CITY *of* CALABASAS
2030 General Plan

VII. SAFETY ELEMENT

The Safety Element is concerned with identifying and, whenever possible, reducing the impact of natural and man-made hazards that may threaten the health, safety, and property of Calabasas residents, business owners, and visitors. The element emphasizes hazards reduction and accident prevention for known hazards and potential disasters. In addition, the element emphasizes the importance of reducing risk and the effects of disaster prevention and/or preparedness.

The Safety Element establishes mechanisms to reduce death, injuries, property damage and the economic and social dislocation resulting from hazards such as fires, floods, earthquakes, landslides, and other hazards. Hazards are an unavoidable aspect of life, and the Safety Element cannot eliminate risk completely. Instead, the Element contains policies to minimize the level of risk. Additional information, including hazard profiles, previous occurrences, potential loss estimates, and mitigation strategies can be found in the Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan, of which the City is a participating jurisdiction.

Numerous potential hazards that could affect life and property are present in and around Calabasas. Safety hazards can be ~~generally grouped~~grouped into two categories: ~~naturally-occurring~~naturally occurring and man-made. Some hazards – flooding, for example – can be categorized as both naturally-occurring and man-made. Flooding could occur naturally ~~as a result of~~because of intense precipitation in a short duration which causes rivers, natural drainage courses, or low-lying areas to overflow affecting surrounding properties. Man-made flooding could occur as a result of failure of a dam, obstruction of a natural drainage course, to a fire hydrant being broken in an automobile accident. In accordance with Government Code Section 65302, this safety element also includes a climate change vulnerability assessment and measures to address vulnerabilities in the section titled *Climate Change*.

Issues covered in this Safety Element include~~:~~:

A. Geology and Seismicity

B. Stormwater Management and Flooding

C. Fire Hazards

D. Radon Gas

E. Hazardous Materials

F. Disaster Response

G. Climate Change

VII. SAFETY ELEMENT

Included as a technical appendix to the Safety Element are detailed analyses regarding wildfire risk and emergency evacuation. *See Appendix D Safety Element Appendices which include Appendix D-1 Wildfire Assessment and Appendix D-2 Emergency Evacuation Traffic Assessment*.

VII.A Geology and Seismicity

Objective

Minimize the potential for loss of life, physical injury, property damage, and social disruption resulting from seismic ground shaking and other geologic events.

The Seismic Hazards Mapping Act, a California law passed in 1990, requires the State Geologist to identify and map zones prone to seismically induced liquefaction, ground shaking, ~~landslides~~landslides, and other forms of ground failure resulting from earthquakes.

General Plan Approach

Like all of Southern California, Calabasas is subject to substantial seismic hazards. These seismic hazards can affect the structural integrity of buildings and utilities, and, in turn, cause property damage and potential loss of life. Although it is not possible to prevent earthquakes, their destructive effects can be minimized through comprehensive hazard-mitigation programs and efforts. The potential for a major earthquake that may result in loss of life, injury, or displacement of many thousands of persons is present throughout Southern California. The precise time of such an event cannot be ~~accurately~~ predicted.

Calabasas is not located within an Alquist-Priolo Fault-Rupture Hazard Zone (California Geological Survey, 1999). However, 25 active and potentially active faults are located within 25 miles of the City. A partial list of these faults includes:

- *Malibu Coast*
- *Anacapa Dume*
- *Santa Monica*
- *Palos Verdes*
- *Northridge*
- *Hollywood*
- *Simi-Santa Rosa*
- *Santa Susana*
- *Newport-Inglewood*
- *Sierra Madre (San Fernando)*
- *Oakridge (onshore)*
- *Verdugo*
- *Holser*
- *San Gabriel*
- *Compton Thrust*
- *San Cayetano*

- *Sierra Madre*
- *San Andreas*

VII. SAFETY ELEMENT

Figure VII-1 depicts regional faults that could create severe ~~groundshaking~~ground shaking in Calabasas, according to U.S. Geological Survey 2020 data. Although the San Andreas fault is located around 60 miles northeast of Calabasas, it is considered a "master fault" because it is the boundary between the Pacific and North American geology plates. In the event of a 7.8 magnitude San Andreas ~~E~~earthquake, in addition to widespread property damage, power outages, displacement, and loss of life, southern California's aqueducts would incur significant damage and restoration of water flow to the region would take around four to 18 months (Davis, Craig, and Thomas O'Rourke 2011). According to the Las Virgenes Municipal Water District, during this type of earthquake scenario, water supply can be provided to their service area for up to 6 months from the Las Virgenes Reservoir, which, according to the District's Urban Water Management Plan, can hold up to 9,500 acre-feet of water.

Although no known faults are located within Calabasas, known ~~the aforementioned~~ fault systems could cause property damage, ~~possibly resulting~~resulting in injury and loss of life in the

event of a major earthquake due to ground motion. The level of impact resulting from any seismic activity will depend on factors such as: distance from epicenter, earthquake magnitude, and characteristics of soils and subsurface geology. **Figure VII-2** depicts the seismic hazard zones delineated by the California Department of Conservation (2021).

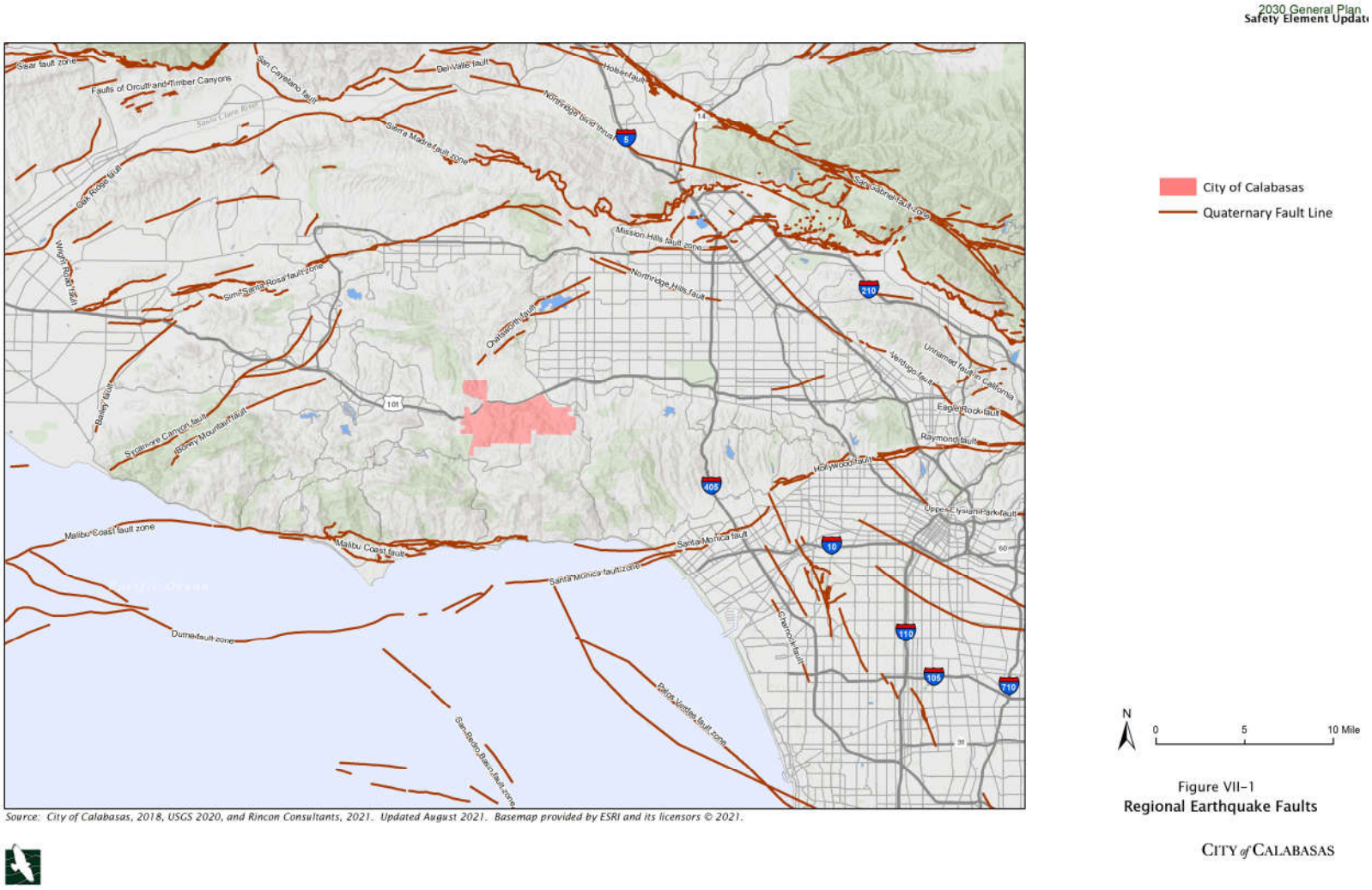
> *The California Building Code (CBC) is the regulatory environment for design and construction of building codes and standards covering local, state, federal, land use and environmental regulations which are developed specifically for the purpose of regulating the life safety, ~~health~~health, and welfare of the public.*

The City ~~will~~ requires building design to be commensurate with the expected level of groundshaking in a major earthquake, based on site-specific soils and geologic conditions, as well as on the level of risk associated with potential damage to the building. Thus, high-occupancy buildings and buildings that serve needed disaster recovery functions need to be designed to withstand a greater degree of groundshaking than low-occupancy, low-risk buildings. For all buildings, once environmental protection policies are met, construction techniques will be regulated according to the latest edition of the California Building Code with City of Calabasas amendments or increased requirements as necessary to reduce geologic and seismic risks to acceptable levels.

According to the California Department of Conservation (2021), pPortions of Calabasas may be susceptible to liquefaction (see **Figure VII-2**). Liquefaction results when water-saturated, sandy unstable soils are subject to intense shaking, such as that caused by an earthquake. These soils lose cohesiveness, causing unreinforced structures to fail.

VII. SAFETY ELEMENT

Figure VII-1-Updated

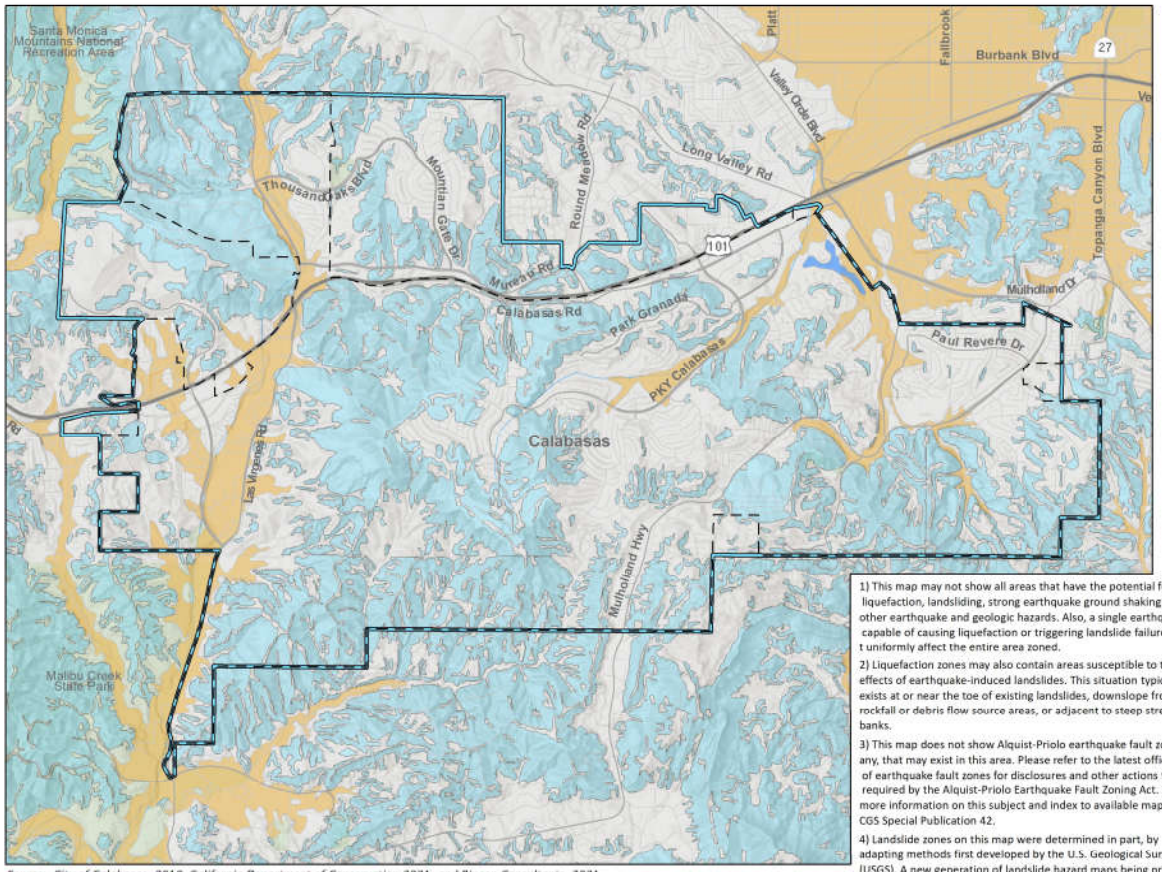


Source: City of Calabasas, 2018, USGS 2020, and Rincon Consultants, 2021. Updated August 2021. Basemap provided by ESRI and its licensors © 2021.

Figure VII-1
Regional Earthquake Faults

CITY of CALABASAS

Figure VII-2



Source: City of Calabasas, 2018, California Department of Conservation 2021, and Rincon Consultants, 2021. Updated August 2021. Basemap provided by ESRI and its licensors © 2021.

VII. SAFETY ELEMENT

Liquefaction can cause damage to residential, commercial, and industrial buildings as well as infrastructure including roads, bridges, and pipelines. The primary factors for increased liquefaction susceptibility include areas subject to high seismicity, shallow groundwater, and young, poorly consolidated sandy alluvium. When this type of sandy alluvium is present, liquefaction susceptibility is ~~generally considered~~considered high if groundwater depth is less than ten feet beneath the ground surface, moderate if ground water depth is between ten and thirty feet, and low if groundwater is between thirty and fifty feet deep. Liquefaction usually is not considered a significant hazard if the groundwater table is more than 50 feet below the ground surface level.

The topography within Calabasas varies and features vertical slopes and steep canyons. The major environmental factors controlling stability of the steeper hillsides include precipitation, topography, geology, soils, vegetation, and man-made alterations of the natural topography. Development on hillside areas where steep slopes are present can increase rates of erosion and exacerbate landslide hazards that may threaten structures. However, methods contained within the California Building Code reduce negative impacts associated with development on slopes.

Although it is not possible to eliminate all the risks associated with seismic related hazards, it is the intent of the Safety Element to use available tools, such as geotechnical studies, appropriate land -use ~~decisions~~decisions, and adequate building codes to reduce risks.

Policies

VII-1 Incorporate adequate mitigation measures into proposed development projects to achieve an accep*table* level of risk from potential seismic hazards resulting from ground motion or fault rupture. Figure VII-1 depicts regional faults that could create severe ground shaking in Calabasas.

VII-2 Emphasize prevention of physical and economic loss associated with earthquakes and other geologic disasters through early identification of potentially hazardous conditions prior to project approval.

VII-3 Facilitate rapid physical and economic recovery following an earthquake, geologic ~~disaster~~disaster, or wildland fire through early investigation of the event and implementation of effective new standards for design of structures.

VII-4 Incorporate the analysis and mitigation of seismic risks into the analysis and design of water supply infrastructure.

VII-5 Strongly d~~D~~iscourage development within potential landslide areas and areas with severe soils limitations as the City's preferred management strategy, and as a higher priority than attempting to implement engineering solutions.

VII-6 Where engineering solutions to slope stability constraints are required, implement landform grading programs ~~so as to~~to recreate a natural hillside appearance.

VII-7 Include projected climate change impacts of slope stability changes after wildfires and develop mitigation strategies for new areas deemed at risk to slope instability.

VII-8 Prior to approval of development projects within the liquefaction or landslide hazard zones depicted on Figure VII-2 or other areas identified by the City Engineer as having significant liquefaction or landslide hazards, require applicants to prepare site-specific liquefaction and/or landslide studies and mitigation. Such studies shall be subject to review and approval by the City Engineer.

VII-9 Work cooperatively with the Las Virgenes Municipal Water District to e~~E~~nsure that water supplies are not interrupted by seismic events such as surface rupture, ground shaking, ground failure, tsunami, seiche, or dam failure. Encourage residents, homeowners, and landlords to maintain an on-site emergency supply of water for 3-days in case a seismic event damages water lines.

VII-10 Prepare a bridge preventative maintenance plan that is regularly updated in conformance with the findings from Caltrans' annual bridge inspection reports. Implement maintenance recommendations by seeking funding from Caltrans and the Federal Highway Administration~~,~~ and prioritize bridges that are part of critical evacuation routes.

VII.B Stormwater Management and Flooding

Objective

Minimize the potential for loss of life, physical injury, property damage, and social disruption resulting from flooding.

A 100 year flood is calculated to be the level of flood water equaled or exceeded at least once in a 100 year period. The 100 year flood is more accurately referred to as the 1% flood, since it is the event that has a 1% chance of being equaled or exceeded in any single year.

VII. SAFETY ELEMENT

General Plan Approach

Flooding is the inundation of normally dry land ~~as a result of~~because of a rise in the level of surface waters or the rapid accumulation of storm~~–~~water runoff; it becomes a hazard when the flow of water has the potential to damage property and threaten human life or health. Flood risks are greatest, and flood hazards most severe, in winter, when water bodies are usually full and soils saturated. Flooding is primarily a natural process and, therefore, difficult to prevent. However, land use and development decisions have a significant effect on the frequency and severity of floods; in general, urbanization increases the risk of flooding by increasing stormwater runoff and, to a lesser extent, erosion. Flooding is often a regional problem that crosses multiple jurisdictional boundaries.

Figure VII-3 depicts the Federal Emergency Management Agency ~~(FEMA)~~ flood zones in Calabasas using Federal Emergency Management Agency~~FEMA~~ data from 2008 and 2016. A small portion of western Calabasas is within the 100-year floodplain; however, ~~the majority of~~most of the City is not located within any designated flood zones.

Calabasas will facilitate efforts with local, state, and federal agencies, including special districts, to address flooding issues. Development will generally be discouraged in flood-prone areas and individual developers in the City will be required to mitigate their potential contributions to downstream flooding problems.

Policies

VII-11 Incorporate adequate mitigation measures into proposed development projects to achieve an acceptable level of risk from potential flooding hazards. Mitigation measures should also address projected flooding impacts from climate change.

VII-12 Strongly d~~D~~iscourage development within flood hazard areas and encourage retention of natural drainage as the City's preferred management strategy, and as a higher priority than attempting to implement engineering solutions~~.~~.

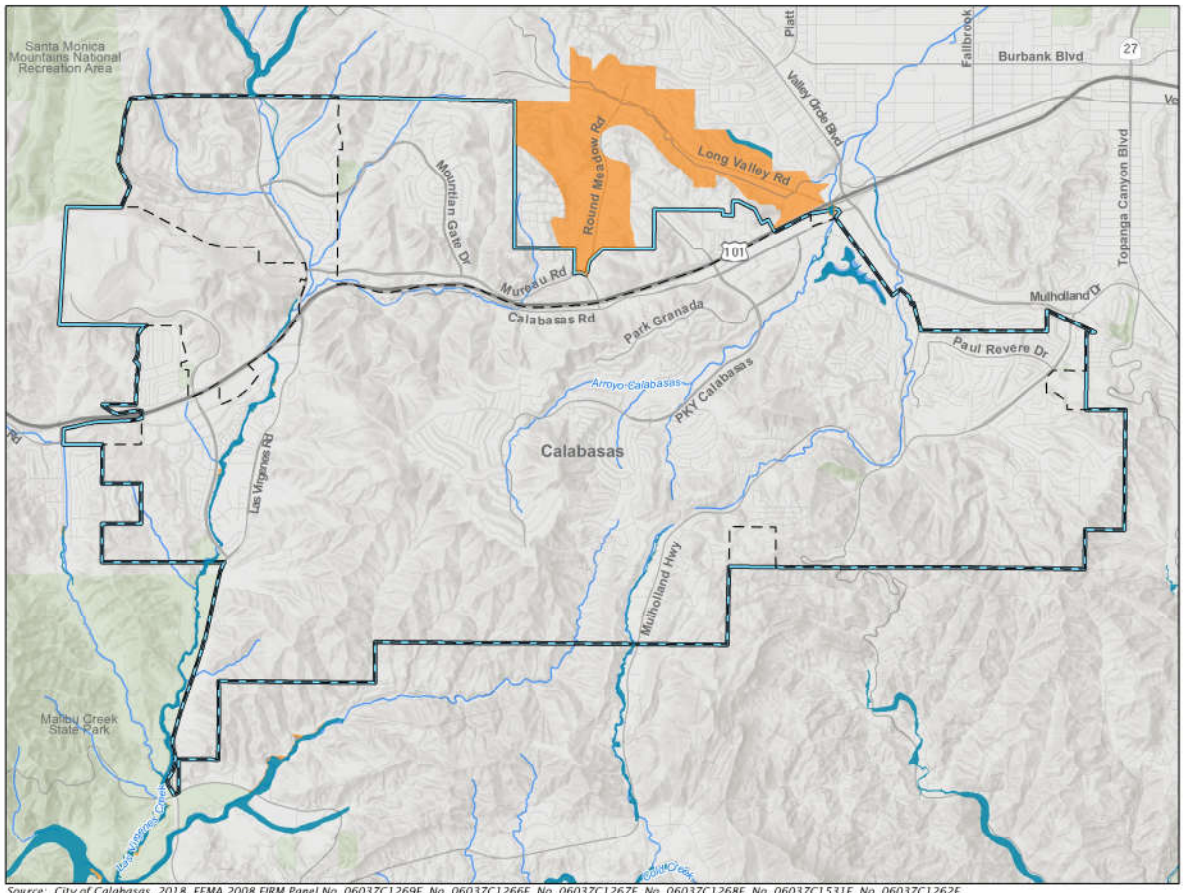
VII-13 Ensure that new flood control and drainage facilities as well as improvements to existing facilities are consistent with the General Plan's environmental protection standards.

VII-14 For ~~discretionary~~ development projects, limit new impervious surfaces to those that will not individually or cumulatively increase harmful runoff into natural stream channels downstream.

VII-15 Setbacks from stream beds should be sufficient to avoid possible adverse effects associated with future stream bank erosion.

VII-16 ———Whenever feasible, locate essential public facilities, including health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities, outside flood hazard zones.

Figure VII-3 – FEMA Flood Hazard Zones



Source: City of Calabasas, 2018, FEMA 2008 FIRM Panel No. 06037C1269F, No. 06037C1266F, No. 06037C1267F, No. 06037C1268F, No. 06037C1531F, No. 06037C1262F, FEMA 2016 FIRM Panel No. 06037C1264G, No. 06037C1527G, and Rincon Consultants, 2021. Updated February 2022. Basemap provided by ESRI and its licensors © 2022.

VII.C Fire Hazards

Objective

Minimize the potential for loss of life, physical injury, property damage, and social disruption resulting from urban and wildland fires.

General Plan Approach

Fire is a unique hazard in that it can result both from natural processes and from the intentional or accidental actions of people. There are three main types of fire hazards: (1) wildfires, which affect open space and development on the urban fringe; (2) structural fires, which occur in buildings; and (3) industrial fires, which generally result from the ignition of flammable materials. While fires are not entirely preventable, it is possible to create conditions that reduce the chances of fire and that facilitate efficient response in case fire breaks out. When a fire does ignite, quick response from firefighters and an adequate supply of water are essential in minimizing damage.

General factors that affect an area's risk from fire hazards include its location, land uses, distance from fire stations, ease of accessibility by fire-fighting equipment and personnel, and adequacy of water supply. More specifically, the extent and severity of damage by fires are determined by several key factors affecting vulnerability. All areas within ~~All of~~ Calabasas' city limits ~~is~~are designated as a very high fire hazard severity zone, according to CAL FIRE 2020 data (see **Figure VII-4**).

There are several critical facilities located within the City of Calabasas and within the very high fire hazard severity zones, as shown on **Figure VII-4**. Critical facilities are structures and institutions necessary for a community's response to and recovery from emergencies. Critical facilities must continue to operate during and following a disaster to reduce the severity of impacts and accelerate recovery. Critical facilities are identified in the Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan, and include schools, emergency services, natural gas and oil pipelines, banking and finance institutions, commercial facilities, the 101 Freeway, and water district headquarters. In addition to the critical facilities shown on **Figure VII-4**, the Agoura Hills/Calabasas Community Center may serve as a critical facility once repairs have been completed and it is reopened.

Fire services are provided to residents by the Los Angeles County Fire Department (LACOFD), including fire protection and emergency medical services as well as wildland fire protection and forestry tree service. No areas in Calabasas have been identified as lacking emergency response services.

VII. SAFETY ELEMENT

Historical fires in or near Calabasas are mapped below in **Figures VII-5**, **VII-6**, and **VII-7** using CAL FIRE data. Fires have impacted the western half of the city with the most recent fire occurring in 2018. The 2018 Woolsey Fire extended into the western half of the City damaging properties, vegetation, and habitat, and triggered a city-wide emergency evacuation.

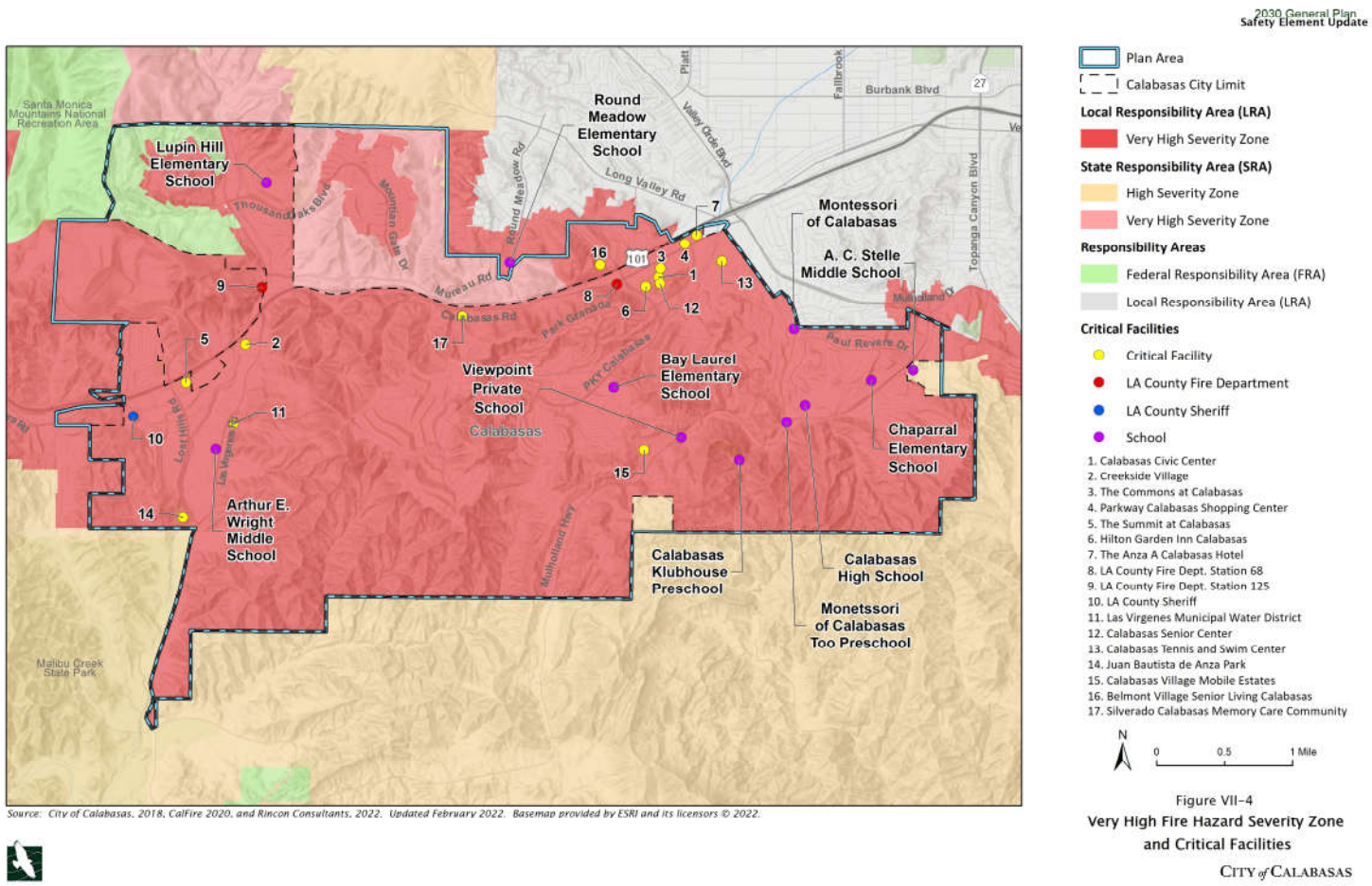
Fire Stations #68 and~~,~~ #125 are within the City's jurisdictional boundary, located on Calabasas Road and Las Virgenes Road, respectively. Several other stations~~s~~ are nearby, including Fire Stations #67 and #69, which are located south of the City, but they also routinely respond ~~into~~ to fires within the city to provide assistance if needed. The Las Virgenes-Malibu Council of Governments (COG) is served by Division VII of LACOFD's Central Regional Operations Bureau. Battalions 1 and 5 are assigned to Division VII.

Measures in the California Building Code reduce fire hazards in structures. These include use of specific building construction materials, fire separation walls, building separation, and use of fire sprinklers. Included in development regulations are requirements for minimum road widths that provide adequate access for firefighting equipment and evacuation of residents, as well as clearance around structures (fuel modification areas) to prevent the rapid spread of fire.

Water availability and peak load water supply are essential in combating wildfires. Peak load water supply refers to the supply of water to meet both domestic water and fire-fighting needs during the particular season and time of day when domestic water demand on a water system is at its peak~~the sum total amount of water required for fire flow, operational daily consumption, and emergency storage~~. As development occurs, peak load water supply reserves will need to be increased. The Las Virgenes Municipal Water District (LVMWD) provides water service to Calabasas, as well as Agoura Hills, Hidden Hills, Westlake Village and various unincorporated areas. LVMWD maintains enough peak load water supply to put out a structure fire for the single largest structure within each water pressure zone during the peak summer season. For purposes of fighting wildfires, the LACOFD utilizes the LVMWD Reservoir #2. Calabasas Lake, fire hydrants, and swimming pools can also be utilized when necessary to fight wildfires.

~~Since increasing demands on groundwater basins can create deficiencies in local water supplies, it will be necessary for Calabasas to obtain additional water in the future from sources such as the State Water Project to ensure that peak load water supply demands are met~~.

Figure VII-4 –– Very High Fire Hazard Severity Zone and Critical Facilities – Revised

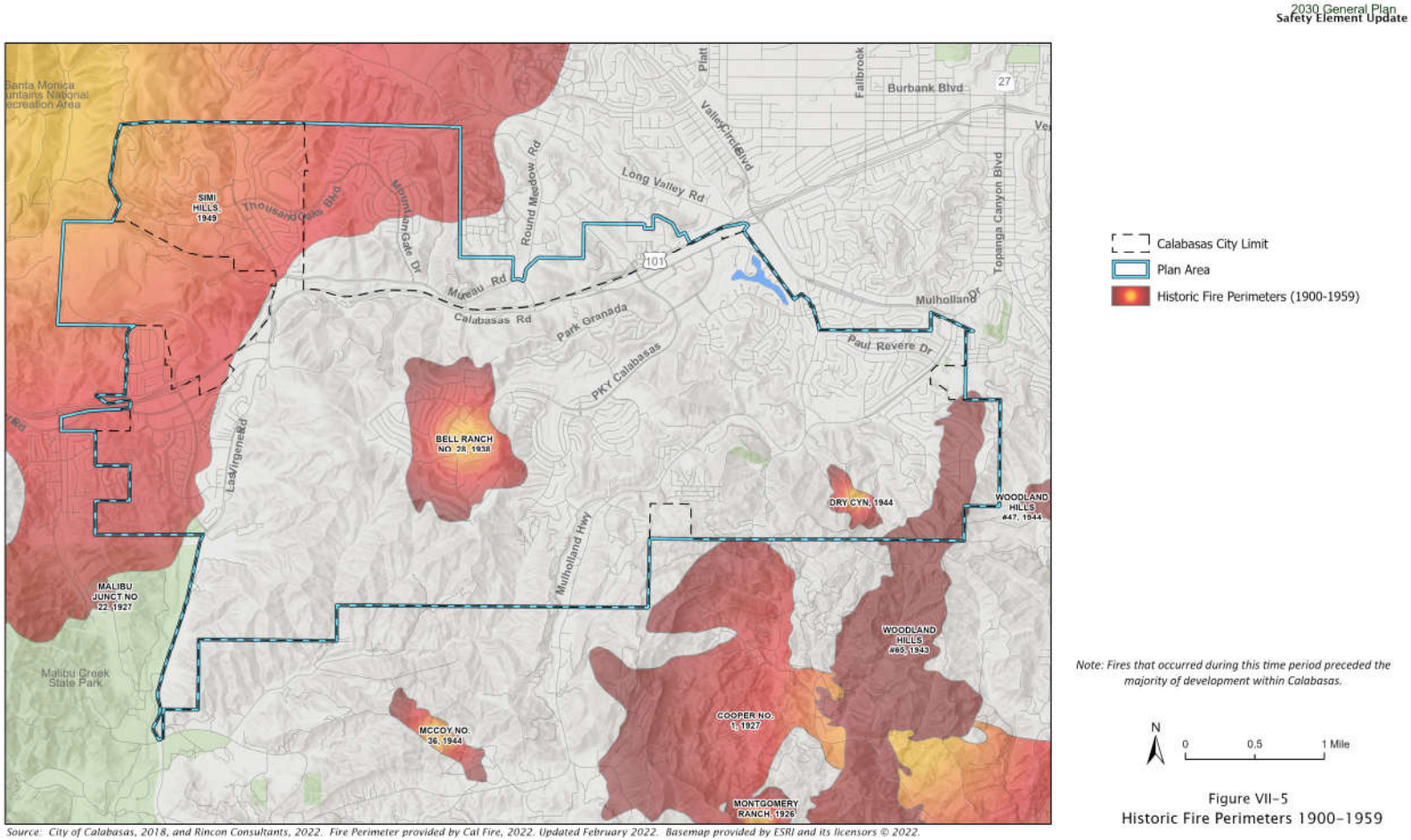


Source: City of Calabasas, 2018; CalFire 2020; and Rincon Consultants, 2022. Updated February 2022. Basemap provided by ESRI and its licensors © 2022.

Figure VII-4
Very High Fire Hazard Severity Zone and Critical Facilities
CITY of CALABASAS

VII. SAFETY ELEMENT

FiFigure VII-45 -- Historic Fire Perimeters (1900-1959)-NEW

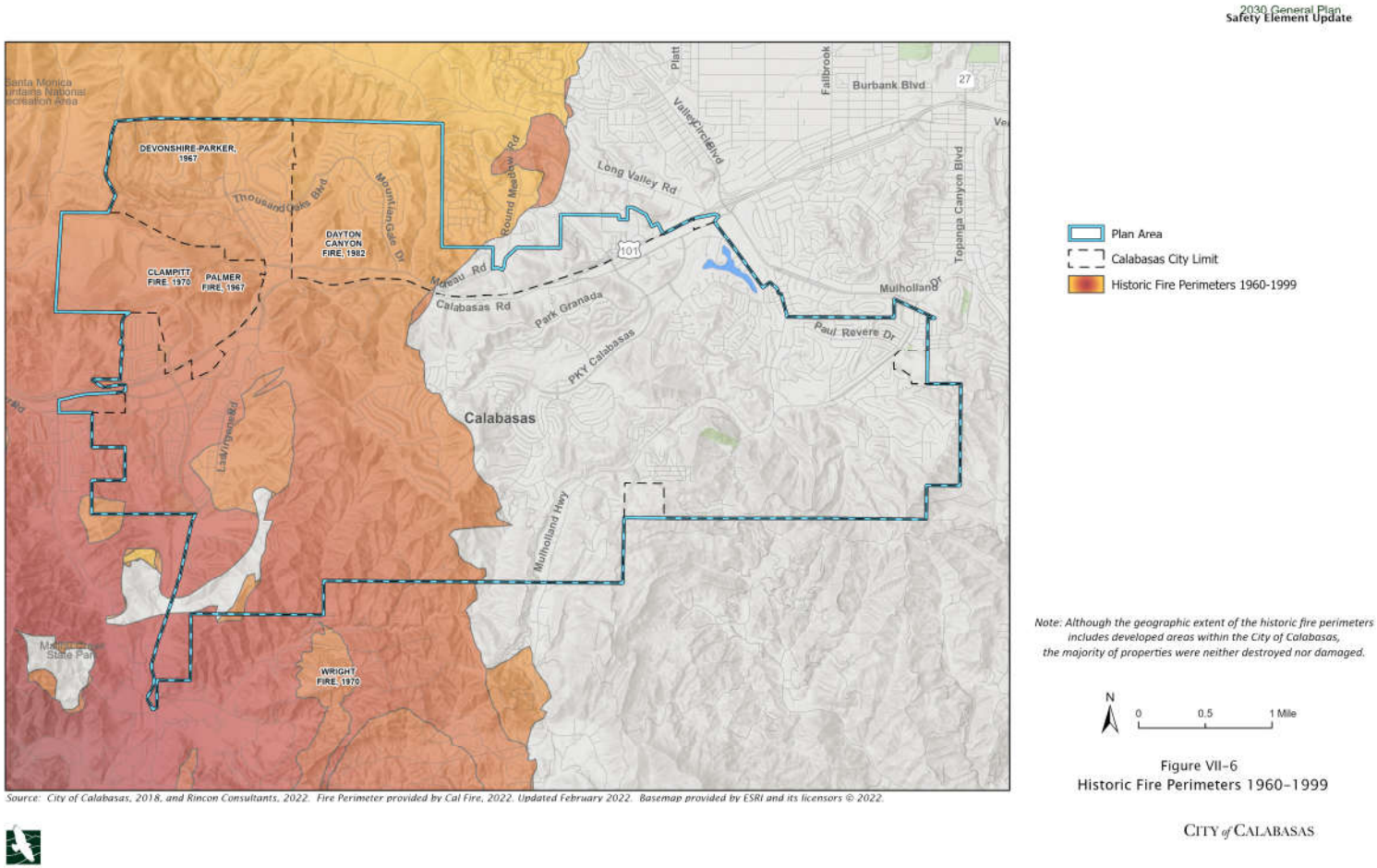


Source: City of Calabasas, 2018, and Rincon Consultants, 2022. Fire Perimeter provided by Cal Fire, 2022. Updated February 2022. Basemap provided by ESRI and its licensors © 2022.

Figure VII-5
Historic Fire Perimeters 1900-1959

CITY of CALABASAS

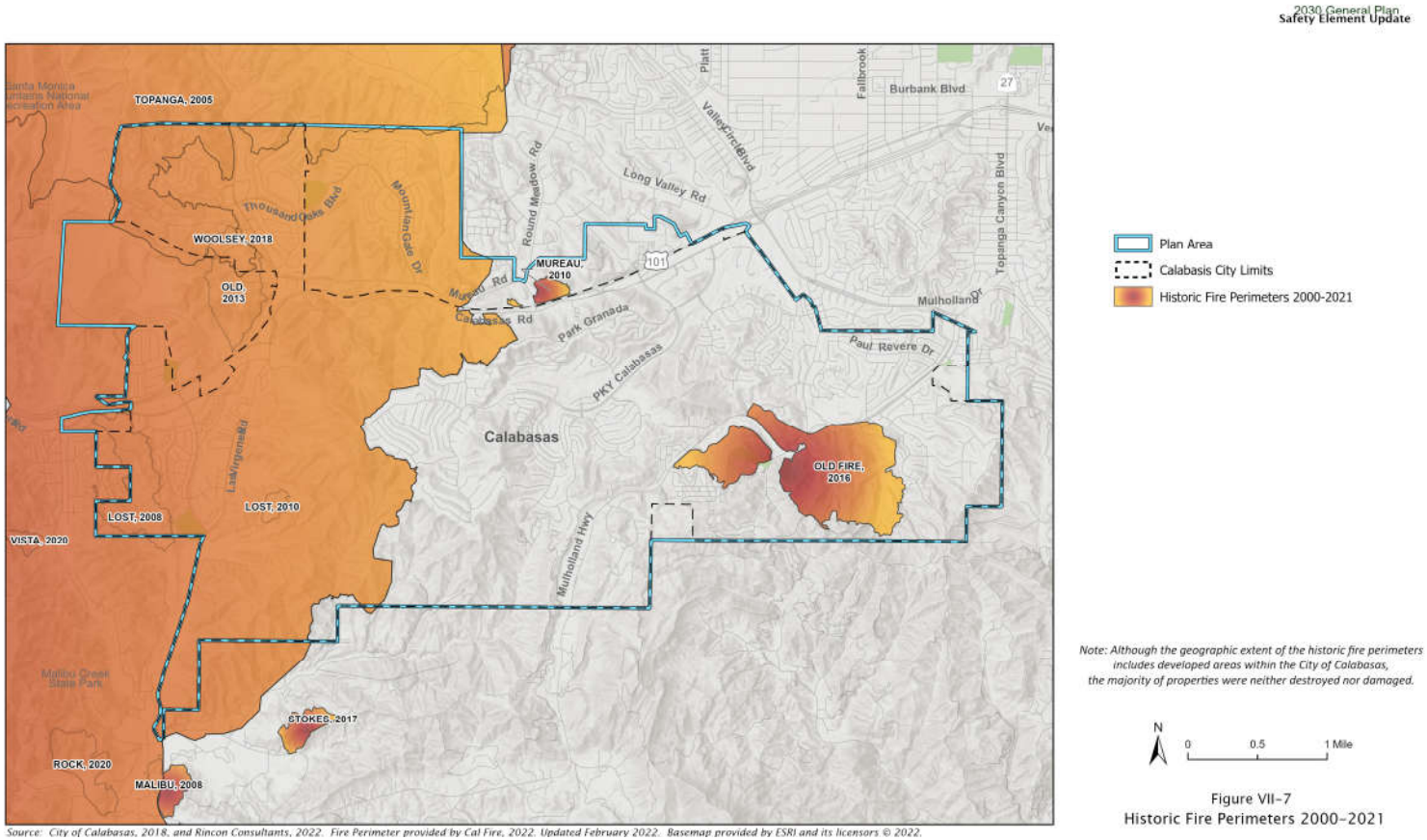
Figure VII-6~~1~~ Historic Fire Perimeters 1960-1999-NEW



Source: City of Calabasas, 2018, and Rincon Consultants, 2022. Fire Perimeter provided by Cal Fire, 2022. Updated February 2022. Basemap provided by ESRI and its licensors © 2022.

VII. SAFETY ELEMENT

Figure VII-72 Historic Fire Perimeters 2000-2021-NEW



Source: City of Calabasas, 2018, and Rincon Consultants, 2022. Fire Perimeter provided by Cal Fire, 2022. Updated February 2022. Basemap provided by ESRI and its licensors © 2022.

Figure VII-7
Historic Fire Perimeters 2000-2021

CITY of CALABASAS

Policies

~~VII-12 Emphasize prevention of physical and economic loss associated with wildland fire through early identification of potentially hazardous conditions prior to project approval.~~

~~VII-13 Promote fire prevention as the City's preferred management strategy; facilitate programs that are aimed at the prevention of fires.~~

~~VII-14 Discourage development and encourage sensitive siting of structures within hazardous fire areas as higher priorities than attempting to implement fuel modification techniques that would adversely affect significant biological resources.~~

~~VII-15 Require design and siting of new development within areas subject to wildfires in a manner that minimizes the threat of loss from wildland fire.~~

~~VII-16 Ensure that new development is designed so as to facilitate access by firefighting equipment and to maintain adequate evacuation routes.~~

~~VII-17 Do not permit development within areas that do not have adequate water pressure or fire flows until sufficient pressure and fire flows can be reliably provided.~~

VII-17 Actively collaborate with regional, state and f~~F~~ederal fire agencies to coordinate and implement wildfire mitigation measures and fuel load modifications / reduction zones, including load clearing, prescribed burns, fire breaks, livestock grazing, and public and private road clearance and other mitigation activities for areas proximal to the city, particularly potential wildfire approach pathways identified as high risk areas located to the north and south of the city as identified in Figures 6 and 7 of Appendix D-1 Wildfire Assessment. Establish and maintain for the future, a cooperative management agreements~~s~~ with entities that have jurisdiction over lands located to the north and south of the city limits.

VII-18 Survey the conditions in the wildfire approach pathways located within city limits as identified in Figure 8 of Appendix D-1 Wildfire Assessment in collaboration with the Los Angeles County Fire Department to assess vegetation management actions that could reduce wildfire movement.

VII-19 Actively engage with the County of Los Angeles, Santa Monica Mountains Conservancy, and Resource Conservation District of the Santa Monica Mountains as part of wildfire planning and implementation initiatives for unincorporated

county areas that impact the City of Calabasas, including in particular those related to the Los Angeles County Fire Department Strategic Plan and the~~,~~ Los Angeles County Countywide Community Wildfire Protection Plan.

VII-20 Prepare a Community Wildfire Protection Plan for the City Calabasas that aligns with Los Angeles County's Countywide Community Wildfire Protection Plan by the next revision of the City of Calabasas Safety Element.

VII-21 Develop and maintain a GIS-based land inventory to identify fuel reduction status and points of contact to inform load reduction activities.

VII-22 Incorporate wildfire risk reduction measures, including healthy hillside management, load clearing, and brush management into plans, operations, and maintenance procedures for- public access roads, parks, trails, open space, critical roads, and critical infrastructure.

VII-23 Conduct a City-wide survey of vegetation conditions in drainage corridors, hillsides, and similarly well--vegetated areas that could provide opportunities for wildfire to travel into built areas and specify recommended actions to reduce wildfire risks in these locations.

VII-24 Minimize risks to existing development by identifying existing non-conforming development that does not meet contemporary fire safe standards, in terms of road standards and vegetative hazard, and require all new development to meet or exceed California Code of Regulations, division 1.5, chapter 7, subchapter 2, articles 1-5 requirements (State Responsibility Area Fire Safe Regulations).

VII-25 Encourage existing businesses and residents to adopt drought tolerant and fire-resistant landscaping practices.

VII-26 Support Los Angeles County's Defensible Space Inspection Program that enforces defensible space standards of existing development in Calabasas by posting informational resources on the City's website and distributing via social media platforms.

VII-27 Develop and disseminate education and outreach materials to homeowners, residents, businesses, and landlords regarding retrofits and hardening that align with recommendations from CAL FIRE~~ire~~'s Wildfire Home Retrofit Guide. Identify resources that can provide financial support for home retrofit and home hardening projects.

VII-28 Develop and regularly update building and landscaping requirements and protocols that integrate ~~CAL FIRE and~~ Los Angeles County Fire Department regulations and procedures for retrofits and future development. Require ongoing maintenance and upkeep to be codified as part of building covenants or

homeowner covenants, conditions and restrictions. Update the Calabasas Municipal Code with incentives for home retrofits.

VII-~~29~~30 Update landscaping requirements and guidelines regarding landscape design, species preferences, installation, and maintenance to reduce vulnerability to ember ignition, and wildfire impacts.

VII-31 Minimize wildfire risk by increasing resistance of structures to heat, flames, and embers. Review current building code standards and other applicable statutes, regulations, requirements, and guidelines regarding construction, and specifically the use and maintenance of non-flammable materials (both residential and commercial) and consider adopting amendments to implement these higher standards.

VII-32 To reduce vulnerability of structures to ember ignition and wildfire impacts, review current building code standards and other appliable statutes, regulations, requirements, and guidelines regarding construction, and specifically the use and maintenance of non-flammable materials (both residential and commercial).

VII-33 Update the City~~'~~'s development standards to be in conformance with title 14, California Code of Regulations, division 1.5, chapter 7, subchapter 2, articles 1-5 (commencing with section 1270) (State Responsibility Area Fire Safe Regulations) and title 14, California Code of Regulations, division 1.5, chapter 7, subchapter 3, article 3 (commencing with section 1299.01) (Fire Hazard Reduction Around Buildings and Structures Regulations).

VII-34 Discourage development where wildfire risk mitigation measures would significantly impact biological resources. Where development must be accommodated, implement fuel modification techniques that would not adversely affect significant biological resources, to the greatest extent feasible. Site structures to maximize low-flammability landscape features to buffer against wildfire spread ~~encourage sensitive siting of structures~~.

VII-35 In lieu of more highly combustible and non-native tree species, encourage existing residents and new developments to plant native oaks in strategic locations and near existing oak woodlands to protect developments from wildfires, as well as to lessen fire risk associated with developments.

IVII-36 Coordinate with local organizations, such as Emergency Preparedness in Calabasas: A Fire Safe Council (EPIC), to pursue and allocate grant funding to support wildfire risk reduction activities.

VII-37 Coordinate with Los Angeles County Fire Department to evaluate their ~~the City's~~ capacity to adequately suppress wildfire, taking into account water supply

availability and fire protection, including fire stations, fire engines and personnel, required for existing and newly developed areas, as part of the next Las Virgenes-Malibu Council of Governments Multi-Jurisdictional Hazard Mitigation Plan update.

VII-38 Coordinate with the Las Virgenes Municipal Water District to ensure the long-term maintenance and integrity of water supply and water pressure for existing and future developed areas for firefighting purposes. Support the Las Virgenes-Triunfo Joint Powers Authority's proposed Pure Water Project in order to provide residents with a locally produced water source that can be relied on through disasters and hazard events.

VII-39 Permit new development only within areas that have adequate water resources available, to include water pressure, onsite water storage, or fire flows.

VII-40 Limit new development along steep slopes and amidst rugged terrain to limit rapid fire spread and increase accessibility for fire-fighting.

VII-41 Whenever feasible, locate new essential public facilities, including health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities, in areas of the City that are already developed rather than on properties adjacent to undeveloped lands.

VII-42 Coordinate with telecommunication service entities and the Los Angeles County Cable and Telecommunications Office to fire-harden communications.

VII.D Radon Gas

Objective

Minimize the potential for physical injury and potential loss of life resulting from radon gas exposure.

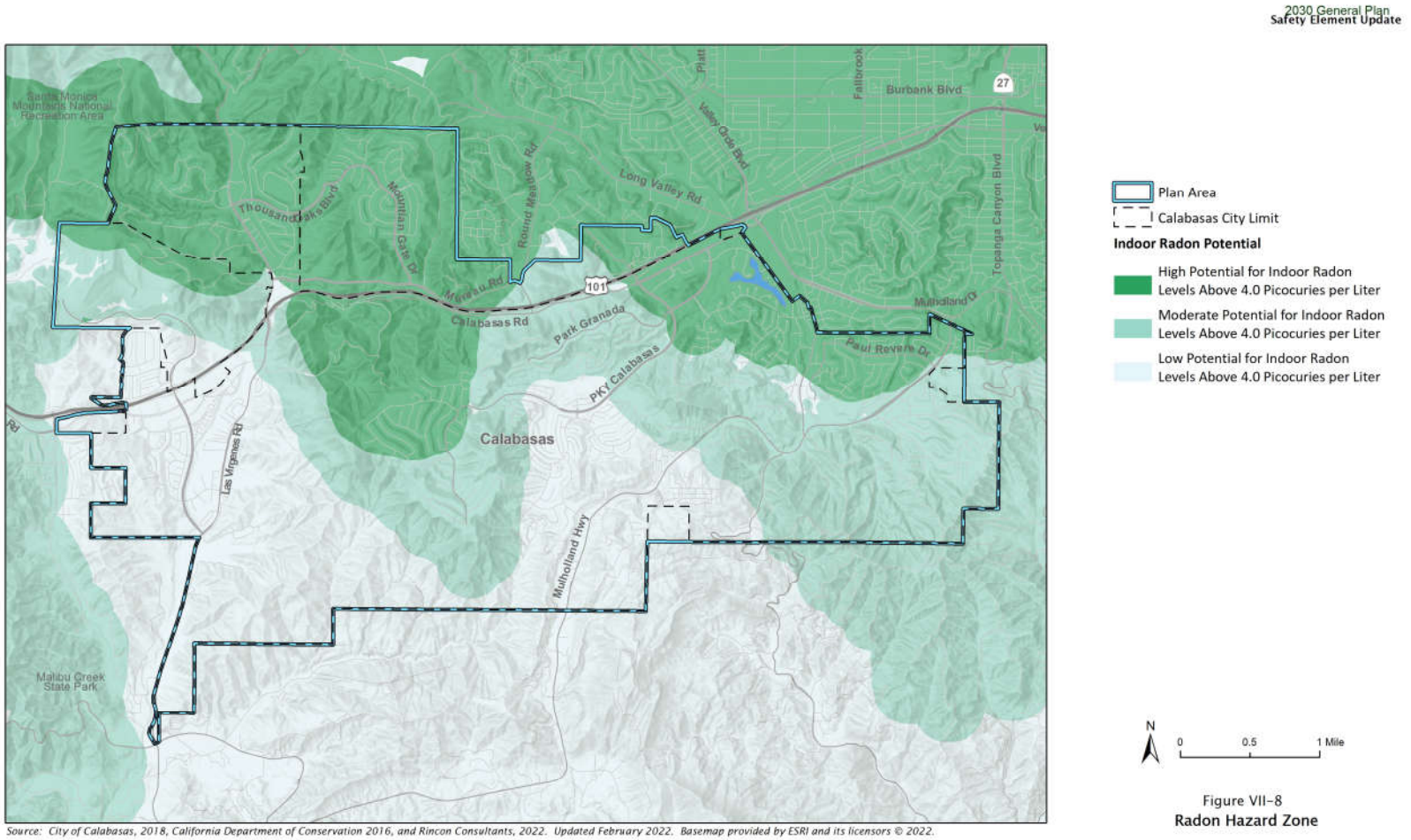
General Plan Approach

Radon is a cancer-causing natural radioactive gas that is invisible, odorless, and tasteless. Radon forms from the radioactive decay of small amounts of uranium naturally present in the rocks and soil. It can affect indoor air quality, particularly in mountainous areas. Radon gas from natural sources can accumulate in buildings and is a leading cause of non-smoking lung cancer deaths. The aim of the Safety Element is to minimize risks from radon exposure.

The California Geological Survey has developed a radon potential zone map for southern Los Angeles County. The map, shown on **Figure VII-84**, is based on the relative radon

potentials of different geologic units provided by California Department of Conservation in 2016. Geologic unit radon potentials were evaluated using short-term indoor-radon measurement data, provided by the Department of Health Services ~~(DHS)~~ Radon Program and airborne radiometric data from the National Uranium Resource Evaluation Project conducted in the 1970s and early 1980s. The Department of Health Services indoor-radon data from Southern Los Angeles County range less than 0.3 picocuries per liter (pCi/L) to 159.6 pCi/L. The radon level at which the U.S. Environmental Protection Agency ~~(EPA)~~ recommends considering remedial actions for radon reduction in residences is 4.0 pCi/L. The City of Calabasas is reported to have a moderate potential for radon levels to exceed 4.0 pCi/L (Dept. of Conservation, California Geological Survey, 2005). California Building Code requires residential construction in areas affected by radon to comply with U.S. Environmental Protection Agency recommendations. Radon-resistant construction would include placing a polyethylene sheet in a sub-slab or sub-crawl space and placing a ventilation pipe from below the sheet to above the roof.

Figure VII-84 – UPDATED



Source: City of Calabasas, 2018, California Department of Conservation 2016, and Rincon Consultants, 2022. Updated February 2022. Basemap provided by ESRI and its licensors © 2022.

Figure VII-8
Radon Hazard Zone

CITY of CALABASAS

Policies

VII-43 Promote community education regarding potential hazards associated with radon exposure.

VII-44 Require radon testing for new development within areas with moderate or high potential for indoor radon levels exceeding U.S. Environmental Protection Agency recommended limits.

VII-45 Where radon levels may exceed U.S. Environmental Protection Agency recommended limits, implement effective measures – such as "sub-slab depressurization" systems – to limit exposure to radon.

VII.E Hazardous Materials

Objective

Protect life and property from potential short- and long-term adverse effects associated with the transportation, storage, treatment, and disposal of hazardous materials within Calabasas.

General Plan Approach

Calabasas is traversed by a major transportation artery: US Highway 101. Transportation of hazardous materials occurs along this route, thus potentially exposing people to potential catastrophic events. Hazardous chemicals or gases may be released accidentally at an industrial site or from trucks transporting hazardous materials. Such an event could require evacuation, and depending on the hazard and its severity, evacuation may be required for a few hours or several days. The release of hazardous materials requires an immediate response ~~in order to~~to protect human health and safety, and/or the environment. The Emergency Operations Bureau~~Section~~ and the Health Hazardous Materials Division ~~(HHMD)~~ of the LACOFD ~~Los Angeles County Fire Department's Health Hazardous Materials Division (HHMD)~~ provide~~s~~ 24-hour emergency response services to hazardous materials incidents occurring throughout Los Angeles County.

The Los Angeles County Hazardous Waste Management Plan, which the City has adopted, requires businesses that handle, store, or generate hazardous materials to obtain certain permits and prepare certain plans based on the amount of hazardous materials involved. The Inspection Section of the Health Hazardous Materials Division

permits and inspects hazardous material handling and hazardous waste--generating businesses to ensure compliance with federal, ~~state~~state, and local laws and regulations.

The City will continue to maintain permitting requirements that parallel County requirements for businesses within Calabasas that handle, store, or generate hazardous waste. Recognizing that the residential sector is a major producer of hazardous wastes, Calabasas has also implemented a household hazardous waste collection program so that household hazardous wastes are collected and disposed of in a safe manner. This program will continue to be implemented and will be expanded as appropriate to address the City's hazardous waste disposal needs.

Policies

VII-46 Manage activities within Calabasas involving the transport, use, storagee or disposale of hazardous materials in a responsible manner that protects public health, safety, and the environment.

VII-47 Promote the availability of safe and legal options for the management of hazardous wastes generated by businesses and households within and adjacent Calabasas.

VII-48 Promote community education and understanding of sound management practices for the storage, handling, use, and disposal of hazardous materials.

~~**VII-45** Ensure the reliability of essential facilities such as the Las Virgenes Municipal Water District's water treatment and distribution facilities, the Las Virgenes Wastewater Treatment Plant, hospitals, and first-response buildings in the event of an emergency through promoting grid resiliency and energy independence. Work to implement on-site generation through solar photovoltaic systems and battery storage.~~

VII-49 Enforce the requirement that industrial facilities and construction sites have adequate Hazardous Materials Handling and Spill Response Plans to ensure that the goals of pollutant control are consistent with the City's public safety needs and the General Plan's water quality objectives.

VII.F Disaster Response

Objective

Maintain a system of emergency services and disaster response preparedness that will save lives, protect property, and facilitate recovery with a minimum of social disruption following both minor emergencies and major catastrophic events. This should include

working with LACOFD's Health Hazardous Materials Division to ensure that hazmat handlers are registered with the Certified Unified Program Agency.

General Plan Approach

The management of emergencies and disasters consists of three distinct phases: (1) mitigation of potential hazards and pre-event preparedness (including event forecasting, response planning, training and public education); (2) response during or soon after the event, most often by fire, police and medical-services personnel ~~and trained volunteers~~ (also includes public alerts and notification, evacuation, search and rescue, and critical, short-term assistance to victims); and (3) post-event recovery, which generally includes debris removal, re-establishment of public and private services, financial and other longer-term types of assistance to victims, reconstruction, and collection and analysis of data related to the event.

The City contracts with the Los Angeles County Sheriff's Department for law enforcement services. The Malibu/Lost Hills Station is responsible for preparing comprehensive Fire, Flood and Earthquake Evacuation Plans. The plans identify evacuation shelters, secondary evacuation shelters, command post sites, multi-purpose staging areas, and alternate traffic routes. These plans are updated on an annual basis. The City is served by the LACOFD who provides emergency medical services, fire suppression, and hazardous materials response services.

Mutual aid agreements with regional agencies will be maintained to ensure the City's ability to receive assistance when demands for emergency services are greater than the City's available resources. The City will also continue to utilize the ~~the Emergency Management Information System (EMIS)~~Los Angeles County Operational Area Response & Recovery System, a computer database system that provides detailed, real-time information about emergencies from the County Emergency Operations Center.

The City will continue to maintain ~~an~~ up-to-date Eemergency ~~response~~ Ooperations Pplan to detail Calabasas' planned response to emergency situations. Local disaster response will continue to be coordinated under the Calabasas Emergency ~~Response~~ Radio Program (CERP), a volunteer program made up of ~~home owner representatives, medical professionals, communications experts, and business representatives~~trained amateur radio operators. Following a disaster, CERP's role is to assess and communicate neighborhood conditions to the City's Emergency Operations Center. Emergency Preparedness in Calabasas: A Fire Safe Council (EPIC) is a non-profit organization helps Calabasas residents to mitigate risks, survive emergency events and recover from fires, earthquakes, and other natural disasters~~.~~. EPIC provides information to Calabasas residents so they can be prepared for potential emergencies.

VII. SAFETY ELEMENT

~~Following a disaster, the CERP's role is to assess and communicate neighborhood conditions to the City's Emergency Operations Center. The CERP medical disaster team also provides basic first aid services from medical cache (f~~First aid securely stowed packages ~~storage cache units~~ are~~)~~ located throughout Calabasas (locations include Grape Arbor Park, Gates Canyon Park, De Anza Park, Calabasas Tennis and Swim Club, Calabasas High School, and ~~,~~ Bay Laurel Elementary School~~and Calabasas Hills Park)~~.

Emergency Evacuation

The City has designated evacuation routes that are used to move residents out of an impacted area during a disaster or hazard event. Evacuation routes differ from disaster routes which are designated routes used to bring emergency personnel, equipment, and supplies into areas impacted by an emergency event. The following highways and roadways serve as the City's critical evacuation routes:

- *Highway 101*
- *Mulholland Highway~~,~~*
- *Mulholland Drive~~,~~*
- *Old Topanga Canyon Road~~,~~*
- *Lost Hills Road~~,~~*
- *Las Virgenes Road~~,~~*
- *Agoura Road~~,~~*
- *Calabasas Road~~, and~~*
- *Parkway Calabasas~~.~~*
- *Mureau Road*
- *Thousand Oaks Boulevard*

There are several emergency evacuation shelters located within Calabasas, including:

- *Calabasas High School*
- *A.C. Stelle Middle School*
- *A.E. Wright Middle School*
- *Calabasas Civic Center*

Some facilities and population groups may require special assistance and support in an emergency evacuation event. These may include:

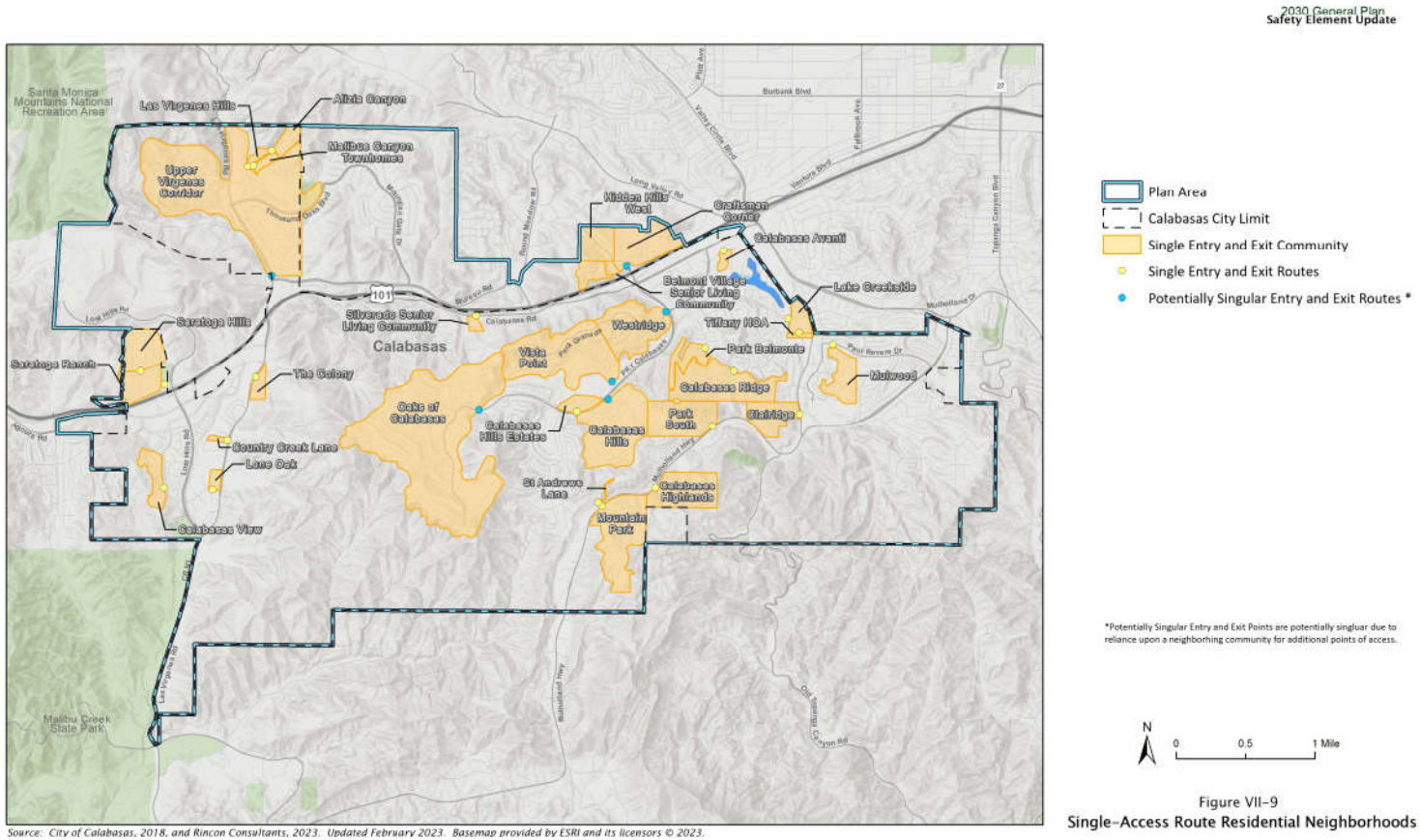
- *Silverado Calabasas Memory Care Community*

- *Calabasas Senior Center*
- *Belmont Village Senior Living Calabasas*
- *Calabasas Village Mobile Estates*
- *Public and private schools*
- *Childcare facilities*
- *Older adults*
- *Households without vehicle access*
- *Visitors*
- *Transit users*
- *Populations with physical disabilities*
- *Non-English-speaking populations*
- *Day laborers, domestic workers, and caretakers*

Isolated Calabasas Neighborhoods

Pursuant to Government Code Section 65302, Safety Elements must indicate or identify residential developments in hazard areas that do not have at least two emergency evacuation routes. There are currently 18 neighborhoods in the City that have been identified as having only a single access route. **Figure VII-9** illustrates the 18 identified neighborhoods that have a singular route of entry and exit. In addition to these 18 neighborhoods, the City has several communities that do have secondary access routes but that are restricted by gated entry (see again **Figure VII-9**). These neighborhoods pose additional logistical challenges when coordinating disaster response. Policies VII-67 to VII-70 include policies that seek to alleviate evacuation challenges associated with single access neighborhoods.

Figure VII-96 -- Single-Access Route Residential Neighborhoods--Revised



Source: City of Calabasas, 2018, and Rincon Consultants, 2023. Updated February 2023. Basemap provided by ESRI and its licensors © 2023.

Figure VII-9
Single-Access Route Residential Neighborhoods

CITY of CALABASAS

VII. SAFETY ELEMENT

Emergency Evacuation Capacity

In keeping with Government Code Section 65302, the City conducted an emergency evacuation analysis to identify evacuation routes and their capacity, safety, and viability under a range of emergency scenarios. The City evaluated four different evacuation scenarios that included city-wide evacuations and larger-scale regional evacuations in the event of a wildfire. The City also evaluated a localized evacuation scenario associated with a potential earthquake and liquefaction event. Evacuation scenarios included different time windows, reliance on different evacuation routes, background commute traffic, and roadway capacity constrained by visibility issues such as smoke. During an actual emergency that necessitates evacuation, evacuation routes are selected based on conditions on the ground and the type of hazard event. In some cases, even the US 101 freeway, which functions as the main evacuation route in the region, may be unusable. The evacuation scenarios that were selected for analysis are described in detail in Appendix D-2 Emergency Evacuation Traffic Assessment. As further described in Appendix D-2, the transportation network could be significantly impacted during a city-wide emergency evacuation, constraining the city's ability to evacuate in a timely manner. Policies VII-71 through VII-92 seek to alleviate evacuation constraints based on the results of the evacuation routes analysis.

Policies

Disaster Response Planning

VII-50 Update and regularly maintain the City of Calabasas' Emergency Operations Plan ~~(EOP)~~ to include an assessment of current emergency service and projected emergency service needs specific to the City of Calabasas. The Emergency Operations Plan should be prepared in consultation with the Los Angeles County Fire Department, ~~and~~ Sheriff Department, and the school district and align with the Los Angeles County Operational Area Emergency Response Plan.

VII-51 Establish and maintain a Disaster Recovery Plan that includes critical needs, such as debris removal and evaluation of post-disaster re-development options.

VII-52 Develop a Continuity of Operations/Government Plan to ensure the city has the ability to operate and provide vital- and uninterrupted services regardless of an emergency.

VII-53 Maintain and update an Evacuation Plan, in conjunction with the Office of Emergency Management, every eight years at a minimum to account for all types of emergencies.

a. Develop and employ evacuation alternatives and/or alternative emergency access routes in neighborhoods that have single ingress/egress.

b. Develop and maintain evacuation options for vulnerable populations, including residents and workers with mobility challenges.~~.~~

c. Designate and publicize evacuation routes; include existing pedestrian pathways.

d. Designate safety zones or shelter-in-place locations as potential places of refuge when evacuation routes become blocked.

Disaster Response Coordination

VII-54 Engage in regular communication with local, regional, and state partners, including Emergency Preparedness in Calabasas (EPIC), Calabasas Emergency Response Program (CERP), Los Angeles County Office of Emergency Management, Los Angeles County Fire Department, Los Angeles County Sheriff Department, and the school district on emergency preparedness, response, and recovery. Ensure alignment with ongoing planning efforts by these entities, provide a clear understanding of roles and responsibilities, and maintain consistent communication with the general public.

VII-55 Coordinate with the County of Los Angeles Office of Emergency Management to maintain up-to-date local relevant data on shelter facilities, vulnerable populations, and other critical information as part of emergency evacuation planning and community outreach efforts. Findings from the evacuation scenarios analysis in Appendix D-2 Emergency Evacuation Traffic Assessment should inform coordination efforts.

VII-56 Improve coordination between frontline emergency personnel, Calabasas Emergency Response Program (CERP), Emergency Preparedness in Calabasas: A Fire Safe Council (EPIC), media sources, and the school district to ensure accurate and clear information is being disseminated.

Disaster Response Preparedness

VII-57 Staff performing emergency preparedness and response duties should be trained as necessary to fulfill their obligations; such training to include (but not be limited to): damage assessment protocols, Emergency Operations Center operations, Standardized Emergency Management System, and Incident Command System protocols and operations.

VII-58 Enhance Calabasas Emergency Radio Program's (CERP) participation with volunteers and agencies and incorporate emergency preparedness procedures on a continuing basis.

VII-59 Regularly evaluate the availability and anticipated demand for community facilities to serve as evacuation centers, shelter in place centers, or designated cooling or smoke relief centers during emergencies. Designate such facilities and regularly maintain them to comply with industry standards. Establish solar photovoltaic systems and battery storage for these facilities and other critical facilities in the event of power outages.

VII-60 Require that all homes and businesses have visible street addressing and signage.

VII-61 Partner with Emergency Preparedness in Calabasas: A Fire Safe Council (EPIC) and Calabasas Emergency Radio Program (CERP) to explore funding opportunities to support distribution of hand-cranked or battery-powered radios to residents in Calabasas.

Community Awareness

VII-62 Provide bilingual (English and Spanish) public health, emergency preparedness, and evacuation information and signage to citizens through libraries, the City website, radio, schools, and social media platforms.

VII-63 Develop and distribute educational materials to residents and businesses on evacuation planning and routes and the standards and requirements for vegetation clearance and maintenance of defensible space. Focus outreach on vulnerable populations, such as senior, young children, and individuals with physical disabilities.

VII-64 Engage residents to better prepare for wildfire mitigation and protection. Empower Emergency Preparedness in Calabasas: A Fire Safe Council (EPIC) to serve as one of the City's Fire Safe Councils that offer defensible space and home hardening training and assessments.

VII-65 Provide Community Emergency Response Training (CERT) to increase community disaster preparedness at the neighborhood level.

VI-66 Increase access to essential resources and facilitate effective communication in the community to accelerate recovery following a disaster.

VII. SAFETY ELEMENT

Single-Access Residential Communities

VII-67 Ensure that the Los Angeles County Fire Department has complete access to all locations in the City, including gated residential communities and critical infrastructure.

VII-68 Require new development to provide adequate access (ingress, egress) and a minimum of two roadways with widths and lengths in compliance with California Building Code Chapter 7A requirements.

VII-69 In coordination with Los Angeles County Fire Department and Los Angeles Sheriff's Department, conduct regular evacuation trainings with single-access community HOAs and residents; encourage residents in single-access communities to maintain emergency supplies for at least 3 - 10 days.

VII-70 Proactively engage with residential neighborhoods with single ~~points~~routes of entry and exit to encourage home retrofits to meet current standards on structure hardening, proactively enforce defensible space standards, and conduct emergency preparedness trainings.

Emergency Evacuation

VII-71 Explore and, if feasible, issue evacuation orders in coordination with Los Angeles County Fire Department to facilitate early voluntary evacuation prior to a wildfire event occurring. Conduct a study to identify weather conditions that have a substantial likelihood of resulting in a wildfire. Establish monitoring protocols to track such weather conditions in coordination with Los Angeles County Fire Department. Develop communication and implementation protocols to issue alerts to the public to voluntarily evacuate when certain weather conditions occur.

VII-72 Maintain emergency roadways and improve them as necessary and appropriate to ensure they stay in operation during hazardous events~~ongoing~~.

VII-73 Future roadway design, especially in areas that have less accessibility and on key evacuation routes, should consider evacuation capacity and consider design treatments such as painted medians (instead of raised medians) or other treatments that could assist in creating reversible lanes and facilitate additional capacity in an evacuation event scenario.

VII-74 Evacuation event signal timing should be periodically reviewed and updated to provide additional evacuation capacity. Incorporate Caltrans in the City's emergency operations center protocol to develop emergency evacuation signal timing for freeway on- and off-ramps.

VII-75 Continue coordinating with nearby jurisdictions, including adjacent cities and Ventura County, the Las Virgenes-Malibu Council of Governments and Los Angeles County Office of Emergency Management on developing strategies to address freeway congestion on the US-101 freeway which functions as the main evacuation route in the region.

VII-76 Consider the needs of vulnerable populations in the city, such as senior housing facilities and schools, and others without access to a personal vehicle in City evacuation plans.

VII-77 Encourage residents to evacuate in a timely manner to reduce last-minute evacuations and concentrated demand on the roadway network. Coordinate with the school district to build awareness regarding school evacuation protocols which include sheltering in place or evacuating off-site using school buses.~~.~~

VII-78 Issue mandatory evacuation orders and release evacuees by pre-designated zones to manage roadway congestion. Anticipate school district evacuation needs as part of evacuation orders.

VII-79 Issue mandatory evacuation orders based on characteristics of the hazard, such as fire spread characteristics.

VII-80 Encourage residents to take only one or two vehicles (based on household size) to reduce the number of evacuating vehicles. Offer offsite parking facilities to safely store secondary vehicles in advance of an emergency event.

VII-81 Close routes upstream from the hazardous area to decrease demand on key evacuation routes.

VII-82 Coordinate with Caltrans to manage freeway lanes restricting vehicles already on the freeway to travel on the inner lanes and reserving the outer lanes for vehicles entering the freeway.

~~VII-79 Future roadway design, especially in areas that have less accessibility and on critical evacuation routes, should consider evacuation capacity and design treatments that could assist in creating reversible lanes (contraflow) and facilitate additional capacity in an evacuation such as painted medians (instead of raised medians) or other treatments.~~

VII-83 Set traffic signals to prioritize certain traffic movements to increase flow through the intersection or prioritize evacuating vehicles.

VII-84 Use high-capacity public transit vehicles to reduce the use of single-occupancy vehicles and increase the number of evacuees.

VII-85 Restrict parking periodically (e.g., on red flag days) along critical evacuation routes.

VII-86 Provide evacuees with guidance on safe and efficient routes along with dynamic rerouting information to decrease travel times and reduce congestion on highly traveled roads (for example, GPS-routing systems)

VII-87 Monitor traffic using intelligent transportation system ~~(ITS)~~ technology to identify accidents and problem areas, determine the effectiveness of responses, and change responses as needed.

VII-88 Establish a redundant and resilient communications system to ensure uninterrupted emergency operations and communications such as through solar photovoltaic systems and battery storage, phone/text alerts, AM radio, sirens/loudspeaker, and signage.

VII-89 Increase defensible space and vegetation maintenance and clearing associated with critical evacuation roadways.

VII-90 Coordinate with Southern California Edison to accomplish replacements of wooden poles with fire-resistant steel poles, and to enhance preventative maintenance activities along critical evacuation roadways.

VII-91 Coordinate with Southern California Edison to implement an aggressive electrical undergrounding plan with a focus on critical evacuation roadways and areas with highest wildfire risk.

VII-92 Engage with Southern California Association of Governments, Caltrans, California Highway Patrol, adjacent cities, and Los Angeles County to identify regional evacuation solutions to address constraints on the Highway 101 system, as described in Appendix D-2 Emergency Evacuation Traffic Assessment.

VII.G Climate Change & Vulnerable Populations

Objective

Prepare for climate change impacts associated with increases in temperatures, more severe storms, increases in extreme heat events, changes in precipitation patterns, extended drought conditions, and increasing wildfire risk by increasing the resilience of the Calabasas community and infrastructure systems.

General Plan Approach

Climate change adaptation and resilience strategies must be included in the City's General Plan via its Safety Element in accordance with California Government Code § 65302(g) (as updated by SB 379). The review and update must consist of the following components:

1. A vulnerability assessment that identifies the risks climate change poses to the local jurisdiction and the geographic areas at risk from climate change.
2. Set of adaptation and resilience goals, policies, and objectives based on the information specified in the vulnerability assessment.
3. Set of feasible implementation measures designed to carry out the goals, policies, and objectives identified in the adaptation objectives.

The Intergovernmental Panel on Climate Change –provides several GHG emissions scenarios used to describe possible future GHG emissions and associated changes to global climate patterns. The State recommends two Representative Concentration Pathways (RCPs) to assess the City's potential vulnerability to climate change. RCP 4.5 represents a "mitigation" scenario in which global emissions peak around 2040 and then decline at the end of the century. RCP 4.5 is an unlikely scenario due to ongoing global emissions.[1] This scenario assumes global agreement and implementation of GHG reduction strategies. RCP 8.5 represents a "business as usual" scenario in which emissions continue to rise throughout the 21st century. Climate projection data associated with both emission scenarios are presented below; however, the policies were formulated based on the projections associated with the RCP 8.5 scenario.

The State ~~provides~~requires local jurisdictions to rely on the Cal-Adapt tool ~~to local jurisdictions~~ for climate adaptation and resilience planning. Cal-Adapt is a web-based platform that provides climate change projections and climate impact research that are downscaled to the local level for different RCP scenarios. The projections are based on the extensive body of climate research described in California's Fourth Climate Change Assessment, Los Angeles Region Report (2018).[2] The Safety Element includes climate change projections for the RCP 4.5 and RCP 8.5 scenarios taken from Cal-Adapt for Temperature, Precipitation, and Wildfire ~~relative to the health and safety of Calabasas residents~~. These climate change projections provide an understanding of possible future climate change impacts and help prioritize policies to increase community resilience to climate change. Data for Calabasas is provided as part of three separate grid cells.

[1] https://cal-adapt.org/help/faqs/which-rcp-scenarios-should-i-use-in-my-analysis/
[2] https://www.energy.ca.gov/sites/default/files/2019-11/Reg%20Report-%20SUM-CCCA4-2018-007%20LosAngeles_ADA.pdf

Temperature results associated with the easternmost grid cell is presented here as that represents the highest temperature ranges that could affect Calabasas.

Temperature

Observations over the past century indicate that temperature has increased across the Southern California region. Based on historical temperature records (1896–2015) from the California South Coast NOAA Climate Division, which encompasses the Los Angeles region, significant trends were identified in annual average, maximum, and minimum temperatures.[3]

Warming is expected to increase across the Los Angeles region in the coming decades. Under RCP 4.5, future model-average temperature values are projected to increase by 2.3°F by the early-21st century, 4.2°F by the mid-21st century, and 5.2°F by the late-21st century compared to the modeled historical annual average maximum temperature of 72.5°F. Furthermore, the intensity and frequency of extreme heat days are also projected to increase over the Los Angeles region. Under RCP 4.5, the average hottest day of the year is expected to increase by 4–7°F.

Average maximum and minimum temperatures are expected to increase in the ~~C~~city. Compared to the observed baseline (1961–1990)~~2005~~, average maximum temperatures in Calabasas are expected to rise between 4~~5~~.3~~1~~° Fahrenheit (F) (RCP 4.5) and 8.1°F (RCP 8.7~~5~~) by the end of the century.[4] Average minimum temperatures in Calabasas are expected to rise similarly, between 3~~4~~.8~~7~~°F (RCP 4.5) and 8~~7~~.2~~8~~°F (RCP 8.5) by the end of the century. According to "Our Climate Crisis: A Guide for SoCal Communities in the Wildland Urban Interface" prepared by the Malibu Foundation, the cities of Calabasas, Agoura Hills, and Hidden Hills~~,~~ will face the highest temperature increases in the Santa Monica Mountains region.[5]

The number of extreme heat days per year is also expected to increase. In Calabasas, an extreme heat day is when the maximum temperature exceeds 103.9~~97.5~~°F. Historically, the region experiences four extreme heat days per year on average. By the end of the century, extreme heat days are expected to increase by 13~~6~~ days per year under RCP 4.5 and approximately 36~~3~~ days per year under RCP 8.5.

Changes in temperature are in **Figures VII-10** and **VII-11**. In both figures, the purple lines show high emissions scenario (RCP 8.5), the blue lines show the medium emissions scenario (RCP 4.5), the grey lines show the current trend (observed), and the gold lines

[3] https://www.energy.ca.gov/sites/default/files/2019-11/Reg%20Report-%20SUM-CCCA4-2018-007%20LosAngeles_ADA.pdf
[4] https://cal-adapt.org/tools/local-climate-change-snapshot/
[5] https://www.themalibufoundation.org/resilience-report

shows the modeled historical data. The shaded areas indicate the range for the emissions scenario. For example, the blue shaded areas represent the range of data for the medium emissions scenario (RCP 4.5).

Although Cal-Adapt presents 30-year average modeled historic data for Calabasas at 78.2°F, data from the National Oceanic and Atmospheric Association (NOAA), shows historic average maximum temperatures significantly higher, as seen in **Figure VII-12**. The NOAA station, from which this data is sourced, is located east of Calabasas, at Pierce College in the City of Los Angeles. The maximum temperatures within this figure are averages of the maximum temperatures between the months of April to October spanning 1961-1990 for the City of Los Angeles.[6] The observed 30-year average for this NOAA station was 102°F while the range was 96.6°F to 106.6°F. This historical baseline shows an upward trend in maximum temperatures.

[6] NOAA Station Woodland Hills Pierce College, CA. https://www.weather.gov/wrh/climate?wfo=lox

Figure VII-10

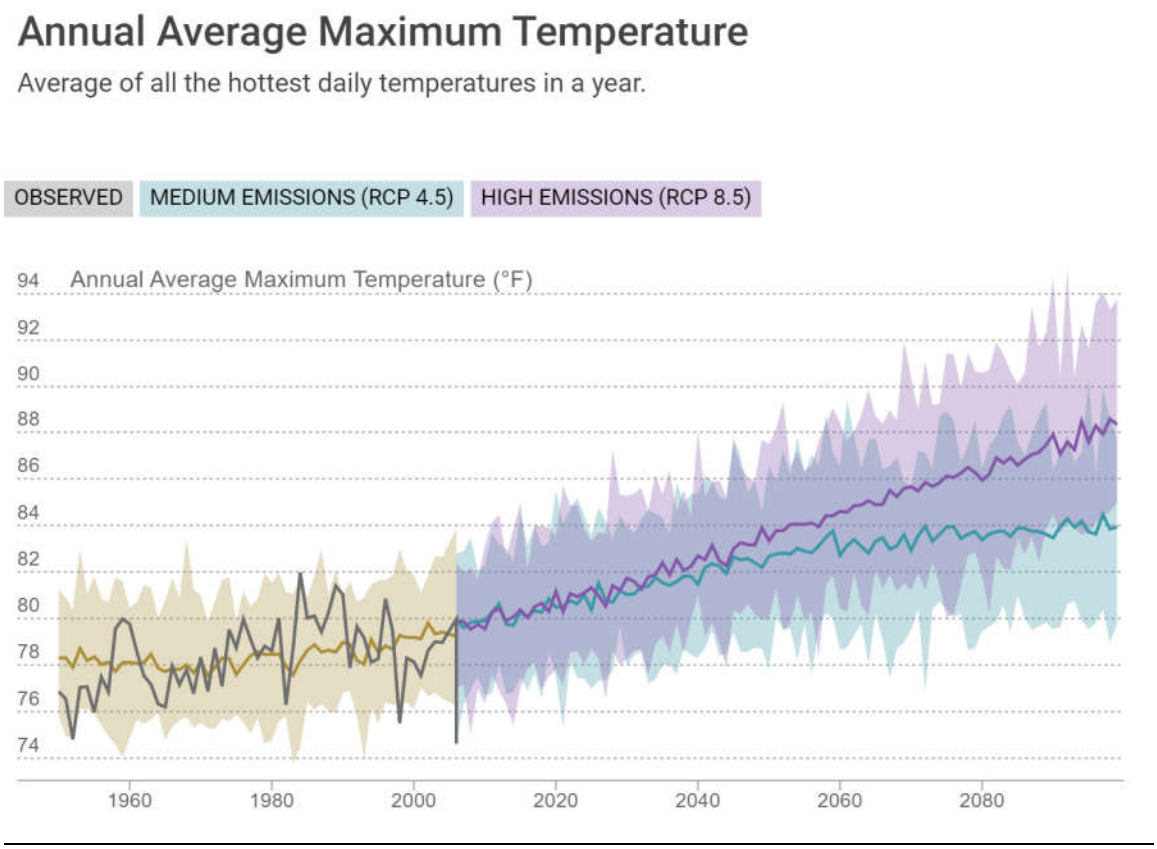


Figure VII-11

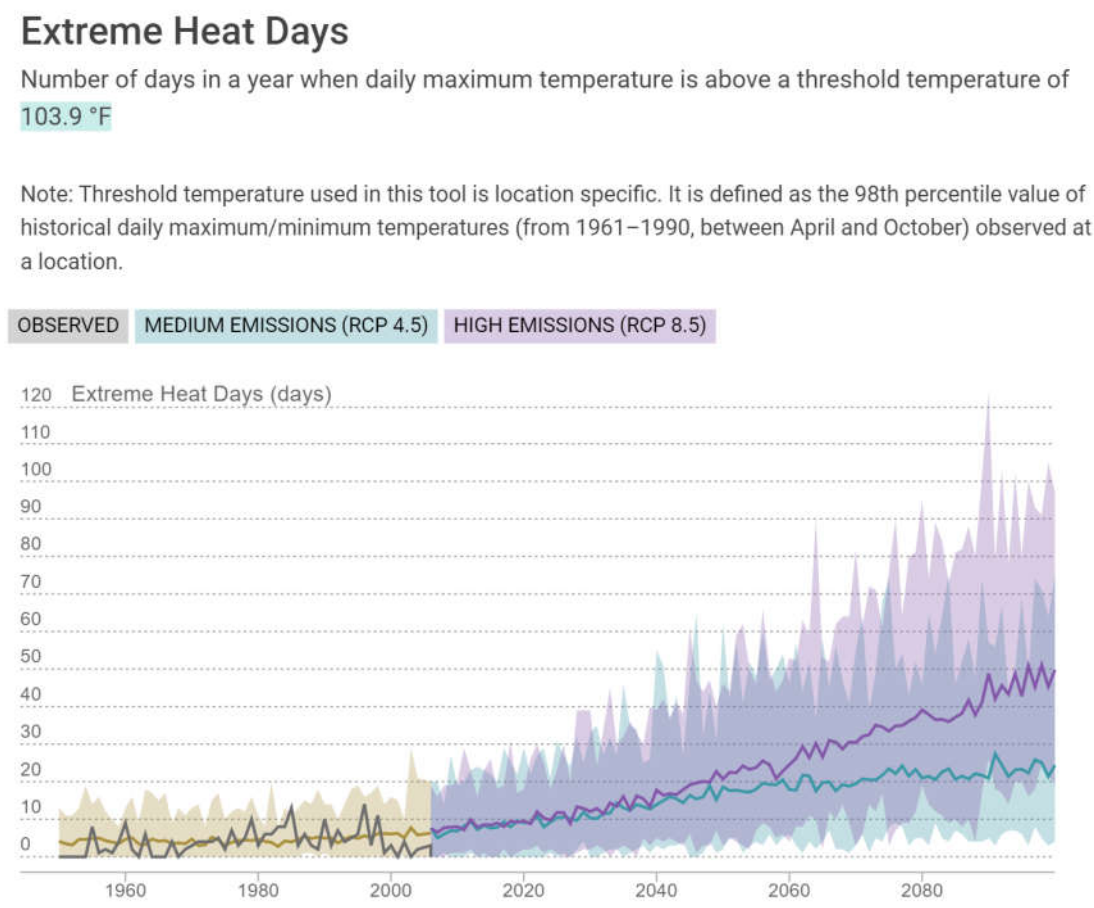
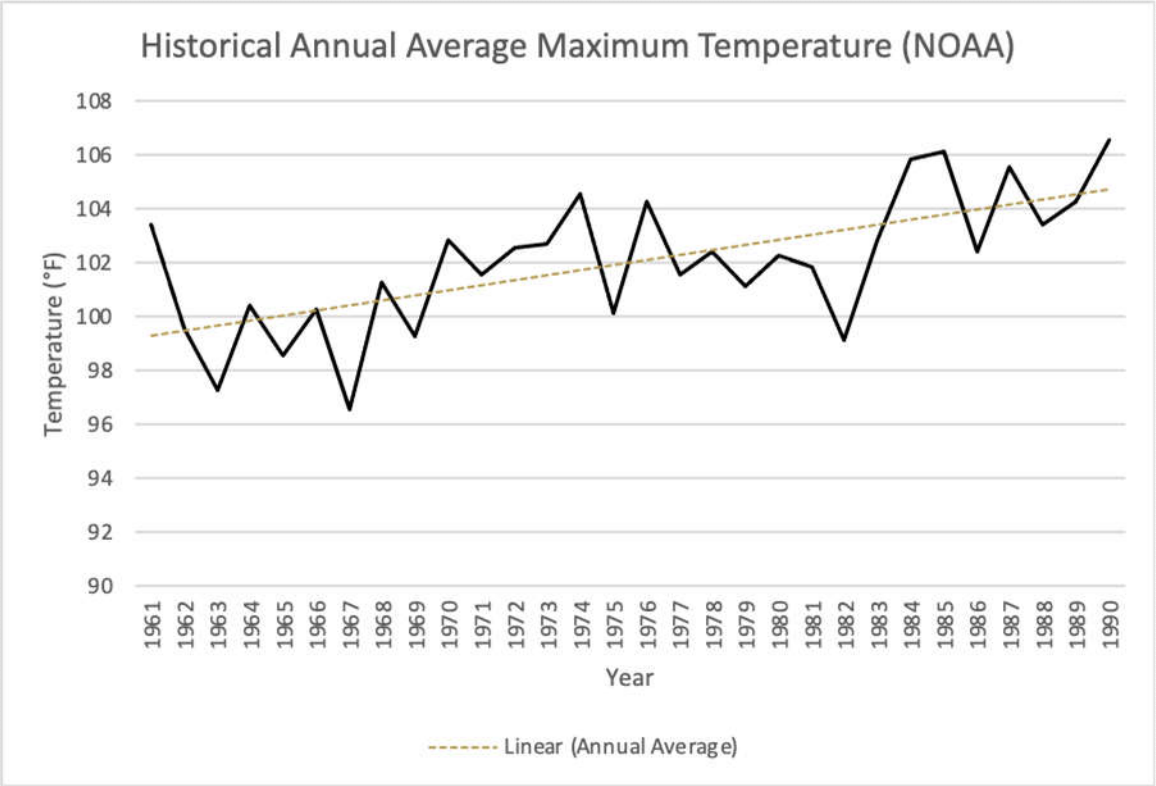


Figure VII-12~~1~~



Precipitation

Precipitation over the Los Angeles region is highly variable from year to year. According to California's Fourth Climate Change Assessment, Los Angeles Region Report (2018), typically about five storms each year generate approximately 50 percent of total precipitation.[7] Model projections are inconsistent, but in general, small changes in average annual precipitation are expected relative to the region's historic variability. However, dry and wet extremes are both expected to increase in the future thus increasing the potential for higher variability in precipitation. By the late 21st century, the wettest day of the year is expected to increase across most of the Los Angeles region, with some locations experiencing 25-30 percent increases under RCP 8.5. According to California's Fourth Climate Change Assessment, Los Angeles Region

[7] https://www.energy.ca.gov/sites/default/files/2019-11/Reg%20Report-%20SUM-CCCA4-2018-007%20LosAngeles_ADA.pdf

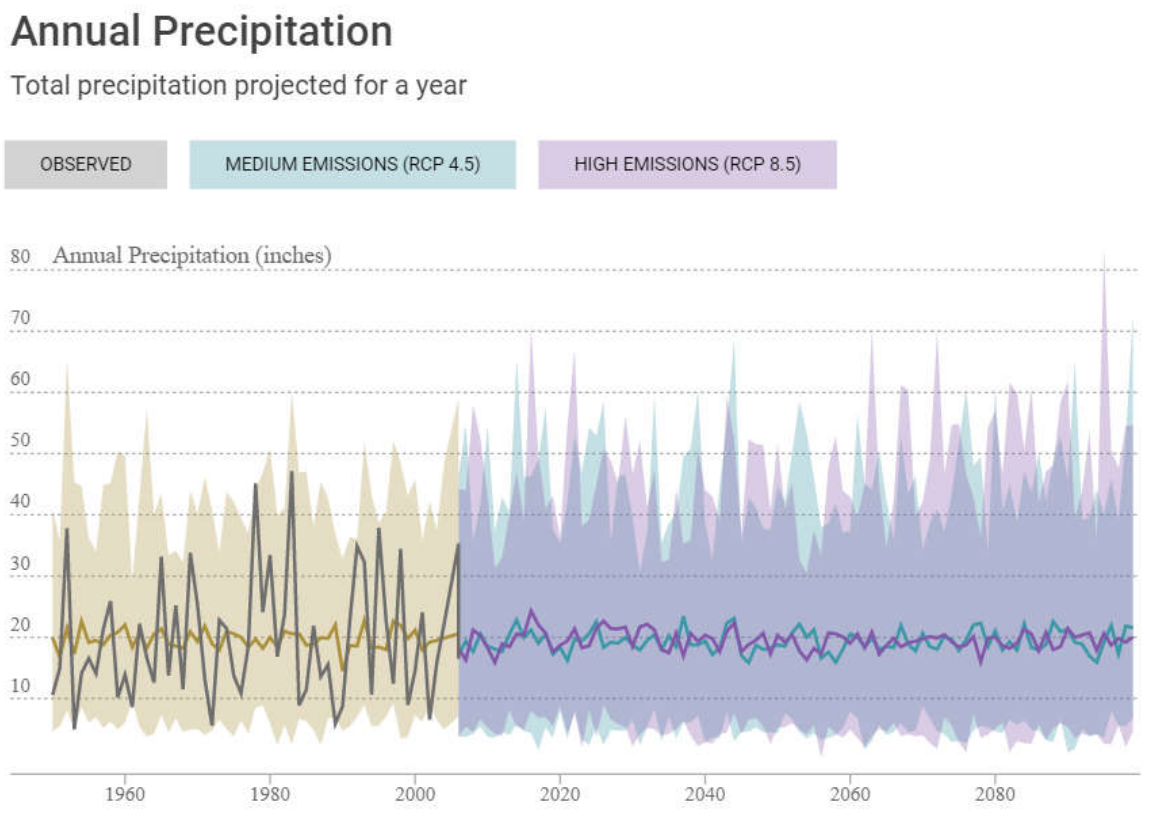
Report (2018), extremely dry years are also projected to increase, potentially a doubling or more in frequency by the end of the 21st century.[8]

In the City, the modeled historical annual precipitation is a 30-year average of approximately 19.5 inches.[9] Mid-century projections predict annual precipitation to decrease between 0.3 (RCP8.5) and 0.4 inches (RCP4.5). However, by the end of the century, annual precipitation is expected to increase above the current 30-year average of 19.5 inches by 0.1 inches (RCP4.5) due to more extreme storms and precipitation events.

Changes in precipitation are in **Figure VII-132**. The purple line shows high emissions scenario (RCP 8.5), the blue line shows the medium emissions scenario (RCP 4.5), the grey line shows the current trend (observed), and the gold line shows the modeled historical data. The shaded areas indicate the range for the emissions scenario. For example, the blue shaded areas represent the range of data for the medium emissions scenario (RCP 4.5). Overall, the projections show no clear or consistent trends during the next century. However, even small changes in precipitation can lead to significant effects on the water supply. Projections for the Los Angeles region predict an intensification of precipitation, as well as an increase in the annual number of dry days and a decrease in the number of wet days. Fewer but more severe rainfall events are projected, which may result in intense runoff during storm events.

[8] Los Angeles Summary Report, California's Fourth Climate Change Assessment. https://www.energy.ca.gov/sites/default/files/2019-11/Reg%20Report-%20SUM-CCCA4-2018-007%20LosAngeles_ADA.pdf>.
[9] https://cal-adapt.org/tools/local-climate-change-snapshot/

Figure VII-132



Intense Precipitation Events

A warming climate is likely to influence the frequency and intensity of precipitation events and may cause more frequent flooding and trigger landslides Calabasas. There is a Federal Emergency Management Agency -designated flood zone along Las Virgenes Creek located in the western portion of Calabasas (see **Figure VII-3**). This creek as well as other streams in Calabasas could experience more frequent flooding because of climate change. FEMA flood zone designations are identified based on historical data and do not account for future climate projections. Therefore, future risk associated with floods may not be accurately depicted on **Figure VII-3**.

Flooding may also occur when the amount of water generated from rainfall and runoff exceeds the City's stormwater system's capability to remove it. During periods of urban flooding, streets can become swift-moving rivers, buildings can be flooded, and storm drains can back up with vegetative debris causing additional, localized flooding.

During years of intense levels of precipitation and storms, the city could also see an increase in the number of landslides or make landslides greater than usual. **Figure VII-2**

identifies areas in the city that are at-risk of landslides. Due to the topography within Calabasas, as well as other factors, the vast majority of Calabasas carries landslide risks.

Drought

Droughts occur when there is a period of unusually persistent dry weather with below-average rainfall. Drought severity depends upon the degree of moisture deficiency, the duration, and the size of the affected area. Climate change is projected to increase the probability that low precipitation years will coincide with above-average temperature years. This increases the likelihood of drought due to decreased supply of moisture and increased atmospheric demand for moisture as evaporation from bare soils and evapotranspiration from plants increase. Global climate models project a 25 percent to 100 percent increase in extreme dry-to-wet precipitation events throughout the state by the end of the century (Swain, 2018). However, the specifics of projected drought conditions, such as their magnitude and duration, are not currently available for California or Calabasas. These periods of drought would negatively impact vegetation throughout the Santa Monica Mountains, as well as within Calabasas, including City parks, open spaces, and street trees, reducing localized carbon sequestration as well as limiting areas for shading and cooling (Remote Sensing of Environment, 2020). According to Our Climate Crisis: A Guide for SoCal Communities in the Wildland Urban Interface prepared by Malibu Foundation, prolonged droughts and deteriorating forest health (over 123,000 trees in the Santa Monica Mountains died between 2015 and 2017) will make the Santa Monica Mountains region more susceptible to wildfires.[10]

In addition to evidence of increased drought severity, there is evidence for occasional wet years. Because precipitation is projected to be variable, some years will be less drought prone than others due to more frequent and stronger storms. Even if there is greater precipitation, the projected increase in evaporative demand from higher temperatures implies that more water could be lost to the atmosphere and increase the possibility of drought. Water shortages and price hikes resulting from droughts could affect access to safe, affordable water. Additionally, when the Sierra Nevada Mountain range does not receive adequate snowfall during the winter, much of the state will feel the impact the following summer and fall and drought severity can increase.

In recognition of the impacts drought will have on water supply, the LVMWD has been working to diversify their water supply portfolio. Currently, the LVMWD relies exclusively on the State Water Project. The Pure Water Project proposed by the LVMWD and Las Virgenes-Triunfo Joint Powers Authority (JPA) will increase local water resource reliability by treating surplus water that is currently discharged to Malibu Creek from the Tapia Water Reclamation Facility. The treated water will be added to imported water stored at

[10] https://www.themalibufoundation.org/resilience-report

the Las Virgenes Reservoir and distributed for residential consumption following additional treatment at the Westlake Filtration Plant. The Pure Water Project, once in operation, will increase local water supplies and account for 20 percent of the LVMWD water supply portfolio. LVMWD is also working with the Metropolitan Water District to receive Colorado River water to further diversify their water supply portfolio. In addition to these supply-side strategies, LVMWD implements an aggressive landscape conversion program to incentivize homeowners to drastically reduce their per capita water demand.

Wildfire

According to California's Fourth Climate Change Assessment, Los Angeles Region Report (2018), ~~i~~in the Southern California region, wildfire risk is influenced by a multitude of compounding factors that include its dry and warm Mediterranean climate, periodic episodes of offshore Santa Ana winds, drought events, the type and spatial distribution of vegetation, varying topography, large urban-wildland interfaces, past fire suppression attempts, and human activities.[11] Regionally, approximately 80 percent of wildfire events occur during the summer and fall, with a quarter of annual wildfires occurring during Santa Ana wind events. Future projections using statistical models indicate that Southern California may experience a larger number of wildfires and burned area by the mid-21st century under RCP 8.5. Overall burned area is projected to increase over 60 percent for Santa Ana-based fires and over 75 percent for non-Santa Ana fires.

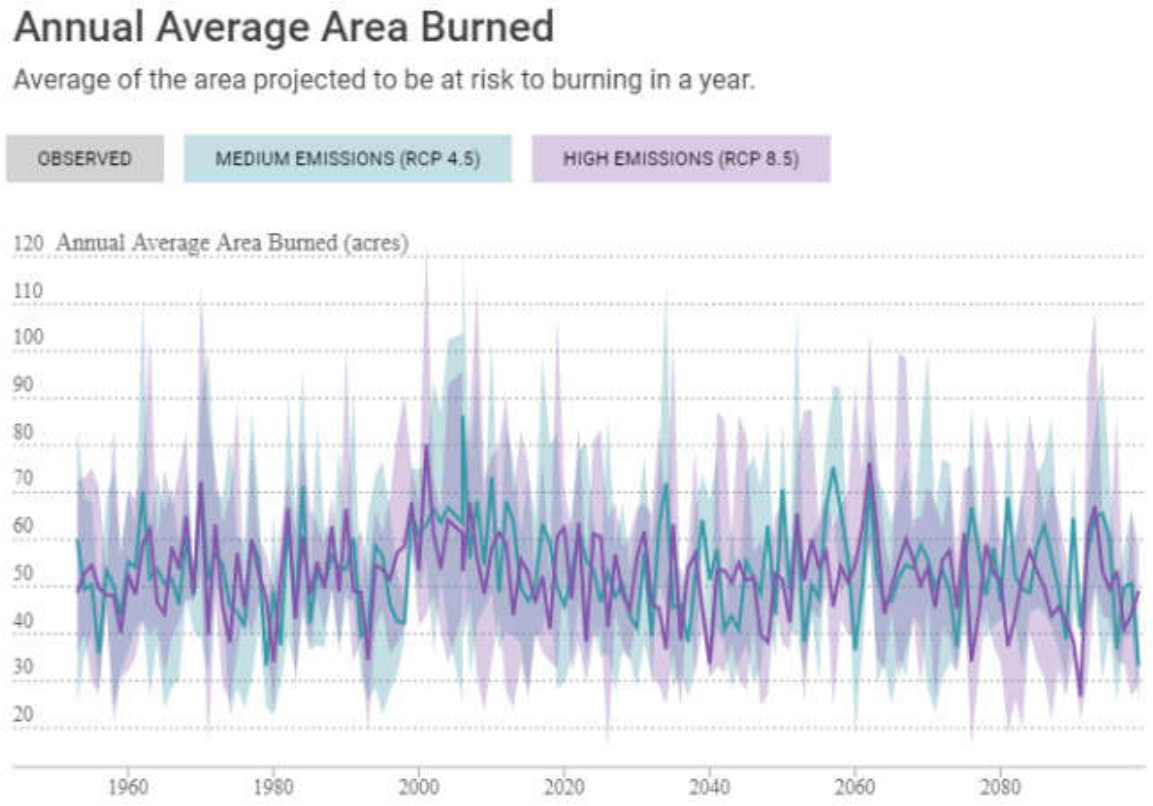
All parts of the City of Calabasas are mapped as within the CAL FIRE-designated Very High Fire Hazard Severity Zone (see **Figure VII-4**). This designation also applies to vast swaths of the Santa Monica Mountain region. According to The Our Climate Crisis: A Guide for SoCal Communities in the Wildland Urban Interface and the Los Angeles County Climate Vulnerability Assessment, wildfires are anticipated to increase in number and size in the region[12].

In the City, the baseline 30-year average (1961-1990) of acres burned ranges between 52.7 acres and 53.2 acres depending on the emissions scenario.[13] Although this is the historical modeled 30-year average, many factors affect projected future occurrence of wildfire because of climate change. There are significant uncertainties associated with the influence of climate change on the future occurrence of wildfire in the City. However, by both the mid-century and the end of century, the 30-year average acres burned is expected to slightly increase under an intermediate emissions scenario (RCP4.5) but

[11] https://www.energy.ca.gov/sites/default/files/2019-11/Reg%20Report-%20SUM-CCCA4-2018-007%20LosAngeles_ADA.pdf
[12] https://www.themalibufoundation.org/resilience-report and https://ceo.lacounty.gov/cso-actions/
[13] https://cal-adapt.org/tools/local-climate-change-snapshot/

decrease under a high emissions scenario (RCP8.5). **Figure VII-143** below shows wildfire scenario projections use a statistical model based on historical data of climate, vegetation, population density, and fire history between 1953 and 2099.

Figure VII-143



Vegetation loss due to more frequent wildfires increases the likelihood of landslides due to the lack of root networks holding the soil together. Landslides that occur after a wildfire are called post-wildfire debris flows. The Our Climate Crisis: A Guide for SoCal Communities in the Wildland Urban Interface prepared by Malibu Foundation identified several areas within Calabasas that were at an elevated risk for post-wildfire debris flows after the Woolsey Fire of 2018.[14]

In addition to increased landslide risk, wildfires can decrease air quality, releasing vast amounts of smoke which includes toxic pollutants. Wildfire smoke is comprised of air pollutants, including particulate matter, and is known to be a public health risk (CDC, 2013). According to the Los Angeles County Climate Vulnerability Assessment, by mid-

[14] https://www.themalibufoundation.org/resilience-report

century, the total number of smoke waves, average intensity, and length of season are projected to increase significantly.[15]

Vulnerability

Communities will be affected by climate change to varying degrees depending on their sensitivity to its impacts. Social vulnerabilities can inhibit the adaptive capacity of a community. On a larger scale, communities may be more vulnerable because of limited access to financial capital and resources, various institutional barriers, social network limitations, and compromised access to critical infrastructure. Adaptive capacity is largely influenced by governance, management, and institutions, thus making it imperative that adaptive capacity is addressed through effective policy implementation. On a more local level, the sensitivity of a community depends more on the specific makeup of the community (i.e., specific populations and assets).

The impacts of climate change that Calabasas may experience include increases in average maximum and minimum temperatures, more severe storms, increases in extreme heat events, changes in precipitation patterns, extended drought conditions, and increasing wildfire risk.

Certain population groups may be disproportionately harmed by the impacts of climate change in Calabasas. The California Healthy Places Index tool identifies vulnerable populations by census tract. Vulnerable populations identified in Calabasas include but are not limited to; unemployed, seniors, young children, outdoor workers, low-income households, mobile home residents, and individuals with physical disabilities.

The City's residents and workers rely on infrastructure for mobility, water, power, and communications. These systems are vulnerable to climate change, which in turn can reduce the ability of people to adapt. Health risks may arise or be exacerbated because of damaged infrastructure, such as from the loss of access to electricity, or impacts to sanitation, safe food, water supplies, health care, communication, and transportation. To help reduce negative impacts on vulnerable populations and increase adaptive capacity, strategies and policies must be identified regarding vulnerable infrastructure, ensuring a high standard of condition and performance on infrastructure systems, and overall disaster preparedness.

External factors present in the Calabasas community that also contribute to climate change vulnerability include high housing cost burden and exposure to poor air quality and other environmental conditions. ~~.~~Because climate change impacts are closely intertwined with vulnerable populations and inequities, climate adaptation planning

[15] https://ceo.lacounty.gov/cso-actions/

presents a unique opportunity to address some of the external factors that contribute to climate change vulnerability, which are also root causes of inequity. Addressing these underlying causes can help increase resilience for all citizens of Calabasas.

Policies

VII-93 Consider shading and usability of resources on hot days when designing inland trails, parks, and freshwater recreation areas and when acquiring new land for recreation.

VII-94 Promote and expand the use of ~~drought-tolerant~~ green infrastructure, such as street trees, bioswales, understory planting, and green roofs, that provides shading, mitigates wind, tolerates drought, and resists fire~~, including fire-resistant landscapingstreet trees, and landscaped areas~~, as part of cooling and resilience strategies in public and private spaces. Promote the addition of shade structures in public spaces.

VII-95 Coordinate with Los Angeles County Department of Public Health to identify and map cooling centers in locations accessible to vulnerable populations and establish standardized temperature triggers for when they will be opened.

VII-96 Support prioritization of shading, drinking water, and permeable paving on multi-use transportation corridors.

VII-97 Partner with Southern California Edison to promote 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.

VII-98 Work cooperatively with utilities to harden vulnerable overhead power lines against winds.

VII-99 Mitigate landslide and debris flow risks in the hills by improving drainage, reconstructing retaining walls, installing netting and vegetation, avoiding clear cutting, and stabilizing the soil after tree clearing, such as with compost and mulch.

VII-100 Establish a regular inspection and maintenance cycle for existing physical landslide and debris flow defenses, including inspections prior to heavy rain events and post-wildfire events.

VII-101 Incorporate climate change projections in future resource conservation plans and land use plans, including research and monitoring plans.

VII. SAFETY ELEMENT

VII-102 Incorporate consideration of climate change impacts as part of infrastructure planning and operation. Identify projects as part of capital improvement programs that should consider climate adaptation priorities.

VII-103 Use available data and studies to simulate how expanded wildfire, flooding, and landslide impacts might affect the transportation system. In particular, study changes along designated evacuation routes associated with more frequent and severe wildfire, flood, and landslide events.

VII-104 Explore the feasibility of installing self-sufficient energy systems, such as microgrids, at city-owned facilities to minimize service disruptions during power outages triggered by a climate event.

VII-105 Restore degraded ecosystems to enhance the natural adaptive capacity of biological communities that are vulnerable to the effects of climate change.

VII-106 Weatherize homes using a holistic "healthy homes" model that addresses severe weather protection, energy efficiency, indoor air improvements, and other housing improvements.

VII-107 Identify a targeted and sustained funding sources to improve access to solar with battery backup to blackout-proof the homes of vulnerable populations.

VII-108 Partner with the Los Angeles County Health Department to develop and enhance disaster and emergency early warning systems to incorporate objective data and information for potential health threats such as heat-illness, and illnesses complicated by low air quality due to climate change hazards.

VII-109 Use federal, state, and regional resources, as they become available, to address localized exposure to elevated air pollutant levels (such as along U.S. 101).

VII-110 Provide incentives to promote air pollution reduction, including incentives for developers who go beyond applicable requirements and mitigate pollution for facilities and operations that are not otherwise regulated.

VII-111 Minimize risk of disease spread and economic disruption due to infectious diseases by coordinating with the Los Angeles County Department of Public Health to provide testing and contact tracing resources and promoting public safety protocols, maintaining up-to-date health services on the City's website, and partnering with local non-governmental organizations and community groups to provide economic support services.

VII-112 Disseminate education and outreach materials regarding the Las Virgenes Municipal Water District Landscape Conversation Program to homeowners, residents, and landlords to decrease water demand.