

## Chapter 12: Safety Element

### I. Introduction

Development in Los Angeles County has extended into areas with environmental hazards, such as hillsides, floodplains, and seismic areas. If this pattern of growth continues, it will further increase the vulnerability of Los Angeles County residents to seismic, geotechnical, flood, and fire hazards. In addition, studies suggest that climate change will increase the risk of natural hazards, particularly related to wildland fires, extreme heat, inland flooding and extreme precipitation, coastal flooding, and drought.

The purpose of the Safety Element is to reduce the potential risk of death, injuries, property damage, economic loss, and social dislocation resulting from natural and human-made hazards. The California Government Code requires the General Plan to address “the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence, liquefaction, and other seismic hazards...; flooding; and wildland and urban fires.” The Safety Element addresses only limited aspects of human-made disasters, such as hazardous waste and materials management. In general, hazardous materials management is addressed in the Los Angeles County Integrated Waste Management Plan (California Code of Regulations (CCR) Section 18755.5).

The Safety Element works in conjunction with the Operational Area Emergency Response Plan (OAERP), which is prepared by County’s Chief Executive Office - Office of Emergency Management (CEO OEM). The OAERP strengthens short and long-term emergency response and recovery capability, and identifies emergency procedures and emergency management routes in Los Angeles County.

CEO OEM also prepares the All-Hazards Mitigation Plan, which provides policy guidance for minimizing threats from natural and human-made hazards in Los Angeles County. The All-Hazards Mitigation Plan, which has been approved by the Federal Emergency Management Agency (FEMA) and the California Emergency Management Agency (CalEMA), includes a compilation of known and projected hazards in Los Angeles County. The All-Hazards Mitigation Plan also includes information on historical disasters in Los Angeles County. To access the OAERP and the County All-Hazards Mitigation Plan, please visit the CEO’s web site at <https://lacounty.gov/emergency/county-of-los-angeles-all-hazards-mitigation-plan/>.

### II. Seismic and Geotechnical Hazards

#### Background

Since 1700, over 78 significant earthquakes with a magnitude of 6.5 or greater have occurred in California. In the Los Angeles region, there are over 50 active and potentially active fault segments, an undetermined number of buried faults, and at least four blind thrust faults capable of producing damaging earthquakes in Los Angeles County.

The California Alquist-Priolo Earthquake Fault Zoning Act of 1972 and Section 113 of the County Building Code prohibits the location of most structures for human occupancy across the traces of active faults, and lessens the impacts of fault rupture. In addition, the California Seismic Hazards Mapping Act of 1990 regulates developments as defined by the Act. Seismic Hazard Zone maps depict areas where earthquake induced liquefaction or landslides have historically occurred, or where there

is a high potential for such occurrences. Liquefaction is a process by which water saturated granular soils transform from a solid to a liquid state during strong ground shaking. A landslide is a general term for a falling, sliding, or flowing mass of soil, rocks, water and debris.

The main provisions of the Alquist-Priolo Earthquake Fault Zoning and Seismic Hazard Mapping Acts are to:

- Require the California Geological Survey to prepare maps depicting earthquake fault zones, liquefaction hazard zones and earthquake-induced landslide zones.
- Require property owners (or their real estate agents) to disclose that their property lies within identified hazard zones; and
- Prohibit new construction of projects within identified hazard zones until a comprehensive geotechnical study has been completed.

Figure 12.1 identifies the County's Seismic Hazard Zones. In addition to depicting faults within Alquist-Priolo Earthquake Fault Zones, Figure 12.1 also depicts faults that are considered active based on published information. For more details on active faults in Los Angeles County, please refer to Appendix H.

### **Figure 12.1: Seismic and Geotechnical Hazard Zones Policy Map**

#### **Issues**

##### **1. Seismic Hazards**

Earthquakes can cause ground rupture, liquefaction and landslides. In addition, flooding in low-lying coastal areas can result from a tsunami that is generated by a large offshore earthquake or sub-marine landslides. Widespread and localized earthquake induced effects place structures or utility corridors at-risk, and if damaged, can result in fires, failure of large dams, or the release of toxic, flammable, or explosive materials. The General Plan prohibits new projects, as defined by the Alquist-Priolo Act and Seismic Hazards Mapping Acts, until a comprehensive geotechnical study has been approved.

##### **2. Geotechnical Hazards**

More than 50 percent of the unincorporated areas are comprised of hilly or mountainous terrain. Most hillside hazards include mud and debris flows, active deep-seated landslides, hillside erosion, and man-induced slope instability. These geotechnical hazards include artificially or rainfall-saturated slopes, the erosion and undercutting of slopes, earthquake induced rock falls and shallow failures, and natural or artificial compaction of unstable ground. The County's Hillside Management Area Ordinance regulates development in hillsides that have natural slope gradients of 25 percent or steeper, and these potential hazards are analyzed as part of the permitting process.

## Goals and Policies for Seismic and Geotechnical Hazards

<b>Goal S 1: An effective regulatory system that prevents or minimizes personal injury, loss of life and property damage due to seismic and geotechnical hazards.</b>	
<b>Topic</b>	<b>Policy</b>
Geotechnical Hazards	Policy S 1.1: Discourage development in Seismic Hazard and Alquist-Priolo Earthquake Fault Zones.
	Policy S 1.2: Prohibit construction of structures for human occupancy adjacent to active faults unless a comprehensive fault study that addresses seismic hazard risks and proposes appropriate actions to minimize the risk is approved.
	Policy S 1.3: Require developments to mitigate geotechnical hazards, such as soil instability and landslides, in Hillside Management Areas through siting and development standards.
	Policy S 1.4: Support the retrofitting of unreinforced masonry structures and soft-story buildings to help reduce the risk of structural and human loss due to seismic hazards.

### III. Climate Adaptation and Resilience

#### Background

Climate change has exacerbated existing hazards and introduced new hazards, such as extreme heat, extreme precipitation, and drought in Los Angeles County. Adaptation and resilience strategies are adjustments in natural or human systems in response to existing or expected climate impacts to reduce harm. This section includes adaptation and resilience strategies applicable to all hazards in compliance with Senate Bill 379. Hazard-specific adaptation and resilience strategies can be found in the individual hazard sections of this Element.

The 2021 Los Angeles County Climate Vulnerability Assessment (CVA) assesses how people and infrastructure in Los Angeles County may be vulnerable to climate change. Vulnerability in this context is generally defined as a combination of increased exposure to climate hazards; high sensitivity, or susceptibility, to negative impacts of exposure; and adaptive capacity, or ability to manage and recover from exposure. The CVA analyzes five climate hazards: extreme heat, wildfire, extreme precipitation and inland flooding, coastal flooding, and drought. The CVA assesses the severity that climate hazards will impact in two points in time: today and at mid-century under Representative Concentration Pathway (RCP) 8.5. RCP 8.5 is one of the scenarios adopted by the Intergovernmental Panel on Climate Change to project the concentration of greenhouse gas emissions based on differing volumes of emissions in the future. RCP 8.5 is considered the “business as usual” projection, which assumes that global greenhouse gas emissions will continue to increase in the absence of climate change policies until at least the end of the 21st century. The CVA evaluated the RCP 8.5 scenario for a worst-case evaluation of how climate hazards may worsen over time. The key takeaways from the CVA are:

- Extreme heat will increase in frequency, severity, and duration.
- Wildfires will become larger, more frequent, and more destructive.
- Rainfall patterns will change, with drier springs and summers and wetter winters. The concentration of rainfall over short periods will increase the likelihood of inland flooding.
- A rise in sea level of up to 2.5 feet by mid-century will lead to more frequent and severe coastal flooding.
- Drought and mega-drought will become more likely because of rising temperatures and shifting precipitation patterns.

Additional details from the CVA can be found at <https://ceo.lacounty.gov/cso-actions/>.

Frontline communities - populations that often experience the earliest and most acute consequences of climate change, face historic and current inequities, and have limited resources and/or capacity to adapt - are at immediate risk from climate-induced hazards. When disadvantaged communities are also in the frontlines of such hazards, it makes it harder for these communities to recover from the damages. A hazard event may require residents to vacate homes due to unsafe conditions, and the costly and lengthy rebuilding process may prevent communities that were already at a disadvantage from recovering completely. The lack of a social safety net can also make it difficult for disadvantaged communities to navigate reducing the harms of hazards. A strong social structure is imperative for communities to build resiliency and adapt to climate change, and a physical space like a resilience hub can serve as an anchor for a community. This Element contains policies that provide additional support to frontline communities through supportive planning, education, and services.

## **Resilience hubs**

Resilience hubs are community-serving facilities that support residents and coordinate resource distribution and services before, during, or after a natural hazard event. They provide the physical space and social safety net for a community in the event of a hazard and its secondary impacts, such as heat waves, wildfire smoke, floods, and earthquakes. Resilience hubs can be designed to operate independent of the electrical grid by relying on solar power and battery storage as a backup source of electricity. These alternative sources of power allow the hubs to provide support to residents who are impacted by the hazards. Resilience hubs can also be used as a space to promote meaningful engagement and programming that empower communities to build resilience to climate hazards, especially for frontline communities that are directly impacted by climate hazards and/or their secondary impacts.

## **Microgrids**

Microgrids are smaller distributed energy sources that have localized grids that can disconnect from the traditional grid to operate autonomously. Microgrids can become a more flexible and efficient electric grid by integrating renewable energy resources, such as solar. Microgrids can strengthen grid resilience and help mitigate grid disturbances during Public Safety Power Shutoffs (PSPS) due to dangerous wind conditions that may exacerbate wildland fire ignition potential. A microgrid can provide life-saving reprieve in the event of a hazard, especially for sensitive populations that are dependent on electricity for survival.

## **Issues**

### **1. Climate Change and Social Vulnerabilities**

Social vulnerability encompasses the conditions that affect people's sensitivity and exposure to the impacts of climate change that may put people at greater risk of harm. Although climate hazards pose a risk to all Los Angeles County residents, various factors can make certain populations more susceptible to harm than others. These factors include inequities in infrastructure and access to the benefits of education, living wages and income, economic opportunity, social capital, healthcare, and/or other services; institutionalized bias or exclusion from political and decision-making power; inequities in environmental and living conditions and health status; and differences in individual health, age, and ability. The CVA includes a Social Vulnerability Assessment to identify the conditions that contribute to a community's social vulnerability for individual climate hazards. To access the CVA, please visit: <https://ceo.lacounty.gov/cso-actions/>.

### **2. Climate Change and Physical Vulnerabilities**

Physical vulnerability is the susceptibility and limitations of physical infrastructure in the context of climate hazards and extreme events. Climate change has the potential to damage physical infrastructure and disrupt services or limit accessibility. The CVA explores the vulnerability of key infrastructure systems to understand how climate change will affect them by mid-century. In the CVA, climate hazard exposure and infrastructure sensitivities to climate hazards are combined to determine physical vulnerability to climate change. The Physical Vulnerability Assessment in the CVA aims to highlight infrastructure systems that are most vulnerable to different climate hazards and prioritize and bring attention to those that should be the focus of investment and policy advancements.

Disruption to infrastructure can create cascading impacts that can heighten the severity of a climate event and impact other interconnected sectors that serve critical needs. The Cascading Impacts Assessment in the CVA examines potential cascading impacts in Los Angeles County caused by climate-related disruption affecting linked systems and socially vulnerable populations. To access the CVA, please visit: <https://ceo.lacounty.gov/cso-actions/>.

### **3. Secondary Impacts of Climate Hazards**

Secondary impacts are the effects that occur directly as a result of the primary impacts of climate-induced hazards. Secondary impacts may be felt during and after the hazard event and outside of the immediate area of impact. Examples of secondary impacts are smoke and hazardous air quality from a wildland fire, increased mosquito activity after a flood event, mudslides after extreme precipitation falling on a recent burn area, or poor air quality due to extreme heat events increasing production of smog. Effective emergency response planning will need to consider how secondary impacts may affect the impacted and adjacent communities.

## Goals and Policies for Climate Adaptation and Resiliency

<b>Goal S 2: An effective regulatory system that prevents or minimizes personal injury, loss of life, and property damage due to climate hazards and climate-induced secondary impacts.</b>	
<b>Topic</b>	<b>Policy</b>
Climate Adaptation and Resiliency	Policy S 2.1: Explore the feasibility of community microgrids that are driven by renewable energy sources to increase local energy resilience during grid power outages, reduce reliance on long-distance transmission lines, and reduce strain on the grid when demand for electricity is high.
	Policy S 2.2: Plan for future climate impacts on critical infrastructure and essential public facilities.
	Policy S 2.3: Require new residential subdivisions and new accessory dwelling units within hazard areas to meet required evacuation standards.
	Policy S 2.4: Promote the creation of resilience hubs in frontline communities that are highly vulnerable to climate hazards and ensure that they have adequate resources to adapt to climate-induced emergencies.
	Policy S 2.5: Promote the development of community-based and workplace groups such as Community Emergency Response Teams to improve community resilience to climate emergencies.
	Policy S 2.6: Promote climate change and resilience awareness education about the effects of climate change-induced hazards and ways to adapt and build resiliency to climate change.
	Policy S 2.7: Increase the capacity of frontline communities to adapt to climate impacts by focusing planning efforts and interventions on communities facing the greatest vulnerabilities and ensuring representatives of these communities have a role in the decision-making process for directing climate change response.

## IV. Flood and Inundation Hazards

### Background

Federal, state, and local agencies share and coordinate responsibilities for flood protection in Los Angeles County. The two main federal agencies include the U.S. Army Corps of Engineers, which implements federal flood protection policies, and the Federal Emergency Management Agency (FEMA). The California Department of Water Resources (DWR) is responsible for managing the state's waterways. Locally, the Los Angeles County Public Works (PW) and the Los Angeles County Flood Control District work to reduce flood risk in Los Angeles County. There are numerous ways in which PW and the Flood Control District manage flood risk. PW maintains a vast system of dams, reservoirs, debris basins/inlets, flood basins, channels and storm drains, and coordinates operations of this system with the U.S. Army Corps of Engineers' operations of its flood management facilities. PW also regulates development in flood hazard areas in accordance with ordinances and standards that meet or exceed those of the National Flood Insurance Program (NFIP). Development and implementation of documents like the Los Angeles County Comprehensive Floodplain Management Plan and Sediment Management Strategic Plan aim to reduce adverse impacts of flood hazards for unincorporated Los Angeles County.

For more information on the Los Angeles County Comprehensive Floodplain Management Plan, please visit <https://dpw.lacounty.gov/wmd/NFIP/FMP/>. For more information on the Sediment Management Strategic Plan, please visit <https://dpw.lacounty.gov/lacfd/sediment/stplan.aspx>.

For a comprehensive list of agencies responsible for flood management, protection, as well as financial assistance, please refer to Appendix H.

### Flood Hazard Zones

Flood Hazard Zones are areas subject to moderate or minimal flood hazards that are identified on an official Flood Insurance Rate Map issued by FEMA. Flooding in Los Angeles County can be earthquake induced or can result from intense rainfall. Figure 12.2a shows the County's Flood Hazard Zones, which are 1% Annual Chance of Flood (100-Year) and 0.2% Annual Chance of Flood (500-Year) floodplains designated by FEMA.

In addition to the Flood Hazard Zones, DWR's Awareness Floodplain Mapping Program identifies potential flood hazard areas that are not part of the regulated floodplain. For the available awareness floodplain maps for the unincorporated areas, please refer to Appendix H.

### Figure 12.2a: FEMA Flood Hazard Zones Policy Map

Since 1980, the County has been a voluntary participant in the FEMA National Flood Insurance Program (NFIP). As a participant, the County is responsible for regulating development in Flood Hazard Zones in unincorporated Los Angeles County and planning for floodplain management activities that promote and encourage the preservation and restoration of the natural state of the floodplain. As a compliance requirement of the NFIP, the County enforces regulations to ensure that buildings are erected at a safe elevation and to prevent potential damage to properties.

In 1980, the County also identified flood hazard areas associated with the County Capital Flood, which are shown on County Floodway Maps that were adopted into the County Code (Title 11, Chapter 11.60). The County Floodway Maps are used in conjunction with the FEMA Flood Insurance Rate Maps to regulate development in flood hazard areas to meet or exceed NFIP standards. Figure 12.2b shows the mapped floodways and floodplains associated with the County Capital Flood floodplains,



which are undeveloped areas that may flood based on a 50-year (2% annual chance) rainfall frequency falling on a watershed that have undergone a burn and four years of post-fire recovery.

### Figure 12.2b: County Floodways and Floodplains Policy Map

The County provides information on Flood Hazard Zones from FEMA’s Flood Insurance Rate Maps to property owners for use in resolving flood insurance matters with insurance companies and lending institutions. The County conducts educational outreach to communities in the unincorporated areas on how to mitigate flooding impacts on properties. Through these and other efforts, the County reduces flood insurance costs for residents who are required to purchase flood insurance by lowering a community’s overall rating system number.

To view FEMA and County flood zone information on PW’s Flood Zone Determination web site, please visit <https://pw.lacounty.gov/floodzone>. For more information on flood hazards, please visit the PW web site at <http://dpw.lacounty.gov/wmd/nfip>. Please also visit the U.S. Army Corps of Engineers National Levee Database at <http://nld.usace.army.mil>.

## Regulations

**Table 12.1. Flood-Related Land Use and Building Regulations in the Los Angeles County Code**

Reference	Summary
Title 11, Health and Safety, Chapter 11.60	County Floodway Maps – basis of all County regulation of activities within County floodways
Title 20, Utilities, Section 20.32	Sewer permits
Title 20, Utilities, Section 20.94	Natural watercourses, swales, and man-made drainage channels, prohibition of activities in waterways

## Issues

### 1. Climate Change and Flood Hazards Impacts

Climate change is expected to produce longer and more severe droughts due to higher average temperatures, as well as greater and more frequent floods. The water systems in Los Angeles County are designed to balance flood protection during the winter and spring months with water storage during the dry months. While the average amount of annual precipitation in California is not projected to significantly change due to climate change, there is a greater chance for wet and dry extremes to occur more frequently. However, it is too early to quantify the frequency of extreme storm events. More studies to determine the impact of climate change on extreme storm events will be needed before evaluating the adequacy of flood control systems in Los Angeles County. With increased rainfall, facilities that handle stormwater can become overburdened and lose the capacity to protect communities from inland flooding. This can result in greater and more frequent floods in areas within river floodplains or adjacent to drainage systems, low-lying areas, where heavy rainfall can collect, and areas with inadequate storm drain infrastructure. Infrastructure at risk include bridges, tunnels, and coastal highways. In particular, the ports of Los Angeles and Long Beach are vulnerable to coastal flooding, and if impacted, could result in economic repercussions across the region.

## **2. Dam or Aqueduct Failure**

Catastrophic dam or aqueduct failure can devastate large areas and threaten residences and businesses. There are 85 dams in Los Angeles County that hold billions of gallons of water in reservoirs, and seismic activity can compromise dam structures and result in catastrophic flooding ([https://fmds.water.ca.gov/webgis/?appid=dam\\_prototype\\_v2](https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2)). The Division of Safety of Dams of the California Department of Water Resources has jurisdiction over large dams throughout the State and enforces strict safety requirements and annual inspections. Additionally, dam inundation areas have been mapped by dam owners and submitted to the California Office of Emergency Services (Cal/OES) to ensure effective emergency planning and adequate preparations in the event of a catastrophic event (<https://water.ca.gov/Programs/All-Programs/Division-of-Safety-of-Dams/Inundation-Maps>). The California State Water Project provides information on aqueducts located in Los Angeles County (<https://water.ca.gov/swp/>).

## **3. Tsunami Hazard Areas**

Coastal areas are vulnerable to tsunamis. Tsunamis are a series of powerful waves that originate from geologic disturbances in the ocean. Generated by large earthquakes below the ocean floor, underwater landslides, volcanic activity, and meteor strikes, tsunamis grow significantly in mass and height as they approach land and have the potential to cause injury and damage along adjacent coastal areas in Southern California. The travel time for a locally generated tsunami, from initiation at the source to arrival at coastal communities, can be 5 to 30 minutes. Tsunamis can last for hours and resemble a flood or surge. Figure 12.3 identifies Tsunami Hazard Areas in Los Angeles County, which include Marina del Rey and portions of the Santa Monica Mountains Coastal Zone.

### **Figure 12.3: Tsunami Hazard Areas Map**

The likelihood for the catastrophic inundation of low-lying coastal areas from tsunamis in Los Angeles County is low. However, the risk of losing vital commerce associated with the ports of Los Angeles and Long Beach warrants adequate risk reduction measures from tsunamis. The ports of Los Angeles and Long Beach have completed a Tsunami Hazard Assessment to guide disaster planning and mitigate damage from a potential tsunami at their facilities. In addition, the County All-Hazards Mitigation Plan includes risk reduction measures for the coastal areas. To learn more about tsunamis, please visit the California Geological Survey Tsunami Program: [www.tsunami.ca.gov](http://www.tsunami.ca.gov).

## **4. Coastal Flooding**

Sea level rise can affect and alter the impacts of flood inundation of low-lying coastal areas. While these impacts are likely to occur over a long period of time, impacts related to sea level rise include the flooding of septic systems and the intrusion of salt water into the fresh water supply. Coastal habitats can adapt to gradual changes in sea level, however, an accelerated rise in sea level will negatively impact coastal habitats. Wetlands are at risk of being inundated. Figure 12.4 shows the areas along the coastline that can potentially be impacted due to coastal flooding.

### **Figure 12.4: Sea Level Rise Impact Areas Map**

## Goals and Policies for Flood and Inundation Hazards

<b>Goal S 3: An effective regulatory system that prevents or minimizes personal injury, loss of life, and property damage due to flood and inundation hazards.</b>	
<b>Topic</b>	<b>Policy</b>
Flood Hazards	Policy S 3.1: Strongly discourage development in the County's Flood Hazard Zones, unless it solely provides a public benefit.
	Policy S 3.2: Strongly discourage development from locating downslope from aqueducts, unless it solely provides a public benefit.
	Policy S 3.3: Promote the use of natural, or nature-based flood protection measures to prevent or minimize flood hazards, where feasible.
	Policy S 3.4: Ensure that developments located within the County's Flood Hazard Zones are sited and designed to avoid isolation from essential services and facilities in the event of flooding.
	Policy S 3.5: Ensure that biological and natural resources are protected during rebuilding after a flood event.
	Policy S 3.6: Infiltrate development runoff on-site, where feasible, to preserve or restore the natural hydrologic cycle and minimize increases in stormwater or dry weather flows.

## V. Fire Hazards

### Background

#### Fire Hazard Severity Zones

While all of California is subject to some degree of fire hazard, there are specific features that make some areas more hazardous. The California Department of Forestry and Fire Protection (CAL FIRE) is required by law to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors. These zones, referred to as Fire Hazard Severity Zones (FHSZ), influence how people construct buildings and protect property to reduce risk associated with wildland fires.

Los Angeles County faces wildland fire threats due to its topography, rainfall patterns, and fire-adapted vegetation. The at-risk areas are designated as FHSZs per Government Code Sections 51175–51189. FHSZs in the unincorporated areas are classified as Very High, High, and Moderate in State Responsibility Areas (SRA) and Very High in Local and Federal Responsibility Areas (LRA and FRA). SRA are areas where the State has financial responsibility for wildland fire protection and prevention. Cities and federal ownerships are not included. LRA are areas where the local government is responsible for wildfire protection. FRA are lands that are administered by federal agencies that are responsible for wildfire protection. The County of Los Angeles Fire Department (Fire Department) provides the wildfire protection in LRAs in District and Fee-for Service cities and all unincorporated areas of Los Angeles County. A map of SRA, LRA, and FRA boundaries can be viewed here: <https://gis.data.ca.gov/datasets/CALFIRE-Forestry::state-responsibility-area/explore?location=34.211922%2C-118.099748%2C10.43>.

To reduce the threats to lives and property, the Fire Department has instituted a variety of regulatory programs and standards. These include vegetation management, pre-fire management and planning, the fuel modification plan review program, and brush clearance inspection program. In addition to these programs, the Fire Department and PW enforce fire and building codes related to development in FHSZs. The Fire Department implements Title 32 (Fire Code) requirements in FHSZs.

Figure 12.5 identifies the FHSZs in Los Angeles County. For more information on the County's fire prevention and safety programs, please visit the Fire Department's web site at <http://www.fire.lacounty.gov>.

#### Figure 12.5: Fire Hazard Severity Zones Policy Map

#### California Strategic Fire Plan

The State Board of Forestry and CAL FIRE have completed a comprehensive document for wildland fire protection in California, the California Strategic Fire Plan (Fire Plan). The Fire Plan acknowledges the persistence of wildfires in California and addresses how local, state, federal, and private entities can work together to increase resilience to adapt to this risk. The Fire Department Forestry Division's Fire Plan Unit annually prepares and implements the Los Angeles County Strategic Fire Plan, a parallel document to the State Fire Plan. The planning process defines a level of service measurement, considers assets at risk, incorporates the cooperative inter-dependent relationships of wildland fire protection providers, provides for public stakeholder involvement, and creates a fiscal framework for policy analysis. The Fire Plan assessment process utilizes weather, assets at risk, fuels, and input from the various regions, bureaus, divisions, and battalions to help target critical areas and prioritize projects.

The Fire Department is one of six contract counties that maintain a contractual relationship with CAL FIRE and implements the Fire Plan within unincorporated Los Angeles County through the Strategic

Fire Plan. The Strategic Fire Plan identifies and prioritizes pre- and post-fire management strategies and tactics to reduce loss of life, property, and natural resources. It also includes a map of existing Fire Department helispots fuel reduction projects, water resources, motorway maintenance maps, and a description of the road and fuel maintenance functions of the Fire Department. This Safety Element incorporates the Strategic Fire Plan by reference. For more information, please visit the following web site: <http://www.fire.lacounty.gov>.

## Regulations

### Fuel Modification Plan Review Program

Fuel modification plans are required for development projects within areas designated as a Fire Hazard Severity Zone within the State Responsibility Areas or Very High Fire Hazard Severity Zone within the Local Responsibility Areas, as described in Title 32, Fire Code. The fuel modification plan identifies specific zones within a property that are subject to fuel modification. A fuel modification zone is an area of land where combustible native or ornamental vegetation has been modified and/or partially or totally replaced with drought-tolerant, low-fuel-volume plants. The County of Los Angeles Fuel Modification Guidelines can be found at <http://www.fire.lacounty.gov>.

Fire prevention items addressed in Title 32 include provision of fire apparatus access roads, adequate road widths, requirements for all-weather access and fire flow, fire hydrant spacing, and clearance of brush around structures located on hillside areas that are considered primary wildland fire risk areas. Table 12.2 references fire-related land use and building regulations, including fuel modification, in the Los Angeles County Code.

**Table 12.2. Fire-Related Land Use and Building Regulations in the Los Angeles County Code**

Reference	Summary
Title 20, Utilities, Section 20.16.060	Fire flow and fire hydrant requirements, including in Very High Fire Hazard Severity Zones
Title 21, Subdivisions, Chapter 21.24, Part 1	Streets and access routes requirements, including fire apparatus access, and public evacuation
Title 21, Subdivisions, Section 21.24.220	Fire-protection access easements
Title 26, Building, Chapter 7A	Materials and Construction Methods for Exterior Wildfire Exposure
Title 30, Residential, Section R337	Materials and Construction Methods for Exterior Wildfire Exposure
Title 32, Fire, Section 325	Clearance of brush and vegetative growth
Title 32, Fire, Section 503	Specifications for fire access roads in developed areas, including dimensions and markings.
Title 32, Fire, Section 4907.1	Defensible space around structures in State Responsibility Areas, per Title 14, Section 1270 of the California Code of Regulations

Title 32, Fire, Sections 4908, 1117.2.1	Fuel modification
Title 32, Fire, Appendix B and Appendix C	Fire flow requirements and fire hydrant locations

## **Conservation and Wildland Areas**

### ***Significant Ecological Areas and Oak Woodlands***

Overlapping with fire hazard zones are areas that contain biological resources, including oak woodlands, Significant Ecological Areas (SEAs) and Coastal Resource Areas (CRAs). The General Plan's Conservation and Natural Resources Element includes a map and goals and policies related to SEAs and CRAs.

Oak woodlands play an important role in reducing wildfire risk. The native oak woodland understory typically contains less flammable vegetation compared to other types of trees. Oak trees are also harder to ignite and not as prone to rapid combustion. Well-maintained oak stands prevent slope failure, reduce erosion, and can slow down a wildfire. As described in the Conservation and Natural Resources Element, DRP will work to expand documentation of oak woodlands as part of the implementation of the Oak Woodlands Conservation Management Plan.

The SEA Program also includes the SEA Ordinance, an implementing ordinance, that is part of Title 22 (Planning and Zoning). The SEA Program Guide contains additional detail about the biological resources present in each SEA, along with additional information to assist the County in managing resources within the SEAs. General descriptions of the biological resources and designation criteria for each SEA and CRA are contained in Appendix E.

As part of the project planning review process, the Fire Department complies with the California Environmental Quality Act (CEQA), the CAL FIRE Programmatic Environmental Impact Report for chaparral vegetation management programs, and the County's Oak Tree and SEA ordinances to consider project impacts to wildlife habitats, endangered species and cultural resources.

### ***Integrated Vegetation Management Program***

Vegetation management, as it relates to wildland fire, refers to the total or partial removal of high fire hazard grasses, shrubs, or trees. This includes thinning to reduce the fuel loads and modification of vegetation arrangement and distribution to disrupt fire progress. In addition to fire hazard reduction, vegetation management has other benefits. These include increased water yields, habitat restoration and improvement, reduction of invasive exotic plant species, and open access for recreational purposes.

The Vegetation Management Program (VMP) is a cost-sharing program that focuses on the use of prescribed fire, hand crews, mechanical, biological, and chemical means, for addressing wildland fire fuel hazards, habitat restoration and other resource management issues on State Responsibility Area and Local Responsibility Area lands.

A VMP allows private landowners, and state and conservancy entities to enter into a contract with CAL FIRE to accomplish a combination of fire protection and resource management goals, including in

open space areas. The Fire Department Forestry Division's Vegetation Management Unit and the Air and Wildland Division's Prescribed Fire Office implement VMP projects.

### ***Pest, Disease, and Other Forest Health Issues***

The County of Los Angeles Department of Agricultural Commissioner / Weights and Measures (ACWM) maintains a vast network of insect traps throughout much of Los Angeles County. The network is designed to serve as an early warning system for some of California's most feared insect pests, including species such as the gypsy moth, gold-spotted oak borer (GSOB), and invasive shot-hole borer (ISHB), which have the potential to damage fragile wildland and watershed areas. The County of Los Angeles Fire Department Forestry Division assists the ACWM with detection and mitigation of insect and plant diseases, pests, and invasive species.

The County also collaborates with state, local, and educational agencies on the detection, management, and mitigation of insect and plant diseases, pests, and invasive species.

## **Issues**

### **1. Climate Change and Wildfire Impacts**

Climate change has resulted in wildland fires that last longer and occur more frequently due to higher temperatures and extended drought. In 2007 and 2008, wildland fires burned over 147,000 acres, destroyed 570 residences, and damaged an additional 42 residences in the unincorporated areas. In 2009, the Station Fire broke out in the Angeles National Forest, which burned nearly 160,000 acres and destroyed approximately 76 residences. This fire, the largest in recorded history for Los Angeles County, occurred months before low-moisture and strong Santa Ana winds, which often exacerbate wildland fires in the fall and spring months. In more recent years, fire season has become longer, affecting all jurisdictions in the State. Wildfires from neighboring jurisdictions pose new challenges for Los Angeles County. In 2018, the Woolsey Fire began in Ventura County and crossed into Los Angeles County, burning nearly 97,000 acres of the Santa Monica Mountains, and destroying 1,643 structures. In 2020, California endured the 2020 Fire Siege that saw multiple fires burning up and down the State at the same time. During this unprecedented year, the Bobcat Fire, which started in the San Gabriel Mountains, burned over 115,000 acres, destroying over 170 structures, and becoming the second largest in recorded history for Los Angeles County. Appendix H contains descriptions of these and other recent wildfires.

As wildfires have become intense, all-year phenomena due to climate change, the risk of injury to residents and damage to property and infrastructure have increased. Secondary impacts, such as smoke from wildfires, have also significantly impacted the health of Los Angeles County residents. As these risks are projected to increase, there is a need to develop adaptation strategies, such as emergency and evacuation planning for communities located in high fire risk areas, retrofitting older homes to current fire code standards, and updating communications and energy infrastructure.

### **2. The Increasing Costs of Wildland Fires**

Although fires are a natural part of the wildland ecosystem, development in wildland areas put more residents and their homes/businesses at risk of adverse impacts from wildfires, increases adverse fire-related environmental impacts, and increases the burden on public services to protect residents, homes/businesses, and the environment. Increased fire frequency is the primary threat to wildland ecosystems, which are adapted to an infrequent fire return interval. Frequent fires cause habitat type conversion and the presence of invasive species.

Wildland fire threats are increasing, in part due to climate change causing heavier (dead) fuel loads but also due to further encroachment of development into wildland areas. Increased development and

land uses at the urban periphery introduces structures, roads, vehicle traffic, and people into areas that were previously undeveloped, and increases the probability of ignitions within wildland areas. Nearly all wildfire ignitions in Los Angeles County in recent times were human-caused, often by electrical equipment, vehicles, fireworks, debris burning, smoking, campfires, or arson. According to the National Interagency Fire Center, Southern California experienced 5,295 human-caused wildfires resulting in 927,722 acres burned in the year 2020 alone. The rise in temperatures and prolonged periods of drought increase the fire ignition potential and may increase the frequency and duration of wildfires. Wildfires also have negative impacts on air quality. As exposure to smoke and particulate matter has immediate and long-term public health impacts, populations may suffer from eye irritations, respiratory problems, and complications to existing lung and heart conditions. Wildfires also have major economic impacts and have the potential to cost the County millions of dollars every year.

Although multiple regulations are in place to ensure that adequate infrastructure is incorporated into new developments, older communities with aging and substandard infrastructure may face greater risks from wildland fires. Future regulations will need to consider the increased risk for existing developments located in FHSZs from larger and more frequent wildland fire threats.

For a timeline of recent fires and their countywide impacts, as well as their impacts on the unincorporated areas, please refer to Appendix H.

### **3. The Wildland Urban Interface**

Recent fires throughout the State have established that communities and homes located in and near wildlands with vegetative ‘fuels’ are at much higher risk of loss due to wildfire. These areas, known as the wildland urban interface (WUI), are characterized by the geographical intersection of two land types: human development and undeveloped wildlands. WUIs are common throughout Los Angeles County, particularly in rural and mountainous areas, and can also include urban communities that are located near open space, conservation areas, and national forests. Development in the WUI is broken down into two classes: interface and intermix. Interface represents relatively dense development adjacent to wildlands, with a clear boundary between them. Intermix represents less dense, or sparse, development interspersed within wildland areas.

Development within the WUI, particularly for residential homes, represents a significant proportion of growth across the State. Development within the WUI has increased over the last several decades due to a variety of factors, including peoples’ interest in living near open space amenities. According to a 2018 study authored by the Department of Forest Ecology & Management, University of Wisconsin-Madison and the U.S. Forest Service, titled “Rapid Growth of The U.S. Wildland Urban Interface Raises Wildfire Risk,” Los Angeles County had over 561,000 housing units and 1.5 million residents within the WUI countywide in 2010. According to the report’s County Summary Statistics data, published in 2019, this represents 16% of the Los Angeles County’s total housing and population. Based on this data, it is estimated that every 10 years an additional 50,000 homes are built in the WUI in Los Angeles County. A large portion of the homes built within the WUI are within the Very High Fire Hazard Severity Zone (VHFHSZ). Thus, increasing climate-related wildfire conditions combined with the scale of existing and potential development within the WUI and VHFHSZ represent an enormous risk to a significant proportion of Los Angeles County residents.

Development within the WUI and VHFHSZ increases the likelihood of fire spreading between developed and undeveloped areas. Particularly within a densely populated area such as Los Angeles County, wildfire ignitions often start near development and can rapidly spread into nearby wildlands. Conflagrations can then spread through vegetated areas and threaten multiple communities over a wide geographical area. As communities grow further out into undeveloped areas, the ability for fire protection agencies to protect homes is diminished and the resources to maintain adequate infrastructure required for evacuation and emergency response is stretched thin. This results in greater risk to communities and increased costs for residents and agencies for fire protection.



As wildfire risks mount due to climate change, communities that have developed within the WUI and VHFHSZ face significant challenges related to natural resource management and hazard mitigation. Expanding development boundaries exacerbate wildfire risk by degrading natural resources through impacts to biological communities and watersheds. Other conditions such as topography, hydrology, vegetation types, and climate contribute to the risk factors associated with development in the WUI. As climate-related impacts to precipitation and vegetation occur and development persists, the boundaries of the WUI will continue to change into the future.

#### **4. Urban Fire Considerations**

Due to the intensity of development, population density, and the difficulties of containment, the County must also devote major resources to controlling potential fire hazards in its urbanized areas. Fire safety and suppression are especially critical in industrial areas and high-rise buildings. The County must also consider performance standards and use exemptions that minimize urban fire risks, such as regulating certain commercial uses that have high fire risks in mixed use developments.

#### **5. Fire Prevention, Response and Recovery**

The Fire Department serves unincorporated Los Angeles County as well as 60 cities. The Fire Department has a contractual agreement with CAL FIRE to provide wildland fire protection on SRAs. The Gray Book staffing agreement identifies resource allocations that CAL FIRE considers necessary for the protection of SRA and provides funding accordingly. In Los Angeles County, the Gray Book provides funding for 23 stations and fire prevention activities.

In emergency services, mutual aid is an agreement among emergency responders to lend assistance across jurisdictional boundaries. This may occur due to an emergency response exceeding capabilities of local resources, such as a disaster or a multiple alarm fire. Mutual aid may be ad hoc, requested only when such an emergency occurs, or may be a formal standing agreement for cooperative emergency management on a continuing basis, such as ensuring resources are dispatched from the nearest fire station, regardless of the incident's jurisdictional boundary. Agreements sending the closest resources are regularly referred to as "automatic aid agreements."

Los Angeles County currently has five new operational fire stations in the Santa Clarita Valley as of 2021. Nineteen new stations are planned for development within the next five years in the Antelope Valley, Santa Clarita Valley, and Santa Monica Mountains.

Appendix H references the relevant County codes, as well as programs and functions of the Fire Department and other agencies in fire prevention, fire/emergency response, and recovery as required by CAL FIRE. Additional information can be found in the Strategic Fire Plan.

#### **6. Community Resilience and Fire-Resistant Planning**

As wildfires increase in frequency and intensity due to climate change, the capacity of fire agencies to respond to heightened fire risks within their own jurisdictions and to provide mutual aid to other areas is becoming increasingly strained. As such, communities in FHSZs can reduce the potential risk of death, injuries, and economic loss by increasing their resilience to wildfire. Adaptive measures include hardening homes, installing fire-retardant landscapes, maintaining defensible space, increasing fuel breaks, maintaining clear emergency access routes, evacuation planning, and adopting community wildfire protection plans. Residents living in existing development with inadequate access/evacuation routes are strongly encouraged to implement such adaptive measures, as it could increase their safety during a wildfire event. The Fire Department provides resources through the Ready! Set! Go! brochure to provide residents with critical information on creating defensible space around homes, retrofitting

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homes with fire-resistant materials, and preparing residents to safely evacuate well ahead of a wildfire. Additional information can be found at the Fire Department's web site: <http://fire.lacounty.gov/rsg/>.

## Goals and Policies for Fire Hazards

<b>Goal S 4: An effective regulatory system that prevents or minimizes personal injury, loss of life, and property damage due to fire hazards.</b>	
<b>Topic</b>	<b>Policy</b>
Fire Hazards	Policy S 4.1: Prohibit new subdivisions in VHFHSZs unless entirely surrounded by existing built development, will connect to public infrastructure, and the level of service capacity of adjoining major highways can accommodate evacuation. Discourage subdivisions in all other FHSZs.
	Policy S 4.2: New subdivisions shall provide adequate evacuation and emergency vehicle access to and from the subdivision on streets or street systems that are evaluated for their traffic access or flow limitations, including but not limited to weight or vertical clearance limitations, dead-end, one-way, or single lane conditions.
	Policy S 4.3: Ensure that biological and natural resources are protected during rebuilding after a wildfire event.
	Policy S 4.4: Reduce the risk of wildland fire hazards through meeting minimum State and local regulations for fire-resistant building materials, vegetation management, fuel modification, and other fire hazard reduction programs.
	Policy S 4.5: Encourage the use of climate-adapted plants that are compatible with the area's natural vegetative habitats.
	Policy S 4.6: Ensure that infrastructure requirements for new development meet minimum State and local regulations for ingress, egress, peak load water supply availability, anticipated water supply, and other standards within FHSZs.
	Policy S 4.7: Discourage building mid-slope, on ridgelines and on hilltops, and employ adequate setbacks on and below slopes to reduce risk from wildfires and post-fire, rainfall-induced landslides and debris flows.
	Policy S 4.8: Support the retrofitting of existing structures in FHSZs to meet current safety regulations, such as the building and fire code, to help reduce the risk of structural and human loss due to wildfire.
	Policy S 4.9: Adopt by reference the County of Los Angeles Fire Department Strategic Fire Plan, as amended.
	Policy S 4.10: Encourage the planting of native oaks in strategic locations and near existing oak woodlands, including those to be mapped in the Oak Woodlands Conservation Management Plan, to protect developments from wildfires, as well as to lessen fire risk associated with developments.
	Policy S 4.11: Support efforts to address unique pest, disease, exotic species and other forest health issues in open space areas to reduce fire hazards and support ecological integrity.
	Policy S 4.12: Support efforts to incorporate systematic fire protection improvements for open space, including the facilitation of safe fire suppression tactics, standards for adequate access for firefighting, fire mitigation planning with landowners and other stakeholders, and water sources for fire suppression.
	Policy S 4.13: Encourage the siting of major landscape features, including but not limited to large water bodies, productive orchards, and community open space at the periphery of new subdivisions to provide strategic firefighting advantage and function as lasting firebreaks and buffers against wildfires, and the maintenance of such features by respective property owners.

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	<p>Policy S 4.14: Encourage the strategic placement of structures in FHSZs that conserves fire suppression resources, increases safety for emergency fire access and evacuation, and provides a point of attack or defense from a wildfire.</p>
	<p>Policy S 4.15: Encourage rebuilds and additions to comply with fire mitigation guidelines.</p>
	<p>Policy S 4.16: Require local development standards to meet or exceed SRA Fire Safe Regulations, which include visible home and street addressing and signage and vegetation clearance maintenance on public and private roads; all requirements in the California Building Code and Fire Code; and Board of Forestry Fire Safe Regulations.</p>
	<p>Policy S 4.17: Coordinate with agencies, including the Fire Department and ACWM, to ensure that effective fire buffers are maintained through brush clearance and fuel modification around developments.</p>
	<p>Policy S 4.18: Require Fire Protection Plans for new residential subdivisions in FHSZs that minimize and mitigate potential loss from wildfire exposure, and reduce impact on the community's fire protection delivery system.</p>
	<p>Policy S 4.19: Ensure all water distributors providing water in unincorporated Los Angeles County identify, maintain, and ensure the long-term integrity of future water supply for fire suppression needs, and ensure that water supply infrastructure adequately supports existing and future development and redevelopment, and provides adequate water flow to combat structural and wildland fires, including during peak domestic demand periods.</p>
	<p>Policy S 4.20: Prohibit new large general assembly uses in VHFHSZs unless entirely surrounded by existing built development, will connect to public infrastructure, and the level of service capacity of adjoining major highways can accommodate evacuation. Discourage large general assembly uses in all other FHSZs.</p>

## **VI. Extreme Heat and Drought**

### **Background**

#### **Extreme Heat**

Extreme heat occurs when temperatures are much hotter and/or humid than average for a particular location and time of year for at least two to three days. Heat waves, which are prolonged periods of extreme heat, are becoming more common. Natural land cover provides cooling functions but in many areas of Los Angeles County development has replaced those areas serving as a contributor to the urban heat island effect. The urban heat island refers to areas that are artificially hotter due to surfaces that absorb heat (like roofs and pavements) and a lack of vegetation, particularly trees. Dense concentrations of impervious pavement and buildings cause the absorption and retention of heat throughout the day and fails to cool by night.

The County of Los Angeles Department of Public Health provides information and resources on how individuals can prepare for and tackle the effects of extreme heat:

<http://publichealth.lacounty.gov/eh/climatechange/ExtremeHeat.htm>.

#### **Drought**

A drought is an extended period of time, typically a season or more, when an area experiences below average precipitation resulting in a water shortage. Droughts can cause altered weather patterns, damaged natural ecosystems, reduced soil moisture, diminished water courses, crop damage, and general water shortage. It is difficult to monitor since it has a creeping effect through its slow absence of precipitation rather than the occurrence of a hazard event. When drought conditions persist and/or intensify, a drought emergency can occur where conditions of disaster or extreme peril pose a threat to the safety of people and property.

Water in Los Angeles County is already a precious resource, and climate change poses significant challenges to maintaining supplies both for humans and the environment. Los Angeles County gets its water from different sources, such as the Colorado River, groundwater basins, captured stormwater, and recycled water. Heavy reliance on imported water means that the regional effects on water sources can directly affect Los Angeles County. More frequent and intense periods of drought throughout the State of California and neighboring states could reduce the availability of imported water and drive an increasing use of groundwater. Local aquifers must be maintained sustainably to avoid over drafting of water and permanently decreasing the groundwater table.

#### **Regulations**

##### ***Los Angeles County Cooling Centers***

The County operates cooling centers for residents to find respite during extreme heat days. Libraries, community and senior centers, and County parks all serve as cooling centers. At times, excessive heat results in the need for extended hours and additional centers. When this occurs, the County extends hours or open additional centers in select locations. To view locations and hours of cooling centers, please visit: <https://ready.lacounty.gov/heat/>.

##### ***Low-Impact Development Ordinance***

The Low-Impact Development (LID) Ordinance requires development occurring in unincorporated Los Angeles County to incorporate LID strategies in the project design to enhance pollutant removal and groundwater recharge benefits beyond conventional stormwater quality control measures as of January 1, 2009. LID strategies work to mimic the natural hydrology of the site by retaining precipitation on-site to the maximum extent possible. LID strategies are designed to protect surface and

groundwater quality, maintain the integrity of ecosystems, and preserve the physical integrity of receiving waters by managing stormwater runoff at or close to the source. The benefits of reduced stormwater runoff volume include reduced pollutant loadings and increased groundwater recharge and evapotranspiration rates.

### ***Water Conservation Ordinance***

The Water Conservation Ordinance mandates water conservation requirements for unincorporated Los Angeles County. Such requirements include watering of lawns and landscapes, indoor plumbing and fixtures, washing of vehicles, serving drinking water at public eating places, and maintaining decorative fountains. This ordinance was last amended on March 19, 2015 in response to the ongoing drought at that time. Amendments to the Water Conservation Ordinance included an increase in fines for violating this ordinance.

## **Issues**

### **1. Climate Change and Extreme Heat Impacts**

Climate change exacerbates conditions to produce extreme heat days. Extreme heat is projected to increase in frequency and severity and have widespread effects on people and infrastructure. Extreme heat can result when heat collects in urban areas without the cooling qualities of parks, overhead tree canopies, and other vegetated areas. Heat collects in inland valleys, and in the arid valleys on the eastern side of the San Gabriel Mountains. The areas that already experience heat will continue to see rising temperatures. Populations, such as seniors, people living in poverty, those with chronic conditions, and outdoor workers are more susceptible to heat-related illnesses. In addition, energy infrastructure, and parks and open space, which are also critical for helping people cope with heat, are vulnerable to extreme heat. Temperatures are projected to rise 95th-percentile daily maximum temperatures—or the temperature threshold at which 95 percent of all days in a year have cooler maximum temperatures.

Extreme heat is projected to increase in frequency, severity, and duration, with the largest increases occurring in the Santa Clarita and San Fernando Valleys. Seasonal temperatures can be most extreme in the northern areas of Los Angeles County, where 95th-percentile daily maximum temperatures of over 100 °F are common during the summer months.

Extreme heat is a public health concern as it negatively affects sensitive populations. Extreme heat days also place a strain on the electrical grid and may lead to rolling blackouts and brownouts. Interruptions in the electrical system may prevent people to run cooling mechanisms and life-sustaining equipment.

### **2. Climate Change and Drought Impacts**

Drier springs and summers are projected for Los Angeles County as low precipitation years are expected to coincide with warm years. Together with lower snowpack in California, the risk and severity of drought is expected to increase. Drought reduces the availability of water from wells, increases water prices, decreases water quality, and reduces power generation from hydropower. Although the groundwater basins of Los Angeles County are regulated to prevent the permanent lowering of groundwater tables, a state or region-wide drought can make it difficult to replenish the local groundwater basins to maintain or increase groundwater levels during and after a drought. Prolonged periods of drought coupled with rising temperatures can also weaken the health of forests, rendering them susceptible to insect outbreaks and increasing their likelihood to ignite, while reductions in the irrigation of landscapes can produce harmful dust.

## Goals and Policies for Extreme Heat and Drought Hazards

<b>Goal S 5: An effective regulatory system that prevents or minimizes personal injury, loss of life, and property damage due to extreme heat and drought impacts.</b>	
<b>Topic</b>	<b>Policy</b>
Extreme Heat	Policy S 5.1: Encourage building designs and retrofits that moderate indoor temperatures during extreme heat events.
	Policy S 5.2: Encourage the addition of shade structures in the public realm through appropriate means, and in frontline communities.
	Policy S 5.3: Encourage the use of cooling methods to reduce the heat retention of pavement and surfaces.
	Policy S 5.4: Ensure all park facilities, including recreational sports complexes, include a tree canopy, shade structures, and materials with low solar gain to improve usability on high heat days and reduce heat retention.
	Policy S 5.5: Encourage alternatives to air conditioning such as ceiling fans, air exchangers, increased insulation, and low-solar-gain exterior materials to reduce peak electrical demands during extreme heat events to ensure reliability of the electrical grid.
	Policy S 5.6: Coordinate with demand-response/paratransit transit services prior to expected extreme heat days to ensure adequate capacity for customer demand for transporting to cooling centers.
	Policy S 5.7: Coordinate with local transit agencies to retrofit existing bus stops, where feasible, with shade structures to safeguard the health and comfort of transit users.
	Policy S 5.8: Enhance and sustainably manage urban forests that provide shade and cooling functions.
	Policy S 5.9: Promote greater awareness of the impacts of extreme heat exposure on the most vulnerable populations, such as seniors, people living in poverty, those with chronic conditions, and outdoor workers.
Drought	Policy S 5.10: Protect and improve local groundwater quality and supply to increase opportunities for use as a potable water source during drought periods.
	Policy S 5.11: Encourage the conservation of water by employing soil moisture sensors, automated irrigation systems, subsurface drip irrigation, and weather-based irrigation controllers.
	Policy S 5.12: Encourage water efficiency in buildings through upgrading appliances and building infrastructure retrofits.
	Policy S 5.13: Encourage the use of drought tolerant landscaping in new developments to reduce reliance on potable and recycled water resources.
	Policy S 5.14: Encourage the installation of grey water reuse systems in new developments.

## VII. Human-made Hazards

### Background

This Element also addresses limited aspects of human-made hazards, such as oil and gas well management and mitigation. Tens of thousands of Los Angeles County residents live in close proximity to an oil well; nearly 73 percent of whom are people of color. There are approximately 1,600 active and idle oil wells located within unincorporated Los Angeles County. Over half of those wells are within the Inglewood Oil Field, the largest urban oil field in the nation, located in the Baldwin Hills community.

The County's Oil and Gas Strike Team identified a total of 637 idle wells (i.e., wells that have not operated for two years or more) and 2,173 wells that were plugged and abandoned according to the standards at the time of abandonment. Of the 2,173 abandoned wells, the Strike Team identified 128 "higher priority" abandoned oil wells based on proximity to frontline communities and based on the risk of well leakage. The lead regulatory agency, California Geologic Energy Management Division (CalGEM), publishes annual reports regarding the status of idle wells and may have additional information on idle wells that should be considered priorities.

To find information about well stimulation treatment permits, well stimulation disclosures, well maintenance data, well records, and underground injection control projects, please visit: [https://www.conservation.ca.gov/calgem/for\\_operators/Pages/WellSTAR.aspx](https://www.conservation.ca.gov/calgem/for_operators/Pages/WellSTAR.aspx).

### Regulations

#### *Baldwin Hills Community Standards District*

The Baldwin Hills Community Standards District (CSD) was adopted in 2008 to better regulate oil drilling operations and prioritize the public health and safety of its residents living near oil wells. The Baldwin Hills CSD established stricter regulations, safeguards, and controls for oil and gas production activities at the Inglewood Oil Field. The CSD requires that the County conduct a comprehensive review of the CSD at least every five years to determine if the provisions of the CSD are adequately protecting the health, safety, and general welfare of adjacent communities. The review shall consider whether additional provisions should be added, appended, or removed and to evaluate if proven technological advances that would further reduce impacts of oil operations on neighboring land uses should be incorporated into the provisions of the CSD.

### Issues

#### **1. Abandoned and unsealed oil and gas wells**

Abandoned and unsealed wells can leak pollutants into the groundwater, soil, and air, which can expose residents to harmful emissions. According to CalGEM, 800 oil companies have dissolved over the years without scheduling wells for proper plugging and abandonment, or paying sufficient State fees to cover the costs. Inadequate monitoring of drilling operations failed to ensure that all idle wells are properly abandoned after two years of inactivity. These circumstances can lead to unfettered oil and gas pollution, with significant public health and safety consequences.

#### **2. Public health risks for adjacent communities**

Living in close proximity to oil drilling operations can result in negative public health risks that includes asthma, cardiovascular disease, low birth weight, and reproductive health impacts. A 2018 Los Angeles County Department of Public Health Report found that even at a distance of 1,500 feet, oil wells still pose a safety risk to nearby communities. Health impacts can result from the particulate matter and toxic pollutants from oil and gas operations, such as volatile organic compounds, released



from oil and gas extraction. Health protections and mitigation measures at oil production sites are not standardized across the County, which often results in low-income and marginalized communities disproportionately suffering from poor health due to the lack of strictly-enforced regulatory controls.

### **3. “Just transition” of oil and gas extraction workforce**

The County is currently working on a Just Transition Strategy for the oil and gas extraction workforce. Developing a framework for capping and plugging oil wells, remediating sites and returning lands to beneficial uses ensures that the physical infrastructure of the fossil fuel industry is remediated as the just transition of its workforce is implemented. As the County continues to support clean energy goals, it is anticipated that the number of idle and abandoned wells will grow. The Just Transition Strategy needs to align policy efforts with the training and readiness of a workforce to support the proper abandonment of wells. Collaboration amongst environmental, labor, and business stakeholders is imperative to closely examine this issue and identify opportunities to incorporate incentives, enforcement protocols, funding strategies and legislative advocacy to ensure that inactive wells are properly plugged and abandoned in a timely manner to eliminate potentially dangerous emissions and climate pollution.

## Goals and Policies for Human-made Hazards

<b>Goal S 6: An effective regulatory system that prevents or minimizes personal injury, loss of life, and property damage due to human-made hazards.</b>	
<b>Topic</b>	<b>Policy</b>
Human-made Hazards	Policy S 6.1: Assess public health and safety risks associated with existing oil and gas facilities in the unincorporated Los Angeles County.
	Policy S 6.2: Coordinate with State and regional air quality agencies to ensure funding and implementation of annual inspections, ongoing air monitoring, and health impact assessment data continue to be collected and used to prioritize and facilitate the timely phase out of existing wells.
	Policy S 6.3: Support State and federal policies and proposals that increase funding sources to help plug, abandon, remediate and revitalize idle and orphaned well sites, and advocate for increased funding that will provide critical relief to the County and its residents.

## **VIII. Emergency Response**

### **Background**

#### **Emergency Responders**

##### ***Office of Emergency Management (OEM)***

The Office of Emergency Management is responsible for organizing and directing the preparedness efforts of the Emergency Management Organization of Los Angeles County. OEM is the day-to-day Los Angeles County Operational Area coordinator for the County. The emergency response plan for the unincorporated areas is the Operational Area Emergency Response Plan (OAERP), which is prepared by OEM. The OAERP strengthens short and long-term emergency response and recovery capability, and identifies emergency procedures and emergency management routes in Los Angeles County. To access the OAERP, and to find more information on the OEM, please visit the CEO's web site at <https://ceo.lacounty.gov/emergencydisaster-plans-and-annexes/>.

#### **Disaster Response**

Figure 12.6 shows the County's disaster routes. For more information on disaster response, please refer to the County OAERP.

##### **Figure 12.6: Disaster Routes Map**

#### **Identifying Possible Evacuation Routes**

Assembly Bill 747 (Levine, 2019) requires the Safety Element to identify evacuation routes and their capacity, safety, and viability under a range of emergency scenarios. Evacuation routes are determined by emergency responders who decide at the time of the emergency the routes that should be used for evacuation after assessing the conditions and location of the emergency to avoid endangering the lives of others, personal injury, or death. Evaluating a route for safety and viability is situational, context-specific, and subject to change. Figure 12.9 identifies roads that are public, paved, and through-ways, which may be used for evacuation if they are viable routes during an actual emergency. These evacuation routes are not all inclusive and may not be the most suitable routes since actual emergency events necessitate day-of-event conditions and risks assessments.

More information on the methodology to identify possible evacuation routes can be found in Appendix H.

##### **Figure 12.9: Possible Evacuation Routes Map**

#### **Identifying Communities with Residential Developments with Limited Egress**

Evacuation planning is also addressed in Senate Bill 99 (Nielsen, 2019), which focuses on identifying residential developments in hazard areas that have fewer than two emergency evacuation routes. Table 12.3 lists the communities in unincorporated Los Angeles County that are both subject to a hazard and have at least one residential development within the community that has a single possible evacuation route. These residential communities can be viewed in the Residential Developments with Limited Egress map application, which can be accessed at the following link: <http://bit.ly/SE-SB99>.

More information on the methodology to identify communities with residential developments with fewer than two evacuation routes can be found in Appendix H.

**Table 12.3: Unincorporated Communities with Residential Development(s) with Limited Egress\***

<b>Antelope Valley Planning Area</b>			
Acton	Angeles National Forest	Crystallaire/(Little Rock/Juniper Hills)	Del Sur
Elizabeth Lake	Fairmont/W. Antelope Valley	Green Valley/Bouquet Canyon	Hi Vista
Lake Hughes	Lake Los Angeles	Lakeview/Anaverde	Leona Valley
Littlerock/Juniper Hills	Llano	Longview/(Pearblossom/Llano)	Neenach
North Lancaster	Paradise	Pearblossom/Llano	
<b>East San Gabriel Valley Planning Area</b>			
Avocado Heights	Bassett	Charter Oak	Covina Islands
East Azusa (CSA: Azusa)	Glendora Islands	Hacienda Heights	La Verne
North Claremont (also see Padua Hills)	North Pomona	Northeast La Verne	Padua Hills
Pellissier Village			
<b>Gateway Planning Area</b>			
East Whittier	La Habra Heights Islands	Long Beach Island	North Whittier
Northwest Whittier	Cerritos Islands		
<b>Metro Planning Area</b>			
Florence-Firestone	East LA: Belvedere Gardens	East LA: City Terrace	East LA: Eastmont
East Rancho Dominguez			
<b>San Fernando Valley Planning Area</b>			
Kagel / Lopez Canyon			
<b>Santa Clarita Valley Planning Area</b>			
Agua Dulce	Alpine	Castaic	Castaic Junction/Castaic
Forest Park/ Canyon Country	Hasley Canyon/ Castaic	Newhall	Placerita Canyon
<b>Santa Monica Mountains Planning Area</b>			
Agoura	Calabasas	Malibu Vista	Cornell
Las Virgenes/Malibu Canyon	Malibou Lake	Malibu Bowl	Malibu Highlands

Malibu/Sycamore Canyon	Monte Nido	Seminole Hot Springs	Sunset Mesa
Triunfo Canyon	Pepperdine University		
<b>South Bay Planning Area</b>			
Alondra Park	Del Aire	El Camino Village	Hawthorne Island
La Rambla	Lennox		
<b>West San Gabriel Valley Planning Area</b>			
East Pasadena	East Pasadena-Northeast San Gabriel	Kinneola Mesa/East Pasadena	La Crescenta-Montrose
Mayflower Village/Arcadia	North El Monte/Monrovia		
<b>Westside Planning Area</b>			
Baldwin Hills/Ladera Heights	Franklin Canyon	Ladera Heights	Marina del Rey
<p><i>*A community listed in this table may contain as few as one residential development with limited egress. A listing here is not an indicator that an entire community is affected by limited egress.</i></p>			

### Identifying Evacuation Locations

Assembly Bill 1409 (Levine, 2021) requires the Safety Element to identify evacuation locations. The County departments responsible for emergency response and logistics have identified facilities that can serve as potential evacuation centers, shelters, and temporary evacuation points. These facilities are surveyed and assessed by the Department of Public Social Services to ensure ADA accessibility and the facilities have the capacity to serve as a potential evacuation location. The potential evacuation locations are activated depending on the location, nature, and scale of the emergency and are announced on the Los Angeles County Emergency Response web site (<https://lacounty.gov/emergency/>), OEM’s social media pages, and the County’s 2-1-1 call line. The real-time information and mapping provided on the County Emergency Response web site ensures people are evacuating to the correct location activated by emergency responders based on the latest conditions of the emergency.

The Los Angeles County Operational Area Emergency Response Plan Tsunami Annex provides a list of potential tsunami evacuation sites (<https://ceo.lacounty.gov/wp-content/uploads/OEM/Tsunami%20Annex.pdf>).

### ***County of Los Angeles Fire Department***

The Fire Department provides fire, safety, and emergency medical services to the unincorporated areas. The Strategic Fire Plan includes the County of Los Angeles Fire Department Operations Bureau Map, which indicates that emergency services are available in all unincorporated areas of the County. Additionally, many cities within Los Angeles County utilize Fire Department services. There are three major geographic regions in the Fire Department service area, which are divided into nine divisions and 22 battalions, as seen in Figure 12.7.

### **Figure 12.7: Fire Department Battalions and Stations Map**

The Fire Department operates multiple divisions including Air and Wildland, Fire Prevention, and Forestry. In addition, the Health Hazardous Materials Division's mission is to "protect the public health and the environment...from accidental releases and improper handling, storage, transportation, and disposal of hazardous materials and wastes through coordinated efforts of inspections, emergency response, enforcement, and site mitigation oversight."

The Fire Department is a special district and receives most of its revenue from the unincorporated areas from a portion of the ad valorem property tax paid by the owners of all taxable properties. This revenue source varies from one tax rate area to another, and is specifically earmarked for the Fire Department. The Fire Department's Special Tax, which was approved by voters in 1997, is a supplemental revenue source that pays for essential fire suppression and emergency medical services. In addition, in 1990, the Board of Supervisors adopted a Los Angeles County Developer Fee Program to fund the acquisition, construction, improvement, and equipping of fire station facilities in the high growth areas of the unincorporated areas.

The County of Los Angeles Fire Department has one of the premier firefighter training programs in the nation. For wildland firefighters, the Department follows the National Wildfire Coordination Group (NWCG) qualifications for operational, logistical, planning and financial positions. For more information, please visit <http://www.nwcg.gov/>.

For more information on the Fire Department's programs and divisions, please visit their web site at <http://fire.lacounty.gov>.

### ***County of Los Angeles Sheriff's Department***

The County of Los Angeles Sheriff's Department (LASD) is the largest sheriff's department in the country. In addition to specialized services, the LASD is divided into 10 divisions, including the Office of Homeland Security, which focuses on potential threats related to local homeland security issues, such as terrorism or bioterrorism. The LASD provides law enforcement services to more than one million people living within 90 unincorporated communities, as well as to more than four million residents living within 40 contract cities. In addition, LASD provides law enforcement services to nine community colleges, Metro, and 48 Superior Courts. In addition to proactive enforcement of criminal laws, the LASD also provides investigative, traffic enforcement, accident investigation, and community education functions.

The Training Bureau consists of seven different programs that are designed to provide academy recruits and in-service personnel with the most up-to-date, innovative, creative, and realistic learning experiences available to law enforcement. The featured programs are:

- I. Recruit Training Unit
- II. Advanced Officer Training Unit
- III. Weapons of Mass Destruction Detail
- IV. Field Operations Training Unit
- V. Education-Based Discipline Unit
- VI. Weapons Training
- VII. Tactics and Survival Training Unit (Laser Village)
- VIII. Emergency Vehicle Operations Center
- IX. Professional Development Unit

The LASD budget is approved by the Board of Supervisors through the utilization of state and local tax dollars. These funds are augmented by revenue generating contracts and grant allowances.

The passage of tax limitation measures, decline in the popular support for bond measures, and reductions in state and federal assistance, have hampered the capability of local governments to fund public safety. The LASD partnered with the City of Santa Clarita and the Board of Supervisors to establish the Law Enforcement Facilities Fee. The Law Enforcement Facilities Fee is a fee program that applies to certain projects in the Santa Clarita Valley and aims to mitigate project impacts on law enforcement service and facilities.

Figure 12.8 identifies the location of LASD's service areas. The Field Operation Regions are centered on 25 patrol stations that are dispersed throughout Los Angeles County.

For the location and detailed information of each station, and further information on the LASD Office of Homeland Security, please visit the LASD web site at <http://www.lasd.org>.

### **Figure 12.8: Sheriff's Department Service Areas Map**

#### ***Emergency Response Across County Agencies***

Emergency response is handled in the field through incident command posts. As described in the OAERP, the County's Emergency Operations Center provides centralized support to field responders to coordinate overall County response.

#### ***Cross-Jurisdictional Emergency Response***

In emergency services, mutual aid is an agreement among emergency responders to lend assistance across jurisdictional boundaries. This may occur due to an emergency response that exceeds local resources, such as a disaster or a multiple-alarm fire. Mutual aid may be ad hoc, requested only when such an emergency occurs. It may also be a formal standing agreement for cooperative emergency management on a continuing basis, such as ensuring that resources are dispatched from the nearest fire station, regardless of which side of the jurisdictional boundary the incident is on. Agreements that send closest resources are regularly referred to as "automatic aid agreements." Current agreements are:

- Los Angeles County Operational Area Mutual Aid Plan;
- California Fire Master Mutual Aid Agreement;
- California Master Cooperative Wildland Fire Management (CFMA) and Stafford Act Response Agreement;
- California Fire Assistance Agreement; and
- Public Resources Code 4129

The expansion of communities, homes, and other improvements into wildland areas has created a significant challenge for the agencies responsible for providing fire protection in those areas.

Fires in the wildland-urban interface often overtax the local fire agency, resulting in the activation of mutual aid and automatic aid agreements to augment jurisdictional resources. Nearly every wildland-urban interface fire includes responses from a variety of wildland and municipal fire agencies. Los Angeles County's Operational Area Emergency Response Plan conforms to California's Standardized Emergency Management System (SEMS), which is intended to facilitate communication and coordination among all responding agencies. The system unifies all elements of California's emergency management community into a single integrated system and standardizes key elements.

SEMS incorporates the use of the Incident Command System (ICS), California Disaster and Civil Defense Master Mutual Aid Agreement, and other forms of multi-agency or inter-agency coordination.

***Los Angeles Regional Interoperable Communication System (LA-RICS)***

The Los Angeles region's first responders use a patchwork of often incompatible radio technologies and frequencies. This uncoordinated system means that neighboring agencies and systems cannot easily communicate with one another.

In April 2005, the Regional Interoperable Steering Committee was formed to explore the development of a single, shared communications system for all public safety agencies in the greater Los Angeles region. As a result, Los Angeles County, 82 municipalities, and three other public sector entities in the region drafted a Joint Powers Agreement that established the Los Angeles Regional Interoperable Communication System (LA-RICS) Joint Powers Authority to create a regional, area-wide, interoperable public safety communications network. LA-RICS is a modern, integrated wireless voice and data communication system designed and built to serve law enforcement, fire service, and health service professionals throughout Los Angeles County.

The Land Mobile Radio (LMR) system creates a unified web of communication, eliminates barriers to multi-jurisdictional responses and allows police, firefighters and paramedics to communicate directly with users outside of their agency. Construction of this network of approximately 60 LMR communication sites to provide narrowband data radio communications coverage for emergency responders throughout the County is underway.

The Public Safety Broadband Network (PSBN) provides police and firefighters with the capability to send and receive large amounts of data. The PSBN was completed on October 1, 2015 and is currently in use by various agencies throughout Los Angeles County. It consists of 63 fixed towers and 15 temporary sites that use Long-Term Evolution (LTE) technology. In July 2018 the network was transferred to AT&T for integration into the Nationwide Public Safety Broadband (NPSBN) under FirstNet.

LA-RICS will provide day-to-day communications within agencies and allow seamless interagency communications for responding to routine, emergency, and catastrophic events. LA-RICS will replace the patchwork system with a single countywide network, improve overall traffic capacity and coverage, and provide a dedicated broadband network for first responders. More information about LA-RICS is available at <http://www.la-rics.org/>.

***Homeland Security***

The Fire Department's Homeland Security/Hazardous Materials Section was created in 1995 in response to Presidential Decision Directive 39, outlining the need for the Fire Department to plan, organize, and direct its members in preparing and responding to any large-scale terrorist incident in the Los Angeles County Operational Area.

The Homeland Security Section was born out of necessity in response to the community's concerns that emergency responders need to be fully equipped and trained to deal with a chemical, biological, radiological, nuclear, or explosive event. All County firefighters and other emergency responders have the necessary personnel protective equipment and the training to respond safely and effectively. The Fire Department is also represented on the Federal Bureau of Investigations' Los Angeles Joint Terrorism Task Force.



## **Issues**

### **1. The Need for Adequate Emergency Response Services**

A catastrophic natural or human-made disaster has the potential to severely strain the emergency response and recovery capabilities of federal, state, and local governments, and profoundly impact the regional and state economy. It is imperative that there are adequate resources available for emergency response. For example, to fulfill all its functions effectively and efficiently, the Fire Department requires a staff level of one deputy sheriff per each 1,000 population.

Effective emergency response requires that the County provide public alerts and warnings for disasters. In addition, there is a need for preparedness communications regarding threats to communities throughout Los Angeles County.

### **2. The Cost of Increased Hazard Events**

A full accounting of long-term and complex costs from hazard events span areas of ecosystems, infrastructure, economy, and individuals. Resources required to address hazard events include direct, rehabilitation, indirect, and additional costs. Direct costs are the most immediate and typically include those to address the hazard event at the time it occurs such as fire suppression, loss of real property, and damage to utilities. Following a hazard event, rehabilitation costs to bring an area back may include debris removal, reconstruction, and ecosystem restoration. Many indirect costs relate to the economy where business and tax revenues are lost. Finally, health impacts and loss of life are additional costs that may be incurred during a hazard event. Emergency responders along with many other service providers pivot during hazard events to address the hazard and provide support to those affected by the event. Increased frequency and severity of hazard events can cause major disruptions where there may not be sufficient human-power or resources to quickly recover.

### **3. Creating Efficiencies Through Collaboration and Coordination**

Continued growth and development in Los Angeles County will significantly affect the Fire Department and LASD operations. Coordination among various County departments is necessary to ensure adequate emergency response. Collaboration can also ensure that development occurs at a rate that keeps pace with service needs. To maintain an adequate emergency response system, it is important for the County to discourage development in hazardous areas, including Very High Fire Hazard Severity Zones, Flood Hazard Zones, and Seismic and Geotechnical Hazard Zones.

### **4. Support Community-Driven Planning and Adaptation Efforts**

Community members play a huge role in prevention and planning measures. Grassroots and community-based organizations can effectively encourage partnerships within their communities to develop personal evacuation plans and Community Wildfire Protection Plans, establish resilience hubs, and conduct education to encourage community members to prepare for exposure to hazards. Community members can prepare for disasters through home retrofits, developing family emergency plans, subscribing to alert systems, and identifying neighbors that may need assistance during an emergency.

## Goals and Policies for Emergency Response

<b>Goal S 7: Effective County emergency response management capabilities.</b>	
<b>Topic</b>	<b>Policy</b>
Emergency Response	Policy S 7.1: Ensure that residents are protected from the public health consequences of natural or human-made disasters through increased readiness and response capabilities, risk communication, and the dissemination of public information.
	Policy S 7.2: Support County emergency providers in reaching their response time goals.
	Policy S 7.3: Coordinate with other County and public agencies, such as transportation agencies and health care providers, on emergency planning and response activities, and evacuation planning.
	Policy S 7.4: Encourage the improvement of hazard prediction and early warning capabilities.
	Policy S 7.5: Ensure that there are adequate resources, such as sheriff and fire services, for emergency response.
	Policy S 7.6: Ensure that essential public facilities are maintained during disasters, such as flooding, wildfires, extreme temperature and precipitation events, drought, and power outages.
	Policy S 7.7: Locate essential public facilities, such as hospitals, where feasible, outside of hazard zones identified in the Safety Element to ensure their reliability and accessibility during disasters.
	Policy S 7.8: Adopt by reference the County of Los Angeles All-Hazards Mitigation Plan, as amended.
	Policy S 7.9: Work cooperatively with public agencies with responsibility for flood and fire protection, and with stakeholders in planning for flood and fire hazards.

## IX. Safety Element Implementation Programs

1. Mass Debris Management Plan Implementation and Update
2. At-Risk Properties Hazard Fund and Strategies
3. Floodplain Management Plan Implementation
4. Climate-Adapted Landscape Program
5. Community Capacity and Resilience Program
6. Shaded Corridors Program
7. Oil and Gas Operation Strategy
8. OurCounty Sustainability Plan
9. Reduce Damage from Wildfire

For descriptions of these programs, please refer to Chapter 16: General Plan Implementation Programs.

[Text Boxes]

### **Wildland Fires and Climate Change**

Recent studies indicate that climate change has resulted in wildland fires that last longer and occur more frequently. In 2007 and 2008 alone, wildland fires burned over 147,000 acres, destroyed 570 residences, and damaged an additional 42 residences in the unincorporated areas. In 2009, the Station Fire broke out in the Angeles National Forest, which burned nearly 160,000 acres and destroyed approximately 76 residences. This fire, the largest in recorded history for Los Angeles County, occurred months before the Santa Ana winds, which often exacerbate wildland fires in the fall and spring months. Appendix H contains descriptions of these and more recent wildfires in Los Angeles County.

### **Wildfire Preparedness Programs and Evacuation Guides**

The following are guidelines for wildfire readiness for a variety of development and occupancy types:

County of Los Angeles Fire Department “Ready, Set, Go” Program

Santa Monica Mountains Fire Safe Alliance, “A Road Map to Fire Safety”

For more information, please visit the Fire Department web site at <http://www.fire.lacounty.gov>.

### **Community Wildfire Protection Plans**

Community Wildfire Protection Plans are community-based collaborative plans developed by local stakeholders that identify and prioritize areas for hazardous fuel reduction treatments to protect natural resources, communities and infrastructure from wildfire. Applicable local governments, local fire departments, state forestry, and federal land management agencies agree to the plans, which are established under the umbrella of the County’s Strategic Fire Plan. The County of Los Angeles Fire Department’s Fire Plan Unit provides fire hazard reduction project design, development, planning and implementation for communities in Los Angeles County. Los Angeles County CWPPs include the following:

Santa Monica Mountains Community Wildfire Protection Plan:  
[http://www.nps.gov/samo/parkmgmt/upload/SMM\\_CWPP\\_02MAY2012\\_FINAL\\_v3.pdf](http://www.nps.gov/samo/parkmgmt/upload/SMM_CWPP_02MAY2012_FINAL_v3.pdf)

### **Community Emergency Response Team (CERT) Program**

The Community Emergency Response Team (CERT) Program educates people about disaster preparedness for hazards that may impact their area, and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. Using the training learned in the classroom and during exercises, CERT volunteers can assist others in their neighborhood or workplace following an event when professional responders are not immediately available to help. CERT members are also encouraged to support emergency response agencies by taking a more active role in emergency preparedness projects in their community.

For more information on the CERT Program, please visit the Fire Department web site at <http://www.fire.lacounty.gov/index.php/cert-program/>.

## **Part III: General Plan Implementation**

## Chapter 15: General Plan Maintenance

### I. General Plan Annual Progress Report

Section 65400 of the Government Code requires that the County prepare a general plan annual progress report (annual report) on the status of General Plan implementation. The annual report is prepared by the Department of Regional Planning (DRP), presented to the Los Angeles County Regional Planning Commission and the Board of Supervisors, and submitted to the California Office of Planning and Research and the California Department of Housing and Community Development by April 1 of each year.

The annual report is the County’s mechanism for comprehensively reporting on the following: 1) program implementation; 2) effectiveness of major policies; 3) updates to datasets; and 4) map maintenance.

#### 1. Program Implementation

The annual report shall outline the County’s progress toward implementing the General Plan implementation programs. A description of milestones, accomplishments, as well as any impediments will be included for each program.

#### 2. Effectiveness of Major Policies

The annual report shall include information on the effectiveness of major policies. The table below outlines the monitoring strategy:

Policy Area	Monitoring Method
Transit Oriented Districts (TODs)	Report annually on the status of the TODs. Include: <ul style="list-style-type: none"> <li>– A summary of new development within the TODs approved by DRP, including mixed-use projects; and</li> <li>– A summary of infrastructure improvements, including but not limited to pedestrian, bicycling, and streetscape improvements.</li> </ul>
Significant Ecological Areas (SEAs)	Report biennially on the status of the County’s SEAs. Include: <ul style="list-style-type: none"> <li>– A summary of new development within SEAs approved by DRP;</li> <li>– A public comment process for accepting suggestions on improving the SEA Program, and its components.</li> <li>– The overall status of biological functions within each SEA, if known;</li> <li>– Identification of any new techniques or methods of conservation planning which are, or could, be utilized to enhance the SEA Program</li> <li>– Assessment of the necessity for new SEA studies and any resulting scientific studies undertaken on SEAs;</li> <li>– Recommendations for any modifications to the SEA Program, including General Plan goals and policies, SEA boundaries and the SEA Ordinance;</li> </ul>

	<ul style="list-style-type: none"> <li>- Identification of lands within individual SEAs as priority habitats or areas for protection;</li> <li>- A description of any ongoing partnerships with conservation agencies and other stakeholders;</li> <li>- A current map of SEA lands that are protected in perpetuity through deed-restrictions, conservation easements, etc.; and</li> <li>- The Director’s conclusion as to the overall successes and challenges of the SEA Program in implementing General Plan goals and policies.</li> </ul>
Employment Protection Districts (EPDs)	<p>Report annually on the status of the EPDs. Include:</p> <ul style="list-style-type: none"> <li>- A summary of new development within the EPDs approved by DRP, including new industrial uses, as well as an analysis on the conversion of any industrial lands to non-industrial uses.</li> </ul>
Agricultural Resource Areas (ARAs)	<p>Report annually on the status of the ARAs. Include:</p> <ul style="list-style-type: none"> <li>- A summary of new development within the ARAs approved by DRP, including an analysis on the reduction or expansion of agricultural uses in the ARAs;</li> <li>- A comparison of the agricultural land uses countywide based on data from the California Department of Conservation and the Los Angeles County Agricultural Commissioner/Weights and Measures; and</li> <li>- Recommendations for any modifications to the ARA boundaries.</li> </ul>
Oak Tree Preservation	<p>Report annually on the status of the loss of oak trees.</p>

### 3. Dataset Updates

The General Plan includes various maps and figures that rely on datasets that are continually updated. The annual report shall outline information on new data that impacts General Plan maps and figures. As new datasets become available, the following maps will be updated administratively:

- Mineral Resource Zones, as programs such as the State’s mineral land use classification project are updated with new and expanded information over time. The County is required to recognize data transmitted by the State Mining and Geology Board in the General Plan within 12 months of receipt, per the Public Resources Code.
- Seismic and Geotechnical Hazard Zones
- Flood Hazard Zones
- Tsunami Hazard Areas
- Sea Level Rise Impact Areas
- Fire Hazard Severity Zones

The Special Management Areas Policy Map and the Hazard, Environmental, and Resource Constraints Map may also be updated administratively, if the changes are a result of new datasets that are applied to the aforementioned maps.

#### **4. Map Maintenance**

Lastly, certain policy maps may need to be amended annually to reflect new public lands and open space acquisitions. These changes will require a plan amendment. The annual report will outline plan amendment recommendations to be initiated by the DRP after the completion of the annual report.

The following policy maps will be reviewed annually and updated as needed:

- Land Use Policy Maps: Update based on changes to Public and Semi-Public (P) and Natural Resources (OS-C, OS-PR, OS-NF, OS-BLM, and W) land use categories.
- Open Space Resources Policy Map: Update to reflect new lands that have been dedicated permanently for open space conservation purposes, as well as land acquired for parks and recreation.

## **II. General Plan Updates**

The County shall undergo a comprehensive General Plan Update every 10 years. The General Plan Update shall include a concurrent update to the zoning ordinance and zoning map, as needed, to ensure consistency with the General Plan. Individual elements shall be updated in accordance with the statutory deadlines specified in the Government Code. Updating a General Plan is a comprehensive process that ensures consistency with other countywide agency plans, and should include stakeholder input.



## Chapter 16: General Plan Implementation Programs

### I. Introduction

The Government Code requires that upon adoption of a general plan, a planning agency shall “investigate and make recommendations to the legislative body regarding reasonable and practical means for implementing the general plan.”

### II. Organization

The General Plan programs, outlined below, are organized by General Plan element and are designed to address the overall policy objectives identified in the General Plan. Each program identifies lead and partner agencies; however, they are not exclusive, and new partners can be added, as needed. The programs also include a timeframe and are categorized based on level of priority. The highest priority programs should be initiated within the first two years of the adoption of the General Plan. Programs that are designated as ongoing represent actions that must be addressed on a regular basis for General Plan implementation.

### III. Funding

The General Plan programs guide the development of work programs for County departments. They also inform the budget process and will be used to set funding priorities. The schedules and tasks listed in the implementation program are based on adequate funding being secured through a joint effort undertaken by all departments and agencies. If funding is not secured, the implementation steps and/or timeframes may need to be modified. To supplement department budgets, County staff will also work to secure grants, as needed, for program implementation.

Program No.	Program Description	General Plan Goals and Policies	Lead and Partner Agencies	Timeframe
S-1	<p><b>Mass Debris Management Plan Implementation and Update</b></p> <p>Update the Mass Debris Management Plan based on organizational changes, new policies and guidance, and lessons learned from actual debris events to address the mass removal of debris that resulted from major disasters.</p>	Safety Element: Goal S 7	Lead: PW Partner: CEO	Ongoing
S-2	<p><b>At-Risk Properties Hazard Fund and Strategies</b></p> <ul style="list-style-type: none"> <li>• Identify at-risk properties in hazard areas, such as those on FEMA's repetitive loss properties list.</li> <li>• Research available funding sources to retrofit existing structures that are located in hazard areas.</li> </ul>	Safety Element: Goals S 1, S 3, S 4	Lead: PW Partner: CEO, DRP, DPH	Years 6-10
S-3	<p><b>Floodplain Management Plan Implementation and Update</b></p> <ul style="list-style-type: none"> <li>• Distribute and advocate the County's Floodplain Management Plan, which focuses on flood hazard information and mitigation strategies for repetitive loss properties and properties in severe flood hazard areas in the County's unincorporated areas.</li> <li>• Update the Floodplain Management Plan and the Repetitive Loss Area Analysis on their five-year cycle to address any additional or reduction of repetitive loss properties and properties in severe flood hazard areas.</li> </ul>	Safety Element: Goal S 3	Lead: PW	Ongoing
<u>S-4</u>	<p><b>Climate-Adapted Landscape Program</b></p> <p>Develop model landscape design strategies for development projects that specify climate-adapted plants to appropriately address hazards while also supporting local biodiversity.</p>	Safety Element: Goal S 2, S 4, S 5	Lead: DRP Partner: PW, Fire	Years 3-5
<u>S-5</u>	<p><b>Community Capacity and Resilience Program</b></p> <ul style="list-style-type: none"> <li>• Develop an education campaign to engage communities on actions and resources for adapting and increasing resilience to climate impacts.</li> <li>• Collaborate with community-based organizations on strategies best suited for communities in areas with high vulnerability to climate impacts by supplying easily</li> </ul>	Safety Element: Goal S 2, S 3, S 4, S 5	Lead: DRP Partner: CEO, PW, DPH	Ongoing

	<p>distributable information in a range of media platforms.</p> <ul style="list-style-type: none"> <li>• Develop a resource prioritization plan for funding allocation to frontline communities containing socially vulnerable populations as identified in the Los Angeles County Climate Vulnerability Assessment.</li> </ul>			
<u>S-6</u>	<p><b>Shaded Corridors Program</b></p> <ul style="list-style-type: none"> <li>• Identify corridors, particularly pedestrian pathways and bikeways that connect transit stations to nearby residential areas and public spaces, in extreme heat hazard overlay zones with the greatest need for shade.</li> <li>• Incorporate features, such as galleries, arcades, pergolas, awnings, and/or tree allées into development guidelines, where feasible and in compliance with fire regulations.</li> <li>• Coordinate with Public Works' Green Street Master Plan, which incorporates design strategies to mitigate climate change impacts.</li> <li>• Prioritize shading of pathways in disadvantaged communities in areas with high vulnerability to extreme heat.</li> </ul>	Safety Element: Goal S 2, S 5	Lead: DRP Partner: PW	Ongoing
<u>S-7</u>	<p><b>Oil and Gas Operation Strategy</b></p> <ul style="list-style-type: none"> <li>• Develop an ordinance that reflects best practices and current mitigation methods, minimize environmental impacts, and protect sensitive uses and populations.</li> <li>• Conduct an amortization study of oil and gas drill sites in unincorporated Los Angeles County to determine the most accelerated phase out period and recommendations to guide a phase-out process.</li> <li>• Develop a framework for an Oil Well Cleanup Pilot Program to plug and abandon idle oil wells, improve environmental conditions for affected communities and maximize local, high-road jobs.</li> </ul>	Safety Element: Goal S 6	Lead: DRP Partner: DPH, PW	Years 1-3
<u>S-8</u>	<p><b>OurCounty Sustainability Plan</b></p> <p>Implement the hazard and climate-impact related actions identified in the OurCounty Sustainability Plan. Programs include an urban forest management plan, heat island</p>	Safety Element: Goal S 2	Lead: CEO, DPH, DPR, DRP, Fire, ISD, OEM, PW	Ongoing

	reduction plan, and resilient integrated water system.			
<u>S-9</u>	<p><b>Reduce Damage from Wildfire</b></p> <ul style="list-style-type: none"> <li>• Amend Title 21 with development standards that could reduce the risk of personal injury or property damage in the Very High Fire Hazard Severity Zones (VHFHSZs).</li> <li>• Amend Title 22 to support the proposed changes in Title 21, and to further reduce the risks of personal injury and property damage in VHFHSZs.</li> </ul>	Safety Element: Goal S 4	Lead: DRP Partner: Fire	Years 1-3

## Appendix H: Safety Element Resources

### I. Active Faults

A significant number of known active earthquake faults are located throughout Los Angeles County. The locations of active faults are mapped to understand the potential likelihood and severity of seismic activity for existing and proposed development. Faults that are considered active by the State of California are included within the Alquist-Priolo Earthquake Fault Zones. Additional faults may be considered active by Los Angeles County and other jurisdictions based on seismic and geological data. Information on known active and inactive faults can be accessed through the source(s) below.

**U.S. Geological Survey’s Quaternary Faults Database:** This source provides fault trace locations, fault name, section name, age, dip direction, slip rate, slip sense, fault class, strike, and fault length, and other fault characteristics.

*Source:*

*U.S. Geological Survey and California Geological Survey, Quaternary fault and fold database for the United States, accessed October 13, 2021, at: <https://www.usgs.gov/natural-hazards/earthquake-hazards/faults>.*

### II. Zones of Required Investigation

The Seismic Hazards Mapping Act (SHMA) of 1990 (Public Resources Code, Chapter 7.8, Section 2690-2699.6) directs the Department of Conservation, California Geological Survey to identify and map areas prone to earthquake hazards of liquefaction, earthquake-induced landslides and amplified ground shaking. The purpose of the SHMA is to reduce the threat to public safety and to minimize the loss of life and property by identifying and mitigating these seismic hazards. The SHMA was passed by the legislature following the 1989 Loma Prieta earthquake.

A Seismic Hazard Zone is a regulatory zone that encompasses areas prone to liquefaction (failure of water-saturated soil) and earthquake-induced landslides.

**Liquefaction** occurs when loose, water-saturated sediments lose strength and fail during strong ground shaking. Liquefaction is defined as the transformation of granular material from a solid state into a liquefied state as a consequence of increased pore-water pressure. The process of zoning for liquefaction combines Quaternary geologic mapping, historical ground-water information and subsurface geotechnical data. Required Investigation boundaries are based on the presence of shallow historic groundwater (< 40 feet depth) in uncompacted sands and silts deposited during the last 15,000 years and sufficiently strong levels of earthquake shaking expected during the next 50 years.

**Landslides** tend to occur in weak soil and rock on sloping terrain. The landslide hazard Zone of Required Investigation boundaries generally indicate steep hillslopes composed of weak materials that may fail when shaken by an earthquake. The process for zoning earthquake-induced landslides incorporates expected future earthquake shaking, existing landslide features, slope gradient, and strength of hillslope materials.

The SHMA requires the State Geologist to establish regulatory zones (Zones of Required Investigation) and to issue appropriate maps (Seismic Hazard Zone maps). These maps are distributed to all affected cities, counties, and state agencies for their use in planning and controlling construction and development. Single family frame dwellings up to two stories not part of a development of four or more units are exempt from the state requirements. Information on fault, liquefaction, and landslide zones can be accessed through the source(s) below.

**California Department of Conservation, California Geological Survey's Earthquake Zones of Required Investigation:** This source depicts California Geological Survey Official Zone Maps for fault rupture, liquefaction, and seismic landslide hazards in California. Please note that portions of the Sierra Madre Fault zone and the western San Gabriel Fault zone are not included in this map because the State of California has not designated these faults as active. Los Angeles County does consider the Sierra Madre Fault and the western San Gabriel Fault to be active. Faults may be considered active or inactive in other jurisdictions.

*Source:*

*California Department of Conservation, California Geological Survey, Earthquake Zones of Required Investigation, accessed October 13, 2021, at: <https://www.conservation.ca.gov/cgs/maps-data>.*

### **III. Awareness Floodplain Mapping**

The intent of the Awareness Floodplain Mapping project by the California Department of Water Resources (DWR) is to identify all pertinent flood hazard areas by 2015 for areas that are not mapped under the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP). The Awareness project will also provide the community and residents with an additional tool in understanding potential flood hazards currently not mapped as a regulated floodplain. The awareness maps identify the 100-year flood hazard areas using approximate assessment procedures. These floodplains will be shown as flood prone areas without specific depths and other flood hazard data.

For more information and to view the Awareness Floodplain Mapping layer, please visit DWR's Best Available Maps web mapping portal at: <http://gis.bam.water.ca.gov/bam/>.

### **IV. Development in Flood Hazard Zones**

Figures H.1 through H.3 represent existing and planned developments, and streets, which are located within the County's flood hazard zones.

**Figure H.1: Existing Development in Flood Hazard Zones**

**Figure H.2: Planned Development in Flood Hazard Zones**

**Figure H.3: Streets in Flood Hazard Zones**

## V. Flood Repetitive Loss Sites

The County adopted an updated Repetitive Loss Area Analysis on June 15, 2021 to mitigate the flooding of repetitive loss properties. Los Angeles County had 54 FEMA-designated repetitive loss properties in its unincorporated areas as of September 2018, including four that FEMA has approved as being mitigated. The 50 remaining unmitigated properties have been mapped into 24 repetitive loss areas. The Repetitive Loss Area Analysis included mapping of the repetitive loss areas and recommended action items to mitigate the flooding issues.

For more information on the County’s Repetitive Loss Area Analysis, please visit PW’s web site at: <https://dpw.lacounty.gov/wmd/NFIP/FMP/RLAA.aspx>.

## VI. Regulatory Agencies for Flood Management, Protection, and Financial Assistance

**Table H.5: Federal, State, and Local Agencies Responsible for Flood Management, Protection, and Financial Assistance**

Agency	Type
U.S. Army Corps of Engineers	Federal
Federal Emergency Management Agency	Federal
U.S. Bureau of Reclamation	Federal
Natural Resources Conservation Service	Federal
U.S. Fish and Wildlife Service	Federal
National Marine Fisheries Service	Federal
U.S. Environmental Protection Agency	Federal
U.S. Geological Survey	Federal
U.S. Small Business Administration	Federal
U.S. Department of Housing and Urban Development	Federal
California Department of Water Resources	State
California Water Commission	State
State Water Resources Control Board	State

California Department of Fish and Wildlife	State
State Lands Commission	State
California Emergency Management Agency	State
California Department of Housing and Community Development	State
California Department of Real Estate	State
Los Angeles County Public Works	Local
Los Angeles County Flood Control District	Local
Los Angeles Office of Emergency Management	Local

## VII. Historic Wildfires in Los Angeles County

**Table H.6: Los Angeles County Wildfire Incident Statistics, 2007-2020\*\***

Fire Name	Year	Acres Burned	Structures	
			<i>Damaged</i>	<i>Destroyed</i>
Buckweed/ Agua Dulce	2007	38,356	30	43
Canyon	2007	4,500	14	8
Magic	2007	2,824	0	0
Ranch	2007	58,401	2	10
Meadow Ridge	2007	20	0	0
October	2007	100	0	0
Sayre	2008	11,262	0	634
Sesnon	2008	14,703	11	78
Marek	2008	4,824	10	42
Osito	2009	304	0	0



Morris	2009	2,168	0	0
Station	2009	160,577	57	209
Crown	2010	14,000	6	10
Briggs	2010	530	0	0
Oasis	2011	355	0	0
Wagon Wheel	2011	500	0	0
Mint	2011	634	0	0
Sage	2016	1,100	2	0
Old	2016	465	1	9
Fish	2016	4,253	0	0
Reservoir	2016	1,146	0	0
Sand	2016	41,383	20	116
Lake	2017	850	2	0
Creek	2017	15,619	81	123
Rye	2017	6,049	3	6
La Tuna	2017	7,194	0	5
Skirball	2017	422	13	9
Stone	2018	1,352	0	0
Charlie	2018	3,380	0	0
Woolsey***	2018	96,949	364	1,643
Saddle Ridge	2019	8,799	91	24
Tick	2019	3,950	46	29
Getty	2019	745	19	13
<b>Totals</b>		<b>507,714</b>	<b>772</b>	<b>3,011</b>

Source: Cal Fire Wildfire Activity Statistics

\*Data on structures damaged and destroyed was not available for all wildfires, just for the ones listed above.

\*\* Year 2020 statistics pending availability of 2020 Wildfire Activity Statistics from Cal Fire

\*\*\* Categorized under Ventura County by Cal Fire

**Table H.7: Acres Burned in Los Angeles County, 2004-2020**

<b>Year</b>	<b>Unincorporated Areas</b>	<b>Other Jurisdictions</b>	<b>All Jurisdictions</b>
2004	34,354	362	34,715
2005	5,221	23,835	29,056
2006	7,355	164	7,519
2007	116,894	2,231	119,125
2008	30,714	402	31,116
2009	162,266	871	163,136
2010	1,514	45	1,559
2011	1,813	64	1,883
2012	5,077	885	5,962
2013	31,464	282	31,746
2014	320	1,755	2,075
2015	943	343	1287
2016	42,762	5,796	48,559
2017	19,276	4,833	24,109
2018	49,728	13,377	63,106
2019	8,897	4,861	13,759
2020	149,987	4,516	154,503
<b>Totals</b>	<b>668,586</b>	<b>64,623</b>	<b>733,214</b>

Source: Los Angeles County Fire Department, Information Management Section, 2021.

## VIII. Fire Department Functions

The following provides an overview of applicable functions of the County of Los Angeles Fire Department:

1. **Fire Prevention Division:** This Division is responsible for conducting plan checks for building, processes and fire extinguishing systems. The Division coordinates with building and safety officials, federal, state, city and County officials to implement the Title 26 Building (Wildland-Urban Interface and Chapter 7A) and the County Fire Code, Title 32.

The Fire Prevention Division also focuses on educating the community about the benefits of proper safety practices and identifying and eliminating all types of hazardous conditions, which pose a threat to life, the environment and property. Commercial, industrial, and residential development and operations are processed and inspected.

2. **Forestry Division:** The Forestry Division enforces and observes all orders and ordinances of the Board of Supervisors pertaining to forest, brush, and other fires, and all statutes relating to prevention or extinguishment of forest, brush or grass fires. The Division cooperates with the State Forester and the Federal Forest Supervisors in the prevention and suppression of forest fires in the County of Los Angeles. The Forestry Division coordinates inspections with Emergency Operations personnel on private lands for the purpose of determining if a fire hazard exists. Where it is found that a fire hazard exists, the County Forester orders the owner or person responsible to abate or diminish such hazard. County Foresters educate the public about fire prevention and the conservation of natural resources, and disseminate such information by means of lectures, motion pictures, slides or other projection of pictures, displays and exhibits, or by any other appropriate means. The Forestry Division program areas are:

Conservation Education

Urban and Wildland Forestry Programs

Fire Hazard Reduction Programs

Oak Tree Ordinance

Fire Weather/Fire Danger

Emergency Incident Services

Wildland Urban Interface/Fire Safety Organizations

- **Environmental Review Unit:** This unit works with the Department of Regional Planning (DRP) to implement existing environmental ordinances. Unit personnel review all County Oak Tree Permit applications submitted to DRP, and develop recommendations for implementation. Additionally, unit personnel produce environmental documentation and recommendations, such as non-significant impact documents, negative declarations and mitigation measures consistent with California

Environmental Quality Act (CEQA) mandates for construction projects and developments. The County Forester and Fire Warden are also represented on the Subdivision Committee, which advises the Regional Planning Commission and Hearing Examiner (Title 21, Subdivisions, Section 21.12.010).

- **Fuel Modification Unit:** This unit provides guidelines and reviews landscape and irrigation plans submitted by the property owner for approval before construction or remodeling of a structure. As described in the Strategic Fire Plan, the objective of the Fuel Modification Unit is to create the defensible space necessary for effective fire protection in newly constructed and/or remodeled homes within the Department's Fire Hazard Severity Zones (FHSZ). Fuel modification reduces the radiant and convective heat, and provides valuable defensible space for firefighters to make an effective stand against an approaching fire front. Fuel modification zones are strategically placed as a buffer to open space or areas of natural vegetation and generally would occur surrounding the perimeter of a subdivision, commercial development, or isolated development of a single-family dwelling.
- **Brush Clearance Unit:** The Brush Clearance Program is a joint effort between the Fire Department and the County of Los Angeles Department of Agricultural Commissioner/Weights and Measures, Weed Hazard and Pest Abatement Bureau (Weed Abatement Division). This unified enforcement legally declares both improved and unimproved properties a public nuisance, and where necessary, requires the clearance of hazardous vegetation. The Department's Brush Clearance Unit enforces the Fire Code as it relates to brush clearance on improved parcels, coordinates inspections and compliance efforts with fire station personnel, and provides annual brush clearance training to fire station personnel.
- **Fire Plan Unit/Fire Safe Councils:** The Fire Plan Unit coordinates countywide projects and provides direction in the planning of pre-fire projects.

Fire Safe Councils are grassroots community-based organizations that share the objective of making California's communities less vulnerable to catastrophic wildfire. Fire Safe Councils accomplish this objective through education programs and fire hazard reduction projects such as shaded fuel breaks or home structure hardening to protect area residents against an oncoming wildfire and to provide fire fighters with a place to fight the oncoming fire.

The Fire Plan Unit supports the fire prevention efforts of the local Fire Safe Councils, assisting with project planning and implementation. Projects include hazardous tree and plant removal and trimming as well as fuel break treatment. A list of geographically-specific fire risk reduction projects (operational and proposed) is published annually in the Strategic Fire Plan.

## IX. Post-Fire Safety, Recovery and Maintenance

The Fire Department's Forestry Division implements post-fire reforestation projects to create resilient landscapes and restore functioning ecosystems. For example, the Forestry Division operates nurseries to supply native plants for revegetation of burned areas.

The Fire Department uses Cal MAPPER (CAL FIRE's Management Activity Project Planning Event Reporter) as the Department's designated GIS database for collecting activity and fiscal data on forest and fuels reduction projects executed through the County. CAL MAPPER assists with project planning and maintenance, risk assessment, performance measures and emergency response.

The following are additional programs at the County for Post-Fire Safety, Recovery, and Maintenance:

- **Coordinated Agency Recovery Effort (C.A.R.E):** During storm season there is an elevated risk of flooding, as well as an increased threat of mud and debris flows, particularly in foothill communities and in communities below recent wildfire burn areas. After the 2009 Station Fire, the Los Angeles County Public Works Department developed the Coordinated Agency Recovery Effort (C.A.R.E.), a multi-agency media and community outreach campaign. C.A.R.E. partners include County Public Works, Sheriff's and Fire Departments, the County Office of Emergency Management, the U.S. Forest Service, U.S. Geological Survey, the National Incident Management Organization, the National Weather Service, the California Department of Transportation (Caltrans), the American Red Cross, and the City of Los Angeles. C.A.R.E. program elements and community resources include a speakers' bureau for community meetings; educational/storm preparation materials; and information on road closures and evacuations, weather forecasts and updates, and links to other emergency response and recovery agencies. In addition, C.A.R.E.'s eNotfy System allows at-risk residents to register to receive storm-related updates and alerts. More information on C.A.R.E. is available at <http://dpw.lacounty.gov/care/>.
- **Burned Area Emergency Response (BAER) and State Emergency Assessment Teams (SEATs):** While many wildfires cause little damage to the land and pose few threats to fish, wildlife and people downstream, some fires create situations that require special efforts to prevent further catastrophic damage after the fire. Loss of vegetation exposes soil to erosion; runoff may increase and cause flash flooding; sediments may move downstream and damage houses or fill reservoirs; and put endangered species and community water supplies may be at risk. The Burned Area Emergency Response (BAER) federal program and State Emergency Assessment Teams (SEAT) program address these situations with the goal of protecting life, property, water quality, and deteriorated ecosystems from further damage after the fire is out. Concern for possible post-fire effects on fish, wildlife, archeological sites and endangered species is often a primary consideration in the development of BAER and SEAT plans.
- **Wildland-Urban Interface Fire Safety Organizations:** The Fire Department is represented in many local collaborative fire safety and prevention efforts. These include the following:

### **California Fire Safe Council (CFSC)**

California Fire Safe Council's mission is to "mobilize Californians to protect their homes, communities and environment from wildfires." California Fire Safe Council was formed as a committee of the California Department of Forestry and Fire Protection (CDF) (now called CAL FIRE) in 1993 and its intent was to bring together governmental agencies and corporations to provide education to the residents of California on the dangers of wildfires and how they could be prevented. For more information, please visit [www.cafiresafecouncil.org](http://www.cafiresafecouncil.org).

### **Santa Monica Mountains Fire Safe Alliance (SMMFSA)**

The mission of the Santa Monica Mountains Fire Safe Alliance, a collaboration of related public agencies, departments, and communities, is to find solutions and resources for property owners and land managers to improve stewardship in the wildland-urban interface. Integration of best management practices will create defensible space while protecting wildland. The Alliance will help create safer communities and protect natural areas by involving and educating stakeholders, sharing information, and locating and providing beneficial resources.

### **Sustainable and Fire Resistant Landscapes (SAFER Landscapes)**

Fire safety in the wildland-urban interface starts in the home, with the use of fire-resistant building materials and architectural features, practices to avoid starting fires in and around the home, and a household fire response plan. University of California Cooperative Extension provides information on maintaining sustainable and fire-safe landscapes in the home and beyond. For more information, please visit <http://ucanr.edu/sites/SAFERLandscapes/>.

### **Los Angeles County Weed Management Area (LAWMA)**

The WMA brings together local landowners, managers, and stewards to coordinate efforts and expertise against invasive plant species. For more information, please visit <http://lacountywma.org>.

### **Center for Invasive Species Research (CISR)**

Inadvertent introductions of exotic insect pests, plant diseases, weeds, and other noxious organisms (e.g., exotic crabs and mussels) pose a major and continuing threat to California's agricultural, urban, and natural environments as well as the state's precious supplies of fresh water. The Center for Invasive Species Research, based at the University of California, Riverside, provides a forward-looking approach to managing invasions by exotic pests and diseases. The Fire Department's Forestry Division alerts CISR when invasive species are discovered. For more information, please visit <http://cizr.ucr.edu/>.

## **X. Possible Evacuation Routes**

### **Methodology for Identifying Possible Evacuation Routes**

Evacuation routes are determined by emergency responders at the time of the emergency the routes that should be used for evacuation after assessing the conditions and location of the emergency to avoid endangering the lives of others, personal injury, or death. Roads that were (1) public, (2) paved, and (3) through-ways were identified as possible evacuation routes.

To identify these roads, two datasets were combined: (1) the Los Angeles County Master Plan of Highways (updated March 9, 2016), and (2) the Countywide Address Management System (CAMS). The Master Plan of Highways designates roadways in Los Angeles County by their planned capacity. All roads from this dataset were coded possible evacuation routes because all roads were public and paved. From the CAMS dataset, all primary and secondary roads were coded as possible evacuation routes because they met all three criteria. Other categories in the CAMS dataset, such as trails, dirt roads, onramps, offramps, some driveways, some private roads, and pedestrian walkways were excluded. Gates or road obstacles were not identified due to lack of data. Information on the capacity of these roads is available by clicking on the following links: (1) Master Plan of Highways - Overview ([arcgis.com](http://arcgis.com)), and (2) CAMS Data ([arcgis.com](http://arcgis.com)).

The County also classifies some roads as disaster routes (last updated September 24, 2012 by PW). Disaster routes are freeway, highway or arterial routes pre-identified for use during times of crisis. These routes are utilized to bring in emergency personnel, equipment, and supplies to impacted areas in order to save lives, protect property, and minimize impact to the environment. During a disaster, these routes have priority for clearing, repairing, and restoration over all other roads. Disaster routes are not evacuation routes. Although an emergency may warrant a road to be used as both a disaster and evacuation route, an evacuation route is used to move affected populations out of an impacted area.

#### **Methodology for Identifying Communities with Residential Developments with Limited Egress**

A list of unincorporated communities was compiled using a combination of Countywide Statistical Areas (CSA) and the County of Los Angeles Chief Executive Office's List of Unincorporated Communities. As some CSAs are quite large, such as the Santa Monica Mountains and the Antelope Valley, combining CSAs and community names as the unit for analysis enabled a refined identification of residential developments with access to fewer than two possible evacuation routes. The list of unincorporated communities from the Chief Executive Office is here: <https://ceo.lacounty.gov/wp-content/uploads/2018/08/Unincorp-Alpha-Web.pdf>

A multi-step process was undertaken to determine communities with residential developments with access to fewer than two possible evacuation routes. Residential developments, based upon zones that allow for residential development, located on non-through streets were identified. The possible evacuation routes were overlaid to determine if these residential developments were able to access two possible evacuation routes. The CSA was used as the unit basis for determining whether or not a community contained a residential development with access to fewer than two possible evacuation routes. If a minimum of one residential development within the CSA had access to fewer than two possible evacuation routes, the CSA would be identified as having limited egress. The community names found on the County Chief Executive Office's List of Unincorporated Communities was then used to augment the CSA community names to refine the referenced community. Unincorporated communities that had only one possible evacuation route were flagged and included in Table 12.3 in Chapter 12: Safety Element of the General Plan. These communities are visible on the Residential Developments with Limited Egress mapping application (<http://bit.ly/SE-SB99>).