San Luis Obispo County Community FireSafe Council

San Luis Obispo County FIRESHEDS

San Luis Obispo County Firesheds

September 2025

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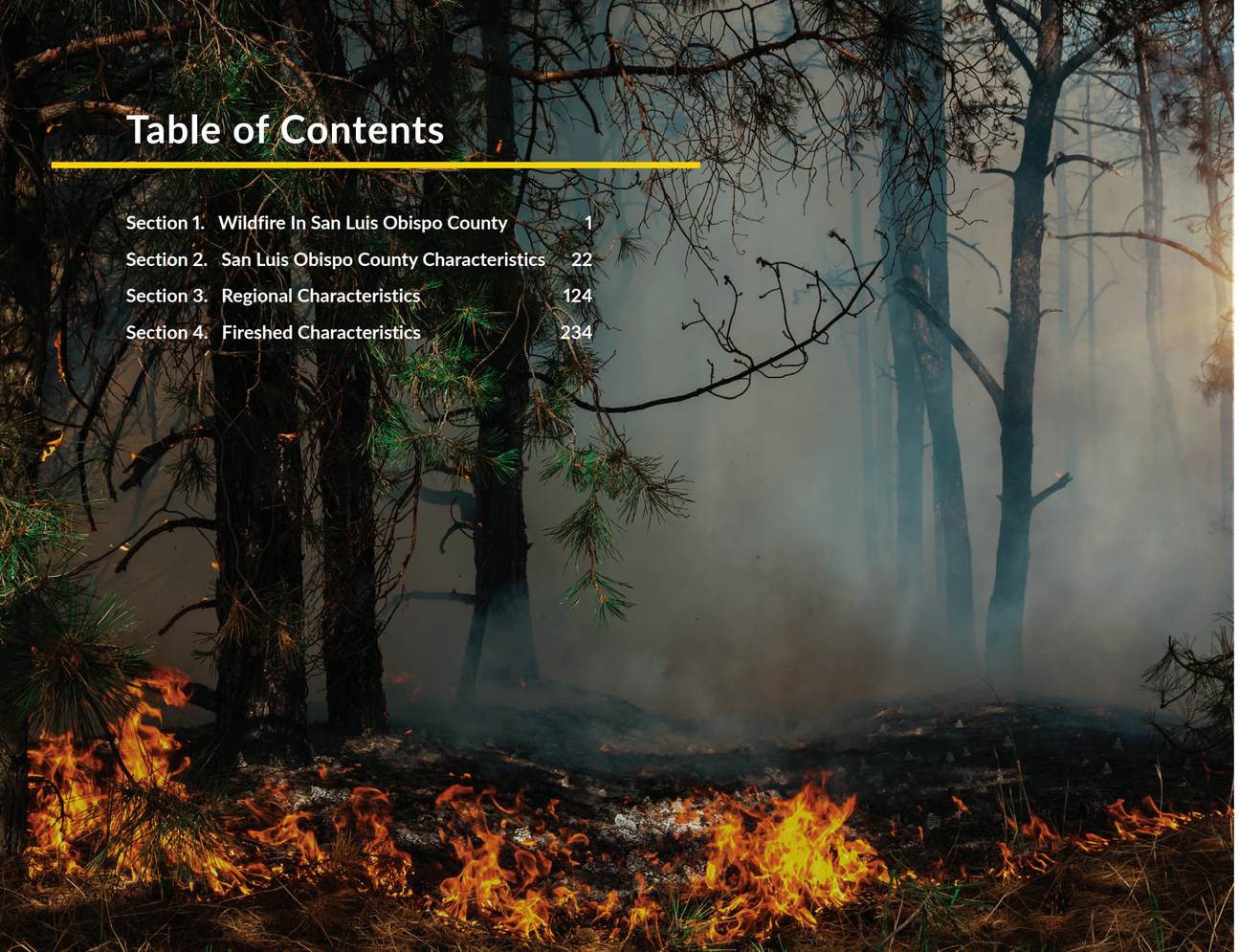

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WILDFIRE IN SAN LUIS OBISPO COUNTY

Wildfire Conditions in San Luis Obispo County

San Luis Obispo County (SLO County) is located on the Central Coast of California, about halfway between Los Angeles and San Francisco. The major population hubs of SLO County are located along the Pacific Ocean coastline and State Route 101 (SR-101) as shown in Figure 1. SLO County enjoys a mild Mediterranean climate and features a unique coastal geography replete with multiple mountain ranges and river valleys. SLO County encompasses approximately 3,300 square miles (2,126,045 acres), with seven incorporated cities, home to a population of 282,424. All communities in the county are adjacent to or intermixed with flammable wildland vegetation and are therefore identified as being in the wildland urban interface (WUI). The native vegetation is diverse from the unique Monterey pine forests in and around Cambria to the oak woodlands of the coastal and inland valleys. From the expansive grass lands to the fire dependent chaparral.

SLO County has a long history of wildfires, influenced both by natural occurrences and the intentional use of fire by Native American peoples for thousands of years. The region's Mediterranean climate, characterized by wet winters and dry summers, creates ideal conditions for regular fires in native vegetation. Lightning-induced wildfires were common, and Native Americans frequently used fire as a tool for habitat enhancement. As a result of these recurring fires, many native plants in the county, and throughout the American West, have become "fire-adapted"—able to withstand or even benefit from repeated exposure to fire. In fact, some species rely on fire as a crucial element of their reproductive process.

European and Asian influences in the last five hundred years changed the nature of fire on the landscape. As European style developments and communities started, indigenous fire use was curtailed, and suppression of all wildfires became a standard practice. Fire use by indigenous people was stopped; however, some ranching community members still used fire to manage their rangelands. Additionally, many non-native species were introduced. Often, these non-native species are more flammable than the natives they out-competed. The result has been a change in fire occurrence on the landscape and native vegetation. Development of the wildland into permanent towns and communities where buildings and infrastructure are concentrated in small geographic locations began with European and Asian settlements. With lumber readily available, most of these permanent structures were constructed of combustible lumber and wood products. The threat of wildfire was given little attention in the design of these communities. However, during the 1700-1900 period almost every community in SLO County experienced major fires that destroyed large sections of their towns. Some of these fires started as wildland fires and spread into the communities. Today, these fires are referenced as WUI fires.

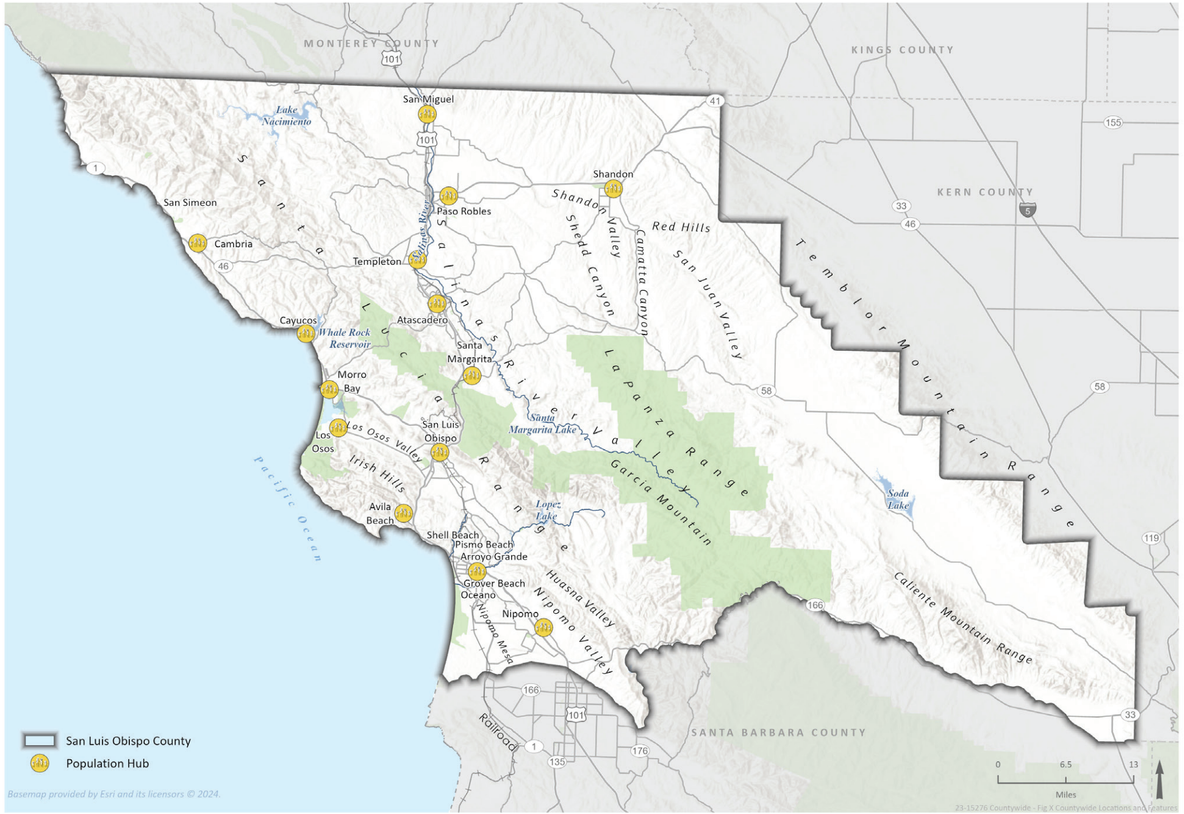
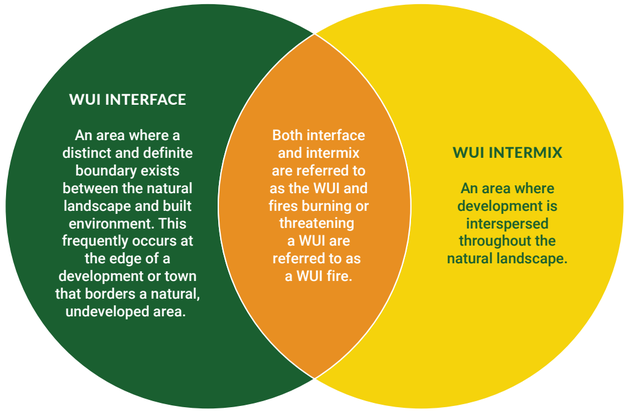


Figure 1. San Luis Obispo County - Fireshed Planning Area

Wildland-Urban Interface and Intermix Explained

The Wildland-Urban Interface (WUI) refers to areas where human development and natural wildlands meet, creating a unique zone where homes, communities, and infrastructure are in close proximity to forests, grasslands, and other undeveloped landscapes. Within the WUI, there are two primary types of development: intermix and interface. The "intermix" describes areas where homes and other structures are dispersed throughout wildland vegetation, often with significant natural fuel sources interwoven among the properties. In contrast, the "interface" refers to more densely populated communities or neighborhoods that directly border wildlands, where the boundary between developed areas and natural landscapes is more distinct. Both intermix and interface zones are particularly vulnerable to wildfires, as they combine human activity with flammable vegetation and the buildings become fuel for the fire, increasing the risk to life and property.

WUI fires are prevalent in SLO County. Within the last seventy-five years WUI fires have burned more than 380,000 acres (590 square miles). Some areas have experienced multiple fires while some areas have no recorded burn history. Many backcountry fires in undeveloped areas of the Los Padres National Forest and Carrizo Plains National Monument have burned thousands of acres but presented very little threat to developments. Additionally, many seemingly non-threatening fires in the rural or backcountry areas, when not quickly contained, have the potential to become catastrophic when fire behavior conditions change, placing distant communities under threat. Examples within SLO County include the 1985 Las Pilitas Fire, 1994 Highway 41 Fire, the 1996 Highway 58 Fire, and the 2016 Chimney Fire which burned several miles from rural areas into developed communities.



Wildfire history in SLO County resulted in more than the destruction of homes and infrastructure, these wildfires have also been deadly. Since 1931, there have been fourteen deaths caused by wildfires in SLO County; all fourteen were firefighters. The unique circumstances around these events will be discussed in Section 2 SLO County Characteristics.

Today SLO County averages more than 300 wildfires per year. SLO County is especially at risk from WUI fires and wildfire due to the unique fire environment influenced by a combination of flammable vegetation and buildings (fuels), weather, topography, and human behavior. Most of these fires (caused by people, their activities, and summertime lightning) are kept small by aggressive fire suppression efforts. However, throughout the County's history, in the last 75 years, there have been several large or destructive wildfires, including the 1960 Weferling Fire, 1950 Pilitas Fires, 1985 Las Pilitas Fire, the 1989 Chispa Fire, the 1994 Highway 41 Fire, 1996 Highway 58 Fire (the largest fire in SLO County's recorded history), 1997 Logan Fire, the 2016 Chimney Fire, and most recently the 2025 Madre Fire. To reduce wildfire risks and mitigate consequences throughout SLO County, there are a variety of plans underway for hazardous fuels reduction projects, defensible space, home hardening, prescribed burning, ecological restoration, and more. However, to further mitigate fire risks in a consistent manner from project to project, the San Luis Obispo County Community Fire Safe Council (SLO FSC) and partner agencies have worked to establish the Fireshed Planning Report and accompanying online Fireshed Dashboard.

Wildland Urban Interface
Pacific Estates near Pismo Beach

Wildland Urban Intermix
Homes off Toleman Road, Santa Lucia Range

Fire Weather Conditions in SLO County

Wind Dominated Fires

SLO County fire conditions are strongly influenced by multiple microclimates due to the proximity to the Pacific Ocean and its impact on weather, particularly erratic winds. There are four wind characteristics:

1. **Prevailing northwesterly winds that originate from the Pacific Ocean;**
2. **Diurnal winds that change from daytime onshore prevailing winds to offshore winds at night;**
3. **Santa Lucia winds that occur in the spring and fall that are moderate to strong katabatic offshore winds; and**
4. **Summertime wind phenomenon where high heat in the interior causes a thermal low pressure and results in the marine air spilling over the Santa Lucia Range and create a katabatic wind on the inland side of the ridge that battles with the prevailing northwesterly causing very erratic wind patterns.**

The most dangerous fires in SLO County have occurred during this last wind type. Of the 14 firefighter fatalities, 10 were directly related to this widely recognized wind phenomenon; referred to by some as "The Wind With No Name." The area along the Cuyama River Canyon and SR-166 frequently experiences these conditions. In 1979, the Spanish Ranch Fire killed four firefighters when winds suddenly changed as a result of the wind phenomenon. During the 1997 Logan Fire in the Cuyama River Canyon area, there were several near misses as firefighters were confronted by the head of the fire rapidly changing direction when the winds changed. The 1950 Pilitas Fires resulted in four firefighter fatalities in the Huer Huero area with another nineteen firefighters involved in the burn over resulting from the wind with no name phenomenon.

The Santa Lucia wind phenomenon has been previously responsible for driving coastal valley temperatures over 115 degrees Fahrenheit, such as those experienced in September 2020. The air temperature across the county can vary by as much as 50 degrees Fahrenheit within 10 air miles and down canyon katabatic winds can exceed 40 miles per hour.

Inland areas of the county, east of the Santa Lucia Range, can experience very high summer temperatures contributing to extremely dry vegetation unpredictable winds while coastal areas like Morro Bay may have high temperature of 60 degrees Fahrenheit with persistent marine fog.

Plume dominated fires where intense fires create their own wind effects, are another distinct fire type that has wreaked havoc in SLO County and is discussed in more depth in Section 2 Fire History.

Shell Beach

Assets at Risk

Many people and infrastructure are vulnerable to wildfire risk throughout SLO County. Some communities are at greater risk due to the natural environmental conditions and built environmental conditions that are present in their area. Human life and safety is the primary priority of most wildfire hazard reduction projects occurring in SLO County. Environmental restoration projects are of vital importance as well, although they are commonly developed in strategic locations to provide risk reduction to buildings or infrastructure and to provide improved ecological health. Identifying assets at risk within SLO County allows project planners to develop wildfire risk reduction projects strategically to achieve multiple benefits. A non-comprehensive list of examples of major assets at risk in SLO County are shown to the right and in Figure 2.

Further accounting of specific assets at risk will be found in the Fireshed Unit Reports within the Appendix.

Population Hubs: San Luis Obispo, Paso Robles, Atascadero, the Five Cities area, Cambria, Los Osos, Morro Bay, Templeton, San Miguel, Shandon, Nipomo, Santa Margarita, and Cayucos

Institutional Assets: California Polytechnic State University-San Luis Obispo (Cal Poly SLO), Cuesta College, California Men's Colony, Atascadero State Mental Hospital, California National Guard-Camp SLO, California National Guard-Camp Roberts, schools and hospitals

Infrastructure Assets: Diablo Canyon Nuclear Power Plant, Union Pacific Railroad, utility lines, underground gas and petroleum pipelines, water treatment facilities, state water project, energy extraction sites, highways, communication sites, and roads

Economic Assets: Business, industry, historic sites, jobs, Hearst Castle, tourism, wine, and agriculture

Natural Assets: Oceano Dunes, Los Padres National Forest, Montaña de Oro State Park, BLM-Carrizo Plains National Monument, wildlife refuges and recreational beaches

Figure 2. San Luis Obispo County - Assets at Risk

Fire Suppression and Fire Use

Historic wildfires have long been a natural part of California's ecosystem, shaped by the state's diverse landscapes and Mediterranean climate. Before European settlement, Native American tribes in SLO County practiced traditional fire use management, utilizing controlled burns to maintain and enhance ecosystems, promote biodiversity, improve hunting and gathering, security and defense, and manage resources. These practices, rooted in centuries of indigenous knowledge, played a crucial role in shaping the landscape and ecological processes of SLO County's diverse ecosystems. However, with the arrival of European settlers to California and the suppression of indigenous burning practices, the frequency and intensity of these managed fires began to change.

Other cultural burning practices in SLO County were conducted by the Spanish and ranching communities which often burned shrublands to increase grazing for livestock and reduce large fire potential. Rangeland improvement burning remains an ongoing practice today.

Wildfire suppression in the American West began in earnest in the early 1900's. The legacy of this tactic is apparent with every passing fire season as more densely loaded acres burn with increased intensity. Not all fires are made alike, and the natural systems of California developed with fire of varying intensity as an integral function. Typical measurements of the intensity of a wildfire include flame length and rate of spread. Mature, dense vegetation (fuel) usually results in larger, more intense fires. Small, less intense fires are less impactful on soil and watersheds than large high intensity fires. The concept of fire return intervals (FRI) describes how often a landscape or vegetation type typically burns. When fire, whether natural or anthropogenic, is applied to the landscape within a normal FRI for the site, the quantity of fuel available to burn will likely keep the fire intensity at bay. Many plants in California have evolved fire adaptations and some require fire as part of their reproductive cycle. The practice of complete removal of fire from the system has resulted in reduced functionality of these natural systems and has overloaded natural fuel beds which cannot safely burn without putting people, property, and the environment at risk. Much of the wildfire suppression strategy is focused on protecting communities, infrastructure, and other assets.

Modern wildfire management strategies have evolved over time, incorporating elements of both traditional ecological knowledge and scientific understanding. Today, there is growing recognition of the importance of integrating traditional wildfire management practices with modern approaches to better protect communities, promote ecosystem health, and reduce the risk of catastrophic wildfires in California.

Prescribed burning near Hollister Peak

Concept Background – Firesheds

There are currently multiple efforts underway to develop plans related to evaluating and reducing wildfire consequences in SLO County. Other than the SLO County Fire Safe Council developed 2019 Countywide CWPP which defines desired end state goals, no single plan has been developed for the whole county based on an established consistent format. This has resulted in decentralized project development. While many of these efforts have been successful, there is value and efficiency gained in analyzing defined planning areas throughout the county.

Consistency in planning areas will improve collaboration, data sharing, data analysis, and education associated with the many wildfire planning and mitigation projects that are currently under way or being planned for in the future. A focused effort developed in concert with established standards will result in projects that complement one another and magnify benefits countywide. The development of the firesheds involves the characterization of specific fire and community related factors to promote consistency in the delineation of focused wildfire planning in SLO County.

Types of factors used to delineate firesheds are:

- **Micro-climate impacts**
- **Natural and built assets at risk**
- **Natural and engineered firebreaks**
- **Wildfire behavior and history**
- **Natural fire return intervals**
- **Prescribed fire and other fuel treatments**
- **Ecological restoration efforts**
- **Fire suppression system and capabilities**
- **Staff capacity for planning and response**
- **Consequences of management activities**

The Ten Pillars of Resilience adopted by the Governor's Wildfire and Forest Resilience Task Force are incorporated into the fireshed delineation, in addition to other more complex WUI factors that assist decision makers in prioritizing actions and efforts to reduce unwanted and increase desirable results of fires.

Source: The Tahoe-Central Sierra Initiative

Defining Firesheds

The firesheds, displayed in Figure 3, cover the entire county and like wildfires, are blind to artificial jurisdictional boundaries. While it is seemingly intuitive to utilize jurisdictional lines and land use planning boundaries for firesheds, our process is to visualize the county as a wildfire would. Where natural and human-made barriers, environmental factors such as micro-climates, topography and fuel types define an area.

The County was divided into five regions based on general characteristics that all the firesheds within a region have. This is often based on the proximity to affects of the ocean, the predominant topographic features such as mountains or valleys and the climate.

Each fireshed was created in a manner that the factors that both influence a wildfires spread and the impacts that a wildfire would have are consistent with the entire fireshed defined area. By providing a consistent approach to developing firesheds, fire safe projects with a fireshed can better support past and future projects in mitigating the impacts, or improving the benefits, of a wildfire or prescribe fire. Expert knowledge of historical wildfire behavior was used to identify the appropriate criteria to accurately distinguish each unit's boundaries. Boundaries follow fixed geographic features such as mountain ranges, valleys, roads, ridgelines, and developed areas that act as natural barriers to fire. Thus, these barriers can be used to shape the natural borders between the different firesheds. More information regarding the fireshed delineation methodologies can be found via the Fireshed Delineation Methodology report located in Appendix X.

The firesheds were delineated using a diverse set of metrics and data to categorize wildfire risk and spread. These factors include:

- Topography
- Elevation
- Vegetation
- Soil Types
- Hydrology
- WUI
- Wildfire Risk Assessment Modeling
- Ignition History
- Roadways
- Fuels Reduction
- Land Ownership
- Ignition Modeling
- Infrastructure
- Structure Characterization
- Evacuation Routes

Firesheds in SLO County

- 37 total firesheds
- Average fireshed size 57,472 acres
- 5 Regions

Region	Firesheds
Salinas River	10
Coastal	16
Carrizo	1
Cuyama	3
Estrella	7

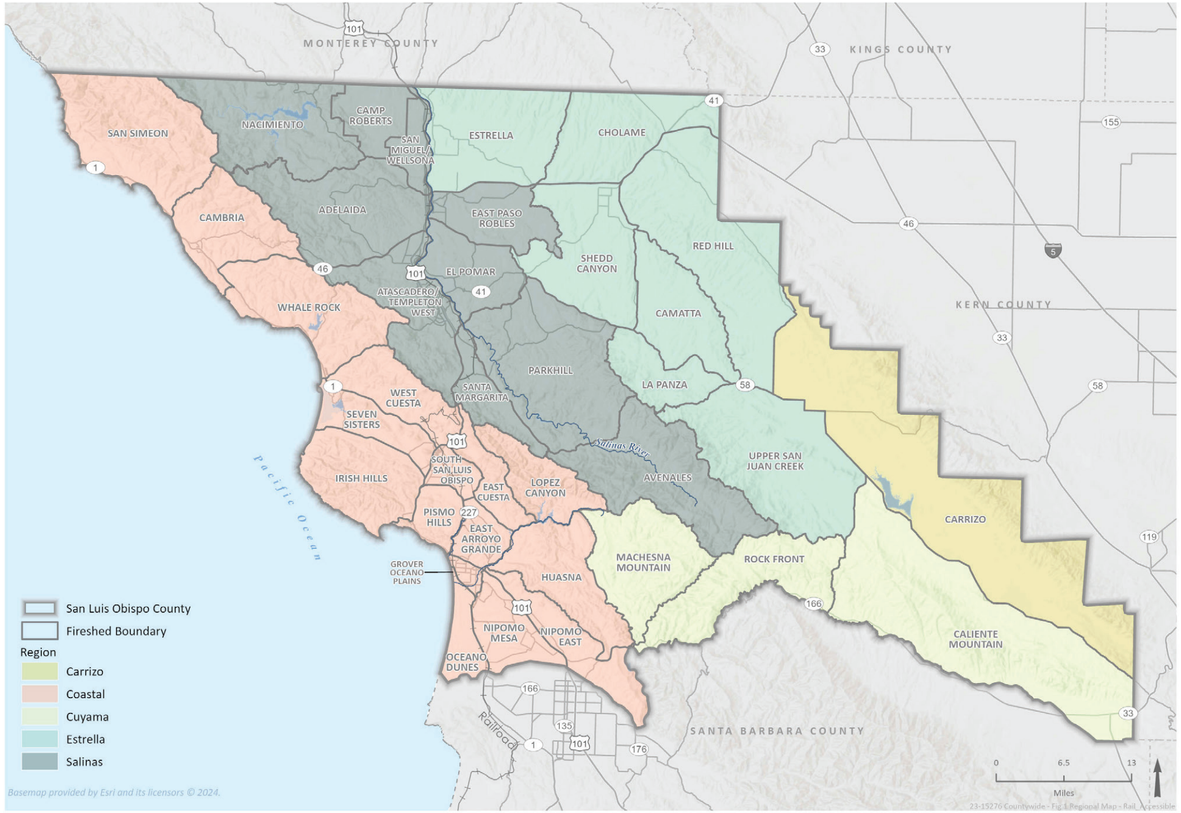


Figure 3. San Luis Obispo County - Firesheds

Fireshed Planning Tool

Purpose of Firesheds and Fireshed Reports in Wildfire Planning

Wildfire Planning Strategy

Wildfire planning refers to the process of developing and implementing strategies, policies, and actions to mitigate the consequences of wildfires on communities, ecosystems, and infrastructure.

Wildfire Planning Goal

The goal of wildfire planning is to reduce the risk and consequences of wildfires, restore more natural ecological conditions, enhance preparedness and response capabilities, and promote the overall safety and resilience of areas prone to wildfires.

Wildfire Planning Challenges

A primary challenge in wildfire planning is the wide variety of information needing to be analyzed from a host of disparate resources, which can lead to inconsistencies in project planning. Subjective data analysis coupled with non-standardized data sources may result in incongruous wildfire planning across a connected landscape.

Wildfire Planning Solutions

Effective wildfire planning requires the strategic collection of information so that the best available information is used to prioritize, plan, and conduct ecological restoration, wildfire fire prevention and response efforts efficiently.

Fireshed Report + Dashboard Action

The Fireshed Report and accompanying online Fireshed Dashboard will result in a comprehensive source for reliable, consistent, and up-to-date data for project development and enable stakeholder agencies to plan for wildfires more effectively in SLO County.

Fireshed Dashboard

Through the assimilation of available Geographic Information Systems (GIS) data into a simple user interface, decision makers can use the Fireshed Report and Fireshed Dashboard to provide key information about dynamic factors affecting wildfire and management. There is increased long term value and efficiency in coordinating across planning areas for maximum collaboration, resource efficiency, data sharing, and analysis for use by stakeholder agencies to perform hazard and risk assessment, mitigation measures, ecological restoration, and emergency operations. This resource provides project planners and those seeking grant funding with a consistent platform from which to base their funding and permit applications and plans. Funding organizations and the public at large will benefit from this established standard with a better understanding of the larger strategic approach that a single project can relate to within this planning framework.

This non-public facing GIS-based tool will facilitate project-level analysis and utilize consistent inputs from project planners to inform decision makers when determining priorities to mitigate unwanted consequences and impacts of wildfire (including social and economic impacts), guide ecological restoration and recovery projects, and advise policy makers about land use and other regulatory matters at a more refined scale.

To remain relevant, the Fireshed Dashboard will be updated regularly to maintain high quality datasets, many of which may be derived from private resource information. The Fireshed Dashboard will remain dynamic with regular data updates integrated as needed by the SLO FSC project management team.

The integration of relatively static information found within the Fireshed Report with the dynamic data housed in the Fireshed Dashboard will provide planners with baseline information about a planning area as well as up to date data that can reflect recent events. This will reduce the need for regular updates to the Fireshed Report.

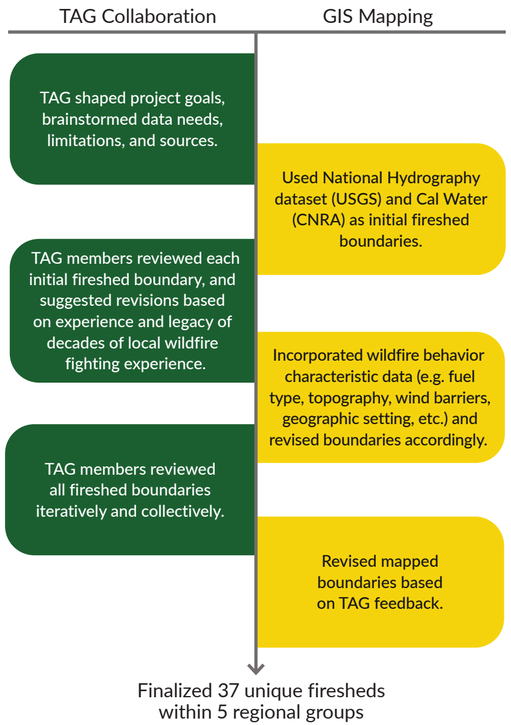
Collaboration and Involved Planning Parties

The delineation and development of firesheds in SLO County was a collaborative effort among several agencies and organizations. Through a California Climate Investment grant from CAL FIRE, the SLO FSC spearheaded the effort and identified specific parties to involve in the effort, specifically: local FIRE departments, CAL FIRE, the San Luis Obispo County Office of Emergency Services, Cal Poly SLO (Cal Poly), and a former United States Forest Service (USFS) biologist. Other involved planning parties include local landowners, California State Parks, county and municipal regulators, local homeowner associations, CalTrans, San Luis Obispo County Board of Supervisors, and the two Resource Conservation Districts. Several subject matter experts with extensive past experience working locally for fire management agencies participated on the Fireshed Technical Advisory Group (TAG) and were fundamental in building the fireshed boundaries. Their insights provided both broad-level statewide information and more targeted regional and municipal information to inform fire behavior and characteristics within each of the firesheds.

Process

The initial TAG meetings were focused on shaping the project goals and brainstorming data limitations and sources. Later meetings focused on revising initial fireshed boundary lines by incorporating more in-depth data regarding wildfire behavior characteristics, such as fuel type, wind barriers, geographic setting, and more. Using the National Hydrography Dataset from the US Geological Survey (USGS) and the Cal Water 2.2.1 dataset from the California Natural Resources Agency (CNRA) as a basis for determining firesheds, helped provide the foundation for the firesheds. Each original fireshed was analyzed with the experience and legacy of decades of local wildfire fighting experience of the TAG members. Many other factors affecting wildfire behavior that superseded hydrography were incorporated into the boundary definition process. Through this iterative process, the involved planning parties, such as CAL FIRE, SLO FSC, TAG members, and Rincon Consultants, Inc. (Rincon) created the final fireshed boundaries. Using ArcGIS and ArcPro software applications, Rincon mapped these boundaries and revised them based on TAG feedback during the development process, accompanying data sources, and intuitive knowledge from TAG members. More in-depth information regarding the delineation of the firesheds can be found in the Fireshed Delineation Methodology Report located in the Appendix.

Fireshed Delineation Process



Policy and Regulatory Framework

An understanding of relevant policies and regulations is essential for creating projects within the fireshed framework that align with federal, state, and community guidelines. The following list of agencies and regulatory processes should inform project planners of which ones should be included early in project development.

California Coastal Commission-Public Works Plan

A recent alternative to the Coastal Development Permit, the Public Works Plan (PWP) is an innovative approach to streamlining CCC permitting for qualifying public projects.

California Coastal Commission-Coastal Development Permit

The California Coastal Commission (CCC) is a state agency that oversees the development and implementation of land use plans, policies, and programs for the California coast.

Lake and Streambed Alteration Program

The CDFW Lake and Streambed Alteration (LSA) Program requires any person, state, or local government agency, or public utility to notify California Department of Fish and Wildlife prior to beginning any activity that may impact any river, stream, or lake including those that are dry.

Clean Water Act Section 401 Water Quality Certification

The 401 Water Quality Certification and Water Discharge Requirements is a required certification for projects that involve the removal or placement of soil, sediment, and other materials near water bodies, which may include fuels reduction projects.

Clean Water Act Section 404

Section 404 of the Clean Water Act requires authorization from the Secretary of the U.S. Army Corps of Engineers (USACE), for the discharge of dredged or fill material into all waters of the United States, including wetlands.

Incidental Take Permit

The California Department of Fish and Wildlife (CDFW) Incidental Take Permit process allow a permittee to "take" a California Endangered Species Act (CESA)-listed species if such a taking is incidental to, and not the purpose of, carrying out an otherwise lawful activity.

Endangered Species Act

The Endangered Species Act (ESA) of 1973 protects species federally listed as endangered or threatened throughout all or a significant portion of their range. Critical habitats upon which the species depends are also protected through the ESA.

California Governor's Wildfires & Forest Resilience Task Force Plan

The Wildfire and Forest Resilience Action Plan was designed to accelerate efforts to restore the health and resilience of California forests, grasslands and natural places; improve the fire safety of communities; and sustain the economic viability of rural forested areas.

California Vegetation Treatment Program

California Vegetation Treatment Program (CalVTP) is a California Board of Forestry and Fire Protection statewide Programmatic Environmental Impact Report (PEIR) that addresses hazard fuels reduction concerns related to CEQA.

Chaparral Management Program

The Chaparral Management Program (CMP) commonly represented as the Vegetation Management Program (VMP) is a PEIR cost share program developed by the California Department of Forestry & Fire Protection.

California Forest Improvement Program

The California Forest Improvement Program (CFIP) is a cost share program available through CAL FIRE for various forestland conservation, habitat improvement, and fuel reduction practices.

CalTrans Encroachment Permits

Encroachment permits through CalTrans may be required for certain activities including vegetation management within State highway rights-of-way.

County of San Luis Obispo Encroachment Permits

Encroachment permits are required within SLO County for activity, such as construction, that takes place in the County right of way.

California Public Resources Code 4290

The California Administrative Code Title 14, Public Resources Code 4290, along with local ordinances and County Planning and Building Land Use Ordinance, outlines development requirements in the Wildland-Urban Interface (WUI) for unincorporated areas. Each of the seven incorporated cities has its own WUI development and building standards, derived from the California Building Code and local Land Use Ordinances. Specifically, California Building Code Chapter 7A focuses on buildings in WUI areas, detailing regulations on building materials, home hardening, water supply, and other protective measures.

Prescribed Burn Plan

The Prescribed Burn Plan is a regulatory application that burners must submit to the jurisdictional fire agency before starting a prescribed fire.

California Governor's Tree Mortality State of Emergency & Executive Orders

The January 17, 2014, State of Emergency was declared by then Governor Jerry Brown in response to extensive drought conditions and subsequent tree mortality in the state.

California Board of Forestry and Fire Protection Forest Practice Rules

The California Board of Forestry's Forest Practice Rules are an exhaustive list of regulations that provide a framework for the assessment of cumulative impacts that may occur as a result of proposed timber operations, which includes fuels reduction projects.

Healthy Forest Restoration Act

This act creates the framework for plans such as Community Wildfire Protection Plans (CWPPs) and allows for community input and involvement in the identification of areas of high wildfire risk.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) is a federal law that aims to preserve the country's historic and cultural resources.

California Environmental Quality Act

California Environmental Quality Act (CEQA) requires that state and local agencies disclose and evaluate the significant environmental impacts of proposed projects and adopt all feasible mitigation measures to reduce or eliminate those impacts.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires federal agencies to assess the environmental and related social and economic effects of their proposed actions prior to decision making.

Federal Good Neighbor Tactics

Federal agencies are directed to develop Good Neighbor Agreements with adjoining landowners/managers to provide mutually beneficial protection efforts that cross jurisdictional boundaries.

San Luis Obispo County Air Pollution Control District

San Luis Obispo County Air Pollution Control District (SLO APCD) is a local regulatory agency responsible for protecting air quality within SLO County.

Burning Permits

Burning permits are another option available to landowners to conduct burning operations on their land.

Fireshed Report + Dashboard VS CWPP

Supplement or Complement a CWPP?

In SLO County, the Countywide CWPP is a strategic planning document designed to articulate common and attainable end state goals for desirable conditions that will reduce wildfire consequences and achieve ecological restoration. Each organization and agency moves at their own pace to attain the goals with the resources at their disposal. The Fireshed Report and Dashboard will supplement the CWPP, as it will accomplish the same high-level strategic goals of a CWPP and serve as a priority and planning tool to attain the end state goals. Both documents outline strategies for mitigating wildfire spread and community risks, but with the addition of the online Fireshed Dashboard, this document will provide a much more detailed platform for agencies to plan and prioritize wildfire hazard reduction projects accurately and in alignment with one another.

Hearst Castle

The Fireshed Report concept is intended to be a component of the commonly known Community Wildfire Protection Plan (CWPP), principally providing the hazard and risk analysis component. CWPPs and the Fireshed Report do have intentional similarities, as they both serve to reduce environmental, social, and economic risks associated with wildfires within SLO County. Both provide ample descriptions of the plan area and relate strategic wildfire planning to community needs, but the Fireshed Report is intended to provide a more dynamic planning tool through the Fireshed Dashboard. Simply stated, the goal of the Fireshed Dashboard is to help move the project from planning to implementation. This graphic below compares how a CWPP is similar and different from the Fireshed Report and Dashboard. The fireshed process will take the next steps of implementing strategies identified in the CWPP.

	FIRESHED REPORT + DASHBOARD	BOTH	CWPP
Overview	An in-depth look at a specific area that has been designated using fire behavior characteristics to offers project planners a single database with which to design projects that optimize area protections and reduce consequences.	Serve as a high-level planning documents to help communities best prepare for wildfire.	Seek to reduce losses to human life, property, and critical infrastructure for communities present within the WUI and have been the most commonly used wildfire planning document.
Regulatory Driver	Contains all content to comply with the 2003 Healthy Forests Restoration Act.	Comply with the 2003 Healthy Forests Restoration Act.	Originated from the 2003 Healthy Forests Restoration Act.
Organization	Up-to-date information to plan more effectively such as fire history, mitigation projects, recent development, and improved fine scale vegetation mapping.	Serve as a high-level planning documents to help communities best prepare for wildfire.	Focus on unique regions, which can vary from a small neighborhood to a regional, multi-county area.
Content	Provides the standard suite of information for successfully writing wildfire mitigation grants because details for project planning are provided.	Provide information to inform policymakers and agencies to best management practices in the defined area.	Provide community overviews and descriptions, utilize wildfire risk assessment, identify assets at risk from wildfire.
Recommendations	Allows users to make specific project decisions at a granular level based on dynamic site-specific data.	Contain recommendations at varying levels.	Provide biophysical and sociopolitical recommendations for improving wildfire prevention, mitigation, preparedness, and recovery within its focal region.
Opportunities/ Challenges	Through consistent management, the Fireshed Dashboard will remain relevant and improve oversight as better dynamic site-specific data becomes available. Provides further granularity for each fireshed, which will aid agencies in reviewing and planning projects in a specific unit.	If specific projects are included within the static reports, the documents can quickly become dated and require repeated updates and revisions.	Can often be static and fail to provide detailed, dynamic options for wildfire planning and mitigation for specific areas. With no integrated project planning component, a CWPP may languish and not serve the purpose of empowering the community it was designed to benefit.

2.

SAN LUIS OBISPO COUNTY CHARACTERISTICS

SLO County is located on the California central coast and is home to a unique wildfire regime influenced by a combination of distinct micro-climates and weather patterns, fuels, topography, and human behavior. To better recognize these wildfire regimes throughout SLO County, individual firesheds have been developed to constitute concise planning units to capture the specific characteristics that influence a planning unit's wildfire behavior. The firesheds have been developed as planning units that will assist with regional and local planning, mitigation efforts, and management of wildfire threats and consequences. The firesheds will assist managers in the identification, assessment, and development of projects that will reduce, prevent, or eliminate the impacts of destructive wildfire.

There are several key countywide characteristics that contribute to the collective wildfire risk and behavior that span across fireshed boundaries.

These characteristics include:

- **Socioeconomic Consequences of Wildfire**
- **Cultural History**
- **Wildland Fatality Fires**
- **Life Safety and Development Patterns**
- **Evacuation**
- **Fuel Reduction Methodologies**
- **Natural Environment and Fire**
- **Air Quality Concerns**
- **Topography**
- **Fire History**
- **Wind**
- **Microclimates**
- **Critical Infrastructure**
- **Emergency Planning**
- **Firefighting Assets**
- **Fire Hazard Severity Zones**
- **Built Environment**

Effective project planning requires a detailed understanding of the existing socio-economic and environmental conditions at a site and the elements that may influence the project. By providing insight about these factors, beginning with the countywide elements, and progressively narrowing the focus from the county level to the region within the county, to the individual firesheds within the region, this report provides context at a scale befitting understanding of fire impact and mitigation project development. Some elements such as wildfire history should be addressed at all levels of granularity, while others such as cultural history are generally applicable on a county-wide basis.

Grassland Fire

Life, Safety, and Development Patterns

Community development in SLO County has historically occurred around wildland areas where fire risks are high. Wildfire in these communities has been persistent and has caused many communities to reevaluate fire preparedness as wildfire risks become more common with climate change. Since the founding of the County in the late 18th century, population hubs have grown within the wildland urban interface, with rural communities developing more within the wildland urban intermix. This diversity in development has brought SLO County's population to over 280,000 people across seven incorporated cities and dozens of unincorporated, census designated areas. The distribution of land uses throughout the County's history has created a unique fire regime, centered around the wildland urban interface that makes up much of the developed areas of the County. As of the 2020 census, the most populated areas in the county include the cities of San Luis Obispo, Paso Robles, Atascadero, and the Five Cities area. With the expansion of these areas, encroachment into the previously uninhabited wildland areas has occurred to support the growing population. As a result, SLO County's wildland urban intermix areas and subsequent fire risks around these population hubs have increased significantly.

To combat these risks and prepare for increased urbanization throughout the wildland areas of SLO County, there are many precautions and community design standards that should or in some cases are required to be followed. Such characteristics include:

- Ignition resistant design for new buildings and infrastructure
- Ensuring safe evacuation routes
- Ensuring that communities have wildfire defenses
- Sustainable vegetation management plans
- Maintaining road regulations for fire emergency access (such as proper width and turnarounds), and
- Retrofitting existing buildings to ignition resistant standards.

According to CAL FIRE's Fire and Resource Assessment Program (FRAP) database, there are several Priority Communities and Communities at Risk within the county, in which fire management activities, including bolstering WUI protection via vegetation management, infrastructure resilience, building and home hardening, should be prioritized. Such communities include some of the most populated areas of the county, including San Luis Obispo, Atascadero, Paso Robles, Arroyo Grande, Cambria, and Nipomo.[1] In order to minimize the WUI risks to these areas, several protective measures have been standardized. Such standards include:

- Minimizing high voltage lines near dense vegetation
- Encouraging undergrounding electric utility lines
- Implementing firesafe building standards
- Retrofitting existing homes in the WUI with fire-resistant materials
- Adopting common defensible space standards
- Have adequate evacuation routes, and maintaining fire resistive landscaping around homes and businesses, while incorporating protections for natural environment.

As communities plan for future development throughout SLO County, it is imperative that WUI risks are identified and mitigated through the incorporation of fire-resistant development standards and strategies. These strategies will enable SLO County to continue growing in both size and prosperity without increasing the fire risk that the county has experienced throughout its history.

1 San Luis Obispo County. Community Wildfire Protection Plan. 2019. ***https://www.slocounty.ca.gov/Departments/County-Fire-Department/Publications/Community-Wildfire-Protection-Plan.pdf***

WUI Zone

Built Environment

While development continues to expand in SLO County, it is inevitable that structural vulnerabilities will also increase. SLO County's wildlands evolved with fire as an integral influence on the landscape, and different areas throughout the county have varied historic fire return intervals providing higher or lower risk of a wildland fire adjacent to built areas. Despite all efforts to keep fire at bay, wildfires are inevitable and therefore, development must include protective measures from wildfires. Fire does not need to be destructive; people do not need to be injured or die as a result of a wildfire event. Appropriate community preparedness, design, and building materials greatly increase the probability of structural survival while maintenance of defensible space around buildings can reduce the severity of wildfire exposure. Effective evacuation strategies will reduce injury and death. Furthermore, a building constructed to resist ignition from a wildfire provides refuge from a wildfire if people do not have time to evacuate. The Office of the State Fire Marshal has developed a webpage providing planners and homeowners with a repository for useful information.

General Plan Land Use Element

The Land Use General Plan and its elements (Land Use, Circulation, Housing, Conservation, Open Space, Noise, Safety, Environmental Justice, and Air Quality) is the overall guiding document for development in a city, community, or county. Several of these elements have significant bearing on wildfire resilience, especially the Land Use, Safety, Open Space, and Circulation elements. General plans and their elements are updated periodically which provides an excellent opportunity to include wildfire resilience measures for future development.

Fire agencies should remain fully aware of the General Plan and its provisions for incorporating overarching development conditions on development that improve wildfire resilience.

2 *California State Fire Marshal. (2024). Wildland Hazards and Building Codes. Retrieved from* ***https://osfm.fire.ca.gov/what-we-do/code-development-and-analysis/wildland-hazards-and-building-codes***

House Fire

Subdivision Review

Subdivision review, under the Subdivision Map Act, occurs when a landowner proposes to subdivide a larger parcel into multiple smaller parcels. Subdivisions are usually done to facilitate more intense development, such as a 20-acre parcel subdivided into 60 small parcels to build homes and road network. New or proposed subdivisions go through a rigorous review process that includes many organizations and agencies that establishes the foundational design and conditions for the future development. Once approved, the conditions are locked in. This is an important stage for fire agencies to affect the wildfire resistant design, resilience, and sustainability of fire defense systems for wildfire and built environment fire and life safety. Community parcel layout, road networks, evacuation planning, water systems, and sustainable vegetation management program are best when developed during this stage. Once the new subdivision "map" is approved, attempting to enact changes to water systems, road layout, or vegetation management programs is complicated.

There are several "antiquated" subdivisions in SLO County that were approved prior to considerations for wildfire or evacuations. The landowner can develop or subdivide under the rules in place at the time the map was recorded, without being required to meet current WUI requirements.

Mello-Roos Community Facilities Districts (CFD) are a type of special tax district formed when property owners within a geographic area agree to impose a tax on property in order to fund infrastructure improvements or services. These are highly effective ways to define and fund sustainable life safety, fire protection, and vegetation management programs and are more easily accomplished during the subdivision map phase of a project.

Conditions, Covenants, and Restrictions (CCR) are also used but with less success compared to CFDs. CCRs are particularly helpful in maintaining fire safe practices such as requiring property owners to maintain fire resistant landscapes, ignition resistant fencing materials, maintaining community open space areas, providing public education signage etc.

Fire agencies should actively engage at the subdivision map review process and not wait until the building permit phase to provide design input, when it is often time too late to achieve desired results such as road network, water systems, and open space maintenance requirements.

Building Codes

Fire agency Fire Marshall's Offices provide fire/life safety plan review and field inspection of most construction projects. Projects range from single family residences to commercial/industrial construction. The Fire Marshall's Office reviews development plans to ensure projects meet the current code requirements for adequate public evacuation, fire apparatus access, and water supplies. Building plans are reviewed to ensure projects meet the fire and building codes for fire/life safety requirements for fire rated construction, occupant egress systems, fire sprinkler systems, and fire alarm systems.

SLO County Fire/CAL FIRE have developed the SRA Fire Safe Regulations (2023) document in alignment with the California Board of Forestry and Fire Protection SRA Fire Safe Regulations.[3] These regulations apply to all SRA areas in SLO County. Title 14 applies to all projects including new building construction permits, remodels, change in occupancy, code violation permits and applications for use permits. The regulations are established to ensure the minimum wildfire protection standards in conjunction with building construction and development are being met. SLO County fire departments have adopted more stringent regulations through the adoption of local fire codes and ordinances. Local fire code amendments are identified throughout the guidelines. It is the responsibility of the design professional, property owner, or their representative to ensure the requirements of the Fire Code, local amendments and Title 14 requirements are being met.

Structure Hardening

There are three ways a building can be exposed to wildfire: direct flames from a wildfire or burning neighboring building; radiant heat from nearby burning plants or structures; and flying embers. Flying embers from a wildfire can ignite buildings up to a mile away and are responsible for the destruction of most buildings during a wildfire.[4]

California Building Code Chapter 7A standards for buildings located in Wildland-Urban Interface Fire Areas and the Defensible Space Requirements are required for all buildings built in SRA and LRA that are designated Very High Fire Hazard Severity Zone (VHFHSZ), or where a local agency in LRA has adopted a WUI designation that requires Chapter 7A standards be met. The regulation provides strict requirements on new construction that provides hardening of building from wildfire.[5]

CAL FIRE, the National Fire Protection Association (NFPA), and other organizations have developed helpful guides on how to harden existing buildings, such as *Low-Cost Retrofits*[6] as well as the *Wildfire Home Retrofit Guide*[7] as a reference guide.

3 CAL FIRE San Luis Obispo County Fire Department. (2023, September). SLO Fire Safe Development in State Responsibility Areas 2023. Retrieved from ***https://calfireslo.org/wp-content/uploads/2023/09/SLO-Fire-Safe-Development-in-State-Responsibility-Areas-2023.pdf***

4 Ready for Wildfire. (2024). Hardening Your Home. Ready for Wildfire. Accessed Feb. 20, 2024 from ***https://www.readyforwildfire.org/prepare-for-wildfire/get-ready/hardening-your-home/***

5 California Legislature. (September 29, 2020). Bill Text - AB-3074 Fire prevention: wildfire risk: defensible space: ember-resistant zones. Accessed August 1, 2024, from ***https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200AB3074***

6 Ready for Wildfire. (2022, February 17). Low-cost Retrofit List Update 2_17_22. Ready for Wildfire. Accessed Feb. 20, 2024, from ***https://www.readyforwildfire.org/wp-content/uploads/Low-cost-Retrofit-List-Update-2_17_22-2.pdf***

7 Ready for Wildfire. (2021, January 26). Wildfire Home Retrofit Guide. Ready for Wildfire. Accessed Feb. 20, 2024, from ***https://www.readyforwildfire.org/wp-content/uploads/Wildfire_Home_Retrfit_Guide-1.26.21.pdf***

Wood Shake Roofing

Overgrown Vegetation

Sprinkler System

Debris in Gutters

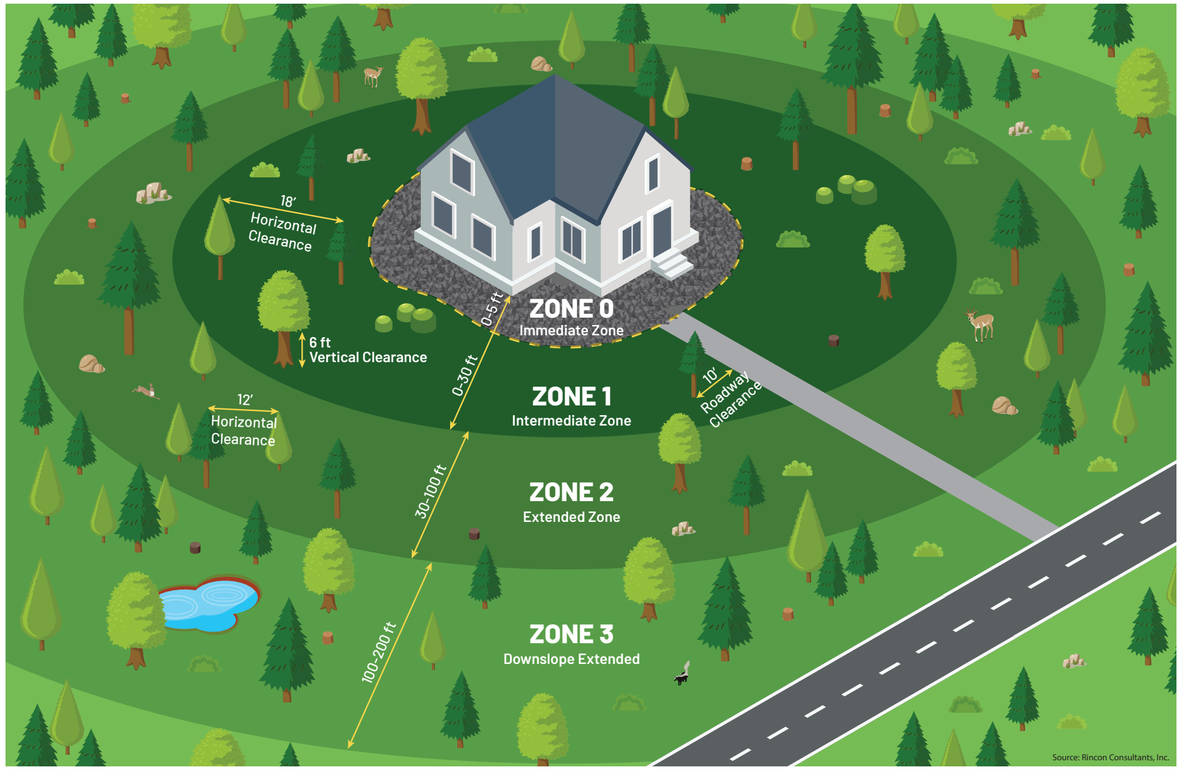


Figure 4. Defensible Space Zones

Defensible Space

Defensible space regulations in California have strengthened in the wake of extremely destructive wildfires. Local agencies have adopted defensible space and hazardous fuels or "weed" abatement regulations for their communities. In unincorporated SRA, California Public Resources Code 4291 and CAL FIRE defensible space guidelines for parcels with buildings have been established[8] to direct appropriate vegetation management and landscaping to increase fire safety through the Zone 0, 1, and 2 standards shown in Figure 4:

Zone 0:

0-5 feet from buildings is an ember resistant zone, which should have no combustible material. Ideally non-combustible construction materials will have been used for roofing, siding, decks, and fences.

Zone 1:

5-30 feet should be kept lean and green with removal of all dead plant material. Tree canopies should be trimmed to keep 10 feet of space between trees. Create separation between trees, shrubs and built items that may catch fire.

Zone 2:

Fuel reduction within 100 feet. Mow grasses to maximum of four inches. Create horizontal and vertical space between vegetation. Remove dead plant materials.

Zone 3:

Additional methods of creating defensible space can be found in Figure 4.

In alignment with Assembly Bill – 38, starting July 1, 2021, the seller of any real property that is in a High or Very High Fire Hazard Severity Zone (FHSZ), needs documentation of a compliant Defensible Space Inspection (DSI) if the home was constructed before January 1, 2020.[9]

Hazardous Fuel or Weed Abatement Regulations

Several municipalities and special districts have enacted regulations that require a landowner to go beyond the defensible space rules. These regulations require property owners to reduce flammable vegetation on certain vacant lots. Most SLO County cities and fire districts have rules to clear vacant lots. SLO County, outside of special districts, does not have such a weed abatement ordinance but is studying what it would take to enact one.

Landscaping

Along with appropriate vegetation clearance comes appropriate vegetation choices for landscaping. Many native and non-native ornamental plants are flammable. Homeowners are responsible for installing fire-smart landscaping. Focusing on plant characteristics that provide resistance to fire should be a priority. Such as selecting plants that are low-growing and high in moisture content with low biomass production. Plants that should be avoided include plants with high oil or resin content, exfoliating or peeling bark, and those that produce significant dead material.[10] In the Ember Resistant Zone 0-5 feet from the house there should be nothing that is combustible including plants, wood chips, wooden fencing, lawn furniture etc.

8 California Department of Forestry and Fire Protection. (2024). DSpace. Accessed Feb. 20, 2024, from ***https://www.fire.ca.gov/dspace***
9 CAL FIRE San Luis Obispo County Fire Department. Fire Marshal. Accessed Feb 20, 2024, from ***https://calfireslo.org/fire-marshal/***
10 McCue, K. (2015, June 28). Fire Safe Landscaping. University of California Agricultura and Natural Resources. ***https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=18178****.*

Critical Infrastructure

Critical infrastructure includes systems that provide electricity, water, communications, transportation, gas and oil, cable and television, internet, railroad, and roads and highways. These systems provide the support backbone to support communities. It is vital to consider these systems and their vulnerability to wildfire damage and, most importantly, the consequences of the loss of use of these systems. The direct impact of rebuilding and the indirect impact of doing without them for an extended period of time should also be considered. An example is fire damaging a mountaintop microwave and communications system site that provides cell service, telephone, data transmission, radio communications, etc. The direct damage to the hardware would likely be in hundreds of thousands or millions of dollars; the economic and societal loss of the provided services can be several times the direct cost. Major critical infrastructure in SLO County is shown in Figure 5.

- **Electricity**
- **Communications**
- **Railroad**
- **Water**
- **Cable, Satellite, and Fiber Optics**
- **Gas and Oil**
- **Public Transportation**
- **Air Transportation**
- **Roads and Highways**

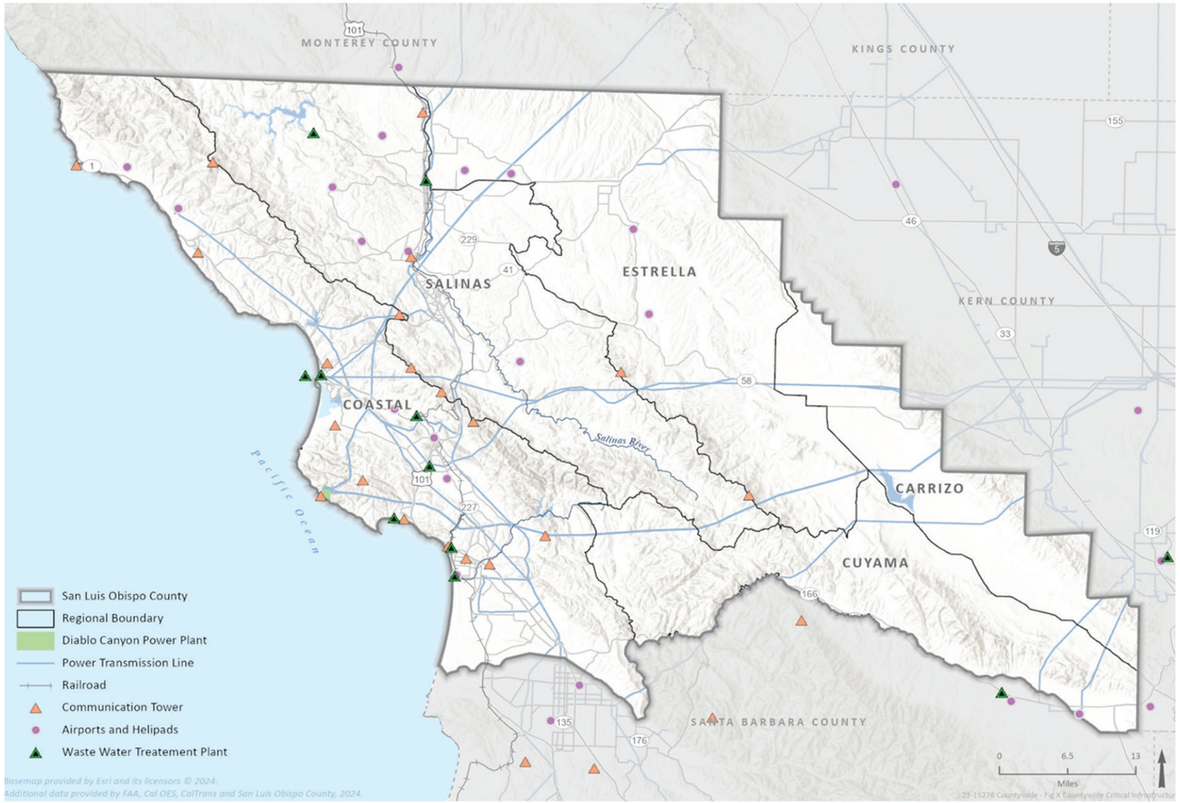


Figure 5. SLO County Critical Infrastructure

Critical Infrastructure

Electrical Utility-High Voltage Lines

Electrical power is one of the most important infrastructure components to protect. The basic functions of society are incredibly dependent on electricity. Loss of service for even short periods can lead to life or safety concerns. When electrical utilities are involved in wildfires the system can either be temporarily de-energized for safety, or, if damaged by the fire, can require extended loss of service while repairs are made. Protection of electric service delivery is especially important. Equally important is the design, construction, and maintenance of the electrical system to reduce fire ignitions. Ignitions may be caused by system hardware failures, trees falling across or limbs contacting conductors, vehicle accidents that damage poles and lines, human activities, and even large birds shorting conductors.

Electric utility lines present a wildfire ignition source in SLO County. Pacific Gas and Electric (PG&E) is the electricity provider for SLO County. The California Public Utilities Commission (CPUC) and the California Public Resources Code (CPRC) have issued General Orders and established code respectively to develop vegetation clearance standards for all high-voltage electric utilities. Clearance of vegetation around high voltage equipment should only be conducted by certified professionals in contract with the electricity provider.

Communications Systems

Communications systems infrastructure is highly vulnerable to wildfires due to the reliance on physical components like cell towers, cables, and power lines, which can be impacted by fire. Wildfires can sever critical connections, leading to disruptions in cellular, internet, and emergency communication services. The loss of power can disable communication networks, making it difficult for emergency responders to coordinate efforts and for residents to receive vital information. Additionally, smoke and heat can interfere with signal transmission, compounding the challenges. Post-wildfire access to vital communications sites may be affected by soil and road network stability. Access roads should be managed for stability prior to rainfall events during the wet season following a wildfire.

There are several critical communications infrastructure sites in SLO County. Cuesta Peak is a key site for broadcasting and communications, serving public safety and commercial networks. Rocky Butte is an important radio and emergency communications services site serving the north county. The La Panza communications site is a vital communications hub in the eastern part of SLO County. The rural and elevated locations often used for communications sites increase their vulnerability to wildfire and post wildfire hazards.

Water Systems

Water systems infrastructure is vulnerable to wildfires due to its reliance on above-ground and underground components that can be directly impacted by fire. Wildfires can damage pipelines, storage tanks, pumping stations, and treatment facilities, leading to disruptions in water supply and quality. Heat from fires can cause structural damage, while ash and debris can contaminate water sources. Additionally, power outages during wildfires can disable pumps and other essential equipment, making it difficult to maintain water pressure and supply for firefighting efforts and residential use.

There are several major surface water storage locations in SLO County, all are located in rural areas surrounded by open space and vulnerable to wildfires. Nacimiento Reservoir is the largest in SLO County, primarily serving water supply and flood control needs. Lopez Lake provides water supply to the Five Cities communities. Santa Margarita Lake provides water to some north county municipalities and the City of San Luis Obispo. Whale Rock Reservoir, near Cayucos, is also a major supplier to the city of San Luis Obispo. Lastly, Twitchell Reservoir on the border of San Luis Obispo and Santa Barbara Counties is primarily used for groundwater recharge and flood control.

Railroad Infrastructure

Railroad infrastructure is highly vulnerable to wildfires due to the extensive and exposed nature of rail networks, which often run through remote or wildfire-prone areas. Key vulnerabilities include the potential for damage to tracks, bridges, signaling systems, and communication networks, which can disrupt operations and pose safety hazards. Wildfires can also create debris and falling trees, which can obstruct tracks, leading to derailments or delays. Additionally, the heat from wildfires can warp steel tracks, further compromising the integrity of the rail system. Ensuring that vegetation management and fire-resistant materials are in place is critical for mitigating these risks. In SLO County, the Union Pacific Railroad carries passengers and freight on a north/south line roughly parallel to SR-101. The three train stations in SLO County are located in Grover Beach, San Luis Obispo, and Paso Robles.

Roads and Highways

Road and highway infrastructure is particularly vulnerable to wildfires due to the potential for direct damage from flames, intense heat, and falling debris, such as trees or power lines. Wildfires can weaken or destroy road surfaces, guardrails, and signage, leading to hazardous driving conditions. Additionally, smoke can reduce visibility, increasing the risk of accidents. The closure of roads and highways during wildfires can also impede evacuation efforts and restrict access for emergency responders, further exacerbating the challenges posed by the fire. Maintaining clear and safe roadways is crucial for effective disaster response and public safety.

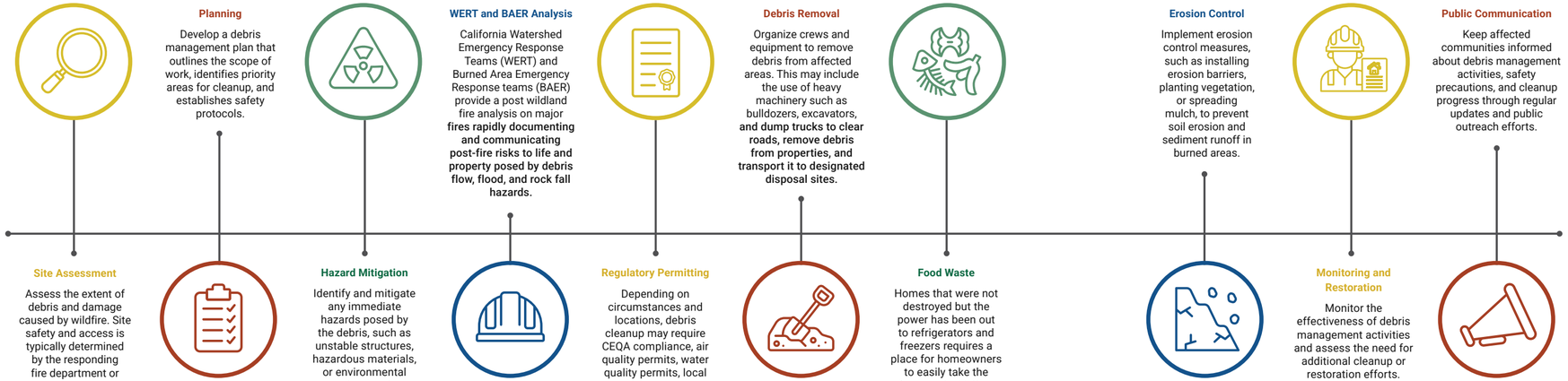
Oil and Gas Pipelines

Oil and natural gas pipeline infrastructure faces significant vulnerabilities to wildfires, primarily due to the potential for fires to damage or destroy critical components of the pipeline system. When wildfires approach or directly impact pipeline infrastructure, several risks emerge: the intense heat can weaken or rupture pipelines, leading to leaks or explosions; flames may damage protective coatings or insulation, compromising the pipeline's integrity; and smoke and ash can obstruct or contaminate vital equipment. Additionally, wildfires can disrupt access for maintenance and emergency response teams, exacerbating the potential for a disaster.

Post Fire Cleanup

Managing the Mess

In the event of a wildfire reaching the built environment, structure damage or loss is very likely. Post-fire, the cleanup process can be fraught with complications ranging from hazardous material management to regulatory hurdles and expense. Post-wildfire debris management involves several steps to safely and efficiently remove and dispose of the debris left behind. Each wildfire will result in unique factors, though the typical steps involved are shown below. By following these steps, post-wildfire debris management can help minimize environmental damage, protect public health and safety, and support the recovery and rebuilding process in wildfire-affected areas.



Site Assessment

Assess the extent of debris and damage caused by wildfire. Site safety and access is typically determined by the responding fire department or emergency services. Building inspection may be necessary to determine structural integrity. Insurance adjusters may be involved during this process to determine the extent of damage and document losses.

Planning

Develop a debris management plan that outlines the scope of work, identifies priority areas for cleanup, and establishes safety protocols.

Hazard Mitigation

Identify and mitigate any immediate hazards posed by the debris, such as unstable structures, hazardous materials, or environmental contaminants.

WERT and BAER Analysis

California Watershed Emergency Response Teams (WERT) and Burned Area Emergency Response teams (BAER) provide a post wildland fire analysis on major **fires rapidly documenting and communicating post-fire risks to life and property posed by debris flow, flood, and rock fall hazards.**

Regulatory Permitting

Depending on circumstances and locations, debris cleanup may require CEQA compliance, air quality permits, water quality permits, local land use or grading permits, hazardous waste management permits, and cultural or historic resource permitting.

Debris Removal

Organize crews and equipment to remove debris from affected areas. This may include the use of heavy machinery such as bulldozers, excavators, **and dump trucks to clear roads, remove debris from properties, and transport it to designated disposal sites.**

Food Waste

Homes that were not destroyed but the power has been out to refrigerators and freezers requires a place for homeowners to easily take the food waste. Setting up dumpsters in neighborhoods assists with this should be considered.

Erosion Control

Implement erosion control measures, such as installing erosion barriers, planting vegetation, or spreading mulch, to prevent soil erosion and sediment runoff in burned areas.

Monitoring and Restoration

Monitor the effectiveness of debris management activities and assess the need for additional cleanup or restoration efforts.

Public Communication

Keep affected communities informed about debris management activities, safety precautions, and cleanup progress through regular updates and public outreach efforts.

CALRECYCLE

CalRecycle has developed the Consolidated Debris Removal Program through the California Governor's Office of Emergency Services (Cal OES) in collaboration with state and local governments and federal partners.[17] This two-phase process ensures a site is safely and efficiently prepared for rebuilding. Property owners must enroll in this program and provide site information as well as right-of-entry forms.

Phase I

Phase 1 includes household hazardous waste removal. The California Department of Toxic Substances Control or United States Environmental Protection Agency will work with CAL FIRE and the California Office of Emergency Services (Cal OES) to use damage assessment maps to determine where cleanup should take place. They are responsible for conducting this work to reduce the likelihood of exposure to toxic substances like exposed household hazardous waste and asbestos during the Phase II process.

Phase II

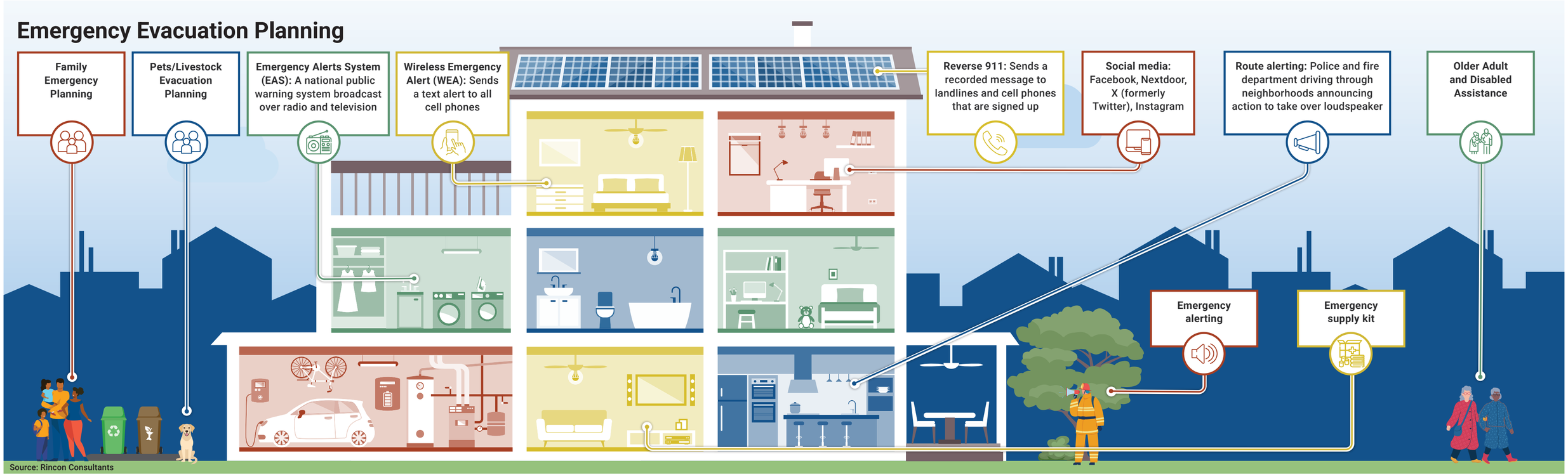
Phase II includes seven steps and is typically led by CalRecycle. This program differs from work being conducted privately due to its comprehensive process managed through the state program.

1. **Site Assessment and Documentation**
2. **Asbestos Assessment and Removal**
3. **Debris Removal**
4. **Soil Testing and Contaminated Soil Removal**
5. **Hazard Tree Removal**
6. **Erosion Control**
7. **Final Inspection**

Evacuation

There are a variety of threats resulting in the need for a community to evacuate or shelter in place. These could include wildfire, hazardous material spill, gas leak, power outage, hazardous air quality, storms, or an active shooter. The local first responders have several methods that are used to alert the public to take action.

In addition, residents can remain vigilant and prepared for unforeseen events by maintaining a connection with current events and weather conditions. Each property owner should be responsible to be informed on emergency preparedness.



Source: Rincon Consultants

Figure 6. Emergency Evacuation Planning

Notifications

Emergency responders make the determination on how best to protect the residents and guests of a community. Their first strategic choice is to go offensive to prevent the threat from spreading and causing more harm. Sometimes that effort is not possible, and then first responders will take a defensive strategy and utilize the following actions:

An example of the evacuation zones (e.g., SLC-E257 or FIV-E004) for the East Arroyo Grande Fireshed is shown in Figure 7. More information about evacuation zones is discussed at the ReadySLO website[19] and an interactive evacuation zone map is available from PrepareSLO.[20]

Evacuation Order

Movement of community members out of a defined area due to an immediate threat to life and property from an emergency incident. An Evacuation Order should be used when there is potential or actual threat to civilian life within one to two hours or when the Incident Commander deems it necessary to protect civilians.

Evacuation Warning

Alerting community members in a defined area of a potential threat to life and property from an emergency incident. An Evacuation Warning may be issued when the potential or actual threat to civilian life is more than two hours away.

Shelter in Place

Directing community members to stay secure inside their current location. Used if evacuation will cause higher potential of loss of life.

Temporary Refuge Area

These Temporary Refuge Areas (TRA) are temporary locations near the affected area to hold evacuees until safe evacuation is possible.

Safe Refuge Area

Temporary areas outside of affected area to stage evacuees until emergency is over or a shelter can be opened.

Evacuation Zones

The County of San Luis Obispo has created evacuation zones for each neighborhood. Evacuation notices and instructions are normally issued by zone and affect the entire zone and often times adjoining zones too.

19 County of San Luis Obispo. (2024). SLO County Emergency Services. Accessed April 3, 2024, from ***https://www.emergencyslo.org/en/index.aspx***
20 PrepareSLO. (2024). Evacuation Zones. Retrieved August 1, 2024, from ***https://www.prepareslo.org/en/evacuation-zones.aspx****.*

Figure 7. Evacuation Zones – East Arroyo Grande Fireshed

Evacuation Complexities

One of the most common factors in wildfire fatalities is failed evacuations. People, pets, and livestock are often required to evacuate due to approaching wildfire. Not having an evacuation plan with at least two ways out; waiting too late to leave; unexpected traffic congestion; vehicle accidents blocking the escape route; or deciding to stay and defend their properties and becoming trapped have frequently led to fatalities. Latchkey children, people with disabilities, and the elderly are left at home without transportation while their families are at work can create unmanageable rescue challenges for responders. In rural areas the evacuation challenge is compounded by the need to include horses and other livestock along narrow winding roads. Additionally, because SLO County is a high-volume tourist destination, short-term rentals and facilities serving visitors have people who are unfamiliar with the hazards, evacuation routes, and TRAs nearby.

Fire behavior (rate of spread) and evacuation times are closely tied to the need to prioritize projects. Areas that have fire behavior conditions that will likely experience fires spreading faster than evacuees can leave the area necessitate critical safety planning.

As a community adds more buildings and people, care must be given to consideration of the cumulative impact effect on the road network carrying capacity during an evacuation.

Roadside hazardous fuel clearance projects are common in SLO County and can provide safer access/egress while also reducing roadside ignition potential. Increased focus on strategic sections of roadway which would benefit evacuation and emergency access should be a focus of this work.

Livestock and Animals

In rural SLO County evacuation of livestock, horses, and pets creates a distinct set of complexities to evacuation. Determining the best solution, whether moving or protecting animals in place, is an equation the owners and emergency responders must be prepared to solve based on the variability of available evacuation routes and fire behavior. People with livestock or pets need specific plans for evacuation during multiple scenarios that include their animals. Creation of safety zones that reduce the travel distance to reach a place of safety must be considered as an alternative to moving more people and animals than a road network can handle in time to escape an approaching fire.

Part of the project planning considerations must include:

Evacuation of People and Animals

Road Network Carrying Capacity

Locations of Temporary Refuge Areas

Evacuee Egress Combined with Responder Access

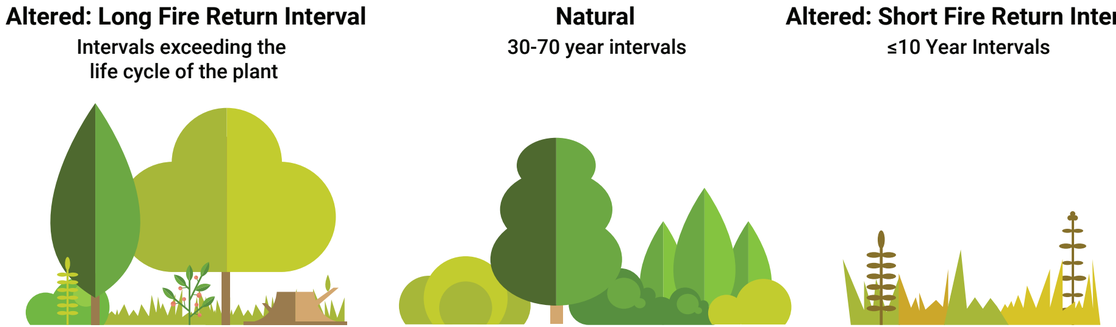
Biological Adaptations

Native vegetation in SLO county has evolved over eons to be fire adapted or in some cases require occasional wildfires. Examples of adaptations that vegetation in SLO County has developed include serotinous cones in Monterey; Knobcone; and Bishop pines (Pinus sp.) found in the Coastal Region. Serotinous cones are naturally "glued" closed with resins, requiring high heat to melt the resin adhesive and allow seeds to drop into the freshly burned soil. Many of the numerous chapparal species of SLO County are fire adapted and have developed a carbohydrate-rich root mass, allowing them to respond quickly post-fire to take advantage of the increase in water and sunlight resources. Coast live oak (Quercus agrifolia) is notable for its thick fire-resistant bark and its ability to recover from fire even though its leaves are very flammable and contributes to millions of airborne embers when they burn. This feature protects the internal cambium layer from the heat of the low to medium intensity fires that these oaks have evolved the ability to survive even when completely defoliated in the fire. These adaptations and many others are useful for plants to survive with occasional wildfire. The circumstances of the fires that led, over millennia, to the function of these tactics vary from natural causes like lightning to cultural burning practices for resource management used by Native Americans.

Monterey Pine with serotinous cone

Coast Live Oak

Fire Regime



*Chaparral ecosystems are widely varied across the state of California. Ideal fire return intervals vary across Chaparral ecosystems.

Source: Rincon Consultants

Figure 8. Fire Regime

The concept of fire return intervals refers to the average time between successive fires in a particular area or ecosystem. Fire return intervals vary depending on factors such as climate, vegetation type, topography, and human activities. Shorter fire return intervals indicate more frequent fires, while longer intervals suggest less frequent fire occurrence.[21] Familiarity with the fire return intervals for certain species and natural vegetation groups helps wildfire professionals understand the health of a landscape based on fuel loading.

Fuel loading refers to the quantity of combustible materials, such as vegetation, dead wood, leaf litter, and other organic matter, present in an area.

Fires occurring too regularly for the native species to recover and respond are detrimental to the natural system that these species evolved with. Vegetation will nearly always respond and take hold to repopulate a site when a system is thrown out of its natural burn cycle. Although, with repeatedly short fire return intervals, vegetation is more often invasive, undesirable, or otherwise detrimental to the health of that landscape.

21 Joint Fire Science Program. (n.d.). Chapter 3: Fire Regimes. Retrieved from ***https://www.firescience.gov/projects/09-2-01-9/supdocs/09-2-01-9_Chapter_3_Fire_Regimes.pdf****.*

Effects of Fire Suppression

Fire suppression can be equally bad for the health of native plants. Without disturbance, most perennial plants will grow as long as there is available sunlight and water. Some plants, like many grasses and forbs are annuals, meaning they grow a new generation each year to full maturity, produce seeds for the next generation, and die. Other plants, like shrubs and trees, are perennials, meaning they continue to grow over an extended period, growing larger each year. Both types of vegetation produce biomass which eventually dies and will slowly biodegrade into constituent parts where it can be reabsorbed as building block material for other plants. The process of biodegradation does not keep pace with the production of vegetative materials, and over time, fuel loads increase. In the American west, where most of the native vegetation has evolved to live with occasional wildfires burning through on a regular fire return interval, the intensity of wildfires is limited by the amount of available fuels (fuel loads). Low to medium intensity wildfires can rejuvenate a landscape. These "good fires" serve to break down dead materials into ash to be incorporated into the soil, thin out weaker plant specimens which can reduce pest pressures and reduce resource competition for the surviving vegetation.

Fire suppression over the last century has resulted in fuel loading beyond the capacity of natural systems to handle without major disturbance. If that disturbance is wildfire, the result can be catastrophic. The high-intensity wildfires that result from burning overloaded fuel beds can overcome most of the fire adaptations that have evolved in native plants. The higher heat for an extended period that these fires are creating increases soil temperatures to levels plant roots are unable to survive and in some cases can cause massive die-off of the soil biota resulting in dead soils.[22]

This generalization of the interaction of fire in the ecosystem in SLO County is broad. The native ranges of vegetation, where they overlap with other species, their ideal fire return intervals, and their ideal growth conditions should be considered in project planning, though for landscape scale projects, cannot be standalone. Landscapes are pliant and resilient. Humans have been molding their natural surroundings as long as they have been a component of them. When planning project outcomes, a certain subjectivity must be factored in to reach the desired result. Common project methods for maintaining or improving landscape health emulate low to medium intensity wildfires with the goal of reinvigorating the natural advantages of native species' adaptations to wildfire. If successful, the next wildfire to reach the project area would not pose undue threat to nearby communities, would be manageable by firefighters, and would provide ecological benefits to the site that fire historically has.

For wildfire risk reduction projects, planners should understand the landscape, consider what the result of alternative versions of a project could be, and choose the best goal to reach the desired outcome. With these goals in mind, there is always a risk of unintended consequences of projects which can render the effort moot or worse. Collateral damage to protected species is typically avoidable through careful planning and compliance with regulatory requirements. Project planning should incorporate an interdisciplinary team of experts to ensure the expected outcome aligns with the intended result.

22 Snow, M. (2022, Oct. 11). How does wildfire Affect Wildlife and Forests?. U. S. Fish and Wildlife Service. Accessed Feb. 21, 2024 from How Does Wildfire Impact Wildlife and Forests? | U.S. Fish & Wildlife Service (fws.gov).

Rangeland projects may aim to produce desired forage response by burning at a specific time of year.

Fuels treatments in the many non-native eucalyptus groves in SLO County may aim to reduce ladder fuels strictly through removal of dead materials.

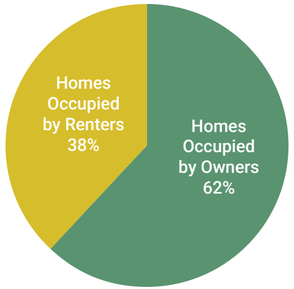
Projects in Monterey pine forests may strive to cull weak and diseased trees to benefit forest health and regeneration.

Socioeconomic Consequences of Wildfire

Wildfires can disrupt livelihoods, destroy homes, damage critical infrastructure, result in job losses, impact community safety, and cause drastic economic turmoil. Understanding these consequences is a necessary part of planning for wildfires and will help SLO County adequately prepare should a major wildfire event occur. In SLO County, about 38 percent of homes are occupied by renters and 62 percent are occupied by owners of the properties.[23]

Renters

Renters in the area are especially at risk for socioeconomic dislocation from the effects of wildfires. In many wildfire prone parts of the state, it can be difficult or impossible to obtain renter's insurance.[24] Additionally, according to the California Department of Real Estate, if a rental property is damaged or lost due to wildfire, the rental lease can be terminated, and the landlord is not required to provide temporary housing to the tenant. Nor is the landlord required to pay for lost items. If the tenant is unable to obtain renter's insurance, this person will be without housing or personal belongings and without means to receive any financial assistance to replace lost items or find housing.[25] Recently, renters in the North Bay fires of 2017, which destroyed nearly 9,000 homes were especially affected by this disparity. Approximately 74 percent of those affected in the fires did not have adequate insurance to accommodate for losses.[26]



Homeowners

For homeowners near wildfire prone areas, such as those located in the WUI, wildfire insurance has become increasingly more difficult and costly to obtain, especially due to insurer-initiated non-renewals.[27] According to a report by the California Department of Insurance, major insurers have been halting insurance renewals for homeowners specifically in the WUI and are charging premiums and wildfire surcharges for adequate insurance in the WUI. These increases can be cost-prohibitive to obtain for homeowners, causing many to not receive adequate insurance and be at-risk for significant losses due to wildfires.[28] Thus, if a wildfire destroys a home or rental property in SLO County, it is likely that these residents will face high costs associated with rebuilding, dislocation from their homes, large financial losses, and decrease their sense of safety in the community.

23 United States Census Bureau. San Luis Obispo County, CA. **https://www.census.gov/quickfacts/fact/table/sanluisobispocountycalifornia,CA/DIS010222**.
24 Beam, A. (2023, Sept 28). Wildfire Prone California to Consider New Rules for Property Insurance Pricing. Associated Press. **https://apnews.com/article/california-home-insurance-wildfire-risk-premiums-cf40911606e8e4d9c7c35ca57ca733e8**.
25 The Wildfire Lawyers. Rental Property Damage. 2024. **https://thewildfirelawyers.com/rental-properties/**.
26 Fire Safe Marin. Wildfire Insurance. 2024. **https://firesafemarin.org/prepare-yourself/wildfire-insurance/#gsc.tab=0**.
27 California Department of Insurance. The Availability and Affordability of Coverage for Wildfire Loss in Residential Property Insurance in the Wildland-Urban Interface and Other High-Risk Areas of California. 2017. **https://www.ccfd.org/wp-content/uploads/2018/10/CA-Availability-and-Affordability-of-WUI-Coverage.pdf**.
28 California Department of Insurance. The Availability and Affordability of Coverage for Wildfire Loss in Residential Property Insurance in the Wildland-Urban Interface and Other High-Risk Areas of California. 2017. **https://www.ccfd.org/wp-content/uploads/2018/10/CA-Availability-and-Affordability-of-WUI-Coverage.pdf**.

Results of a Structure Fire

Socioeconomic Consequences of Wildfire

Agriculture

The compounding effects of wildfire can be especially detrimental to SLO County communities who rely on income from agriculture. Agriculture in SLO County accounted for over one billion dollars of income in 2022, which is one of the leading sources of income for County residents.[29] Because of the dominant agricultural makeup of the county, the impacts from wildfire can be especially detrimental to sensitive crops, such as wine grapes. Wine grapes are especially vulnerable to losses from wildfire impacts, as they suffer from smoke taint when exposed to wildfire smoke. Smoke taint is a process that causes undesirable flavors in wine grapes that are exposed to smoke and causes direct losses, as the grapes become unusable. In 2022, income from wine grapes made up nearly 25 percent of the County's crop value.[30] As such, losses from smoke taint can severely impact the County's overall economic output. Since 2020, wildfires in California cost wine grape growers and wineries nearly $4 billion from immediate fire losses and unharvested grapes due to smoke taint.[31] These losses can cause closure of wineries and lead to job losses, which can be the only source of income for a large percentage of SLO County residents. This time away from work can have compounding effects and lead to severe economic disparity, loss of sense of safety, and loss of community character, which can ultimately drive residents to relocate out of the county. Similarly, loss of forage from wildfire can significantly impact ranchers and their employees in SLO County.

Vineyard in SLO County

29 San Luis Obispo, County of. 2022 Annual Crop Report. 2022. **https://www.slocounty.ca.gov/Departments/Agriculture-Weights-and-Measures/All-Forms-Documents/Information/Crop-Report/Crop-Report-Current/Crop-Report-2022.pdf**.

30 San Luis Obispo, County of. 2022 Annual Crop Report. 2022. **https://www.slocounty.ca.gov/Departments/Agriculture-Weights-and-Measures/All-Forms-Documents/Information/Crop-Report/Crop-Report-Current/Crop-Report-2022.pdf.31**

31 Rajagopal, Bulbul. 2023. Smoky fields: As wildfire seasons grow more intense, West Coast elected officials want to help vineyards and wineries deal with the impact. New Times SLO. **https://www.newtimesslo.com/news/smoky-fields-as-wildfire-seasons-grow-more-intense-west-coast-elected-officials-want-to-help-vineyards-and-wineries-deal-with-the-impact-14094366#:~:text=The%202020%20wildfires%20cost%20California,grapes%20exposed%20to%20the%20smoke**.

Infrastructure & Institutions

Fires within communities can affect critical infrastructure, transportation networks, job centers, schools, and local economic drivers. Due to the large amount of WUI within the county, it is increasingly likely that wildfire could impact larger community areas. Populous areas within the county such as Cambria, Paso Robles, Atascadero, Arroyo Grande, and San Luis Obispo could face impacts such as job losses, significant housing losses, disruption of school continuity, damage to iconic features, disruption of transportation networks, and severe economic losses from wildfires occurring in or near city limits. The direct and post-fire effects that these communities would face would cause millions of dollars of physical damage, loss of residents' sense of safety, and loss of future income from tourism and other major economic drivers. The increasing severity and frequency of wildfire in SLO County will be detrimental for residents and the County, itself, socially and economically.

Major institutions in the county are at risk from wildfire. Many, including Cal Poly SLO, the California Men's Colony, Diablo Canyon Power Plant, and Hearst Castle have experienced direct threat from recent wildfires.

Hearst Castle

Recovery

Disaster recovery is the phase of the emergency management cycle that begins with the stabilization of the incident and ends when the community has recovered from the disaster's impacts. The response period is relatively short so while the response is occurring it is important to begin efforts to plan for recovery. The FEMA National Disaster Recovery Framework has been developed to better understand the obstacles to recovery and challenges faced by communities in this process. It outlines the overlapping recovery continuum by phase as shown in Figure 9.

Socioeconomic Consequences of a Wildfire

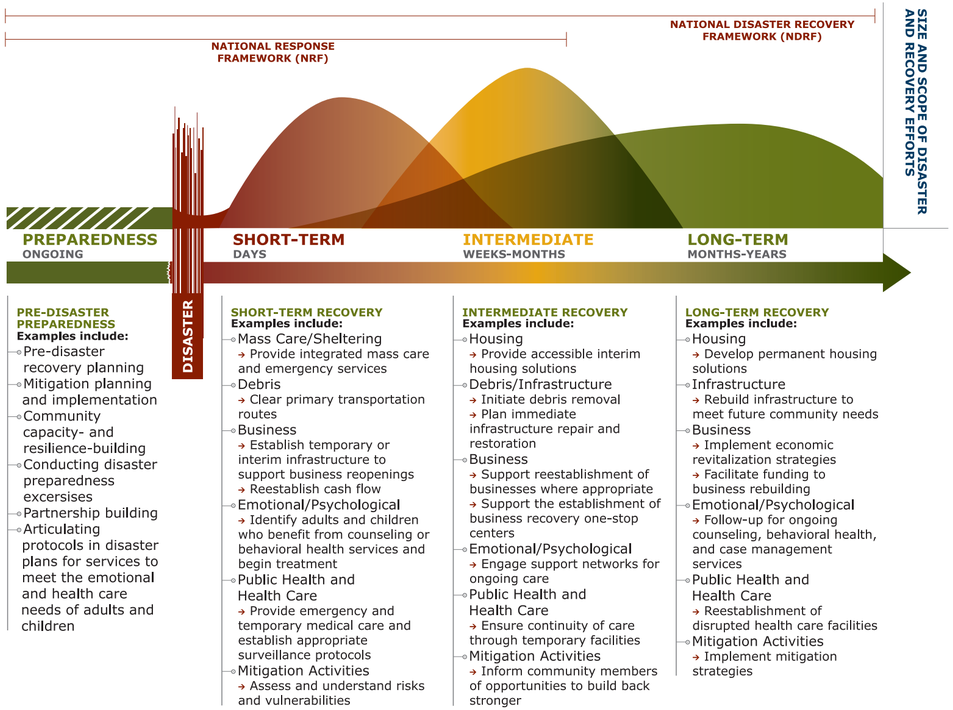


Figure 9. Disaster Recovery Continuum (FEMA 2008) (National Disaster Recovery Framework. Accessed 3/27/2024 from *https://www.fema.gov/pdf/recoveryframework/ndrf.pdf.*)[32]

*32 Federal Emergency Management Agency. (2008). National Disaster Recovery Framework. Accessed 3/27/2024 from **https://www.fema.gov/pdf/recoveryframework/ndrf.pdf**.*

KEY COMPONENTS: POST-FIRE

MENTAL HEALTH SUPPORT

While the process of disposing of physical debris must be dealt with, the psychological and emotional toll of a wildfire should also be addressed. Losing one's home in a wildfire event can be one of the most devastating events of a person's life. The experience of hastily fleeing a safe haven, usually with very little time to prepare and very little information can have a lasting effect. Post-fire mental health services are essential for addressing the psychological and emotional impacts experienced by individuals and communities. Establishing Community Wellness Teams when an emergency occurs is most valuable. It requires that mental health services; government, schools, non-profits, and volunteers from for-profit services come together, train and organize before the emergency occurs.

1. **Psychological First Aid:** Provide immediate psychological support and assistance to individuals and communities in the aftermath of a wildfire. This may involve offering emotional support, crisis counseling, and referrals to additional mental health resources.

2. **Counseling and Therapy:** Offer individual, group, and family counseling services to help individuals cope with trauma, grief, stress, anxiety, depression, and other mental health issues related to the wildfire experience. Therapeutic interventions such as cognitive-behavioral therapy (CBT), eye movement desensitization and reprocessing (EMDR), and mindfulness-based techniques may be utilized to address specific needs.

3. **Support Groups:** Facilitate support groups and peer-led discussions where individuals can connect with others who have experienced similar challenges and share their thoughts, feelings, and coping strategies in a supportive environment.

4. **Outreach and Education:** Conduct outreach and educational efforts to raise awareness about the psychological impacts of wildfires and reduce stigma surrounding mental health issues. Provide information about available resources, coping strategies, and self-care techniques to empower individuals to seek help and support.

5. **Psychological First Aid:** Provide immediate psychological support and assistance to individuals and communities in the aftermath of a wildfire. This may involve offering emotional support, crisis counseling, and referrals to additional mental health resources.

6. **Resilience Building:** Offer resilience-building programs and workshops to help individuals develop coping skills, build social support networks, and strengthen their ability to adapt and recover from adversity.

7. **Collaborative Care:** Collaborate with other community organizations, emergency responders, healthcare providers, and government agencies to ensure a coordinated and comprehensive approach to post-wildfire mental health support.

8. **Long-Term Support:** Recognize that the psychological effects of wildfires can persist long after the immediate crisis has passed. Provide ongoing support and follow-up services to individuals and communities as they navigate the long-term recovery process.

By addressing the mental health needs of those affected by wildfires, post-wildfire mental health services can help promote healing, resilience, and recovery in the aftermath of a disaster. The availability of these services will vary by location and event. The SLO County Health Agency offers behavioral health services and should be contacted for post-wildfire services.

Source: Rincon Consultants

Disaster Recovery Funding

Funding to fight wildfire in California are treated differently than other types of emergencies such as floods and earthquakes. The State of California and Federal government have authorized significant operational funding for the purpose of fire prevention and suppression in areas identified as either Federal Responsibility Area (FRA) for the Federal government and State Responsibility Area (SRA) for the State government. The California "Emergency Fund" are funds for CAL FIRE use on wildland fires beyond its budgeted 3.3 billion dollar (2023-24) operating budget. This funding is not available for local government if they experience a wildland fire, unless that fire is a threat to either the SRA or FRA and suppressing it will prevent the fire from spreading to those lands. Further, there is an agreement that obligates the State and Federal government to prevent wildfire from spreading into local government responsibility areas (LRA) and take responsibility for the defense of structures that are threatened by the wildfire. This does not include the operational and fiscal responsibility or that local fire department's responsibility to protect their communities.

According to California Government Code 8558, when an emergency, including a wildfire meets the definition of a Local Emergency, a City or County can proclaim an emergency:

> *"The duly proclaimed existence of conditions of disaster or of extreme peril to the safety of persons and property within the territorial limits of a county, city and county, or city, caused by such conditions as air pollution, fire, flood, storm, epidemic, riot, drought, sudden and severe energy shortage, plant or animal infestation or disease, the Governor's warning of an earthquake or volcanic prediction, or an earthquake... or other conditions, other than conditions resulting from a labor controversy, which are or are likely to be beyond the control of the services, personnel, equipment, and facilities of that political subdivision and require the combined forces of other political subdivisions to combat…"*

Disaster recovery assistance stages can be found in Figure 10.

Local

SLO County in partnership with State OES can quickly open a Local Assistance Center (LAC). This can be converted into a FEMA Disaster Recovery Center (DRC). These centers can provide assistance and services following a large disaster, such as wildfire. These services include replacing personal documentation such as driver's licenses and social security cards, providing small business loans, and information on rebuilding, permitting, and property taxes.[33]

State

Cal OES offers a suite of resources for people affected by wildfires, including grant support, general recovery resources, debris removal, and evacuation assistance. Via the CDAA, Cal OES administers disaster financial assistance to fund repair, restoration, or replacement of public property that has been damaged by a disaster.[34]

Federal

There are two main types of assistance FEMA may provide following a presidential disaster declaration: Individual Assistance and Public Assistance. The two programs are funded independently from each other and are intended to benefit individuals and communities in different ways.[35]

33 *County of San Luis Obispo. Current Emergency Information Local Assistance Centers. 2024.* ***https://www.emergencyslo.org/en/local-assistance-centers.aspx#:~:text=A%20Local%20Assistance%20Center%20(LAC,Information%20about%20homeowner's%20insurance.***

Individual Assistance (IA) helps survivors directly to assist those who have uninsured or under-insured necessary expenses and serious needs. The assistance is meant to return a home to a safe, sanitary and functional residence.

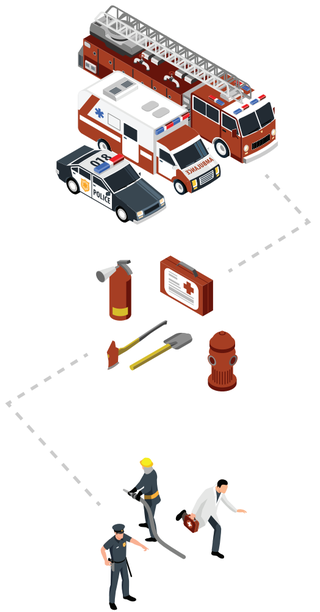
Public Assistance (PA) program provides supplemental grants to state, tribal, territorial and local governments, and certain types of private non-profits – such as houses of worship, hospitals or academic institutions – so communities can quickly respond to and recover from major disasters or emergencies.

Assistance Requested from the Federal Government

When a disaster rises to this level the Governor will often request for assistance from the Federal government by asking the President to either declare a Presidential Declaration of Emergency that provides specific and limited Federal assistance or declare a Presidential Declaration of Major Disaster which may provide Public Assistance (PA), funds to assist local and state governments with debris removal, recovery and disaster repairs. Sometimes it will also include Individual Assistance (IA), which provides funding to individuals who experienced damage to their properties or loss of employment and need assistance.

Local, State, and Federal Funding Assistance

Postfire recovery can be financially burdensome on those affected and can often result in heavy financial losses for years, without the proper insurance or support. To assuage these financial burdens, there are several levels of disaster recovery funding available via local, state, and federal programs. The level of assistance is often dependent on the level of emergency declaration, with federal emergencies receiving the most funding.



Source: Rincon Consultants

Figure 10. Disaster Recovery

Local Emergency is Proclaimed

When a Local Emergency is proclaimed, a letter is sent to the Governor of California requesting a Proclamation of a State Emergency. A State proclamation of emergency will provide specific support to the local government. Often times this includes assistance from State agencies, emergency permitting to conduct critical operations to mitigate the disaster, and authorization of use of the California Disaster Assistance Act (CDAA) that provides financial assistance from the State for costs incurred by local governments as a result of a disaster event.

Fire Management Assistance Grant Declaration

State and local governments may also request FEMA to declare a Fire Management Assistance Grant (FMAG) declaration. This is only for wildfires that threaten to cause such destruction as would constitute a major disaster. The request for FMAG must occur while the wildfire is threatening a community. The request is made through Cal OES.

When the State authorizes the use of CDAA reimbursement it is generally at a rate of 75% with the local government responsible for the other 25%. When the Federal government authorizes Public Assistance the Federal government will reimburse the first 75% and the State will reimburse through CDAA 75% on the remaining 25%. This leaves the local government responsible for 6.25% of costs.

34 *Cal OES. California Disaster Recovery Act. 2024.* ***https://www.caloes.ca.gov/office-of-the-director/operations/recovery-directorate/recovery-operations/public-assistance/california-disaster-assistance-act/.***

35 *Federal Emergency Management Agency. (March 18, 2024). Individual Assistance vs. Public Assistance. Retrieved August 1, 2024, from* ***https://www.fema.gov/fact-sheet/individual-assistance-vs-public-assistance.***

Rebuilding

Whether using the CalRecycle Consolidated Debris Removal Program or private contractors, landowners must receive approval from the local planning and building department in the jurisdiction the property is in to begin post-fire rebuilding.[36] This requires all site inspections, tests, and remediations to meet required standards.

Rebuilding after a wildfire will require standard building permits and inspections.[37] Building permit fees may be waived by the jurisdiction if it adopts a resolution to do so. However, the jurisdiction should understand the impacts this could have on the jurisdiction's budget and how they will absorb the costs. With fire insurance, building permit costs are often included in the payout for claims from an insurance company. Building permits for post-fire restoration projects should be given priority with reviews and it is often beneficial to assign specific staff to assisting disaster survivors. Rebuilds must meet current minimum requirements of the California Building Code.

Structures being rebuilt within the SRA, the very high FHSZ (VHFHSZ) of the LRA, and locally adopted WUI are required to meet Chapter 7A of the California Building Code.[38] The California Board of Forestry and the CAL FIRE Office of the State Fire Marshal (OSFM) have developed the OFSM Listed WUI Products Handbook to assist with reconstruction.[39] This guidance document complies with Chapter 7A of the California Building Code. The guide lists materials and products categorized into seven main sections including decking, exterior windows, exterior siding and sheathing, exterior doors, under eave protections, vents, and non-wood roof covering assemblies. Whether a home is being built within the WUI or not, every structure in California being built to the standards set in Chapter 7A of the California Building Code will be more resistant to the effects of wildfire.

Homeowner and property insurance payments for replacement and rebuilding will be subject to existing policies at the time of the incident. Insurance adjusters will visit the incident site to assess the damage and document losses. California recently revised regulations to allow insurance companies to consider climate change when setting prices. Prior to this revision, insurance companies were only allowed to consider the history of a site to determine pricing. This is in response to policy cancellation, non-renewal, and complete abdication from the state for many of the nation's top insurance companies in the face of growing wildfire threats. This policy change aims to allow companies to continue to offer insurance, though at increased rates. Companies will only be allowed to do this if they agree to write more policies for homeowners in areas of increased wildfire risk.[40]

Insurers have provided discounted homeowners policies to homeowners living in recognized Firewise USA Communities.[41,42] There are currently nine recognized Firewise USA Communities in SLO County. Policyholders have recourse options in the case of dropped or non-renewed policies.[43] As a final alternative homeowners can purchase insurance through the California FAIR Plan.[44] This state-run option provides only basic fire protection insurance and is typically more expensive than a traditional policy.

Depending on the nature and scale of the wildfire event leading to the need for rebuilding, funding to subsidize the cleanup and rebuilding process may be available through local, state, or federal resources. Grants will often have a set application period and a period of performance during which time all funds must be expended. Depending on the granting agency these rules will vary.

36 County of San Luis Obispo. (2024). Planning and Building Department. Accessed Feb 29, 2024, from ***https://www.slocounty.ca.gov/Departments/Planning-Building.aspx****.*
37 County of San Luis Obispo. (Aug. 3, 2017). Fire Rebuild FAQ. Planning and Building Department. Accessed Feb 29, 2024, from ***https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Building-(Construction)-Forms-and-Documents/Construction-Permit-Application-Forms/Fire-Rebuild-FAQ.pdf****.*
38 California Department of Housing and Community Development. (2010). California Residential Code, Part 2, Title 24, California Code of Regulations, Chapter 7A - Materials and Construction Methods for Exterior Wildfire Exposure. Accessed Feb 29, 2024, from ***https://www.hcd.ca.gov/building-standards/state-housing-law/wildland-urban-interface/docs/2010-part-2-cbc-ch7a.pdf****.*
39 California Department of Forestry and Fire Protection. (Dec. 14, 2021). State Fire Marshal Wildland-Urban Interface (WUI) Listed Products Handbook. Accessed Feb 29, 2024, from ***https://www.osfm.fire.ca.gov/media/5e4drz1r/2021-sfm-wui-listed-products-handbook-12-14-2021.pdf****.*
40 Beam, A. Associated Press. (2023, September 28). California homeowners face higher insurance costs. AP NEWS. Accessed Feb. 29, 2024, from ***https://apnews.com/article/california-home-insurance-wildfire-risk-premiums-cf40911606e8e4d9c7c35ca57ca733e8****.*

Rebuilding

41 National Fire Protection Association (NFPA). (2024). Firewise USA. Accessed Feb 29, 2024, from ***https://www.nfpa.org/education-and-research/wildfire/firewise-usa****.*
42 California Department of Insurance. (2022, November 14). Insurers Currently Offering Discounts. Accessed Feb. 29, 2024, from ***https://www.insurance.ca.gov/01-consumers/105-type/95-guides/03-res/Insurers-Currently-Offering-Discounts.cfm****.*
43 Fire Safe Marin. (2024). Wildfire Insurance. Accessed Feb. 29, 2024, from ***https://firesafemarin.org/prepare-yourself/wildfire-insurance/#gsc.tab=0****.*
44 CFP Network. (2024). Accessed Feb 29, 2024, from ***https://www.cfpnet.com/****.*

Air Quality

Historically, SLO County has had relatively poor air quality, based on the US Quality Index, due to regional agricultural practices, dust/sand from high winds, open burning and smog. Historic poor air quality events generally coincide with regional wildfire events, agricultural burning, periods of time without wind, extreme heat events, and extended drought. Some of the impacts may have resulted from events outside the air basin.

Data from the CARB and the SLO APCD indicates an average of 22 days per year in which ozone levels are above the national standard of 0.070 parts per million (ppm).[45] There are ten air monitoring stations throughout SLO County, which track and collection information on the ambient levels of pollutants such as ozone (O_3), particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), nitrogen oxides (NOx), sulfur oxides (SOx), and carbon monoxide (CO), shown in Figure 12. High ozone levels in SLO County are largely due to motor vehicle activity, especially high levels of traffic via US Highway 101 (US-101), the major interstate highway running the length of SLO County.

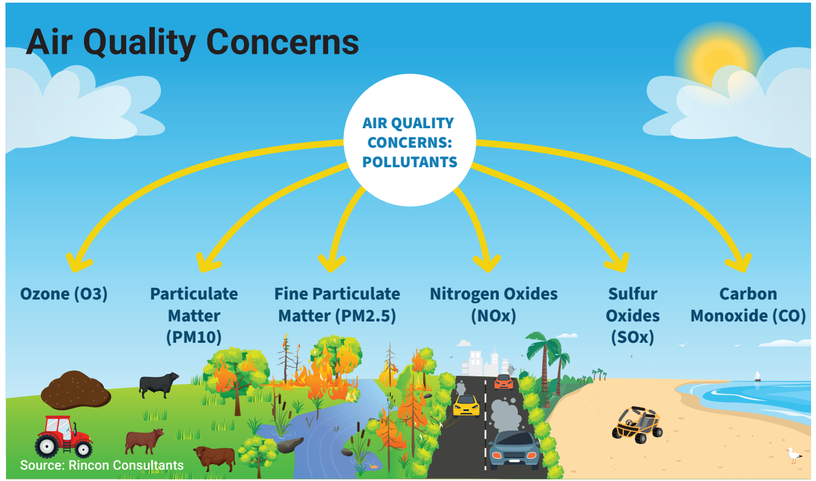


Figure 11. Air Quality Concerns

Particulate matter and fine particulate matter are fine mineral, metal, smoke, soot, and dust particles which become suspended in the air.[46] Major sources of particulate matter in SLO County result from smoke from wildfires, smoke from agricultural burning, vehicle exhaust, dust from agricultural tilling, and sand from coastal areas, such as the Oceano Dunes State Vehicular Recreation Area. Seasonal high winds in the area, known as the Santa Lucia winds, create low air quality conditions, particularly around the Oceano Dunes and across the agrarian areas of SLO County.These winds blow fine dust and sand to local communities and contribute to the CARB standard non-attainment status of much of SLO County.[47] Coastal onshore winds, especially prolific in spring, add to air quality concerns in the Five Cities and Nipomo Mesa area.

45 SLO County Air Pollution Control District. Accessed Jan. 20, 2024. About Air Quality. San Luis Obispo County APCD. ***https://www.slocleanair.org/air-quality/about.php****.*

46 U.S. Environmental Protection Agency. Accessed Jan. 20, 2024. California Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants. Green Book: Nonattainment Areas for Ozone (O3) in California. ***https://www3.epa.gov/airquality/greenbook/anayo_ca.html****.*

47 California Air Resources Board. Accessed Jan. 20, 2024. Nonattainment Area Plans. Our Work: California State Implementation Plans. ***https://ww2.arb.ca.gov/our-work/programs/california-state-implementation-plans/nonattainment-area-plans****.*

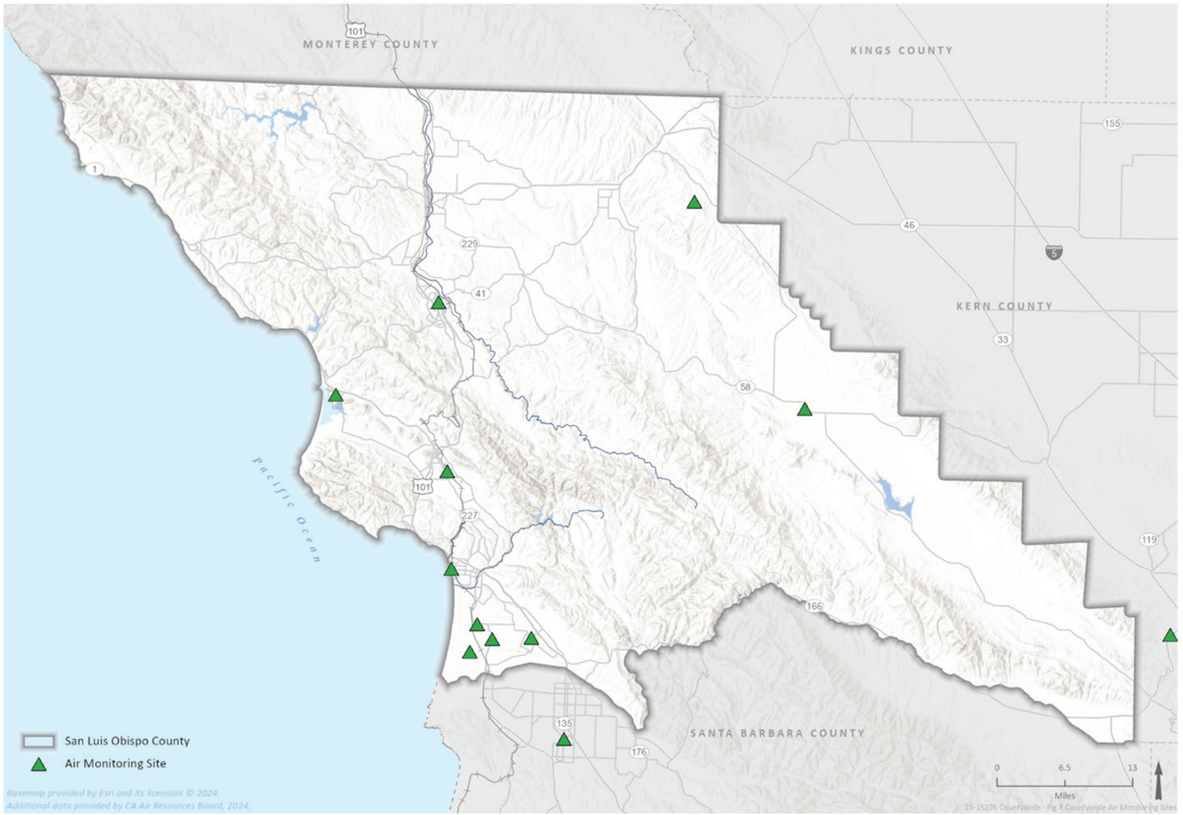


Figure 12. SLO County Air Quality Monitoring Stations

Smoke Concerns

As wildfire season expands in length, wildfire hazards continue to worsen due to climate change, and without proper fuel management projects in place, wildfire related air quality for much of SLO County will suffer, resulting in higher risk of respiratory illness, pollution, and public health emergencies.[48]

A recent analysis by the National Oceanic and Atmospheric Administration (NOAA), stemming from a groundbreaking global atmospheric airborne research mission, reveals that smoke resulting from biomass burning plays a significant role in a prevalent and harmful component of urban air pollution: ozone. The extensive wildfires experienced during recent record-breaking fire seasons in the western United States and Canada not only affected local and statewide air quality but also extended their impact across vast distances, reaching cities as far away as Boston and New York City. This new research from NOAA underscores that the atmospheric effects of fire emissions are more extensive and impactful than previously understood, notably contributing to ozone pollution, a key concern for urban air quality.[49]

Smoke is the primary concern for air quality when considering wildfires, although hazard fuel reduction projects using mechanized equipment should also be planned with air quality in mind. Greenhouse gas emissions form mechanized equipment are a notable concern when conducting CEQA analysis of a project. Best management practices to avoid unnecessary outputs should be implemented. A second air quality concern when using mechanized equipment is pulverization of rock and soils. Project planners should address naturally occurring asbestos in SLO County when developing treatments methods.[50] Asbestos is a term used for a group of silicate minerals that occur as asbestiform fibers having high tensile strength, flexibility, and heat and chemical resistance. Asbestos is a known carcinogen and inhalation of asbestos may result in the development of lung cancer or mesothelioma.[51] Asbestos airborne toxicity control measures (ATCM) for construction, grading, quarrying, and surface mining operations have been established by the CARB and should be incorporated into project implementation in SLO County when working in areas of known naturally occurring asbestos.[52]

48 San Luis Obispo County Air Pollution Control District. Accessed Jan. 20, 2024. More Information: South County. San Luis Obispo County APCD. ***https://www.slocleanair.org/air-quality/south-county/more-info.php****.*
49 NOAA Office of Oceanic and Atmospheric Research. 2022, January 10. Smoke from Fires Influences Ozone Pollution on a Global Scale. NOAA Research. ***https://research.noaa.gov/2022/01/10/smoke-from-fires-influences-ozone-pollution-on-a-global-scale/****.*
50 Google Maps. (Oct 8, 2023). SLO APCD NOA Screening Buffers. Accessed Feb 27, 2024, from ***https://www.google.com/maps/d/viewer?mid=1YAKjBzVkwi1bZ4rQ1p6b2OMyvIM&ll=35.43998479654646%2C-120.89092891015623&z=10****.*
51 California Geological Survey. (2024). Asbestos. California Geological Survey. Accessed Feb 27, 2024, from ***https://www.conservation.ca.gov/cgs/minerals/mineral-hazards/asbestos****.*
52 California Air Resources Board. (June 3, 2015). Asbestos Airborne Toxic Control Measure (ATCM). California Air Resources Board. Accessed Feb 27, 2024, from ***https://ww2.arb.ca.gov/sites/default/files/classic/toxics/atcm/asb2atcm.htm****.*

Smoke from a wildfire

Native American History

SLO County has a rich Native American cultural history that spans thousands of years. Prior to European contact, the area was inhabited by several Native American tribal groups; the Chumash people in the southern region, the Salinan people in the northern region, the yak tiṯ̓u tiṯ̓u yak tiłhini (YTT) also referred to as the Obispeño or Northern Chumash in the coastal area near Morro Bay, the ʻAmuwu on the southern coast of the county, and the Kuyam in the inland southern region of SLO County, as shown in Figure 13. These groups created an intricate system of trade routes and networks, which helped play a role in the exchange of economic, social, and cultural resources throughout their ancestral lands.[53,54] Native American people have had a continuing presence in SLO County for over 13,000 years.[55] Their partnership and collaboration in fire safe projects and fire suppression actions is critical.

As we continue to honor the rich cultural past of SLO County, it is important that all precautions are taken to preserve the important cultural and archaeological resources within the county. Any project that is under CEQA guidelines requires any activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, such as wildfire mitigation work requires a Phase I Cultural Resources Assessment to determine the presence or absence of cultural resources prior to project implementation. A qualified Archaeologist must prepare a cultural resources assessment to determine potential impacts to known archaeological resources in compliance with CEQA, NEPA, and National Historic Preservation Act (NHPA)/National Register of Historic Places (NRHP) (Section 106) and Local Regulations.

When a project uses the CalVTP PEIR or CMP/VMP (available only in SRA), projects are subject to Standard Project Requirements (SPRs) outlined within the PEIR. These SPRs provide a required set of tasks to be conducted prior to project implementation. Tasks include conducting a California Historic Resource Information Systems (CHRIS) record search, Native American Heritage Commission (NAHC) Sacred Lands File search, Native American scoping, conducting pre-field research, an archaeological field survey(s), a cultural resources assessment report, a treatment plan for archaeological and/or cultural resources that cannot be avoided during project implementation, the avoidance of all built environments, and cultural resource training for workers prior to project implementation.

Projects unable (non-SRA), or choosing not, to use the CalVTP PEIR will follow all these guidelines and are also required to follow Assembly Bill 52 Tribal Consultation. Wildfire projects which may affect cultural resources should use the SPRs and mitigation measures established in CalVTP as best management practices. These requirements ensure that the rich history of SLO County's Native American tribes can be maintained, and their legacy can continue for generations.

53 Santa Margarita Historical Society. Accessed Jan 20, 2024. First Settlers. Santa Margarita Historical Society. ***https://santamargaritahistoricalsociety.org/first-settlers#:~:text=Between%201500%20and%201700%2C%20two,and%20with%20tribes%20further%20inland.***

54 Native Land Digital. Accessed Jan 20, 2024. Native Land. ***https://native-land.ca/.***

55 Santa Barbara Museum of Natural History. (2024). The Chumash People. Retrieved August 1, 2024, from ***https://www.sbnature.org/collections-research/anthropology/chumash-life/#:~:text=The%20Chumash%20People&text=The%20area%20was%20first%20settled,lifeways%20to%20the%20local%20environment.***

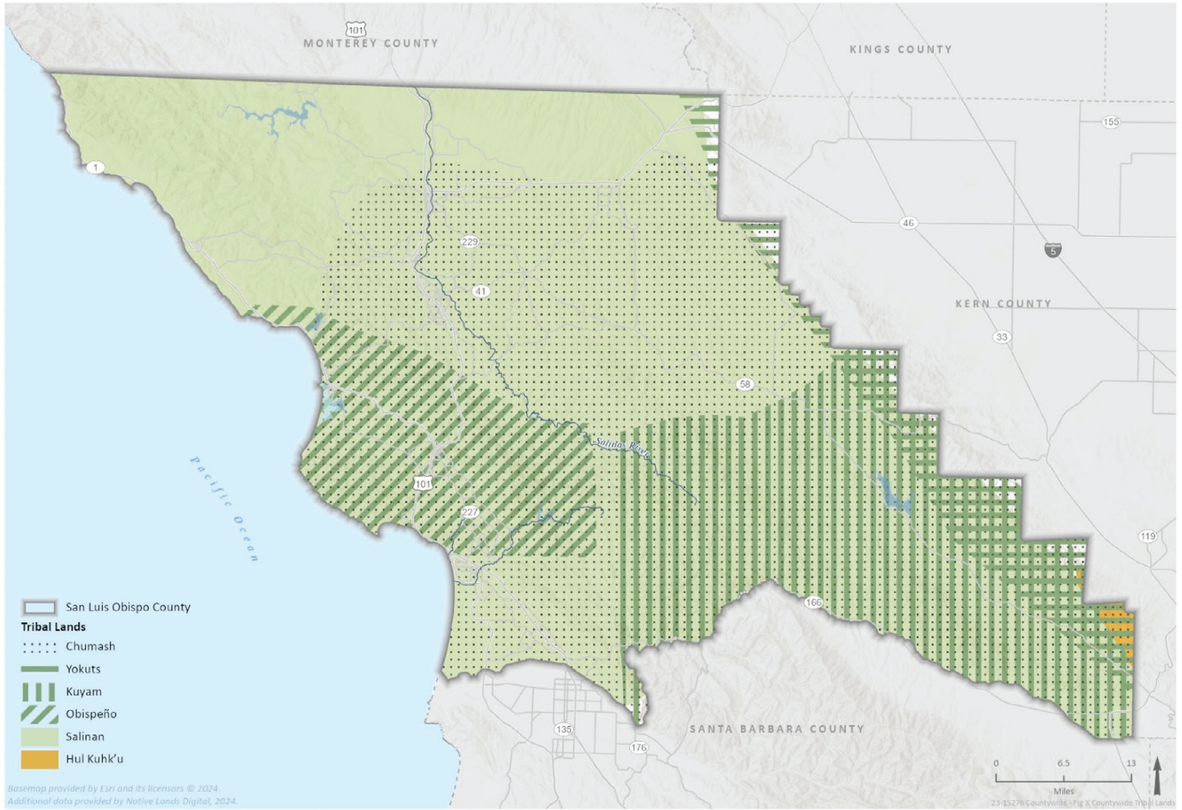


Figure 13. SLO County Tribal Lands

Prescribed Fire Use

There is a long history of prescribed fire or "controlled burning" in SLO County. Throughout California, Indigenous nations have used fire for thousands of years as a tool to steward the land, and still do today.[56] Additionally, the ranching community in SLO County has actively used prescribed fires for more than 200 years. Intentional "good fire" was and is still frequently used by land managers to clear understory and shrublands and enhance the goals of the people living on the land.

Native American Burning Practices

All tribes practiced some form of land management to manipulate resources to their preference and the use of fire for management was historically commonplace. Cultural burning or traditional fire, as defined in the California Public Resources Code is the intentional application of fire to land by California Native American tribes, tribal organizations, or cultural fire practitioners to achieve cultural goals or objectives, including for subsistence, ceremonial activities, biodiversity, or other benefits.[57] These traditional fires were a common tool to enhance wildlife habitat, hunting, plant production, safety, and cultural ceremonies. Indigenous cultural burning practices are distinguished from other fire management activities (e.g., those carried out by local, state, and federal agencies) through their connection to Tribal or Traditional Indigenous laws, objectives, outcomes, and the right to burn.[58]

Rancher Burning Practices

The local ranching community have been using range improvement burns to manage resources in the SLO County area for nearly 200 years. Historically, ranchers in SLO County would work with the California Department of Forestry and Fire Protection (then CDF), now CAL FIRE, to burn dense chaparral with the goal of increasing grazing lands for cattle or reducing wildfire risk, as shown in Figure 14. Going back to the 1940s, CDF recognized the value in creating areas of younger vegetation that could be used to contain an out-of-control wildfire. The overarching purpose of these range improvement burns is similar to those of the Native American communities; burn to improve the resources as they are preferred.

Contemporary Prescribed Fire Constraints

The single biggest impediment to prescribed burning on private lands was removed when Senate Bill 1704 was enacted and signed by Governor Edmund G. Brown Jr. on July 16, 1980. The legislation established much-needed processes and procedures to manage chaparral-covered lands with the use of prescribed fire. CDF and the landowner would enter into a contract that provided for cost share and the State assumed the liability for conducting the prescribed burn. The program became known as the Chaparral Management Program (CMP) and a resultant Chaparral Management Programmatic Environmental Impact Report (EIR), now more typically referenced as the Vegetation Management Program (VMP).

The number of private landowners with land conducive to conducting prescribed fires is reduced each year as many large landowners have sold off or given parts of their property to their estate. Consequently, there has been an increase in the number of built households and related infrastructure on these properties, contributing to urban sprawl into the WUI. This urban sprawl further complicates the ability to conduct prescribed burns in these areas and can exacerbate fire risks as vegetation grows without proper management. As a result, prescribed burns will require smaller burns or engage more landowners to be involved in project coordination with CAL FIRE, complicating the process. To combat these complexities and encourage the landowners in these areas to conduct prescribed burns, it is important to create incentives to burning and broaden the "burn window" to carry out the work.

56 National Park Service. (n.d.). Indigenous fire practices shape our land. U.S. Department of the Interior. ***https://www.nps.gov/subjects/fire/indigenous-fire-practices-shape-our-land.htm****. Accessed September 26, 2024.*
57 CA Pub Res Code § 4002.4 (2023)
58 C.E. Eriksen and D.L. Hankins. "The Retention, Revival and Subjugation of Indigenous Fire Knowledge Through Agency Fire Fighting in Eastern Australia and California." Society and Natural Resources [2014].

CDF Conducting a Range Improvement Burn in SLO County in 1949

Barriers to the expansion of prescribed fire use for Tribal groups in California have been detailed in two recent publications from the Karuk Tribe. *Good Fire (2021)*[59] and *Good Fire II (2024)*[60] serve to detail the history of indigenous fire use in California, the United States, and the world. They summarize the legal and policy barriers to the expansion of prescribed fire use in California and provide recommendations to address them with the goal of revitalizing the relationship between humans and fire.

59 Karuk Tribe. (2021, March). Karuk prescribed fire report (Final report). Karuk Tribe Climate Change Projects. ***https://karuktribeclimatechangeprojects.wordpress.com/wp-content/uploads/2021/03/karuk-prescribed-fire-rpt_final-1.pdf****. Accessed September 26, 2024.*
60 Karuk Tribe. (2024, March). Good fire II: Prescribed fire strategies in Karuk territory (Report). Karuk Tribe Climate Change Projects. ***https://karuktribeclimatechangeprojects.wordpress.com/wp-content/uploads/2024/03/good-fire-ii-march-2024.pdf****. Accessed September 26, 2024.*

Prescribed Fire Success

The SLO County Range Improvement Association has a long history in SLO County of supporting ranchers and each other in conducting "range improvement" burns. It is one of the longest established organizations of its type in California. While VMP burns are conducted throughout the County as shown in Figure 14, the partnership with CAL FIRE has proven most successful in conducting a series of burns in the Huasna-Suey Creek area in south SLO County.

Ranchers and CAL FIRE conducting a VMP prescribed burn in SLO County

SAN LUIS OBISPO County
Range Improvement ASSOCIATION

This long-term effort has been effective in preventing a major fire from occurring in this area and in the establishment of a fuel break to prevent the spread of wildfires coming off the Los Padres National Forest (LPNF) into the Nipomo and Five Cities area. This was most effective during the August 1997 Logan Fire, which burned 50,000 acres in the LPNF. This fire burned west along the Cuyama River until it ran into the chain of prescribed burn plots, which gave the firefighters a strategic location to attack the fire directly and stop its spread.

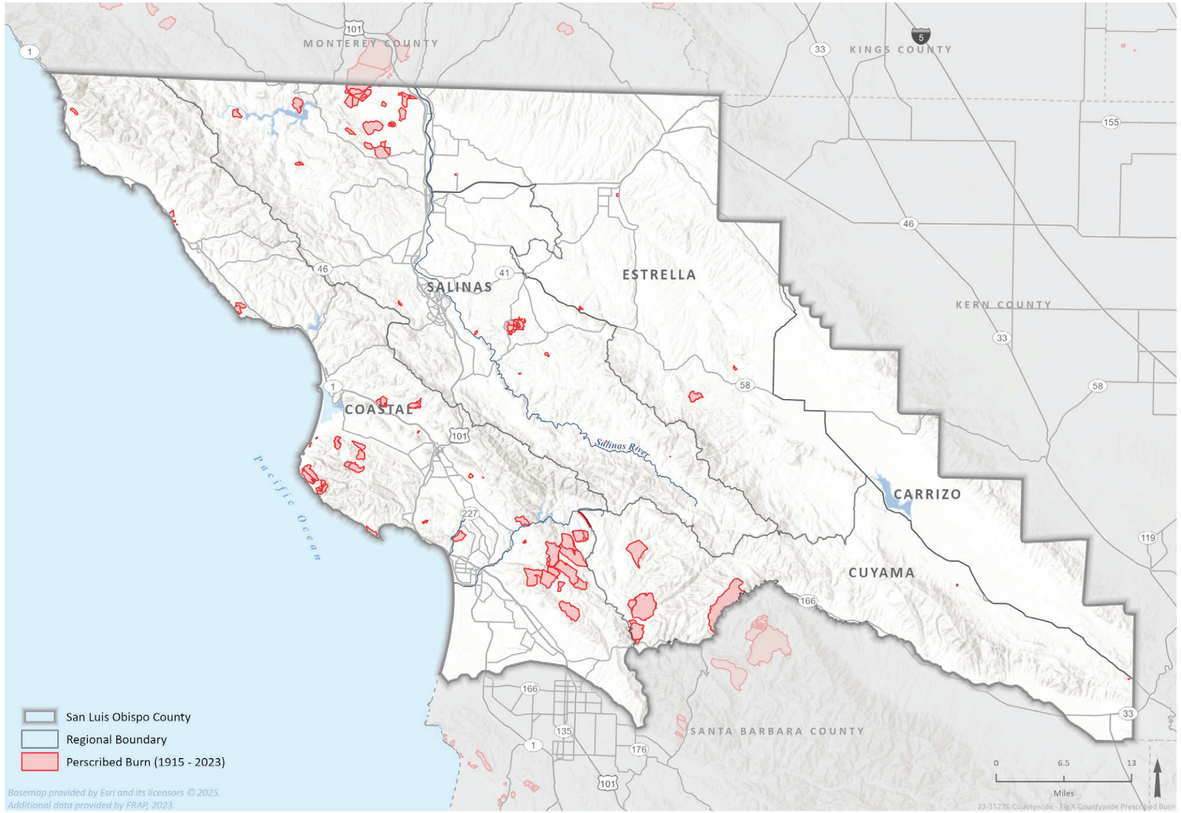


Figure 14. CDF Conducting a Range Improvement Burn in SLO County in 1949

Prescribed Fire Then and Now

Many resource management agencies and large tract land managers in SLO County including California State Parks, Pacific Gas & Electric, the Department of Defense, CAL FIRE, the San Luis Obispo City Fire Department, the Nature Conservancy, and the United States Forest Service have established prescribed burning programs in place as a part of their land management approach. These organizations are currently undertaking the bulk of the prescribed fire operations ongoing in SLO County. Regular use of fire as a tool to fight wildfire is not only beneficial from an ecological and public safety standpoint, but as a public education tool. Public noticing is a requirement for all planned fire events, and if occurring near populated areas, community members can see the flames, the smoke, and the results. Increasing public familiarity with prescribed fire can ease community concerns with its use and help normalize the practice as another available tool to increase public safety from wildfire events.

The increased use of prescribed fire as a wildfire management tool has manifested recently with the establishment of Prescribed Burn Associations (PBAs) throughout California. Recent legislation such as SB 310 (2023) and the push to use nature-based solutions has fueled the resurgence in popularity of this proven treatment activity. A PBA is in the process of being developed in SLO County[61] and aims to increase the total acres burned annually, although Native American cultural burning followed by the prescribed fire efforts of the SLO County Range Improvement Association have resulted in a nearly unbroken deployment of this land management technique in SLO County for thousands of years.

Public Noticing for Prescribed Burning

*61 California Prescribed Burn Association. (2024). Connect with California PBA. California Prescribed Burn Association. **https://calpba.org/connect-ca-pba**. Accessed September 26, 2024.*

Prescribed Burn

Mountain Ranges

The diverse topography in SLO County increases the difficulty of managing wildfires and has a dramatic impact on daily weather and overall climate. SLO County topography results in multiple microclimates where daily weather conditions can differ significantly. Varied and often inaccessible vegetation results in high fuel loads abutting developed lands in the Wildland Urban Intermix and Wildland-Urban Interface. Projects aiming to reduce fuels on mountainous terrain in SLO County must address how topography can affect localized weather, soil erosion, fire movement, site access, and appropriate treatment techniques.

SLO County is home to several notable mountain ranges that contribute to the diverse landscape that helps make up California's Central Coast as shown in Figure 15. These mountain ranges influence the County's weather, flooding, built infrastructure, development planning, and wildfire planning and mitigation efforts. The Santa Lucia Range runs parallel to the Pacific Ocean to the west and the Salinas Valley to the east and extends nearly 140 miles southeast from Carmel Bay to the Cuyama River in SLO County. The peaks of this range reach heights over 5,000 feet, with a maximum of 5,853 feet on Junipero Serra Peak in southern Monterey County. The Santa Lucia Range and La Panza Range are densely vegetated and make up much of Los Padres National Forest, where many significant wildfire events have occurred in the past. The Temblor Range, located in eastern SLO County, extends about fifty miles from Kern County to the southern end of the Central Valley along the San Andreas Fault. This range is known for its rolling hills, with peaks averaging about 3,500 feet in elevation, helping to make up the eastern portion of Carrizo Plains National Monument, and boasting impressive seasonal wildflower blooms. This range has also been known for its remote wildfires, oftentimes burning several thousand acres of private land and land managed by the Bureau of Land Management (BLM).[62]

Fire Management in Steep Terrain

62 Encyclopaedia Britannica. Accessed Jan. 20, 2024. Santa Lucia Range. Britannica. **https://www.britannica.com/place/Santa-Lucia-Range**.

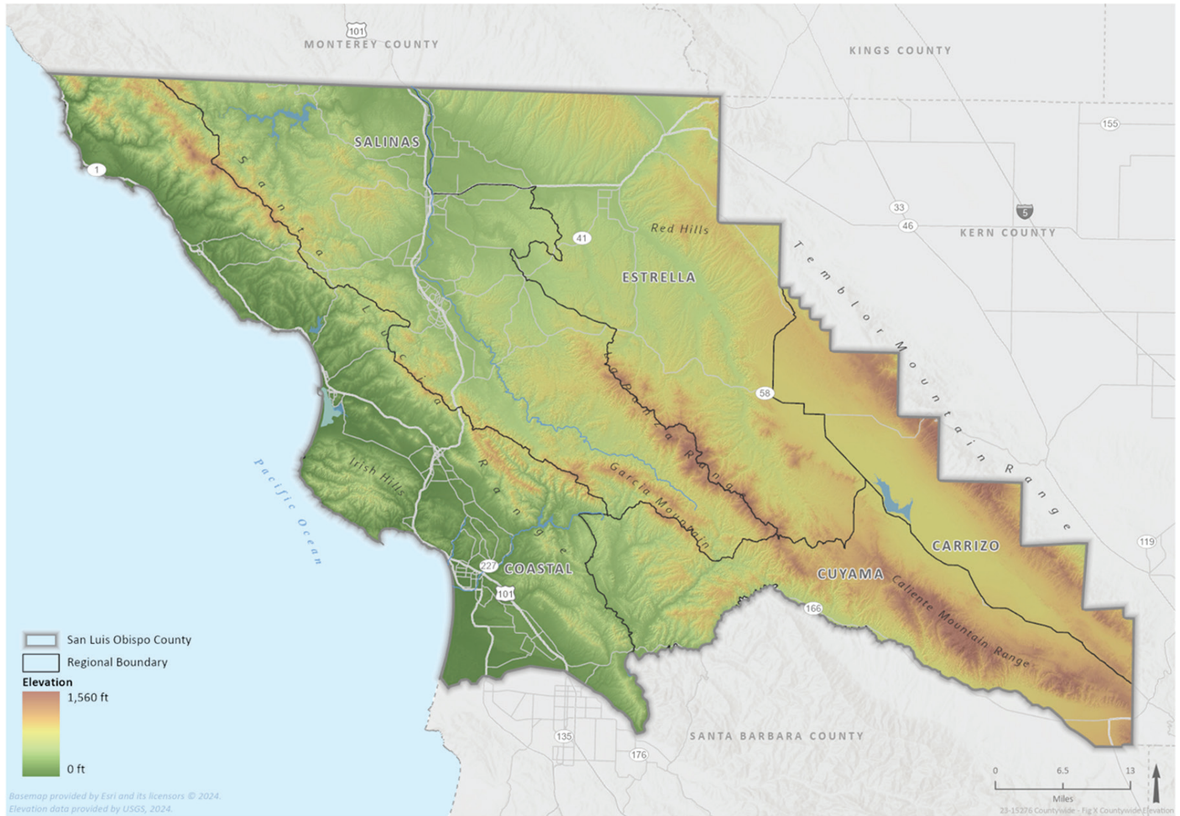


Figure 15. SLO County Topography

Iconic Peaks

SLO County is also home to the iconic "Nine Sisters," a set of nine volcanic mountains that run parallel to the Pacific Ocean, extending from Morro Rock in Morro Bay to Islay Peak further north. The tallest of these volcanic plugs is Bishop Peak, which sits at 1,559 feet.[63] The natural beauty and scenic value of these peaks is a draw for developers and homeowners and therefore, many communities continue to expand towards the grasslands, chaparral, and woodlands at their base. These WUI developments need to be planned with wildfire risks in mind.

Steep slopes within SLO County greatly increases the risk of flooding, excessive erosion and sedimentation, and dangerous debris flows after wildfires and this hazard is exacerbated by climate change where hot, dry summers promote wildfire followed by high intensity rainfall during the winter. The Thomas Fire in Santa Barbara County resulted in massive debris flows in Montecito that took the lives of 23 people on January 9, 2018.

63 Dart, Louisiana Clayton. 1978. The Nine Peaks of San Luis Obispo County. History Center of San Luis Obispo County. ***https://www.historycenterslo.org/uploads/1/2/5/3/125313011/fri_june_26.pdf****.*

Iconic "Nine Sisters" on the Central Coast

Bishop Peak

Microclimates

Understanding and recognizing SLO County's microclimates is critical to the delineation of the firesheds and will continue to be crucial for planning wildfire mitigation projects and combatting wildfire risks. SLO County's unique geographic features and its location between the Pacific Ocean and San Joaquin Valley result in a wide array of distinct microclimates; in some cases, causing extreme temperature differences in towns just miles apart on the same day. This variability in climate and temperatures is the result of several factors including abrupt topographical variations, wind patterns, proximity to the Pacific Ocean, and inversion patterns. Towns located west of the Santa Lucia Mountain Range, closer to the Pacific Ocean are likely to experience cooler temperatures with increased humidity year-round, influenced by coastal fog. As higher density, cooler air from the ocean pushes inland, lower-density warm air rises above the mass of cool air. This typically results in afternoon onshore westerly winds. As the cool air is pushed over the Santa Lucia Range by the winds, it sinks, on the eastern side of the Range. This sinking causes the air to heat up, causing significant increases in temperature for inland towns of SLO County. This effect is known as subsidence inversion and is quite common for SLO County.

The location of the coastal Santa Lucia Range results in an orographic effect, otherwise known as a rain shadow, for much of inland SLO County. The area west of the range receives significantly more annual precipitation than areas east of the range. Rocky Butte (3,245 feet) in northern SLO County, records the highest annual rainfall in the county at 40 inches[64] while the City of Paso Robles, 26 miles east, averages just over 14 inches annually.[65]

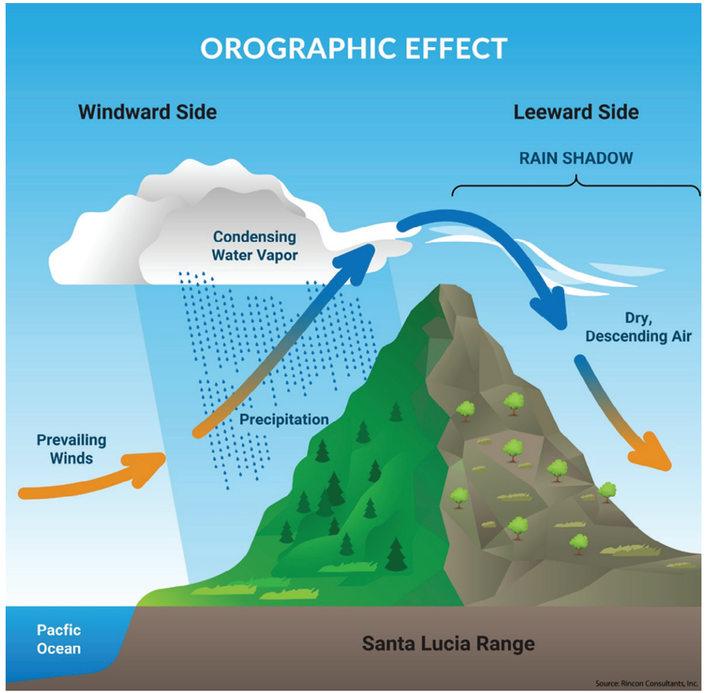


Figure 16. Orthographic Effect

64 Shuman, M. San Luis Obispo Tribune. Oct. 4, 2023. SLO County's Historic 2023 Rain Year is Complete. The Tribune. ***https://www.sanluisobispo.com/news/weather-news/article280074109.html****.*
65 City of Paso Robles. Accessed Jan. 22, 2024. Rainfall Totals. City of Paso Robles. ***https://www.prcity.com/462/Rainfall-Totals****.*

Wind

Wind Factors

Wind intensity is caused by the differential between high- and low-pressure centers.

Wind direction is affected by both high to low pressure flow as well as geographic features.

Wind unpredictability is caused by multiple forces in flow direction that are in conflict with each other.

Wind Intensity

The intensity of wind is primarily determined by the pressure difference between high and low pressure. The higher the difference the stronger the wind.

Wind Direction

Wind directions are referenced as the direction they are blowing from. Typically, during spring and early summer along the coast the predominate daytime wind is a northwesterly flow. This is caused by a high pressure well out to sea flowing to a low pressure far inland. This flow occurs over a long distance and is very predictable if unobstructed by terrain. During the later months of summer and fall it is not uncommon to experience fast-moving low-pressure systems that may be wet or dry and may be accompanied by lightning. These systems are spinning counterclockwise, meaning the leading edge will create southerly winds, shifting to easterly, and then northerly as the system passes. As these systems pass, they can be expected to change direction quickly. During the fall as high pressure builds over the Great Basin, the winds will blow from the east to the cooler ocean in the west, typically at night and early morning, heating up from the friction over land. These east winds, called Santa Lucia winds in SLO County, can push the coastal fog far out to sea and produce daytime temperatures at the coast well over 100 degrees. These conditions are most often experienced in the Coastal Region.

Wind Unpredictability

A common denominator in firefighter fatalities is a sudden wind shift. Wind shifts most often occur when there is a conflict in wind direction, caused by either opposing high to low pressure flows, or by opposing flows caused by topographic features. This condition is most often experienced in the Salinas and Cuyama Regions.

Wildfire Near Development

Diurnal Winds

Diurnal winds refer to the predictable daily pattern of wind movement that occurs in response to temperature changes between day and night. During the day, as the sun heats the Earth's surface, warm air rises and cooler ocean air rushes in to replace it, creating a breeze from areas of higher pressure to lower pressure known as onshore winds. At night, the reverse occurs as the land cools more rapidly than the ocean, causing the wind to shift direction and flow from land to sea, known as offshore winds. These diurnal wind patterns play a significant role in shaping local climates and weather conditions in SLO County.

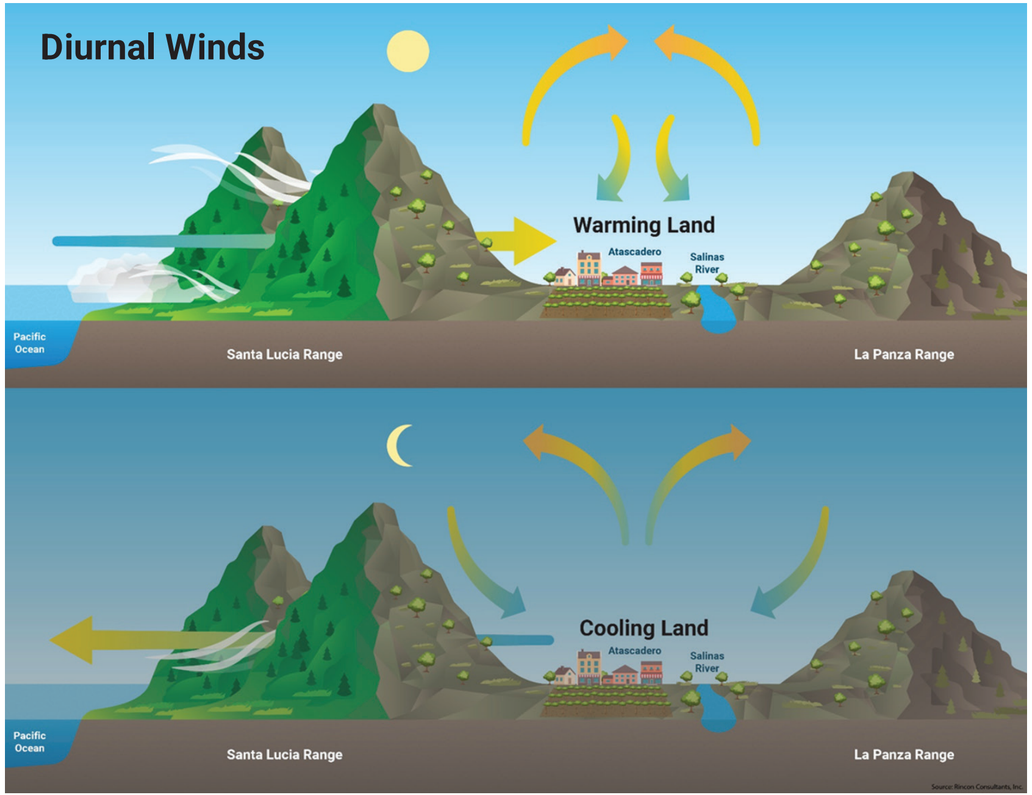


Figure 17. Diurnal Winds

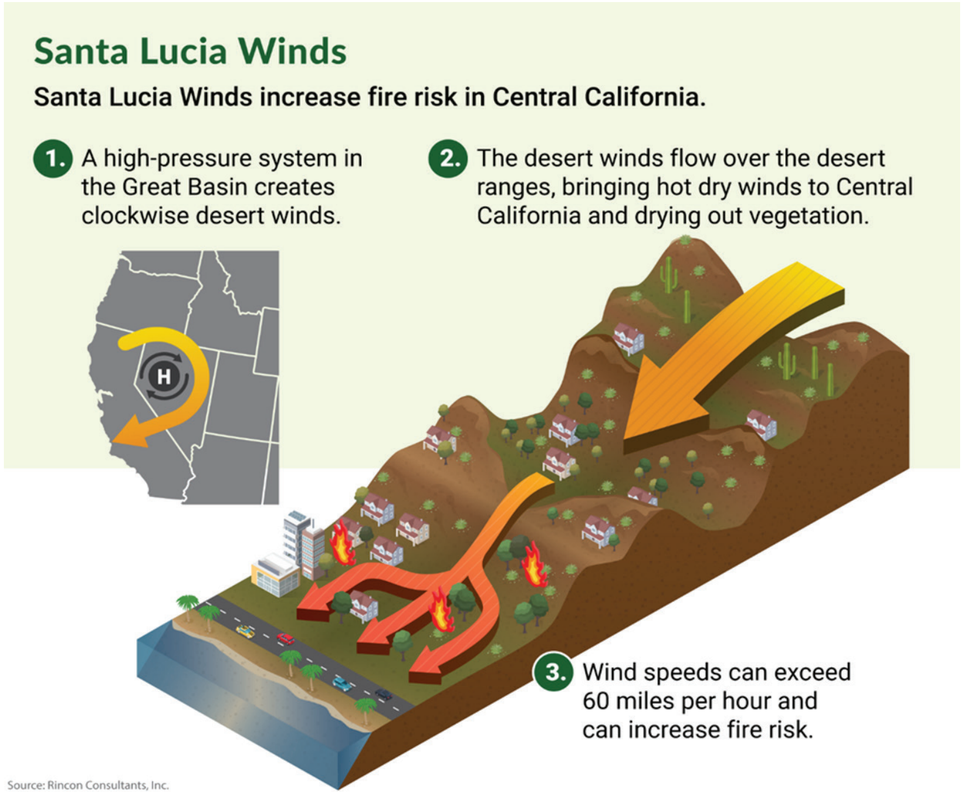


Figure 18. Santa Lucia Winds

Seasonal local Santa Lucia wind patterns bring strong dry northeasterly flows over SLO County, having a similar drying effect of the greater Diablo winds of northern California and the Santa Ana winds of southern California. While not typically as consistently strong as the similar Santa Barbara County Sundowner winds, this warmer dry air mass typically moves through the area during the late spring and fall months at the end of the driest and hottest time of year, further exacerbating low fuel moisture. The Santa Lucia wind phenomenon has been previously responsible for driving coastal valley temperatures over 115 degrees Fahrenheit, such as those experienced in September 2020.[66] The timing of these Santa Lucia wind events can pose a major threat to safety and create difficult wildfire fighting conditions. Also see Section Wildland Fatality Fires for a discussion of fatalities caused by wind-driven fires.


Coastal Hills

66 *Lindsey, John. April 15, 2021. Ever wonder where the Santa Lucia winds come from?. Lompoc Record.* ***https://lompocrecord.com/news/local/lindsey-ever-wonder-where-the-santa-lucia-winds-come-from/article_bc359bd4-f8f6-56ae-bc08-f01693248ec7.html***.

Wind with No Name

SLO County features a unique fire regime that can oftentimes be exacerbated by distinct afternoon wind patterns and microclimates influenced by the diverse topography and geographic features. Of the state's coastal counties, SLO County has more mountain passes than any other in the coastal range. This unique topographic makeup leads to extremely unique wind patterns that can create extremely dangerous wildland fires. This local wind pattern has been called The "Wind with No Name," "Wind in Conflict," and "Crazy Winds." Specifically, near State Route (SR)-41, SR-46, SR-101, and SR-166, afternoon firefighting conditions have been known to become extremely dangerous. These patterns are recognizable in SLO County's historical fatality fires and directly led to 10 firefighter fatalities and many more near miss incidents.

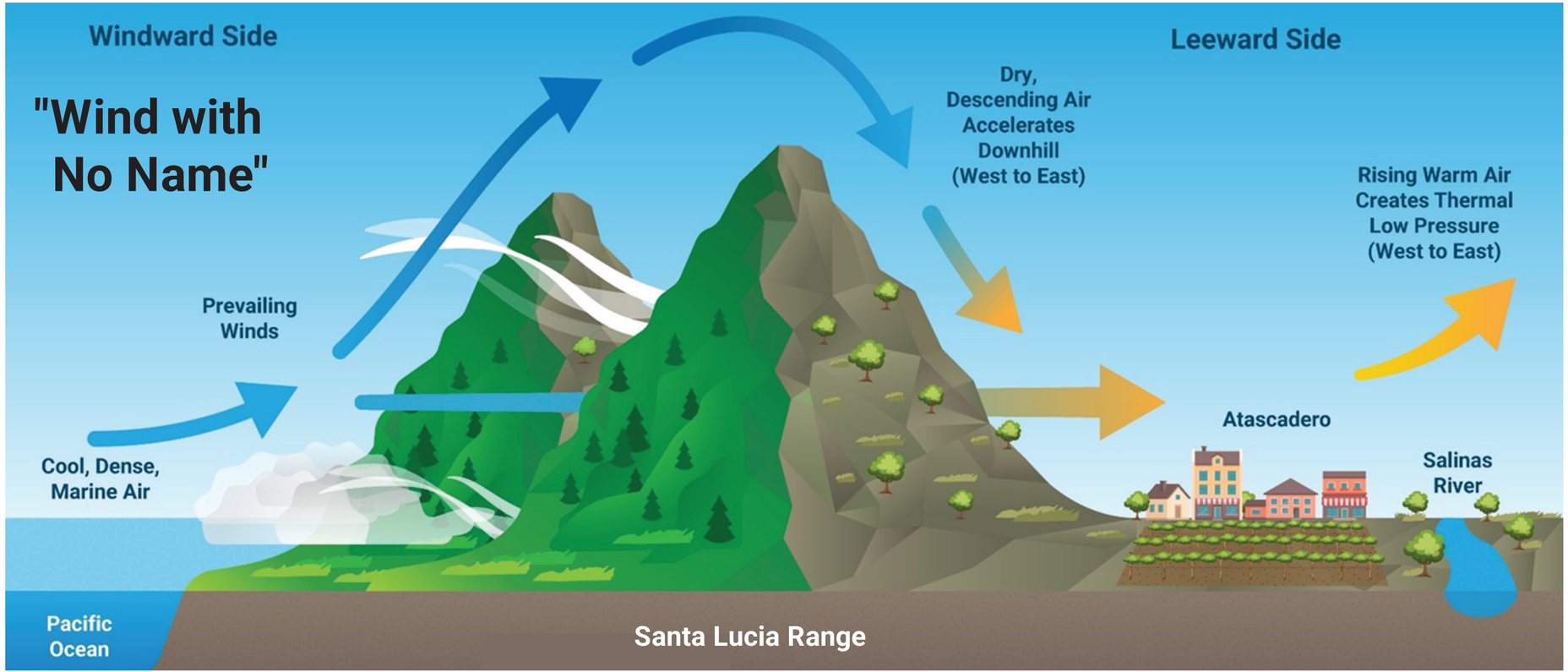


Figure 19. "Wind with No Name" Coastal Cross Section

Regional Wind Patterns

These winds are not unique to SLO County but are more prevalent due to several factors. The Pacific high-pressure system is often situated off the central coast of California creating hot dry weather during summer months. The Santa Lucia Range in SLO County runs parallel and in close proximity to the coastline north to south for the entire length of the county. Multiple west to east passes in the range align with prevailing westerly winds enhanced by the high-pressure system offshore. These winds bring cooler air inland to mix with the warmer air as a subsidence wind on the leeward side of the Santa Lucia Range as shown in Figure 20 and Figure 21.

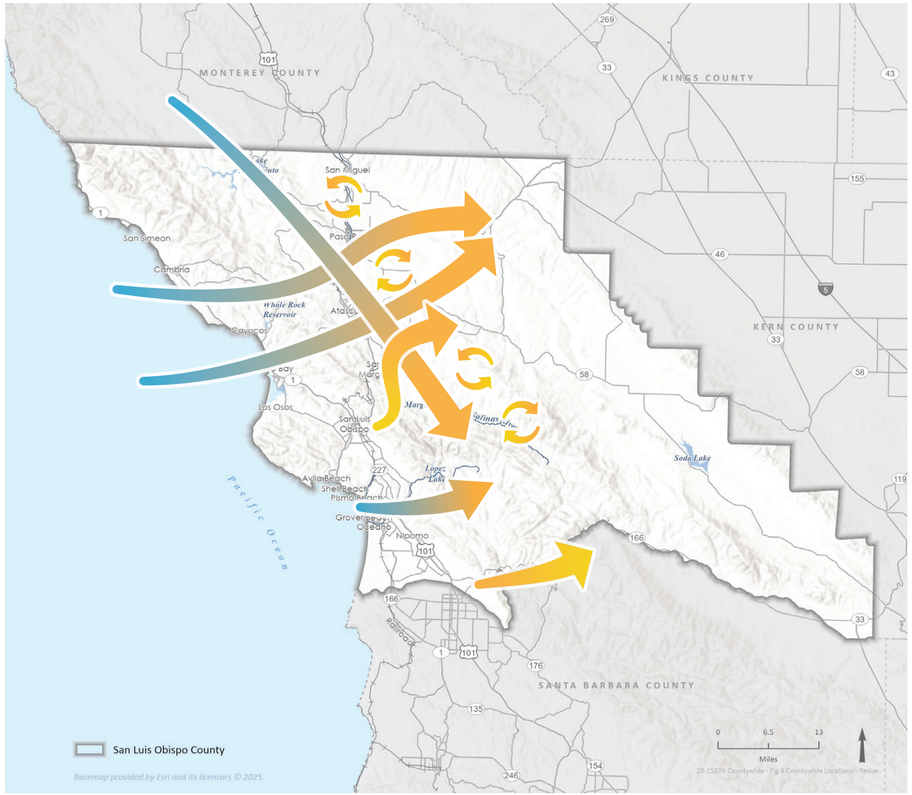


Figure 20. "Wind with No Name" County Conditions

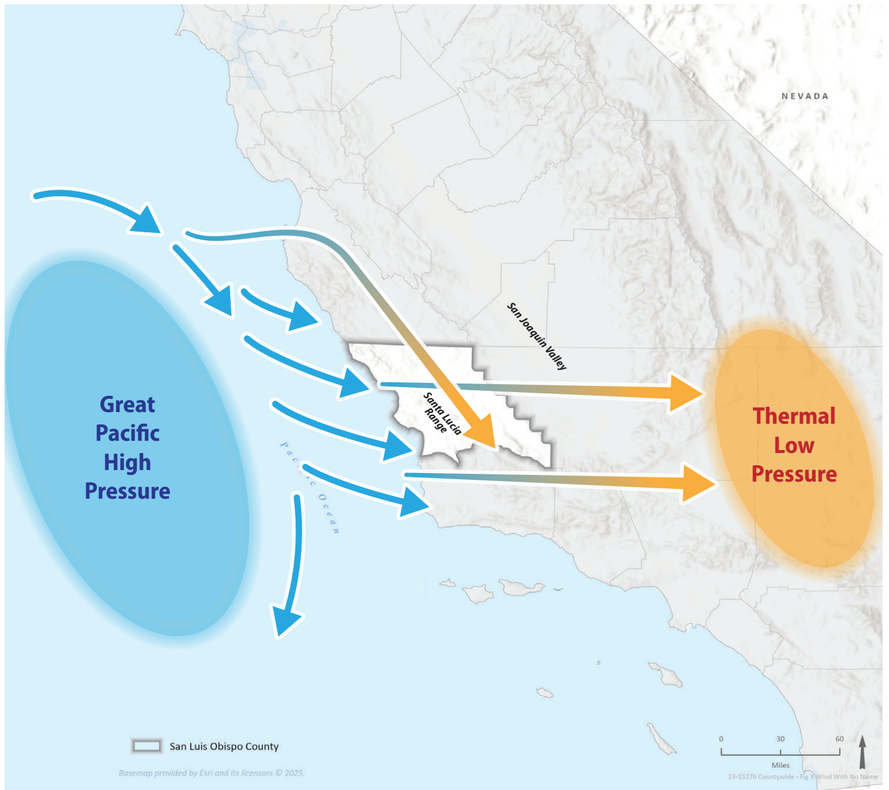


Figure 21. "Wind with No Name" Coastal Cross Section

The inland area's "wrinkled" topography and high summer temperatures create a thermal low-pressure system. Winds in this area are channeled through multidirectional valleys, ridgelines, canyons, and drainages creating turbulent and unpredictable conditions. This wind coupled with dry and abundant vegetation has resulted in the area between the Santa Lucia Range and the La Panza Range being known as a highly volatile region by area firefighters.[67]

67 (D. Dulitz, personal communication, Jan 2024).

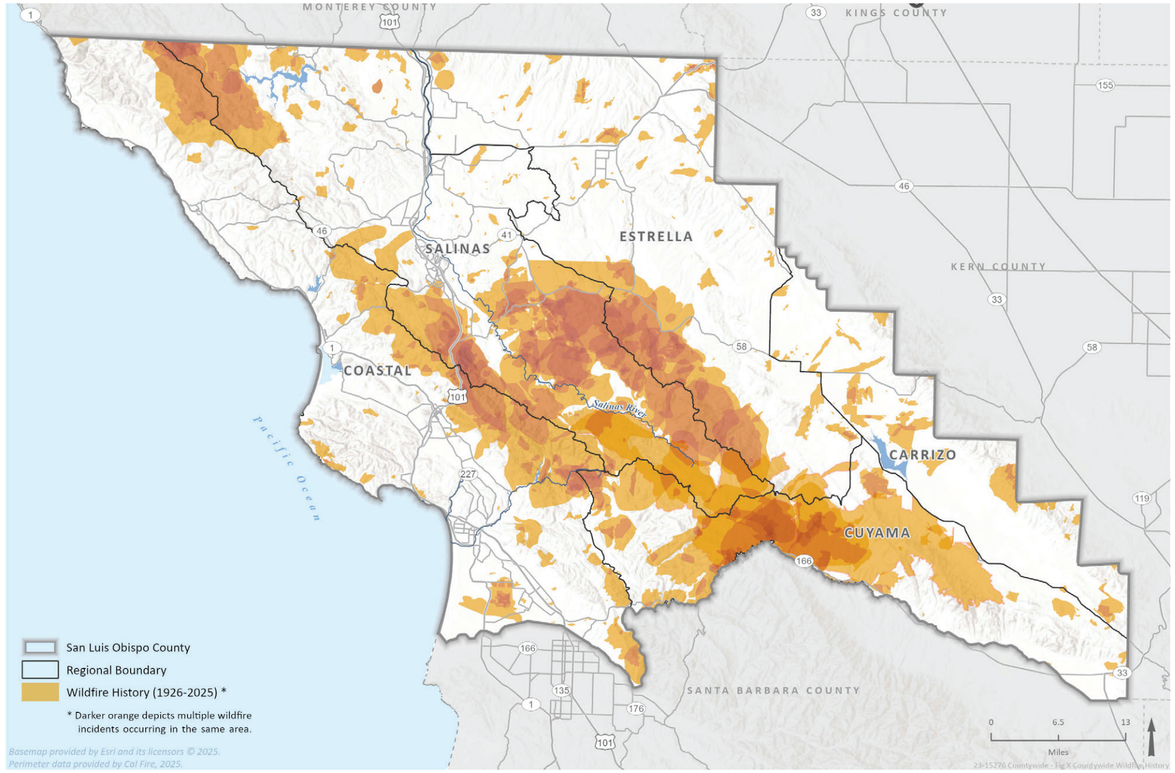


Figure 22. SLO County Fire History

Regional Fire History

Fire history in SLO County is extensive and has been ongoing for thousands of years. However, data limitations prevent access to the complete history of wildfires in the County. Thus, the following discussion includes data based on available sources within the County. Cultural burning, and more contemporary agricultural burning practices in SLO County have long been used for landscape and resource management. This is discussed further in the Cultural History Section. Fire adaptations in native plant species show that occasional fires are an integral part of the survival strategies that have evolved over time. This concept is discussed further in Section 2.1.6 Natural Environment and Fire.

Wildfire history showing repeat burn patterns can be observed using the historical fire perimeter data from CAL FIRE's FRAP.[68] In the Santa Lucia Range repeated burning occurs in areas with dense chaparral, most notably on federal land. These areas exhibit large fire perimeters and a more concentrated distribution of fire perimeters. Grass-dominated lands in the eastern portion of SLO County exhibit smaller, well-dispersed burn perimeters. The average interval between large wildfires of more than 20,000 acres in SLO County is 7.3 years, with intervals ranging from 1 year to 17 years. Understanding the historic and contemporary fire return interval of an area will guide a project planner to develop proactive fuel reduction projects.

With few exceptions, the major fires that have burned in SLO County have a general burn pattern from the northwest to the southeast. This is due to the alignment of the Santa Lucia Range and the dominant prevailing onshore wind pattern from the northwest. When mixed with the afternoon marine air spilling over the Santa Lucia Range (The "Wind with No Name") fires spread in multiple directions on the lee side of the ridgeline. The exception to this is along the Cuyama River where the dominant effect of the river canyon funnels wind back and forth between the Pacific Ocean and the inland desert.

68 California Department of Forestry and Fire Protection. Accessed Jan. 20, 2024. Fire Perimeters. What We Do: Fire Resource Assessment Program. ***https://www.fire.ca.gov/what-we-do/fire-resource-assessment-program/fire-perimeters****.*

Wildland Fire

Regional Fire History

Figure 22 shows fire perimeters within SLO County from 1926-2025. Darker orange polygons depict multiple wildfire incidents occurring in the same area. Although larger fires have historically caused more damage, smaller WUI fires in or near SLO County communities can threaten more homes and structures. Fuel reduction projects should be planned to defend assets at risk.

As more homes are built in the WUI, the area of risk expands, and target treatment areas should evolve to address the current composition of risk. Many of the largest fires in SLO County history have been wind driven, as can be seen in the burn perimeters predominately stretching northwest to southeast. Wildfires occurring within the Santa Lucia Range are driven by diurnal wind patterns which drive the front back and forth over the ridge depending on the time of day.

Fire spotting, also known as spotting or firebrands, refers to the phenomenon where burning embers or small pieces of flaming debris are carried by the wind and can ignite new fires ahead of the main fire front. These flying embers can travel significant distances from the original fire, sometimes miles away, and can start spot fires in vegetation, structures, or other combustible materials. Fire spotting is a critical factor in the spread and behavior of wildfires during high winds, as it can lead to the rapid expansion of the fire perimeter and pose challenges for firefighting efforts. The 1985 Las Pilitas fire originated on the north side of Santa Margarita Lake and spotted across the lake igniting new fires along Pozo Road that eventually spread to the city of San Luis Obispo and Lopez Lake.

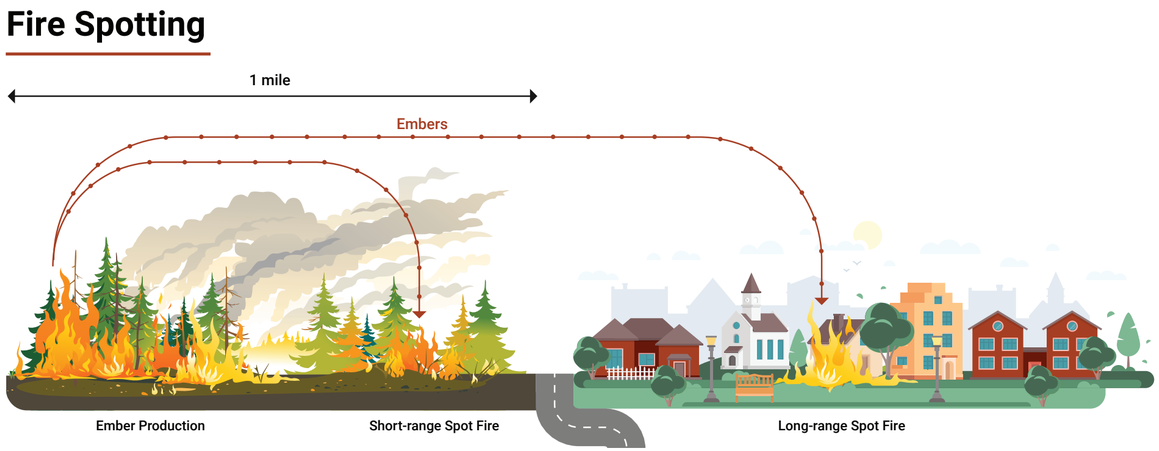


Figure 23. Fire Spotting

Wildland Fire

SLO Fire History

Since the early 1900s many large and damaging wildfires have been recorded in SLO County. The Parkhill-Pozo area of central SLO County experiences the most frequent large fires and burns with extreme intensity in July and August. Cumulatively, these large fires, destroyed dozens of structures, and caused millions of dollars of social, environmental, built and economic damages.[70,71] Resource drawdown and competition with other simultaneous ongoing large fires in the state at the time may have contributed to the levels of destruction wrought by the worst fires in SLO County.

The 1996 Highway 58 Fire consumed 106,969 acres, thirteen homes, and many other structures and vehicles. The fire began near SR-58 and O'Donovan Road and was driven to the south and east into the Los Padres National Forest, dying near Branch Mountain southeast of Pozo.

The 1985 Las Pilitas Fire burned 84,271 acres and ten homes. It began on Las Pilitas Road north of Santa Margarita Lake and burned southwesterly into the Santa Lucia Range, to Lopez Lake, across East Cuesta Ridge and into the city of San Luis Obispo.

The 2025 Madre Fire burned 80,779 acres in the Cuyama and Estrella Regions of SLO County. It began as a grass fire near SR-166 and quickly consumed thousands of acres of grasslands before spreading into nearby chaparral covered slopes. It was active for 24 days before being completely contained. One structure was lost and two firefighters were injured during the blaze.

The 1994 Highway 41 Fire burned 50,729 acres in the Santa Lucia Range. It was ignited on SR-41 near Cerro Alto and the first evening, under offshore diurnal winds, was bearing down on the city of Morro Bay before shifting winds pushed it back toward Atascadero, Garden Farm, Santa Margarita, and into Cal Poly, the Men's Colony, and City of San Luis Obispo. The fire destroyed 42 homes, 61 other structures and 91 vehicles. A strike team of five fire engines with 20 firefighters were nearly overrun along Tassajara Creek Road when the afternoon "Wind with No Name" pushed the fire in their direction. The Highway 41 fire burned at the most extreme rate of any fire in California, consuming 6,000 acres per hour at its peak.

The 1950 Pilitas 1, 2 & 3 fires burned together and burned 30,100 acres in the Parkhill area. 23 firefighters were overrun when the Pilitas 2 fire burned into the Pilitas 1 fire trapping the firefighters and killing four of them. The Pilitas 1 fire started near the dam for the Salinas Reservoir (Santa Margarita Lake) and burned to the northeast across Pilitas Road toward Huer Huero Road. While hand crews were constructing hand line on this fire, a new fire (Pilitas 2) began on Parkhill Road at Seven Oaks Road from a debris burn escape when a sudden wind shift occurred. This new fire burned to the southeast and trapped the firefighters between the two fires at Huer Huero Road north of Parkhill Road. The third fire (Pilitas 3) was caused by arson at SR-58 and Parkhill Road and burned easterly along SR-58. The three fires burned together and reached Black Mountain.

1979 Spanish Ranch fire along SR-166 west of Cuyama resulted in the death of four firefighters when the marine wind ("Wind with No Name") pushed inland through the Cuyama River pass and caused the fire intensity to change trapping and killing four firefighters and injuring two more.

The 1989 Chispa Fire burned 9,750 acres near Chalk Mountain Golf Course in Atascadero and burned south and east toward Santa Margarita and Creston. It destroyed twelve homes and many other structures in its wake.[69]

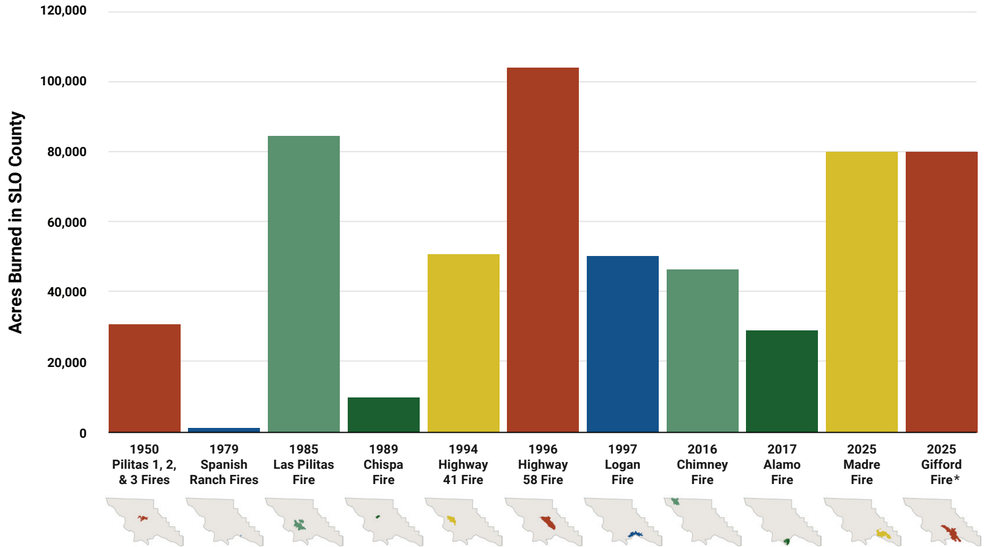
The 1997 Logan Fire burned 49,490 acres in remote areas off SR-166 in the Cuyama River pass and resulted in near miss entrapments of firefighters on the east and west sides of the fire due to the afternoon winds. This fire burned both in easterly and westerly directions based on the "Wind with No Name" wind flow direction in the Cuyama River drainage.

The 2016 Chimney Fire burned 46,233 acres near Lake Nacimiento, burning through the Santa Lucia Range and coming within two miles of Hearst Castle. It destroyed 49 homes and 21 other structures. The Chimney Fire burned in nearly the same footprint as the 1960 Weferling Fire. The Weferling Fire After Action Report mentioned "Crazy winds" ("Wind with No Name") as a factor in the severe fire spread.

The 2017 Alamo Fire burned 28,687 acres near Twitchell Reservoir (Cuyama River drainage) in SLO County, though the majority of acreage was in neighboring Santa Barbara County. It destroyed one home and thirteen other structures.

69 Vaughn, M. San Luis Obispo Tribune. Dec. 11, 2017. The 7 Largest Wildfires in SLO County History. Accessed Feb 20, 2024. from ***https://www.sanluisobispo.com/article189260279.html#storylink=cpy*** .

SLO County Major Fire History - 1950-2025



Source: Rincon Consultants

*SLO acres burned. Full fire acreage 131,614 includes Santa Barbara County.

Figure 24. SLO County Fire History

70 San Luis Obispo County Fire Department. July 2019. Community Wildfire Protection Plan. San Luis Obispo County. ***https://www.slocounty.ca.gov/Departments/County-Fire-Department/Publications/Community-Wildfire-Protection-Plan.pdf***.

71 San Luis Obispo County Public Works. Apr. 28, 2022. CAL FIRE Unit Strategic Fire Plan. San Luis Obispo County. ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/SLO-Watershed-Project/Resources/CAL-FIRE-Unit-Strategic-Fire-Plan.pdf***.

SLO Fire History

The 2025 fire season in SLO County was highly active, resulting in the greatest acreage burned in a single season on record in the county. The Madre Fire began on July 2, 2025, on the north side of SR-166 in the Cuyama Region near Rock Front Ranch. This highway corridor runs through steep topography west to east along the Cuyama River in this region which results in frequent channelized gusty winds. This area is prone to annual wildfires, driven by light flashy fuels in grasslands and oak savannah. Smaller areas of chaparral covered slopes may also be involved in these fires.

Typically, this region, with its few inhabitants and minimal infrastructure, experiences fast spreading wildfires with low-risk to built environment. However, the area does pose an extreme risk for firefighters. The 1979 Spanish Ranch Fire killed four firefighters and the 1997 Logan Fire resulted in several near miss burnover events. The fire spread was extreme because of the intense winds. The fire burned at the rate of 2,000-3,000 acres per hour and burned over the fatality site of the Spanish Ranch fire in the first two hours.

The Madre fire exhibited an excellent example of the Wind with No Name phenomenon, where marine winds battle inland winds for dominance in the Cuyama River drainage. Westerly marine winds blowing up the Cuyama River drainage through the narrows at the Rock Front Ranch increased in velocity due to the venturi effect of the narrows. The initial phases of the fire were recorded on the CA Alert fire camera system. The fire's smoke was laying horizontally due to the strong winds (images from the Plowshare camera). However, just above the fire was an inversion layer with winds aloft blowing easterly, 180 degrees different. Images from the CA Alert fire camera at La Panza site showed a convection column piercing the inversion and shearing off to the west. This inversion layer and marine battle results in very strong winds with abrupt wind shifts.

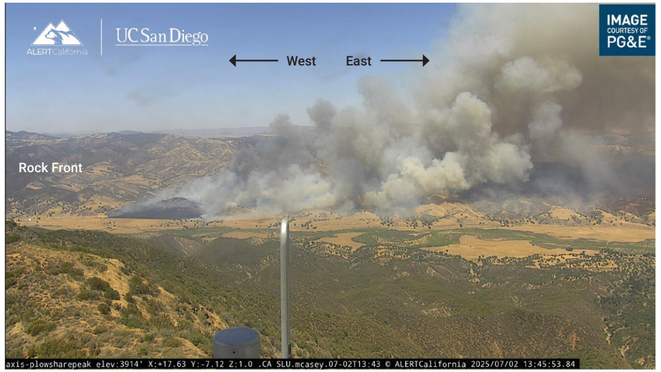
The Madre fire burned more than 30,000 acres on the first day and ultimately burned 80,779 acres making it the 3rd largest fire in SLO County recorded history at the time. Most of the area burned was uninhabited in either Los Padres National Forest (LPF), BLM, or CA Department of Fish and Wildlife reserve lands.

The Gifford Fire began approximately four miles west of the Madre Fire ignition, also along SR-166, near Rock Front Ranch. Again, high winds through the Cuyama River narrows at the Rock Front Ranch drove the initial phases of this fire causing it to spread on both sides of SR-166. While the Madre Fire burned generally eastward through grasslands from its ignition point, the Gifford Fire burned north and south from its source through Santa Barbara and SLO County. The Gifford fire burned into steep mountainous terrain in dense chaparral fuels.

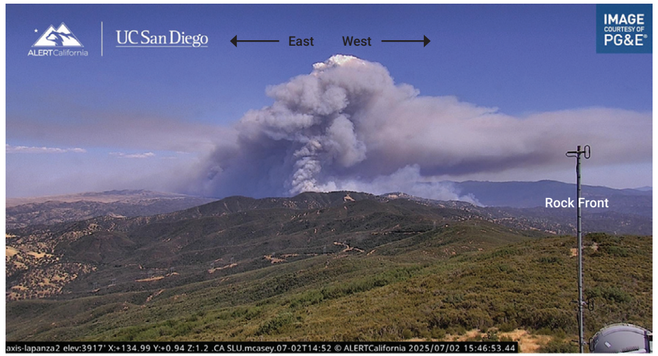
The Gifford fire burned through areas with no recorded wildfire history since 1878. While this area has undoubtedly experienced fire at some point, the lack of fire in the past 150 years has resulted in extremely decadent and dense fuel loading. The chamise redshank chaparral vegetation community that dominates the slopes in this area requires fire as part of its regenerative process. Shrub canopies average 1-2 meters in height and frequently overlap producing a nearly impenetrable canopy of interwoven branches. The dense, interwoven canopy not only hindered firefighter access but also contributed to unusually high fire intensities that made suppression efforts extremely challenging. As it progressed north and west the Gifford Fire burned into the unincorporated area of Pozo and preparations were in place to combat the fire in Santa Margarita and San Luis Obispo.

The Gifford Fire suppression effort involved more than 5,000 personnel and resulted in five structures destroyed, three confirmed civilian injuries, and 15 confirmed firefighter injuries. As of August 23, 2025, the Gifford Fire reached a total recorded area of 131,613 acres with 47,942 in Santa Barbara County and 83,671 acres burned in SLO County making it the new 3rd largest fire in SLO County recorded history.

Neither of these fires were driven by Santa Lucia Wind events. Instead, the Wind With No Name was influential in their progression. Marine winds battling inland winds for dominance. On-shore marine winds pushed the fire during the day and off-shore inland winds pushed the fire at night. The fire burning intensely at night above the marine inversion layer. Due to an improved understanding of this weather phenomenon, there were no significant injuries or loss of life for firefighting personnel or civilians reported for either event.



Madre Fire Origin – Plowshare Peak Camera



Madre Fire Inversion – La Panza Camera

As noted above, the Gifford Fire burned through a large area of the LPF with no recorded fire history. Local fire personnel recognized that it was a matter of when, not if, this area would eventually experience wildfire. However, the fuel conditions in this region of the LPNF were unmanaged due to the sheer scale of fuels reduction project work necessary and limited resources to enact such a project on federally managed lands. There are 239,114 acres of the LPF in SLO County. These two fires burned 86,297 acres of the SLO County LPF in 2025 alone, nearly 40%. Since 1985, 218,255 acres (91%) of the LPF have burned in the County.

The outcome of the Gifford Fire may take years to assess. Much of the native vegetation in this region of the state has evolved fire adaptations, but enough heat with enough residence time (a measure of how long a fire was on the ground and at what temperature) can overpower all adaptations. Many facultative species will rapidly resprout from root systems, but some obligate seeders may not. Only after several years of rainfall and vegetation recovery will it be possible to determine if the Gifford Fire served an ecologically beneficial role or marked yet another instance of highly destructive wildfire activity. Post-fire damages can also be devastating. Winter rains following the 1997 Logan fire resulted in massive runoff from burned watersheds and caused flooding and mudslides that included a washout of SR-166 near Twitchell reservoir in the middle of the night. The washout resulted in the death of 2 civilians and California Highway Patrolmen that were responding in the darkness to investigate the washout and were swept away.

Ignition Patterns

Figure 25 shows the recorded ignition locations for wildfire events from 1922-2024. This information is shown in a "heat map" to clearly depict the repeat ignition locations. Historically, ignitions have occurred near densely populated areas in SLO County as well as along US-101. Using these data to plan the locations of hazard fuel reduction projects can show where preventative measures will be most valuable.

Wildland Fire

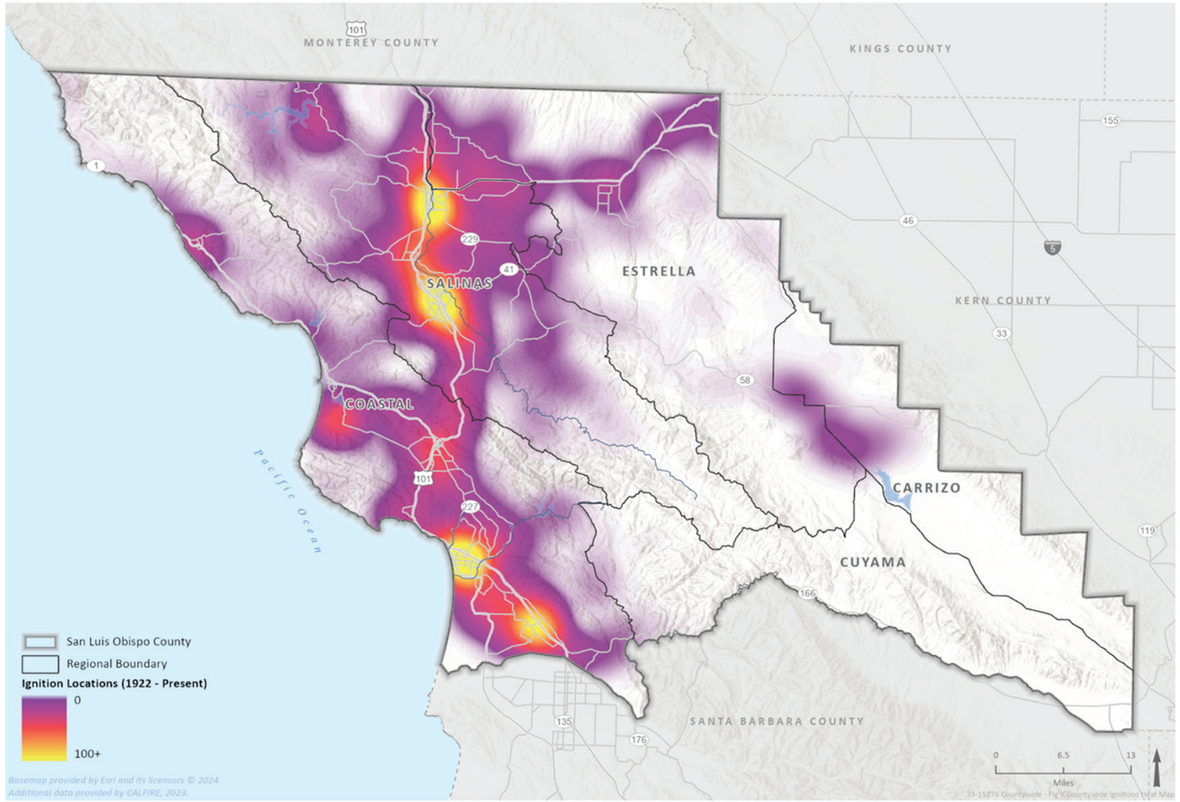


Figure 25. SLO County Historical Wildfire Ignitions

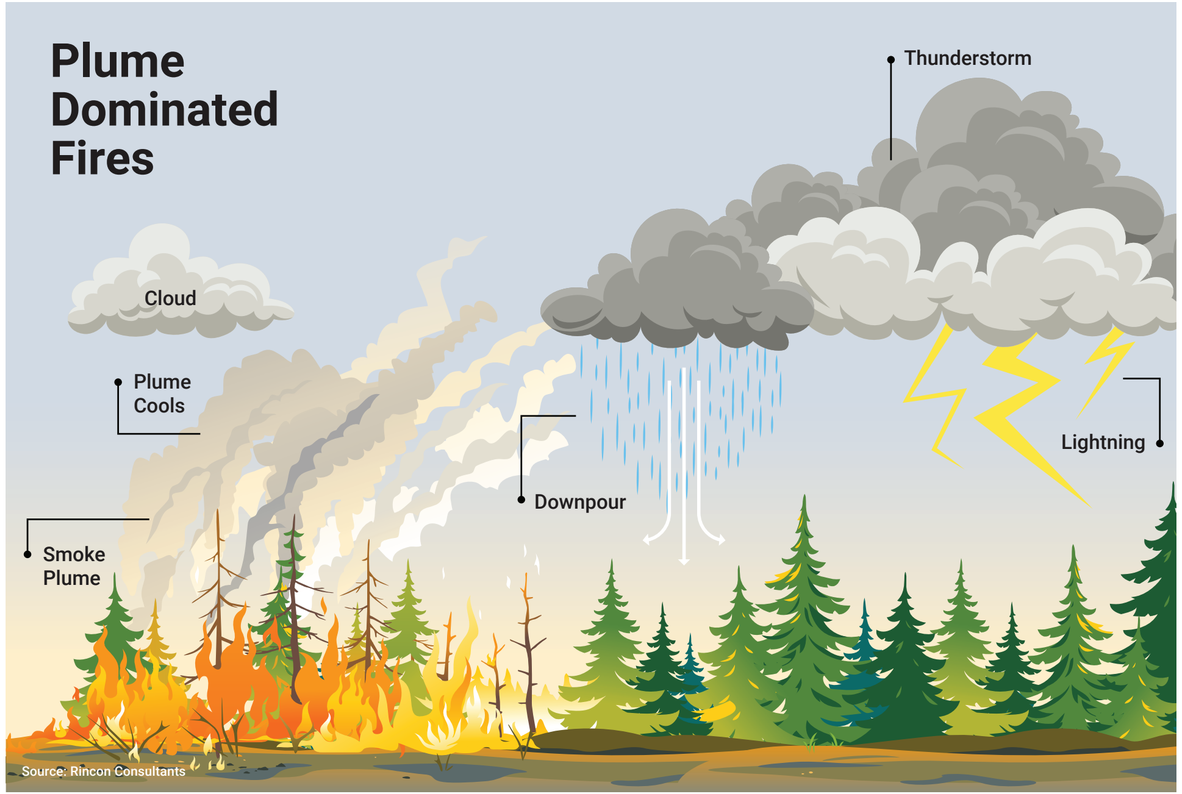


Figure 26. Plume Dominated Fires

Plume-Dominated Fires

While wind driven fires events in SLO County are a common threat, plume dominated fires account for some of the largest and most destructive fires in recent history. A plume-dominated fire, shown in Figure 26, exhibits the increased role of the convective force generated by the heating of the fire. The fire itself begins to influence the wind field around it. This added vertical development has also been described as "fire in the third dimension" along with the length, width, and atmosphere above and around the fire. Consequently, fire spread rate and direction become less predictable due to the role of the general wind in fire spread becoming less pronounced. Spotting is normally short ranged but occurs in all directions. All convective columns have updrafts and downdrafts. Associated with these are indrafts, which is the flow of air into the column, and downdrafts or downbursts of air out of the convective column.[72]

Wildfires in SLO County are often fueled by the combination of old, unmanaged, and decadent vegetation and low live fuel moisture and low dead fuel moisture. Once a fire gets established the conditions are ripe for a plume generated fire. The 1994 Highway 41 and the 2016 Chimney Fires are examples of these types of fires.

Under extreme conditions, plume-dominated wildland fires in SLO County can burn at more than 5,000 acres per hour. At its peak, the plume-dominated 1994 Highway 41 fire burned at 6,000 acres (over 9 square miles) per hour between Atascadero, Santa Margarita, and San Luis Obispo as shown in Figure 24. The flaming front eventually ran into an area of the 1985 Las Pilitas Fire scar which helped to slow the advance and allowed firefighters to gain control. The blaze caused extensive damage to US-101 and SR-41 resulting in closures of these vital thoroughfares. The fire affected the transmission lines that are required to operate Diablo Canyon nuclear power plant and provide electricity to the surrounding communities. Many residents were without electricity for an extended period of time. This fire highlighted the importance of protecting mountaintop communication structures and the extended damage from cascading effects. Several communication sites on West Cuesta ridge were destroyed resulting in immediate loss of service and long-term cascading damage due to extended loss of service while repairs were made, including disruption of trans-Pacific telephone lines.

This was the first area fire to be mapped using GIS, which was conducted by Cal OES on a program called Mousetrap that used CAL FIRE Alma Helitack helicopter-based GPS/GIS system.

*72 The source of this material is the COMET® Website at **http://meted.ucar.edu/** of the University Corporation for Atmospheric Research (UCAR), sponsored in part through cooperative agreement(s) with the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce (DOC). ©1997-2024 University Corporation for Atmospheric Research. All Rights Reserved.*
73 S-290 Unit 11: Extreme Wildland Fire Behavior (cmatc.cn).

Wildfire Smoke Plume[73]

Firefighter Fatalities

While the recognized impacts of wildfire focus on the threat to communities, infrastructure, watershed, environmental resources and property, the threat to firefighters cannot be overstated. Firefighting is inherently dangerous. Firefighters are asked to work under extreme and hazardous conditions where injuries are common and fatalities not unexpected.

Reducing the exposure time of firefighters, particularly in highly dangerous defensive operations will lower injury and fatality rates.

Despite best efforts to mitigate wildfire risk through effective fuel reduction projects, public education, and public policy, wildfires may still occur. Tragically, fourteen firefighters have died fighting wildfires in SLO County, shown in Table 1 and Figure 27. The fatalities for firefighters in the line of duty can mostly be attributed to dangerous and volatile wind driven wildfire events, specifically the "Wind with No Name."

Wildfire Name	Date	Time of Day	Miles from Coast	Cause of Fatality	Number of Fatalities
Devil's Gap	8/28/1931	14:00	10	Burn-over	1
Delassi	9/17/1946	20:00	10	Vehicle Rollover	1
Pilitas #1	7/5/1950	14:15	25	Burn-over	4
Geneseo	6/22/1959	16:00	30	Burn-over	1
Colusa	8/19/1978	18:00	45	Plane Crash	3
Spanish Ranch	8/15/1979	16:30	40	Burn-over	4

Table 1. Wildland Fatality Fires

The 1931 Devil's Gap fire occurred near SR-41 between Atascadero and Morro Bay. One firefighter was killed when the afternoon marine wind caused a wind shift condition that overran the firefighter's position, and he was unable to escape.

The 1950 Pilitas fires were actually three separate fires that ultimately burned together. Four firefighters died and 19 more were involved in the burn-over. Two hand crews of 11 men were working the fire edge of the first fire (Pilitas 1) which had started near the dam at Santa Margarita Lake and burned to the northeast toward Las Pilitas, Parkhill, and Stagecoach road intersection.

While the crews were working on the fire edge, a new fire (Pilitas 2) started along Parkhill Road near Seven Oaks Road. This new fire spread rapidly to the southeast, pushed by the "Wind with No Name," and trapped the two crews between the fires. Four members of one crew died and others were able to escape to safety. A third, arson-caused fire (Pilitas 3), burned into the other two and spread eastward to Black Mountain.

The 1959 Geneseo fire occurred north of Creston near today's Ground Squirrel Hollow. A fire engine crew was mopping up a grass fire that had stopped spreading when a sudden wind shift occurred causing the fire to flare up and overran their position. One firefighter died and three others escaped.

The 1979 Spanish Ranch fire. This fire started along the northside of SR-166 west of New Cuyama on a hot August day. Similar to the Geneseo fire, a fire engine crew and a bulldozer were working on a 500-acre grass fire that had stopped spreading and appeared to be out. The marine wind (Wind with No Name) pushed in from the coast through the Cuyama river drainage and wind speed and direction changed from calm to 15-20 miles per hour and spread laterally as it came through the narrow Cuyama river mountain pass. The fire engine crew and bulldozer were overrun. All four fire engine crew members suffered fatal injuries.

In addition to the fatality events there are several known instances of near miss situations where fire crew narrowly escaped the wind shifts caused by the "Wind with No Name."

Figure 27. Fatality Fire Events in SLO County

Firefighting Assets

When planning a hazard fuel reduction project, it is ideal to integrate both CAL FIRE and local fire department staff in the process. Their local knowledge and expertise will be beneficial to understanding the success of past projects and the nuances of the landscape that can enhance project effectiveness.

There are 48 fire stations in SLO County operated by 17 agencies (federal, state, cities, and special districts). Many of these fire stations have wildfire firefighting assets. CAL FIRE has a state wildfire responsibility and functions as the SLO County Fire Department under a contract since 1929. CAL FIRE-SLO County Fire features six fire-fighting battalions and twenty-four fire stations operated by CAL FIRE. Twenty-four additional fire stations are operated by federal, state, and local fire departments, shown in Figure 28. Additionally, CAL FIRE operates the Emergency Command Center (ECC), which is dedicated to Integrated, Cooperative, Regional Fire Protection, and Emergency Dispatch Services.[74] From SLO County's 48 fire stations, agencies operate mobile equipment such as fire engines, bulldozers, hand crews , chief officers, fire prevention staff, mobile kitchen unit, mobile communications unit, construction equipment, all-terrain vehicles, air attack aircraft, specialized aircraft, and rescue fire fighting vehicles.

Fire engines are designed to transport personnel and equipment to fire scenes, provide water and foam for fire suppression, and carry various other tools and supplies needed for firefighting.[75] Bulldozers and hand crews provide the on the ground frontline firefighting resource necessary to combat fires in steep terrain. Additionally, statewide CAL FIRE and the U.S. Forest Service operate the largest civil aerial firefighting fleet in the world, including specialized helicopters such as the CAL FIRE HAWK, air tankers, Modular Aerial Fire Fighting Systems, specialized airplanes, and tactical aircraft.

74 Cal Fire San Luis Obispo County. Accessed Jan. 20, 2024. Emergency Command Center (ECC). Cal Fire San Luis Obispo County. ***https://calfireslo.org/emergency-command-center-ecc/****.*
75 California Department of Forestry and Fire Protection. Accessed Jan. 20, 2024. Mobile Equipment. What We Do: Fire Protection. ***https://www.fire.ca.gov/what-we-do/fire-protection/mobile-equipment****.*

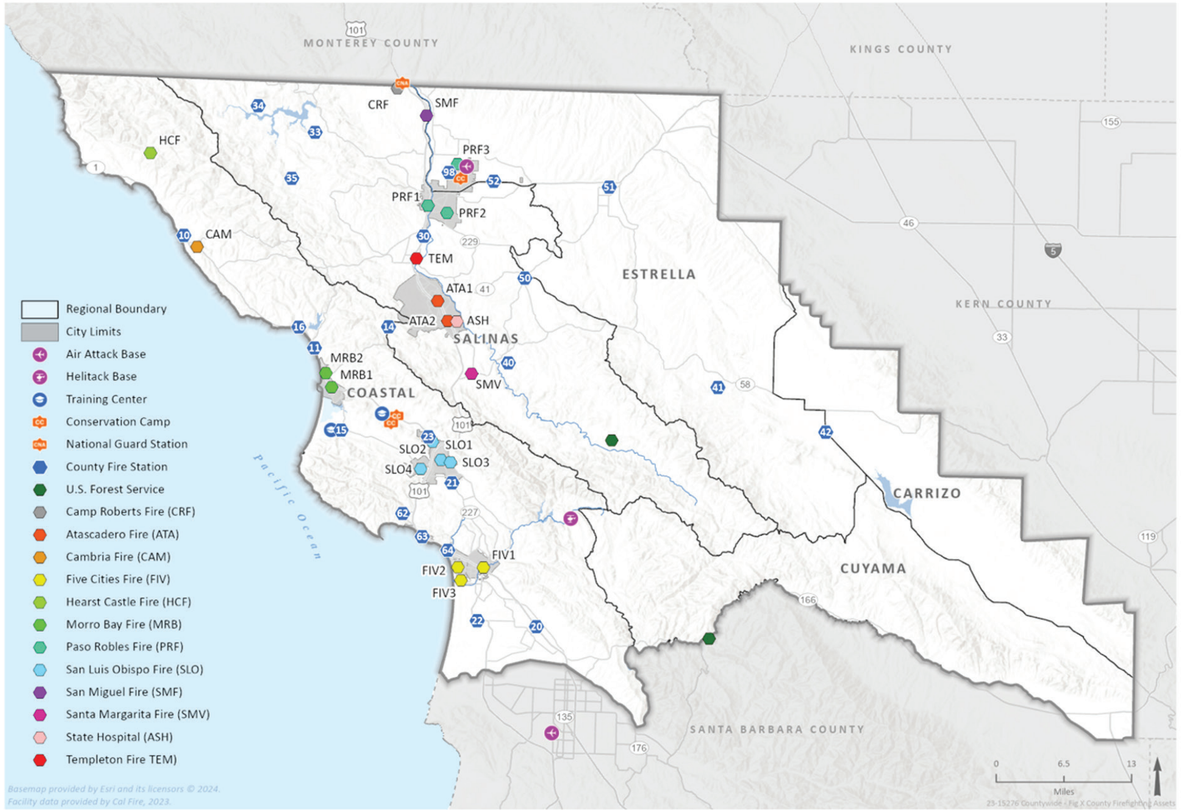


Figure 28. SLO County Firefighting Assets

Responsibility Areas

Due to a robust mutual aid agreement between all the fire departments in SLO County, all fires, both structure fires and wildland fires, receive immediate response from the closest assets regardless of the jurisdiction, as displayed in Figure 29 and Figure 30.

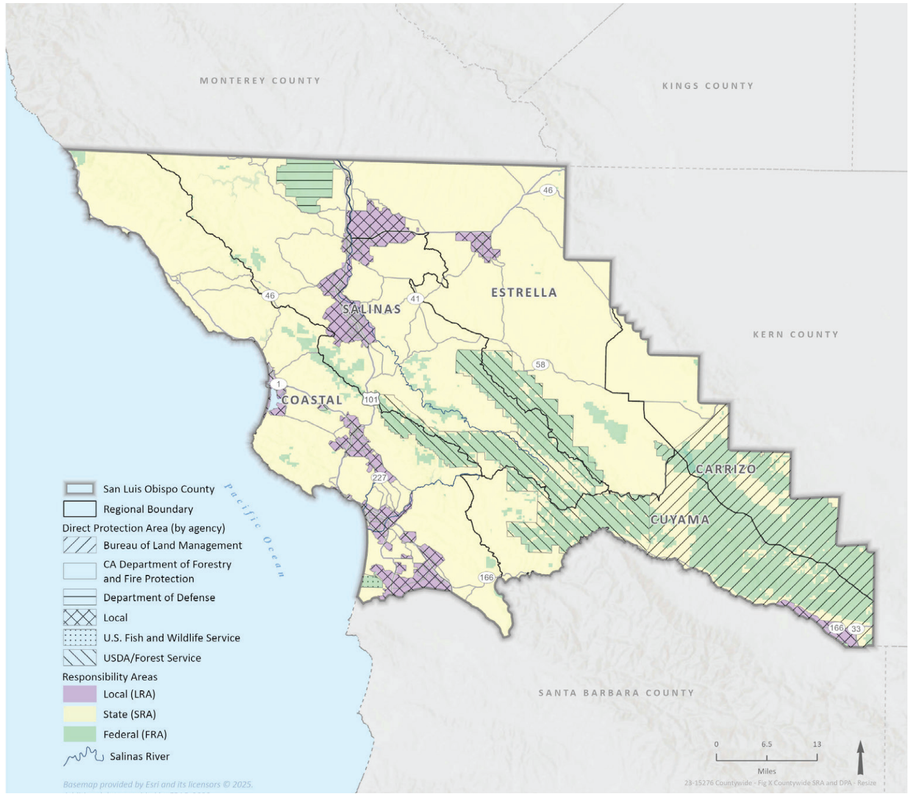


Figure 29. SLO County Wildfire Responsibility Areas

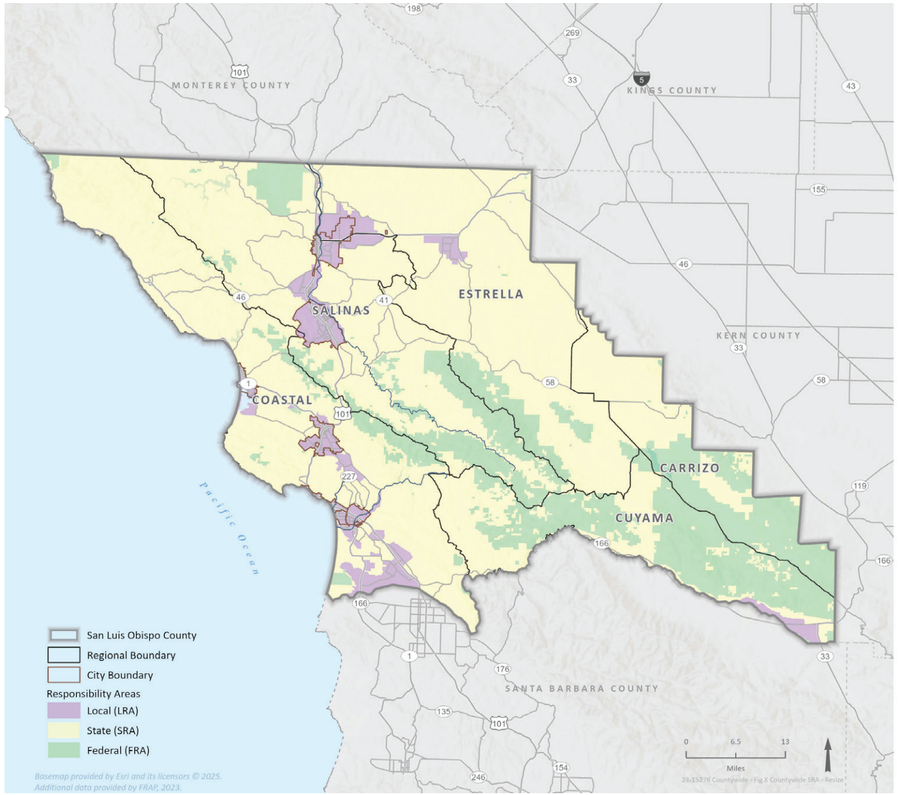


Figure 30. SLO County Direct Protection Area

This important strategy improves the initial attack's success by getting firefighting assets to fires quickly. Wildfires in a local government jurisdiction are the responsibility of the that jurisdiction, however if that fire threatens federal or state jurisdiction the relevant federal or state jurisdiction will take responsibility to prevent the spread of the fire.

Wildfire Responsibility Areas

Wildfire Responsibility Areas: Federal, State, Local

State law and California Public Resources Code identifies three levels of jurisdictional responsibility for wildland fires in California. This shared jurisdictional responsibility occurs in SLO County in Cambria Community Services District (CSD), San Miguel CSD, and Templeton CSD.

Fire agency response to wildfires will vary based on jurisdictional agency policy and capability. Federal agencies like the US Forest Service are well designed and equipped to manage wildland fires. Local government agencies (cities and districts) primary role is municipal fire protection, however, WUI fires constitute a significant threat to their jurisdiction and many local agencies have wildland fire resources in addition to their municipal capability. Fires that occur within FRA, SRA, or LRA are managed by the jurisdictional responsible agency. Mutual aid between agencies is very robust and sharing of scarce resources is commonplace.

Federal Responsibility Area (FRA)

Wildland area is owned by the federal government and a federal agency (USFS; BLM; NPS; DOD; etc.) is charged with protection.

State Responsibility Area (SRA)

Public and private owned wildland and watershed lands outside of incorporated city limits. CAL FIRE is charged with wildland fire protection on SRA lands. There is frequently an overlying local government fire protection organization (special district or county fire department) in the SRA charged with general fire protection services in addition to CAL FIRE. This shared jurisdictional responsibility occurs in SLO County in Cambria Community Services District (CSD), San Miguel CSD, and Templeton CSD.

Local Responsibility Area (LRA)

Include ALL lands (public and private) inside an incorporated city and unincorporated areas that do not have flammable watersheds or wildland.

The wildfire suppression response for a wildland fire is established by fuels, topography, and weather. Based on the three factors, mostly weather, the three dispatch levels are "Fire Wildland (FWL) Low, Medium and High". There are times where Automatic Aid Agreements with other agencies help to intensify the response. Mutual Threat Zones (MTZ's) are located on the Los Padres National Forest, city limit boundary when bordering or close to the SRA. The MTZ's are a half mile inside and outside the limit line or greater based on fuels and topography. CAL FIRE treats the MTZ's like the SRA and sends a standard response with the intent to keep the fire as small as possible and keep the fire from moving onto or out of the SRA as shown in Table 2. Partner agencies respond to the MTZ outside their jurisdiction to prevent the fire from burning into their jurisdiction.

	SRA Response	
Fire Wildland Low (FWLL)	1–Chief Officer 1–Air Attack 1–SLO County or State Engine 2–Type III (Wildland) Engines	
Fire Wildland Medium (FWLM)	1–Chief Officer 1–Air Attack 2–Air Tankers 1–Type II Helicopter 1–SLC or State Engine	4–Type III (Wildland) Engines 2–Type I Hand Crews 1–Dozer 1–Water Tender
Fire Wildland High (FWLH)	1–Chief Officer 1–Air Attack 3–Air Tankers 1–Type I Helicopter 1–Type II Helicopter 1–SLC or State Engine	5–Type III (Wildland) Engines 2–Type I Hand Crews 2–Dozer 1–Water Tender 1–Type III Safety Officer

Source: Lee, P. CAL FIRE Battalion Chief – Mid Coast. February 2024.

Table 2. SRA Response

Specialized aerial firefighting resources for response from the Paso Robles Air Attack Base includes one airborne air tactics supervisor, two air tankers, and one or two water dropping helicopters. The U.S. Forest Service has a helicopter with firefighting hand crew at their Arroyo Grande Helitack base near Lopez Lake and operates the Santa Maria Air Attack Base. The Santa Maria Air Attack Base includes one assigned air tactics supervisor airplane and serves as a critical reload base for air tankers flying on nearby fires including SLO County. Other specialized wildfire protection resources include bulldozers from several stations including CAL FIRE's North Paso Robles Station (near the Paso Robles airport), Parkhill Fire Station, and CAL FIRE San Luis Obispo Fire Station on SR-1 in San Luis Obispo. Hand crews are dispatched from Toro Fire Center and Cuesta Conservation Camp at Camp SLO off SR-1 and the California National Guard Rattlesnake Crews at Camp Roberts. USFS has hand crews within one hour of most areas in the county. Crews are available for both fire suppression and response as well as vegetation management project implementation.

Fire Hazard Severity Zones

The State Fire Marshal is mandated to classify lands within the SRA into Fire Hazard Severity Zones (FHSZ). Fire Hazard Severity Zones fall into the following classifications: moderate, high, and very high. The FHSZ maps are developed using a science-based and field-tested model that assigns a hazard score based on the factors that influence fire likelihood and fire behavior. Many factors are considered such as fire history, existing and potential fuel (natural vegetation), predicted flame length, blowing embers, terrain, and typical fire weather for the area.[76] FHSZ are also defined within the Local Responsibility Area (LRA) and Federal Responsibility Areas (FRA). LRA includes all incorporated cities, and unincorporated areas that do not have flammable native vegetation, like irrigated row crops. The FHSZ designations in SLO County are shown in Figure 31.

FHSZ are modeled and adopted by the Governor-appointed Board of Forestry and Fire Protection. Over the past few years, CAL FIRE has been building a new model for an update of the FHSZ. The latest technologies are being used in the mapping and will include new factors such as land use changes, recent fire history, significant wind event data, as well as a model that is more spatially detailed.[77] This data will be updated and available to the public after SRA and LRA updates are completed and adopted by CAL FIRE.

Fire Hazard Severity Zones mapping DOES NOT MEASURE or EVALUATE RISK; nor does the FHSZ model take mitigation nor fuel treatments into account when establishing the "hazard" rating. The FHSZ hazard rating is an evaluation of the expected wildfire condition of the landscape if it were to remain (or return) to natural conditions. Mitigating factors such as prescribed fire; fuel treatments; wildfire; etc. that may reduce consequences are NOT considered in evaluating the hazard.

Risk is the probability of damage and the consequences related to the fire occurring. Risk models are being developed by insurers to weigh their exposure to loss by evaluating burnable features (natural and built). Risk models also may take into account the cascading consequences of WUI fires and wildfires such as loss of community, tax base, businesses, jobs, infrastructure and housing stock in the built environment and ecological damage to watersheds and species in natural environments.

76 *California Office of the State Fire Marshal. N.d. Fire Hazard Severity Zones (FHSZ). Retrieved from* ***https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildfire-preparedness/fire-hazard-severity-zones/****.*

77 *California Department of Forestry and Fire Protection. 2022. Frequently Asked Questions - Fire Hazard Severity Zones (FHSZ) - December 2022. Retrieved from* ***https://osfm.fire.ca.gov/media/winfmow-p/2022-fhsz-faqs-dec-2022-_final.pdf****.*

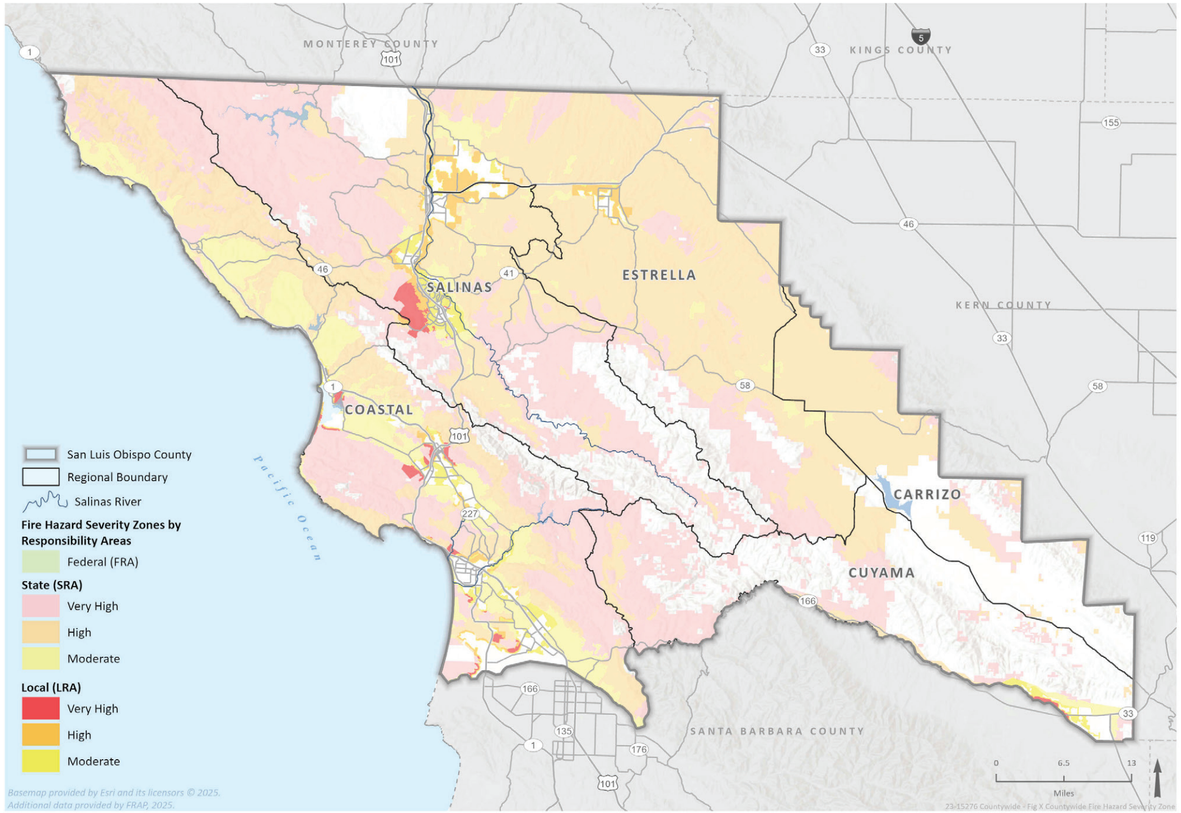


Figure 31. SLO County Fire Hazard Severity Zones

Fire Behavior and the Effects

The fire triangle, shown in Figure 32, is a fundamental concept in fire science that illustrates the three essential components required for a fire to occur. These components are fuel, heat, and oxygen. The triangle visually represents the interdependence of these elements, where the absence or removal of any one of them prevents or extinguishes the fire.

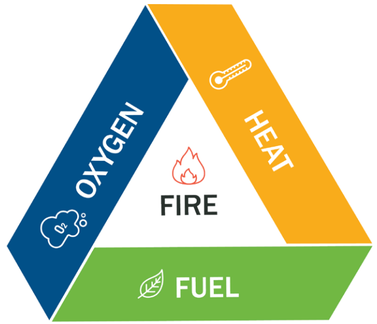
Fuel serves as the combustible material, heat initiates the ignition, and oxygen supports the combustion process. Understanding the fire triangle is crucial for fire prevention, control, and safety measures, as manipulating these elements can be used to manage and mitigate the risk of wildfires or accidental fires in various settings. Of the three factors in the fire triangle, fuel is the easiest to manipulate.

The fire behavior triangle is another representation of how wildfire events can be affected by implementing fuel treatment projects. The three sides of the fire behavior triangle are weather, topography, and fuels as shown in Figure 33. As discussed in the Microclimates section and the Wind section, wildfires in SLO County are commonly driven by dominant wind patterns.

As discussed in the Topography section, wildfire behavior is directly related to the slope of the terrain. Flames will travel quickly uphill through preheated fuels at a higher rate than over low angled ground. With weather patterns and topography being factors that cannot be addressed anthropogenically, that leaves the third side of the fire behavior triangle, fuels, a factor that can be addressed through reductions of fuel quantities and alterations of fuel arrangements.

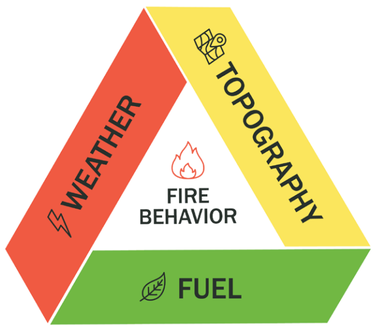
Hazard is the sum of the likelihood of an event and the intensity of the event. Vulnerability is the sum of exposure to an event and susceptibility to the event. Overall wildfire risk is a product of hazard and vulnerability, as illustrated in Figure 34. Developing fuel reduction projects that reduce likelihood, intensity, exposure, susceptibility or ideally a combination of these factors is the objective of a wildfire risk reduction project. Enabling projects that benefit community health, environmental health and sustainability is the overarching goal of this tool.

There is not a one size fits all mitigation for wildfire hazards and project planners will need to take many factors into account when developing the appropriate treatment for any area. Identifying the specific treatment objectives, assets being protected, location of the project, and desired end state will provide planners with the information they need to select the appropriate fuel reduction method for the site. The CalVTP PEIR recognizes five essential methods to conduct fuel reduction.[78] Amongst these methods there are pros and cons to be considered and it is likely that a combination of treatments will provide a planner with the flexibility and effectiveness necessary to meet the project objectives.



Source: Rincon Consultants

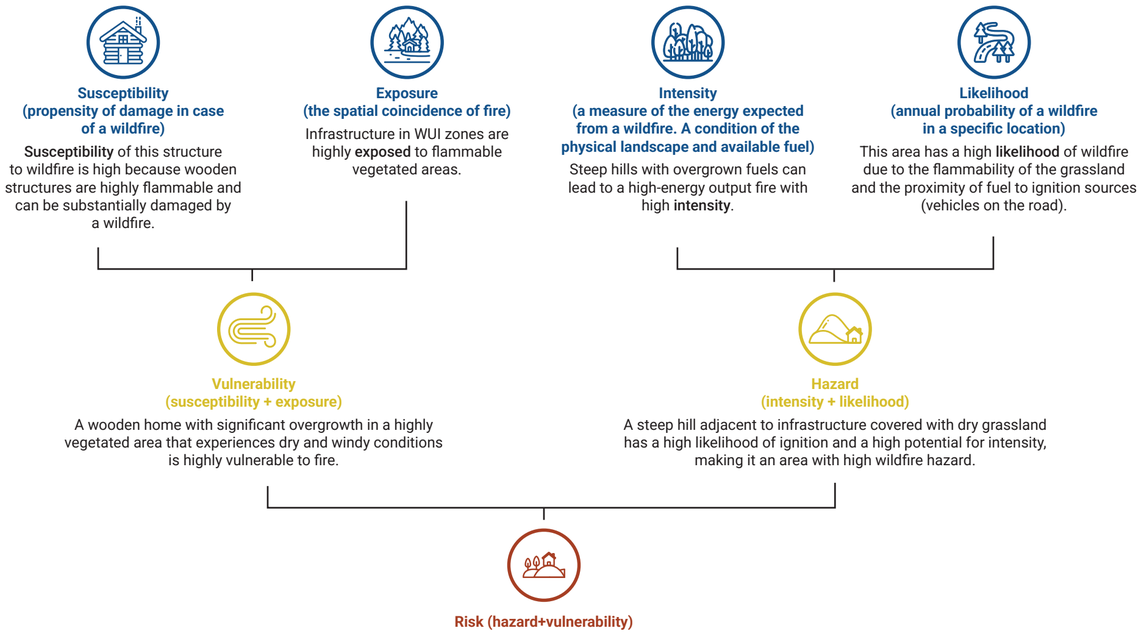
Figure 32. Fire Triangle



Source: Rincon Consultants

Figure 33. Fire Behavior Triangle

Components of Risk



Source: Rincon Consultants

Figure 34. Components of Risk

78 California Department of Forestry and Fire Protection. Accessed Jan 20, 2024. California Vegetation Treatment Program (CalVTP). CAL FIRE. ***https://bof.fire.ca.gov/projects-and-programs/calvtp-homepage/#:~:text=The%20CalVTP%20includes%20the%20use,shaded)%2C%20and%20to%20promote%20ecological***.

Fuel Reduction Methodologies

Manual Treatment

Manual fuel reduction for wildfires involves the removal or reduction of combustible vegetation and debris through physical labor, tools, and equipment. This approach aims to strategically reduce the amount of potential fuel that could feed a wildfire. Manual fuel reduction methods include hand clearing, chainsaw operations, and hand operated mechanical equipment to thin out overgrown vegetation, remove deadwood, and create firebreaks. A planner may choose manual treatment methods when a project requires precision. Working near property boundaries, amongst sensitive resources, or only on specific vegetation may be reasons to choose manual methods. By selectively thinning and managing vegetation, the goal is to break up continuous fuel loads, reduce fuel ladders, decrease fire intensity, and enhance the ability of firefighting personnel to control and contain wildfires. Manual fuel reduction is an integral component of wildfire mitigation strategies, particularly in wildland-urban interface areas, where reducing the risk of fire spreading to populated areas is crucial for both community safety and ecosystem health.

Conducting manual fuel treatments will often include a disposal component. Materials are often collected and piled to be chipped back on to the site, chipped and removed from the site, or burned using a variety of methods. Often personnel conducting manual treatment are exposed to poison oak which can impact production.

Mechanical Treatment

Mechanical fuel reduction for wildfires involves the use of machinery and equipment to modify or remove combustible vegetation and other potential fuels to mitigate the risk and impact of wildfires. This method employs various mechanical tools such as masticators, mulchers, crushing, mowers, and bulldozers to create fuel breaks, clear vegetation, and reduce the density of flammable materials. Mechanical fuel reduction operations are often strategically implemented to create defensible spaces, protect critical infrastructure, treat large areas, conduct work quickly, and improve overall wildfire resilience in vulnerable areas. This approach is particularly valuable in areas with challenging terrain or dense vegetation where manual methods may be impractical or less efficient. By employing mechanical means to modify the landscape, fuel reduction efforts aim to impede the spread of wildfires, enhance firefighter access and safety, and contribute to overall wildfire prevention and management strategies. Steep and broken topography may limit the ability to use some types of machinery used in mechanical treatments.

Prescribed Grazing/Herbivory

Prescribed herbivory (grazing) for wildfire reduction involves a targeted and controlled approach to managing vegetation by utilizing livestock grazing to reduce fuel loads in areas prone to wildfires. This intentional grazing is strategically planned and executed to create defensible spaces, decrease the abundance of highly flammable vegetation, and enhance the overall resilience of ecosystems. This method is often used in ecologically sensitive areas where noise concerns or impact to soil should be avoided. It can also be a preferred alternative within riparian areas or abutting residential properties where other more intense methods should be avoided. Fuels reduction treatments can be seen below in Table 3.

Prescribed herbivory helps mimic natural processes by harnessing the ecological role of herbivores in shaping landscapes and controlling vegetation growth. This method is employed to mitigate the risk of severe wildfires by modifying the composition and structure of vegetation, promoting biodiversity, and improving the overall health and fire resistance of ecosystems.

Treatment Activity	Definition
Chipping	Breaking, cutting, or grinding trees into woodchips and leaving on site
Fuel Break (Not Shaded)	Removal of vegetation to create a gap in vegetation that acts as a barrier to slow or stop the progress of wildfire. Overhead canopy is retained.
Fuel Break (Not Shaded)	Removal of vegetation to create a gap in vegetation that acts as a barrier to slow or stop the progress of wildfire. Overhead canopy is removed.
Grazing	Using strategic livestock grazing to reduce fuels.
Herbicide	Application of chemical substance to target and kill undesirable plants.
Invasive Plant Removal	Manual removal of targeted invasive plant species.
Lop and Scatter	Hand method of cutting limbs and tops off felled trees into smaller pieces and scattering across the site.
Mastication	Pulverizing vegetation down to ground level using a masticator.
Piling	Piling of fuels for subsequent treatment.
Pile Burning	Burning of intentionally piled materials.
Pruning	The removal of side branches and multiple leaders from a standing live tree.
Right of Way Clearance	Work conducted within the right of way along fire roads, county roads, or highways for purposes of improved ingress and egress. This includes removal of dead trees resulting from insects or drought. Right of way clearance is not done with the intent of stopping a fire at the location of work, but instead focuses on ingress and egress enhancement.
Thinning (Manual or mechanical)	Manually or mechanically cutting trees to reduce stocking or fuel loading.

Table 3. Fuels Reduction Treatments

Prescribed herbivory is often used as a follow-up method to treat regrowth after manual and mechanical treatments. Careful planning and monitoring are essential to ensure that prescribed herbivory aligns with conservation goals and effectively contributes to wildfire prevention efforts while maintaining the ecological balance of the landscape. Sheep, goats, and cattle are commonly used for this practice in SLO County. Because there are limits to the type of vegetation that herbivores will consume, it is important to match the type of herbivore to the type of vegetation and the project goals. In some cases, like Salvia mellifera (black sage), the herbivore will not have a palate for consuming it.[79]

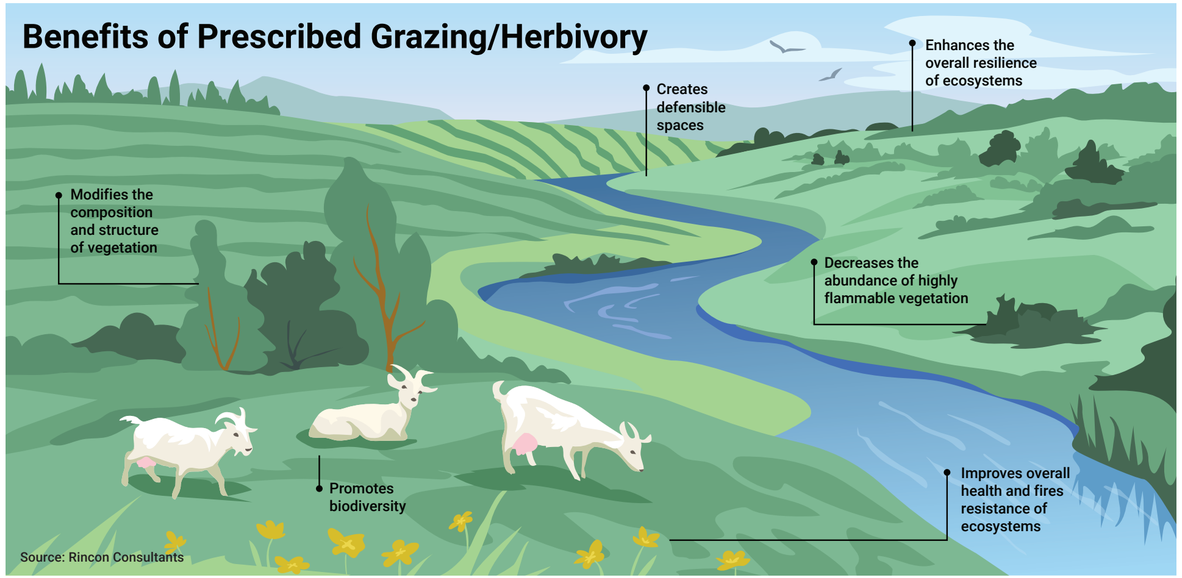


Figure 35. Benefits of Prescribed Grazing/Herbivory

79 McMurray, Nancy E. 1990. Salvia mellifera. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: ***https://www.fs.usda.gov/database/feis/plants/shrub/salmel/all.html*** *[2024, September 13].*

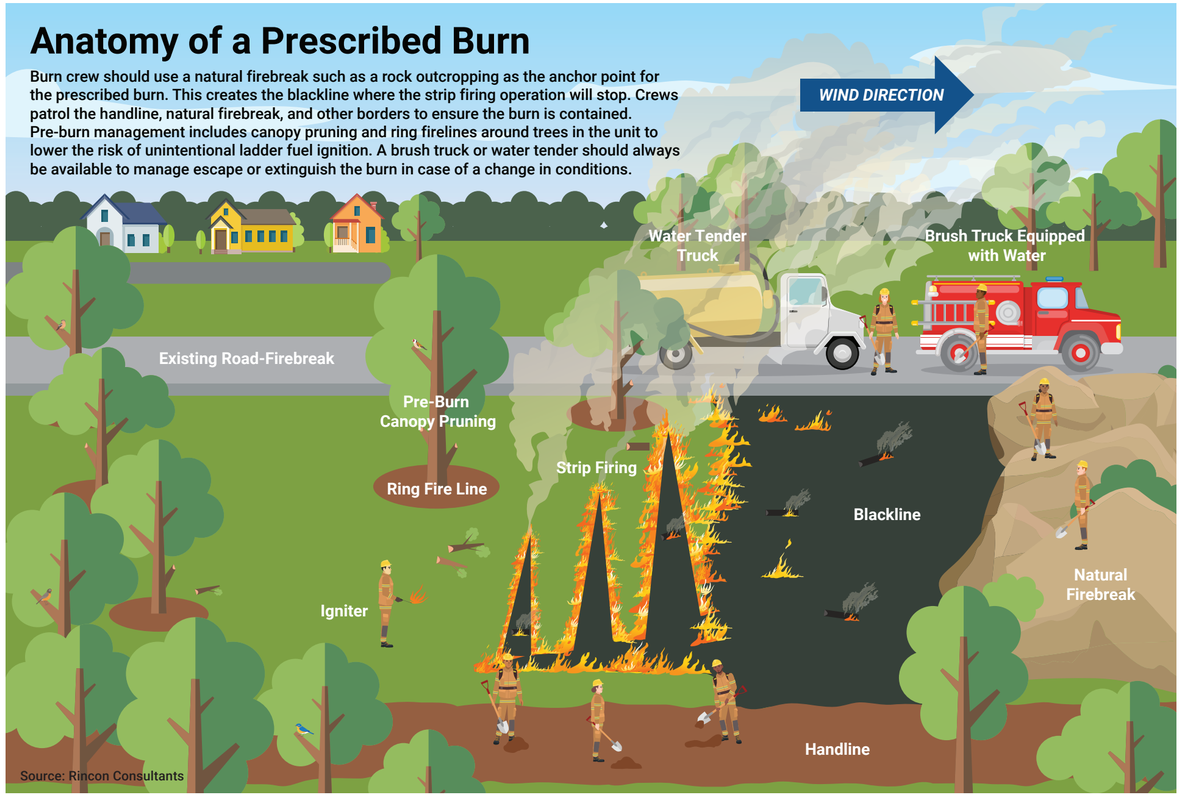


Figure 36. Anatomy of a Prescribed Burn

Prescribed Fire

As discussed in depth in Section Cultural History, using prescribed fire for fuel reduction is a proactive and carefully planned approach to wildfire management that involves deliberately setting controlled fires under predetermined conditions to reduce the accumulation of combustible vegetation. This intentional burning should be executed by trained professionals and follows a comprehensive prescription that considers factors such as weather, fuel moisture, and ecological objectives. By strategically applying fire to designated areas, the goal is to mimic natural fire regimes, reduce the density of vegetation, and create firebreaks. Prescribed fires play a crucial role in mitigating the risk of larger, more destructive wildfires by decreasing the amount of available fuel and promoting a healthier balance within ecosystems. This method is widely employed to enhance forest and landscape resilience, protect communities, and support overall wildfire prevention efforts while minimizing the potential negative impacts of uncontrolled wildfires. Prescribed fire is not without risk of escape, therefore strict adherence to safety protocols and thorough planning are paramount to the success of prescribed fire for fuel reduction.

Prescribed fire includes both pile burning and broadcast burning. Pile burning is a suitable alternative to chipping or hauling materials away from a site. Alternative methods of pile burning can result in biochar for reincorporation into soils at the site to improve water holding capacity.

Broadcast burning, a low intensity burn across a prepared area, is a method that mimics the historically low-intensity fires used by Native Americans, often referred to as cultural burning. The SLO County area, similar to much of the state, has a history of cultural burning practices conducted by the local Indigenous groups. These seasonal cultural burns were beneficial for a host of purposes, though production of preferable hunting and gathering conditions across traditional ranges was a driving factor. These practices also led to reduction of fuel loads on a landscape scale, resulting in what are determined to be healthier forests by modern-day standards.[80] Additionally, the ranching community in SLO County has actively used prescribed fires for land management for more than 200 years. The SLO County Range Improvement Association, comprised of ranchers, landowners, associated organizations, is one of the remaining original prescribed fire use organizations in California. They conduct prescribed fires on private lands across the county. California's Strategic Plan for Expanding the Use of Beneficial Fire acknowledges the benefits of prescribed fire and aims to deploy beneficial fire on 400,000 acres annually by 2025.[81]

Tribes throughout California have used cultural fire as an effective and efficient land management tool for over 10,000 years. Indigenous people, including the Northern Chumash people use fire to enhance and maintain biodiversity, increase the abundance of foraged food, encourage the growth of high-quality material, reduce plant diseases and insect infestations, and improve hunting conditions—all while reducing fuels that cause high-intensity catastrophic wildfires. Fire is essential to Indigenous lifeways and native ecosystems.

Treatment Activity	Definition
Broadcast Burning	Prescribed burning where fire is applied to the majority of an area within a well-defined boundary for reduction of fuel hazard, as a resource management, or both.
Cultural Burning	Native-led traditional fire management practices such as prescribed burns to restore species for cultural use.
Pile Burning	Burning of intentionally piled materials.
Site Preparation	The removal or alteration of fuels or ground material to prepare for prescribed fire or reforestation.

Table 4. Prescribed Burning

80 *Clark, S.A., Miller, A., Hankins, D. "Good Fire." Karuk Tribe Climate Change Projects. (2022, June). Karuk Prescribed Fire Report 2022 (Version 2.1). WordPress.* ***https://karuktribeclimatechangeprojects.files.wordpress.com/2022/06/karuk-prescribed-fire-rpt_2022_v2-1.pdf***.

81 *California Department of Forestry and Fire Protection. Mar. 16, 2022. California's Strategic Plan for Expanding the Use of Beneficial Fire. CAL FIRE.* ***https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/what-we-do/natural-resource-management/prescribed-fire/californias-strategic-plan-for-expanding-the-use-of-beneficial-fire-march-16_2022.pdf?rev=f2694844e0d64c9f81e26380af608631***.

Herbicide

The use of herbicides for fuel reduction in wildfire management involves the controlled application of chemical substances to selectively target and suppress specific vegetation that contributes to elevated fire risk. Use of herbicides may require permits or licenses, and applicators must be trained and certified in accordance with state requirements. A Certified Pest Control Advisor (PCA) recommendation is used to select and apply the proper herbicide. This approach is commonly used when targeting a specific species such as invasive French Broom (Genista monspessulana) for reduction or removal within an area of otherwise untargeted vegetation. Herbicides are employed as part of strategic vegetation management plans to reduce the density of flammable plants, clear firebreaks, and create defensible spaces. This method is particularly useful in areas where manual or mechanical means may be impractical or less efficient, or possibly in concert with them. Herbicide can also be employed as a follow-up treatment to prevent resprouting of cut vegetation. By chemically treating targeted vegetation, herbicides help to break up continuous fuel loads, decrease the intensity of potential wildfires, and improve the overall safety of communities and ecosystems. Use of herbicides for fuel reduction is subject to strict regulations, environmental considerations, and careful planning to minimize any adverse effects on non-target species and ensure the ecological sustainability of treated areas. Public perception of herbicide use should be a concern to project planners, and this method should be tactically employed to avoid conflict. Herbicide use is subject to strict regulations in California. Herbicide applicators must follow all label instructions provided by the manufacturer. Additionally, users must comply with state and local regulations governing herbicide application, including restrictions on application near water bodies, sensitive habitats, and residential areas. It is prohibited to apply herbicides in a manner that may cause harm to non-target plants, wildlife, or human health. Applicators exercise caution to minimize drift and runoff, and properly dispose of herbicide containers and waste in accordance with applicable laws and regulations.

The CAL FIRE Forest Health Program provides a breakdown of treatment objectives and the treatment activities that can be employed to achieve them[82] in Table 5.

Treatment Activity	Definition
Chipping	Breaking, cutting, or grinding trees into woodchips and leaving on site
Crushing	Utilizing mechanical equipment to rollover and break off standing vegetation in order to reduce hazard and/or facilitate use of prescribed fire in a safer manner
Fungicide	Application of fungicide use to target and kill undesirable fungus.
Herbicide	Application of chemical substance to target and kill undesirable plants.
Insecticide	Application of insecticide used to target and kill undesired insects.
Invasive Plant Removal	Manual removal of targeted invasive plant species.
Piling	Piling of fuels for subsequent treatment.
Pile Burning	Burning of intentionally piled materials.
Pruning	The removal of side branches and multiple leaders from a standing live tree.
Removal of Diseased/Infested Trees	Cutting down trees that are infected, diseased, or susceptible to pests for purposes of pest management.
Tarping	Covering and sealing a wood pile with clear UV resistant plastic to prevent forest pests from emerging from infested wood or colonizing freshly cut wood, preferably placed in full direct sunlight.
Thinning (Manual or mechanical)	Manually or mechanically cutting trees to reduce stocking or fuel loading.

Table 5. Prescribed Grazing/Herbivory

82 *California Department of Forestry and Fire Protection. (2024). Forest Health Grants. Accessed Feb. 9, 2024, from* ***https://www.fire.ca.gov/what-we-do/grants/forest-health****.*

SLO County Climate Change Impacts

An increase from 4 to 32 extreme heat days per year.
Extreme heat can cause dehydration, heat stroke, and other illnesses. People at highest risk include tribal members as well as farmers, ranchers, and other outdoor workers.

An increase by 13 days of the average annual dry spell.
Droughts create dusty environments which lead to poor air quality that can cause respiratory illness. Droughts also increase the cost of water and food.

A 5% increase in average area burned per year.
Wildfires can cause health and safety risks, damage to homes and property, and income loss. Public health and safety during large-scale evacuations caused by wildfire are a major concern.

19% increase in maximum 1-day precipitation (inches).
Flooding can damage homes and cause health and safety risks. Flooding can lead to mold in homes, which can cause health issues.

Source: Rincon Consultants

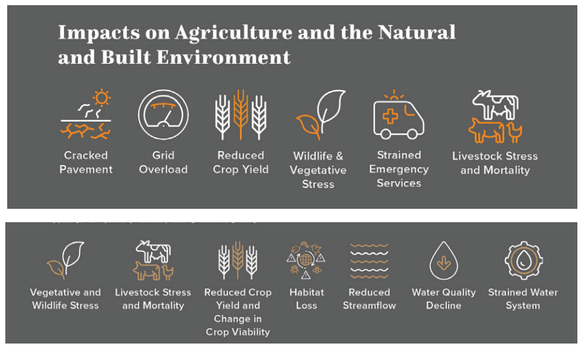
Figure 37. SLO County Climate Change Impacts

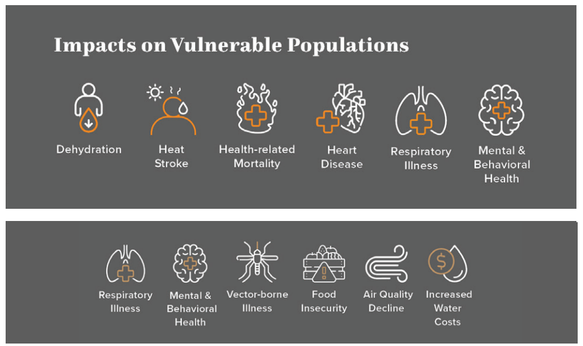
Historically, wildfire in SLO County has had a major impact on the built and natural environment, residents, economy, and firefighting resources. Compounded with the effects of climate change, it is likely that these impacts will only worsen in future years. Anthropogenic caused climate change in SLO County is projected to create an environment that will increase the frequency and severity of wildfires. This has been observed by north coast residents as a reduction in the number and duration of foggy days in the summer has occurred.

Monterey pine in and around Cambria are very dependent on summertime fog drip for moisture. Continued decrease in fog drip may lead to the loss of this rare species and conversion to more drought tolerant oaks. Antiquated land use planning has also contributed to a fire environment that is becoming more dangerous due to climate change and must be updated to provide SLO County communities with a better land use plan to prevent further wildfires.

By the end of the century, annual average maximum temperatures are projected to increase by nearly 8° F, while the number of extreme heat days is projected to increase by 28 days, a nearly 7-fold increase.[83] While temperatures rise, annual precipitation levels are projected to remain relatively stagnant, instead, shifting to more extreme precipitation events followed by longer average dry periods. Extreme precipitation events will lead to an increase in runoff and lack of water retention throughout the landscape, which, when followed by increased average length of dry spells, can lead to drought conditions. These characteristics combine to create a dangerous fire regime with increased dry fuel loads, lower moisture levels, hotter temperatures, and less humidity. Additionally, as the temperature of the land increases within proximity to the ocean due to climate change, it is likely that this increased thermal gradient will increase the severity of high winds throughout the area, contributing to an even more drastic fire environment.[84] Overall, a reduction in the predictability of weather patterns will result in less ability for SLO County residents to prepare for extreme events.

The cascading impacts of climate change will lead to more dangerous fire conditions for SLO County and cause major economic, human, and infrastructure related damages if the County is not adequately prepared. These potential impacts are identified in Figure 38 "SLO County Climate Change Impacts, Adaptative Capacity, and Mitigation", including existing adaptive capacity the County has put in place to mitigate these impacts and future implications of these impacts.





83 Cal Adapt. Local Climate Snapshot for San Luis Obispo County. 2024. ***https://cal-adapt.org/tools/local-climate-change-snapshot/****.*
84 Stephens, Tim. "Stronger coastal winds due to climate change may have far-reaching effects." 2008. UC Santa Cruz. ***https://news.ucsc.edu/2008/12/2644.html#:~:text=%22What%20we%20think%20is%20going,increased%20winds%2C%22%20Snyder%20said****.*

SLO County Climate Change Impacts, Adaptative Capacity, and Mitigation

SLO County Impacts	Increased loss of homes due to dangerous wildfire conditions in the WUI as development continues to expand in the WUI	Displacement of local residents who are affected by WUI related fire	Worsening air quality throughout SLO County as wildfires become more frequent and severe, leading to increased fire-related pollutants in the air	Loss of sensitive species and critical habitats throughout SLO County due to wildfire
Adaptive Capacity	Current vegetative management programs such as CalVTP, Chaparral Management Program (CMP/VMP), prescribed and cultural fires, public communication, and education platforms.	Home hardening education materials and regulations, as well as Financial Assistance via Recover San Luis Obispo County disaster recovery loans, tax relief, and individual assistance.[85]	SLO County APCD Clean Air Plan, Ozone Emergency Episode Plan, PM Report, Woodsmoke Reduction Program, Clean Air Rooms Program.	Consultations with CDFW and other agencies to mitigate impacts; Incidental Take Permits, Lake and Streambed Alteration Program, Endangered Species Act.
Future Mitigation Needed	Increased understory vegetation management to combat vegetative density in the WUI, high voltage lines management, removal of non-native vegetation species such as eucalyptus and palms around homes. Update WUI education materials for residents near WUI zones. Update land use planning zones to prevent further building into the WUI and ensure compliance with CA Building Code Chapter 7A.	Increased home hardening and defensible space regulation to prevent fire ember cast in the WUI. Increase financial assistance to those who have been displaced. Increase accessibility to fire insurance in the WUI.	Increased air purifiers and filtration systems throughout all public gathering places and private homes, increase public education materials about smoke.	Removal of non-native species such as eucalyptus, further prescribed burn application to prevent extreme wildfire events, ensure that key migration paths are not blocked. Increase protections for critical habitats such as elevation riparian areas and migration corridors to allow for elevation resiliency for sensitive species.
	Increased pressure on firefighting resources, which may result in damage to equipment, firefighter fatigue, firefighter casualties, and more.	Loss of valuable economic resources such as agriculture products and tourism due to impacts from increased wildfire	Loss of community sense of safety and character from increased fires throughout SLO County.	Loss or damages to commercial and residential buildings, resulting in displacement of business owners and residents.
	Emergency Command Center (ECC) and multi-agency response to all wildland fires.	California Family Farmer Emergency Fund, USDA California Farm Service Agency, various disaster relief funds. Education materials about home hardening and prescribed burns near agriculture lands to prevent ember cast.	Public education about wildfire prevention, home hardening, WUI defensible space, evacuation routes, firefighting asset availability.	Existing CA and federal funding opportunities for displaced residents, home losses due to wildfire, disaster recovery loans, federal tax breaks after disaster.
	Increased coordination between intercounty agencies and fire departments to ensure massive response can occur and individual units are not overwhelmed. Coordinate with the BAER and WERT teams to ensure debris flow management occurs after fires and watersheds are not impacted by hazardous materials.	Increase prescribed burns and vegetation treatment in public areas around farms and wineries. Coordinate with local landowners to conduct prescribed burns across their lands. Educate residents on home hardening and ignition prevention. Ensure debris flows do not occur to local farms and businesses.	Update land use plans in coordination with fire agencies to ensure antiquated community design standards do not continue. Ensure compliance with section 7A of CA Building Code to provide adequate home hardening and wildfire resilient design.	Increase public awareness of defensible space creation, home and building hardening, retrofit opportunities. Increase funding opportunities for these services and increase insurance availability for residents in high fire severity zones. Update antiquated land use planning to accommodate for increased wildfire risks.

Figure 38. Climate Change Impacts, Adaptative Capacity, and Mitigation

Vegetation Management · Home Hardening/ Defensible Space · Human Health · Coordination · Education

85 San Luis Obispo County. Recover Financial Assistance. 2024. **https://www.recoverslo.org/en/financial-assistance.aspx**.

3.

REGIONAL CHARACTERISTICS

SLO County is located on the California central coast and is home to a unique wildfire regime influenced by a combination of distinct micro-climates and weather patterns, fuels, topography, and human behavior. To better recognize these wildfire regimes throughout SLO County, individual firesheds have been developed to constitute concise planning units to capture the specific characteristics that influence a planning unit's wildfire behavior. The firesheds have been developed as planning units that will assist with regional and local planning, mitigation efforts, and management of wildfire threats and consequences. The firesheds will assist managers in the identification, assessment, and development of projects that will reduce, prevent, or eliminate the impacts of destructive wildfire.

Key countywide characteristics contribute to both collective wildfire risk and behavior across fireshed boundaries:

The **Coastal Region** covers nearly 550,296 acres of land in the most western portion of SLO county that abuts the Pacific Ocean and is west of the Santa Lucia Range.	The **Salinas Region** covers nearly 540,486 acres of interior SLO County and roughly follows the Salinas River from the head-waters in Pozo east of the Santa Lucia Range.	The **Estrella Region** covers nearly 520,326 acres within the interior and eastern portions of SLO County adjacent to both Kern and Monterey County borders.	The **Carrizo Region** includes just a single fireshed and is comprised of 212,525 acres in the eastern region of SLO County adjacent to the Kern County Border and includes the Carrizo Plain and the Temblor Mountain Range.	The **Cuyama Region** covers nearly 302,823 acres of land along the southern boundary of SLO County and northern boundary of Santa Barbara County, mostly in Los Padres National Forest. This area follows the SR-166 corridor and extends to Kern County in the east.

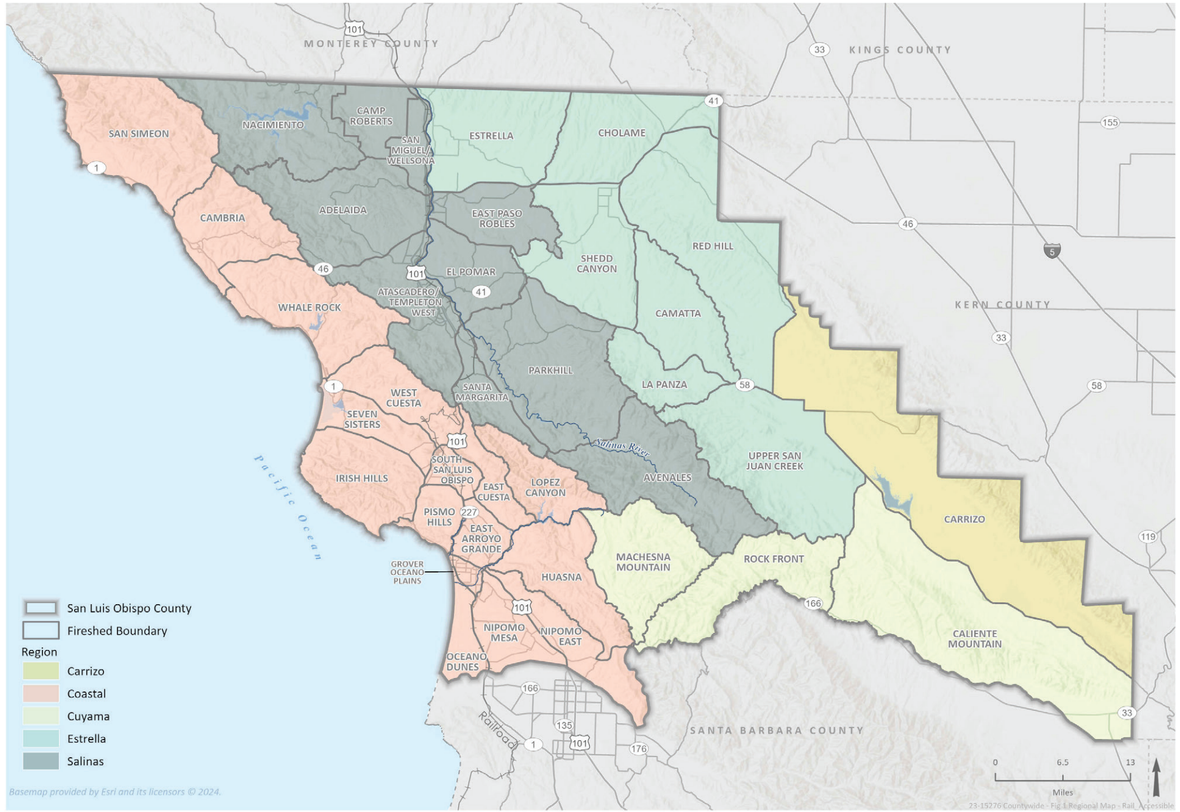


Figure 39. Fireshed Regions

San Luis Obispo County Characteristics

Major Geographic Features

Major geographic features are relevant at the regional scale. They can affect weather, vegetation, smoke distribution, and development patterns. Geography also provides a means of providing generalities about the social and political perspective of an area. This could affect project permitting, public acceptance, and identification of what outreach efforts must be considered. While often at a scale beyond the scope of a single project, understanding these features will benefit strategic project development and continuity between projects within a region.

Assets At Risk

Determining the assets at risk is the first step in determining why an action is warranted and what mitigation method is appropriate to resolve that risk. Assets at risk include people and natural and built environments. The appropriate mitigations may range from awareness and education outreach, land use planning, to implementing an on the ground project.

The different fireshed regions have variable asset at risk characteristics that may modify the appropriate mitigation. Wildfire behavior and microclimates combined with population distribution, tourism, and built environment significantly affect the potential impact to people. Biotic species distribution differs significantly across the various fireshed regions and determines impacts of fire or mitigation actions.

People

Knowledge of population trends and demographics at a regional scale will allow project planners to develop projects benefiting high-density areas, low-income residents, and communities located in the WUI. As the population of the County continues to expand from its 2022 levels of approximately 282,000 residents, it is imperative to understand where population hubs are located and their associated risks from wildfires from region to region. As this expansion occurs, new housing will be developed and patterns of urban and suburban encroachment into wildland spaces will create new risks for wildfires in the WUI. Housing that is built in or near wildland spaces will disrupt existing fire regimes and create increased dangers for communities, residents, built infrastructure, and firefighting assets. Residential expansion into the WUI can result in increased risk of fire ember cast from wildland fires into communities, which can result in structure fires, damage to or loss of property, and displacement of residents and businesses. The complexity of evacuation of people and animals from a wildfire is a critical factor in wildfire mitigation planning. County residents in disadvantaged communities may not have the resources available to conduct wildfire mitigation projects and planners should give additional consideration to projects that benefit disadvantaged communities. SLO County was historically home to two primary Native American tribes: the Chumash and the Salinan. For information regarding the cultural history of SLO County, Refer to the Cultural History section.

The San Luis Obispo Council of Governments (SLOCOG) developed thirteen distinct variables in their Disadvantaged Communities Assessment to define disadvantaged communities in SLO County:

- Racial Minority
- Ethnic Minority
- Disability Status
- Household Income
- Educational Attainment
- Language Proficiency
- Renter Affordability
- Housing Ownership Affordability
- Free or Reduced Price Meals
- Households with No Vehicle Available
- Households with No Computing Device Available[86]
- Older Adults: Age 75 and Older
- Youth: Age 15 Years and Younger

86 San Luis Obispo Council of Governments. Jun 2, 2021. Disadvantaged Communities. SLOCOG. ***https://slocog.org/programs/special-studies-services-projects/disadvantaged-communities***

Built Environment

To adequately prepare for, respond to, and recover from wildfires within SLO County, project planners must have an up-to-date knowledge of the built infrastructure within each of the five regions.

These built environment features include assets such as:

- Commercial Infrastructure
- Income/Job Producing Facilities
- Retail Careers
- Housing
- Highways
- Railroads
- Educational Centers
- Correctional Facilities
- Military Facilities
- Historical Buildings
- Utilities

Understanding how these assets vary across the five fireshed regions will allow planners to protect communities more effectively from wildfires. Cultural site protection is another mitigation planning factor. Sites that require protection from wildfire and protection during field operations include:

- Indigenous Period Sites
- Spanish Period Sites
- Railroad Period Sites
- Whaling Period Sites
- Mining Period Sites
- Other Significant Historical Sites

Wildfire History

Addressing wildfire history at a regional scale allows a planner to focus on fire behavior patterns that are unique to an area. So often, wildfires burn on the same geography and imitate similar fire behavior as previous fires. A project planner's knowledge of the fire history of a region will lead to projects that can prevent repeat incidents and avoid new threats as development in the WUI continues. Being able to look at the perimeters of historical fires provides information on the location of possible project containment line locations that can be reutilized. It is not just large fires that should be identified, smaller fires within the WUI can be as or more damaging to residents than larger blazes as homes and infrastructure are typically crowded into centralized areas. By identifying previous small fires in an open space surrounded by homes or businesses is important to identifying the need for a small fuel reduction project. Significant property loss and damage can be attributed to historical wildfire events throughout the region. Fires often lead to secondary risks to the area such as erosion, landslides, and invasive species. Similarities between fire events can be tracked by understanding the fire perimeter and weather conditions during the event.

Microclimates

While all of SLO County is considered to have a Mediterranean climate, trends throughout the county vary considerably by region. Wind patterns are significantly influential in fire behavior and understanding these patterns at a regional scale will allow planners to develop projects that will effectively reduce the severity of wildfire. Temperature and wind speed and direction variation across the fireshed regions can be extreme. Average annual precipitation within a region coupled with temperature variation directly correlate with the available flammable fuel of a region. Understanding the expected fuel loading and growth patterns affected by weather allows a planner to develop appropriate mitigation measures for a site and provides knowledge of the best time of year to complete a project.

Regional Features

The Coastal Region encompasses 550,296 acres and fifteen individual firesheds along the Pacific Ocean on the western slope of the Santa Lucia Range, including:

- San Simeon
- Cambria
- Whale Rock
- West Cuesta
- East Cuesta
- Lopez Canyon
- Seven Sisters
- Irish Hills
- South San Luis Obispo
- Pismo Hills
- East Arroyo Grande
- Grover Ocean Plains
- Oceano Dunes
- Nipomo Mesa
- Nipomo East
- Huasna

This region, shown in Figure 40, extends from the Oceano Dunes in the south through the city of San Luis Obispo north to San Simeon and includes a wide range of larger cities and towns. Major cities and towns in the region include:

- Nipomo
- Arroyo Grande
- Grover Beach
- San Luis Obispo
- Morro Bay
- Los Osos
- Cayucos
- Cambria
- San Simeon

Important infrastructure in the area includes:

- California Polytechnic State University
- San Luis Obispo
- The San Luis Obispo County Regional Airport
- Diablo Canyon Nuclear Power Plant
- California Men's Colony
- Camp San Luis Obispo
- Communications sites
- Hearst Castle State Historical Monument
- Point San Luis Lighthouse
- State Water Project
- Petroleum extraction and distribution
- and many historical piers and structures

The Coastal Region's transportation routes support considerable traffic through a mix of densely populated towns in the south of the region and sparsely populated, highly vegetated areas in the north of the region approaching Big Sur. Major roadways run through this region including:

- State Route 1 (SR-1) which extends south to north along the Pacific coastline.
- U.S. Highway-101 (US-101), which extends south to north through San Luis Obispo (including Cuesta Grade) before veering northeast into the Salinas Valley.
- SR-41, which extends east from Morro Bay into Atascadero.
- SR-46 which extends east from the intersection with SR-1 south of Cambria through Paso Robles toward Kern County.
- SR-166 originates at US-101 and extends east through the Cuyama region and beyond.

The Coastal Region features a variety of land cover, including:

- Maritime Chaparral
- Riparian Corridors
- Monterey Pine Forest

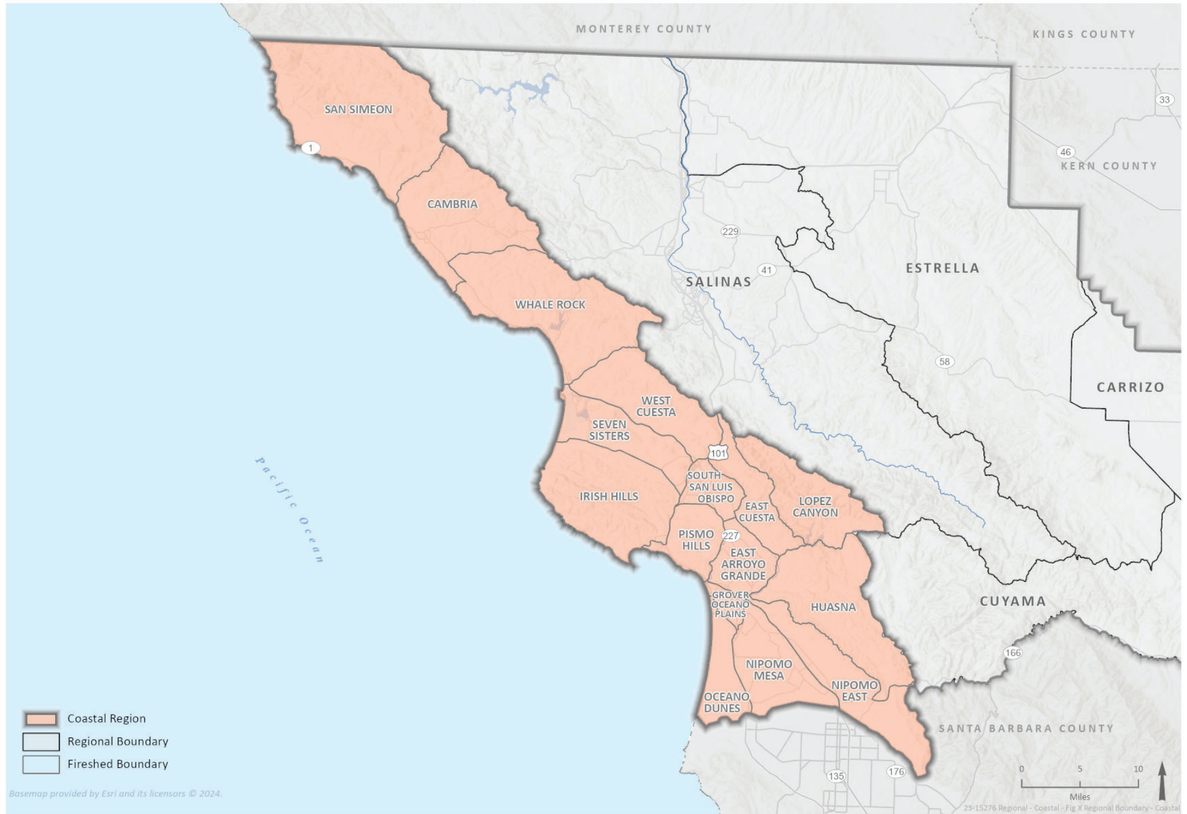


Figure 40. Coastal Region Firesheds

Major Geographic Features

The Coastal Region is predominately influenced by proximity to the Pacific Ocean, the Santa Lucia mountain range, and the coastal plain below it. Eight of the sixteen firesheds are bordered by the ocean, while the remainder are subject to strong marine influence.

The Santa Lucia Range is the most prominent mountain range in SLO County and extends along the western part of the county for 140 miles parallel to the Pacific Ocean from Monterey County to the Cuyama River in southern SLO County. Mountain passes through the Santa Lucia Range are pathways for strong winds across the ridgeline. Santa Lucia winds blow from east to west; coastal winds (wind with no name) blow from west to east across the ridges and accelerate through the passes resulting in extreme fire behavior on the lee side of the ridge.

The Coastal Region shown in Figure 41 exhibits unique vegetation patterns and topography which influences water supply for coastal communities, flood control, wildlife habitat, and soil stability after wildfires. Many of the coastal creeks support native anadromous fisheries. Wildfire and fuel reduction projects can have a significant influence on the function of hydrologic systems. The effect on water quality is a consideration for all area mitigation projects.

Dominant geographic features of the Coastal Region include:

- Big Sur
- Santa Lucia Mountain Range
- Morro Bay
- Morro Bay Estuary
- Montaña de Oro State Park
- Irish Hills
- Point San Luis
- Los Osos Valley
- Oceano Dunes State Vehicular Recreation Area
- Nipomo Mesa
- Los Padres National Forest (small portion)

The Coastal Region includes the following watersheds[87]:

- San Simeon Watershed
- Santa Rosa Creek Watershed
- Cayucos Creek Watershed
- Morro Bay Watershed
- San Luis Obispo Creek Watershed
- Pismo Creek Watershed
- Arroyo Grande Creek Watershed
- Santa Maria River Watershed

Major water features of the Coastal Region include:

- Morro Bay Estuary
- Pismo Marsh
- Osos Flaco Lake
- Lopez Lake
- Whale Rock Reservoir
- Laguna Lake

87 *San Luis Obispo County Public Works. Jan. 2014. SLO Watershed Management Project. San Luis Obispo County.* ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/SLO-Watershed-Project/Resources/SLO-Watershed-Management-Project.pdf***

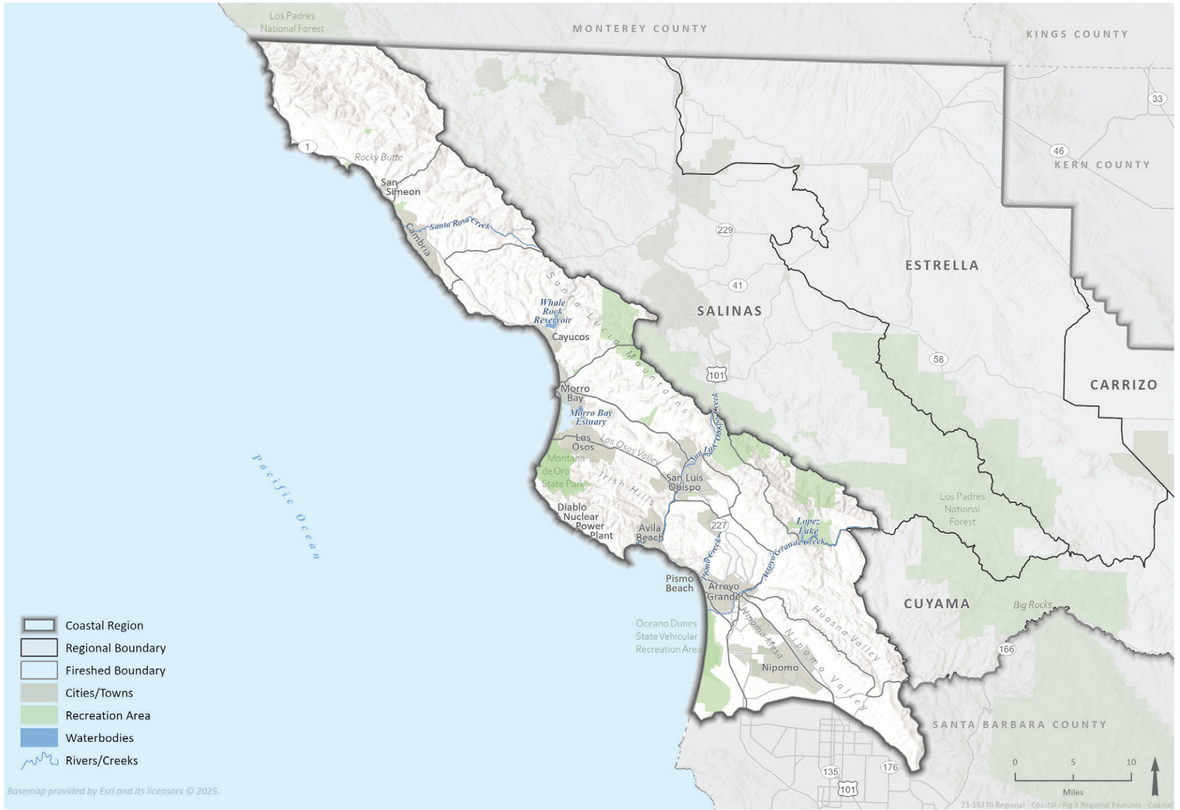


Figure 41. Coastal Region Features

Assets at Risk

People

The population of the Coastal Region is large and relatively transient. The City of San Luis Obispo census population is 47,000 however, because it is the county seat and the presence of Cal Poly and Cuesta college, the Men's Colony prison, and other major employers, thousands of people commute to San Luis Obispo daily. The daily population swings dramatically. Studies show that humans are responsible for starting nearly 95 percent of all wildfires in California.[89] Based on this, the population hubs within SLO County displayed in Figure 42 should receive focus from wildfire risk reduction project planners to develop projects that provide firefighter access to defend communities from blazes. The Coastal Region, while home to the majority of county residents, is also the most common tourist destination in the county. Visitors from outside the area take advantage of a vast array of lodging alternatives and may not be familiar with local geography if a wildfire event were to necessitate evacuation while they were visiting. The Coastal Region of SLO County was historically home to the Salinan tribe and the Chumash tribe, specifically the Obispeño-speaking Chumash people.

The community of Cambria is built in and adjacent to a fire dependent Monterey pine forest that has experienced declining health due to disease, drought, pest infestation, and fire exclusion. This area has a large short-term rental, transient visitor, and elderly resident demographic. Evacuations become complicated with this type of community characteristic. Limited evacuation routes exist for people to travel to places of safety.

Other coastal communities are exposed to fire weather events that create complicated fire scenarios. Several large fires that started several miles distant have burned into Cal Poly and San Luis Obispo (Hwy 41 -1994, Las Pilitas-1985). Cal Poly has thousands of students without readily available transportation to evacuate the campus area. The Avila Beach community has limited access/egress routes with a high percentage transient population. Other areas in the coastal region have rural roads that may be narrow or curvy and are complicated by the need to evacuate large animals such as horses and other livestock.

Neighborhoods in Cambria, Morro Bay, San Luis Obispo, Pismo Beach, Arroyo Grande, Grover Beach, Oceano, and Nipomo are identified as disadvantaged communities.[90] Often, population centers with low income or disadvantaged communities feature centralized, compacted residential areas. Project planners can use population demographic information to develop projects intended to benefit people and regions with reduced means to implement wildfire hazard reduction projects. Projects focusing on reducing wildfire risk around these communities can provide protection for some of the most vulnerable residents.

89 Tim Arrango. Aug 20, 208. Behind Most Wildfires, a Person and A Spark: We Bring Fire With Us. ***https://www.nytimes.com/2018/08/20/us/california-wildfires-human-causes-arson.html****. Accessed January 2025.*
90 San Luis Obispo County Disadvantaged Communities (arcgis.com)

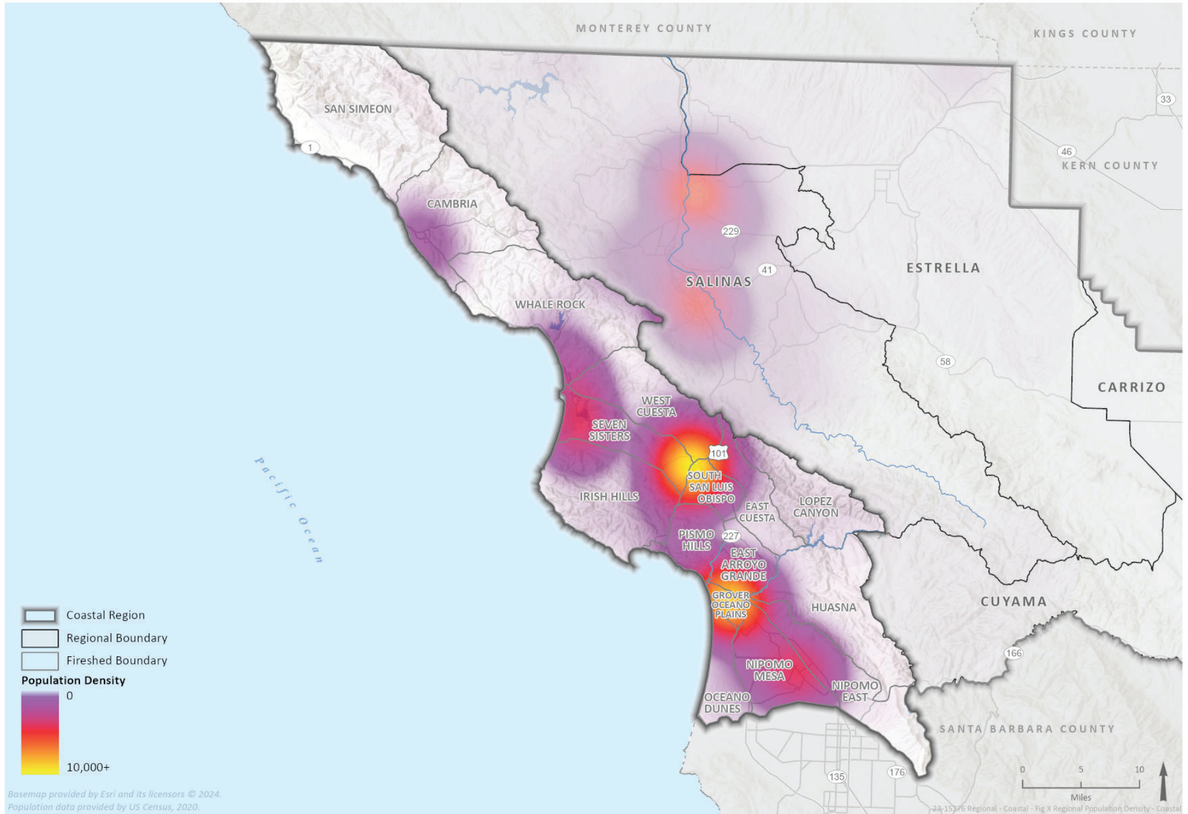
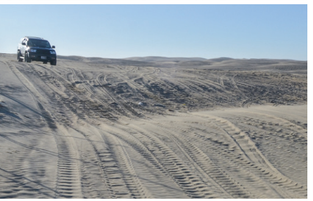


Figure 42. Coastal Region Population Density

Coastal Region



Built Environment

The Coastal Region includes the City of **San Luis Obispo** which serves as the SLO County seat and cultural hub, with a population around 47,000 residents. California Polytechnic State University, San Luis Obispo (Cal Poly SLO), contributes to the city's vibrant downtown area and population demographics with nearly 21,000 students enrolled. Other major cities and towns in the Coastal Region include **San Simeon, Cambria, Cayucos, Morro Bay, Pismo Beach, Grover Beach, Arroyo Grande,** and **Nipomo**. Each of these places feature unique infrastructure that contributes to their unique character, economy, and sense of community.

San Simeon is a small town along the Central Coast with a population of approximately 580 people and features the iconic Hearst Castle and the Piedras Blancas Lighthouse among thousands of acres of coastal grazing land.

Cambria, located just south of San Simeon, is a larger town of about 5,555 residents and features an idyllic town located off SR-1 with a main hub of restaurants, hotels and inns, and densely-set neighborhoods. Cambria also features the Fiscalini Ranch Preserve and several schools along the northeast border of the town. The economy of both of these communities is tourist oriented with Hearst Castle being the primary tourist destination. Hearst Castle is an irreplaceable art museum and historical campus.

Cayucos is a historic shipping town, with a wooden pier, and is an iconic "funky beach town" that has a tourist driven economy. The downtown area was built in the late 1800's and early 1900's with wooden construction.

Morro Bay is a coastal city, located just north of Montaña de Oro State Park, and boasts a population of nearly 10,800 people. Infrastructure in Morro Bay includes dense neighborhoods located near the city's main central hub, several inns and hotels, restaurants, shopping centers like Cypress Plaza, the Morro Bay Mutual Water Company, several medical centers, the Embarcadero and harbor, the Morro Bay High School, and a former PG&E power plant site.

Avila Beach, Pismo Beach, Grover Beach, Oceano, and **Arroyo Grande** are coastal communities located south of Morro Bay, and feature a combined population of about 40,000 residents. Built assets at risk in these areas include the Diablo Canyon Power Plant, Lopez Water Treatment Plant, Sentinel Peak Oil Fields, densely populated neighborhoods located within the WUI, and several community schools and medical facilities, and four historical piers.

Los Osos is a charming coastal community in San Luis Obispo County, known for its scenic beauty and small-town atmosphere. With a population of around 14,000 residents, Los Osos features a mix of residential neighborhoods, local businesses, and recreational areas. The town is adjacent to the Morro Bay Estuary and Montaña de Oro State Park, offering residents and visitors access to stunning natural landscapes and outdoor activities. Infrastructure in Los Osos includes schools, medical facilities, the Los Osos Water Recycling Facility, and the Los Osos Library. The small downtown area provides a variety of shops, restaurants, and cafes that contribute to the town's unique character and sense of community. The built environment in Los Osos is designed to harmonize with its natural surroundings, emphasizing preservation of the area's ecological integrity, including habitat conservation, restoration, and management of sensitive species such as the Morro Bay Kangaroo Rat, Morro Shoulderband Snail, Morro Manzanita, and Indian Knob Mountainbalm.

Much of the Coastal Region is dominated by local agriculture, vegetable crops, avocados, and vineyards that support the popular wine-tourism industry, for which much of the Central Coast is known. Vineyards and wineries are located throughout the region and significantly contribute to the local economies of towns like Morro Bay, Cambria, and Arroyo Grande.

US-101 runs southwest the northeast through the center of the region, SR-1 runs south to north, and SR-227 runs through the southern portion the region. Following SR-1, the Union Pacific Railroad operates through the fireshed, transporting goods north to south.

As fire hazards become more severe and frequent, these built assets are likely to face new and compounded risks associated with wildfires. Understanding the abundance of built assets within the region is critical to ensure the safety and longevity of communities, buildings, historical places, and properties throughout the region.

Biological and Botanical Resources

The Coastal Region is characterized by a variety of biological resources, encompassing a diverse array of animal species. Notable wildlife found in the region includes the California red-legged frog (*Rana draytonii*), Pacific pond turtle (*Actinemys marmorata*), steelhead (*Oncorhynchus mykiss*); Morro Bay Banded Snail, and the endangered Morro Bay kangaroo rat (*Dipodomys heermanni morroensis*). Additionally, the region is a critical migratory pathway for birds, with numerous species utilizing the Pacific Flyway. This biological diversity is supported by the presence of various ecosystems, from the coastal dunes and estuaries to interior grasslands and oak woodlands.[91]

Coastal areas are home to maritime chaparral species, featuring plants like California sagebrush (*Artemisia californica*), coyote brush (*Baccharis pilularis*), coast buckwheat (*Eriogonum latifolium*), and the endemic Morro manzanita (*Arctostaphylos morroensis*). Coastal sage scrub ecosystems support species such as black sage (*Salvia mellifera*), California buckwheat (*Eriogonum fasciculatum*), and golden yarrow (*Eriophyllum confertifolium*).

The many riparian corridors leading toward the ocean feature willows (*Salix ssp.*), California sycamore (*Platanus racemosa*), and California bay laurel (*Umbellularia californica*) to name a few. The north coast area of Cambria and San Simeon is home to the southernmost natural stand of Monterey pine (*Pinus radiata*) in the state which forms extremely dense stands near the coastline. Additionally, Knobcone pine, Bishop pine, Ponderosa pine, Santa Lucia fir, and Sargent cypress are present in this region. Coast live oak (*Quercus agrifolia*) woodlands dominate the western slope of the Santa Lucia Range. The Santa Lucia Range provides serpentine chaparral habitat and is home to a number of rare serpentine endemic species. Wavy-leaf ceanothus (*Ceanothus foliosus*), Cuesta Pass checkerbloom (*Sidalcea hickmanii ssp. anomala*), serpentine manzanita (*Arctostaphylos obispoensis*), San Luis sedge (*Carex obispoensis*) and San Luis mariposa lily (*Calochortus obispoensis*) are all found in this area.[92] Plant species found in the Oceano Dunes area are unique to dune habitats and survive in dense populations subject to harsh conditions.[93]

91 San Luis Obispo County. May 2010. Conservation and Open Space Element. San Luis Obispo County. **https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Plans-and-Elements/Elements/Conservation-and-Open-Space-Element-(1)/Conservation-and-Open-Space-Element.pdf**

92 United States Department of Agriculture Forest Service. (n.d.). Cuesta Ridge Botanical Special Interest Area. Accessed Feb. 15, 2024, from **https://www.fs.usda.gov/wildflowers/regions/Pacific_Southwest/CuestaRidge/index.shtml**

93 San Luis Obispo County Public Works. Jan. 2014. SLO Watershed Management Project. San Luis Obispo County. **https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/SLO-Watershed-Project/Resources/SLO-Watershed-Management-Project.pdf**

California Red-Legged Frog

Monterey Pine

Poison Oak

Landcover

Table 6 and Figure 43 describe the vegetation landcover types present throughout the Coastal Region. LANDFIRE 2022 is the source of the vegetation landcover data which may not be an accurate representation of species composition. Fine scale vegetation mapping for SLO County would benefit the project planning effort and the acquisition of which is a focus of natural resource agencies and organizations in SLO County.

In large part, native species in this region display fire adaptations. Soil disturbance, herbicide use, early season fires, and over grazing as part of fuels reduction projects may result in unanticipated negative effects on non-target species in this region. Project planners must conduct appropriate biological site evaluations to understand the possible consequences of all projects.

Landcover/Vegetation Types	Acres
Agricultural	42,065
Barren and Sparse Vegetation	7,119
California Mixed Evergreen Forest and Woodland	7,318
Chaparral	119,630
Conifer Oak Forest and Woodland	7,131
Developed	66,036
Grassland	36,034
Marsh	1,340
Non-Native Vegetation	131,996
Open Water	4,964
Western Oak Woodland and Savanna	112,346
Western Riparian Woodland and Shrubland	12,962

Source: LANDFIRE 2022

Table 6. Coastal Region Landcover

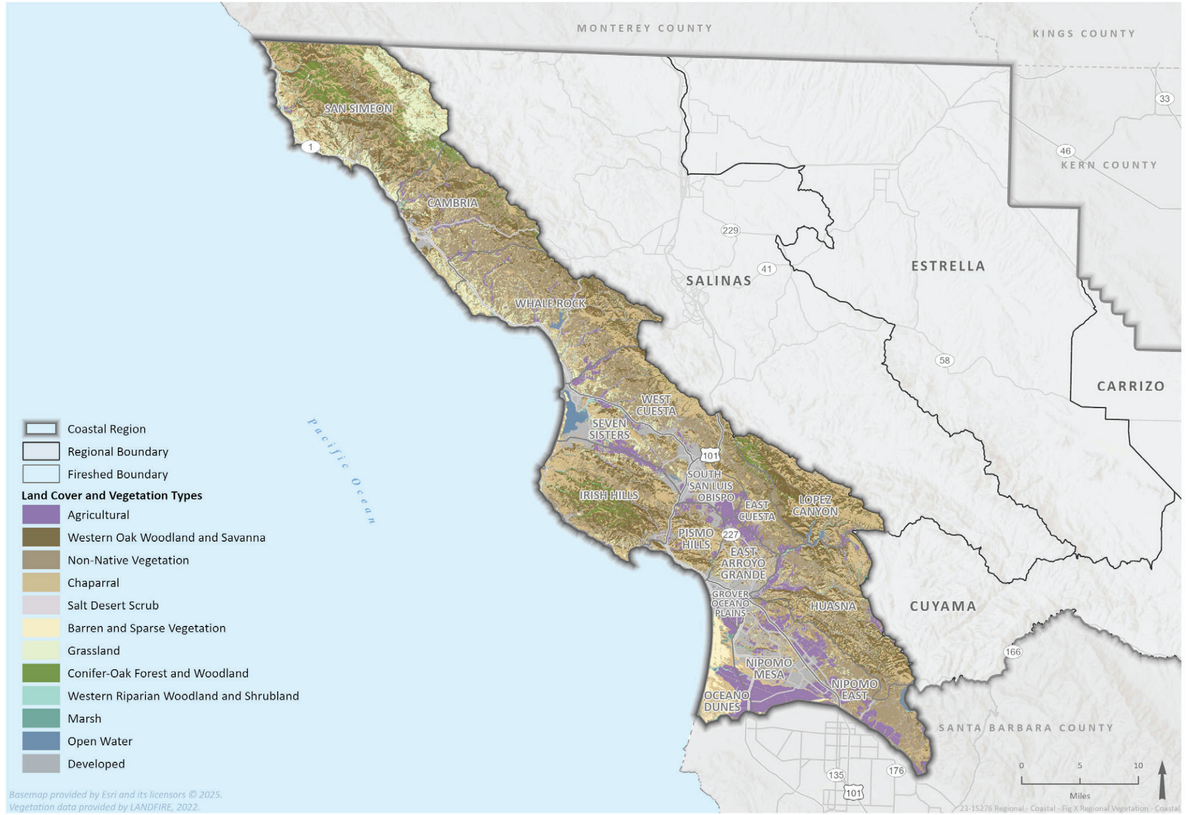


Figure 43. Coastal Region Vegetation

Wildfire History

Many large and damaging wildfires have been recorded in the Coastal Region of SLO County since the early 1900s. Not all of these fires began in this region, though they all burned through some acreage within the Coastal Region as shown in Table 7 and Figure 44. Overlapping fire perimeters show many areas burned repeatedly over the past 100 years.[94] Fire behavior in this region is directly impacted by the coastal weather and the Santa Lucia Mountain Range. Many of the most damaging fires in the county's recorded history have a component in the coastal region. Wind, relative humidity, and temperature can change dramatically based on the depth of the ocean marine layer or Santa Lucia winds. Under marine influence, it is common for summertime daytime high temperatures in Morro Bay to be in the mid 60's while inland temperatures 5-8 miles away are 95-100 degrees. Strong Santa Lucia winds in the spring and fall can result in temperatures as high as 105 in coastal valleys while inland temperatures may be in 70's.

Wildfires have burned several miles in a short period of time in this region, including the Highway 41 Fire which burned at a peak rate of spread of almost 7,000 acres per hour on the eastern border of this region along the Santa Lucia West Cuesta ridge.

US-101 at Cuesta Grade has a very high frequency of fires mostly caused by vehicle operations. There were more than 200 fires in a ten-year span, some of which were major events. These fires present unique challenges to critical infrastructure in the area including Union Pacific Railroad, communications sites, very high voltage electrical transmission lines, the state water project, and the freeway itself. When these fires occur during down canyon Santa Lucia winds, they present a dangerous threat to the City of San Luis Obispo and Cal Poly.

Ignition Date	Fire Name	Acres
8/13/2016	Chimney	46,233
1982, 1984, 1989, 2000, 2007	Diablo (multiple)	2,837
7/1/1985	Las Pilitas	84,271
8/14/1994	HWY-41	50,729
9/27/1970	Buckey	42,307
7/17/1960	Weferling	51,451
7/10/1953	Sam Jones	35,455

Source: CAL FIRE FRAP, 2025

Table 7. Coastal Region Large Wildfire History

Indigenous and lightning caused fires resulted in many native species in the coastal region being fire adapted. Fire exclusion over the last 200 years has resulted in changes in the species composition and characteristics. The most apparent is in the composition of the north coast Monterey pine stand. Fire exclusion has contributed to serious decline of this serotinous species that depends on periodic low intensity fires to promote new seedlings.

Historically the ranching community, currently represented by the SLO County Range Improvement Association (started in 1958), has continually conducted prescribed fires across the county with significant activity in the Huasna area of the region. As a result, there is a low frequency of large wildfires in the area.

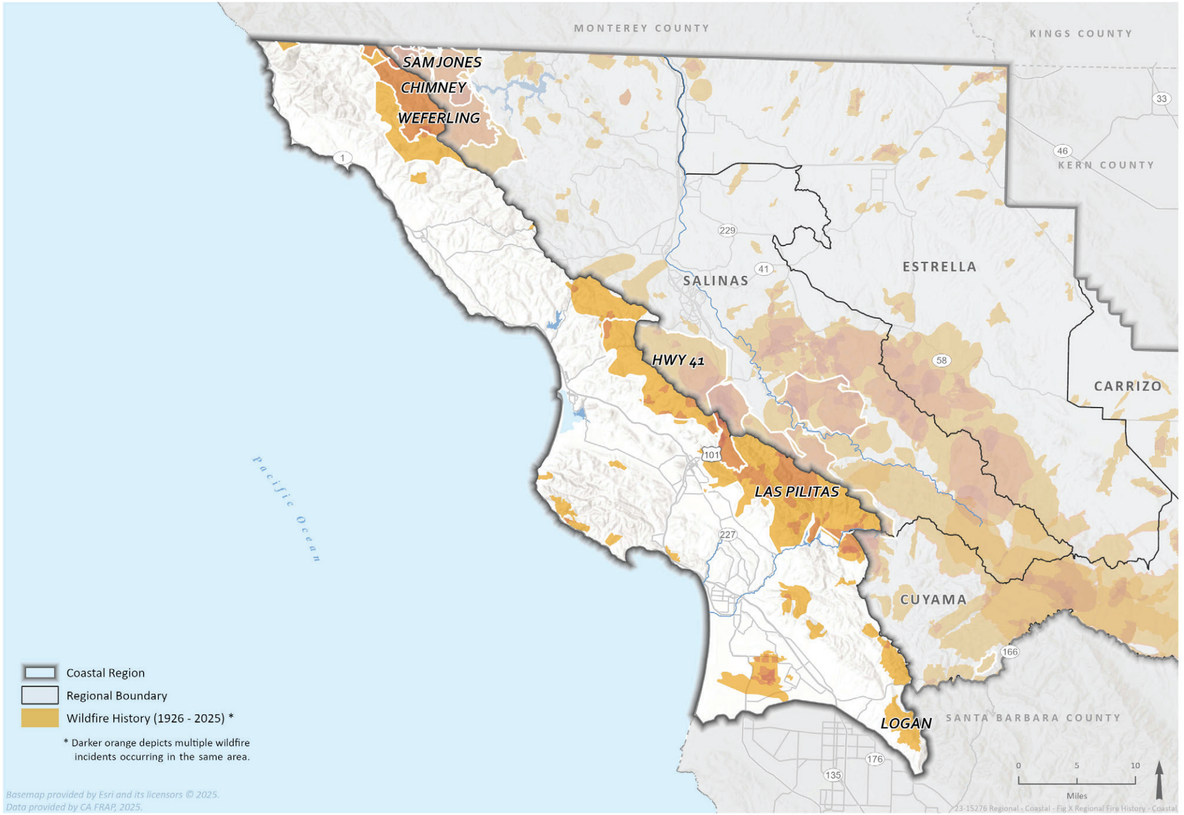


Figure 44. Coastal Region Wildfire History

94 *California Department of Forestry and Fire Protection. Fire Resource Assessment Program. What We Do. CAL FIRE.* ***https://www.fire.ca.gov/what-we-do/fire-resource-assessment-program***

Weferling Fire

On July 17, 1960, the Weferling Fire started on the border with Monterey County and burned into SLO County in both the Salinas and Coastal regions straddling the Santa Lucia Range near Rocky Butte. It burned until July 25th and consumed 51,451 acres. The Chimney Fire in 2016 which started in SLO County burned in almost the same footprint consuming 46,235 acres. It started on July 12, 2016, and was contained on August 8, 2016. The Chimney Fire destroyed and damaged 78 structures. Both fires were stubbornly difficult and dangerous to contain as the fires shifted directions. The marine coastal wind effect referred to in this document as the "wind with no name" along the Santa Lucia Range dramatically impacted these fires as documented in the State Forester's Report.

There was concern for both of them spreading to Hearst Castle and the communities of San Simeon and Cambria. The State Forester's Report for the 1960 Weferling Fire notes a weather phenomenon called "Crazy Winds" which caused notably difficulties for firefighters battling this blaze. Section 2.1.11 Wind includes a discussion of the "Wind with No Name" pattern which resembles the weather described in the Weferling report.

Multiple fires have occurred near Diablo Canyon Nuclear Power Plant. This open space area is densely vegetated, has variable terrain, and experiences high winds. Fires in this area pose a major threat to nearby communities, Montaña de Oro State Park, and the nuclear power generation facility. CAL FIRE conducts prescribed burn operations near this area annually as conditions allow to reduce the risk of wildfire near this critical facility.

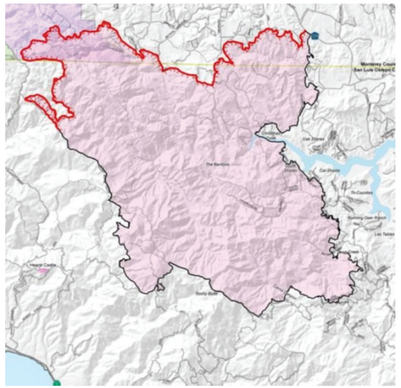


Figure 45. Weferling Fire Perimeter

Diablo Nuclear Power Plant

Jurisdictional Responsibility Areas

Jurisdictional Responsibility Area acreages are shown in Table 8 and depicted in Figure 46.

Responsibility Area	Acres
Federal Responsibility Area	35,539
Local Responsibility Area	55,328
State Responsibility Area	457,037

Source: CAL FIRE FRAP, 2023

Table 8. Coastal Region Responsibility Area Acreage

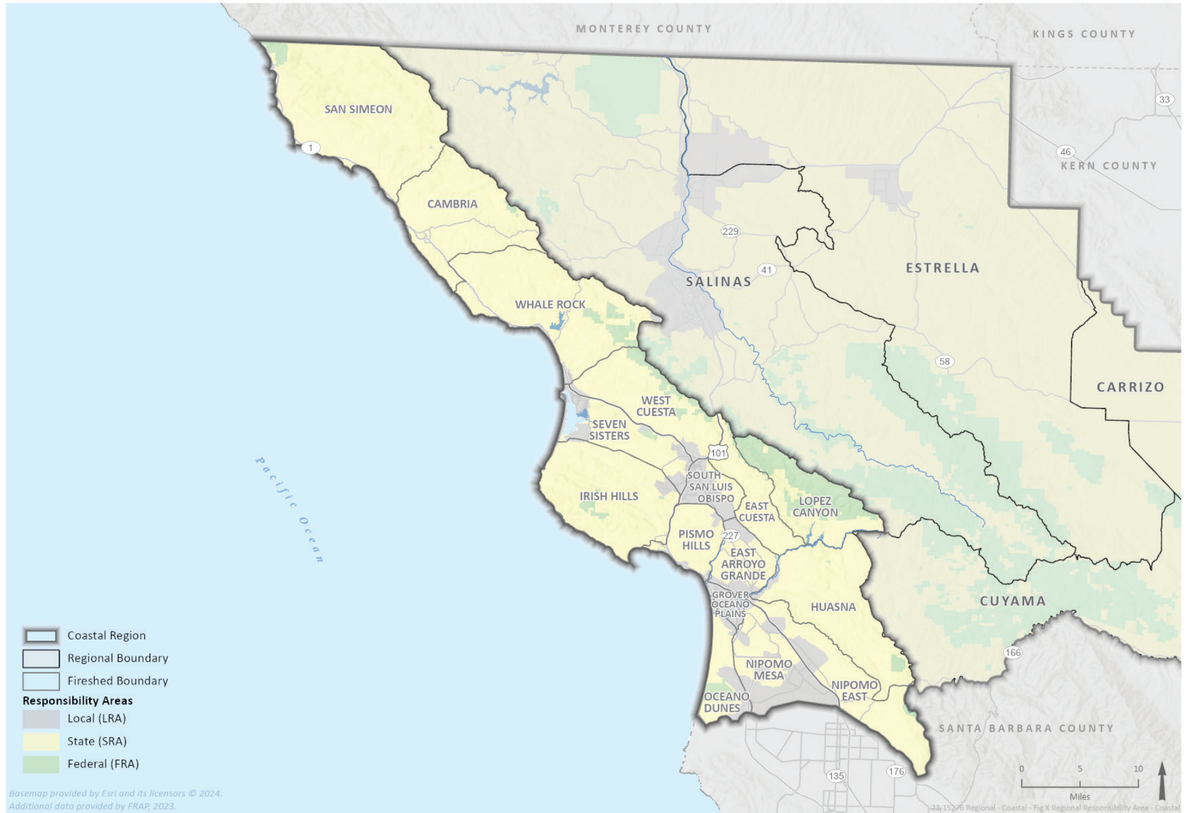


Figure 46. Coastal Region Jurisdictional Responsibility Areas

Direct Protection Areas

Direct Protection Area acreages are shown in Table 9 and Figure 47.

Responsibility Area	Acres
CAL FIRE	472,504
Department Of Defense	33
Local Fire Departments	55,575
U.S. Bureau Of Land Management	4,645
U.S. Fish And Wildlife Service	2,486
U.S. Forest Service	17,122

Source: CAL FIRE FRAP, 2023

Table 9. Coastal Region Direct Protection Area Acreage

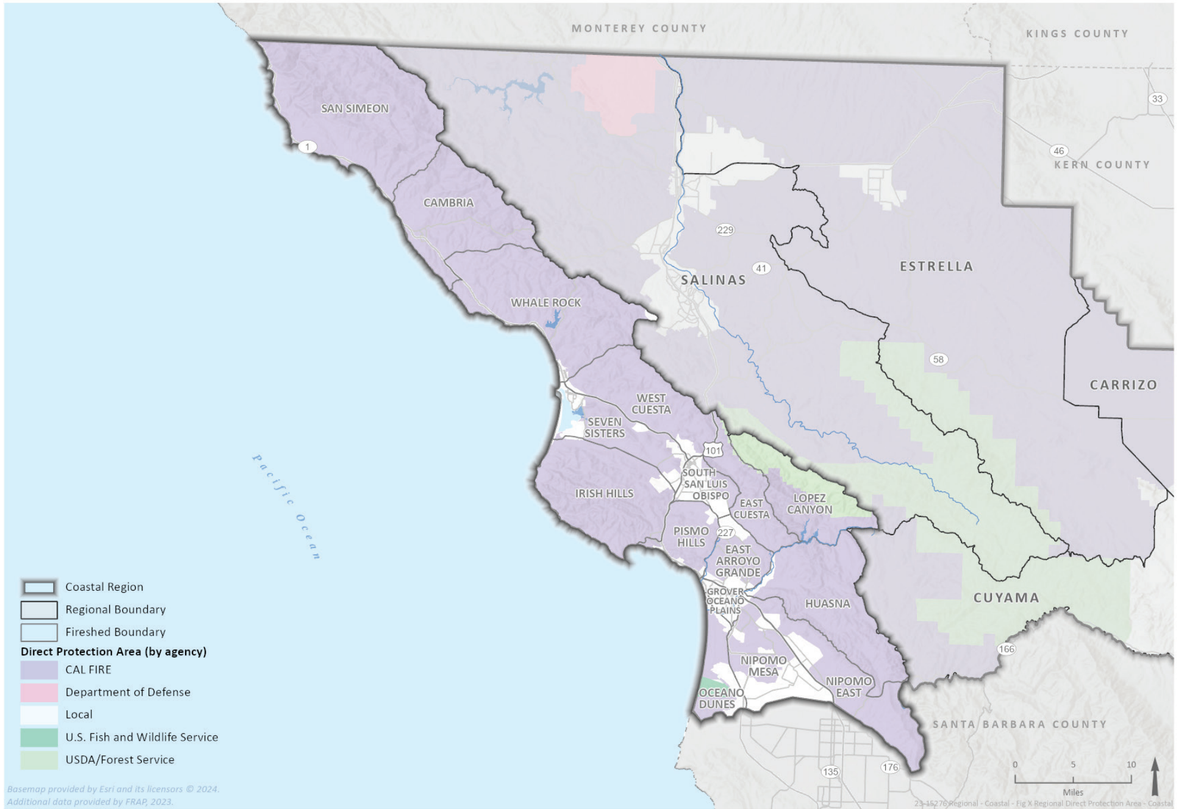


Figure 47. Coastal Region Direct Protection Areas

Fire Hazard Severity Zones

The FHSZ acreage delineation in the Coastal Region is shown in Table 10 and depicted in Figure 48.

Responsibility Area	Acres
FRA	35,537
SRA Very High	167,748
SRA High	175,831
SRA Moderate	113,447
LRA Very High	6,517
LRA High	6,673
LRA Moderate	14,053

Source: CAL FIRE FRAP 2025

Table 10. Coastal Region FHSZ Acreage in FRA, SRA, and LRA

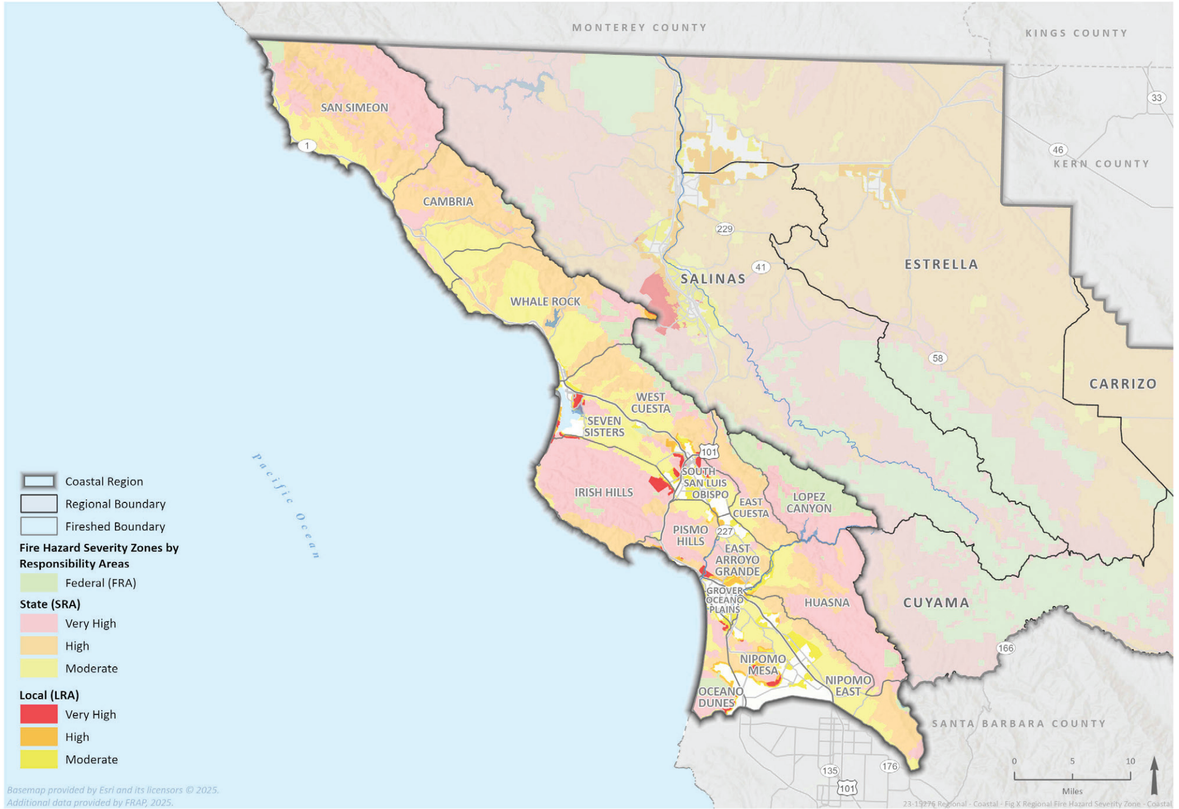


Figure 48. Coastal Region Fire Hazard Severity Zones

Microclimate

The Coastal Region's climatic diversity and distinctive microclimates and wind patterns have a profound impact on the area's susceptibility to wildfires, influencing fire behavior and the overall risk across different landscapes. SLO County has a Mediterranean climate characterized by mild, wet winters and hot, dry summers. In the Coastal Region, the land is moderated by cooler temperatures due to proximity to the Pacific Ocean, often experiencing milder fire conditions due to the marine layer that brings cooler temperatures and higher humidity/fog particularly in the summertime. Lightning fires can occur during the summer when tropical storms in the eastern Pacific Ocean off Mexico migrate north bringing dry lightning to the county.

The usual summertime northwesterly strong onshore winds bring cool moist air off of the ocean into coastal valleys with frequent summertime fog. Elevation and distance from the coastline can result in major changes in this pattern. While it may be foggy and cool in the Los Osos Valley, the summit of the Irish Hills may be 20 degrees warmer with no fog even though they are only 1-2 miles apart. Temperature stratification due to elevation occurs daily. There are widely variable temperatures even within the coastal region due to microclimate effect. Temperatures can vary 15 to 25 degrees across very short distances from the ocean. Uniquely, Cayucos and Avila Beach are south facing beaches that experience a mild form of katabatic wind caused by the northwesterly prevailing wind. The wind comes ashore north of these communities, flows across land (warming and drying as it goes) and descends onto these two beach areas with noticeably warmer and drier air.

Coastal valleys that align with the prevailing northwesterly winds (e.g. Los Osos Valley, Chorro Valley, Edna Valley, and Arroyo Grande valley) experience stronger winds and marine fog influence. Summertime coastal fog contributes to some species distribution. Monterey pine and Bishop pine are dependent on summertime fog drip to sustain themselves. Like temperature, the fog layer extends toward the Santa Lucia Range based on the depth of the marine layer. The shallower the marine layer the shorter distance inland the fog affects.

However, the diurnal coastal wind patterns can influence fire spread, especially in areas with dryer vegetation. The diurnal daytime onshore wind switching to nighttime offshore wind in summertime is also an influence of the moderating ocean temperature. Winds blowing onshore during the day can switch and blow offshore at night.

Santa Lucia winds, prevalent in the spring and fall, can further exacerbate climate-driven wildfire risks by increasing temperatures, reducing relative humidity, and changing wind patterns due to the hot, dry desert air blowing out of the San Joaquin Valley towards the ocean at high speeds. Santa Lucia winds are milder versions of the more familiar Santa Ana, Diablo, and North winds that have caused massive destruction across the state. These katabatic winds accelerate, heat up, and dry out as they descend from the Santa Lucia Range into the coastal valleys. Fire occurrence and rate of spread speed increases on the leeward side of the Santa Lucia Range in the Coastal region during Santa Lucia wind events. Since Santa Lucia winds are descending, they follow terrain and, when in alignment with topography, can accelerate with predictable corridors such as SR-46 pass, Cayucos Creek, SR-41 into Morro Bay, and US-101 Cuesta Pass into San Luis Obispo.

Long periods of drought and unseasonably warm temperatures have contributed to primed fuel beds and longer fire seasons. The Coastal Region receives more annual rainfall than any other region throughout the county; Rocky Butte ridge, east of San Simeon, receives the most rainfall of any location in the county with up to 100 inches of annual rain. The rest of the Coastal region annual averages range from 14 to 42 inches.[95]

95 San Luis Obispo County. Accessed Jan 20, 2024. SLO County Average Annual Rainfall. San Luis Obispo County. ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Water-Resources/SLO-County-Average-Annual-Rainfall.pdf***

Coastal Sage Scrub above Los Osos

Salinas Region

Regional Features

The Salinas Region encompasses ten individual firesheds, including:

- Nacimiento
- Camp Roberts
- San Miguel/Wellsona
- Adelaida
- East Paso Robles
- El Pomar
- Atascadero/Templeton West
- Santa Margarita
- Parkhill
- Avenales

This region, shown in Figure 49, extends from the Adelaida area in northern SLO County near Lake Nacimiento south, along the Salinas River on the east side of the Santa Lucia Range to the La Panza Range on the east and Pozo in the south. It includes towns such as:

- Paso Robles
- Atascadero
- Templeton
- San Miguel
- Garden Farms
- Creston
- Santa Margarita

The Salinas region features built infrastructure supporting tourism, medical needs, and, utilities, and education:

- Paso Robles Municipal Airport
- Atascadero Wastewater Treatment Plant
- Atascadero State Hospital
- Templeton Twin Cities Community Hospital
- San Miguel Arcangel
- Santa Margarita Elementary School
- Lake Nacimiento Dam

Key transportation routes through the Salinas Region include:

- US-101
- Union Pacific Railroad
- SR-46
- SR-229
- SR-41
- SR-58
- El Camino Real

The region is dominated by highly flammable vegetation, such as:

- Oak woodland
- Chaparral vegetation
- Grasslands

Summertime temperatures frequently exceed 100 degrees with very erratic wind patterns that are affected by strong winds flowing from Monterey County up the Salinas River valley and coastal winds across the Santa Lucia Range. The Salinas Region is impacted by "The Wind with No Name" phenomenon more often than the other SLO County regions.

This region has experienced the most dangerous and destructive wildfires in SLO County's recorded history. Fires have burned into communities of Atascadero, Santa Margarita, Garden Farms, Creston, Lake Nacimiento, and rural areas of Parkhill-Pozo and Tassajara.

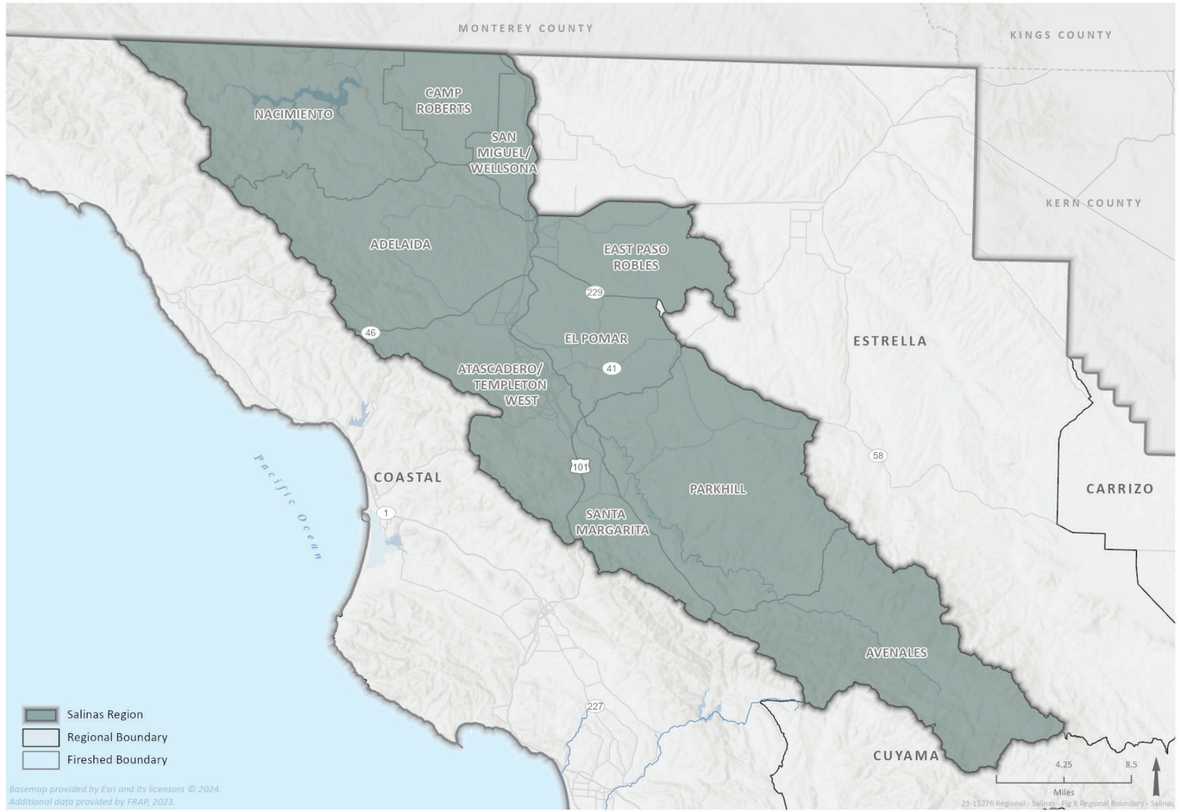


Figure 49. Salinas Region Firesheds

Major Geographic Features

Major geographic features of the Salinas Region include various mountain ranges. The unique mountainous and highly flammable vegetated terrain of this region contributes to increased wildfire risks in the area. The Salinas Region major geographic features are shown in Figure 50.[96] Wildfire and fuel reduction projects can have a significant influence on the function of hydrologic systems. The effect on water quality should be considered for all area projects.

Major geographic features of the Salinas Region include:

- Templeton Gap
- Devil's Gap
- Cuesta Pass
- La Panza Range
- Parkhill-Pozo area
- Adelaida
- Garcia Mountain
- Hi Mountain
- Machesna Mountain
- Black Mountain
- Miller Flat
- The Salinas River Valley
- Smaller canyons such as Avenales and Tassajara

The Salinas Region includes the following watersheds:

- Nacimiento Watershed
- Lower Salinas Watershed
- Mid-Salinas Watershed
- Upper Salinas Watershed
- Huer Huero Creek Watershed

Major water features of the Salinas Region include:

- Lake Nacimiento
- Nacimiento River
- The Salinas River and headwaters
- Santa Margarita Reservoir

96 San Luis Obispo County Public Works. Jan. 2014. SLO Watershed Management Project. San Luis Obispo County. **https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/SLO-Watershed-Project/Resources/SLO-Watershed-Management-Project.pdf**

Figure 50. Salinas Region Features

Assets at Risk

People

The Salinas Region is home to the second largest population group within SLO County after the Coastal Region. Cities and towns in this area, collectively referred to as "North County" include Paso Robles (population 31,490), Atascadero (population 29,773), Templeton (population 8,386), Heritage Ranch and Lake Nacimiento communities (population 3,018), San Miguel (population 3,172), Creston (population 31), and Santa Margarita (population 1,291) as depicted in Figure 51.[97] The Salinas region was traditionally inhabited by the Chumash and Salinan tribes. The Salinas Region is broadly agrarian, with many residents living outside of population centers in more rural settings. There is a significant component of small rural residences and ranchettes. These areas are typically within the Wildland Urban Interface and Intermix and may present limitations to access and evacuation. Evacuations of residents in these areas will often include large animals and livestock which can complicate and slow the process.

The Salinas region, similar to the Coastal Region is a popular tourist destination especially related to wine tasting. Hundreds of wineries and related support facilities exist in the region served by roads that were built to handle much smaller traffic volumes. Visitors from out of the area take advantage of a wide array of lodging alternatives and will not necessarily be familiar with local geography if a wildfire event were to occur during their stay. This could lead to dangerous evacuations and extractions for emergency personnel. South Shore boat clubs at Lake Nacimiento have a high transient population in a VHFHSZ with only one way in and out. Oak Shores, also at Lake Nacimiento, has only one primary evacuation route.

Studies show that humans are responsible for starting 84 percent of all wildfires and 97 percent of wildfires that threatened homes.[98] Based on this, the population hubs within the Salinas Region should receive focus from wildfire risk reduction project planners to develop projects that provide firefighter access to vulnerable communities. Paso Robles has experienced several hundreds of fires in the Salinas river drainage caused by encampments of homeless or unhoused. Agriculture operations also contribute to fire causes. Historically, prior to the land conversion from rangeland and dry land grain farming to irrigated vineyards, it was common to have standing grain fires of several hundred acres.

Areas of Atascadero, Paso Robles, and San Miguel are considered disadvantaged communities in the Salinas Region according to the SLOCOG standards. Often, population centers with low income or disadvantaged communities feature centralized compacted residential areas. Project planners can use population demographic information to develop projects intended to benefit people and regions with reduced means to implement wildfire hazard reduction projects. Projects focusing on reducing wildfire risk around these communities can provide protection for some of the most vulnerable residents.

97 U.S. Census Bureau. Accessed Jan 20, 2024. Census Data for San Luis Obispo County. U.S. Census Bureau. **https://data.census.gov/all?q=san%20luis%20obispo%20county**

98 Joossee, T. December 8, 2022. Human-sparked Wildfires are more destructive than those caused by nature. Science. **https://www.science.org/content/article/human-sparked-wildfires-are-more-destructive-those-caused-nature**.

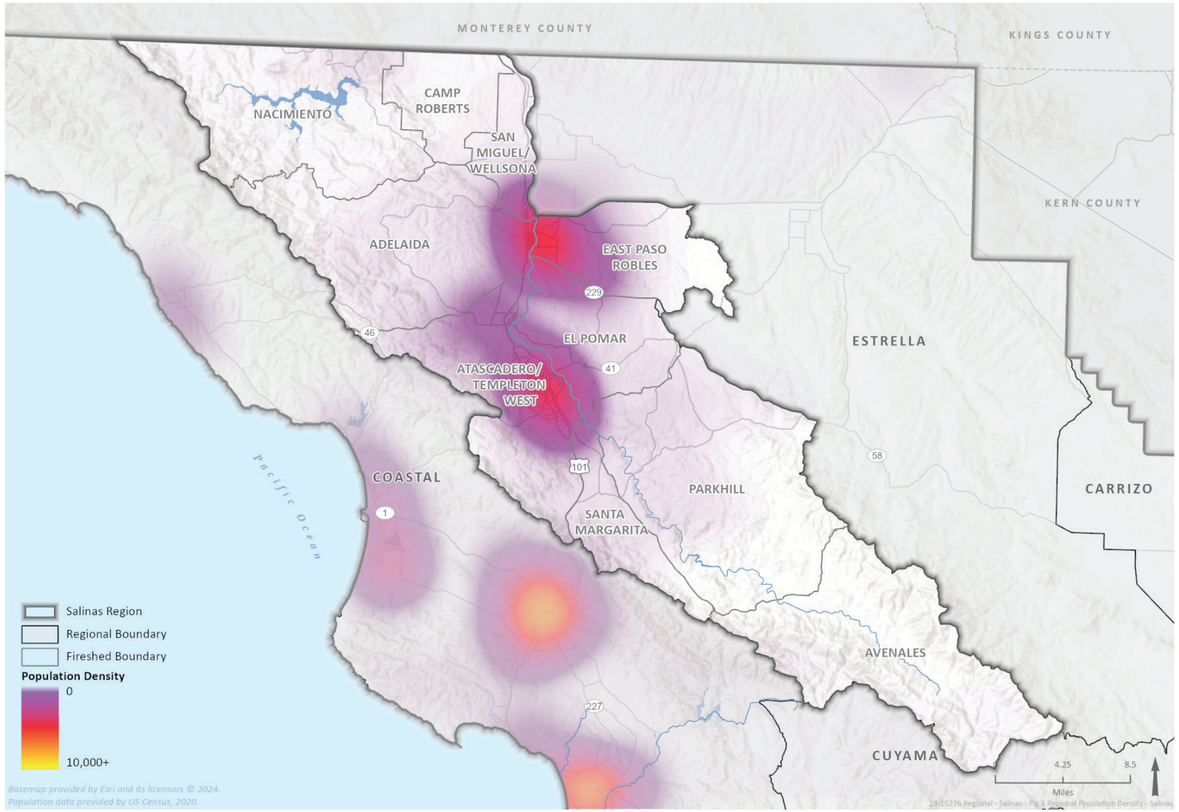


Figure 51. Salinas Region Population Density

Salinas Region

Built Environment

The economy in the region has historically been agriculturally driven which has resulted in significant large land holdings for ranching, farming, and conservation with low population density outside of the cities and towns. The largest communities in the region are **Paso Robles** and **Atascadero**.

Paso Robles is most known for its wine tourism and features built infrastructure such as the Paso Robles Municipal Airport, densely populated neighborhoods, shopping centers, medical centers, hotels, and schools within the Paso Robles Joint Unified School District. Paso Robles features many tourist amenities such as golf courses, wineries, vineyards, and spas which serve as key features in the city's leading commercial industry.

Atascadero features built infrastructure such as the Wastewater Treatment Plant, the Atascadero State Hospital, local schools within the Atascadero Unified School District, dense residential areas, and commercial retail areas and shopping centers.

Templeton is characterized by its significant agricultural history, with large land holdings dedicated to ranching and farming. The community features essential built infrastructure such as the Templeton Twin Cities Community Hospital, which serves as a critical healthcare facility for the region. The town's layout includes low-density residential areas, local schools, and small commercial centers. Additionally, restaurants and wine tasting rooms that cater to tourists are featured throughout Templeton. The presence of major transportation routes like US-101 and the Union Pacific Railroad enhances connectivity, supporting both local and regional economic activities.

San Miguel features expansive grasslands and agricultural lands that dominate the landscape. With a population of nearly 3,000, the community is supported by essential local infrastructure, including local schools and small commercial establishments. The Union Pacific Railroad and nearby highways such as US-101 provide transportation to the community. San Miguel's built environment reflects its agricultural roots, with a focus on preserving its ranching and farming legacy while accommodating modern needs. San Miguel area features several tourist attractions, including Mission San Miguel Arcangel, wineries, and restaurants. The Sinclair Field/ Flying R Ranch Airfield is located nearby.

Garden Farms, with a population of nearly 400 community members, is known for its low population density and agricultural activities. The built environment features residential areas with single-family homes, small essential service establishments, and the Garden Farms Community Water District. US-101 and El Camino Real run alongside Garden Farms, connecting the community to the rest of San Luis Obispo County.

Santa Margarita features essential structures that cater to its roughly 1,200 residents such as the Santa Margarita Elementary School, the Santa Margarita Community Park, and the Santa Margarita Library. The built environment also features residential area with single-family homes and small commercial establishments. El Camino Real, SR-58, and the Santa Margarita Ranch Airport all provide transportation to and from Santa Margarita.

Atascadero Historical Rotunda Administration Building

Major transportation infrastructure exists throughout the region including US-101, which runs north to south through Atascadero and Paso Robles. SR-46, SR-229, SR-41, and SR-58 also operate throughout the region. The Union Pacific Railroad operates through the region, operating south to north adjacent to US-101 through Atascadero and Paso Robles. Other built infrastructure in the region includes the Santa Margarita Ranch Airport, the Templeton Twin Cities Community Hospital, the Lake Nacimiento Dam. State water project pumping stations, Salinas Reservoir/Santa Margarita Lake, high pressure gas and petroleum underground pipelines.

Historical ranching and grazing operations in this region include large expanses of grassland. Using prescribed fire for rangeland management has been a part of the landscape for many generations. Rural residents may choose to remain on site to shelter in place as opposed to choosing to evacuate during a wildfire event, whether due to their comfortability with the risk of grassland fires, reluctance to evacuate without livestock, or limited access to safe evacuation routes.

Biological and Botanical Resources

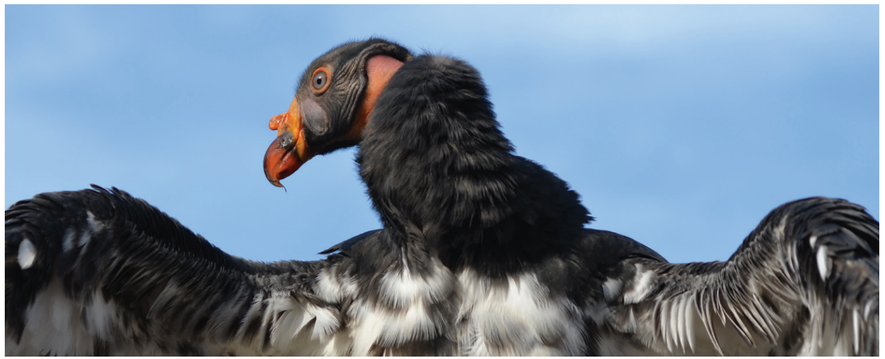
An abundance of wildlife can be found in the Salinas Region. The diversity of landscapes spanning from the eastern slope of the Santa Lucia Range across the Salinas River Valley and south into the La Panza Range provide a wide array of wildlife habitat.

Some notable species native to this area include mountain lion *(Puma concolor)*, black bear *(Ursus americanus*), vernal pool fairy shrimp *(Branchinecta lynchi)*, bald eagle (*Haliaeetus leucocephalus)*, San Joaquin kit fox *(Vulpes macrotis mutica)*, and least bell's vireo *(Vireo bellii pusillus)* amongst many others.[99]

Typical natural communities in the Salinas region include riparian habitats, oak woodlands, oak savannahs, blue oak foothill pine woodlands, chaparral, and grasslands. Common species include coast live oak *(Quercus agrifolia)*, blue oak *(Quercus douglasii)*, valley oak *(Quercus lobata)*, chamise *(Adenostoma fasciculatum)*, wild oat *(Avena fatua)*, grey pine *(Pinus sabiniana)*, California Sycamore *(Platanus racemosa)*, elderberry *(Sambucus mexicana)* and willow *(Salix ssp.)*.

San Joaquin Kit Fox

Valley Oak Savannah



California Condor

California Sycamore

99 *San Luis Obispo County. May 2010. Conservation and Open Space Element. San Luis Obispo County.* ***https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Plans-and-Elements/Elements/Conservation-and-Open-Space-Element-(1)/Conservation-and-Open-Space-Element.pdf***

Landcover

Vegetation and land cover in the Salinas region are shown in Table 11 and Figure 52.[100] LANDFIRE 2022 is the source of the vegetation landcover data which may not be an accurate representation of species composition. Fine scale vegetation mapping for SLO County would benefit the project planning effort and the acquisition of which is a focus of natural resource agencies and organizations in SLO County. Soil disturbance, herbicide use, early season fires, and over grazing as part of fuels reduction projects may result in unanticipated negative effects on non-target species in this region. Project planners must conduct appropriate biological site evaluations to understand the possible consequences of all projects.

The agriculture patterns of this region have changed in the last 50 years. Natural landscapes were farmed as grazing lands, dry land grain (wheat and barley), and tree crops (nuts and fruit). The vineyard-wine industry has also been a component of the region for more than 100 years. However, beginning near the close of the 20th century, acreage in wine grape production exploded. Thousands of agricultural acres in the Salinas Region are now irrigated vineyard. This includes acreage that was previously grassland and oak woodland. Historical tree crops have almost disappeared, being replaced in some instances with olive groves.

Landcover/Vegetation Types	Acres
Agricultural	46,972
Barren and Sparse Vegetation	3,178
California Mixed Evergreen Forest and Woodland	3,145
Chaparral	143,084
Conifer-Oak Forest and Woodland	38,058
Developed	57,412
Grassland	13,465
Marsh	4,459
Non-Native Vegetation	137,854
Open Water	5,919
Redwood Forest and Woodland	1,036
Western Oak Woodland and Savanna	81,374

Source: LANDFIRE 2022

Table 11. Salinas Region Landcover

100 *San Luis Obispo County Public Works. Jan. 2014. SLO Watershed Management Project. San Luis Obispo County.* ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/SLO-Watershed-Project/Resources/SLO-Watershed-Management-Project.pdf***

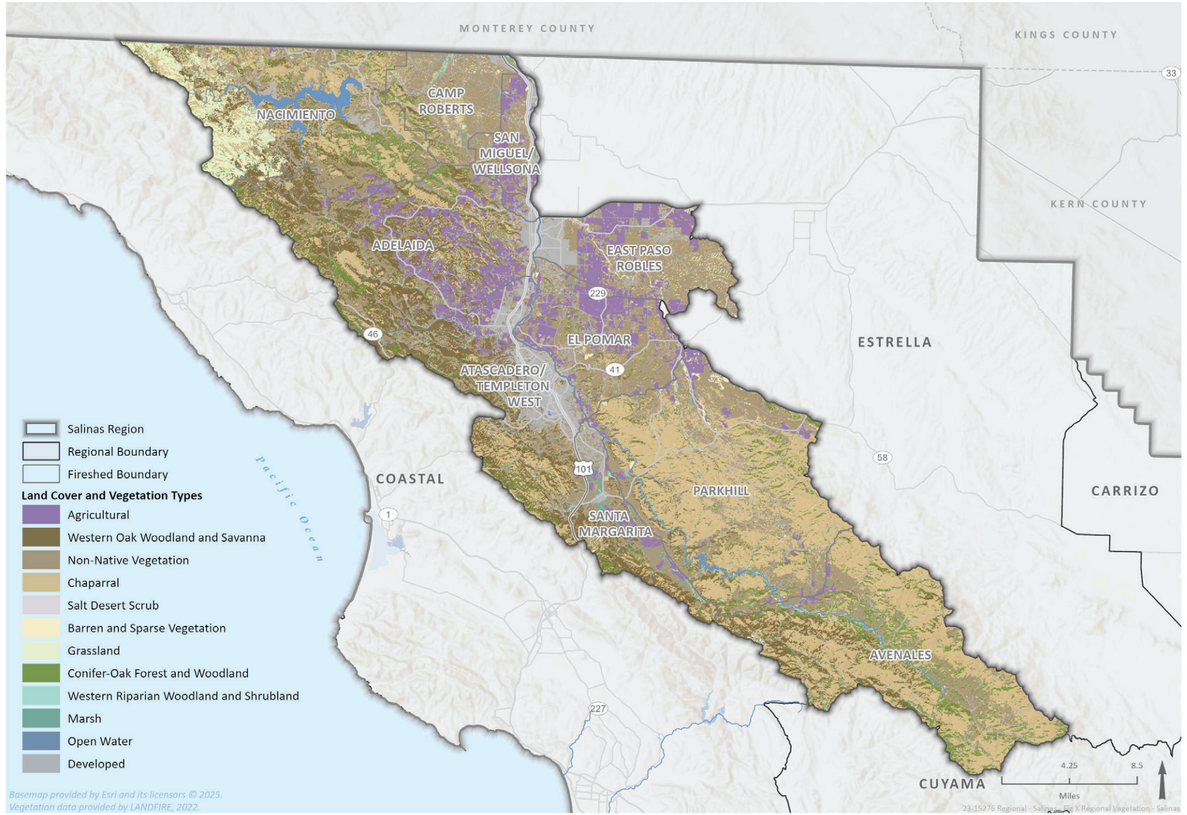


Figure 52. Salinas Region Vegetation

Wildfire History

Of the five fireshed regions, the Salinas Region historically is the most prone to wildfire. With higher average summer temperatures and drier conditions than the Coastal Region, but with enough annual precipitation that fuel loads remain high, the potential for wildfires in this region is great. Many large and damaging wildfires have been recorded in the Salinas Region of SLO County since the early 1900s, as shown in Table 12 and Figure 53.[101] These large fires caused massive destruction throughout the Salinas Region although smaller fires within the WUI can be more damaging to residents than larger blazes as homes and infrastructure are typically crowded into centralized areas where even small fires can cause great damage.

This region experiences wildfires that burn with the highest rates of spread, covering great distances in short periods of time. Atascadero, Paso Robles, Lake Nacimiento, Santa Margarita, Garden Farms, and Creston have all experienced major fires burning into their communities. Six of the ten wildfire burn-over fatalities in SLO County have occurred in this region. The majority of structures damaged in wildfires in SLO County occurred in this region. The largest wildfires in recorded county history have also occurred in this region. Much of the region experiences repetitive fires which burn the same areas as previous events as seen in Figure 53. For more information about the deadly wildfire history within the Salinas Region refer to Section 2.2.11 Wind and 2.1.13 Wildland Fatality Fires.

Ignition Date	Fire Name	Acres
8/1/2025	Gifford	131,614
8/13/2016	Chimney	46,233
8/4/1997	Logan	49,490
8/15/1996	Highway 58	106,969
8/14/1994	Hwy 41	50,729
7/1/1985	Las Pilitas	84,271
7/17/1960	Weferling	51,451
7/2/1950	Pilitas #1 (occurred simultaneously)	22,844
7/4/1950	Pilitas #2 (occurred simultaneously)	2,830
7/4/1950	Pilitas #3 (occurred simultaneously)	5,696

Source: CAL FIRE FRAP, 2025

Table 12. Salinas Region Large Wildfire History

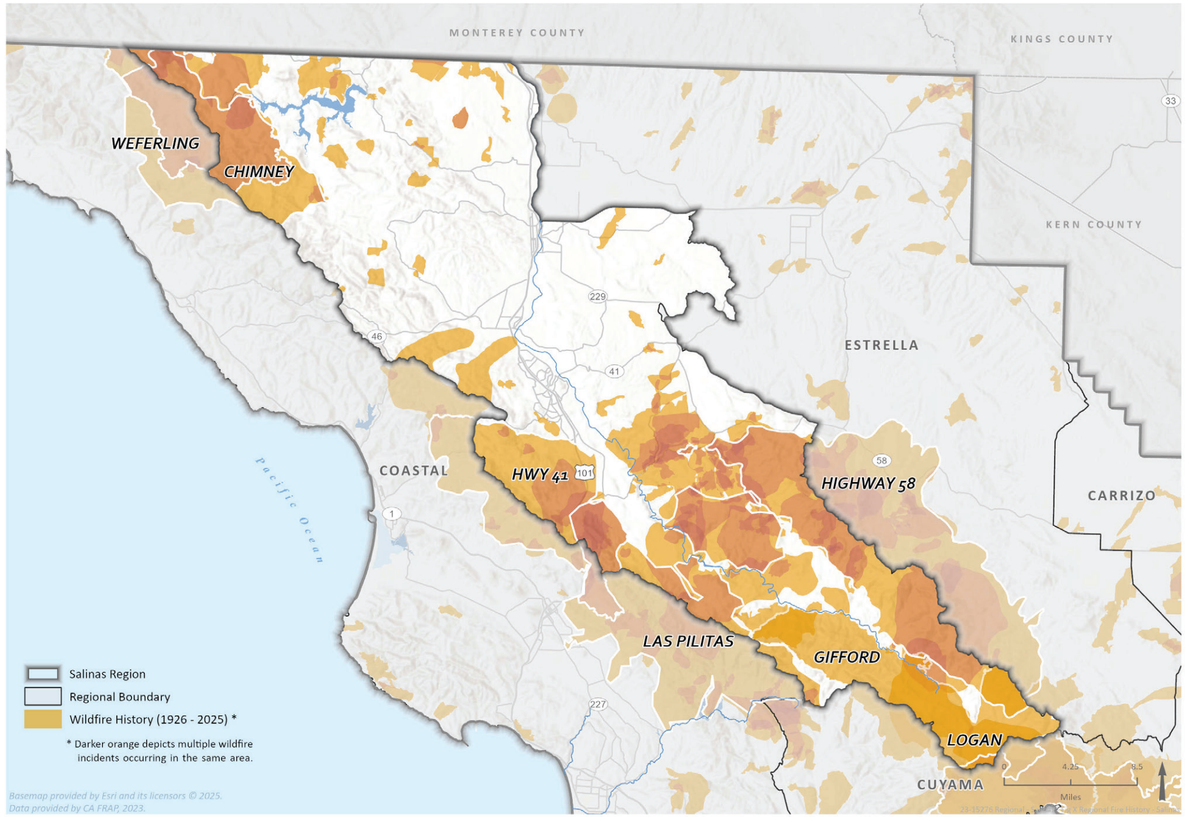


Figure 53. Salinas Region Wildfire History

101 California Department of Forestry and Fire Protection. Fire Resource Assessment Program. What We Do. CAL FIRE. ***https://www.fire.ca.gov/what-we-do/fire-resource-assessment-program***

Jurisdictional Responsibility Areas

Jurisdictional Responsibility Area acreages are shown in Table 13 and depicted in Figure 54.

Responsibility Area	Acres
Federal Responsibility Area	115,408
Local Responsibility Area	38,699
State Responsibility Area	386,360

Source: CAL FIRE FRAP, 2023

Table 13. Salinas Region Responsibility Area Acreage

Figure 54. Salinas Region Jurisdictional Responsibility Areas

Direct Protection Areas

Direct Protection Area acreages are depicted in Figure 55 and acreages shown in Table 14.

Responsibility Area	Acres
CAL FIRE	386,013
Department of Defense	24,937
Local Fire Departments	38,680
U.S. Forest Service	90,838

Table 14. Salinas Region Direct Protection Area Acreage

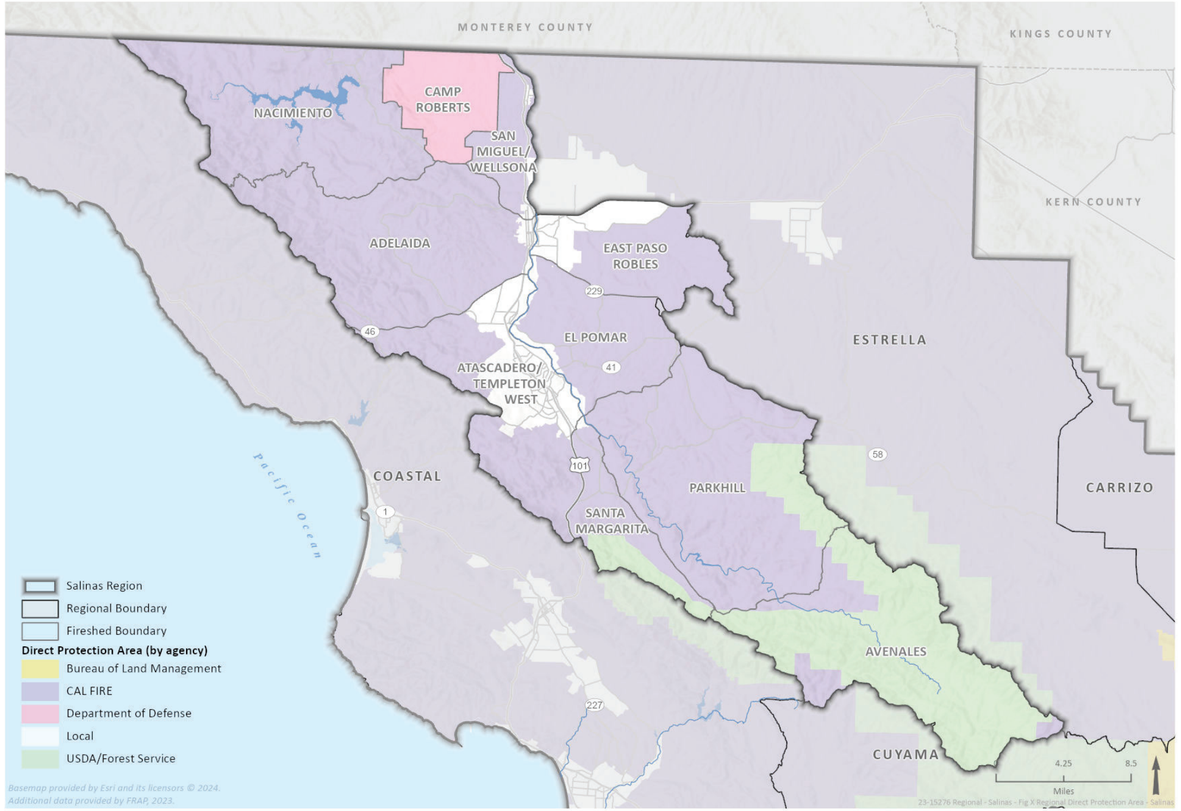


Figure 55. Salinas Region Direct Protection Areas

Fire Hazard Severity Zones

The FHSZ acreage delineation in the Salinas Region is shown in Table 15 and depicted in Figure 56.

Responsibility Area	Acres
FRA	115,406
SRA Very High	238,378
SRA High	136,343
SRA Moderate	11,655
LRA Very High	7,633
LRA High	11,696
LRA Moderate	11,756

Source: CAL FIRE FRAP 2025

Table 15. Salinas Region FHSZ Acreage in FRA, SRA, and LRA

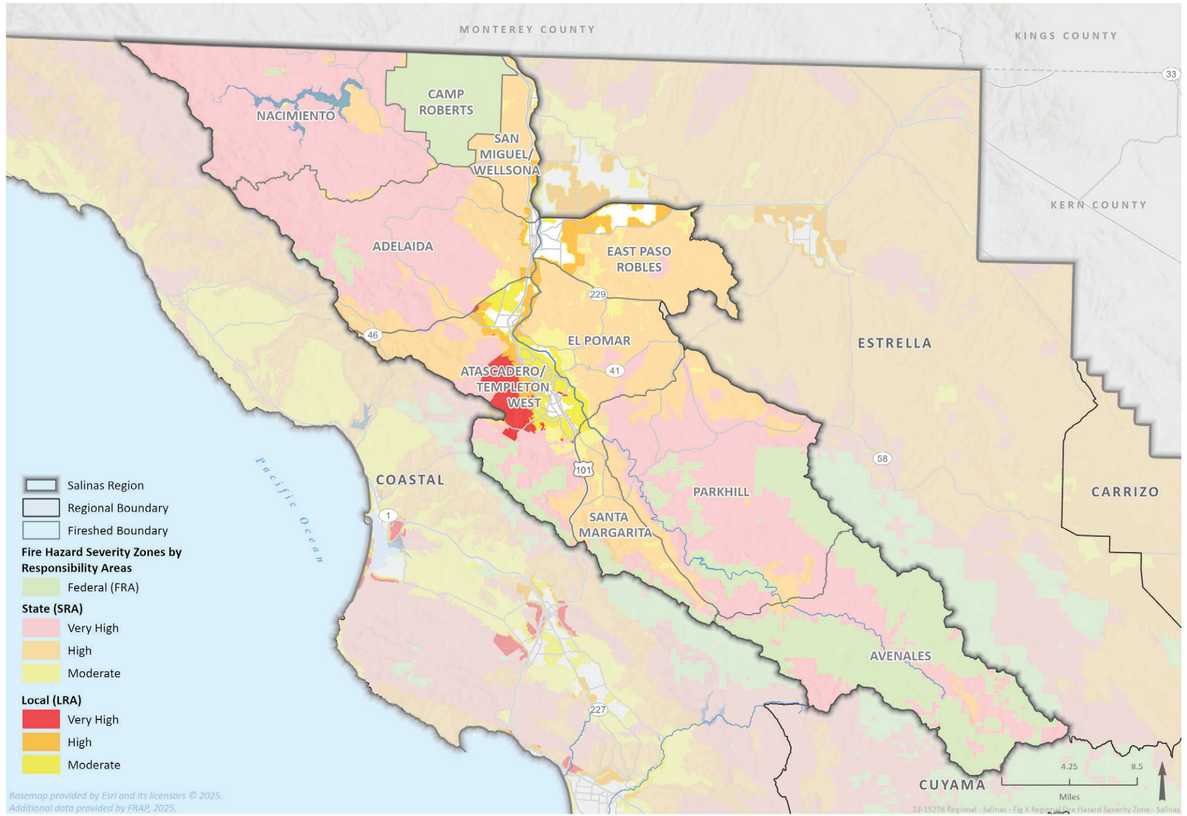


Figure 56. Salinas Region Fire Hazard Severity Zones

Microclimate

The Salinas Region experiences predictably drier weather than the Coastal Region as a result of the rain shadow effect from the Santa Lucia Range. This region incorporates the eastern slope of the Santa Lucia Range, the Salinas River Valley and the lands east of the Salinas River. Moving west to east, the expected average annual precipitation quickly diminishes. Average rainfall for this region is between 34 and 14 inches.[102] Temperatures in the Salinas Region are more extreme than the coastal areas of SLO County with higher average summer temperatures and lower average winter temperatures. Drier and hotter conditions result in lower relative humidities and fuel moisture. Typical summertime high temperatures in this region exceed 95 to 100 degrees with low relative humidities. Areas in Adelaida and near the Santa Lucia ridge experience cooler marine air penetration in the evenings.

The prevailing northwesterly daytime wind is from the same Pacific high-pressure system that causes coastal fog, especially along the Santa Lucia Ridge. Additionally, the Salinas Valley is in alignment with this northwesterly wind. Coastal winds travel down the Salinas Valley from Monterey, drying and warming as they move south. By the time they reach San Miguel they have lost all coastal influence, bringing dry hot conditions. These winds can prime fuels for fire and propel wildfires across the landscape. When these winds are in alignment with the terrain, explosive fire behavior can occur which can be common in the Parkhill-Pozo area and along the Santa Lucia Ridge.

A unique weather condition in the Salinas Region termed "The Wind with No Name" by firefighting professionals provides a daunting element to area conflagrations. This wind is a confluence of the Salinas Valley winds, the thermal low created by inland heating, and the coastal marine air crossing the Santa Lucia ridge. This wind is discussed more broadly in Section 2.1.11 Wind . This region is affected by seasonal Santa Lucia Wind patterns as well as diurnal wind patterns associated with proximity to the Pacific Ocean. The "Wind with No Name" has been a causal factor in the burn-over deaths of the firefighters who have perished in the line of duty in this region and the cause of several other near miss burn-over events.

One of the fatalities occurred in Devil's Gap along SR-41 west of Atascadero. The other fatal fire was along Huer Huero Road near Parkhill Road in 1950. In this case, 23 firefighters became trapped between two fires (Pilitas 1 & Pilitas 2) and overrun. A third Pilitas Fire (3) joined the two previous and together burned to Black Mountain summit in the La Panza Range.

102 San Luis Obispo County. Accessed Jan 20, 2024. SLO County Average Annual Rainfall. San Luis Obispo County. ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Water-Resources/SLO-County-Average-Annual-Rainfall.pdf***

Regional Features

The Estrella Region encompasses seven individual firesheds stretching from the southeastern La Panza Mountain Range north to the town of San Miguel, including:

- Upper San Juan Creek Watershed
- La Panza
- Camatta
- Red Hill
- Shedd Canyon
- Cholame
- Estrella

This largely rural and agrarian area, shown in Figure 57, includes:

- The northeastern portion of the City of Paso Robles (including the Paso Robles Municipal Airport)
- San Miguel
- Whitley Gardens
- Shandon

These towns feature built infrastructure supporting the town's tourism, utility needs, and education such as:

- San Miguel Wastewater Treatment Plant
- Shandon Public Library

The presence of traffic on roadways in the sparsely populated and drier Estrella Region could create increased risk for wildfire ignition due to the preponderance of wildland fires caused by human activity.[103] Major roadways that operate through the Estrella Region include:

- SR-58
- SR-41
- SR-46

A portion of the Estrella Region is managed by the U.S. Forest Service and Bureau of Land Management which has their own planning process through NEPA and have many wilderness area restrictions on fuel projects.

103 Isaacs-Thomas, Bella. PBS NewsHour. Sept. 14, 2010. California's Catastrophic Wildfires in 3 Charts. PBS. ***https://www.pbs.org/newshour/science/californias-catastrophic-wildfires-in-3-charts#:~:text=Ninety-five%20percent%20of%20wildfires%20in,California%20are%20caused%20by%20human%20activity***

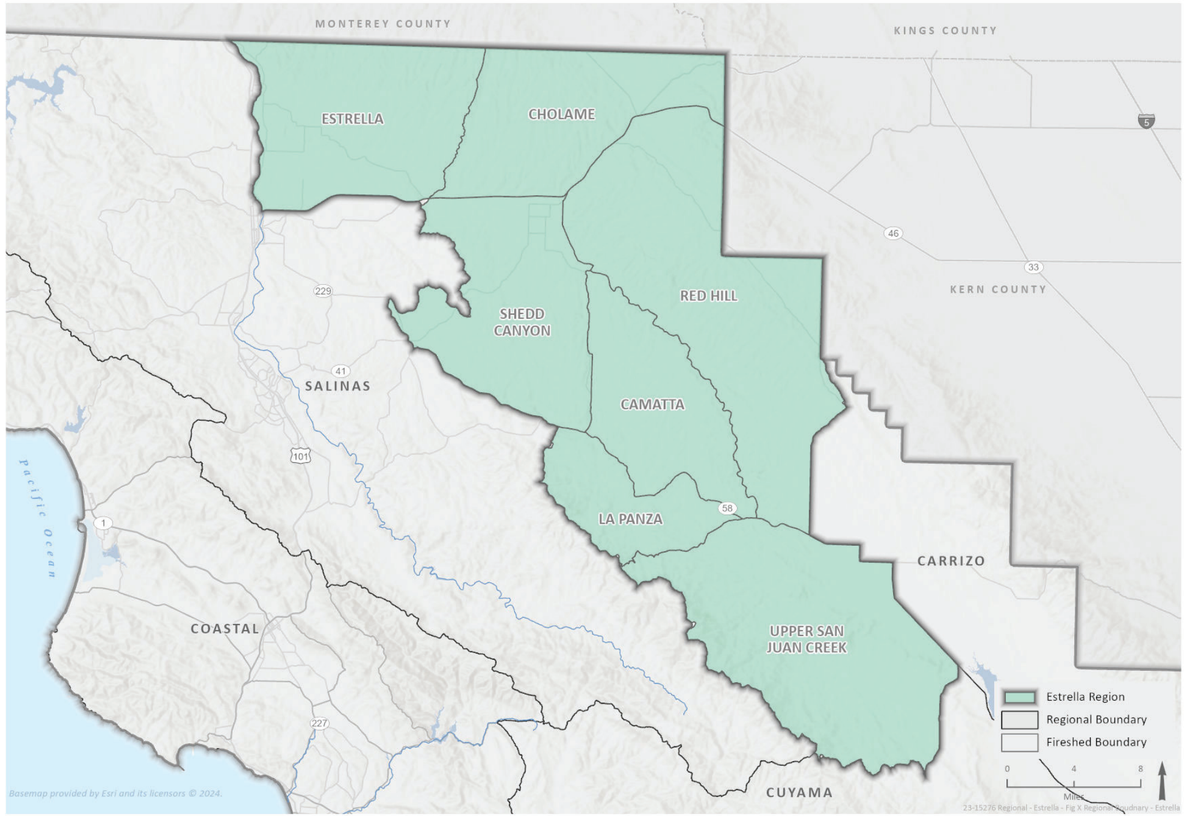


Figure 57. Estrella Region Firesheds

Estrella Region

Major Geographic Features

The Estrella Region begins in the Upper San Juan Creek Watershed to the east of the La Panza Range and extends north through the largely rural areas of San Juan Valley, Shedd Canyon, the Red Hills, Camatta Canyon, Shandon Valley, and towards eastern Paso Robles near the Estrella River in the north of the region. The Estrella Region includes the Estrella River Watershed, Huer Huero Creek Watershed, the Cholame Creek Watershed, the Lower San Juan Creek Watershed, the Upper San Juan Creek Watershed, and a small part of the Lower Salinas River Watershed.[104] Other major water features of the area include the Salinas River, Estrella River, Shedd Canyon Creek, and Navajo Creek, shown in Figure 58. Wildfire and fuel reduction projects can have a significant influence on the function of hydrologic systems. The effect on water quality should be considered for all area projects.

Major geographic features of the Estrella Region include:

- San Juan Valley
- Shedd Canyon
- The Red Hills
- Camatta Canyon
- Shandon Valley
- La Panza Range

The Estrella Region includes the following watersheds:

- Estrella River Watershed
- Huer Huero Creek Watershed
- Cholame Creek Watershed
- Lower San Juan Creek Watershed
- Upper San Juan Creek Watershed
- Lower Salinas River Watershed

Major water features of the Estrella Region include:

- Salinas River
- Estrella River
- Shedd Canyon Creek
- Navajo Creek

104 San Luis Obispo County Public Works. Jan. 2014. SLO Watershed Management Project. San Luis Obispo County. ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/SLO-Watershed-Project/Resources/SLO-Watershed-Management-Project.pdf***

Figure 58. Estrella Region Features

Assets at Risk

People

The Estrella Region is not densely populated. Outside of the inclusion of the northeastern section of the city of Paso Robles, there are no incorporated cities within the region. The Estrella Region includes a portion of the city of Paso Robles (population 31,490) and the towns of San Miguel (population 2,536), California Valley (population 2,414), Shandon (population 1,168), and Whitley Gardens (population 325) as depicted in Figure 59.[105] The Estrella region is the traditional home of the Salinan and Chumash tribes.

The Estrella Region is broadly agrarian, with most residents living in rural agriculturally based settings. These areas are typically within the wildland-urban intermix and may present limitations to access and evacuation. Evacuations of residents in these areas will often include large animals and livestock which can complicate and slow the process.

The Shandon and San Miguel areas are considered disadvantaged communities in the Estrella Region based on the SLOCOG definition. Often, population centers with low income or disadvantaged communities feature centralized compacted residential areas. Project planners can use population demographic information to develop projects intended to benefit people and regions with reduced means to implement wildfire hazard reduction projects. Projects focusing on reducing wildfire risk around these communities can provide protections for some of the most vulnerable residents.

Built Environment

The built infrastructure of the Estrella region includes the Paso Robles Municipal Airport, and infrastructure of Paso Robles north of SR-46, which is comprised of hotels, residential areas, and shopping centers.

The town of **San Miguel** features the historical Mission San Miguel Arcángel, a wastewater treatment plant, residential areas, and the local elementary school.

The town of **Shandon** features infrastructure such as the local elementary and high schools, the Shandon Public Library, shopping centers, and residential areas.

Major transportation routes in the region include SR-41, SR-46, and SR-58, which connect the towns in the region and provide evacuation routes should a fire break out in these areas. Historical ranching and grazing operations in this region have resulted in large expanses of grassland mainly devoid of shrub and woodland fuels. The use of prescribed fire by Native Americans as well as by the ranching community for rangeland management has been a part of the landscape for many years. Residents may choose to remain on site to shelter in place as opposed to choosing to evacuate during a wildfire event, whether due to their comfortability with the risk of grassland fires, reluctance to evacuate without livestock, or limited access to safe evacuation routes.

105 *U.S. Census Bureau. Accessed Jan 20, 2024. Census Data for San Luis Obispo County. U.S. Census Bureau.* ***https://data.census.gov/all?q=san%20luis%20obispo%20county***

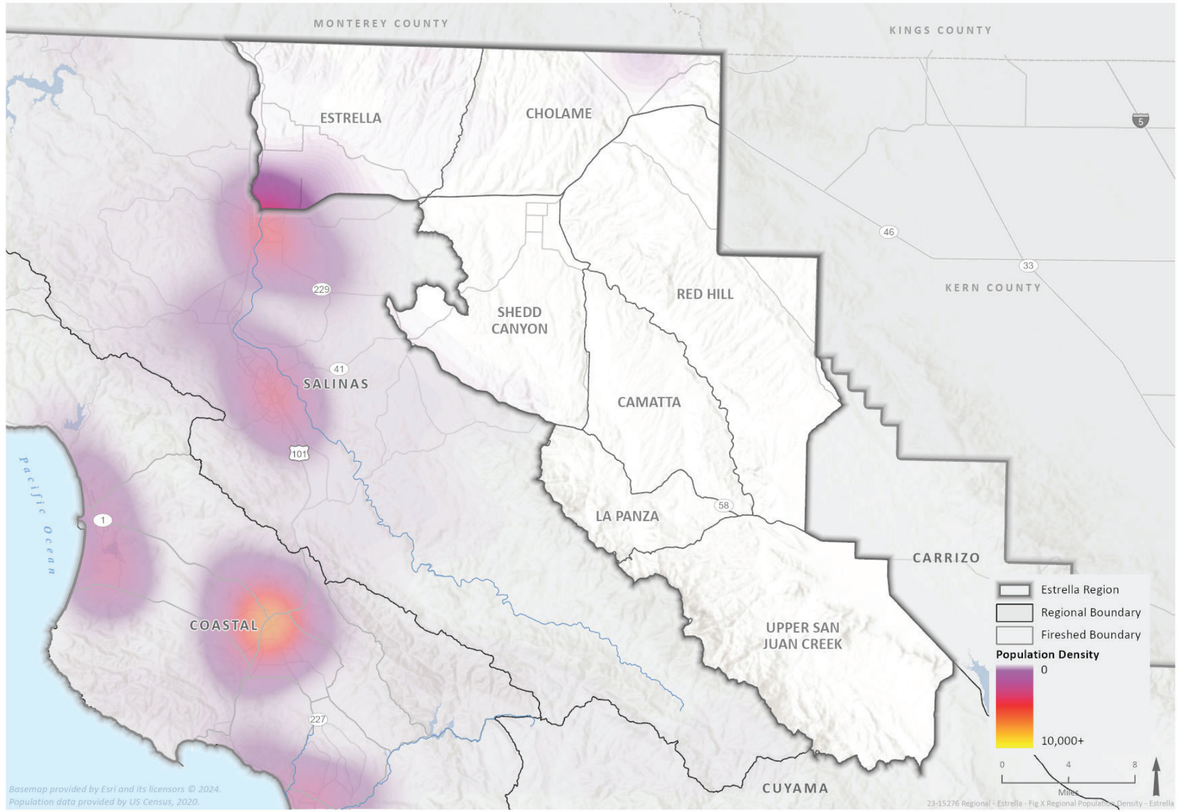


Figure 59. Estrella Region Population Density

Biological and Botanical Resources

While there are no major geographical impediments to the spread of wildlife between the Salinas Region and the Estrella Region, drier conditions, and differences in habitat type result in some unique animal residents. Notable wildlife found in the Estrella region include tule elk *(Cervus canadensis nannodes)*, western spadefoot *(Spea hammondii)*, and California tiger salamander *(Ambystoma californiense)*.[106]

Common vegetation in the Estrella Region includes non-native annual grasslands, blue oak foothill pine, and chamise redshank chaparral. Notable species include valley oak *(Quercus lobata)*, blue oak *(Quercus douglasii)*, grey pine *(Pinus sabiniana)*, and California vinegar weed *(Trichostema lanceolatum).* Invasive species such as yellow star-thistle *(Centaurea solstitialis)* and tamarisk *(Tamarix ramosissima)* also contribute to fuel loads in this region.

The area around Shell Creek Road is a regional highlight for seasonal wildflower blooms and draws frequent visitors.

California Tiger Salamander

Yellow Star-Thistle

California Vinegar Weed

Tule Elk

22 San Luis Obispo County. May 2010. Conservation and Open Space Element. San Luis Obispo County. **https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Plans-and-Elements/Elements/Conservation-and-Open-Space-Element-(1)/Conservation-and-Open-Space-Element.pdf**

Landcover

Vegetation and land cover in the Salinas region are shown in Table 16 and Figure 60.[106] LANDFIRE 2022 is the source of the vegetation landcover data which may not be an accurate representation of species composition. Fine scale vegetation mapping for SLO County would benefit the project planning effort and the acquisition of which is a focus of natural resource agencies and organizations in SLO County. Soil disturbance, herbicide use, early season fires, and over grazing as part of fuels reduction projects may result in unanticipated negative effects on non-target species in this region. Project planners must conduct appropriate biological site evaluations to understand the possible consequences of all projects.

The agriculture patterns of this region have changed in the last 50 years. Natural landscapes were farmed as grazing lands, dry land grain (wheat and barley), and tree crops (nuts and fruit). The vineyard-wine industry has also been a component of the region for more than 100 years. However, beginning near the close of the 20th century, acreage in wine grape production exploded. Thousands of agricultural acres in the Salinas Region are now irrigated vineyard. This includes acreage that was previously grassland and oak woodland. Historical tree crops have almost disappeared, being replaced in some instances with olive groves. The Estrella Region is also home to horse breeding facilities and large scale cattle operations.

Landcover/Vegetation Types	Acres
Agricultural	59,165
Barren and Sparse Vegetation	18,028
California Mixed Evergreen Forest and Woodland	71
Chaparral	101,139
Conifer-Oak Forest and Woodland	14,555
Developed	34,384
Grassland	9,552
Marsh	3,467
Non-Native Vegetation	276,635
Open Water	718
Western Oak Woodland and Savanna	1,774
Western Riparian Woodland and Shrubland	672

Source: LANDFIRE 2022

Table 16. Estrella Region Landcover

106 San Luis Obispo County Public Works. Jan. 2014. SLO Watershed Management Project. San Luis Obispo County. ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/SLO-Watershed-Project/Resources/SLO-Watershed-Management-Project.pdf***

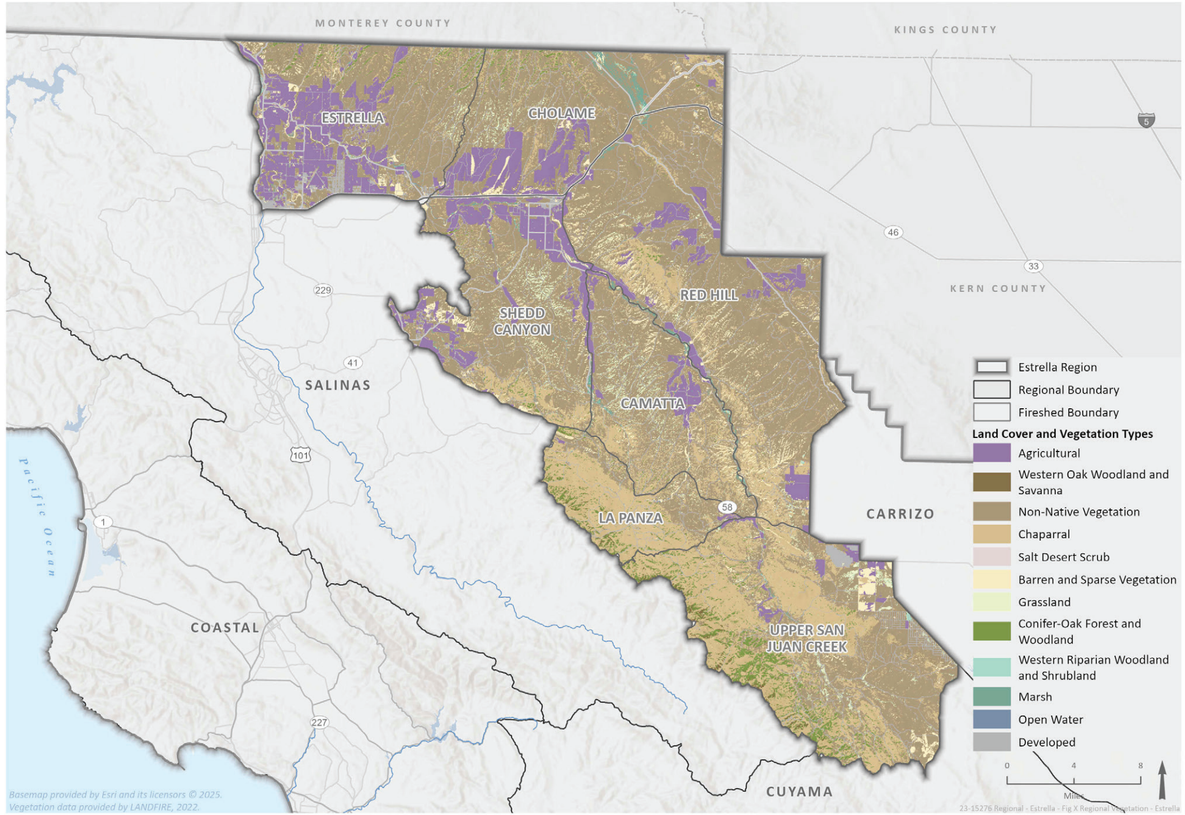


Figure 60. Estrella Region Vegetation

Wildfire History

The southwest area of the Estrella Region in the La Panza Range shows a long history of repeated burn areas. Most of the large fires recorded in this area burned across the La Panza Range in both the Salinas and Estrella Regions as shown in Table 17 and Figure 61. Elsewhere in the region, wildfire history shows many small burns near the Shandon area and around SR-41, north of the Cholame Y.[107]

Ignition Date	Fire Name	Acres
8/1/2025	Gifford	131,614
7/2/2025	Madre	80,779
8/15/1996	Highway 58	106,969
7/27/1973	County Line	4,035
8/15/1951	Bethel	18,253
7/4/1950	Pilitas #3	5,696
7/4/1950	Pilitas #2	2,830
7/3/1950	Pilitas #1	22,844
1939	Unnamed	28,313

Source: CAL FIRE FRAP, 2025

Table 17. Estrella Region Large Wildfire History

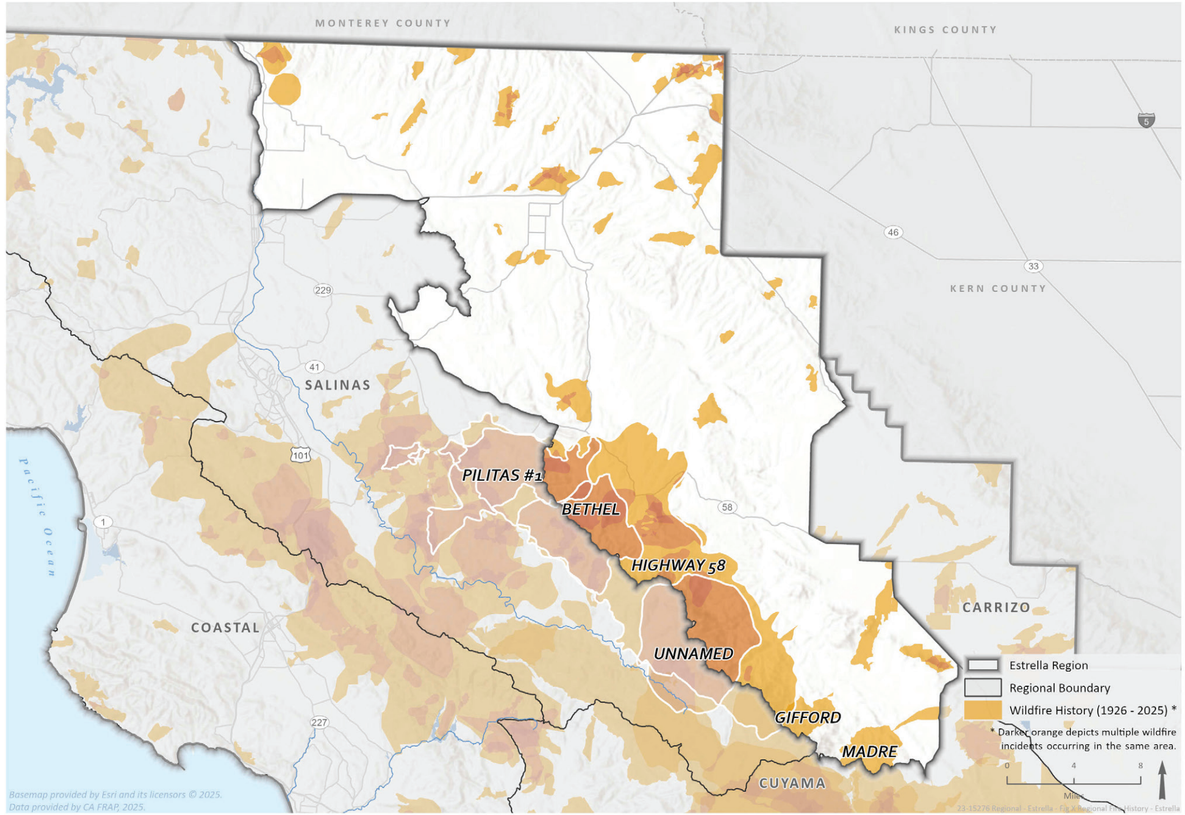


Figure 61. Estrella Region Wildfire History

107 California Department of Forestry and Fire Protection. Fire Resource Assessment Program. What We Do. CAL FIRE. ***https://www.fire.ca.gov/what-we-do/fire-resource-assessment-program***

Jurisdictional Responsibility Areas

Jurisdictional Responsibility Area acreages are shown in Table 18 and depicted in Figure 62.

Responsibility Area	Acres
Federal Responsibility Area	45,098
Local Responsibility Area	22,744
State Responsibility Area	452,366

Source: CAL FIRE FRAP, 2023

Table 18. Estrella Region Responsibility Area Acreage

Figure 62. Estrella Region Jurisdictional Responsibility Areas

Direct Protection Areas

Direct Protection Area acreages are listed in Table 19 and are depicted in Figure 63.

Responsibility Area	Acres
Bureau of Land Management	10,546
CAL FIRE	457,510
Local Fire Departments	22,811
U.S. Forest Service	37,310

Source: CAL FIRE FRAP, 2023

Table 19. Estrella Region Direct Protection Area Acreage

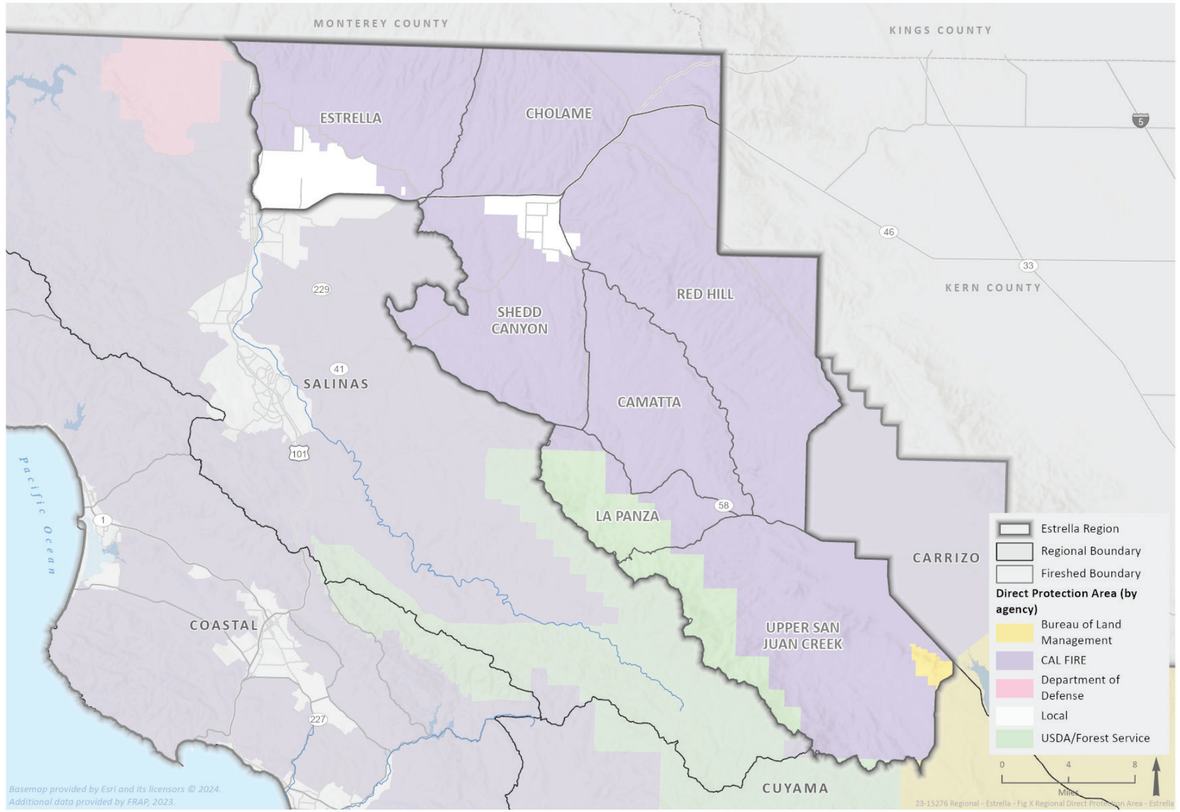


Figure 63. Estrella Region Direct Protection Areas

Fire Hazard Severity Zones

The FHSZ acreage delineation in the Estrella Region is shown in Table 19 and depicted in Figure 64.

Responsibility Area	Acres
FRA	45,096
SRA Very High	79,163
SRA High	357,878
SRA Moderate	15,346
LRA High	11,002
LRA Moderate	2,918

Source: CAL FIRE FRAP 2025

Table 20. Estrella Region FHSZ Acreage in FRA, SRA, and LRA

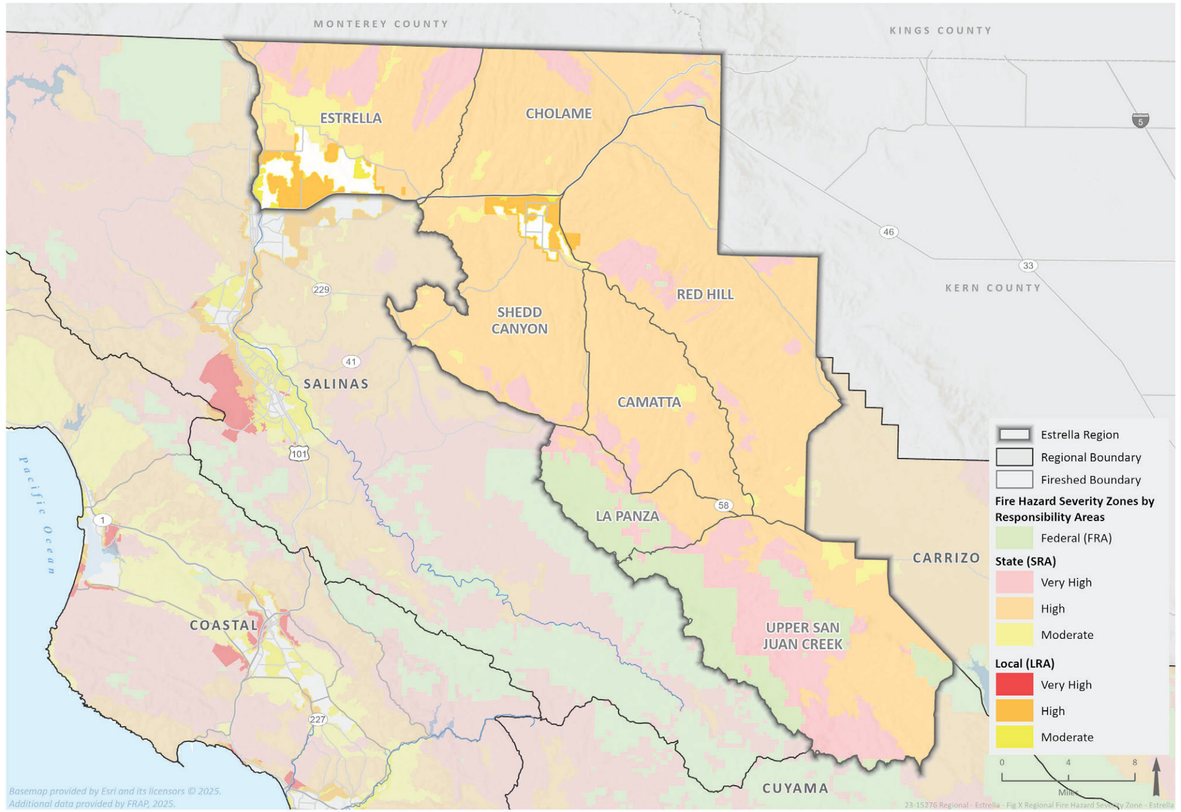


Figure 64. Estrella Region Fire Hazard Severity Zones

Estrella Region

Microclimate

The Estrella Region is much drier than the Coastal and Salinas Regions with average annual rainfall between 8 and 14 inches.[107] Average summer high temperatures in the town of Shandon can reach above 100˚F with lows well below freezing common in the winter months. Due to limited precipitation, natural vegetation growth can be sparse in this region. High summer temperatures contribute to dry vegetation, primed for wildfire. San Miguel is near the southern end of the defined Salinas Valley and routinely experiences the highest summertime temperatures in SLO County along with the strong prevailing wind effect from the Salinas Valley extension to Monterey. The Estrella Region is only mildly affected by seasonal Santa Lucia Wind Patterns which contribute to drying vegetation and propelling flames during wildfire events. Here, Santa Lucia wind conditions typically result in cooler temperatures than the coastal side and mild winds. Diurnal winds are less prolific in this region than the Coastal and Salinas Regions. The “Wind with No Name” phenomenon is less prevalent in the Estrella Region than the Salinas Region although, depending on the strength of the event, erratic winds can cause serious difficulties in firefighting efforts in this region. One firefighter burn-over death was attributed to the “Wind with No Name” near Ground Squirrel Hollow in 1959.

107 San Luis Obispo County. Accessed Jan 20, 2024. SLO County Average Annual Rainfall. San Luis Obispo County. ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Water-Resources/SLO-County-Average-Annual-Rainfall.pdf***

Carrizo Region

Regional Features

The Carrizo Region encompasses one individual fireshed across a land area of about 212,525 acres in the easternmost portion of SLO County:

- Carrizo Plain/Temblor

This fireshed, shown in Figure 65, covers most of the Carrizo Plains National Monument, extending from Elkhorn Plain in the south through the Carrizo Plain in the north.

- Carrizo Plains National Monument
- Elkhorn Plain in the south
- Temblor Range in the east
- Caliente Range in the southwest

Topaz Solar Farm 580 MW and the California Valley Solar Ranch 292 MW are both in the top 10 largest solar farms in the USA.

SR-58 transects the northern portion of the region from west to east, but the region remains relatively undeveloped.

The Bureau of Land Management manages the Carrizo National Monument which comprises roughly half of the regional acreage, featuring vegetation cover such as:

- Annual grasslands
- Alkali desert scrub
- Valley saltbush scrub
- Juniper woodland
- Semi desert chaparral

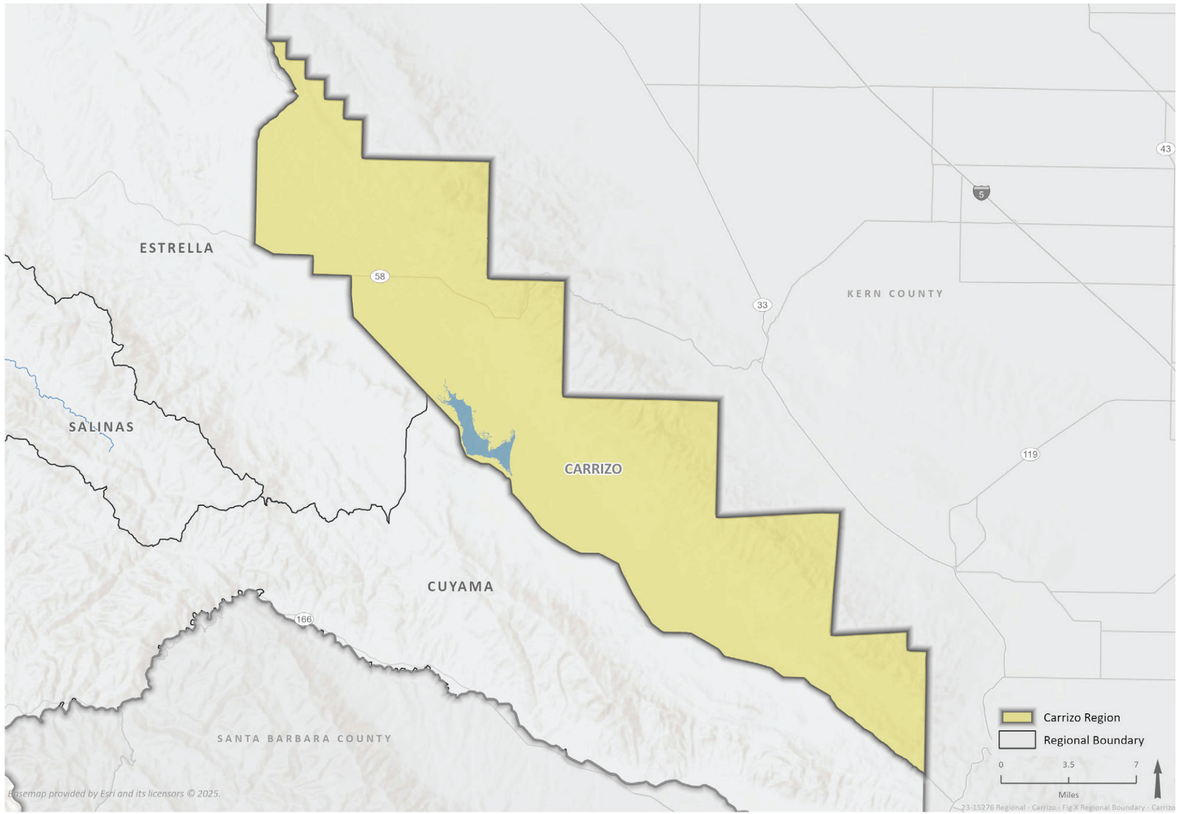


Figure 65. Carrizo Region Firesheds

Major Geographic Features

Major geographic features of the Carrizo Region include the flat grassland area of the Carrizo Plains National Monument, which is notable for its annual spring wildflower blooms, attracting thousands of visitors annually. In the north-central portion of the region, Soda Lake helps create the white alkali flats which are part of the largest remaining natural alkali wetland in California and is the only closed basin within the coastal mountains.[108] The 2,000-foot elevation plain is surrounded by mountains on both sides, which helps create the unique grasslands and wildflower plains of the valley. The San Andreas Fault runs through the Carrizo Plains National Monument resulting in a high likelihood of earthquakes in this and the surrounding regions. The Temblor Mountain Range forms the border between SLO County and Kern County to the east. The Caliente Mountain Range forms the southern border.

The community of California Valley represents a major geographic land modification in this fire shed. Best characterized as a 1060's large scale land speculation development covering several hundreds of acres that went bust. The community has a large gridwork of graded dirt roads serving more than a thousand 2.5 acre parcels with little to no development.

The Carrizo Region includes the Soda Lake Watershed and the Black Sulphur Spring Watershed.[109] Bitterwater Creek is one of a host of small ephemeral waterways in this region, shown in Figure 66. Wildfire and fuel reduction projects can have a significant influence on the function of hydrologic systems. The effect on water quality should be considered for all area projects.

Major geographic features of the Carrizo Region include:

- Carrizo Plains National Monument
- Soda Lake
- San Andreas Fault
- Temblor Mountain Range
- Caliente Mountain Range
- Community of California Valley

The Carrizo Region includes the following watersheds:

- Soda Lake Watershed
- Black Sulphur Spring Watershed
- Bitterwater Creek

Major water features of the Carrizo Region include:

- Bitterwater Creek

108 *U.S. Bureau of Land Management. Accessed Jan 20, 2024. Carrizo Plain National Monument. Bureau of Land Management.* ***https://www.blm.gov/programs/national-conservation-lands/california/carrizo-plain-national-monument#:~:text=Prominent%20features%20on%20the%20monument%20include%20the%20white,floor%3B%20although%20short%20lived%20it%20can%20be%20breathtaking***

109 *San Luis Obispo County Public Works. Jan. 2014. SLO Watershed Management Project. San Luis Obispo County.* ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/SLO-Watershed-Project/Resources/SLO-Watershed-Management-Project.pdf***

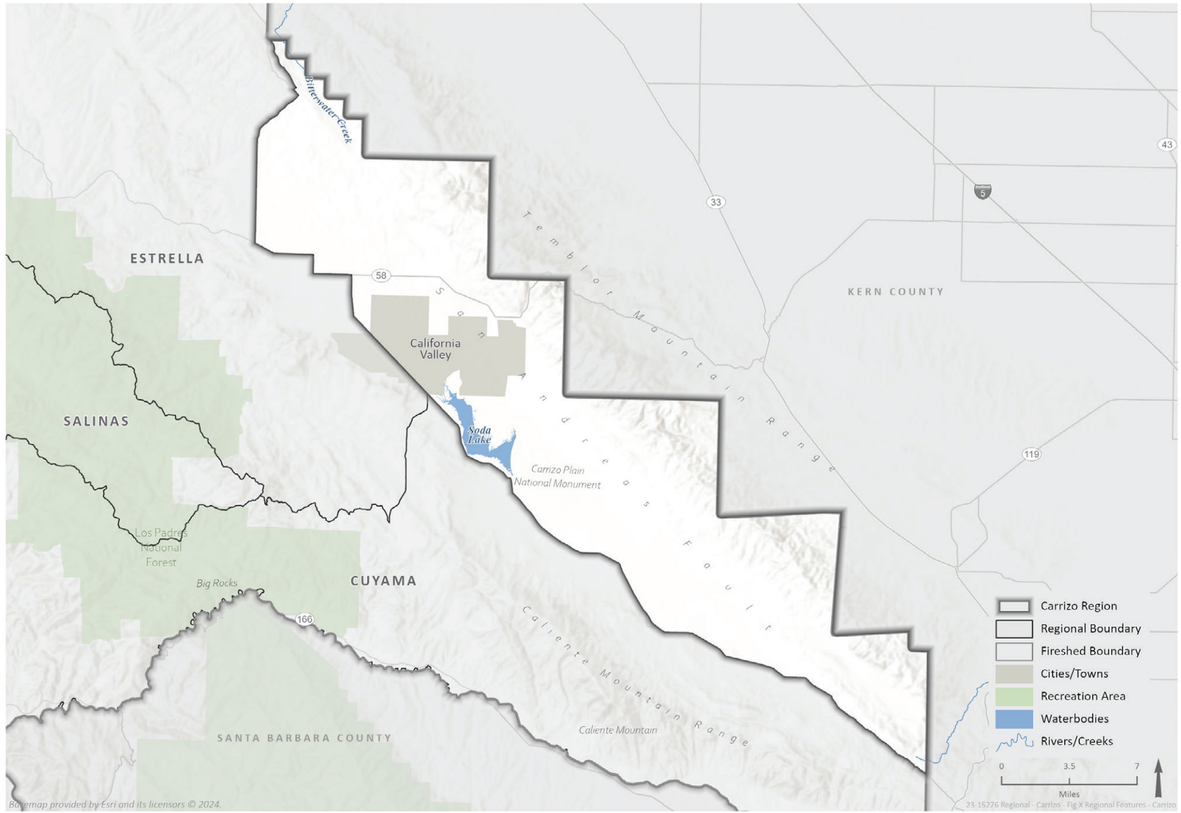


Figure 66. Carrizo Region Features

CAL FIRE Carrizo Plains Station, Google Street View

Carrizo Plain Signage, Alex Jeung, Google Street View

Carrizo Plain National Monument, Charlestown Cuqha, Google Street View

Assets at Risk

People

The population of the Carrizo Region is predominately located in and around the town of California Valley. 1,074 people live in Census Tract 127.08 which mostly aligns with the borders of the Carrizo Region. Rural homesteads are scattered sporadically throughout the region as depicted in Figure 67.[110] The median age within the region is over 62 years old and residents in the Carrizo Region experience higher than average rates of poverty for SLO County. These factors may contribute to difficulties maintaining appropriate defensible space and home hardening standards. There is only one County fire station in the region and emergency response may have limited access to homes during a wildfire. The Carrizo Region is the traditional home of the Salinan tribe. Painted Cave at Carrizo National Monument features Painted Rock with many pictographs created by the Chumash, Salinan and Yokuts peoples.

Wildfires in the area are occurring most commonly through anthropogenic causes. Equipment use, vehicles, and electric utility lines are common re-occurring causes for reported fires in the region. These fires are associated with the areas around California Valley and Soda Lake. Lightning fires do occur during the summer when tropical storms in the eastern Pacific Ocean off of Mexico migrate north bringing dry lightning.

There are no areas considered disadvantaged communities in the Carrizo Region.

Built Environment

The built infrastructure in the Carrizo region is fairly minimal, as most of the region is rural and dominated by grasslands.

The town of **California Valley** features dispersed homes in the Wildland Urban Intermix. These homes are located on dispersed streets from Soda Lake Road. There is one motel in the town and a SLO County/CAL FIRE station. There are major solar generation facilities (the Topaz Solar Farm, California Valley Solar Ranch) that present unique challenges for wildfire protection and risk mitigation.

The Visitor's Center for the Bureau of Land Management (BLM) Carrizo Plains National Monument and other historical ranches dating back to the 1800's are scattered across the fireshed.

110 *U.S. Census Bureau. Accessed Jan 20, 2024. Census Data for San Luis Obispo County. U.S. Census Bureau.* ***https://data.census.gov/all?q=san%20luis%20obispo%20county***

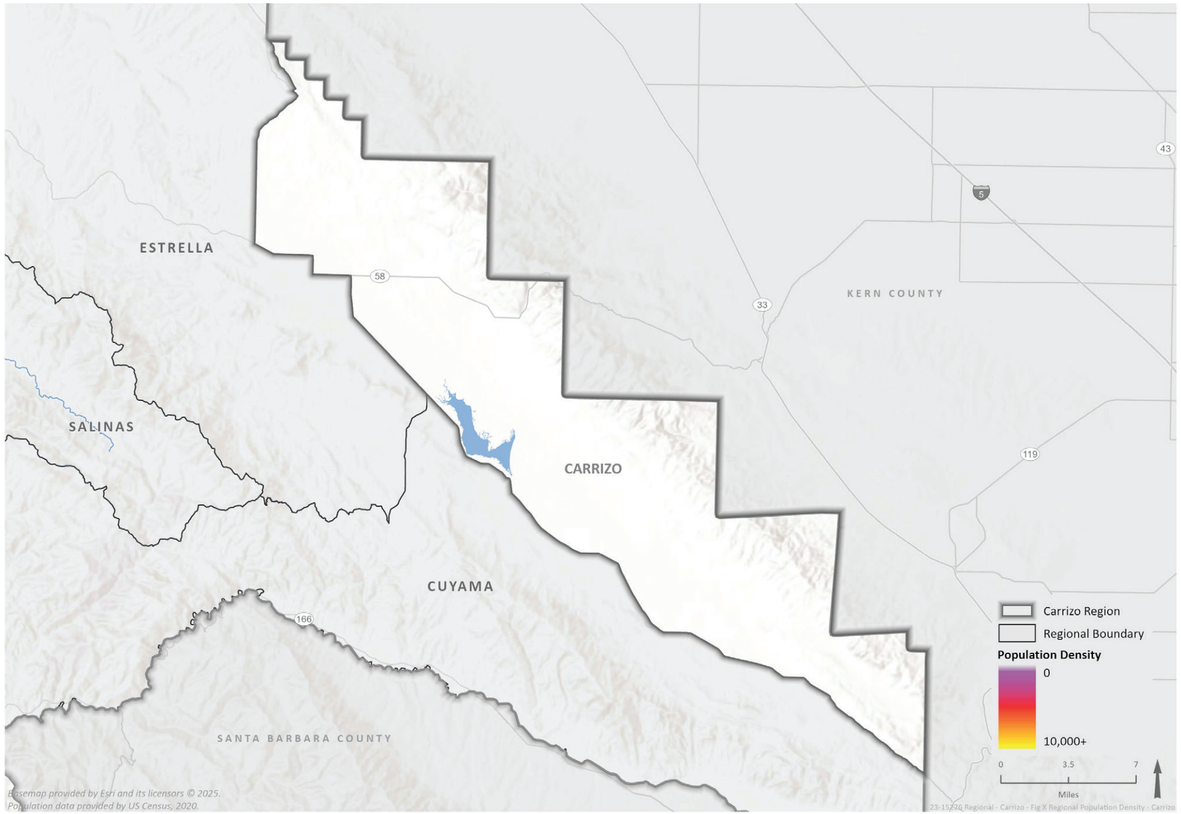


Figure 67. Carrizo Region Population Density

Carrizo Region

Biological and Botanical Resources

The Carrizo Region includes the unique habitat found in and around the Carrizo Plains National Monument and California Department of Fish and Wildlife (CDFW) Preserve Notable species found in the Carrizo Region include the blunt-nosed leopard lizard *(Gambelia silus)*, giant kangaroo rat *(Dipodomys ingens)*, San Joaquin antelope squirrel *(Ammospermophilus nelsoni)*, and pronghorn *(Antilocapra americana)* which is the fastest land animal in the western hemisphere.[111]

Though only appearing sporadically and for a very short time, the Carrizo region is very well known for its wildflower super blooms. Common species include California poppy *(Eschscholzia californica)*, goldfields *(Lasthenia californica)*, and desert five-spot *(Eremalche rotundifolia)*. The primary vegetation cover in the area includes annual grasslands, alkali desert scrub, valley saltbush scrub, juniper woodland (common in the Temblor Mountains), and semi desert chaparral.

Pronghorn

111 San Luis Obispo County. May 2010. Conservation and Open Space Element. San Luis Obispo County. **https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Plans-and-Elements/Elements/Conservation-and-Open-Space-Element-(1)/Conservation-and-Open-Space-Element.pdf**

Carrizo Plains Super Bloom

Landcover

Carrizo Region vegetation and land cover are shown in Table 21 and Figure 68.

Invasive species contribute to the fuel loads in this region and have been introduced primarily through historical agricultural practices.[112] Much of the grasslands were grazed by sheep or dryland farmed for grain (wheat and barley).

Soil disturbance, herbicide use, early season fires, and over grazing as part of fuels reduction projects may result in unanticipated negative effects on non-target species in this region. Project planners must conduct appropriate biological site evaluations to understand the possible consequences of all projects.

LANDFIRE 2022 is the source of the vegetation landcover data which may not be an accurate representation of species composition. Fine scale vegetation mapping for SLO County would benefit the project planning effort and the acquisition of which is a focus of natural resource agencies and organizations in SLO County.

Landcover/Vegetation Types	Acres
Agricultural	1,533
Barren and Sparse Vegetation	40.798
California Mixed Evergreen Forest and Woodland	66
Chaparral	8,340
Conifer-Oak Forest and Woodland	721
Developed	16,051
Grassland	1,376
Non-Native Vegetation	139,987
Open Water	1,547
Salt Desert Scrub	1,323
Western Riparian Woodland and Shrubland	628
Western Riparian Woodland and Shrubland	672

Source: LANDFIRE 2022

Table 21. Carrizo Region Landcover

112 *San Luis Obispo County Public Works. Jan. 2014. SLO Watershed Management Project. San Luis Obispo County.* ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/SLO-Watershed-Project/Resources/SLO-Watershed-Management-Project.pdf***

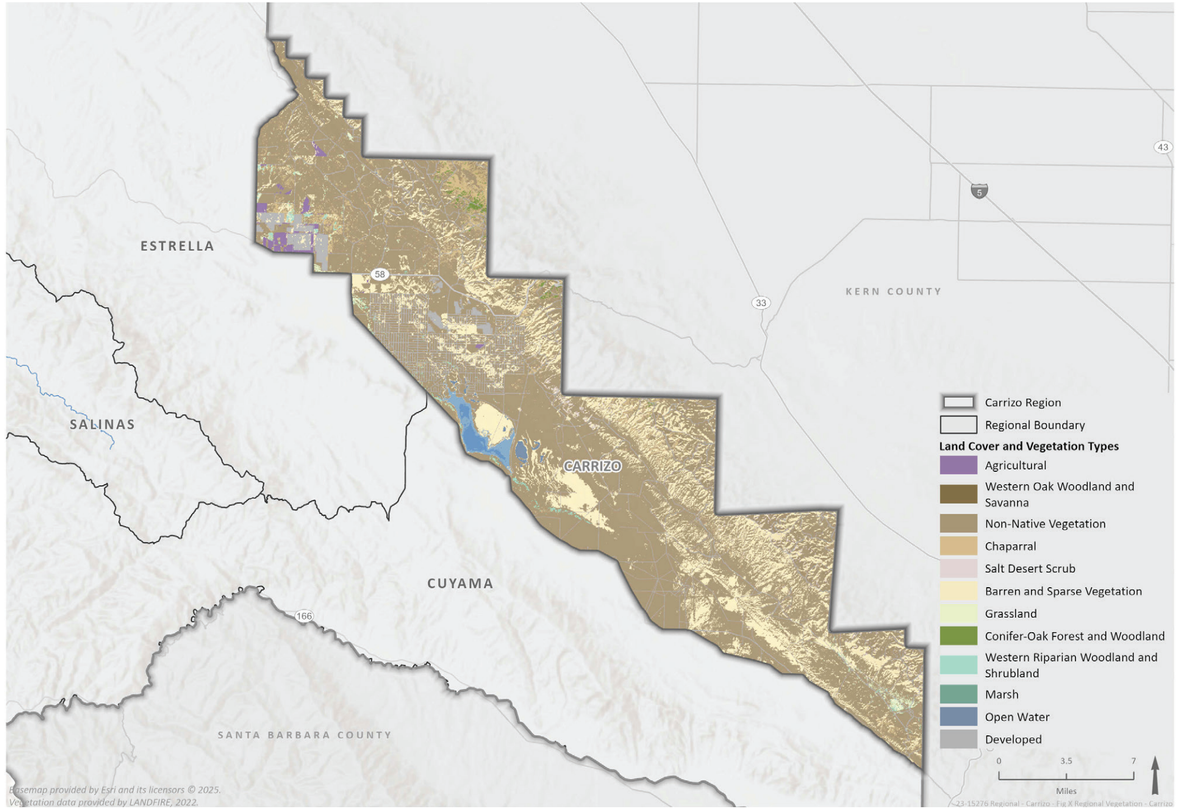


Figure 68. Carrizo Region Vegetation

Wildfire History

Fire history in the Carrizo Region is dependent on the amount of annual rainfall. In dry years, the arid conditions limit fuel availability. However, during wet years, when annual grasses are dense several fires can and do occur. Most fires are human caused, however dry lightning in July and August frequently causes fires. Carrizo is known for a habitat similar to what the San Joaquin Valley resembled before California was a State. There are many large fires that are typically easy to contain due to most of the fuels consisting of grasses and light brush.

This region has been transformed in recent years as a prime location for solar energy infrastructure. Recent fire history shows an increase in events, the increased traffic and electric infrastructure in the area presents more opportunity for ignitions with more assets at risk. Project planners should be aware of development trends when targeting areas for proactive treatments.

Grain fires were common during the summer and have subsided with the reduction in the acreage under grain farming. The original Simmler Fire Station, now known as Carrizo Plain Station 42 (on SR-58 near Soda Lake Road) was established to combat summer grain fires. Historically fires in this region occur near the built areas of California Valley and near SR-58 as listed in Table 22 and shown in Figure 69. Grassland fires do occur and if not brought under control quickly they become large fires.[113]

In 1978 a CAL FIRE air attack supervisor aircraft out of Paso Robles Air Attack Base (Airco 53) crashed while working a fire in the northern end of California Valley development killing all three aboard.

Ignition Date	Fire Name	Acres
7/28/2020	Branch	2,922
6/19/2011	Antelope	5,068
7/11/2006	Beck	1,668
5/23/1996	7 Mile	2,822
6/25/1995	Elk	1,835
7/28/1979	Simmler FFS	2,150

Source: CAL FIRE FRAP, 2025

Table 22. Carrizo Region Large Wildfire History

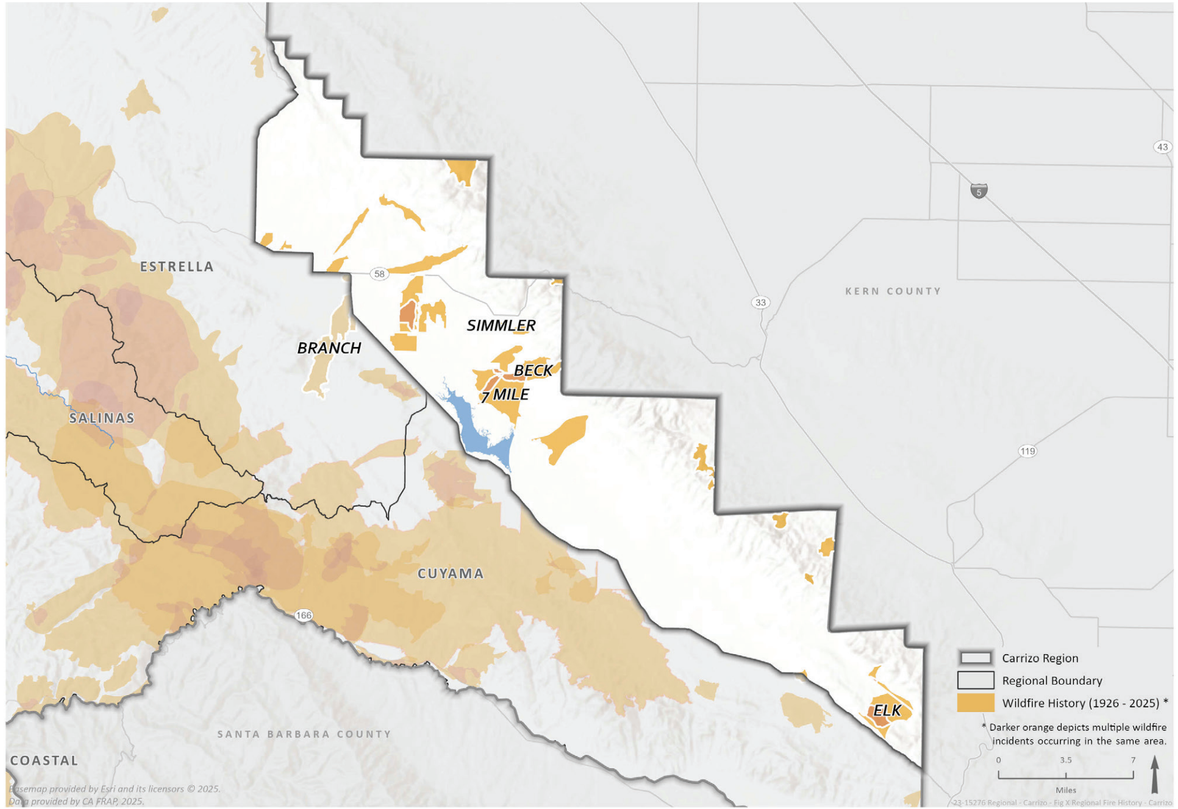


Figure 69. Carrizo Region Wildfire History

113 *California Department of Forestry and Fire Protection. Fire Resource Assessment Program. What We Do. CAL FIRE.* ***https://www.fire.ca.gov/what-we-do/fire-resource-assessment-program***

Jurisdictional Responsibility Areas

Jurisdictional Responsibility Area acreages are shown in Table 23 and depicted in Figure 70.

Responsibility Area	Acres
Federal Responsibility Area	101,514
State Responsibility Area	110,952

Source: CAL FIRE FRAP, 2023

Table 23. Carrizo Region Responsibility Area Acreage

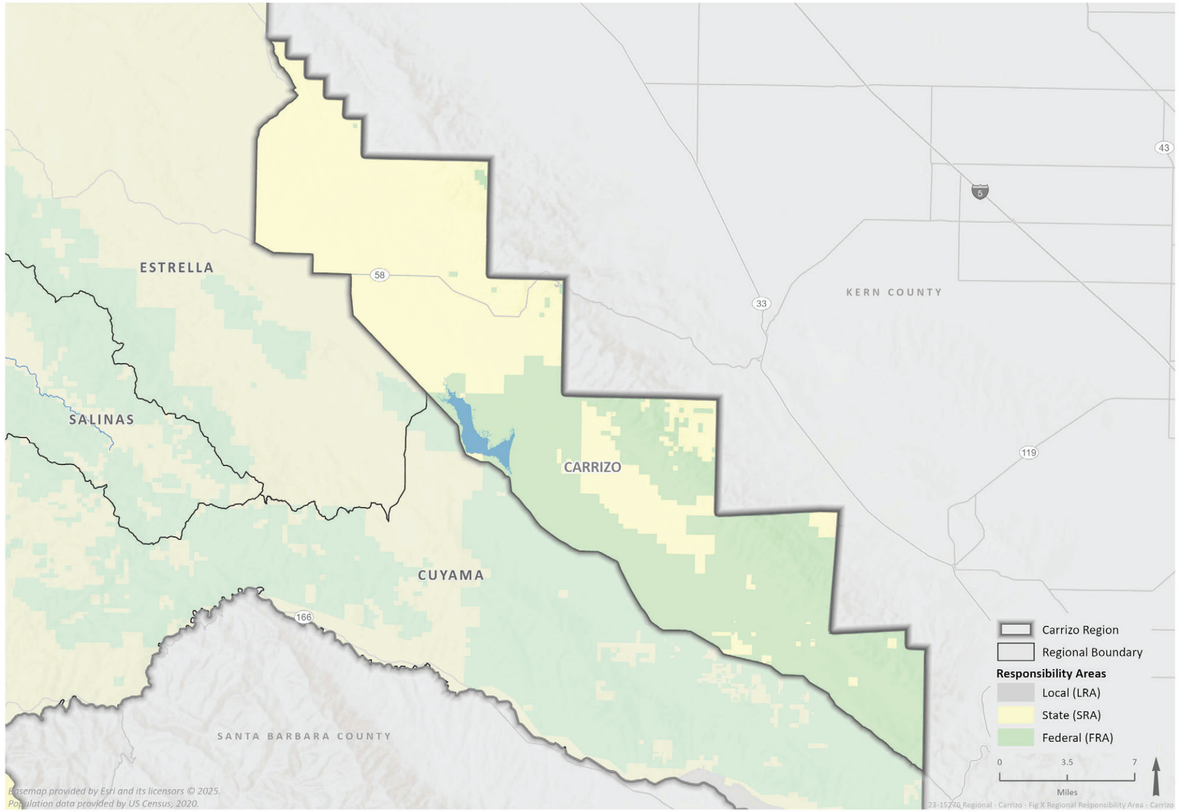


Figure 70. Carrizo Region Jurisdictional Responsibility Areas

Direct Protection Areas

The Direct Protection Area acreages in the Carrizo Region are listed in Table 24 and shown in Figure 71.

Responsibility Area	Acres
U.S. Bureau of Land Management	101,005
CAL FIRE	80,232

Source: CAL FIRE FRAP, 2023

Table 24. Carrizo Region Direct Protection Area Acreage

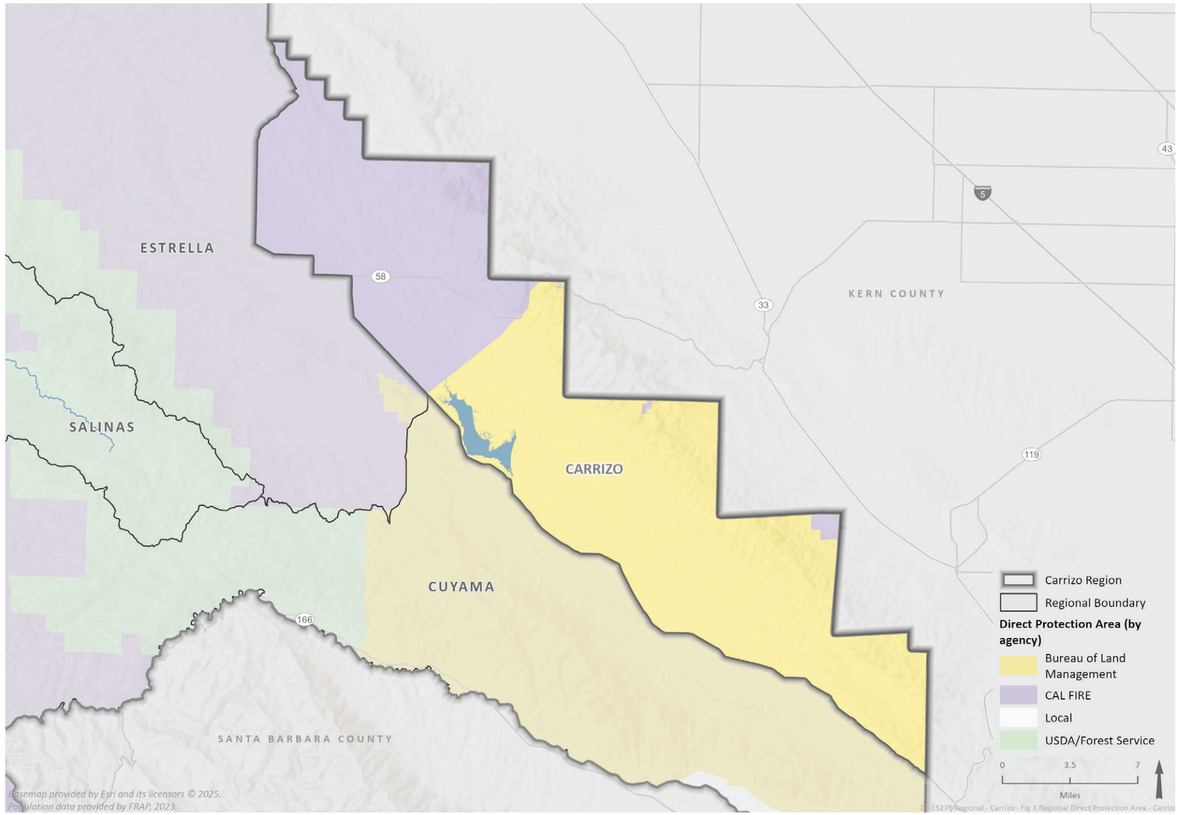


Figure 71. Carrizo Region Direct Protection Areas

Fire Hazard Severity Zones

The FHSZ acreage delineation in the Carrizo Region is shown in Table 24 and depicted in Figure 72.

Responsibility Area	Acres
FRA	101,503
SRA Very High	13,813
SRA High	96,386
SRA Moderate	749

Source: CAL FIRE FRAP 2025

Table 25. Carrizo Region FHSZ Acreage in FRA, SRA, and LRA

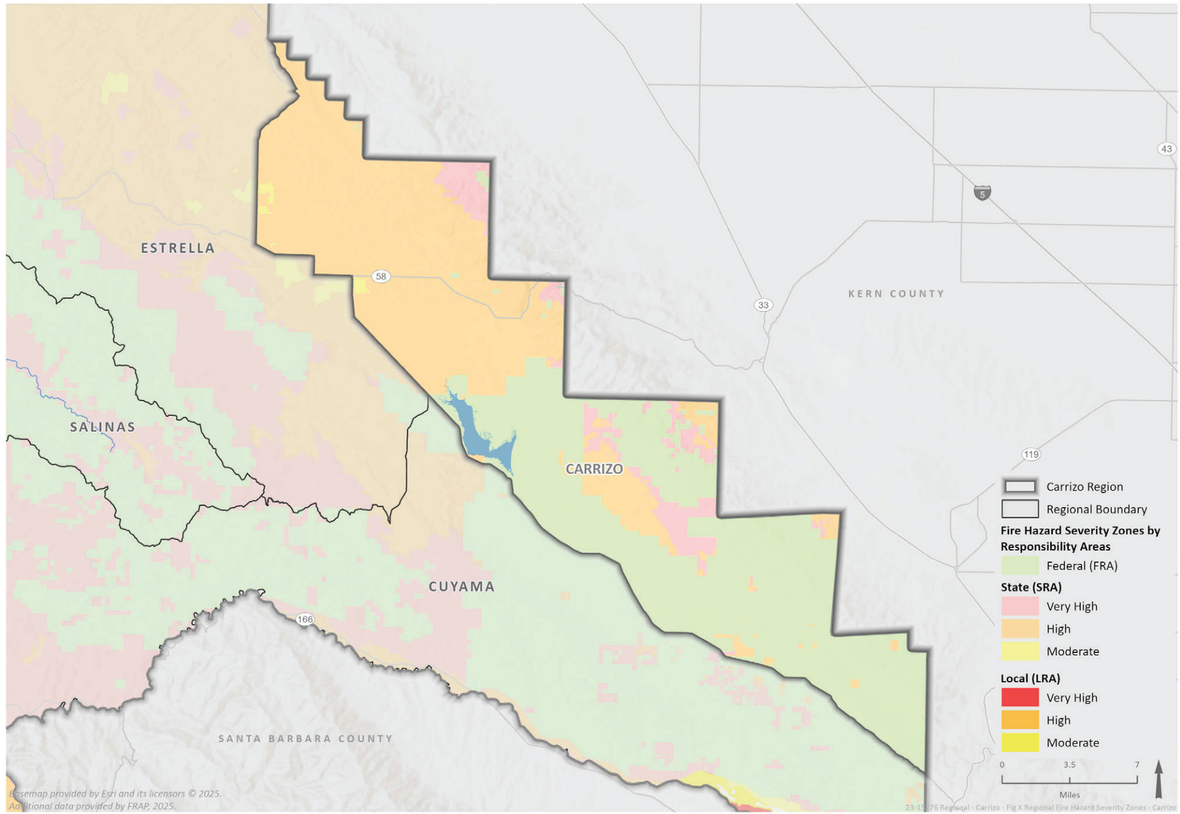


Figure 72. Carrizo Region Fire Hazard Severity Zones

Carrizo Region

Microclimate

This region is very dry with average annual rainfall between 6 and 10 inches.[114] Hot dry summers coupled with cold winters and occasional snow contribute to limited vegetation growth. Summertime temperatures routinely exceed 100 degrees. Fuel beds in this area are dry, but not heavily loaded except in abnormally wet winters. Wildfires in this area are typically burning fine flashy grasslands which can burn hot and fast. The Carrizo Plains experience regular "dust devil" winds that are cyclonic updrafts caused by daytime heating of the land. These dust devils can spread fires very rapidly and create dangerous conditions for firefighting. Unlike other regions in the county, the Carrizo Region is rarely affected by seasonal Santa Lucia Winds.

114 San Luis Obispo County. Accessed Jan 20, 2024. SLO County Average Annual Rainfall. San Luis Obispo County. ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Water-Resources/SLO-County-Average-Annual-Rainfall.pdf***

Regional Features

The Cuyama Region encompasses about 302,823 acres of land in the southeastern most portion of SLO County and contains three firesheds, as displayed in Figure 73:

- Machesna Mountain
- Rock Front
- Caliente Mountain firesheds as shown in Figure 73.

The Santa Barbara County communities of Cuyama and New Cuyama are just on the southside of the SLO-Santa Barbara County line at the southern end of this region. As such, remote wildland fires could ignite in this region, mainly from lightning strikes, hunters, and campers.

Due to the lack of municipalities in this region on the SLO County side of the border, there is limited significant infrastructure that could be damaged by wildfires.

SR-166 is the only major roadway in the region, running easterly through the Nipomo East Fireshed and along the southern borders of the Rock Front and Caliente Mountain Firesheds toward New Cuyama following the Cuyama river drainage. Several dirt roads lead into the public and private lands to the north of SR-166. Fires routinely ignite along SR-166 and one such fire (1979 Spanish Ranch) resulted in the death of four firefighters.

The majority of the land in this region is sparsely populated. Land falls under several management categories:

- Los Padres National Forest
- BLM
- CDFW, which owns manages several thousand acres as a wildlife preserve, including The Chimeneas Ranch, a large wildlife reserve with an active fire history.
- U.S. Forest Service, which has their own planning process through NEPA and have many wilderness area restrictions on fuel projects.

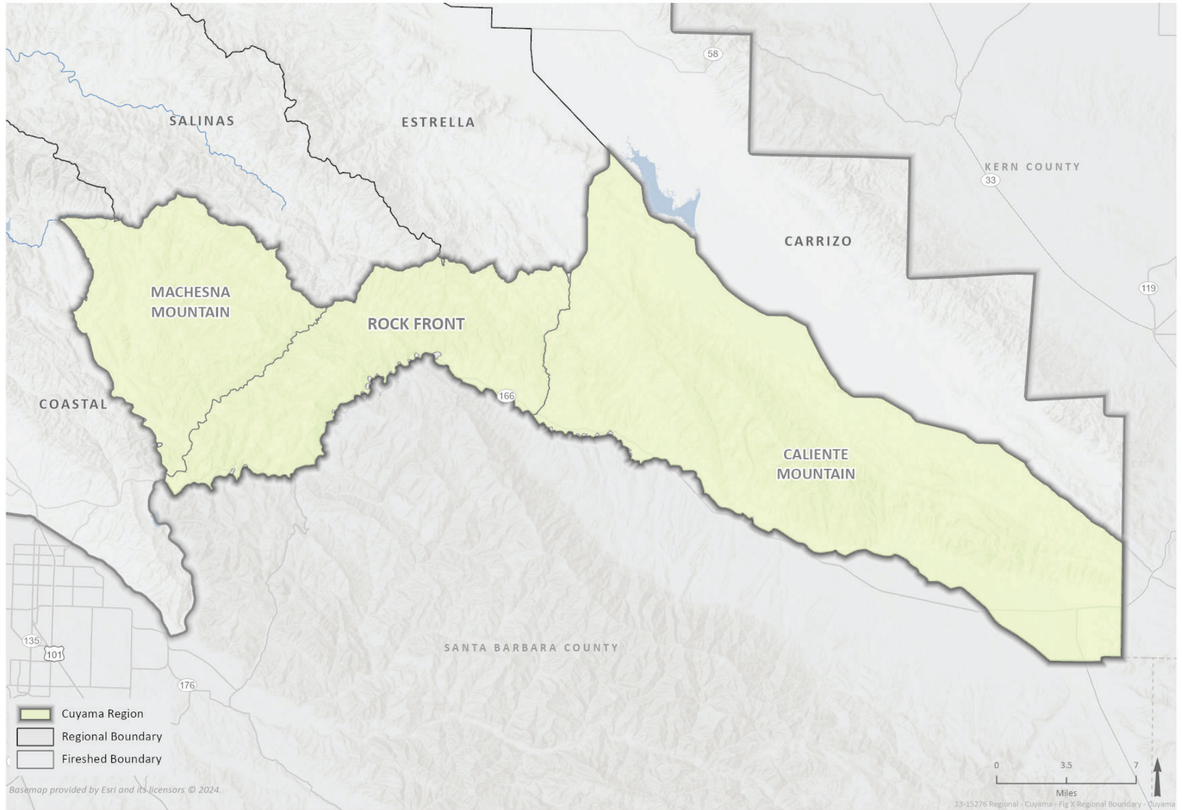


Figure 73. Cuyama Region Firesheds

Major Geographic Features

The Cuyama Region extends east from the Huasna Valley and Twitchell Reservoir and continues into the Caliente Mountain Range towards the Carrizo Plains. Caliente Mountain in the Caliente Mountain Fireshed is the highest point in SLO County at 5,109 feet.

The major influencing feature of this region is the Cuyama River drainage which cuts through the Santa Lucia Range. Winds through this drainage are known to vacillate in the diurnal battle of coastal winds and inland winds. This drainage has been the scene of several large wind-driven fires on both sides of the county line. The four Spanish Ranch Fire firefighter fatalities occurred in this drainage.

Much of the Cuyama Region is within the Los Padres National Forest. The Cuyama Region includes the Huasna River Watershed, the Alamo Creek Watershed, and the Cuyama River Watershed.[115] Other major water features within the region include portions of the Santa Maria River and Twitchell Reservoir in the west. This region exemplifies the wrinkled topography found often throughout SLO County, shown in Figure 74. Wildfire and fuel reduction projects can have a significant influence on the function of hydrologic systems. The effect on water quality should be considered for all area projects.

Major geographic features of the Cuyama Region include:

- Huasna Valley
- Caliente Mountain Range
- Carrizo Plains
- Los Padres National Forest
- Caliente Mountain

The Cuyama Region includes the following watersheds:

- Huasna River Watershed
- Alamo Creek Watershed
- Cuyama River Watershed

Major water features of the Cuyama Region include:

- Santa Maria River
- Twitchell Reservoir
- Cuyama River

115 San Luis Obispo County Public Works. Jan. 2014. SLO Watershed Management Project. San Luis Obispo County. ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/SLO-Watershed-Project/Resources/SLO-Watershed-Management-Project.pdf***

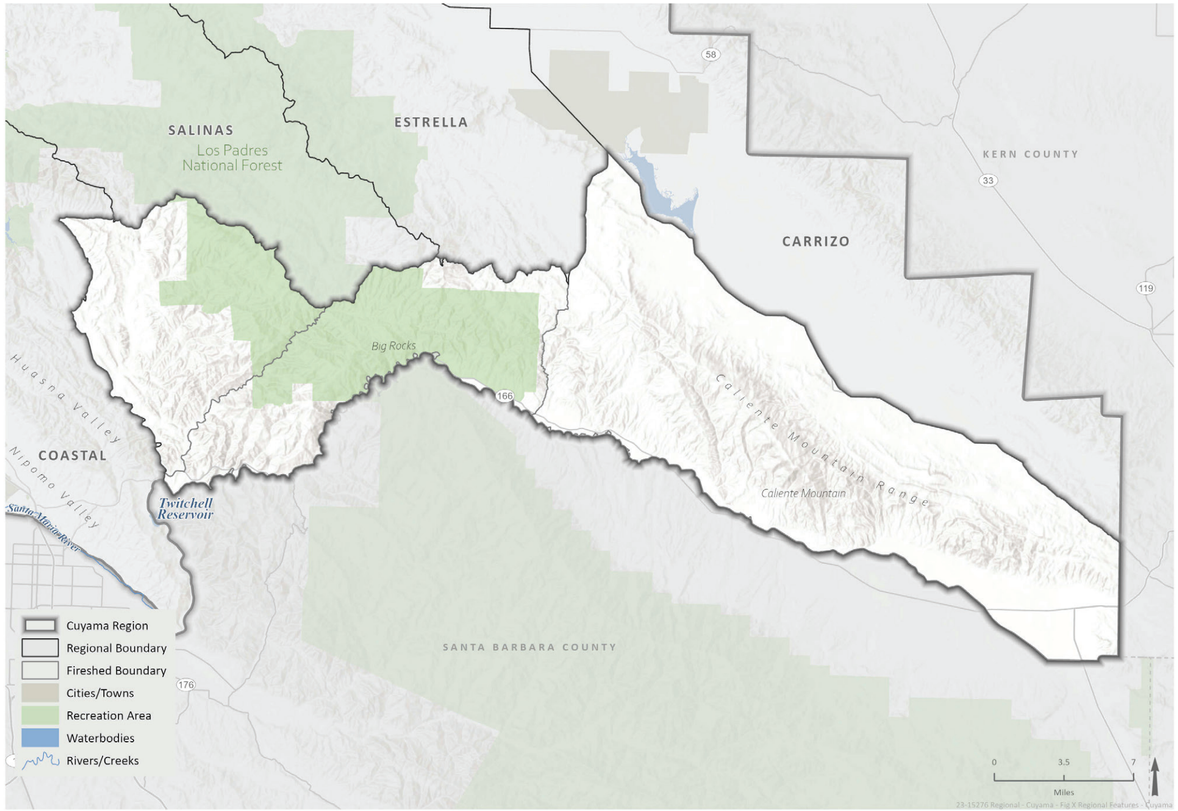


Figure 74. Cuyama Region Features

Rock Front Ranch, Google Street View


Twitchell Reservoir, Raiko Niitav, Google Street View

Highway 166 Signage, Google Street View

Assets at Risk

People

Although bordering Santa Barbara County with its small community population center of Cuyama and New Cuyama, there are very few populated areas within the Cuyama Region. Cuyama and New Cuyama are both small farming communities along SR-166 in Santa Barbara County. Scattered ranch and rural homesteads can be found throughout the region. Fires have burned repeatedly through the Rock Front Ranch area near a popular access point to the Los Padres National Forest. Emergency access is very limited, and evacuation of residents may be complicated. There are no areas considered disadvantaged communities in the Cuyama Region.
The Cuyama region is the traditional home of the Kuyam, Chumash, and Salinan tribes.

Built Environment

The built infrastructure within the Cuyama Region is very limited, as there are no major population hubs in the region. SR-166 runs through the region and features small, dispersed homesteads with a small residential community near the **Big Rocks** area.

Historically, the Cuyama area of SLO County had many oil wells, some of which are still active though many more are inactive. Much of the land in this region consists of Los Padres National Forest, BLM, and CDFW, which is unpopulated.

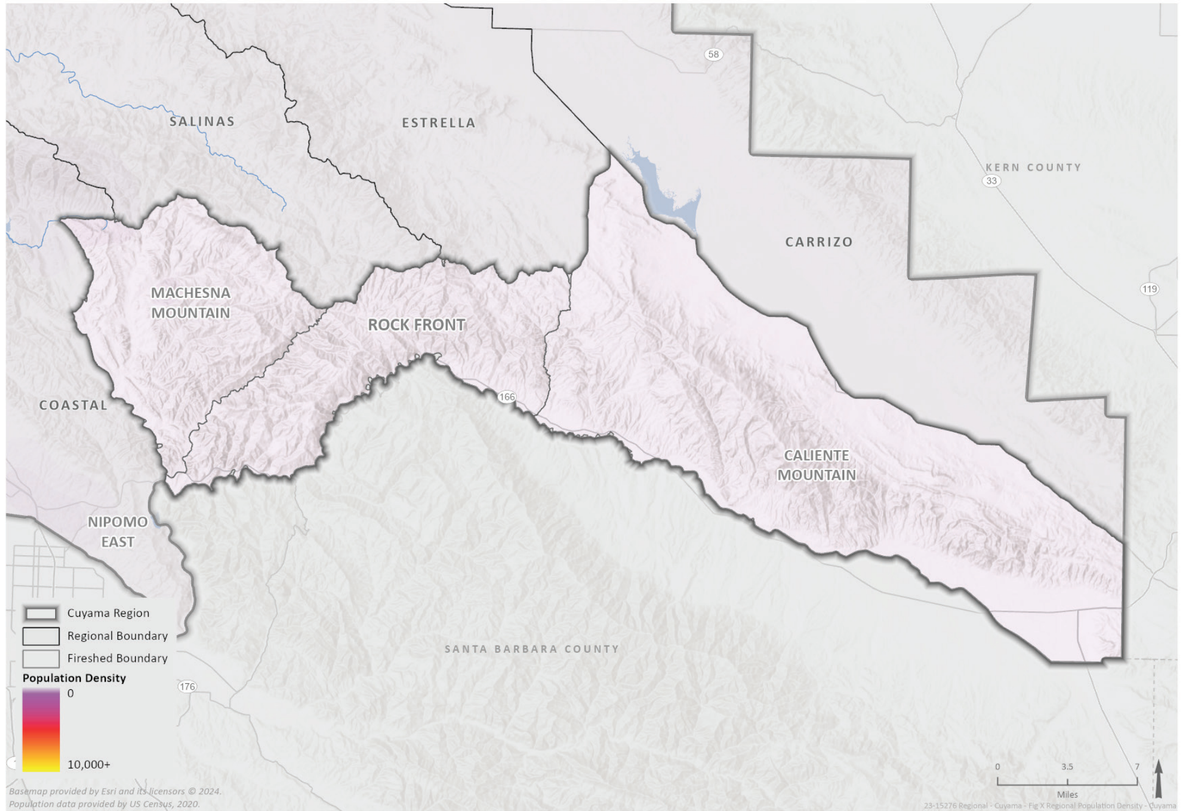


Figure 75. Cuyama Region Population Density

Cuyama Region

Biological and Botanical Resources

Notable animal species found in the Cuyama Region include the arroyo toad *(Anaxyrus californicus)*, foothill yellow-legged frog *(Rana boylii)*, California ridgeway's rail *(Rallus obsoletus)*, and the tricolored blackbird *(Agelaius tricolor)* amongst others.[116] The Cuyama Valley has been deemed a potential priority region based on ecological richness and opportunities to provide a wildlife corridor between the Carrizo Plains and Los Padres National Forest.[117]

Typical vegetation in the Cuyama region include coast live oak woodlands, blue oak woodlands, grasslands, and chapparal species. California sagebrush scrub communities can be found throughout the hills of the region and include California sagebrush *(Artemisia californica)*, California buckwheat *(Eriogonum fasciculatum)*, coyote brush *(Baccharis pilularis)*, and poison oak *(Toxicodendron diversilobum)*.

Tricolor Blackbird

Arroyo Toad

116 San Luis Obispo County. May 2010. Conservation and Open Space Element. San Luis Obispo County. **https://www.slocounty.ca.gov/Departments/Planning-Building/Forms-Documents/Plans-and-Elements/Elements/Conservation-and-Open-Space-Element-(1)/Conservation-and-Open-Space-Element.pdf**

117 San Luis Obispo County Public Works. Jan. 2014. SLO Watershed Management Project. San Luis Obispo County. **https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/SLO-Watershed-Project/Resources/SLO-Watershed-Management-Project.pdf**

California Buckwheat

Landcover

Cuyama Region vegetation and land cover are shown in Table 26 and Figure 76.[118]

Soil disturbance, herbicide use, early season fires, and over grazing as part of fuels reduction projects may result in unanticipated negative effects on non-target species in this region. Project planners must conduct appropriate biological site evaluations to understand the possible consequences of all projects.

LANDFIRE 2022 is the source of the vegetation landcover data which may not be an accurate representation of species composition. Fine scale vegetation mapping for SLO County would benefit the project planning effort and the acquisition of which is a focus of natural resource agencies and organizations in SLO County.

Landcover/Vegetation Types	Acres
Agricultural	22,505
Barren and Sparse Vegetation	19,371
California Mixed Evergreen Forest and Woodland	1,151
Chaparral	114,230
Conifer-Oak Forest and Woodland	16,853
Developed	15,074
Grassland	2,202
Non-Native Vegetation	128,423
Open Water	1,058
Salt Desert Scrub	5,990
Western Oak Woodland and Savanna	11,191
Western Riparian Woodland and Shrubland	1,300

Source: LANDFIRE 2022

Table 26. Cuyama Region Landcover

118 San Luis Obispo County Public Works. Jan. 2014. SLO Watershed Management Project. San Luis Obispo County. **https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Projects/SLO-Watershed-Project/Resources/SLO-Watershed-Management-Project.pdf**

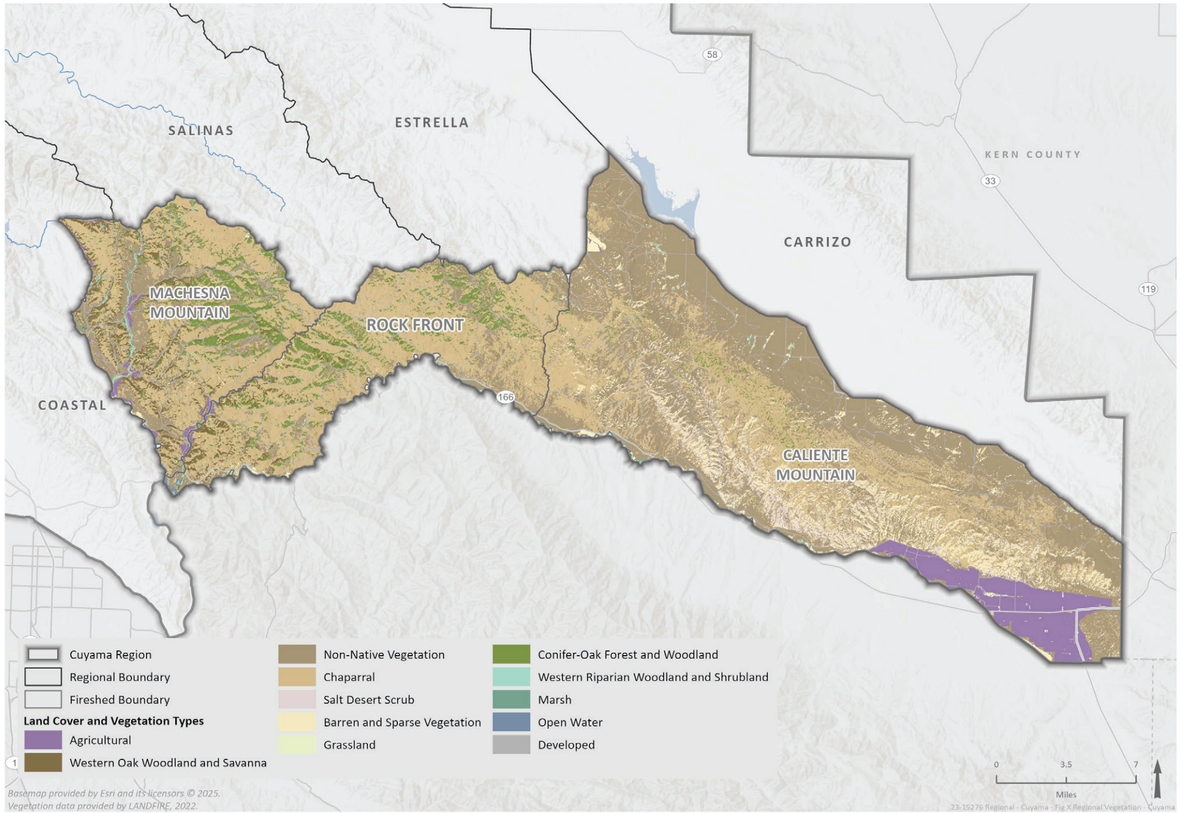


Figure 76. Cuyama Region Vegetation

Wildfire History

The wildfire history of the Cuyama Region shows a pattern of burns in the same central area north of SR-166 near the Big Rocks area. Burns from the Santa Lucia and Machesna Mountain wilderness areas are also partially within this region.

Large fires are common in this region and have resulted in deaths and near miss burn over events. The 1979 four firefighter fatality Spanish Ranch Fire occurred near Chimeneas Ranch Road and SR-166. The 1997 Logan Fire burned along SR-166 and resulted in two near miss burn-overs.

Fires in the Cuyama Region typically burn through areas of the Los Padres National Forest as shown in Table 27 and Figure 77.[119] Abundant fuels, arid conditions, and limited nearby firefighting assets coupled with difficult terrain provide a complicated combination of factors when addressing wildfire in the Cuyama Region.

Ignition Date	Fire Name	Acres
8/1/2025	Gifford	131,614
7/2/2025	Madre	80,779
7/6/2017	Alamo	28,834
8/4/1997	Logan	49,490
7/1/1985	Las Pilitas	84,271
7/10/1953	Big Dalton	67,702

Source: CAL FIRE FRAP, 2025

Table 27. Cuyama Region Large Wildfire History

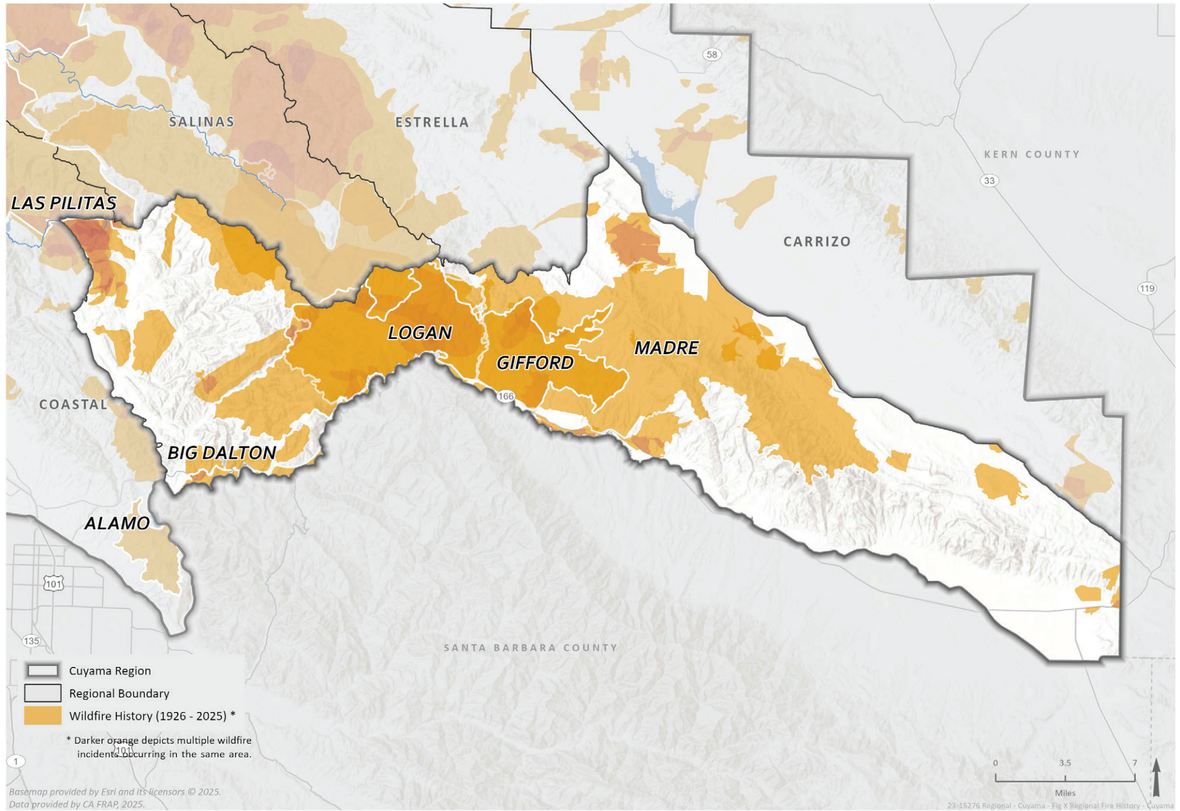


Figure 77. Cuyama Region Wildfire History

119 California Department of Forestry and Fire Protection. Fire Resource Assessment Program. What We Do. CAL FIRE. **https://www.fire.ca.gov/what-we-do/fire-resource-assessment-program**

Jurisdictional Responsibility Areas

Jurisdictional Responsibility Area acreages are shown in Table 28 and depicted in Figure 78.

Responsibility Area	Acres
Federal Responsibility Area	171,545
Local Responsibility Area	9,323
State Responsibility Area	121,937

Source: CAL FIRE FRAP, 2023

Table 28. Cuyama Region Responsibility Area Acreage

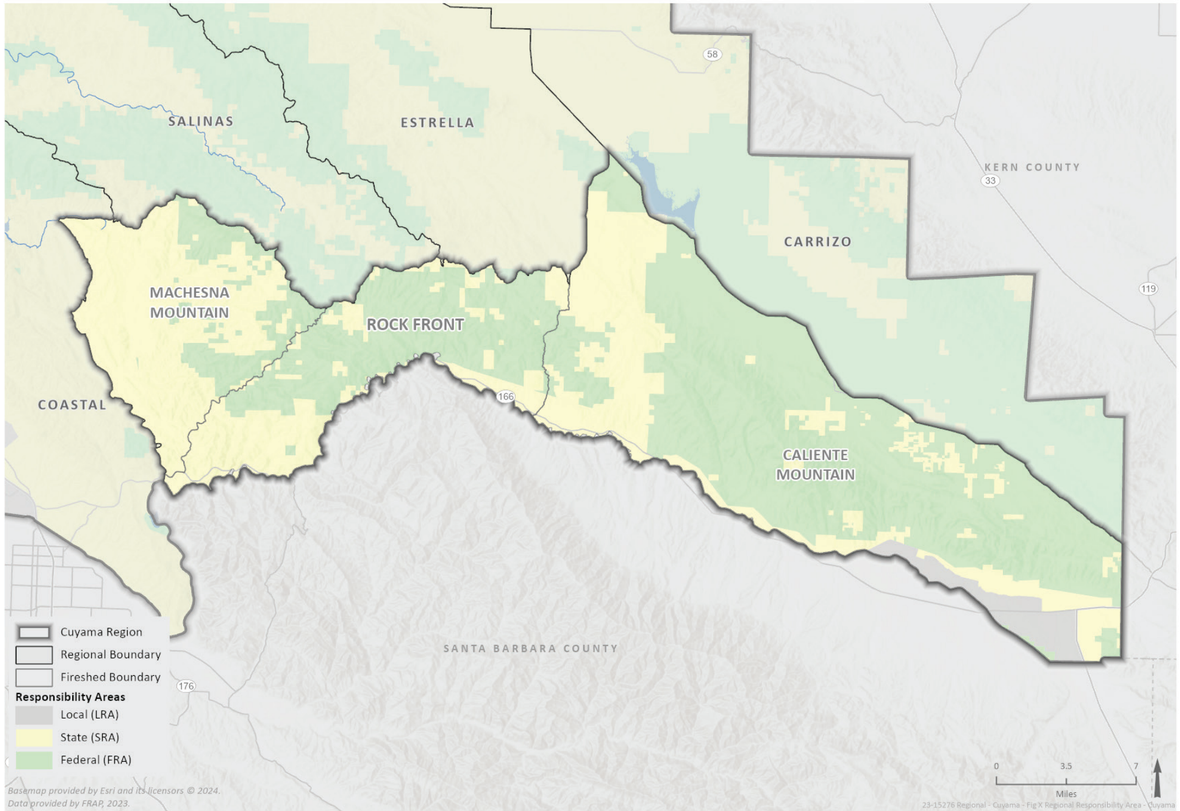


Figure 78. Cuyama Region Jurisdictional Responsibility Areas

Direct Protection Areas

Direct Protection Area acreages listed in Table 29 and are depicted in Figure 79.

Responsibility Area	Acres
Bureau of Land Management	120,622
CAL FIRE	58,582
Local Fire Departments	9,401
U.S. Forest Service	66,629

Source: CAL FIRE FRAP, 2023

Table 29. Cuyama Region Direct Protection Area Acreage

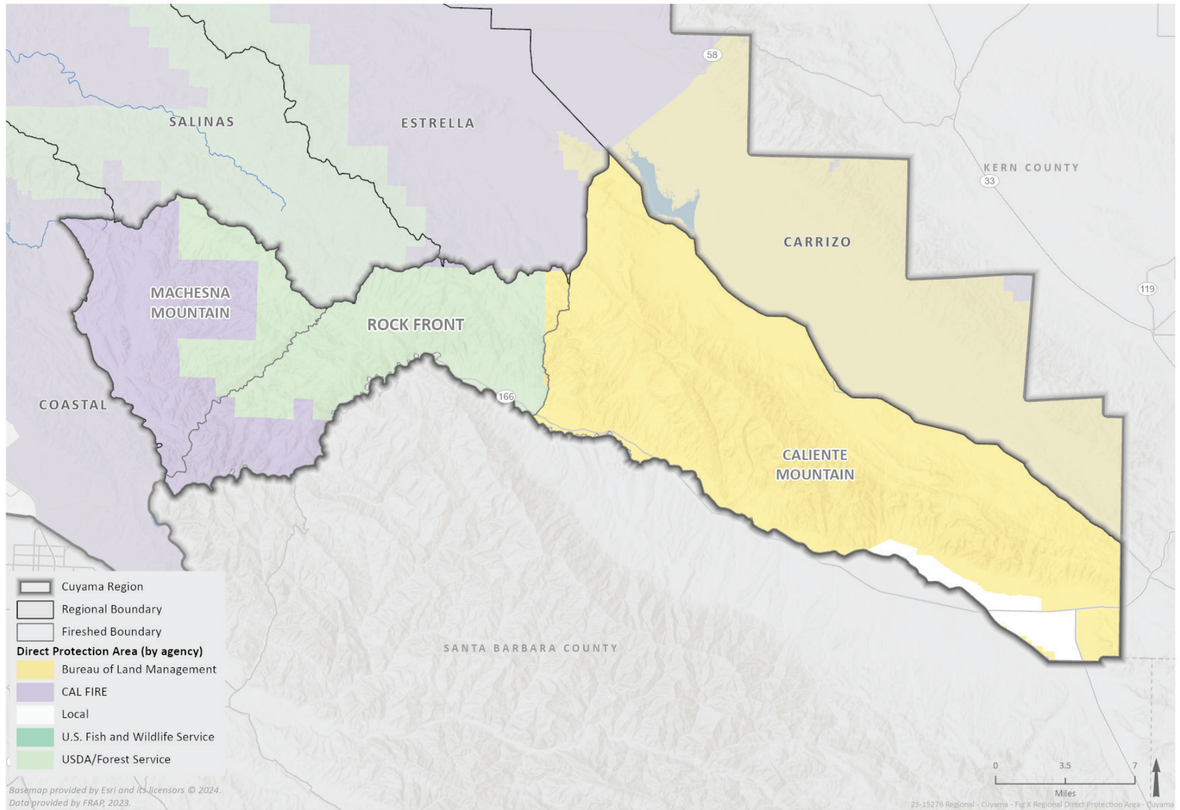


Figure 79. Cuyama Region Direct Protection Area

Cuyama Region

The FHSZ acreage delineation in the Cuyama Region is shown in Table 29 and depicted in Figure 80.

Responsibility Area	Acres
FRA	171,524
SRA Very High	88,718
SRA High	28,301
SRA Moderate	4,904
LRA Very High	1,046
LRA High	223
LRA Moderate	3,414

Source: CAL FIRE FRAP 2025

Table 30. Cuyama Region FHSZ Acreage in FRA, SRA, and LRA

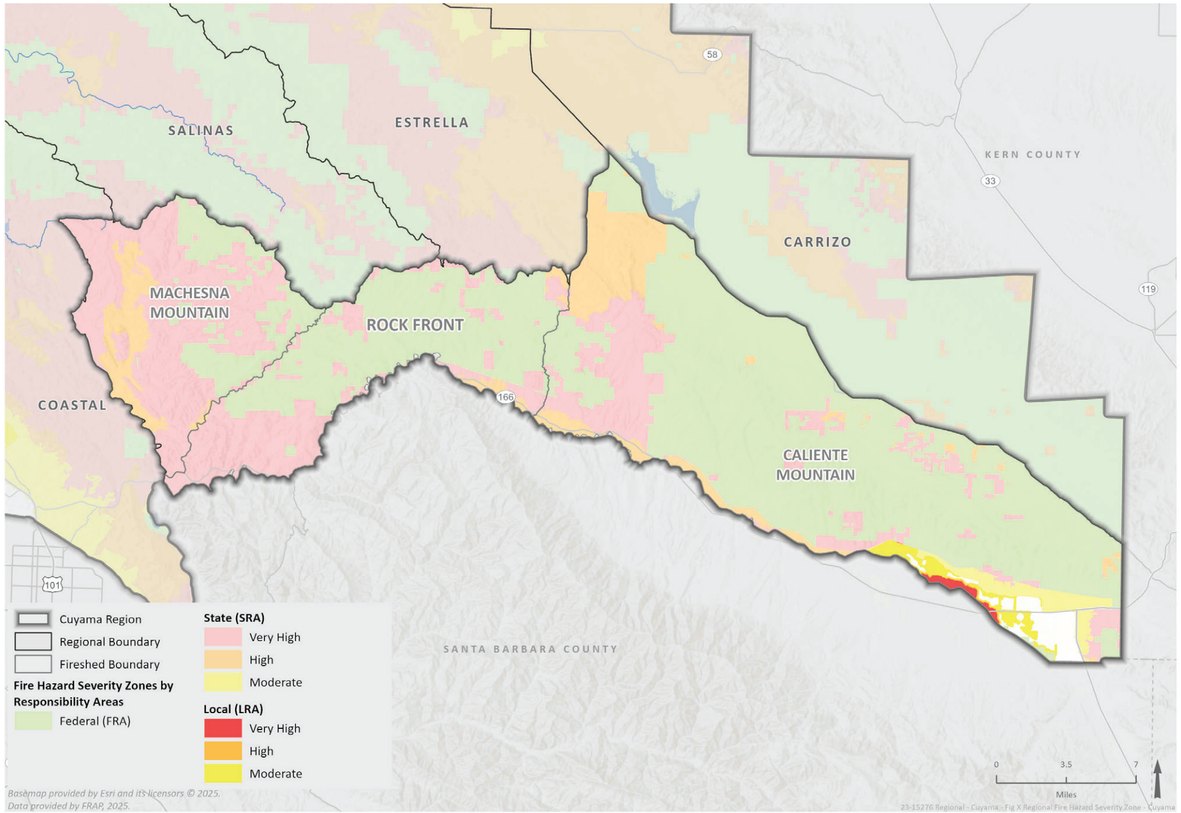


Figure 80. Cuyama Region Fire Hazard Severity Zones

Cuyama Region

Microclimate

Due to its extended longitudinal shape, this region has a broad range of climates, though they are generally in step with the Mediterranean climate patterns of the rest of SLO County. The western firesheds are influenced by moderating forces of the Pacific Ocean through the Santa Maria Valley. Continuing east along SR-166 the mountainous region gets significantly drier and hotter. Average annual rainfall is between 8 and 18 inches.[120] Precipitation patterns lead to a range of vegetation types and densities throughout the Cuyama Region from light flashy annual grasses and buckwheat to dense chaparral and oak woodlands.

The Cuyama Region is often the hottest area in SLO County with the daytime temperatures routinely exceeding 100 degrees.

The "Wind with No Name" is especially pronounced in the Cuyama River drainage. There are strong wind forces every day that battle between ocean influence and inland influence. When the ocean influence overpowers the inland force the ocean wind violently passes through the narrow pass at the Rock Front area, accelerates rapidly, and then spreads laterally as the valley widens.

The area just east of Rock Front at Chimeneas Ranch Road is where the Spanish Ranch Fire occurred and this laterally spreading wind went from calm to over 30 miles per hour in 30 seconds.

Similar to the other regions in the county, the Cuyama Region is affected by seasonal Santa Lucia Wind patterns which contribute to drying fuels and dangerous wildfire conditions. The wrinkled topography in this region coupled with diurnal winds results in similar erratic wind patterns as experienced in the Salinas and Estrella Regions. These strong and unpredictable winds can contribute to major complications for firefighting.

120 San Luis Obispo County. Accessed Jan 20, 2024. SLO County Average Annual Rainfall. San Luis Obispo County. ***https://www.slocounty.ca.gov/Departments/Public-Works/Forms-Documents/Water-Resources/SLO-County-Average-Annual-Rainfall.pdf***

4.

FIRESHED CHARACTERISTICS

Fireshed Development Background

There are 37 individual firesheds across five regions delineated throughout SLO County.

The Coastal Region, Salinas Region, Estrella Region, Carrizo Region, and Cuyama Region encompass all 37 firesheds and cover all SLO County's approximately 2,126,045 acres.

The average size of each fireshed is about 57,472 acres.

Each fireshed was delineated using Cal Water Watershed Boundary data coupled with wildfire related data and institutional knowledge from members of the SLO County Community Fire Safe Council Technical Advisory Group (TAG). This group of career fire experts incorporated their knowledge of fire behavior in SLO County to help delineate each unique fireshed boundary.

Each individual fireshed report will begin with a description of why the area was defined as a fireshed. Features that contributed to the creation of each unique fireshed include:

Fire Environment

Describes how fire behaves within each fireshed.

Built Environment

Includes constructed characteristics and assets found within each individual fireshed.

Natural Environment

Includes environmental characteristics that contribute to the unique fire regime within each fireshed.

Post-Fire Environment

Includes specifics about the unique wildfire recovery process within each fireshed.

Using these data, the TAG built off the Cal Water Watershed boundaries to construct each unique fireshed boundary, capturing the fireshed regime of SLO County on a much finer scale. For more details on how the firesheds were developed see the *Fireshed Delineation Methodology Report*.

Broader characteristics of SLO County have been outlined within the County and Regional sections, while each individual firesheds will be discussed in detail in the unit appendices. The following sections provide an overview of the details that will be discussed for each fireshed within the county.

Fire Environment Description

The Fire Environment section will discuss the fire regime of the specific fireshed including:

- Fire Weather Conditions
- Fire Hazard Severity Zones
- Fire Suppression Resources
- Wildland Urban Interface
- Wildfire History and Ignitions
- Fuels Reduction Projects and Methodologies
- Wildfire Risk Assessment
- Smoke Management
- Topography

The Fire Weather Conditions section will highlight key weather conditions that drive wildfire ignition and spread, such as high winds and low fuel moisture. Fire Hazard Severity Zones (FHSZ) will highlight areas of high risk within the fireshed with the most current data. Fire Suppression Resources will discuss the available firefighting resources in the fireshed such as fire stations, ground and aerial equipment, and staffing. Wildland urban interface will assess the WUI designated areas within the fireshed, including residential areas and potential for fire spread to these areas. Wildfire history and ignitions will review past fire activity in the fireshed and the conditions during the burn. Fuels Reductions Projects and Methodology section will summarize the current fuels reduction projects being conducted in the fireshed, as well as limitations and benefits to potential deployable techniques. Wildfire risk assessment modeling will evaluate the results of three distinct fire scenarios within the fireshed. Conducting this assessment will provide more detailed mapping of anticipated high wildfire risk areas than the FHSZ mapping offers. Planners can use the modeling to improve the accuracy of resource allocation and project planning. Finally, Smoke management will delve into the particulars of a how smoke behaves and can be mitigated for in a fireshed.

Built Environment Description

The Built Environment Section will review the constructed characteristics of each fireshed. These characteristics include:

- Land Ownership and Jurisdiction
- Infrastructure and Critical Facilities
- Economic Resources, Values, and Drivers
- Structure Characteristics
- Roads
- Evacuation Routes

The Land Ownership/Jurisdictions section will discuss the jurisdictional makeup of the fireshed including which areas are privately-owned, government owned and which areas are controlled by county board of supervisors; the incorporated cities; or state/federal agencies (state and federal agencies are exempt from local building and land use codes). The Infrastructure and Critical Facilities section will highlight the types of infrastructure in the fireshed as well as key critical facilities such as hospitals, fire and police department facilities, schools, and municipal government buildings. The Economic Resources, Values, and Drivers section will summarize the local economic makeup of the fireshed, including key economic zones such as retail centers, business/commercial hubs/ educational campuses, tourist attractions and agriculture operations. Structure Characteristics will discuss the variety of structure types in the fireshed and their locations such as residential areas, business/retail/commercial/educational, institutional, oil fields, water treatment facilities, landfills, and more. Roads and Evacuation Routes will highlight the key transportation routes in the fireshed as well as evacuation corridors modeling.

Fireshed Unit Characteristics

Natural Environment Description

The Natural Environment Section will include information about the naturally occurring characteristics of the environment of each fireshed. These characteristics include:

- Weather
- Topography
- Waterways
- Geology
- Vegetation
- Sensitive Species

The Weather/Wind Patterns section will review topics such as precipitation, notable wind patterns such as the Santa Lucia winds, Wind with No Name, Prevailing NW onshore winds, average temperatures, and climate change effects (and how much they differ from one fireshed region to another, which will affect fire behavior and available fuel. The Topography section will discuss topographic characteristics of the fireshed such as canyons and mountains which will factor into fire behavior and fuel reduction project planning. The Hydrology section will include the main water features of the fireshed such as streams, creeks, lakes, or reservoirs. Soil Hazards will include information such as asbestos bearing soils, liquefaction and landslide risks in the area, especially after wildfire and heavy rain events. The Vegetation and Sensitive Species sections will discuss the vegetative makeup of the area, including susceptibility to fire, State and Federally listed species that could influence fuel management projects, and Designated Critical Habitats for these sensitive species.

Post-Fire Environment

The Post Fire Environment Section will discuss information about the difficulties residents of a fireshed may encounter during recovery from a wildfire. Specifics include:

- Impacts to Waterways
- Impacts to Infrastructure
- Residential and Commercial Impacts
- Economic Impacts

Impacts to waterways includes discussions about erosion concerns post-fire both for emergent events like mudslides and long-term issues like sedimentation of waterways and extended downstream issues. Impacts to infrastructure will focus on how the wildfire may have affected the stability and functionality of roads, railroads, and utilities. Residential and commercial impacts will discuss property damage and loss of housing stock, residential displacement, job losses associated with the wildfire, and the economic toll these events can have on a community.

Fire Environment

Built Environment

Natural Environment

Post-Fire Environment

San Luis Obispo County Community FireSafe Council

San Luis Obispo County
FIRESHEDS