed or partially enclosed body of water that can be triggered by seismic activity, posing additional risks to shoreline communities.

**Figure HS-8** ~~Figure HS-7~~ **Regional Fault Lines**

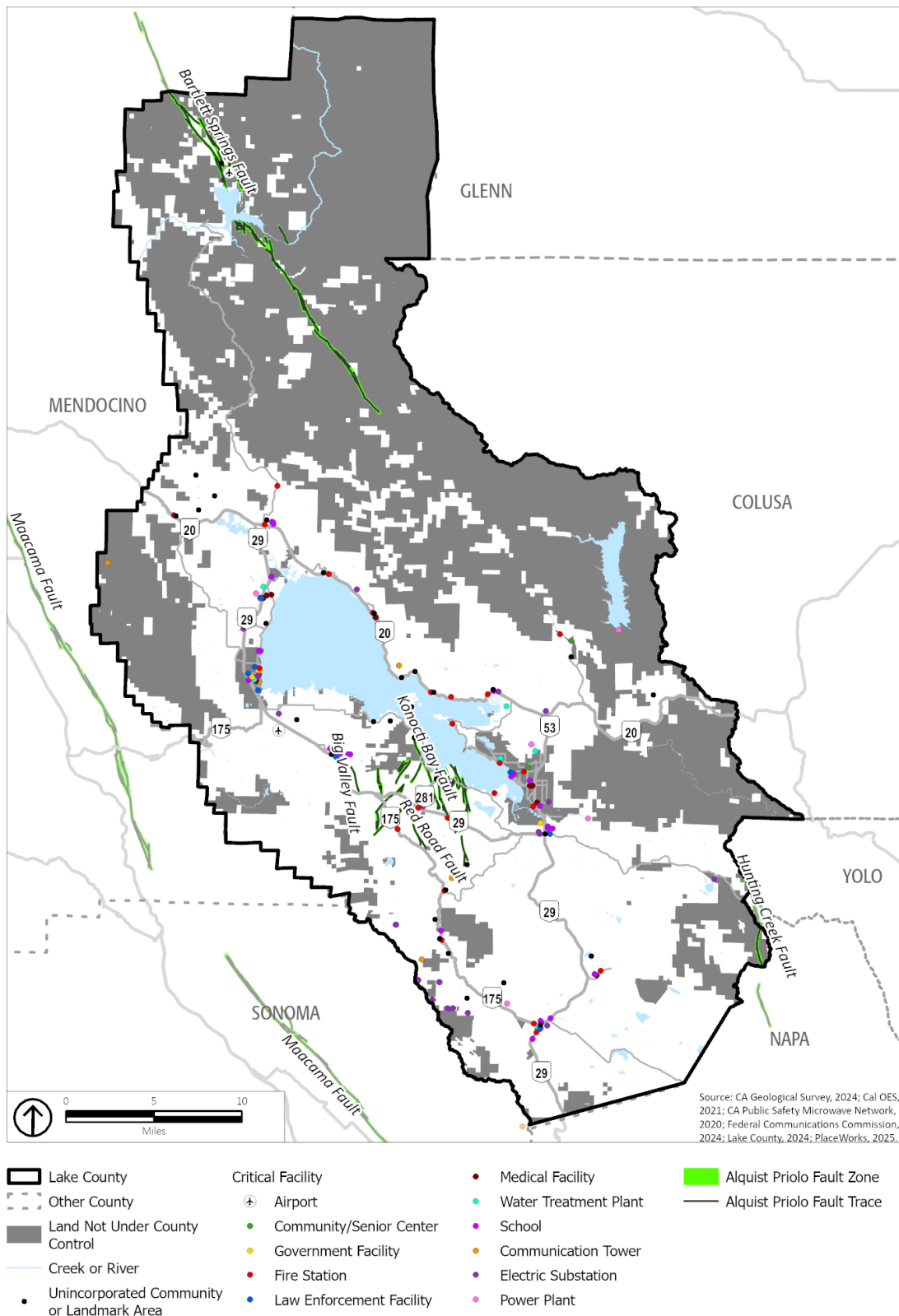
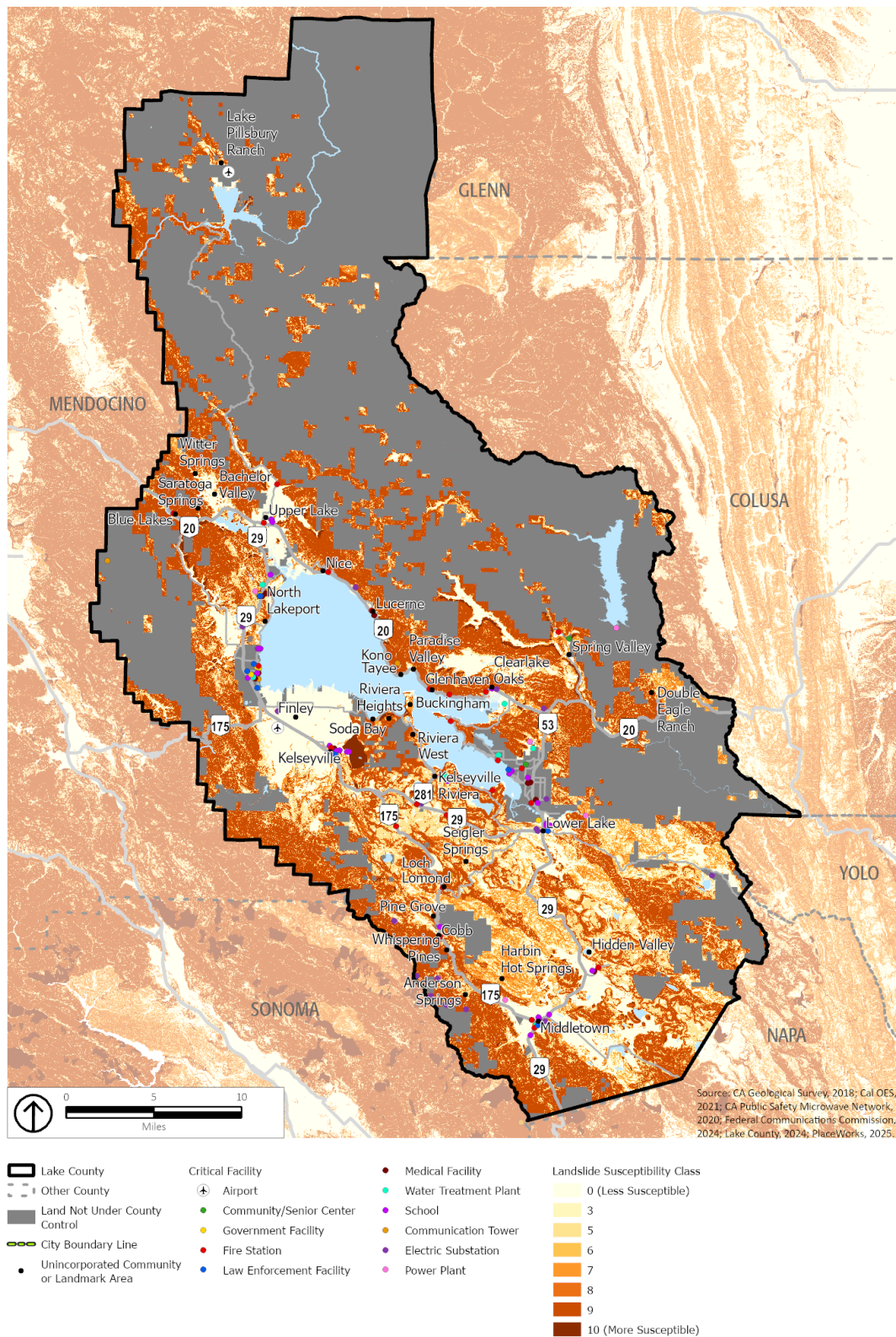


**Figure HS-9 Figure HS-8 Landslide Susceptibility Areas**



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## Goals, Policies, and Actions

### Goal HS-12

To avoid risks to life and minimize impacts to property, including cultural and Tribal Cultural Resources, that may result from seismic and geologic hazards.

#### Policies

##### HS-12.1 \*

Require areas with more than 30 percent slope or in areas mapped with naturally occurring asbestos to submit engineering plans and geotechnical studies for all construction and grading. These plans must address roads, utility corridors, and similar off-site improvements as well as erosion and dust control. Development in other areas possessing potential landslide risk, regardless of slope, shall require engineering plans and/or geotechnical study prior to discretionary approval or approval of grading or building permits.

##### HS-12.2 \*

Prohibit the siting of critical facilities in areas within Alquist-Priolo Special Studies Zones, in mapped naturally occurring asbestos areas, in areas subject to seiches, liquefaction, in areas with a high landslide risk, or on seismically unstable soils, unless a geologic/seismic hazards geotechnical engineering study can be performed to identify potential impacts and engineering recommendations prior to siting or site acquisition.

##### HS-12.3

Encourage continued studies by the United States Geological Survey and California Geological Survey on fault location, activity, and seismicity (including induced seismicity) within the county.

##### HS-12.4

Require that new development be built to the latest siting, design, and construction standards to ensure buildings continue to be functional and useable after a seismic event.

##### HS-12.5

Upgrade public facilities, particularly critical facilities, to meet the risk requirements for seismic safety in the California Building Code and be periodically reviewed to determine if and when upgrading is necessary.

##### HS-12.6

Evaluate and upgrade selected streets vital to the functioning of emergency services, including encouraging Caltrans to upgrade highways, and critical facilities to an acceptable degree of safety that considers potential earthquake effects.

##### HS-12.7

Limit construction of critical transportation structures across the trace of a known active or potentially active fault to those which cannot be reasonably constructed at another location.

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#### HS-12.8

Continue to meet seismic standards of dam safety and coordinate with other owners/operators of dams as promulgated by the State Division of Safety of Dams, as applicable to new and existing structures.

#### HS-12.9 \*

Prohibit new development on a hazardous fault trace, active landslide, or other geologic or seismic hazard area that poses a significant risk, including areas located downstream or downslope from such hazards, as shown on **Figure HS-78** and **Figure HS-89**.

#### HS-12.10

Require structures in the Alquist-Priolo Special Studies Zones to be set back 50 feet from each side of a mapped active fault or fault zone except as provided in State statute. The setback may be reduced based upon a geologic fault report that includes fault trenching.

#### HS-12.11

Permit development on lands having soils sensitive to seismic activity only after adequate site analysis and appropriate siting and design of structure and foundation.

#### HS-12.12

In areas of high potential for landslides, avoid altering the land or hydrology in a way that is likely to increase the hazard potential, including:

- Saturation due to drainage or septic systems.
- Removal of vegetative cover.
- Steepening of slopes or undercutting the base of a slope.

#### **Actions**

##### HS-12.a

Seek financial assistance to implement corrective seismic safety measures required for existing County-owned buildings to reduce risk to life safety and ensure continued functionality during and after seismic events.

##### HS-12.b

Adopt development standards to ensure adequate public health and safety upon delineation of Special Study Zones by state geologists as required by the Alquist-Priolo Act, and local and state asbestos air toxic control measures for naturally occurring asbestos.

##### HS-12.c

Strengthen, abate, or downgrade existing buildings, particularly critical facilities, that do not meet requirements for seismic safety. For seismic upgrading or phasing out of existing seismically unsafe buildings, base priorities on hazard to life, occupancy, and the capability of the structure to resist anticipated earthquake effects.

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#### HS-12.d

Conduct a structural review of all County critical facilities and include a detailed geologic/seismic site investigation and, if necessary, a review of access roads and utilities serving the sites. Require upgrading as determined by the reviews.

#### HS-12.e

Work with private developers to support seismic upgrades to existing facilities by providing technical assistance, streamlining permit processes, and exploring financial incentives or grant opportunities.

## Severe Weather

Severe weather in Lake County includes localized storms bringing heavy rains, thunderstorms, and strong winds. These events can occur throughout the year but are most common during winter months from November through April. The varied topography of Lake County, from the Clear Lake basin to the Mendocino National Forest highlands, creates microclimates that can experience markedly different severe weather conditions.

The primary type of severe weather affecting Lake County are atmospheric rivers, which are long, narrow regions in the atmosphere that transport water vapor from tropical areas. When these systems make landfall, they can release intense precipitation leading to flooding, mudslides, and other hazards. Though these events play a critical role in the region's water supply, they can also cause significant damage. The county's complex topography can also create localized wind patterns, such as the "Konocti Winds" that travel from Cow Mountain between Lakeport and Ukiah, affecting Kelseyville's Big Valley and Clear Lake before splitting around Mt. Konocti.

Lake County has experienced numerous severe weather events throughout its history, with 13 federal disaster declarations related to severe winter storms, flooding, and associated hazards since 1950. Notable events include the 2005 to 2006 winter storms that resulted in a federal disaster declaration, the 2017 winter storms that caused extensive flooding and landslides, and the 2019 atmospheric river events that brought widespread flooding. Most recently, a series of atmospheric river events in late 2022 through early 2023 led to a federal disaster declaration and caused widespread flooding, landslides, and road damage throughout the county.

Lake County's geographic characteristics make it particularly vulnerable to severe weather impacts. The county's three major ingress/egress routes (SR-20, SR-29, and SR-175) can become impassable during severe weather events, potentially isolating communities. Widespread power loss is also a significant concern, whether from temporary outages caused by downed power lines and trees, planned Public Safety Power Shutoffs, or strain on the electrical grid from extreme heat affecting the entire region. This is particularly concerning since the communication network in Lake County lacks redundancy and can be unreliable in some areas of the county.

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## Goals, Policies, and Actions

### Goal HS-13

To minimize risk of loss of life, injury, and property damage from severe weather.

#### Policies

##### HS-13.1

Work with PG&E and local solar energy installers to support resiliency of the local power grid, including solar and battery systems for residents, businesses, and public agencies.

##### HS-13.2

Increase the resiliency of County-owned structures to severe weather events, including high wind events, and support homeowners and business owners to increase the resilience of their buildings and properties through retrofits, weatherization, and other improvements.

##### HS-13.3

Require new development to use design and construction techniques that increase resilience to severe weather. Techniques may include, but are not limited to, on-site stormwater management and green infrastructure, enhanced insulation, window glazing, elevated construction or flood-resistant materials, wind-resistant structural designs, and backup energy systems.

##### HS-13.4

Require utility lines in new subdivisions to be placed underground, except where it is not feasible due to operational constraints.

##### HS-13.5

Ensure resilience to extreme cold and snow events by improving infrastructure, emergency response, and support systems for isolated and vulnerable populations **and businesses**. Strategies may include increasing access to backup power, improving snow clearance, and providing wellness checks during prolonged outages or access disruptions.

##### HS-13.6

Coordinate with utility providers and telecommunications companies to identify and prioritize backup power solutions for areas most likely to lose service during snow or ice storms, including isolated neighborhoods and critical communication infrastructure.

##### HS-13.7

Promote home weatherization and energy efficiency upgrades (e.g., insulation, air-tight windows, weather stripping) to reduce heat loss and improve safety during extreme cold events, especially in older or poorly insulated homes.

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### **HS-13.8**

Collaborate with the Lake County Air Quality Management District to establish exemptions for use of backup agricultural generators during official Public Safety Power Shutoff (PSPS) events, to not penalize an operator's standard annual permitted operating hours.

### **Actions**

#### **HS-13.a**

Install and upgrade County facilities with on-site solar photovoltaic systems with energy storage. Identify and prioritize buildings and facilities that may need backup energy during outages and provide essential County services during extreme weather events.

#### **HS-13.b**

Coordinate with PG&E to assess the feasibility of developing microgrids at critical facilities and in isolated communities to maintain power during severe weather events and Public Safety Power Shutoffs, with priority given to areas with high concentrations of vulnerable populations or Equity Priority Communities.

#### **HS-13.c**

Identify and implement improvements to protect critical infrastructure from severe weather, including elevating equipment and ensuring backup systems at key facilities.

#### **HS-13.d**

Establish and equip designated community warming centers with backup heat and power, prioritizing locations near vulnerable populations and ensuring ADA accessibility and transportation access.

#### **HS-13.e**

Establish a volunteer-based wellness check program to assist seniors, medically vulnerable residents, and those living alone during extended power outages or snow-in events.

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