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 ~~and~~, 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, ~~and~~ property damage, economic ~~damage~~ loss, and social dislocation resulting from natural and ~~man-made~~ 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 ~~man-made~~ human-made disasters, such as hazardous waste and materials management~~, in particular, those aspects related to seismic events, fires, and floods~~. 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. ~~To access the OAERP, and to find more information on the OEM, please visit the CEO's web site at http://lacoa.org/oaerp.htm.~~

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. ~~For more information on~~ To access the OAERP and the County All-Hazards Mitigation Plan, please visit the CEO's web site at ~~http://lacoa.org/hazmit.htm~~ https://lacounty.gov/emergency/county-of-los-angeles-all-hazards-mitigation-plan/.

II. Seismic and Geotechnical Hazards

Background

Since ~~1800~~ 1700, over ~~90~~ 78 significant earthquakes with a magnitude of 6.5 or greater have occurred in ~~the Los Angeles region~~ California. In the Los Angeles region, ~~T~~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 ~~landsliding~~ 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 and unpublished 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 ~~landsliding~~ 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 ~~completed~~ approved.

2. Geotechnical Hazards

More than 50 percent of the unincorporated areas are comprised of hilly or mountainous terrain. ~~The vast majority of~~ Most hillside hazards include mud and debris flows, active deep-seated landslides, hillside erosion, and man-induced slope instability. These geotechnical hazards include artificially-~~saturated~~ 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

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.	
Topic	**Policy**
Geotechnical Hazards	Policy S 1.1: Discourage development in Seismic Hazard and Alquist-Priolo Earthquake Fault Zones.
	Policy S 1.2: Prohibit ~~the~~ construction of ~~most~~ structures for human occupancy adjacent to active faults ~~until~~ unless a comprehensive fault study is approved that addresses ~~the potential for fault rupture has been completed~~ seismic hazard risks and proposes appropriate actions to minimize the risk.
	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 how 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 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 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/ourcounty-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 who were already at a disadvantage to recover completely. The lack of a social safety net can also make it difficult for disadvantaged communities to navigate reducing 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 augmented to 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 who are directly impacted by climate hazards and/or its secondary impacts.

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, or mudslides after extreme precipitation falling on a recent burn area. Effective emergency response planning will need to consider how secondary impacts may affect the impacted and adjacent communities.

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/ourcounty-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. To access the CVA, please visit: https://ceo.lacounty.gov/ourcounty-cso-actions/.

Goals and Policies for Climate Adaptation and Resiliency

Goal S 2: Prevent or minimize personal injury, loss of life, and property damage due to climate hazards and climate-induced secondary impacts.	
Topic	**Policy**
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 of a specified size, as determined in Title 21, and new accessory dwelling units within hazard areas to have at least two means of public road access for evacuation.
	Policy S 2.4: Promote the creation of resilience hubs in frontline communities that are at high vulnerability to climate hazards and ensure 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.

~~III~~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 ~~Department of~~ Public Works (~~D~~PW) and the Los Angeles County Flood Control District work to reduce flood risk in Los Angeles County. ~~One~~There are numerous ways in which ~~D~~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). ~~is through the development of the~~ 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 Los Angeles County unincorporated areas.

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 ~~http://dpw.lacounty.gov/lacfcd/sediment/Default.asp~~ https://dpw.lacounty.gov/lacfcd/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 12.2 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: 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 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). These 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. The County

also provides information on County Capital Flood floodplains and floodways from its County Floodway Maps.

Figure 12.2b: Floodway/Floodplain 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 Floodzone Determination website, please visit https://pw.lacounty.gov/floodzone.For more information on flood hazards, please visit the ~~D~~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. ~~Flood Hazards and the Impacts of~~ 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 change, a greater frequency of wet and dry extremes is expected to occur - a condition known as precipitation whiplash. 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). 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).

3. Tsunami Hazard Areas

~~Large sub-marine landslides have the potential to generate destructive tsunamis~~ 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 ~~as a result of a tsunami~~ 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.

~~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 inundation of water caused by a catastrophic dam or aqueduct failure can devastate large areas and threaten residences and businesses. There are 103 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. 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.~~

~~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. Increased rainfall and an earlier melting of the snowpack could result in overburdened~~

~~facilities that cannot adequately protect communities from floods. In addition, consideration needs to be made for floods caused by sea level rise.~~

4. Coastal Flooding

~~Figure 12.4 shows the areas along the coastline that can potentially be impacted due to sea level rise flooding. While these impacts are likely to occur over a long period of time,~~ ~~s~~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, ~~I~~impacts related to sea level rise include the flooding of septic systems and the intrusion of salt water into the fresh water supply. ~~Although~~ ~~c~~Coastal habitats can adapt to gradual changes in sea level, however, an accelerated rise in sea level will negatively impact coastal habitats. Wetlands~~, in particular,~~ 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

Goal S ~~2~~3: An effective regulatory system that prevents or minimizes personal injury, loss of life, and property damage due to flood and inundation hazards.	
Topic	**Policy**
Flood Hazards	Policy S ~~2~~3.1: Strongly ~~D~~discourage development in the County's Flood Hazard Zones.
	Policy S ~~2~~3.2: Strongly ~~D~~discourage development from locating downslope from aqueducts.
	Policy S ~~2~~3.3: ~~Consider climate change adaptation strategies in flood and inundation hazard planning.~~ Promote the use of natural, or nature-based flood protection measures to prevent or minimize flood hazards, where feasible.
	Policy S ~~2~~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 ~~2~~3.5: Ensure that ~~the mitigation of flood related property damage and loss limits impacts to~~ biological and ~~other~~ natural resources are protected during rebuilding after a flood event.
	Policy S ~~2~~3.6: Work cooperatively with public agencies with responsibility for flood protection, and with stakeholders in planning for flood and inundation hazards.
	Policy S ~~2~~3.7: ~~Locate essential public facilities, such as hospitals and fire stations, outside of Flood Hazard Zones, where feasible.~~ Infiltrate development runoff on-site, where feasible, to preserve or restore the natural hydrologic cycle and minimize increases in stormwater or dry weather flows.

~~IV~~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. Incorporated cities and federal ownerships are not included. LRA are incorporated cities, urban regions, agricultural lands, and portions of the desert 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 Forestry Division of the ~~Los Angeles~~ County of Los Angeles Fire Department (Fire Department) provides the wildfire protection in LRAs within unincorporated Los Angeles County and assists and supports the implementation of the CAL FIRE FHSZ model designation in 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.

~~In an effort to~~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 ~~D~~PW enforce fire and building codes related to development in FHSZs. The Fire Department implements ~~the~~ 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 ~~Los Angeles County~~ 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 ~~the California Department of Forestry and Fire Protection (~~CAL FIRE~~)~~ have ~~drafted~~ 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 ~~is in charge of implementing the California~~ implements the Fire Plan in unincorporated Los Angeles County. 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 ~~California~~ Fire Plan within unincorporated Los Angeles County through the Strategic Fire Plan. The Strategic Fire Plan, which is prepared by the Fire Department, 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 helispot fuel reduction projects, water resources, motorway maintenance maps, and a description of the road and fuel maintenance functions of the Fire Department. The Strategic Fire Plan is updated annually. This Safety Element incorporates the Strategic Fire Plan by reference ~~and as amended annually~~. 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~~, Section 4908~~. The fuel modification plan identifies specific zones within a property that are subject to fuel modification. A fuel modification zone is a strip 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 ~~the County Fire Code~~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 in hillside areas that are considered primary wildland fire risk areas. Table 12.1 references fire-related land use and building regulations, including fuel modification, in the Los Angeles County Code.

Table 12.~~1~~2. Fire-Related Land Use and Building Regulations in the Los Angeles County Code

Reference	Summary
~~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, Section 325~~	~~Clearance of brush and vegetative growth~~
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	Access road requirements for fire equipment access and public evacuation.
~~Title 21, Subdivisions, Section 21.44.250~~	~~Storm drain, sewer, or fire access easement designations on subdivision maps.~~
Title 21, Subdivisions, Section 21.24.220	Fire-protection access easements
Title 26, Building, Chapter 7A	Buildings within a Wildland-Urban Interface Fire Area.
~~Title 32, Fire, Section 105.7.9.1~~	~~Fire Department approval for land development projects.~~

Title 32, Fire, Section 325	Clearance of brush and vegetative growth
~~Title 32, Fire, Section 328.10~~	~~Land development plan reviews located within VHFSZs.~~
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

~~Many of the~~ Overlapping with fire hazard zones are areas that contain biological resources ~~in the unincorporated areas~~, including ~~those within~~ oak woodlands, Significant Ecological Areas (SEAs) and Coastal Resource Areas (CRAs)~~,as well as oak woodlands, overlap with fire hazard areas~~. 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 risk of wildfires. The native understory of oak woodlands typically contains less flammable vegetation than 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.

~~General descriptions of the biological resources and designation criteria for each SEA and CRA are contained in the Technical Appendix.~~ The SEA Program also includes the SEA Ordinance, an implementing ordinance, ~~the SEA Ordinance,~~ ~~which~~ that is part of ~~the County's~~ Title 22 (~~p~~Planning and ~~z~~Zoning) ~~code~~. 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.

~~In addition, 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. Oak woodlands play an important role in reducing risk of wildfires. The native understory of oak woodlands typically contains less flammable vegetation than other types of trees. Oak trees are also harder to ignite and not as prone to rapid combustion. Oak stands that are well maintained prevent slope failure, reduce erosion and can slow down a wildfire.~~

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

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 amount of fuel 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, 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 such as the gold~~en~~ spotted oak borer and polyphagous shot hole borer.

~~**Circulation and Access**~~

~~The Fire Department Strategic Fire Plan includes a map of existing Fire Department helispot fuel reduction projects, water resources, motorway maintenance maps, and a description of the road and fuel maintenance functions of the Fire Department.~~

~~Section 503 of Title 32 provides additional specifications for fire access roads in developed areas, including dimensions and markings.~~

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.

~~1~~2. The Increasing Costs of Wildland Fires

Although fires are a natural part of the wildland ecosystem, ~~development in wildland areas increases the danger of wildfires to residents, property, and the environment~~ 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 fuel loads but also due to further encroachment of urban development into wildland areas. 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~~, such as peak load water supplies and necessary disaster routes are~~ is incorporated into new developments, older communities with aging and substandard infrastructure may face greater risks from wildland fires. ~~In addition, current~~ Future regulations ~~cannot ensure that all~~ will need to consider the increased risk for existing developments ~~that locate~~ located in FHSZs ~~are protected~~ 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.

~~2~~3. 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.

~~3~~4. Fire Prevention, Response and Recovery

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~~, which is updated annually~~.

5. Community Resilience 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. Additional information can be found at the Fire Department's website: http://fire.lacounty.gov/rsg/.

Goals and Policies for Fire Hazards

Goal S ~~3~~4: An effective regulatory system that prevents or minimizes personal injury, loss of life, and property damage due to fire hazards.	
Topic	**Policy**
Fire Hazards	Policy S ~~3~~4.1: ~~Discourage high density and intensity development in VHFHSZs.~~ Prohibit new subdivisions in VHFHSZs unless located outside of the wildland urban interface, surrounded by existing development, and the level of service capacity of adjoining major highways can accommodate evacuation. Discourage subdivisions in all other FHSZs.
	Policy S ~~3~~4.2: ~~Consider climate change implications in fire hazard reduction planning for FHSZs.~~ New subdivisions shall provide adequate evacuation and emergency vehicle access on both public and private roads which 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 ~~3~~4.3: ~~Ensure that the mitigation of fire related property damage and loss in FHSZs limits impacts to biological and other resources.~~ Ensure that biological and natural resources are protected during rebuilding after a wildfire event.
	Policy S ~~3~~4.4: Reduce the risk of wildland fire hazards through ~~the use of~~ meeting minimum state and local regulations ~~and performance standards, such as~~ for fire-resistant building materials, vegetation management, fuel modification, and other fire hazard reduction programs within FHSZs.
	Policy S ~~3~~4.5: Encourage the use of ~~low-volume and well-maintained~~ vegetation drought-tolerant, fire-retardant, and fire-resistant plants that ~~is~~ are compatible with the area's natural vegetative habitats.
	Policy S ~~3~~4.6: Ensure ~~adequate~~ that infrastructure requirements for new development meet minimum state and local regulations for~~, including~~ ingress, egress, ~~and~~ peak load water supply availability, anticipated water supply, and other standards within ~~for all projects located in~~ FHSZs.
	Policy S ~~3~~4.7: ~~Site and design developments located within FHSZs, such as in areas located near ridgelines and on hilltops, in a sensitive manner to reduce the wildfire risk.~~ Discourage building mid-slope, on ridgelines and on hilltops, and employ adequate setbacks on slopes to reduce risk from wildfires and post-fire, rainfall-induced landslides.
	Policy S ~~3~~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 ~~3~~4.9: Adopt by reference the County of Los Angeles Fire Department Strategic Fire Plan, as amended.
	Policy S ~~3~~4.10: ~~Map oak woodlands in Los Angeles County as part of implementation of the Oak Woodlands Conservation Management Plan.~~ 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 ~~3~~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 ~~3~~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, such as 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.
	Policy S 4.14: Encourage developments in FHSZs to be clustered with compact footprints, and to be situated as far away as possible from the wildlands to conserve fire suppression resources, and to facilitate defense against wildfire.
	Policy S 4.15: Encourage rebuilds and additions to comply with fire mitigation guidelines, such as greater setbacks, clustered developments, and fire-adapted landscapes.
	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; California Government Code sections 51175 and 51189 related to VHFSZs; all requirements in the California Building Code and Fire Code; and Board of Forestry Fire Safe Regulations.
	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.
	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.
	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.
	Policy S 4.20: Prohibit new large general assembly uses in VHFHSZs unless located outside of the wildland urban interface, surrounded by existing development, and the level of service capacity of adjoining major highways can accommodate evacuation. Discourage large general assembly uses in all other FHSZs.

~~V~~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. The

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 LA County, where 95th-percentile daily maximum temperatures of over 100 ℉ 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

Goal S 5: Prevent or minimize personal injury, loss of life, and property damage due to extreme heat and drought impacts.	
Topic	**Policy**
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 for 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 disasters, 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 the 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 in the County's Second Supervisorial District.

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.

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

Goal S 6: Prevent or minimize personal injury, loss of life, and property damage due to human-made hazards.	
Topic	**Policy**
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: Prohibit all new oil and gas extraction wells in all zones, including those allowed or planned for under existing discretionary permits.
	Policy S 6.3: Designate all existing oil and gas extraction activities, including those allowed or planned for under existing discretionary permits, as legal nonconforming uses in all zones.
	Policy S 6.4: Coordinate with state elected officials and relevant state and regional agencies, including California Geologic Energy Management Division California Air Resources Board, California Environmental Protection Agency, and South Coast Air Quality Management District 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 6.5: 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.

~~V~~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 http://lacoa.org.

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.

Figure 12.9: Possible Evacuation Routes Map

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 12.2 lists the communities in unincorporated Los Angeles County that are both subject to a hazard and have at least one residential development 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 possible evacuation routes and 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*

Antelope Valley Planning Area			
Acton	Angeles National Forest	Crystalaire/(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	
East San Gabriel Valley Planning Area			
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			
Gateway Planning Area			
East Whittier	La Habra Heights Islands	Long Beach Island	North Whittier
Northwest Whittier	Cerritos Islands		
Metro Planning Area			
Florence-Firestone	East LA: Belvedere Gardens	East LA: City Terrace	East LA: Eastmont
East Rancho Dominguez			
San Fernando Valley Planning Area			
Kagel / Lopez Canyon			
Santa Clarita Valley Planning Area			
Agua Dulce	Alpine	Castaic	Castaic Junction/Castaic
Forest Park/ Canyon Country	Hasley Canyon/ Castaic	Newhall	Placerita Canyon
Santa Monica Mountains Planning Area			
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		
South Bay Planning Area			
Alondra Park	Del Aire	El Camino Village	Hawthorne Island
La Rambla	Lennox		
West San Gabriel Valley Planning Area			
East Pasadena	East Pasadena-Northeast San Gabriel	Kinneola Mesa/East Pasadena	La Crescenta-Montrose
Mayflower Village/Arcadia	North El Monte/Monrovia		
Westside Planning Area			
Baldwin Hills/ Ladera Heights	Franklin Canyon	Ladera Heights	Marina del Rey
**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.*			

~~Los Angeles~~ 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. ~~The Class Specifications can be found at http://dhrdcap.co.la.ca.us/classspec/index.cfm?fuseaction=search.detail&cs_id=22.~~ 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.

~~Los Angeles~~ County of Los Angeles Sheriff's Department

The ~~Los Angeles~~ 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 ~~which~~ 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 ~~present day~~ 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, has~~s~~ve 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; ~~and~~
- California Fire Assistance Agreement~~.~~; and
- Public Resources Code 4129

~~Over the last several decades an~~ The expansion of communities, homes, and other improvements into wildland areas has created a significant challenge for the ~~fire service~~ agencies responsible for providing fire protection in those areas.

~~Wildland~~ Fires in the wildland-urban interface ~~fires~~ 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 ~~currently~~ 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 3 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. ~~The Los Angeles Regional Interoperable Communication System (~~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.

~~The new system~~ 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-RIC~~s~~S 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. ~~Today, a~~All County firefighters and other emergency responders have the necessary personnel protective equipment and the training to respond safely and effectively ~~to an event of this type~~. 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 ~~fulfill all of its functions~~, 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 ~~about~~ regarding threats ~~that face~~ 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.

~~2.~~ 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. ~~In order to~~ 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

Goal S 47: Effective County emergency response management capabilities.	
Topic	**Policy**
Emergency Response	Policy S 47.1: 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 47.2: Support County emergency providers in reaching their response time goals.
	Policy S 47.3: 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 47.4: Encourage the improvement of hazard prediction and early warning capabilities.
	Policy S 47.5: Ensure that there are adequate resources, such as sheriff and fire services, for emergency response.
	Policy S 47.6: Ensure that essential public facilities are maintained during natural 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.

~~VII~~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 ~~and Update~~
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

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

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: – A summary of new development within the TODs approved by DRP, including mixed-use projects; and – A summary of infrastructure improvements, including but not limited to pedestrian, bicycling, and streetscape improvements.
Significant Ecological Areas (SEAs)	Report biennially on the status of the County's SEAs. Include: – A summary of new development within SEAs approved by DRP; – A public comment process for accepting suggestions on improving the SEA Program, and its components. – The overall status of biological functions within each SEA, if known; – Identification of any new techniques or methods of conservation planning which are, or could, be utilized to enhance the SEA Program – Assessment of the necessity for new SEA studies and any resulting scientific studies undertaken on SEAs; – Recommendations for any modifications to the SEA Program, including General Plan goals and policies, SEA boundaries and the SEA Ordinance;

	– Identification of lands within individual SEAs as priority habitats or areas for protection; – A description of any ongoing partnerships with conservation agencies and other stakeholders; – A current map of SEA lands that are protected in perpetuity through deed-restrictions, conservation easements, etc.; and – The Director's conclusion as to the overall successes and challenges of the SEA Program in implementing General Plan goals and policies.
Employment Protection Districts (EPDs)	Report annually on the status of the EPDs. Include: – 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.
Agricultural Resource Areas (ARAs)	Report annually on the status of the ARAs. Include: – 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; – 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 – Recommendations for any modifications to the ARA boundaries.
Oak Tree Preservation	Report annually on the status of the loss of oak trees.

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	**Mass Debris Management Plan Implementation and Update** ~~Prepare a~~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 ~~could~~ result~~ed~~ from ~~a~~ major disaster~~s~~.	Safety Element: Goal S ~~4~~7	Lead: ~~D~~PW ~~and OEM~~ Partner: CEO	~~Years 3-5~~ Ongoing
S-2	**At-Risk Properties Hazard Fund and Strategies** • Identify at-risk properties in hazard areas, such as those on FEMA's repetitive loss properties list. • Research available funding sources to retrofit existing structures that are located in hazard areas.	Safety Element: Goals S 1, S ~~2~~3, S ~~3~~4	Lead: ~~D~~PW Partner: CEO, DRP, DPH	Years 6-10
S-3	**Floodplain Management Plan Implementation and Update** • 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. • Update the Floodplain Management Plan and the Repetitive Loss Area Analysis on ~~its~~ their five-year cycle to address any additional or reduction of repetitive loss properties and properties in severe flood hazard areas.	Safety Element: Goal S ~~2~~3	Lead: ~~D~~PW	Ongoing
S-4	**Climate-Adapted Landscape Program** • Develop model landscape design strategies for development projects that specify climate-adapted plants to appropriately address hazards while also supporting local biodiversity.	Safety Element: Goal S 2, S 4, S 5	Lead: DRP Partner: PW, FIRE	Years 3-5
S-5	**Community Capacity and Resilience Program** • Develop an education campaign to engage communities on actions and resources for adapting and increasing resilience to climate impacts. • Collaborate with community-based organizations on strategies best suited for communities in areas with high vulnerability to climate impacts by supplying easily distributable information in a range of media platforms.	Safety Element: Goal S 2, S 3, S 4, S 5	Lead: DRP Partner: CEO, PW, DPH	Ongoing

	• Develop a resource prioritization plan for funding allocation to frontline communities containing socially vulnerable populations as identified in the climate vulnerability assessment.			
S-6	**Shaded Corridors Program** • Promote the creation of shade along pedestrian pathways and bikeways that connect transit stations to nearby residential areas and public spaces in areas that fall within designated extreme heat hazard overlay zones. • Identify corridors in extreme heat hazard overlay zones with greatest need of shade • Encourage the addition of features such as galleries, arcades, pergolas, awnings, and/or tree allées on the frontages of development projects, where feasible. • Coordinate with Public Works' Green Street Master Plan, which incorporates design strategies to mitigate climate change impacts. • Prioritize pathways in disadvantaged communities in areas with high vulnerability to extreme heat.	Safety Element: Goal S 2, S 5	Lead: DRP	Ongoing
S-7	**Oil and Gas Operation Strategy** • Develop an ordinance that reflects best practices and current mitigation methods, minimize environmental impacts, and protect sensitive uses and populations. • 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. • 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.	Safety Element: Goal S 6	Lead: DRP Partner: DPH, PW	Years 1-3
S-8	**OurCounty Sustainability Plan** • Implement the hazard and climate-impact related actions identified in the OurCounty Sustainability Plan. Programs include an urban forest management plan, heat island reduction plan, and resilient integrated water system.	Safety Element: Goal S 2	Lead: CEO, DPH, DPR, DRP, FIRE, ISD, OEM, PW,	Ongoing

Chapter 17: Goals and Policies Summary

Safety Element Goals and Policies

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.	
Topic	**Policy**
Geotechnical Hazards	Policy S 1.1: Discourage development in Seismic Hazard and Alquist-Priolo Earthquake Fault Zones.
	Policy S 1.2: Prohibit ~~the~~ construction of ~~most~~ structures for human occupancy adjacent to active faults ~~until~~ unless a comprehensive fault study is approved that addresses ~~the potential for fault rupture has been completed~~ seismic hazard risks and proposes appropriate actions to minimize the risk.
	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.
Goal S 2: Prevent or minimize personal injury, loss of life, and property damage due to climate hazards and climate-induced secondary impacts.	
Topic	**Policy**
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 of a specified size, as determined in Title 21, and new accessory dwelling units within hazard areas to have at least two means of public road access for evacuation.
	Policy S 2.4: Promote the creation of resilience hubs in frontline communities that are at high vulnerability to climate hazards and ensure 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.
Goal S ~~2~~3: An effective regulatory system that prevents or minimizes personal injury, loss of life, and property damage due to flood and inundation hazards.	
Topic	**Policy**

Flood Hazards	Policy S ~~2~~3.1: Strongly ~~D~~discourage development in the County's Flood Hazard Zones.
	Policy S ~~2~~3.2: Strongly ~~D~~discourage development from locating downslope from aqueducts.
	Policy S ~~2~~3.3: ~~Consider climate change adaptation strategies in flood and inundation hazard planning.~~ Promote the use of natural, or nature-based flood protection measures to prevent or minimize flood hazards, where feasible.
	Policy S ~~2~~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 ~~2~~3.5: Ensure that ~~the mitigation of flood related property damage and loss limits impacts to~~ biological and ~~other~~ natural resources are protected during rebuilding after a flood event.
	Policy S ~~2~~3.6: Work cooperatively with public agencies with responsibility for flood protection, and with stakeholders in planning for flood and inundation hazards.
	Policy S ~~2~~3.7: ~~Locate essential public facilities, such as hospitals and fire stations, outside of Flood Hazard Zones, where feasible.~~ Infiltrate development runoff on-site, where feasible, to preserve or restore the natural hydrologic cycle and minimize increases in stormwater or dry weather flows.
Goal S ~~3~~4: An effective regulatory system that prevents or minimizes personal injury, loss of life, and property damage due to fire hazards.	
Topic	**Policy**
Fire Hazards	Policy S ~~3~~4.1: ~~Discourage high density and intensity development in VHFHSZs.~~ Prohibit new subdivisions in VHFHSZs unless located outside of the wildland urban interface, surrounded by existing development, and the level of service capacity of adjoining major highways can accommodate evacuation. Discourage subdivisions in all other FHSZs.
	Policy S ~~3~~4.2: ~~Consider climate change implications in fire hazard reduction planning for FHSZs.~~ New subdivisions shall provide adequate evacuation and emergency vehicle access on both public and private roads which 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 3~~4~~.3: ~~Ensure that the mitigation of fire related property damage and loss in FHSZs limits impacts to biological and other resources.~~ Ensure that biological and natural resources are protected during rebuilding after a wildfire event.
	Policy S ~~3~~4.4: Reduce the risk of wildland fire hazards through ~~the use of~~ meeting minimum state and local regulations ~~and performance standards, such as~~ for fire-resistant building materials, vegetation management, fuel modification, and other fire hazard reduction programs within FHSZs.
	Policy S ~~3~~4.5: Encourage the use of ~~low volume and well maintained vegetation~~ drought-tolerant, fire-retardant, and fire-resistant plants that ~~is~~ are compatible with the area's natural vegetative habitats.
	Policy S ~~3~~4.6: Ensure ~~adequate~~ that infrastructure requirements for new development meet minimum state and local regulations for~~, including~~ ingress, egress, ~~and~~ peak load water supply availability, anticipated water supply, and other standards within ~~for all projects located in~~ FHSZs.

	Policy S 3~~4~~.7: ~~Site and design developments located within FHSZs, such as in areas located near ridgelines and on hilltops, in a sensitive manner to reduce the wildfire risk.~~ Discourage building mid-slope, on ridgelines and on hilltops, and employ adequate setbacks on slopes to reduce risk from wildfires and post-fire, rainfall-induced landslides.
	Policy S ~~34~~.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 ~~34~~.9: Adopt by reference the County of Los Angeles Fire Department Strategic Fire Plan, as amended.
	Policy S ~~34~~.10: ~~Map oak woodlands in Los Angeles County as part of implementation of the Oak Woodlands Conservation Management Plan.~~ 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 ~~34~~.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 ~~34~~.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, such as 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.
	Policy S 4.14: Encourage developments in FHSZs to be clustered with compact footprints, and to be situated as far away as possible from the wildlands to conserve fire suppression resources, and to facilitate defense against wildfire.
	Policy S 4.15: Encourage rebuilds and additions to comply with fire mitigation guidelines, such as greater setbacks, clustered developments, and fire-adapted landscapes.
	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; California Government Code sections 51175 and 51189 related to VHFSZs; all requirements in the California Building Code and Fire Code; and Board of Forestry Fire Safe Regulations.
	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.
	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.
	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.

	Policy S 4.20: Prohibit new large general assembly uses in VHFHSZs unless located outside of the wildland urban interface, surrounded by existing development, and the level of service capacity of adjoining major highways can accommodate evacuation. Discourage large general assembly uses in all other FHSZs.
Goal S 5: Prevent or minimize personal injury, loss of life, and property damage due to extreme heat and drought impacts.	
Topic	**Policy**
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 for 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.
Goal S 6: Prevent or minimize personal injury, loss of life, and property damage due to human-made hazards.	
Topic	**Policy**
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: Prohibit all new oil and gas extraction wells in all zones, including those allowed or planned for under existing discretionary permits.
	Policy S 6.3: Designate all existing oil and gas extraction activities, including those allowed or planned for under existing discretionary permits, as legal nonconforming uses in all zones.
	Policy S 6.4: Coordinate with state elected officials and relevant state and regional agencies, including California Geologic Energy Management Division California Air Resources Board, California Environmental Protection Agency, and South Coast Air Quality Management District 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 6.5: 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.
Goal S 4~~7~~: Effective County emergency response management capabilities.	
Topic	**Policy**
Emergency Response	Policy S ~~4~~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 ~~4~~7.2: Support County emergency providers in reaching their response time goals.
	Policy S ~~4~~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 ~~4~~7.4: Encourage the improvement of hazard prediction and early warning capabilities.
	Policy S ~~4~~7.5: Ensure that there are adequate resources, such as sheriff and fire services, for emergency response.
	Policy S ~~4~~7.6: Ensure that essential public facilities are maintained during ~~natural~~ 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.