Orange County Fire Authority

2024 Unit Strategic Fire Plan

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Unit Strategic Fire Plan Signature Page - Developed for Orange County Fire Authority

This plan was collaboratively developed in conjunction with key stakeholders, including Federal, State, County, and City agencies, as well as other community partners, which are listed in the plan.

- Its purpose is to identify and prioritize both pre-fire and post-fire management strategies and tactics, designed to reduce the loss of values at risk within the Unit.
- The Unit Strategic Fire Plan is intended as a planning and assessment tool only, to be used in conjunction with two addendums added in 2017, including Orange County's County-Wide Wildfire Protection Plan (CWPP) and Orange County Fire Authority's (OCFA's) Fire Danger Operating Plan (FDOP).
- It is the responsibility of those implementing the projects to ensure that all environmental compliance and permitting processes are met as necessary.

Brian Fennessy
Fire Chief — Date 4/23/24

Lori Smith
Assistant Chief- Fire Marshal — Date 4/24/24

Kevin Fetterman
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Executive Summary

Throughout the history of the fire service in Orange County, the Orange County Fire Authority (OCFA), and its predecessor agencies have been recognized as a premier wildland fire agency that effectively manages and provides wildland fire prevention and suppression services. As the County of Orange's fire agency, the Orange County Fire Authority is contracted by the State of California to provide all aspects of wildland fire management for State Responsibility Areas (SRA) within the county. Consequently, in accordance with the California Fire Plan, Orange County's Unit Strategic Fire Plan was first collaboratively developed as a planning and assessment tool in 2010, in conjunction with key stakeholders and partner organizations, with the goal of reducing total government costs and citizen losses from wildfire in Orange County. This plan addresses such topics as firefighter and public safety, Wildland Urban Interface (WUI) challenges, impactful cost-effective solutions, community preparedness, prioritization, collaborative partnerships, program, project and policy evaluation and adaptability.

Orange County's Unit Strategic Fire Plan employs a range of strategies to effectively address the challenges posed by wildfires. These strategies include:

- Fostering collaboration with local communities and stakeholders to enhance overall resilience to wildfires.
- Collaborating with other fire management agencies, emergency services, and local authorities to ensure coordinated and effective efforts.
- Engaging communities in wildfire preparedness efforts, including developing evacuation plans and promoting fire-resistant construction practices particularly in the Wildland Urban Interface (WUI).
- Leveraging modern technology and surveillance systems for wildland management and early detection of wildfires.
- Building and maintaining a robust team for emergency response and resource management.

Guided by this plan, notable progress has been made in terms of pre-fire management planning and program implementation. OCFA embraces a collaborative approach to wildfire planning and prevention efforts. By improving vegetation management, road improvement programs, and workforce capacity, our community has become more resilient to wildfire associated challenges. Recent accomplishments include:

- **Placement of the Quest HeloPod (2023) –** A new HeloPod and hydrant were placed in the City of San Juan Capistrano to aid in reducing the turnaround time for helicopter re-fills.
- **Addition of the Wildland Resource Technician (2023) –** A new position was filled in 2023 to help support the Wildland Pre-Fire Management section. This position reports to the Wildland Resource Planner and assists with pre-fire, community wildfire mitigation, and suppression repair activities.

- **Wildland Resource Planning Map (2023) –** A new ArcGIS Enterprise Field Map was developed to track fuel reduction and roadside brushing projects performed by the OCFA Hand Crews and Heavy Equipment Operators.

- **Tree Pest Grant (2018-2023)** – OCFA was awarded a CALFIRE grant in 2018 to address the Invasive Shot Hole Borer and Goldspotted Oak Borer posing significant threat to Southern California oak woodlands. Due to challenges completing the work during COIVD, the grant has been extended through 2025. Additionally, the grant funded flights to produce normalized difference vegetation index (NDVI) data throughout the SRA area.

- **Fire Road & Truck Trail Annual Maintenance** - Completed annual road maintenance on 130 miles of roads used for fire suppression and prevention. Due to excessive rains in the 2022/2023 rainy season, many unpaved roads and trails were subject to flooding and washouts. Open space roads were also overgrown with annual weeds and grasses. Many of the fire roads and trails were repaired and treated multiple times during 2023 to allow for safe and continuous use.

Original 2010 Key Objectives

To evaluate progress to date on the key objectives that were originally outlined in 2010 when this plan was first developed, in 2016, a scoring system of 1-10, with 10 being best, was incorporated for each objective. In general, there's been meaningful progress on most of the objectives since then, but opportunity always exists for continued improvement.

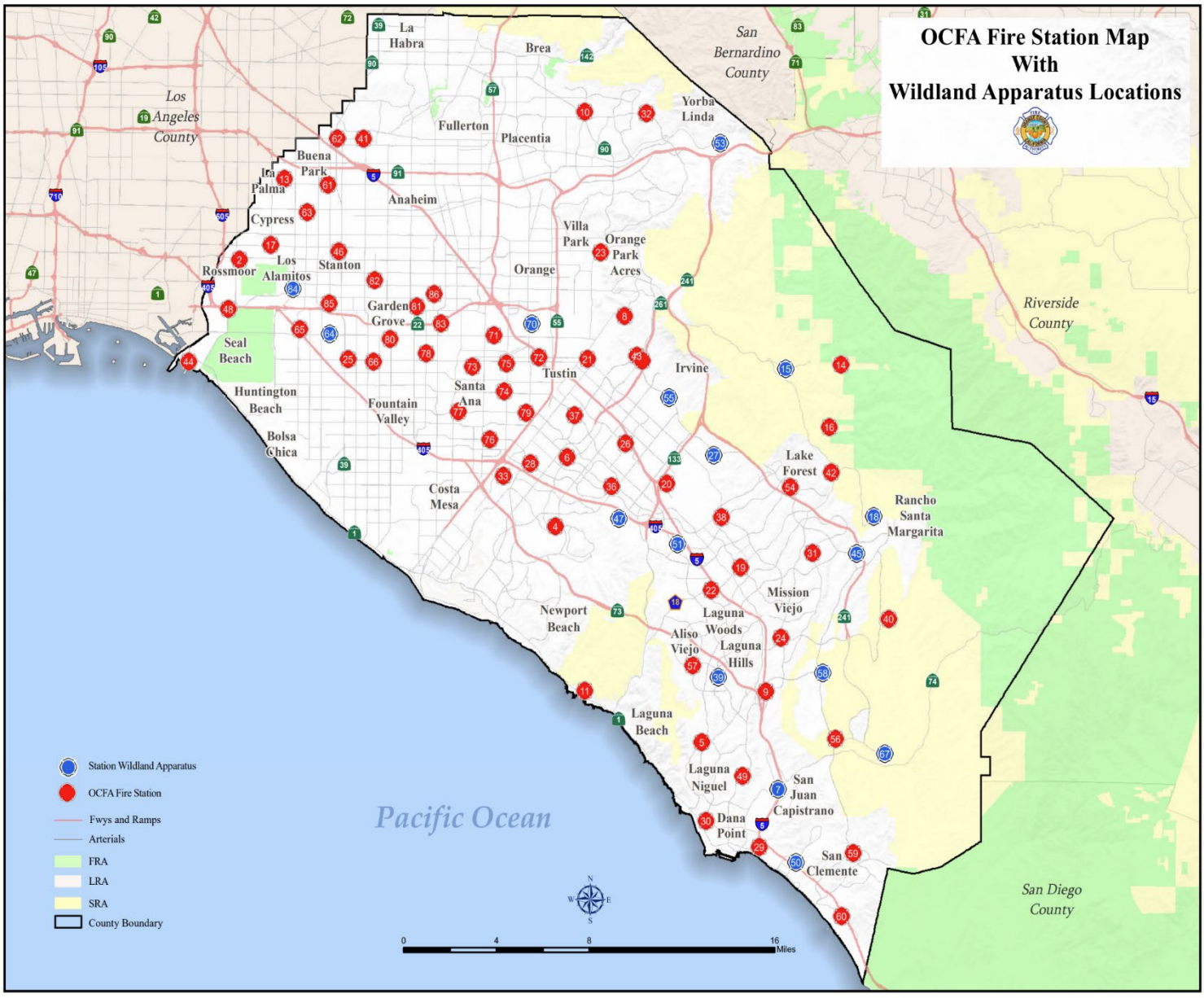
2023 Progress Report for Key 2010 Objectives
• **Establish any relationships, partnerships, and councils necessary to reduce wildfire ignitions, risks, and losses by emphasizing community-level resources and solutions. Leverage partners with common interests/or motivations.** ➢ **2023 Score: 9.0** - There's been tremendous progress in establishing relationships and partnerships such as the formation of the County of Orange Safety Task Force (COAST), a group of key organizations with a vested interest in wildfire planning and preparedness. More work is still needed at the community level, such as establishing additional fire safe councils.
• **Develop and sustain a portfolio of high-impact, least-cost, stakeholder-driven solutions for reducing wildfire ignitions, risks, and losses by creating and sustaining new solutions, eliminating low-impact solutions, and streamlining high-cost solutions.** ➢ **2023 Score: 9.0** - The CWPP has facilitated progress in developing new grants, processes, and program suggestions, which will be continually evaluated, and hopefully implemented.
• **Develop the Unit Fire Plan, using the key elements identified by CAL FIRE, and support the county and smaller communities with the development of their local CWPP.** ➢ **2023 Score: 10.0 -** This objective was met in 2017 when the County-Wide Protection Plan (CWPP) was first established. OCFA recently updated the CWPP in 2021. Additionally, OCFA reviews wildfire and strategic plans for major landowners including several COAST members.
• **Engage collaborative partners to lead and drive the effort to protect communities from wildfire. OCFA's role transitioned into a support-oriented role, focusing primarily on active participation, facilitation, and evaluation of program results.** ➢ **2023 Score: 9.0 -** Collaborative partners continue to be engaged, with OCFA often functioning as a facilitator or evaluator, such as with the Emerging Tree Pests of Orange County Task Force.
• **Ensure the community understands, accepts responsibility, and takes necessary action to mitigate wildfire ignitions and risk, thereby preventing lives and property from being lost or damaged in wildfires.** ➢ **2023 Score: 7.0** – The Wildland Pre-Fire Management team works with HOAs, Fire Safe Councils, and individual homeowners to educate on mitigation strategies. OCFA also launched the online Home Assessment Tool to facilitate homeowner knowledge of home hardening tactics.
• **Develop regularly publicized motivational performance measurements regarding wildfire to facilitate change in cultural attitudes and implement a systematic mitigation of risk for the public.** ➢ **2023 Score: 7.0** –Community engagement during annual wildland inspection in the high and very high fire severity zones in the SRA and LRA as well as ongoing vegetation management and roads projects contribute to systematic risk mitigation.
• **Facilitate change in the local "cultural attitude" about wildfire risks from apathy and unawareness to alertness and empowerment, through mass marketing and outreach.** ➢ **2023 Score: 7.0** - The "Ready, Set, Go!" message, along with messaging in high-risk canyon areas to help facilitate this much needed shift in cultural attitude. OCFA has also increased staffing to improve outreach abilities in communities with a historically challenging human behavior factor.

Section I: Unit Overview

Unit Description

Responsibility

Orange County Fire Authority is a Joint Powers Authority that services 23 cities in Orange County including: Aliso Viejo, Buena Park, Cypress, Dana Point, Garden Grove, Irvine, La Palma, Laguna Hills, Laguna Niguel, Laguna Woods, Lake Forest, Los Alamitos, Mission Viejo, Rancho Santa Margarita, San Clemente, San Juan Capistrano, Santa Ana, Seal Beach, Stanton, Tustin, Villa Park, Westminster, and Yorba Linda. Additionally, OCFA is responsible for wildland fire protection in unincorporated Orange County and in the SRA. The cities of Anaheim, Brea, Costa Mesa, Fountain Valley, Fullerton, Huntington Beach, Laguna Beach, La Habra, Newport Beach, and Orange have their own municipal fire departments, but maintain collaborative partnerships with OCFA. OCFA also responds in mutual aid efforts with Los Angeles County, CALFIRE units San Bernardino, Riverside and San Diego as well as the federal government in the Cleveland National Forest and Camp Pendleton Marine Corps Base.



Geography

Orange County is Southern California's smallest county, with a total area of 947.98 square miles, of which 789.40 square miles (83.27%) is land, and 158.57 square miles (16.73%) is water. The Pacific Ocean is its southwest border, with Los Angeles County as its northern border, and San Diego County as its southeastern border. Moving inland, Orange County is bordered on the northeast and east by both San Bernardino County and Riverside County. While there is no formal geographic division, the county is often divided into north and south, with the 55 Freeway as the informal transition between the generally older established areas closer to Los Angeles County, and the more affluent and recently developed areas to the south.

In terms of OCFA's SRA responsibilities, it's important to note that the geography extends beyond Orange County's borders, with OCFA being responsible for protecting designated adjacent SRA lands in both Riverside and San Diego Counties.

Topography

Topographically, Orange County rises from sea level, along the Pacific Ocean, to the Santa Ana Mountains, which are located within the Cleveland National Forest. The highest Santa Ana Mountain peaks are Santiago Peak at 5,689 feet, and Modjeska Peak at 5,489 feet.

Another prominent topographic feature is Loma Ridge, located west and parallel to the Santa Ana Mountains, which runs through the central part of the county. Loma Ridge is separated from the Santa Ana Mountains by Santiago Canyon.

The county's major watercourse is the Santa Ana River, which flows from the Inland Empire, through the middle of the county from northeast to southwest and terminates at the Pacific Ocean on the Huntington Beach-Newport Beach border.

Land Ownership

Land Ownership Distribution in Orange County

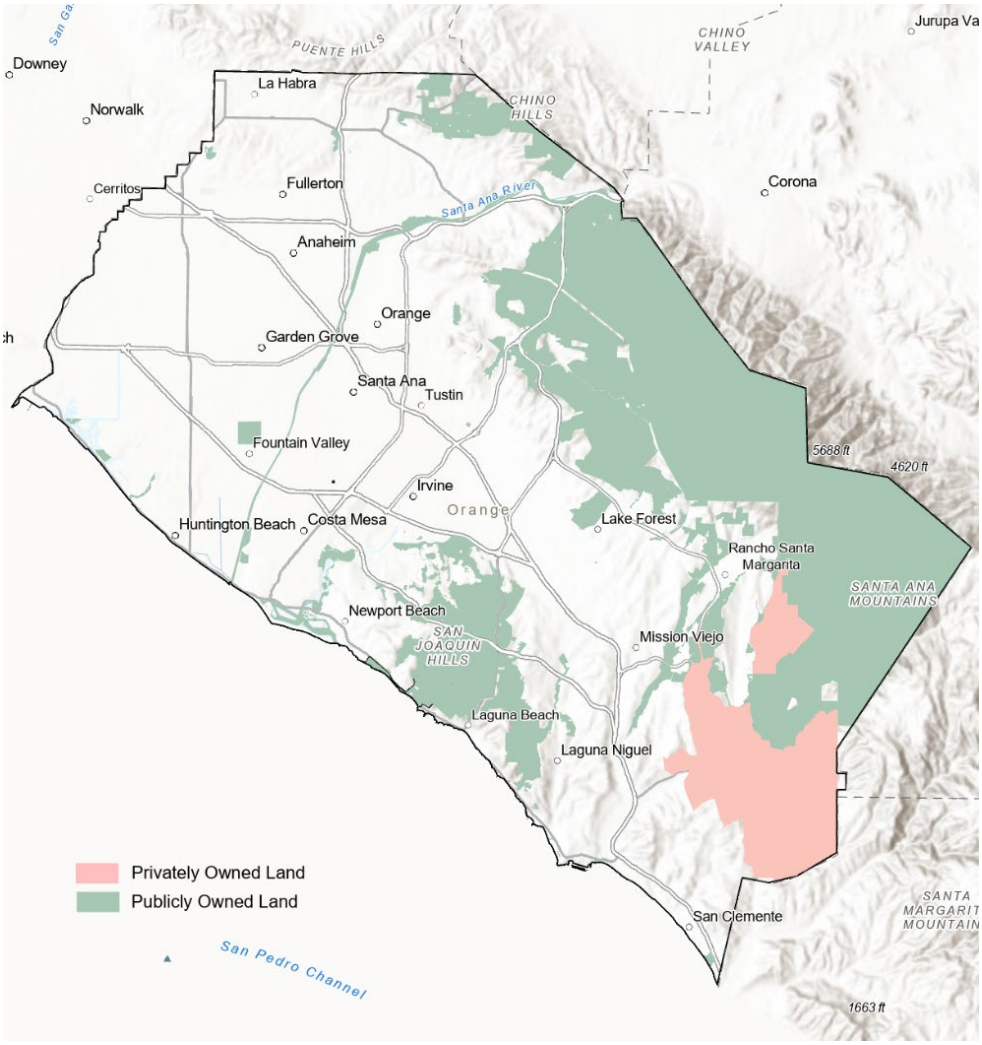
Ownership Type/Agency	Approximate Acreage
U.S. Forest Service	135,718
California Dept. of Parks and Recreation	17,201
California Dept. of Fish and Wildlife	1,730
OC Parks	53,913
Local Government	3,908
Orange County Transportation Authority	1,297
Transportation Corridor Agency	1,471
Private Open Space	24,599

Public lands, within or adjacent to Orange County's SRA lands, play an important role in the management of natural resources, as well with pre-fire management planning, and include Camp Pendleton Marine Base, Cleveland National Forest, Chino Hills State Park, Crystal Cove State Park, OC Parks, Orange County Transportation Authority (OCTA) and Transportation Corridor Agency (TCA) lands. The Irvine Ranch Conservancy and Natural Communities Coalition (formerly known as Nature Reserve of Orange County) manage portions of these public lands. Similarly, there are privately owned open space lands in, and near, the SRA that play an important role, which include Audubon Starr Ranch and Rancho Mission Viejo Land Trust.

Population

Orange County as a whole has 3.18 million residents, who reside in over 1.1 million housing units. Orange County also has the distinction of being the second most densely populated county in the state. According to the 2020 Census, compared to California overall, Orange County is relatively more educated, affluent, and increasingly diverse.

- **Median HH Income:** OC $106.2K vs. CA $91.6K
- **Bachelor's Degree +:** OC 43.7% vs. CA 37%
- **Home Ownership:** OC 55.8% vs. CA 55.8%
- **MDU's**: OC 34.2% vs. CA 31.0%
- **Foreign Born**: OC 30.2% vs. CA 26.7%
- **Non-English (spoken at home):** OC 47 % vs. CA 44.4%



Major Transportation Arteries

With so many people and limited public transportation, Orange County roadways are of critical importance in keeping the resident population moving, along with the large daily influx of commuters from outside the county. However, most of the major roads pass through wildfire prone SRA lands and open space areas that are often the site of roadside wildfire ignitions, including Interstate 5, CA 57, CA 74 (Ortega Highway), CA 91, and the 73, 133, and 241 Toll Roads.

Vegetation Types

Vegetation types dominating the open spaces include grasslands, oak woodlands, desert brush, coastal sage scrub, and chaparral. The general condition of the vegetation covers a broad spectrum from healthy to decadent and from new growth to old growth. Approximately 60% of the wildland vegetation has experienced at least one catastrophic fire within the last decade. However, as drought conditions persist, the fuels have become increasingly hazardous. Additionally, invasive plant species have become more prevalent in the riparian and chaparral ecosystems in southern California as they re-establish more rapidly than native plants in burned or disturbed areas. Invasive weeds and grasses suppress the recovery of native species and provide a continuous fuel bed that ignites easier than native vegetation.

Fuel moisture is measured by OCFA at two locations monthly to help evaluate their potential as a wildfire risk factor. Samples are collected in Black Star Canyon, in the northern part of the county, and Rancho Mission Viejo in South County, near CA 74 (Ortega Highway). The excessive rain that poured across southern California from December of 2022 through September of 2023 lead to intensified erosion and an increased quantity of invasive weeds and grasses as seen at the Black Star fuel moisture collection site (images below). This coastal sage scrub community is plagued by cheatgrass and other nonnative brome species.

Black Star Canyon July 2022

Black Star Canyon July 2023

Weather

Like most of Southern California, Orange County is considered to have a Mediterranean climate, where precipitation occurs during the winter months and summers are typically hot and dry. The average daily temperature is 70 ˚F, with average annual rainfall ranging from 10-14 inches. Weather phenomena characteristic of Orange County, includes:

- **Microclimate Conditions** - Where temperatures can vary as much as 18°F from inland areas to the coast, with a temperature gradient of over one degree per mile.
- **May Gray/June Gloom** - Often brings morning overcast skies to the coastal cities that usually give way to sunny skies by noon, during the late spring and early summer.
- **Santa Ana Winds** - Per the National Weather Service (NWS), Santa Ana Winds are "strong down slope winds that blow through the mountain passes in Southern California". They can easily exceed 40 miles per hour, are warm and dry, and can severely exacerbate brush or forest fires, especially under drought conditions.

In the 2023 Water Year, October 1st of 2022 through September 30th of 2023, California experienced extreme, historic levels of precipitation which ended the three-year drought period from 2020 to 2022. While many rainfall records broke in the winter months of 2023, the normally hot and dry August and September months saw several intense thunderstorms including Hurricane Hilary, California's first tropical storm to reach hurricane status.

Unit Preparedness & Firefighting Capabilities

OCFA is headquartered in Irvine, CA at the Regional Fire Operations Training Center (RFOTC) and operates as a Joint Powers Authority. OCFA contracts with 23 of Orange County's 34 incorporated cities to provide a full spectrum of fire protection services. Additionally, the County of Orange contracts with OCFA to protect its 16 unincorporated communities, as well as Orange County Parks. CAL FIRE also contracts with OCFA to protect Orange County's SRA lands, which include two state parks, and portions of the Cleveland National Forest Trabuco Ranger District.

Emergency Operations Bureau

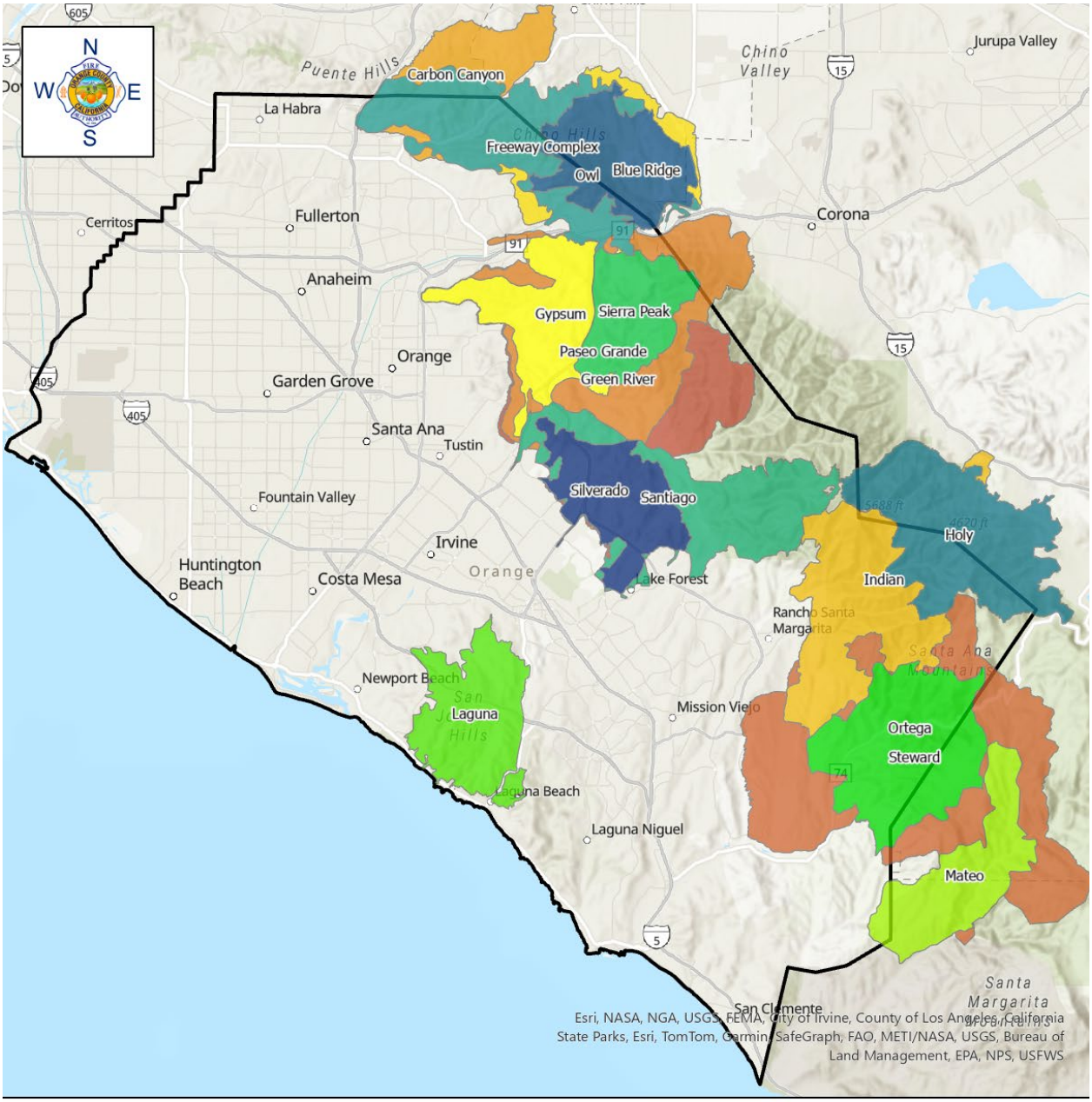
The OCFA operations bureau consists of seven divisions, broken into eleven battalions, with 78 fire stations. Operations personnel provide regional all hazard emergency response to all wildland and structural fires as well as medical aids, remote rescues, hazardous materials incidents, aircraft fire and rescue services to John Wayne Airport, and other miscellaneous emergencies. The operations department encompasses Air and Wildland Operations and Investigations sections. The Command and Emergency Planning section oversees the Emergency Command Center. OCFA currently staffs 16 type 3 engines and 3 type 1 dozers. To better facilitate emergency response, a full-time duty officer has been added to the Emergency Communications Command Center.

Administration and Support Bureau

The Community Risk Reduction Department comprises of three sections: Prevention Field Services, Planning and Development, and Wildland Pre-Fire Management. Wildland Pre-Fire Management takes a proactive approach to wildland fire prevention through the systematic evaluation of risk, fuels mitigation, road maintenance, vegetation management, and home hardening education. The Wildland Pre-Fire Management team also preserves ongoing collaboration with partner organizations, landowners, and communities. The Logistics Department provides additional support to wildland fire fighting preparedness through the Service Center, Fleet Services, and Information and Technology sections. As part of the Information and Technology section, the GIS team provides information intelligence and mapping. Directly under the OCFA Fire Chief is the Corporate Communications department which functions include the Public Information Office, Multimedia and Community Education sections.

Orange County Fire History

Recent history illustrates that Orange County is prone to large scale wildfires in, and near the SRA. It is not unusual for Orange County's wildfires to exceed 10,000 acres in area as shown below. Some even exceed 30,000 acres.



Fire Perimeters Greater Than 10,000 Acres

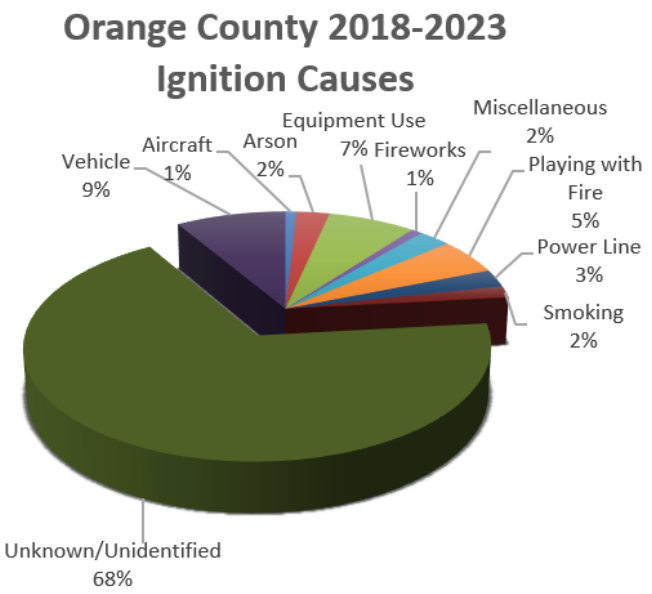
Alarm Year | Fire Name | GIS Acres

- 1948 | Green River | 53,079
- 1958 | Steward | 69,444
- 1967 | Paseo Grande | 51,075
- 1980 | Carbon Canyon | 14,612
- 1980 | Indian | 28,938
- 1980 | Owl | 18,332
- 1982 | Gypsum | 20,141
- 1989 | Mateo | 13,477
- 1993 | Laguna | 14,336
- 1993 | Ortega | 21,010
- 2006 | Sierra Peak |10,515
- 2007 | Santiago | 28,359
- 2008 | Freeway Complex | 30,305
- 2018 | Holy| 22,885
- 2020 | Blue Ridge | 13,694
- 2020 | Silverado | 12,465
- Orange County Boundary

0 2.5 5 10 15 Miles

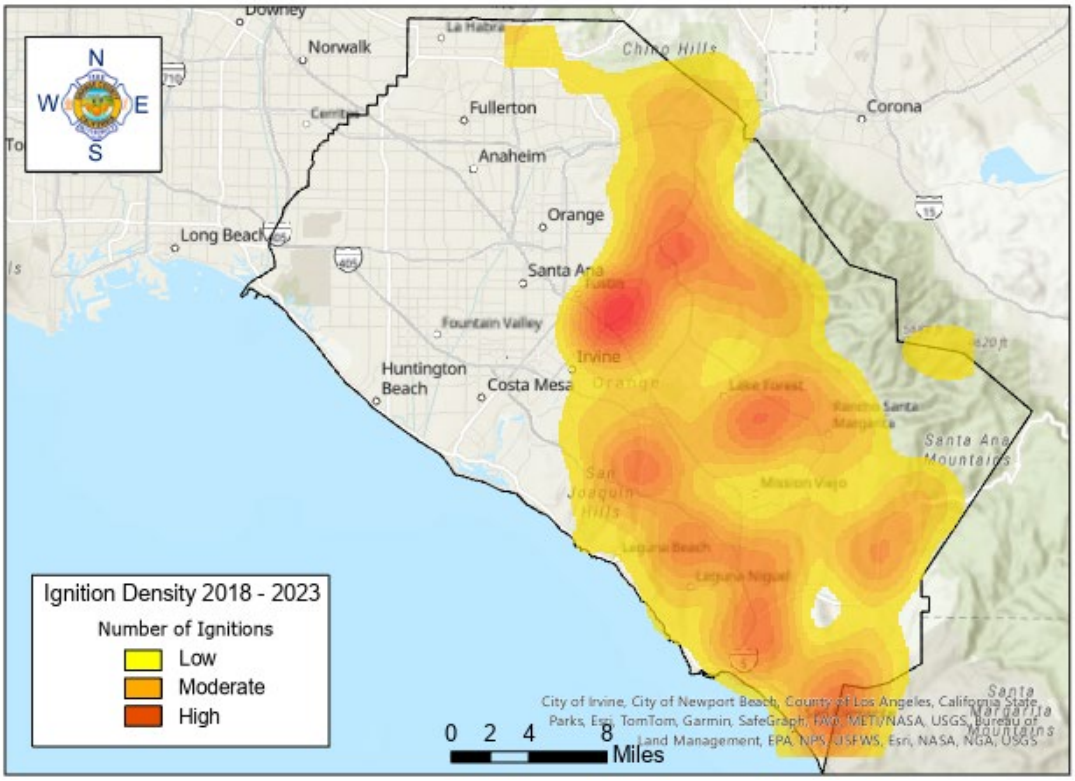
Ignitions

Ignition Cause	Frequency
Aircraft	1
Arson	3
Equipment Use	8
Fireworks	1
Miscellaneous	3
Playing with Fire	6
Power Line	3
Smoking	2
Unknown/Unidentified	79
Vehicle	10
Grand Total	**116**



OCFA's Investigations Section attempts to determine the cause of all Orange County fires that are in or are a threat to SRA areas. For the vast majority of these starts, the cause is identified as Unknown/Unidentified or Miscellaneous. To combat roadside ignitions, which are of particular concern in Orange County, OCFA is partnering with COAST member organizations, including Caltrans, the Transportation Corridor Agency (TCA), and the Orange County Transportation Authority (OCTA) to develop preventive measures. Over the past few years, as drought conditions persisted, the only definitive trend is that there are more fires, and a corresponding increase in the percentage of Unknown/Unidentified and Miscellaneous ignition causes.

Ignition data for Orange County was analyzed for the period 2018 to 2023 to evaluate ignition trends within the county. The dataset, which is depicted in the 2018-2023 Ignition Density map, includes 116 ignitions and the correlating cause for each fire. Analysis of the dataset reveals a direct correlation between ignitions and the county's major transportation arteries including Interstate 5, CA 57, CA 74 (Ortega Highway), CA 91, and the 73, 133, and 241 Toll Roads. While the unknown/unidentified remains highest percentage of ignition cause, of the 116 ignition points approximately 9% were due to vehicle fires and 7% were caused by equipment use.



Challenges

In remote and rural areas of the county, firefighters are often faced with a limited water supply and lack of hydrant taps. Rural areas are characteristically outfitted with small diameter pipe water systems, which are inadequate for providing sustained firefighting flows. While not all these issues are within OCFA's control, prevention efforts for the ones that are (i.e., road clearance, fuels reduction, defensible space inspections and resident education) will continue to be incorporated into this plan.

Some of the most difficult fire protection problems encountered in the Wildland Urban Interface (WUI) are:

- Multiple stories, wood frame, high-density developments
- Large contiguous built-up areas with combustible roofing materials
- Response times for emergency equipment
- Street structure, such as truck trails, non-surfaced private roads, and/or curvilinear roads, with dead-ends and narrow street widths
- Inadequate and unreliable water supply with poor hydrant distribution

With California experiencing more extreme weather conditions, homeowners' insurance poses a new challenge for Southern California homeowners and policy makers. Insurance companies such as Allstate and State Farm are withdrawing from California causing loss of coverage for existing homeowners and delays in mortgage closings for new buyers. Many Californians are facing policy cancellation or paying significantly higher insurance premiums. The California Department of Insurance (CDI) expanded the FAIR Plan, which now provides fire insurance for more than 350,000 California residents. Additionally, the Sustainable Insurance Strategy was released in 2023 in an effort to reform California insurance policies. OCFA hosted the Insurance Institute for Business and Home Safety (IBHS) demonstration burn in collaboration with CDI to illustrate the effectiveness of research-based wildfire mitigation actions. In 2023, Orange County residents and HOAs in the WUI looked to OCFA for home hardening inspections, documentation of defensible space inspections for real estate sales, and support in working with county and state agencies for vegetation clearance around homes boarding the wildland.

However, perhaps the most pressing problem overall is public apathy and unawareness regarding wildfire risks. The ongoing challenge has been for people to understand that surviving a wildfire may depend on their willingness to accept personal responsibility for protecting their homes, families, and communities, by implementing proven preparedness and prevention strategies before fire occurs.

Section II: Collaboration

When this plan was originally developed in 2010, OCFA enlisted input from outside organizations (see Appendix H), including Bon Terra Consulting (restoration ecology), California State Parks, Habitat Restoration Services (HRS), the Fire Safe Council of East Orange County Canyons, Irvine Ranch Conservancy, Orange County Parks, Rancho Mission Viejo Ranch Operations & Land Trust, The Irvine Company Agricultural Operations and The City of Irvine. During that process, the following activities were identified as requiring collaborative efforts from both private and public sector agencies:

Collaborative Programs (Identified in 2010)	**Progress to Date**
CWPP Management • Develop and document partnership(s) with stakeholders to recognize and understand risks from wildland fire and hazardous fuels • Develop and document strategies to mitigate risks from wildland fire and hazardous fuels	OCFA has continued to develop partnerships, as well as strategies, that will help reduce hazardous fuels and mitigate wildland fire risks. Key projects listed in the CWPP are now being planned and implemented. For example, in 2018, the hand crew completed a hazardous fuel reduction project at Mason Park, on OC Parks land. This project not only increased fire safety to the nearby homes, but decreased invasive plant species in the park and opened habitat for native species. In addition, the CWPP was re-written in 2021 to include additional cities and landowners.
Fire Hazard Mapping • Develop a map of all wildland areas that will illustrate the locations of all assets at risk from wildland fire	In 2016, OCFA's Wildland Pre-Fire Management Section and IT Department launched a Wildland GIS App that contains FHSZ layers and various assets at risk. Information continues to be collected and updated. OCFA has acquired a CALFIRE grant for Normalized Difference Vegetation Index mapping of fuels within the SRA Threat Zone to gain better information regarding vegetation conditions and moistures as they change throughout the year.
Fuel Break Program • Develop a fuel break system to identify logical and potential locations • Construct new fuel breaks in strategic positions, clear existing old fuel breaks and provide a mechanism for periodic (at least annual) maintenance	Existing fuels breaks are routinely maintained and more have been added since 2010. Ongoing input from participating partners is coordinated for additional locations.
Fuel Reduction Program • Have property owners, or agencies having jurisdiction, become more aware of hazardous fuels on their respective properties • Have mechanisms in place to assist in the removal of hazardous fuels	OCFA conducts annual defensible space inspections on private and commercial properties in the SRA, and in other Very High and High Fire Hazard Severity Zones. Owners, land managers and residents are issued correction notices when hazardous conditions exist and are re-inspected to ensure compliance. Also, OCFA often assists in the removal of hazardous fuels on a project basis and helps with Chipper Days and other

Collaborative Programs (Identified in 2010)	**Progress to Date**
	events to assist private residents in SRA and WUI areas.
Prescribed Fire Program • Re-establish a prescribed fire program as a mechanism for mitigating risks from wildland fire and for hazardous fuel reduction	Prescribed fire has been an ongoing challenge in Orange County for many years, but recently, OCFA has been able to get the conversation started again. In the beginning stages of planning this controlled burn OCFA reached out to the indigenous tribes affiliated with the geographic area to request comments on the proposed operation.
Road Maintenance • Ensure annual maintenance is completed on all roads and trails prior to the wildland fire season	OCFA's Crews & Heavy Equipment section are contracted to perform maintenance on SCE roads, most of which are also fire access roads. Other road and trail maintenance are done regularly as time allows.

Source: 2014 ORC Strategic Unit Fire Plan & OCFA Pre-Fire Management

Since 2010, in keeping with the original vision of this plan, collaborative efforts have continued. They also regularly include ongoing dialogues and interactions, both within OCFA, and externally, with residents, cities, and communities within OCFA's jurisdiction, local fire safe councils, HOA's, other fire agencies, COAST organizations, and with many others. Regular collaborators by category include:

- **OCFA** - Operations, GIS, Crews & Heavy Equipment, Wildland Pre-Fire Management, Planning & Development, and Corporate Communications
- **Community** - Residents, volunteers, HOA's, cities and unincorporated communities
- **Firewise USA Communities –** East Orange County Canyons, Santiago Canyon Estates, Emerald Bay Community Association, Marina Hills Planned Community Association, Sea Pointe Estates, and the Rancho Mission Viejo Villages of Sendero, Esencia, and Rienda
- **Fire Safe Councils** - North Tustin Fire Safe Council, Fire Safe Council of East Orange County Canyons, Emerald Bay Community Association, and the Inter-Canyon League
- **COAST -** Refer to the COAST member list below

COAST Background	COAST Members
In an effort to facilitate a more comprehensive, and effective approach to addressing wildfire issues for Orange County, the County of Orange Area Safety Task Force (COAST) was formed in 2013. COAST members include large open space landowners and managers, city, county, state and federal government organizations, utilities, road agencies, OCFA, and other fire agencies, as well as others. All members have a vested interest in preventing wildfire ignitions and limiting the associated losses. Member organizations can also influence policy and ensure progress is made. Among its accomplishments, COAST can be credited with helping to institute a new NWS third weather zone for Orange County. Additionally, discussions with the transportation agencies are underway about possible barriers and/or treatments to help prevent roadside ignitions. Another current endeavor is working toward implementing HPWREN cameras for Orange County. Furthermore, COAST was an active participant when OCFA established the 2017 CWPP. OCFA has since revised the CWPP in 2021. The ultimate goal of collaboratively developing a more comprehensive, and inclusive fire protection plan, through a CWPP, is to reduce the losses from wildfire (i.e., people, property, possessions, critical infrastructure and services, ecology, Threatened & Endangered Species, commerce, etc.) by helping to reduce ignitions and limit the impact, which in Orange County, requires a concentrated effort in, and around SRA and open space lands. The CWPP: (1) Better identifies impactful, yet cost effective projects (2) Analyzes and prioritize them (3) Will help secure funding to complete them Projects include, but are not limited to, planning, mapping, fuels reduction, vegetation management, structure hardening, roads hardening, infrastructure improvements, education, training, and equipment purchases/upgrades.	**County Organizations** • Orange County Parks (OC Parks) • OCFA • County of Orange **State Organizations** • CA Department of Fish & Wildlife • CA State Parks (Chino Hills & Crystal Cove State Parks) • CA Fish & Game, South Coast Region **Federal Agencies** • USFS Cleveland National Forest • US Fish & Wildlife • Camp Pendleton **Other Fire Agencies** • Anaheim Fire • Laguna Beach Fire • Newport Beach Fire • Orange City Fire • Brea Fire **Transportation Agencies** • Cal Trans • Orange County Transportation Authority (OCTA) • Transportation Corridor Agency (TCA) **Utilities** • Southern California Edison (SCE) • San Diego Gas & Electric (SDG&E) • Irvine Ranch Water District (IRWD) • Metropolitan Water District (MWD) **Large Land Managers** • Audubon Starr Ranch • Irvine Ranch Conservancy (IRC) • Natural Communities Coalition (formerly NROC) • Rancho Mission Viejo Land Trust (RMV) • The Wildlands Conservancy **Other Participants** • UC Irvine • National Oceanic and Atmospheric Administration (NOAA) • UC Riverside • CAL FIRE

Other Collaborative Relationships
SOLAR - An initial attack, communications, and response plan between the counties of San Bernardino, Orange, Los Angeles, and Riverside.
PROS - An initial attack, communications, and response plan between Camp Pendleton Marine Base, and the counties of Riverside, Orange, and San Diego.
Response Agreement with Riverside County Fire Department – To ensure the closest resource responds.
Response Agreement with Cleveland National Forest – To ensure the closest resource responds.
Response Agreement with San Diego County Fire Authority – To ensure the closest resource responds.
Response Agreement with Camp Pendleton – To ensure the closest resource responds.
Emerging Tree Pests of Orange County Task Force – Formed to address the growing problem of invasive pests, exacerbated by drought, which has increased hazardous fuels and impacted the ecosystem. This group includes UC Riverside, most of the COAST organizations, OC Waste & Recycling and various subject experts.
Camp Pendleton Dozer and Fire School - Cooperative wildland training for OCFA and other local fire agencies at Camp Pendleton.
Regional Heavy Fire Equipment Workshop - Cooperative wildland training for OCFA and other local heavy fire equipment agencies.
Chief Officer Exchange Program with MVU, RRU and MCP - Opportunity to share best practices among regional fire agencies.
Cooperative MOU & Training Program with OC Public Works and OC Waste & Recycling - Designed to effectively utilize heavy equipment resources as needed.

In the fall of 2023, the OCFA hand crew completed the roadside brushing of Live Oak Canyon Trail in collaboration with OC Parks. The trail provides access to the Orange County Birds of Prey Center and the Lake Oso Scout Camp. Additionally, the crew removed several invasive pepper trees to reduce invasive species in the restored habitat in O'Neill Regional Park and reduced risk from the overhead So Cal Edison power lines.

Live Oak Canyon Trail Before Trail Brushing

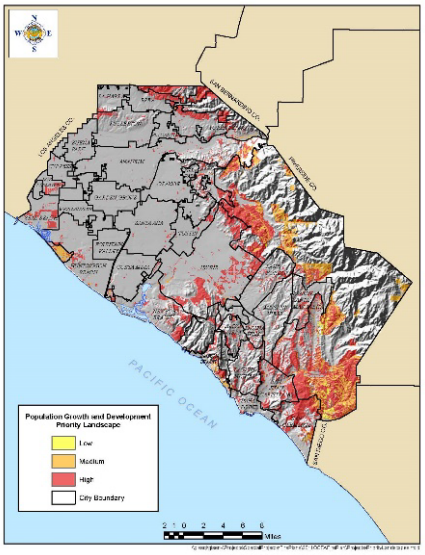
Live Oak Canyon Trail After Trail Brushing

Section III: Values

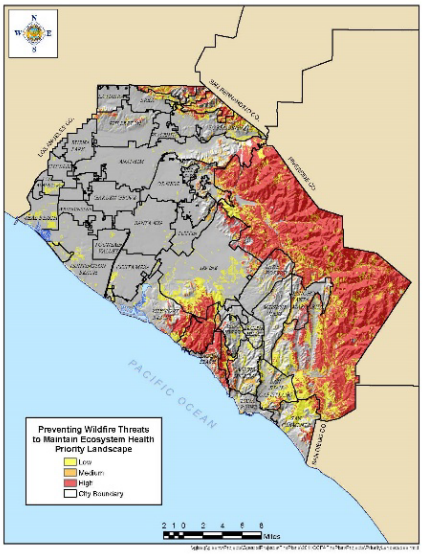
Values at Risk

CAL FIRE's California's Forest and Rangeland's 2010 Assessment was developed to identify and address the State's key wildfire risk issues pertaining to ecosystem health, forest and range economics, infrastructure, recreation, open space, and wildlife. These areas of concern are spatially categorized as "Priority Landscapes". The four types of Priority Landscapes most relevant to Wildland Pre-Fire Management are shown below:

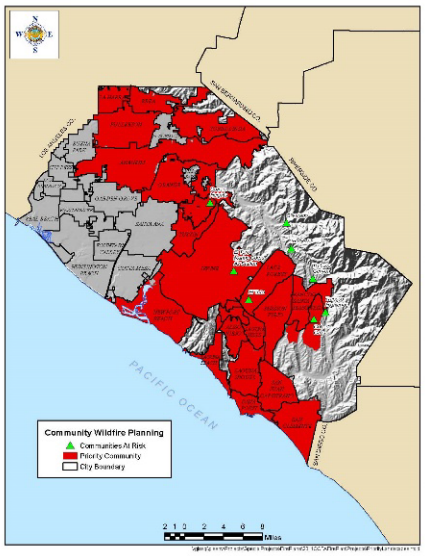
Orange County's Priority Landscape



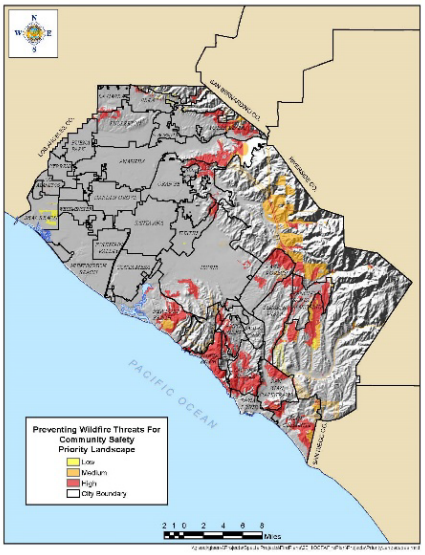
Priority Landscape 1: Population Growth & Development



Priority Landscape 2: Preventing Wildfire Threats to Maintain Ecosystem Health



Priority Landscape 3: Community Wildfire Planning



Priority Landscape 4: Preventing Wildfire Threats to Community Safety

Communities at Risk

Expanding on the 2001 National Fire Plan that identified communities near federal lands that are at risk from wildfire, CAL FIRE developed a more comprehensive list for California that went beyond the federal lands criteria. This list is now managed by the California Fire Alliance and includes 24 Orange County communities as "Nationally Recognized Communities at Risk". Most are within OCFA's jurisdiction, but a few are protected by other fire agencies, as indicated.

Nationally Recognized Communities At Risk

Community Name	Jurisdiction	Federal Threat	Federally Regulated
Aliso Viejo	OCFA		
Anaheim	Non-OCFA		
Brea	Non-OCFA		X
Coto de Caza	OCFA		X
Cowan Heights	OCFA		
Dana Point	OCFA	X	
Irvine	OCFA		X
Laguna Beach	Non-OCFA	X	
Laguna Hills	OCFA	X	
Laguna Niguel	OCFA		
Laguna Woods	OCFA		
Mission Viejo	OCFA		
Modjeska	OCFA	X	
Newport Beach	Non-OCFA		
Orange	Non-OCFA		
Rancho Santa Margarita	OCFA		X
San Clemente	OCFA		X
San Juan Capistrano	OCFA		
Silverado	OCFA	X	
Trabuco Canyon	OCFA	X	
Trabuco Highlands	OCFA	X	X
Villa Park	OCFA		
Yorba Linda	OCFA		X

In addition, OCFA has identified several other communities as being at risk from wildfire, including:

- Emerald Bay
- Lake Forest
- Lemon Heights/North Tustin
- Santiago Canyon
- Tustin Heights

Beyond the previously listed Communities at Risk are a number of other high consequence values that require consideration but are not included in this plan, such as:

- **Commerce:** Various shopping, entertainment, business and restaurant locations
- **Recreation:** Various recreational venues (i.e. Irvine Lake, camp grounds, sports facilities, parks, beaches, etc.)
- **Nature Preserves:** Various ecological and habitat preserves (i.e. wetlands, tide pools, etc.)
- **Historical Sites:** Mission San Juan Capistrano, Richard Nixon Library, and numerous locations with indigenous cultural significance
  Military: Seal Beach Naval Weapons, Camp Pendleton, Los Alamitos Joint Forces Training Base, etc.
- **Transportation:** John Wayne Airport, and various railroads, harbors, bridges and roads, etc.
- **Utilities:** Communications infrastructure, oil and gas facilities, water and power facilities, including the San Onofre and UCI nuclear facilities, etc.
- **Educational Facilities**: Universities (i.e., UCI, Cal State Fullerton, Chapman, etc.), community colleges, and K-12 facilities

Much of the wildland in Orange County is situated on the historical homeland of indigenous peoples. Per California Assembly Bill 52, indigenous tribes in California are formally consulted if a proposed project subject to the California Environmental Quality Act (CEQA) impacts a geographic area with cultural or traditional affiliation to Native American heritage. For instance, Native American tribes were consulted prior to establishing the HeloPod in San Juan Capistrano in 2023.

Section IV: Wildland Pre-Fire Management Efforts

Wildland Resilience Goals

As mentioned previously, Orange County is the second most densely populated county in the state, with wildfire as a major risk factor. Consequently, continued residential, commercial, and industrial growth presents an ongoing challenge. In the Wildland Urban Interface, efforts to prevent ignitions and limit wildfire losses are led by OCFA's Wildland Pre-Fire Management, which includes Wildland Resource Planning and Community Wildfire Mitigation Programs. Since the original development of this plan in 2010, OCFA has adapted in accordance with increased risk of wildfire due to climate change and increased development into the Wildland Urban Interface. In 2020 alone, California experienced five of the largest wildfires recorded in the state's history. In response to this, OCFA has implemented strategies to improve wildland resilience and reduce wildfire risk.

Increase the Pace and Scale of Wildland Health Projects

To develop a workforce with the capacity to construct and coordinate the ongoing pipeline of wildland projects, OCFA has restructured the Pre-Fire Management section to include a new Deputy Fire Marshal (2020), continue staffing the Wildland Resource Planner (2022) position, and created the Wildland Resource Technician (2023) position. The development of these positions provides longevity, oversight, and direction for community wildfire mitigation and suppression repair activities that impact the resiliency of Orange County open spaces.

OCFA has acquired additional manpower and mechanized equipment to expand fuel reduction and fire suppression repair activities. The El Toro Hand Crew (Crew 2) was added in November 2022 on a full-time basis to support fire suppression and vegetation management projects throughout Orange County. Crew 2 consists of a superintendent, assistant superintendent, three squad bosses and 20 hand crew firefighters. When they are not fighting fires, OCFA's Hand Crews and Heavy Equipment Operators routinely work on hazardous fuels reduction projects for a variety of organizations, including Southern California Edison, OC Parks, State Parks, and large landowners/managers. A masticator, excavator, mower, chipper, and an all-terrain skid steer tractor were purchased to improve efficiency for vegetation management and roads projects. In 2019, OCFA purchased a second skid steer and mini skid steer, and in 2020, OCFA purchased an additional D6 bulldozer. OCFA also received grant funding through CALFIRE's Wildfire Prevention Program in 2021 and 2022 to purchase a third skid steer and acquire a tactical water tender for pre-fire management projects. Moreover, two new Firehawk helicopters will be added to the OCFA fleet in the fall of 2024. These type 1 helicopters, capable of carrying roughly 1,000 gallons of water, will be used in firefighting

operations. Additionally, a new HeloPod was placed in San Juan Capistrano off Ortega Highway to decrease re-fill times for the southern part of the county.

One major concern in Southern California is invasive tree pests becoming more prevalent in oak woodlands and other open spaces. Drought stressed trees have become more vulnerable to destructive pests, such as the polyphagous shot hole borer and the gold spotted oak borer, which are killing trees, and adding to the fire danger. OCFA was awarded a CALFIRE Wildfire Prevention Program grant to address the invasive shot hole borers that have killed thousands of trees in Orange County. The grant allows the Wildland Pre-Fire Management team to identify areas in the SRA and SRA threat zone where severely infested trees have caused significant fuel loading of dead and dying plant material. Through the coordination with the University of California Cooperative Extension, these trees are identified so that removal and treatment can occur throughout the county. The grant also funded flights to produce normalized difference vegetation index (NDVI) data throughout the SRA area. This data is hosted by OCFA for use by the major landowners throughout the county.

Strengthen Protection of Communities

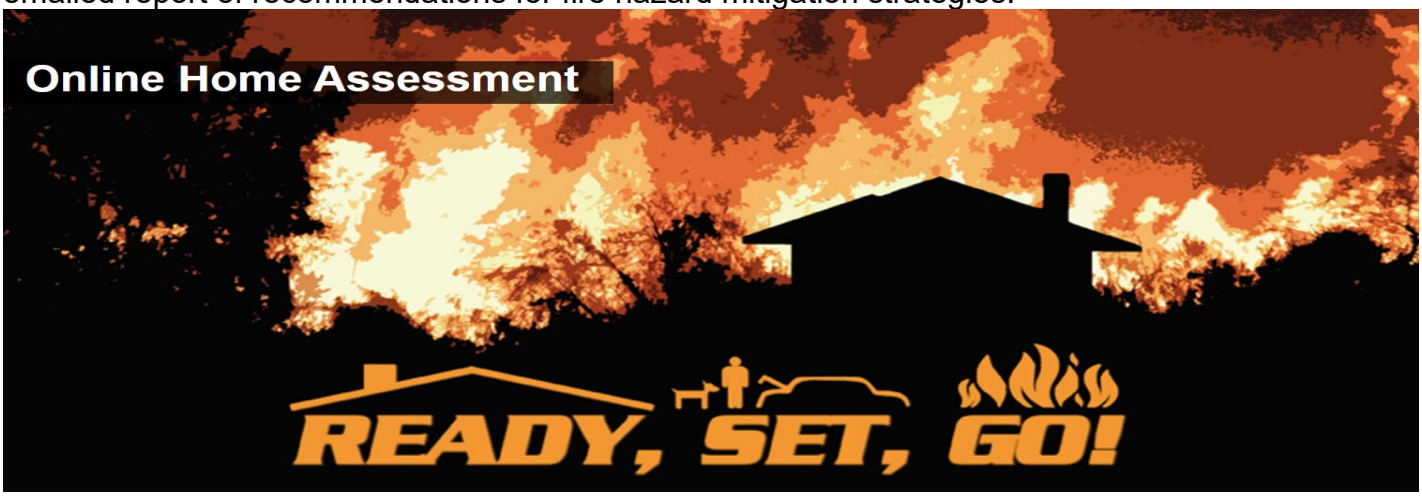
Vegetation management remains at the forefront of fire prevention efforts in Orange County, and OCFA encourages a shift towards landscaping and replanting with native species, which are more drought tolerant and fire resistive. To engineer effective defensible space into the development process, Wildland Pre-Fire Management uses proven vegetation management practices when reviewing and approving all landscaping and fuel modification zone plans. For structures, ignition prevention efforts start with OCFA's Planning & Development section. This section ensures that comprehensive pre-emergency planning has been done, and that fire protection measures are engineered into the design of both residential and commercial structures, for both new construction and remodels. Chapter 7-A building requirements are incorporated, as well as Title 24, Title 19, Title 14, PRC 4290, and PRC 4291, to identify and address potential wildfire hazards, and to help develop mitigation measures that will aid in making the structures more defensible.

OCFA also conducts annual defensible space inspections for homes and structures within the Very High and High Fire Severity Zones to ensure they remain in compliance. The same is true for Fuel Modification Zones and Homeowners Association properties, which are also inspected. Similarly, OCFA annually inspects power poles to help prevent ignitions by ensuring adequate vegetation clearance exists.

OCFA champions the “Ready, Set, Go!” message to promote wildfire education and conduct outreach programs. Based on the premise that during a major wildfire there may not be enough firefighting resources to protect every home, “Ready, Set, Go!” encourages residents to take personal responsibility for protecting their property and family. Thereby becoming part of a solution for the problem of increasing fire losses during wildfires. Special emphasis is focused on ember intrusion and the actions that homeowners can take to lower their risk, such as retrofitting homes with ignition resistive features, and creating defensible space around their property (e.g., with trimming, regular maintenance, and planting with ignition resistive plants. This is of particular importance for residents in Wildland Urban Interface (WUI) areas, where wildfire survivability relies more heavily on the landowner’s personal initiative to take measures to protect his or her own life and property. Additional information regarding the preparation of family emergency plans and kits, contact phone numbers, and evacuation plans are also discussed. Educational outreach such as home assessments, OCFA’s annual Open House, and presentations to HOAs, Fire Safe Councils or Fire Wise communities are logged and reported annually to CALFIRE.

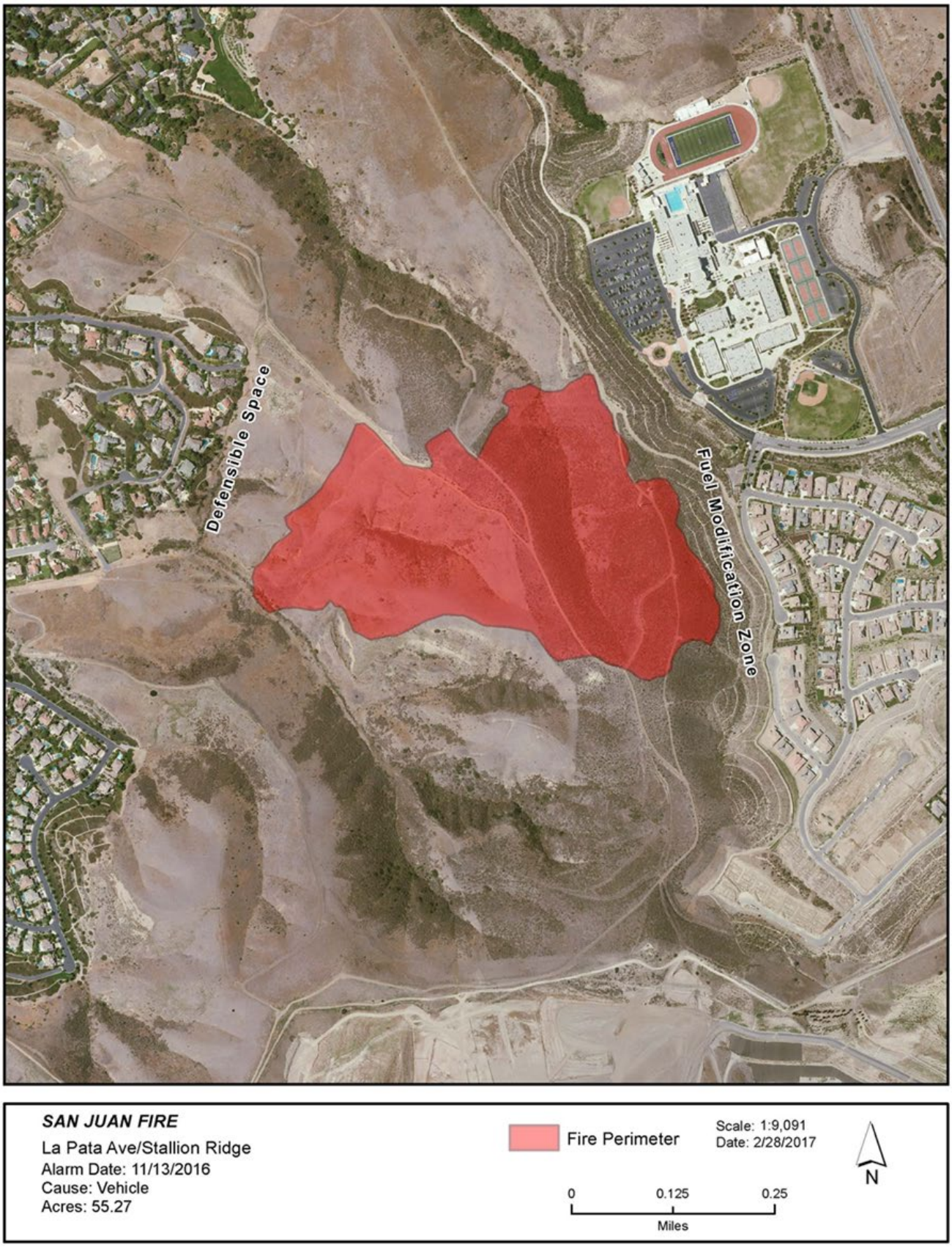
In 2023, the Community Risk Reduction staff developed a home hardening coloring and activity book for children. The coloring book will launch in 2024 for community outreach and education events.

To assist homeowners further, OCFA launched an updated version of the online Home Assessment tool. This new version guides the homeowner through a series of questions about the structure and surroundings using images and descriptions to inform on the basics of both Home Hardening and Defensible Space. Once the assessment form is completed the tool provides the homeowner with an emailed report of recommendations for fire hazard mitigation strategies.



Vegetation management and the application of fuel modification plans have repeatedly proven their value in Orange County. Evidence of the effectiveness can be seen in the fire perimeters for incidents such as the San Juan Fire of 2016, the Silverado Fire of 2020, or the Emerald Fire of 2022. The San Juan Fire, for example, was held between the defensible space cleared by the Hidden Mountain Estates to the west and the fuel modification plan maintained by the Rancho San Juan Community Association to the east.

San Juan Fire



Drive Innovation and Measure Progress

OCFA promotes a culture of innovation at all levels and adopts new technology to enhance firefighting capabilities as well as ariel reconnaissance, data analytics, and resource optimization. For instance, OCFA utilized grant funding to purchase drone equipment with a normalized difference vegetation index (NDVI) camera and mapping software used to map and monitor vegetation health and trends, especially in hard-to-access areas. OCFA is currently partnering with multiple entities that show promising developments in ignition detection through ground based and satellite-based sensors. In 2017 OCFA began utilizing NOAA's satellite-based "Hot Spot" software, and in 2020 the Pre-Fire Management section gained a drone with a thermal camera that will be used to detect and map hot spots on vegetation fires.

In cooperation with the Bureau of Land management, State Parks, SDG&E, and OC Parks, OCFA oversees the use of several Remote Automatic Weather Stations (RAWS) within the county. A third RAWS in coastal Southern Orange County was installed in 2016. In 2020, OCFA installed an additional RAWS at Chino Hills State Park at San Juan Hill. They now feed data that will enable better decision making in a variety of applications including calculation of the National Fire Danger Rating System (NFDRS) indices, fire behavior, burned area fire rehabilitation, planned ignitions, and other land management operations.

In addition to the two remote detection cameras previously installed on Orange County Sheriff's (OCSD) towers that can only be viewed by OCFA and the OCSD, the program has been recently expanded through a partnership with COAST, SCE, SDG&E, the University of California, and the County of Orange. Two new point-tilt-zoom (PTZ) cameras with meteorological sensors have been installed on additional towers secured by SCE and SDG&E to expand remote detection across Orange County and to provide visibility to the public.

The images and data collected via satellite, drone mapping, RAWS, and live cameras allow OCFA to map vegetation and fuel loads across wildland areas. This information then aids in fuel reduction efforts and understanding the ecological impacts during post fire recovery. By incorporating satellite derived information into the planning process, OCFA can make better informed decisions regarding the placement of new infrastructure such as the HeloPod placed in San Juan Capistrano in 2023. As technology develops, OCFA attempts to adapt and incorporate these new technologies into pre-fire planning and response.

Maintain Progress and Partnerships

As a Joint Power Authority, OCFA relies on partnerships with local landowners, stake holders, and HOAs as well as other federal, state, and local fire and forestry agencies. Many of the large landowners and public agencies coordinate with OCFA through the COAST group, but a significant amount of the community is reached through HOAs and community education. OCFA's Wildland Pre-Fire Management section works with developers, open space partners, and homeowner associations to engineer and re-engineer fuel modification zones and landscaping that reflects the new reality of less water and the need to return to a native species plant palate to help reduce hazardous vegetation. OCFA has completed grants in partnership with communities and Fire Safe Councils. In 2018, OCFA completed a grant for additional clearance in Emerald Bay, and another grant for East Orange County Canyons to improve emergency road clearance. In 2017, OCFA finished installing grant-funded canyon-area signage that features interchangeable prevention messages.

In addition to the grant work OCFA performs to address the increase in the amount of Invasive Shot Hole Borers (ISHB) in the SRA, OCFA attends the bi-monthly "Emerging Tree Pest of Orange County Task Force" meeting hosted by the City of Irvine. This meeting is attended by key landowners, stakeholders and the University of California Cooperative Extension, the leading organization for pest management programs in Southern California.

Section V: Wildland Pre-Fire Management Tactics

The Orange County Fire Authority (OCFA) has a wide variety of programs and plans that have been, or are in the process of being, developed to help mitigate wildfire ignitions and limit the losses for communities in and adjacent to the county's SRA and open space lands. The plans and programs are either tactical or strategic in nature, are typically developed collaboratively with OCFA's Wildland Pre-Fire Management section and/or Emergency Planning and Coordination (EPAC) sections and are available upon request from EPAC. Examples include:

- **OCFA Tactical Fire Suppression Plans** - Tactical response plans
- **Outside Organization Fire Plans** - Provided to OCFA by outside organizations, and often developed with OCFA's input
- **County of Orange Area Safety Task Force (COAST) Plans** - Proposed by COAST member organizations, which are now housed in the CWPP, and usually include input from OCFA
- **OCFA Division/Battalion Recommendations** - Generated by operations personnel who are first due near SRA and open space lands

Tactical Fire Suppression Plans

OCFA developed these plans to guide fire and law enforcement agencies during major wildfire occurrence in large areas of intermingled open spaces and densely populated residential and commercial developments that lie within unincorporated and incorporated cities. Within the plans, sections identify the needs for residents to evacuate, and the safest means of evacuations and potential rendezvous sites. OCFA has individual plans for the following areas:

San Clemente	San Juan Capistrano
Rancho Carrillo	El Cariso
Casper's Park	Rancho Mission Viejo
Laguna Beach	Laguna Niguel
Ladera Ranch	Coto de Caza and Wagon Wheel
Trabuco Canyon	Robinson Ranch
Dove Canyon	Portola Hills
Los Alisos-Mission Viejo	Foothill Ranch
Modjeska Canyon	Silverado Canyon
Baker Canyon	Williams Canyon
Laguna Hills	Portola Hills
Shady Canyon-Quail Hill	Turtle Rock-Turtle Ridge
Newport Back Bay	Buck Gully-Newport Coast
Cowan and Lemon Heights	East Orange
Anaheim Hills	Yorba Linda
Carbon Canyon	Brea-Tonner Canyon
Portola-Irvine	Las Flores
Aliso Viejo	

Outside Organization Fire Plans

Developed by outside agencies, with technical assistance from OCFA. Plans are available upon request from each organization. Examples include:

- **Natural Communities Coalition (formerly known as NROC) Tactical Fire Suppression Plan and the NCC Strategic Plan**: The Tactical Plan addresses pre-suppression, suppression, and post-suppression tactics. The suppression tactics identify desired actions and locations, while the post-suppression tactics identify the actions and responsibilities for fire suppression repair. The Strategic Plan is near completion, noting that NCC hired a consultant to work with OCFA and all stakeholders to complete the plan. This plan is the conduit to discuss and develop pre-suppression and prevention activities to reduce the loss of life, property, environment, and suppression costs.

- **The Southern Sub-Regional Wildland Fire Management Plan – Rancho Mission Viejo:** Developed by a consultant firm for the Rancho Mission Viejo Land Trust, it is designed to manage the natural resources of the ranch lands of Rancho Mission Viejo. OCFA, California Department of Fish and Game, U.S. Fish and Wildlife, the RMV Land Trust, and a variety of other regulatory agencies were involved in the development. This plan addresses suppression tactics by identifying desired actions and locations, plus post-suppression tactics for actions and responsibilities for fire suppression repair. This plan is the conduit to discuss and develop pre-suppression and prevention activities to reduce the loss of life, property, environment, and suppression costs.

- **The Irvine Ranch Conservancy Wildland Fire Ignition Reduction Strategy:** A collaborative effort between the Irvine Ranch Conservancy (IRC) and OCFA, this plan focuses on actions that will reduce the probability of wildland fire ignitions, particularly during Santa Ana Wind conditions. The plan highlights five major action areas: Fire Watch Network, Fire-Hardening Roadways, Power line Safety, Wildland Access, and Urban-Wildland Edge. Once again, this plan is the conduit to discuss and develop pre-suppression and prevention activities to reduce the loss of life, property, environment, and suppression costs. However, emphasis on ignition reduction for environmental concerns is the highest priority.

- **The Cowan Heights – Peters Canyon Project:** This recently completed project was a collaborative effort between Orange County Public Works, OCFA, and Orange County Parks and Recreation. The intended result was to reduce hazardous fuels to a minimum of 50% of the current available hazardous fuels (responsible agency – OCFA) and the restoration of the Lower San Diego Creek riparian area (responsible agency – OC Public Works). OCFA conducted outreach and education activities on the necessities of vegetation clearance and maintenance, plus home improvements that will add to survivability during a wildfire.

CWPP

As part of the CWPP development process, OCFA, along with partner agencies, developed a library of projects, which are categorized as follows:

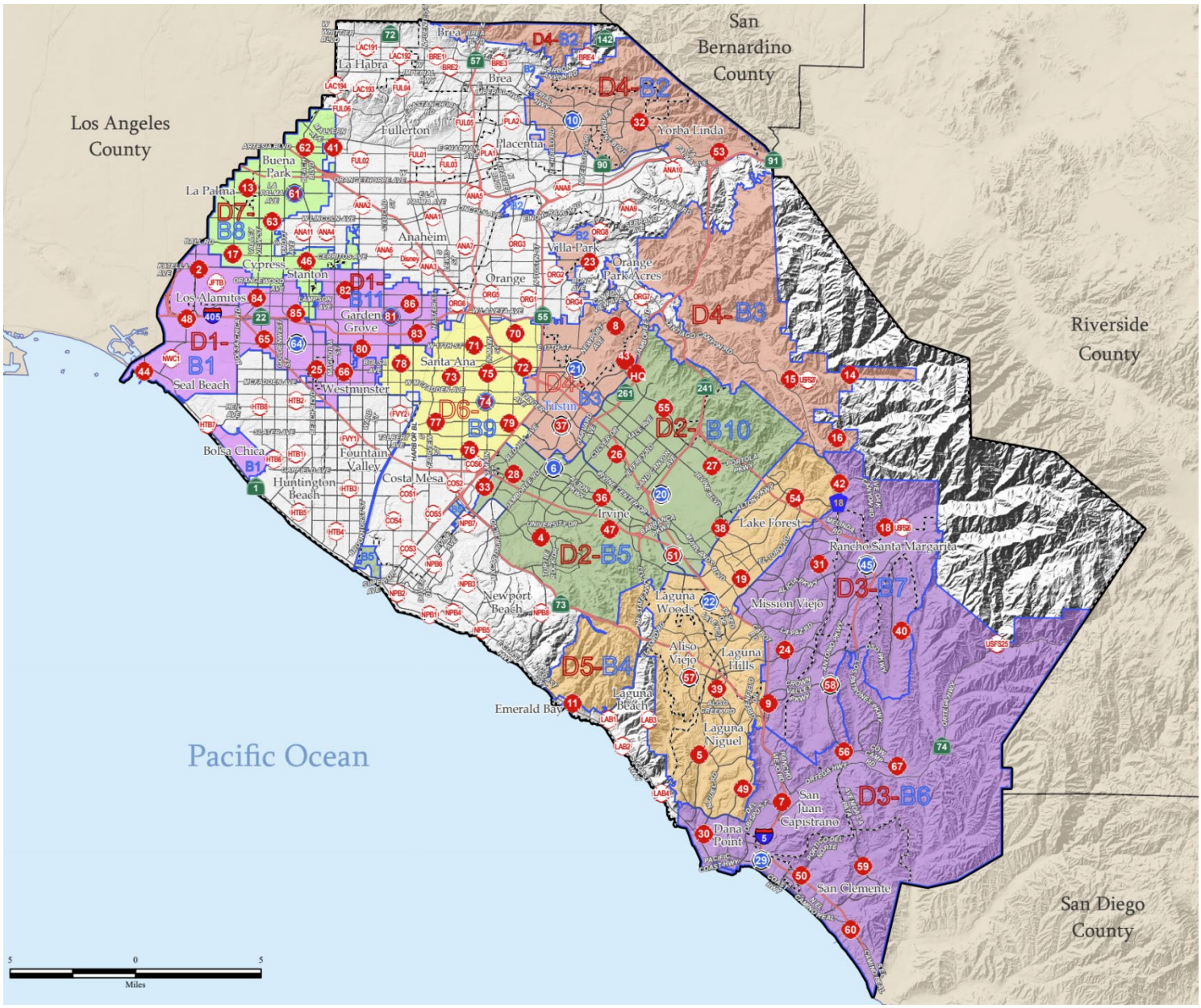
- Ignition Prevention Action Plan
- Communication, Education & Awareness
- Fuel Management on Public & Large-Scale Private Lands
- Firefighting & Mitigation
- Planning
- Structure Survivability & Defensible Space

Initiatives in this library will be implemented as funding becomes available. As a dynamic document, projects will be added and updated as necessary. These projects continue to build on the multi-

faceted approach to developing, expanding, and maintaining initiatives primarily designed to help prevent ignitions and prevent fire spread and to improve structure survivability. Limiting loss of life, property and habitat is the goal. Projects will range from planning and vegetation management treatments to new technologies and public education and outreach. Projects are discussed in further detail in the attached CWPP, but examples include:

- Remote Surveillance Expansion (i.e., Cameras, Fire Watch, HOA's, etc.)
- Mapping of Fuel Loads, Invasive Species and Tree Mortality
- Comprehensive Road Ignition Program
- Collaborative Partner's Joint Messaging
- Multi-Agency Training Programs

OCFA Field Operation Recommendations



Field Operations North

Area	Primary Concern	Potential Mitigation	Mitigation Challenges
Chino Hills State Park	Natural vegetation throughout canyon; power lines along the east end of the North Canyon	Improve / reconstruct North Ridge Trail to re-establish access to Chino Hills State Park Visitor Center area. Also, minor soft limb trimming is needed for overhead clearance; improve Diemer Trail for access from Telegraph Canyon	Bird nesting season requires bio monitors before and during road work. Also, Heavy Equipment access is challenging in narrow canyon along Telegraph Rd
Lambert - 57-Carbon Canyon-71/Tonner North & South and sleepy hollow community	Natural vegetation; power lines Potential - Sleepy Hollow is problematic in a mega-fire scenario due to density, no hardening, and tight access (not OCFA jurisdiction, but probable OCFA involvement)	Sleepy Hollow early evacuation is a must; brush back county roads; construct additional safety zones on existing roads	Road closures required to perform work along narrow Carbon Canyon Road
Hollydale Mobile Home Estates	Vegetation around community and possible structure loss	Needs brush clearance and fuel modification around community	Community is not in OCFA jurisdiction
Brush Canyon Road and Vegetation Management project	Access problem: Heavy fuel loading adjacent to homes and in open space composed of a thick stand of eucalyptus and non-native vegetation	Improve/maintain existing ingress and egress; manage vegetation in open space and adjacent to homes	Road closures and vegetation management on private property
Slaughter Canyon Trail, Scully Ridge Trail, Telephone Line Road, and Wire Springs Spur	Loss of existing road/fire break	Maintain and improve existing road/fuel break	Maintenance relies on access and cooperation from Chino Hills State Park
Silverado and Williams Canyons	Limited defensible space within box canyon, which has a heavy home inter-mix	Community prevention and education efforts (RSG, inspections, media campaigns, etc.) to increase awareness, harden the community,	Relying on landowners to properly maintain fuel modification zones and defensible space around structures

		and improve defensible space	
Major "PAVED" Roads and Highways That Intersect the SRA **- Santiago Canyon Road** **- 241 & 261 Toll Roads** **- State Highway 133** **- Silverado Canyon Road** **- Black Star Canyon Road**	Excessive roadside fuels are a receptive bed for starts (vehicle fires, arson, etc.)	Develop graduated roadside fuel modification zones to eliminate ladder and ground fuels	Vegetation management along Toll Road and CA highways requires cooperation from TCA and Caltrans
Major "UNPAVED" Fire and Access Roads In/Adjacent to SRA **- Main Divide** **- Black Star** **- Harding Truck Trail** **- Maple Springs** **- Limestone Canyon and Ridgeline** **- Chinon Wash**	Roads in poor condition, which limit access (overgrown, washed out, etc.)	Maintain fire and access roads with grading and shaded fuel breaks or fuel modifications	Maintenance relies on access and cooperation from the USFS. Water courses impact the maintenance of these unpaved roads
Baker Canyon	Industrial mulching operation, retreat center and RV park in box canyon with limited defensible space, as well as poor access in/out of the canyon	Community prevention and education efforts (RSG, inspections, media campaigns, etc.); limit mulching operation and protect with fire prevention enforcement; use fuel modification and fuel breaks around the property to prevent fire escape	Private property surrounded by protected wilderness.
Limestone Canyon Wilderness Area and Loma Ridge	Large open space with no compartment control zones	Shaded fuel breaks to help create compartment control zones for large non-wind driven fires	Land is managed by IRC and protected for restoration and ecological enhancement.

Sierra Peak, Gypsum Canyon, Coal Canyon, Fremont Canyon	Mixed fuel types in heavy concentration; extreme terrain; high voltage transmission lines	Update all plans, both Pre-Fire and Suppression, to reflect current fuel conditions; continued communication with Federal partners regarding conditions and plans for Forest Service lands	Vegetation is protected by NCCP and vegetation removal or "take" is prohibited in protected Coastal Sage Scrub habitats
Cowan Heights, Lemon Heights, Panorama Hill, Weir Canyon, Irvine Park	Limited defensible spaces; dense older home construction in the Wildland-Urban-Interface and SRA	Community prevention and education efforts (RSG, inspections, media campaigns, etc.) to increase awareness, harden the community, and improve defensible space; update outside agency agreements, training, and fire plans	Relying on land owners to properly maintain fuel modification zones and defensible space around structures
Blackstar Canyon, Fremont Canyon, Irvine Lake, Santiago Landfill	Excessive roadside fuels are a receptive bed for starts (vehicle fires, arson, etc.); fuels consumed in 2006 Sierra Fire are re-established; increased access to the public may result in increased fire activity	Develop graduated roadside fuel modifications; maintenance of access roads; update fire plans and outside agency agreements	Bird nesting season requires bio monitors before and during fuel reduction and road work.

Field Operations South

Area	Primary Concern	Potential Mitigation	Mitigation Challenges
Laguna Coast Wilderness Park (Shady Canyon)	No fuel breaks between Laguna Coast Wilderness Park and the City of Irvine (Shady Canyon)	Construction of fuel breaks; improve fire breaks; brush back vegetation; maintain wildland access roads for emergency response	Vegetation in open spaces is protected and vegetation removal or "take" is prohibited
73, 133, 241, 261 Toll Roads	Roadside Ignitions especially during Santa Anas	Roadside hardening	Vegetation management along Toll Road and CA highways requires

			cooperation from TCA and Caltrans
Bee Canyon and Bowerman Landfill	Composting operation at/nearby the dump within the City of Irvine	Establishing/maintaining clearance/buffers and annual inspections	Relying on land owner to maintain defensible space annually
Hwy 74	Roadside ignitions off Ortega Hwy (Hwy 74)	Improve and maintain fire breaks; brush back vegetation; reduce roadside ignitions through vegetation management projects; increased signage along highway	Caltrans cooperation and road closures are required to work in easement along highway
Proximity to Marine Corps Camp Pendleton (MCCP)	Frequent ignitions on MCCP spreading into SRA and adjacent communities of South Orange County, Riverside County, and Cleveland National Forest.	Construction and maintenance of fuel breaks; improve fire breaks; brush back vegetation	Pendleton outside of OCFA jurisdiction and requires coordination with property management for the base
Casper's Wilderness Park and Starr Ranch Audubon	No fuel breaks between Casper's Wilderness Park or Starr Ranch and the residential areas	Construction and maintenance of fuel breaks; improve fire breaks and access roads; brush back vegetation along roadways; work with park staff to increase awareness	Starr Ranch is a preserve as well as a scientific research station and prohibits fuel breaks other than minimal road brushing
Trabuco Canyon	No fuel breaks between homes and vegetation. Large areas of residential design intermix	Construction of fuel breaks, community education, work with landowners on clearance and defensible space, brush back vegetation along roads to improve ingress and egress.	Relying on land owners to properly maintain fuel modification zones and defensible space around structures
Live Oak Canyon Road	No fuel break between homes and vegetation	Fuel modification	Road closures and coordination with Caltrans required for maintenance along road

Laguna Coast Wilderness Park	No fuel breaks between Laguna Coast Wilderness Park and City of Aliso Viejo, Emerald Bay Unincorporated and Laguna Beach	Construction of fuel breaks; improve fire breaks; brush back vegetation; maintain wildland access roads for emergency response.	Vegetation is protected by NCCP and vegetation removal or “take” is prohibited in protected Coastal Sage Scrub habitats
Aliso and Wood Canyons Wilderness Parks	No fuel breaks between Aliso and Wood Canyons Wilderness Parks and City of Laguna Beach (Top of the World), Aliso Viejo or Laguna Niguel older construction and limited access make defense of the community difficult.	Construction of fuel breaks; improve fire breaks; brush back vegetation; maintain wildland access roads for emergency response.	Vegetation is protected by NCCP and vegetation removal or “take” is prohibited in protected Coastal Sage Scrub habitats
Crystal Cove State Park	No fuel breaks between the Crystal Cove State Park and the City of Newport Beach (Newport Coast), Laguna Beach or Emerald Bay Unincorporated	Construction of fuel breaks, improve fire breaks and brush back vegetation	State Parks permitting to allow HOAs and homeowners to construct vegetation clearance on Parks land surrounding private parcels

Appendix A: Unit Strategic Fire Plan Amendments

Fire Plan Amendments

Date	Section Updates	Page Number Update	Description of Update	Updated by
4/26/19	Cover	Cover	Updated with current information and/or reformatted	Ariana Ramos
4/26/19	Table of Contents	I	Updated with current information and/or reformatted	Ariana Ramos
4/26/19	Signature Page	ii	Updated with current information and/or reformatted	Ariana Ramos
4/26/19	Executive Summary	1-3	Updated with current information and/or reformatted	Ariana Ramos
4/26/19	Section I	9-13	Updated with current information and/or reformatted	Ariana Ramos
4/26/19	Section II	14 & 15	Updated with current information and/or reformatted	Ariana Ramos
4/26/19	Section IV	32-35	Updated with current information and/or reformatted	Ariana Ramos
4/26/19	Section V	39, 41, 45, 55-57	Updated with current information and/or reformatted	Ariana Ramos
4/26/19	Appendices	58-62	Updated with current information and/or reformatted	Ariana Ramos
4/26/19	Appendices	A1 & A2	Updated with current information and/or reformatted	Ariana Ramos
4/4/20	Entire document	ALL	Updated document to be ADA accessible	Ariana Ramos
4/7/20	Division and Battalion Projects	41	Included information about road brushing and grading	Dave Erickson
4/13/20	Battalion 6 projects	54, 55	Updated info about maintenance of projects	Dave Erickson
4/20/20	2010 Key Objectives	3	Updated progress on goals	Dave Erickson
4/20/20	Appendix B: 2020 Unit Fire Plan Annual Accomplishments	62	Created 2020 accomplishments	Dave Erickson
4/20/20	Battalion 3 projects	45	Added project	Dave Erickson
4/20/20	Section II: Collaboration	14-15	Updated progress on projects	Dave Erickson
4/20/20	Population	7	Updated population of Orange County	Dave Erickson
4/24/20	Unit Overview	12	Updated with current information and/or reformatted	Ariana Ramos
4/24/20	Unit Overview	13	Updated with current information and/or reformatted	Ariana Ramos
5/5/21	Table of Contents	i	Updated with current information and/or reformatted	Ariana Ramos

Date	Section Updates	Page Number Update	Description of Update	Updated by
5/5/21	Signature Page	ii	Updated with current information and/or reformatted	Dave Erickson
4/6/21	Executive Summary	1, 2	Updated with current information and/or reformatted	Dave Erickson
4/6/21	Section I	10-14	Updated with current information and/or reformatted	Dave Erickson
4/6/21	Section II	15-17	Updated with current information and/or reformatted	Dave Erickson
5/03/21	Section V	44, 46, 49, 53-55, 59-60	Updated with current information and/or reformatted	Dave Erickson
5/3/21	Appendix A	62-63	Updated with current information and/or reformatted	Dave Erickson
5/03/21	Appendix A-1	64	Updated with current information and/or reformatted	Dave Erickson
5/03/21	Appendix B	64	Updated with current information and/or reformatted	Dave Erickson
5/03/21	Appendix B-1	65	Updated with current information and/or reformatted	Dave Erickson
5/3/22	Cover Page	i	Updated with current information and/or reformatted	Dave Erickson
5/3/22	Table of Contents	ii	Updated with current information and/or reformatted	Dave Erickson
5/3/22	Signature Page	iii	Updated with current information and/or reformatted	Dave Erickson
5/3/22	Executive Summary	1, 2	Updated with current information and/or reformatted	Dave Erickson
4/21/22	2010 Key Objectives	3	Updated with current information and/or reformatted	Dave Erickson
4/21/22	Section I	13, 14	Updated with current information and/or reformatted	Dave Erickson
5/3/22	Section II	15-17	Updated with current information and/or reformatted	Dave Erickson
5/3/22	Section V	49, 53, 54, 59	Updated with current information and/or reformatted	Dave Erickson
5/3/22	Appendix A	61, 62	Updated with current information and/or reformatted	Dave Erickson
5/3/22	Appendix A-1	63	Updated with current information and/or reformatted	Dave Erickson
5/3/22	Appendix B	64, 65	Updated with current information and/or reformatted	Dave Erickson
3/27/23	Cover Page	i	Updated with current information and/or reformatted	Scott Hatch
3/27/23	Signature Page	iii	Updated with current information and/or reformatted	Scott Hatch

Date	Section Updates	Page Number Update	Description of Update	Updated by
3/28/23	Executive Summary	1, 2, 3	Updated with current information	Scott Hatch
5/1/23	Population	7	Updated with current information	Scott Hatch
5/1/23	Perimeter Acreage update	11	Updated with current information	Scott Hatch
5/1/23	2021 – 2022 Vegetation fires	12	Updated with current information	Scott Hatch
5/2/23	Ignitions Map	13	Updated with new map	Scott Hatch
5/1/23	Vegetation Management	32	Updated with current information	Scott Hatch
5/1/23	Holy Fire	35	Removed map	Scott Hatch
5/1/23	Battalion 6 Map	56	Updated with new map	Scott Hatch
5/1/23	Emerald Fire	40	Updated with new map	Scott Hatch
5/1/23	Battalion 6 Map	56	Updated with new map	Scott Hatch
5/2/23	Unit Plan Annual Accomplishments	65	Updated with current information	Scott Hatch
4/11/24	Entire Document	ALL	Updated and revised full document	Aleya O'Rourke

Appendix B: 2023 Unit Fire Plan- Annual Accomplishments
CALFIRE Grants - Significant progress has been made in assessing tree infestations, tree health, treating and removing infested trees. Over 1,100 infested trees have been removed to date.
GIS Wildland App - OCFA's Pre-Fire Management and Information Technology Departments updated and added more information layers to their collaboratively developed multi-faceted tablet application that assists in wildland and field inspections.
Defensible Space Inspections - Completed annual defensible space inspections.
Purchased additional equipment for the use of vegetation management activities using a Cal Fire direct award.
Fire Road & Truck Trail Annual Maintenance - Completed annual road maintenance on 130 miles of roads used for fire suppression and prevention.
Camp Pendleton Dozer School - OCFA assisted with organizing and running dozer school for two weeks on Marine Base Camp Pendleton, where HFEOs come to train on the base by opening existing fire breaks.
Crews and Equipment conducted vegetation management projects throughout the county.
Appendix C: 2022 Unit Fire Plan- Annual Accomplishments
CALFIRE Grants - Significant progress has been made in assessing tree infestations, tree health, treating and removing infested trees. The remote wildfire cameras have already been successful in monitoring several fires.
GIS Wildland App - OCFA's Pre-Fire Management and Information Technology Departments updated and added more information layers to their collaboratively developed multi-faceted tablet application that assists in wildland and field inspections
Defensible Space Inspections - Completed annual defensible space inspections
Collection of Fire Perimeters - OCFA Pre-Fire Management maps every SRA vegetation fire to identify trends and determine where fuel modification zones are effective and where improvements in fuel modifications can be made
Cleveland National Forest Project - The Santiago Crew participated in mutually beneficial prescribed fire projects and OCFA Equipment assisted with mutually beneficial roads projects with CNF.
Fire Road & Truck Trail Annual Maintenance - Completed annual road maintenance on roads used for fire suppression and prevention
Camp Pendleton Dozer School - OCFA assisted with organizing and running dozer school for two weeks on Marine Base Camp Pendleton, where HFEOs come to train on the base by opening existing fire breaks.
Crews and Equipment conducted vegetation management projects across the County, including in the City of Irvine, Rancho Mission Viejo, City of Yorba Linda.
Camp Pendleton Fire School - OCFA participated in the annual prescribed fire event on Marine Base Camp Pendleton, where prescribed fires are completed to protect the base from wildfire.
Appendix D: 2021 Unit Fire Plan- Annual Accomplishments
CALFIRE Grants - Significant progress has been made in assessing tree infestations, tree health, treating and removing infested trees, and installing remote wildfire cameras. The cameras have already been successful in helping to monitor several fires.
GIS Wildland App - OCFA's Pre-Fire Management and Information Technology Departments updated and added more information layers to their collaboratively developed multi-faceted tablet application that assists in wildland and field inspections
Defensible Space Inspections - Completed annual defensible space inspections

Collection of Fire Perimeters - OCFA Pre-Fire Management maps every SRA vegetation fire to identify trends and determine where fuel modification zones are effective and where improvements in fuel modifications can be made
Cleveland National Forest Project - The Santiago Crew participated in mutually beneficial prescribed fire projects
Fire Road & Truck Trail Annual Maintenance - Completed annual road maintenance on roads used for fire suppression and prevention
Installation of remote wildfire cameras - Through a CALFIRE grant and in partnerships with SCE, UCSD, and many others, OCFA will be installing up to six remote wildfire cameras throughout Orange County to help monitor and confirm wildfires.
Camp Pendleton Dozer School - OCFA assisted with organizing and running dozer school for two weeks on Marine Base Camp Pendleton, where HFEOs come to train on the base by opening existing fire breaks.
OCFA assisted the County with COVID-19 vaccinations by staffing a vaccination team and clinic
Camp Pendleton Fire School - OCFA participated in the annual prescribed fire event on Marine Base Camp Pendleton, where prescribed fires are completed to protect the base from wildfire.
Region 5 Dozer Academy - OCFA dozer apprentices participated in the Region 5 academy in San Bernardino to hone their skills and complete a training academy.
Appendix E: 2015 - 2020 Unit Fire Plan- Annual Accomplishments
Addition of Crew 2: Crew 2 is a 17-person hand crew that assisted with fire suppression and vegetation management projects throughout Orange County. In 2019, the crew conducted vegetation management within ~90 acres.
Addition of a Deputy Fire Marshal for Pre-Fire Management- In 2020, a civilian DFM will be hired to oversee the Pre-Fire Management section to provide continuity and support for the OCFA PFM mission.
Acquisition of Additional Mechanized Equipment - A grader was purchased to improve efficiencies for vegetation management and roads projects
CALFIRE Grants: Received $5.4million in CALFIRE grants to conduct surveys and tree removals for Invasive Shot Hole Borer invaded trees. OCFA also received $90,000 in CALFIRE grants to install remote wildfire cameras.
Cal Mapper - OCFA worked with CAL FIRE to analyze and update Cal Mapper data to more accurately reflect OC project/fire data
Canyon Area Signage - Ordered and installed GSOB and other prevention message signage in SRA areas
Chipper Days Events - Conducted annual Chipper Days in the SRA communities of Trabuco, Silverado**,** and Modjeska Canyons
Cleveland National Forest Project - The Santiago Crew participated in mutually beneficial prescribed fire projects
Collection of Fire Perimeters - OCFA Pre-Fire Management maps every SRA vegetation fire to identify trends and determine where fuel modification zones are effective and where improvements in fuel modifications can be made
Defensible Space Inspections - Completed annual defensible space inspections
FDOP - Completed OCFA's Fire Danger Operating Plan
Fire Road & Truck Trail Annual Maintenance - Completed annual road maintenance on roads used for fire suppression and prevention
Fuel Mapping- OCFA Pre-Fire Management purchased NDVI mapping technology to map fuels throughout the county to monitor vegetation trends and identify areas for fuel reduction projects.

Fuel Reduction Projects- Completed numerous fuel reduction projects throughout the County, including invasive eucalyptus, pepper, and palm tree removals, hazard tree removals, and creating shaded fuel breaks along fire access roads.
Grants - OCFA implemented three grant projects, including one for Emerald Bay for additional clearance, another for East Orange County Canyons, for emergency road clearance, and installed SRA canyon area signage with interchangeable prevention messages
GIS Wildland App - OCFA's Pre-Fire Management and Information Technology Departments updated and added more information layers to their collaboratively developed multi-faceted tablet application that assists in wildland and field inspections
HP WREN - Secured approval to establish an HP WREN backbone in Orange County, to provide remote fire/emergency detection using cameras and sensors
Installation of remote wildfire cameras: Through a CALFIRE grant and in partnerships with SCE, UCSD, and many others, OCFA will be installing up to six remote wildfire cameras throughout Orange County to help monitor and confirm wildfires.
RAWS Station - A third RAWS station is being installed in coastal Southern Orange County
Remote Surveillance – Installed remote fire/emergency detection cameras on Sheriff's Towers, as well as cameras on Santiago Peak with associated meteorological sensors
Tree Mortality - OCFA assisted with the continual removal, mapping, monitoring and treatment of drought and pest infested trees
SCE Annual Roads Project - Completed over 100 miles of brushing and/or grading SCE access roads each year
Update to RSG website - Using funding provided by CALFIRE, OCFA will be updating the OCFA Ready Set Go website with an improved and updated online Home Assessment application. This application will be available online, as well as through a phone application, and will be used by OCFA staff and homeowners throughout the County to identify ways to protect and harden their homes from wildfire.
Appendix F: 2011 - 2015 Supplement (For Historical Reference)
Acquisition of Additional Mechanized Equipment - A masticator, mower, chipper, and all-terrain skid steer tractor were purchased to improve efficiencies for vegetation management and roads projects
Additional Orange County Weather Zone – OCFA, working in partnership with COAST and NOAA, implemented a new third weather zone for Orange County, which is very helpful for making decisions regarding resource deployments, facilities closures, and activity restrictions.
Adoption of MOU Between OCFA and OC Parks - For fuels mitigation and training.
Bell Ridge & West Ridge Roads - Completed Phase I of converting an existing road to a fuel break.
Bent Tree Park – Completed a grant funded project to remove over 75 large eucalyptus trees and other invasive species, then replanted the area with native vegetation, including 50 sycamores and 25 ceanothus plants.
Chipper Days Events - Conducted Chipper Days events, in conjunction with local fire safe councils, to help reduce hazardous vegetation in the wildfire risk prone areas of Cowan Heights, and the canyon communities of Silverado and Modjeska.
Cleveland National Forest Project - A mutually beneficial prescribed fire project.

Acquisition of Additional Mechanized Equipment - A masticator, mower, chipper, and all-terrain skid steer tractor were purchased to improve efficiencies for vegetation management and roads projects
County of Orange Area Safety Taskforce (COAST) - COAST is a coalition of agencies, jurisdictions, landowners, conservancies, public utilities, transportation authorities and others that can affect policy to insure safety and reduce loss of property and life.
Defensible Space Inspections - Completed annual defensible space inspections for structures in SRA areas, and in the Very High and High Fire Severity Zones in LRA areas, and for power poles.
Development of New Pre-Fire Management Section - OCFA's Pre-Fire Management is now comprised of three sub-sections, which include Wildland Defense Planning, Community Wildfire Mitigation and Crews & Heavy Equipment. This new configuration will help ensure that Gray Book obligations are fulfilled and will better serve the community.
El Cariso Defensible Space SRA FPF Project – A mutually beneficial and cooperative community-based vegetation management project on the border of Orange County and Riverside County
Emerging Tree Pests of Orange County Task Force - OCFA took the lead to launch a coordinated effort in Orange County to deal with the growing issue of invasive pests (i.e., gold spotted oak borer, polyphagous shot hole borer, etc.)
Fire Safe Councils - OCFA continues to assist in the development of local Fire Safe Councils in the canyon and foothill communities. In CY2012, there were four (4) Fire Safe Councils in Orange County, as of this report two (2) of these councils have upgraded to Firewise Communities.
Peters Canyon Project - Removed a grove of 75 invasive palm trees in Peter's Canyon
Ready, Set, Go! (RSG) - (*Update: Please note that as of 2015, RSG is now considered "the message" vs. "the program")* Ready, Set, Go! (RSG), our wildfire mitigation program, is an expanding effort motivating communities, partners, and stakeholders to act.
SCE Roads Project - Completed 119 miles of brushing and grading SCE access roads.

Appendix G: Priority Goals and Objectives For 2010 (For Historical Reference)

Orange County Fire Authority is undertaking the development of the READY, SET, GO! Program. The Program goals are aligned with the 2010 California Fire Plan and its objectives as listed below: (*Update: Please note that as of 2015, RSG is now considered "the message" vs. "the program")*

State Goal	State Objective	OCFA Goal
State Goal 1 - Improve availability and use of information on hazard and risk assessment	**State Goal Objective B** - Engage and participate with local stakeholder groups (i.e., fire safe councils and others) to validate and prioritize the assets at risk	**OCFA Goal 1 -** OCFA will establish any relationships, partnerships, and councils necessary to reduce wildfire risks and losses by emphasizing community-level resources and solutions. Leverage partners with common interests/or motivations
State Goal 2 - Land use planning: including general plans, new development, and existing developments	**State Goal Objective B** - Assist the appropriate governmental bodies in the development of a comprehensive set of wildland and wildland urban interface (WUI) protection policies for inclusion in each county general plan or other appropriate local land use planning documents	**OCFA Goal 2** - OCFA will develop and sustain a portfolio of high-impact, least-cost, stakeholder-driven solutions for reducing wildfire risks and losses by creating and sustain new solutions, eliminate low-impact solutions, streamline high-cost solutions
State Goal 3 - Shared vision among communities and the multiple fire protection jurisdictions, including county-based plans and community-based plans such as Community Wildfire Protection Plans (CWPP)	**State Goal Objective B** - Emphasize coordination of Unit fire plans with community wildfire protection plans to encourage and support one consistency approach. Develop county or regional fire plans by bringing together community-based groups, such as fire safe councils and affected fire and land management agencies	**OCFA Goal 3** - OCFA is developing the Unit Fire Plan, using the key elements identified by CAL FIRE and supporting smaller communities with the development of their local CWPP
State Goal 3 - Shared vision among communities and the multiple fire protection jurisdictions, including county-based plans and community-based plans such as Community Wildfire Protection Plans (CWPP)	**State Goal Objective C** - Create and support venues in which individual community member can be actively involved in local fire safe councils, community emergency response teams, FIREWISE and other community-based efforts to develop readiness plans and educate landowners to mitigate the risks and effects of wildland fire	**OCFA Goal 4** - OCFA's collaborative partners lead and drive the effort to protect communities from wildfire. OCFA's role is transitioned into a support-oriented role, focusing primarily on active participation, facilitation, and evaluation of program results

State Goal	State Objective	OCFA Goal
State Goal 4 - Establishing fire resistance in assets at risk, such as homes and neighborhoods	**State Goal Objective A** - Educate landowners, residents and business owners about the risks and their incumbent responsibilities of living in the wildland, including applicable regulations, prevention measures and preplanning activities	**OCFA Goal 5** - Orange County communities understand, accepts responsibility, and takes necessary action to mitigate wildfire risk, thereby preventing lives and property from being lost or damaged in wildfires **OCFA Goal 6 -** OCFA will develop regularly publicized motivational performance measurements to facilitate change in cultural attitudes, systematic mitigation of risk
State Goal 4 - Establishing fire resistance in assets at risk, such as homes and neighborhoods	**State Goal Objective C** - Increase the number and effectiveness of defensible space inspections and promote an increasing level of compliance with defensible space laws and regulations using CAL FIRE staffing as available, public, and private organizations, and alternative inspection methods	**OCFA Goal 7** - OCFA will institute a change in local cultural attitude about wildfire risks from apathy and unawareness to alertness and empowerment through mass marketing and outreach

Appendix H: 2010 Unit Strategic Plan Collaborators (For Historical Reference)

Representatives involved in the original development of the Orange County Fire Authority's Unit Fire Plan are included in the following table.

2010 Plan Development Team

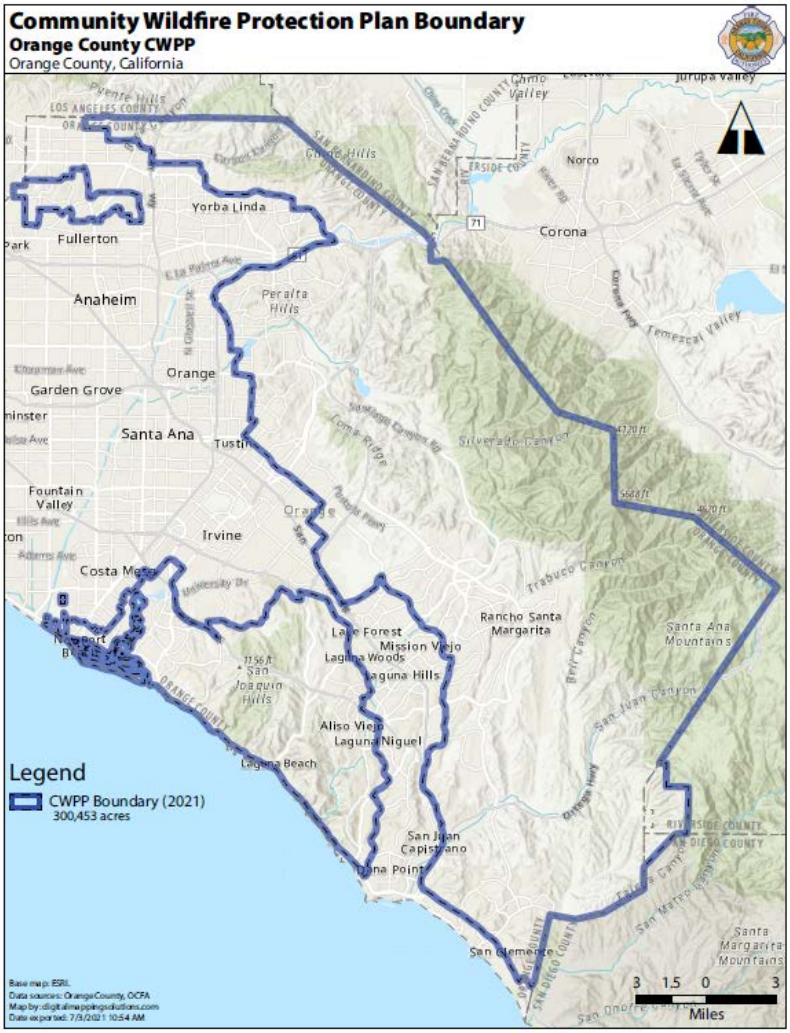
Organization	Representative (Title)
Orange County Fire Authority	Wildland Fire Defense Planner
Orange County Fire Authority	GIS
Orange County Fire Authority	Fire Prevention
Orange County Public Works	Projects & Regulatory Permits Unit
BonTerra Consulting	Senior Project Manager – Restoration Ecology
Orange County Parks	Director
Orange County Parks	Environmental Coordination
Orange County Parks	Park Rangers
HRS (Habitat Restoration Services)	Restoration Specialists
Irvine Ranch Conservancy	Director
Irvine Ranch Conservancy	Director, Planning and Field Operations
Irvine Ranch Conservancy	Field Operations Manager
Fire Safe Council Canyons of East Orange County	Ad hoc Committee
California State Parks	District Environmental Scientist
Rancho Mission Viejo Land Trust	VP – Open Space and Resource Management
Rancho Mission Viejo Ranch	Ranch Operations
The Irvine Company – AG Operations	VP – Agricultural Operations
City of Irvine	Open Space Coordinator

Addendum 1: Community Wildfire Protection Plan (CWPP)

Update to the County-wide Community Wildfire Protection Plan

covering

Orange County, California



August 2021

Funded in whole by CAL FIRE and California Climate Investments Fund

Prepared by

Carol Rice – Wildland Res Mgt, Reno, NV

Cheryl Miller – Cheryl Miller RLA, Oakland, CA


Caltrans
ANAHEIM FIRE & RESCUE
SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company
CITY OF FULLERTON CALIFORNIA
POLICE CITY OF IRVINE
NEWPORT BEACH FIRE
U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR
CALIFORNIA DEPARTMENT OF FISH & WILDLIFE
FIRE ORANGE COUNTY CALIFORNIA AUTHORITY
CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
CAL FIRE SINCE 1885
Natural Communities COALITION
restoration | management | partnership
Audubon
IRVINE RANCH CONSERVANCY
COUNTY OF ORANGE CALIFORNIA
OCTA
FIRE LAGUNA BEACH CALIFORNIA DEPARTMENT
OC parks
THE RESERVE AT RANCHO MISSION VIEJO
FOREST SERVICE US DEPARTMENT OF AGRICULTURE
ORANGE COUNTY OC PublicWorks
Transportation Corridor Agencies
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
IRVINE RANCH WATER DISTRICT
IRVINE COMPANY Since 1864
The Toll Roads
CALIFORNIA CLIMATE INVESTMENTS
Cap and Trade Dollars at Work
CITY OF ORANGE INCORPORATED APRIL 6, 1888 ORANGE COUNTY CALIFORNIA
CALIFORNIA STATE PARKS SINCE 1864
CITY OF LAGUNA BEACH CALIFORNIA
ORANGE COUNTY SHERIFF
City of BREA

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This is the 2021 Update of the County-wide Community Wildfire Protection Plan covering Orange County.

- This 2021 Update of the CWPP was initiated by OCFA's Wildland Pre-Fire Management Section of the Community Risk Reduction Department through a CAL FIRE Fire Prevention Grant and the California Climate Investments fund.
- The 2021 Update of the CWPP was prepared cooperatively through the County of Orange Area Safety Taskforce (COAST), participating Cities, and local fire safe councils and homeowner associations. Interested parties, Federal, State, City, and County agencies within the County have been consulted and are listed in the plan.
- It identifies and prioritizes pre-fire and post-fire management strategies and tactics meant to reduce the loss of values at risk within the County.
- It is intended for use as a planning and assessment tool only. It is the responsibility of those implementing the projects to ensure that all environmental compliance and permitting processes are met as necessary.

Brian Fennessy
Fire Chief
Orange County Fire Authority

Date 11/2/21

Bill Weiser
Unit Chief
Riverside Unit
CAL FIRE

Date 10-16-2021

Lori Smith
Assistant Chief / Fire Marshal
Orange County Fire Authority

Date 11/2/21

Jennifer Bower
Deputy Fire Marshal
Orange County Fire Authority

Date 11/2/21

David Erickson
Wildland Resource Planner
Orange County Fire Authority

Date 11/2/21

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David Shawver
Chair, OCFA Board of Directors
Orange County Fire Authority

David John Shawver

Date 10/28/2021

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Pat Russell
Fire Chief
City of Anaheim

Acting Fire Chief Michael S. Molloy
Date 10/14/2021

Lindsey Young
Interim Fire Marshal
City of Anaheim

Lindsey Young
Date 10/14/2021

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Jeff Boyles
Fire Chief
City of Newport Beach

10-14-21
Date

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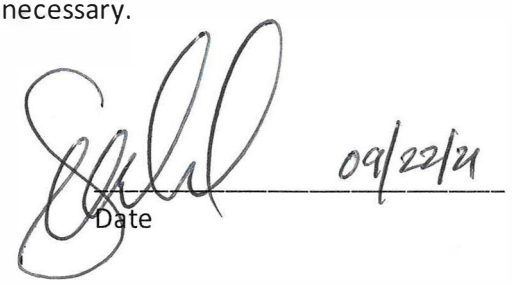

Sean deMetropolis
Fire Chief
City of Orange

Date

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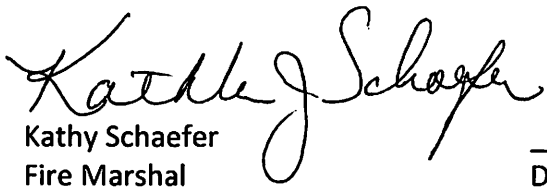
10/25/2021

Adam Loeser
Fire Chief
City of Brea

Date



10/25/2021

Kathy Schaefer
Fire Marshal
City of Brea

Date

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Michael Garcia
Fire Chief
City of Laguna Beach

9-22-21
Date

EXECUTIVE SUMMARY

This 2021 Update of the CWPP was initiated by OCFA's Wildland Pre-Fire Management Section of the Community Risk Reduction Department through a CAL FIRE Fire Prevention Grant and the California Climate Investments fund. This plan update has been prepared cooperatively with many stakeholders, and addresses pre-fire improvements, covering vegetation management, ignition prevention, community education and outreach, and firefighting initiatives and mitigations.

A. REQUIREMENTS OF A CWPP

The Healthy Forest Restoration Act (HFRA) was passed by Congress on November 21, 2003, and was signed into law by President Bush on December 3, 2003. The HFRA encourages communities within the wildland urban interface (WUI) to create CWPPs. Preparation of a CWPP allows communities to clarify, refine, and establish priorities for protection of life, property, critical infrastructure, and natural resources within its jurisdiction. A CWPP contains an assessment of the hazards and risks facing the community and identifies treatments to protect it. CWPPs are authorized and defined in Title I of the HFRA.

The HFRA places a renewed emphasis on community planning by extending a variety of benefits to communities with a wildfire protection plan in place. Critical among these benefits are the option to establish localized definitions and boundaries for areas having high risk potential, hazards (fuels), and values; and the opportunity to help shape management priorities within the planning area. The CWPP, as described in the HFRA, brings together diverse local interests to discuss their mutual concerns for public safety, community sustainability, and natural resources. It offers a positive, solution-oriented environment in which to address challenges, such as local firefighting capacity, the need for defensible space around homes (and areas of value), and where and how to prioritize land management.

The three main components of a CWPP are collaboration with all stakeholders throughout the CWPP process, identification and prioritization of hazardous fuel reduction areas, and addressing the treatment of structural ignitability within the CWPP area.

B. PURPOSE OF THE 2021 UPDATE TO THE CWPP

The purpose of the 2021 Update to the CWPP is to provide stakeholders and those living in the CWPP boundaries with an overview of the wildland fire risks, hazards, and values within the planning area; recommend possible courses of action to reduce the impacts of wildfire in the planned area; and to share an action plan. The Update is intended to add areas of the wildland urban interface in Orange County and to address and respond to changes in fire history, legislation, policies, and funding levels. This plan addresses such topics as firefighter and public safety, Wildland Urban Interface (WUI) challenges, cost-effective solutions, community preparedness, project prioritization, collaborative partnerships, evaluation, and adaptability.

These are the 2021 Updates to the adopted 2017 CWPP:

1. Describes the environments and assets as risk within the CWPP area
2. Delineates a revised WUI within the CWPP area
3. Includes a community base map that visually depicts baseline information from which the community can assess and make recommendations regarding protection, risk, and reduction priorities. It also depicts valuable resources at risk from wildfire, emergency response facilities, important infrastructure, and possible sources of wildfire hazard.
4. Includes maps that show risk in terms of high fire hazard severity areas, as defined by federal, state, and local authorities
5. Describes a suite of desired projects that span from site-specific fuel treatments, recommendations for public education, changes to codes and ordinances, and changes to development patterns for planning to a framework for as yet-undefined projects
6. Collates and summarizes projects identified by stakeholders of the CWPP
7. Prioritizes fuel management projects and treatment methods, as well as principles for selection of projects when funding is available
8. Describes the measures communities and homeowners can take to reduce the ignitability of structures
9. Establishes ways to evaluate plan implementation/progress through measurement and feedback
10. Identifies federal, state, and local resource stakeholder, such as fire response agencies, wildlife and watershed regulatory agencies, open space management entities, private landowners and homeowners, private vegetation management contractors, and hand crew suppliers.

This CWPP is intended be a multi-year, living document that provides a vision for fire management. Plan implementation will be managed and monitored annually and updated to reflect progress made on projects and to respond to the changing environments (e.g., project accomplishments, new developments, changed fuels, recovery actions). Minor revisions will not require updated authorization. If major changes are necessary, due to a major wildfire, for example, a re-authorization of the signatories could be warranted, such as in this 2021 Update. The projects identified within this CWPP include actions that are reasonably foreseeable, based on the current environmental conditions within the CWPP boundaries and available data and information.

What's New and Why Update the CWPP

A. Why Update the 2017 Orange County CWPP

Most Community Wildfire Protection Plans (CWPPs) are considered stale after 5 years or more. The trigger for updating is changed circumstances, either in the natural or socio-political environment. The 2021 Update looks at changes in the natural environment, the desire to include more cities and other organizations in the plan, as well as, the addition of new state laws, local code updates, and funding opportunities.

An updated CWPP can fill multiple purposes:

- Funding. Keep the plan current for grant funding opportunities at State and Federal levels.
- Relationship building. Identify opportunities to add new partners and improve coordination with neighboring jurisdictions and land managing agencies.
- Education. Identify new community wildfire concerns and potential solutions.
- Risk reduction. Update information to serve as background for future code updates. Introduce new topics such as long-term recovery strategies to reduce post fire effects, infrastructure and public health issues.
- Policy making. Inform policy making, legislative actions and funding appropriations. Integrate information into new and existing policies and plans such as Local Hazard Mitigation Plans, Housing Elements and General Plan Safety Elements. Integrating CWPPs with other issues not only reinforces plan consistency but provides new implementation strategies for wildfire hazard mitigation actions.

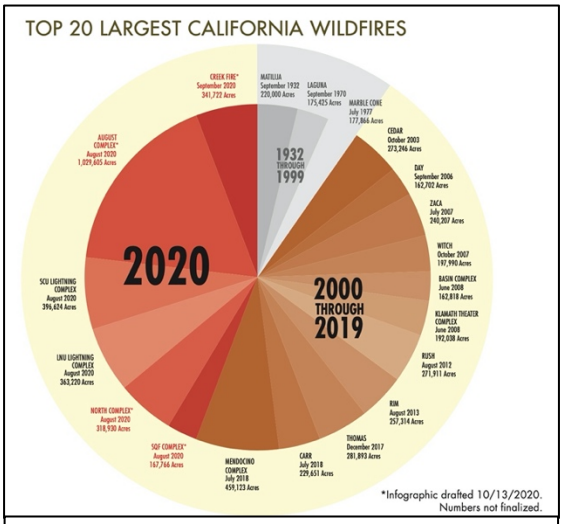
During the development of the 2021 Update to the CWPP, virtual engagement through surveys and virtual gatherings were added to the more traditional methods of gathering input and building consensus. The CWPP update process also encouraged discussions about success stories, lessons learned, and unmet needs.

B. What's New Since the 2017 CWPP

Record Breaking Fires

During the four years since the 2017 CWPP was approved there has been dramatic fire activity throughout California. Five of the six largest fires since CAL FIRE began keeping records in the 1932 burned at the same time during 2020 (see Appendix for Summary of Wildfire Incidents Since 2017). The CWPP Update incorporates this "new normal" of large wind-driven fires, year-round potential for ignitions, and increased public concern. The trend has been an increase in size, frequency, and damage throughout California.

Climate change is considered a driver of this trend. Warmer spring and summer temperatures create longer and more intense dry seasons that increase moisture stress on vegetation and make areas more susceptible to severe wildfire. The length of fire season is estimated to have increased by 75 days and seems to correspond with an increase in the extent of wildfires across the state.



Source: https://www.fire.ca.gov/media/ps4p2vck/californiawildfireandforestresilienceactionplan.pdf

State Laws and Local Regulations

In response to record breaking fires, State legislature increased the introduction of wildfire related bills starting in 2018. Successful legislation created new state laws and unfunded mandates on local jurisdictions addressing everything from: funding, grants and bonds, home hardening, insurance, environmental review, public utilities, wildfire smoke, to risk modeling, emergency services, telecommunications, local planning, and climate change. See Appendix "Wildfire Related Legislation and New Laws Since 2017" for excerpts from the new 48 pieces of legislation.

Many of these laws continue to come into effect during 2021 and 2022. Some of the important new laws that affect the local jurisdictions and agencies that participated in the CWPP update include:

Fire Risk Reduction Communities. AB1823 (2019) By July 1, 2022, the State Board of Forestry must develop criteria and maintain a list of local agencies that meet best practices for local fire planning per PRC 4290.1. A "Fire Risk Reduction Community" must: comply with minimum safety standards, participate in Fire Adapted Communities or Firewise USA programs, adopt an improved Safety Element (GC Section 65302.5), and have a recent of updated CWPP, and standards (PRC 4290.1).

California Wildfire Mitigation Financial Assistance Program: AB38 (2019) A comprehensive program including by July 1, 2021, a regional capacity review, requirements for disclosure during real estate transfers, and by July 1, 2025 a new financial assistance program for cost-effective structure hardening and retrofitting.

Evacuation Route Requirements. Two bills (AB747 and SB99) signed into law in 2019 added new requirements for disclosing residential development without at least two points of ingress and egress and addressing the presence and adequacy of evacuation routes in the Safety Element or by January 1, 2022.

Existing subdivisions without secondary egress routes. AB2911 (Friedman, 2018) requires on or before July 1, 2021, and every five years thereafter, the Board of Forestry, in consultation with the State Fire Marshal, to survey local governments to identify existing subdivisions (more than 30 dwelling units) in SRA or VHFHS zones without a secondary egress route that are at significant fire risk.

New State Minimum Fire Safety Regulations AB2911 (Friedman, 2018) sets forth basic wildfire protection standards for development in Very High Fire Hazard Severity Zones of both the State Responsibility Area (SRA) and the Local Responsibility Area (LRA) beginning July 1, 2021.

Land Use: General Plan Safety Element. SB379 (Jackson, 2015) and AB747 (Levin, 2019) both required update of safety elements to include climate adaptation and resiliency, and evacuation routes and their viability under a range of emergency scenarios. Update of Safety Element required if the local jurisdiction has not adopted a local hazard mitigation plan by January 1, 2022.

Funding Focus

Climate Action Plans and California Climate Initiatives

Assembly Bill (AB) 32: The California Global Warning Solutions Act of 2006 represents California's effort to reduce GHG emissions and combat global climate change. In response several cities within Orange County have adopted Climate Action Plans including: Aliso Viejo, Fullerton, Irvine, La Habra, Laguna Beach, Mission Viejo, San Clemente, and Santa Ana according to the non-profit group Orange County for Climate Action.[1]

Most of these plans anticipate higher temperatures that can decrease the water supply through increased evaporation rates and irrigation demand, and lead to an increased incidence of wildfires, as well as health impacts to vulnerable populations. The "Cap and Trade" funding programs serve a key funding source for hazardous fuel management through the California Climate Investments (CCI) and Forest Carbon Plan.

California Forest Carbon Plan and California Climate Investments Funding[2]

On May 10, 2018, California Governor Brown issued Executive Order B-52-18 to support the state's resilience to wildfire and other climate impacts, address extensive tree mortality, increase forests' capacity for carbon capture, and improve forest and forest fire management. The Order committed $96 million in additional state funds. The executive order called for doubling the land actively managed through vegetation thinning, controlled fires, and reforestation from 250,000 acres to 500,000 acres. Funding will be expanded for training and other incentives to improve watershed health and climate resilience. A Forest Management

[1] Source http://occlimateaction.org/orange-county-climate-action-plans/ accessed 3/26/21.
[2] Source: http://resources.ca.gov/wp-content/uploads/2018/05/California-Forest-Carbon-Plan-Final-Draft-for-Public-Release-May-2018.pdf accessed 3/26/21

Task Force was convened to help implement this order and its accompanying Forest Carbon Plan, which was finalized along with the passage of this Executive Order.

The California Forest Carbon Plan was developed by state, federal, and local representatives, under the leadership of California Natural Resources Agency, California Environmental Protection Agency, and Department of Forestry and Fire Protection (CAL FIRE). The plan provides a strategy to manage our forest landscapes in a changing climate as healthy, resilient net sinks of carbon that provide a range of priceless ecosystems and societal benefits. The goals are to:

- Prevent forest land conversions through easements and acquisitions, as well as land use planning.
- Protect and enhance the carbon sequestration potential and related benefits of urban forests.
- Support Federal goals and actions to improve forest and watershed health and resiliency.
- Significantly increase the pace and scale of forest and watershed improvements on nonfederal forest lands through incentives and other mechanisms.
- Innovate solutions for wood products and biomass utilization to support ongoing forest management activities.
- Support key research, data management, and accountability needs.

The California Forest Carbon Plan provides multiple strategies to achieve these goals through working collaboratively at the watershed or landscape scale across all types of wildlands and ownership categories. It recognizes that to achieve these goals a sustained commitment of effort and funding from the state and federal governments is required. Further non-fiscal measures such as technical assistance, efficient permitting process and ongoing commitment to collaborative efforts are also critical. To foster this program, both CAL FIRE and the Department of Conservation have grant programs that make available cap and trade funding available through the California Climate Investments programs including the Department of Conservation's Regional Forest and Fire Capacity Program.[3]

[3] Source: https://www.conservation.ca.gov/dlrp/grant-programs/Pages/Regional-Forest-and-Fire-Capacity-Program.aspx accessed 3/26/21

Forest Health Prioritization

The California Natural Resources Agency, Department of Conservation's Regional Forest and Fire Capacity program aims to increase regional capacity to prioritize, develop, and implement projects to improve forest health and fire resilience and increase carbon sequestration in forests throughout California.[4]

Six regional entities received multi-year block grants in 2019 to conduct regional planning, develop projects, conduct outreach, and implement landscape-level forest health projects consistent with the California Forest Carbon Plan and Executive Order B-52-18. Two statewide block grant recipients are using their grants to support a statewide forest health and fire resilience network, provide capacity building in underserved regions and provide technical assistance statewide.

Broad and inclusive outreach and involvement in decision-making is a priority of the program. Regional block grantees are expected to partner extensively across their region to identify priorities and develop projects. Current block grantees partner heavily with state, federal, tribal, and local governments as well as water agencies, resource conservation districts, fire safe councils, and other nonprofits. The program funds local partner capacity development to ensure equitable participation and representation in planning and project development.

Tree Mortality, Pests and Diseases


READY. SET. GO!
NEWSFLASH

Orange County, CA - *Invasive Tree Pests* are killing California's trees at epidemic levels. There are 66 million dead trees in six California counties and counting. In Orange County, the problem is getting worse.

Why Should You Care?

Escalating tree mortality has serious consequences that impact you, and your family!

- Unprecedented Fire & Flood Hazards
- Public Safety Risks
- Habitat & Ecosystem Destruction
- Risk-Related Facility Closures
- Negative Economic Impact
- Adverse Human Health Implications
- Liability Risk
- A "Treeless" California?

The Tree Killers

Gold Spotted Oak Borer (GSOB) - GSOB larvae burrow into oaks, feed off the living wood, which slowly kills the tree. Prolonged drought has made trees more vulnerable.

- Moving fire wood is the primary contributor for spreading the GSOB infestation

Invasive Shot Hole Borer (ISHB) - ISHB includes Polyphagous Shot Hole Borer (PHSB) and Kuroshio Shot Hole Borer (KSHB), two genetically distinct, yet otherwise identical tree pests that tunnel into many common native and landscaping trees in natural, urban and irrigated areas.

- ISHB spreads the Fusarium Dieback fungus, causing branch dieback and eventual tree mortality

Challenges

These invasive tree pests require significant State and local government intervention, but officials have been slow to respond. As the problem escalates:

- Significant underfunding continues
- Treatment and removal options are limited and costly
- Public awareness is lacking
- Firewood industry practices perpetuate the problem

What Can You Do?

- **Get Educated** - Learn how to ID, monitor and report suspect trees
- **Don't Move Firewood** - *Buy It Where You Burn It!*
- **Spread Awareness** - Tell friends, family, HOA's, etc.
- **Contact Local Government Officials** - Express your concern

GSOB: D-shape Exit Holes ISHB: Bark Stains

Infestation of the Goldspotted Oak Borer (GSOB – *Agrilus auroguttatus*) and the Invasive Shot Hole Borer (ISHB)[5] continue to spread and kill trees throughout Orange County increasing fuel material for potential future wildfires. The Emerging Tree Pests of Orange County (ETPOC) task force continues to meet and share updates and pursue strategies for responding to GSOB and ISHB in Orange County. The Emerging Tree Pests of Orange County group is working on a GSOB response plan for responding to this pest.

Orange County continues to have high ISHB infestation pressure and impacts in urban areas and in the wildland-urban interface. University of California Cooperative Extension (UCCE) conducts repeated surveys of turf parks and wilderness areas in Orange County Parks. In 2019, 239 ISHB-infested trees were removed with an estimated loss of value at over $1 million. In addition, 1,206 trees were treated using various management techniques based on host species, location, and infestation level. From 2013-

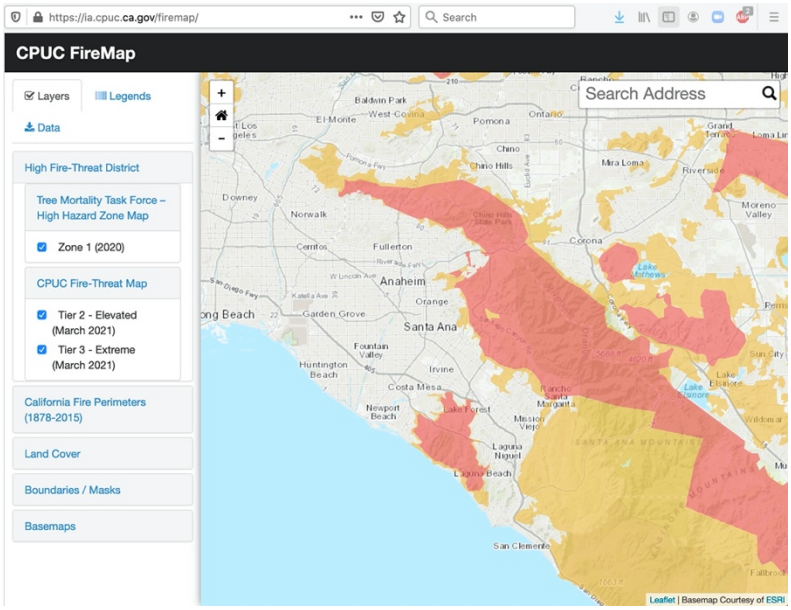
[4] Source: https://www.conservation.ca.gov/dlrp/grant-programs/Pages/Regional-Forest-and-Fire-Capacity-Program.aspx accessed 3/26/21.

[5] ISHB is a general term for two related shot hole borer beetles, the Polyphagous Shot Hole Borer (PSHB) and Kuroshio Shot Hole Borer (KSHB

2019, a total of 3,922 ISHB-infested trees have been removed from Orange County parks. In collaboration with UCCE the OCFA currently is funded by a CAL FIRE Fire Prevention Grant and the California Climate Investments Fund to treat trees infested with the GSOB and ISHB in infected areas.

California Public Utilities Commission Requirements for Investor-owned Utilities. CPUC Fire Maps and Public Safety Power Shut Offs (PSPS)

In response to wildfires reportedly ignited by overhead utility power lines, the California Public Utilities Commission (CPUC) initiated Rulemaking (R.) 08-11-005 to consider and adopt regulations to protect the public from potential fire hazards associated with overhead powerline facilities and nearby aerial communication facilities. On December 21, 2017, the CPUC issued Decision (D.) 17-12-024 adopting regulations to enhance fire safety in the High Fire Threat District (HFTD). On January 19, 2018, the CPUC adopted, via Safety and Enforcement Division's (SED) disposition of a Tier 1 Advice Letter, the final CPUC Fire-Threat Map.[6]



Southern California Edison submitted the first annual submission of its Wildfire Mitigation Plan on February 6, 2019, as required by the new CPUC rules and Senate Bill 901 (2018). The plan included enhanced inspections of overhead power lines in high fire risk areas as well as steps to harden infrastructure, improve situational awareness capabilities, improve operational practices and increase the use of data and technology. Approximately 35 percent of SCE's service area is located in high fire risk areas. Updates and progress reports have been submitted annually.[7]

In 2019, SCE also introduced Public Safety Power Shutoff (PSPS) to the region. PSPS is a practice of proactively shutting off power in high fire risk areas to reduce the chances of fire during

[6] Source: https://www.cpuc.ca.gov/firethreatmaps/ accessed 3/26/21
[7] Source: https://www.sce.com/wildfire/wildfire-mitigation-efforts. .

extreme and potentially dangerous fire conditions.[8] Extreme fire conditions are conditions in which a fire (if ignited) would grow rapidly, burn intensely, and/or erratically. Planning and monitoring continue to refine extreme weather forecasts, and notifications to local and tribal governments and officials, first responders, hospitals, and critical infrastructure and service providers, as well as their customers.

California Insurance Commission

Several years of deadly and destructive wildfires have made insurance more expensive and difficult to find for many Californians, especially those living in high wildfire risk areas and in the state's wildland urban interface (WUI).

Key actions by the Insurance Commission since 2017 have included a one-year moratorium on non-renewal or cancelling (18% or 2.1 million policy holders were affected by 2020 wildfire season). Availability and affordability of coverage for wildfire loss continues to be a topic for legislation.

Department of Insurance assists homeowners in filing claims and maximizing their insurance benefits following a disaster. In July 2021, a new law will take affect removing a company-specific form requirement for inventories, requiring advance payment of living expenses, giving grace periods for payment of premiums, and additional living expenses be paid when a home is uninhabitable due to an evacuation order or lack of water or power caused by a fire (SB-872 Dodd, 2020[9]).

Also to take effect in July 2021, insurance companies will be required to give notice when they non-renew a consumer but offer a lesser "difference in conditions policy," and extend coverage for building code upgrades (AB-2756 Limon and Bloom, 2020).[10]

Other topic of interest to the Commission included potential administrative and regulatory changes to incentivize home-hardening and discuss models that are based in fire science to protect lives and property.[11]

[8] Source: https://www.sce.com/wildfire/psps and https://newsroom.edison.com/internal_redirect/cms.ipressroom.com.s3.amazonaws.com/166/files/20189/psps_one%20pager_english.pdf accessed 3/26/21.
[9] For full text of SB-873 see https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB872
[10] For full text of AB-2756 see https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB2756
[11] Source: https://www.insurance.ca.gov/01-consumers/200-wrr/MtgReHomeHardWildfireCatModelRatemaking.cfm accessed 4/5/21.

Local Hazard Mitigation Plans (LHMPs) and General Plan Safety Elements

Wildfire considerations have been increasingly incorporated into local, state and federal planning requirements. Beginning with the Federal Disaster Mitigation Act of 2000 (Stafford Act), regulations have offered incentives and penalties to local governments to develop plans and implement mitigation measures. While these regulations are often unfunded mandates, or impose new duties on cities and counties, some offer considerable "carrots and sticks" in the terms of grant funding opportunities or penalties.

Since 2017 there have been nine bills adopted into law related to planning. Most of the legislation took effect by 2020. However, some requirements come into effect on January 1, 2022, such as the requirement for a Local Hazard Mitigation Plan and for the Safety Element to address climate change impacts. Many of these new requirements are tied to the update of the Housing Element, which is one of the few plans with accountability requirements and a state enforcement mechanism.[12]

Community Wildfire Protection Plans (CWPPs) are beginning to serve as a sourcebook for data, priorities and mitigation measures for a variety of plans. This 2021 Update of the Orange County CWPP can provide the basis for development of policies, strategies and tactics for local agencies' Local Hazard Mitigation Plans and Safety Elements.

Fire Hazard Planning Technical Advisory – OPR Guidelines

In 2018, legislation[13] required that the Governor's Office of Planning and Research (OPR) update the 2015 Fire Hazard Planning Technical Advisory to include "specific land use strategies to reduce fire risk to buildings, infrastructure and communities." The updated 2020 document is organized in six sections: introduction, overview of fire hazards and risks to California communities, regulatory and policy background, fire hazard planning guidance, example policies, and appendices of potential resources.

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[12] In 2017, Governor Brown signed several bills that clarify and strengthen existing laws and increase accountability and enforcement in order to better address the housing needs of Californians. Chapter 370, Statutes of 2017 (AB 72) is one of those laws. California's housing crisis has reached historic proportions despite the fact that, for decades, the Legislature has passed numerous laws intended to significantly increase the supply of housing affordable to Californians at all income levels. AB 72 grants the California Department of Housing and Community Development (HCD) authority to review any action or failure to act by a local government that it determines is inconsistent with an adopted housing element or housing element law. This includes failure to implement program actions included in the housing element. HCD may revoke housing element compliance if the local government's actions do not comply with state law. In addition, HCD may notify the California Office of the Attorney General that the local jurisdiction is in violation of state law for non-compliance with housing element law, the Housing Accountability Act, "no net loss" law, density bonus law or anti-discrimination law. Source: https://www.hcd.ca.gov/community-development/accountability-enforcement.shtml accessed 4/1/21/

[13] Legislation SB901 (Dodd) and AB2911 (Friedman) codified in 2018 in GC § 65040.21. 2020 Fire Hazard Planning Technical Advisory download at https://opr.ca.gov/docs/20201109-Draft_Wildfire_TA.pdf.

The Technical Advisory provides background and context for understanding fire hazards and risks. It summarizes federal and state laws and regulations, as well as key policies, programs and guidelines that complement the regulatory framework and can serve as basis for local fire hazard planning and mitigation. More detail guidance is provided in the fire hazard planning process with recommendations for general plan updates and opportunities for alignment with other topics such as climate adaptation and local hazard mitigation plans. Safety element updates now must address both wildfire and the broader topic of climate adaptation and resilience and ensure that vulnerable and disadvantaged communities are properly identified and are a part of the planning process. The Technical Advisory expands beyond traditional fire hazards to include public health and equity, housing, drinking water, impacts of public safety power shutoffs, rebuilding and recovery, mental health and economic sustainability. The guide also includes policy examples and implementation programs for existing development, infill development and new growth, for fuel modification and land management, to protect public health and promote equity, as well as disaster response, recovery and maintenance. Potential resources include funding sources, information guidance, case studies from around California, and other planning and regulatory tools. All these can assist planning for wildfire mitigation in Orange County.

CEQA Section – XX. Wildfire

The California Environmental Quality Act (CEQA) is a statute that requires state and local agencies identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. Changes are made continually to CEQA through legislation and case law. Guidelines are issued to explain and interpret the law for public agencies and the public.

The 2019 Guidelines introduced a new section to the required CEQA review: “XX. Wildfire Hazards – if located in or near state responsibility areas or lands classified as very high hazard severity zones.”

Since 2019, CEQA studies have to evaluate if the proposed project would:

1. “Substantially impair an adopted emergency response plan or emergency evacuation plan?
2. Due to slope, prevailing winds and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire?
3. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or may result in temporary or ongoing impacts to the environment?

4. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability or drainage channels?" [14]

California Vegetation Treatment Program and Environmental Impact Report (EIR)[15]

In December 2019, the California Board of Forestry and Fire Protection adopted the California Vegetation Treatment Program (CalVTP). The program is a critical component of the state's multi-faceted strategy to address California's wildfire crisis. The CalVTP defines the vegetation treatment activities and associated environmental protections. The CalVTP includes the use of prescribed burning, mechanical treatments, manual treatments, herbicides, and prescribed herbivory as tools to reduce hazardous vegetation around communities in the WUI, to construct fuel breaks, and to restore healthy ecological fire regimes. The CalVTP has the potential to streamline permitting of activities in treatable landscapes shown below[16].

The CalVTP Program Environmental Impact Report (Program EIR) provides a resource to expedite the implementation of vegetation treatments. The Board of Forestry website "How to use the CalVTP"[17] provides templates for: project specific analysis, CEQA Findings and Statement of Overriding Considerations, Mitigation Monitoring and Reporting, and example CEQA documents that can be used by local Orange County agencies.

Mass Notification, Public Alert, Warning and Evacuation

Fast moving, large, wind driven fires have increased the need for mass notification systems to distribute public alerts and warnings related to critical fire weather and evacuation information. AlertOC is a countywide system designed to keep Orange County residents and businesses informed of emergencies. By registering with AlertOC, time-sensitive voice messages from the

[14] Source: http://resources.ca.gov/ceqa/docs/2018_CEQA_FINAL_TEXT_122818.pdf see also http://resources.ca.gov/ceqa/docs/2019_CEQA_Statutes_and_Guidelines.pdf
[15] For further information see https://bof.fire.ca.gov/projects-and-programs/calvtp-homepage/
[16] https://calfire-forestry.maps.arcgis.com/apps/webappviewer/index.html?id=78782787ae4d459e8cb313141a5c41be
[17] https://bof.fire.ca.gov/projects-and-programs/calvtp-homepage/how-to-use-the-calvtp/

County of Orange are sent to home, mobile, or business phone. Text messages may also be sent to mobile phones, e-mail accounts, and hearing-impaired receiving devices.

Public mass notification systems have become a critical component of emergency preparation and response. Public safety officials utilize the system to rapidly send out messages when there is a perceived, emerging, or imminent situation that may require community action, such as evacuation from wildfire.

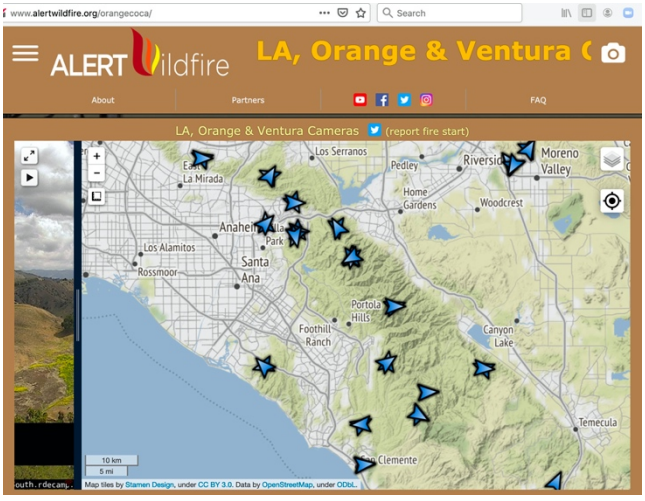
ALERTWildfire[18] and Remote Cameras for Monitoring Wildfires

ALERTWildfire is a consortium of three universities – The University of Nevada, Reno (UNR), University of California San Diego (UCSD), and the University of Oregon (UO) – providing access to state-of-the-art Pan-Tilt-Zoom (PTZ) fire cameras. Cameras covering Orange County include: Anaheim Deer Canyon (1&2), Bell Canyon (South & North), Carbon Canyon (1& 2), Gypsum Canyon (1&2), Pleasants North, Pleasants West (1 & 2), San Juan Hills (South & North), Santiago Peak 1, Sierra Orange, Signal Peak (1&2), Wier Canyon Eastridge (1&2), and Wier Canyon Serrano (1&2).

The cameras and associated tools help firefighters and first responders:

- discover/locate/confirm fire ignition,
- quickly scale fire resources up or down appropriately,
- monitor fire behavior through containment,
- during firestorms, help evacuations through enhanced situational awareness, and
- ensure contained fires are monitored appropriately through their demise.

In the summers of 2014-16, ALERTTahoe.[19] expanded to the statewide network ALERTWildfire, with the goal of 1,000 cameras in California by 2022. This program has been recently expanded through a partnership with COAST, SCE, SDG&E, the University of California and the County of Orange. Two new point-tilt-zoom (PTZ) cameras with meteorological sensors have been installed on additional towers secured by SCE and SDG&E to expand remote detection across Orange County and to provide visibility to the public. OCFA received a CAL FIRE Fire



[18] Source: http://www.alertwildfire.org/orangecoca/ accessed 4/6/21

[19] Funded through the Nevada Seismological Laboratory (NSL) at UNR, the Tahoe Prosperity Center, the Eldorado National Forest, and the USFS Lake Tahoe Basin Management Unit. Due to overwhelming interest in ALERTWildfire technology, WildfireLIVE, a Nevada C-corp, was spun out of the Nevada Research and Innovation Corporation at UNR to not only help scale university-based operations within their original footprint, but to expand to other markets such as Utah and Australia.

Prevention Grant for the installation of these remote wildfire cameras and meteorological sensors throughout Orange County[20].

Summary of Wildfire Incidents 2017-2021

From OCFA Wildland GIS Application data.

Seven fires larger than 150 acres have burned in Orange County since 2016. The area burned totals 68,463 acres, burning valuable habitat and communities in the WUI.

Table 1: Wildfires in Orange County since 2017

Year	Name	Start Date	Date Extinguished	Acres	Injuries	Structure Damage	Structured Destroyed
2017	Canyon Fire	9/25/17	10/1/17	2,662			
2017	Canyon 2 Fire	10/9/17	10/17/17	9,217	4	55	25
2018	Aliso Fire	6/2/18	6/10/18	175			
2018	Santiago Fire	6/11/18	6/14/18	155			
2018	Holy Fire	8/6/18	8/26/18	23,136			24
2020	Blue Ridge Fire	10/26/20	11/2/20	13,964		10	1
2020	Silverado	10/26/20	11/2/20	12,466	2	9	5
2020	Bond Fire	12/2/20	12/7/20	6,686		21	31

2017 – Year of Extremes

The December 2017 fires forced over 230,000 people to evacuate. 2017 will be remembered as a year of extremes. It was the third-warmest year on record for the United States, and it was the second-hottest in California, bringing to the surface the question of long-term climate change and its contribution to the 2017 California fires. Wildfires 2017 in Orange County included the Canyon Fire and Canyon 2 Fire.

2018 – Deadliest and Most Destructive on Record

The 2018 wildfire season was the deadliest and most destructive wildfire season on record in California, with a total of over 7,500 fires burning an area of over 1,670,000 acres (over 1.67M), the largest area of burned acreage recorded in a fire season.[21] Wildfires 2018 in Orange County included the Holy Fire, Santiago Fire, and Aliso Fire.

[20] Orange County Fire Authority 2020 Unit Strategic Fire Plan, at https://osfm.fire.ca.gov/media/tegprqoh/2020-orc-fire-plan.pdf

[21] https://www.fire.ca.gov/incidents/2018/

2019 – Year of PSPS

Pacific Gas & Electric, **Southern California Edison** and San Diego Gas & Electric **preemptively shut off power** to 800,000 electric customers to reduce the risk of wildfires by preventing electrical arcing in high winds from their above-ground power lines.[22] In 2019, more than 20 vegetation fires burned in the county, as shown below.

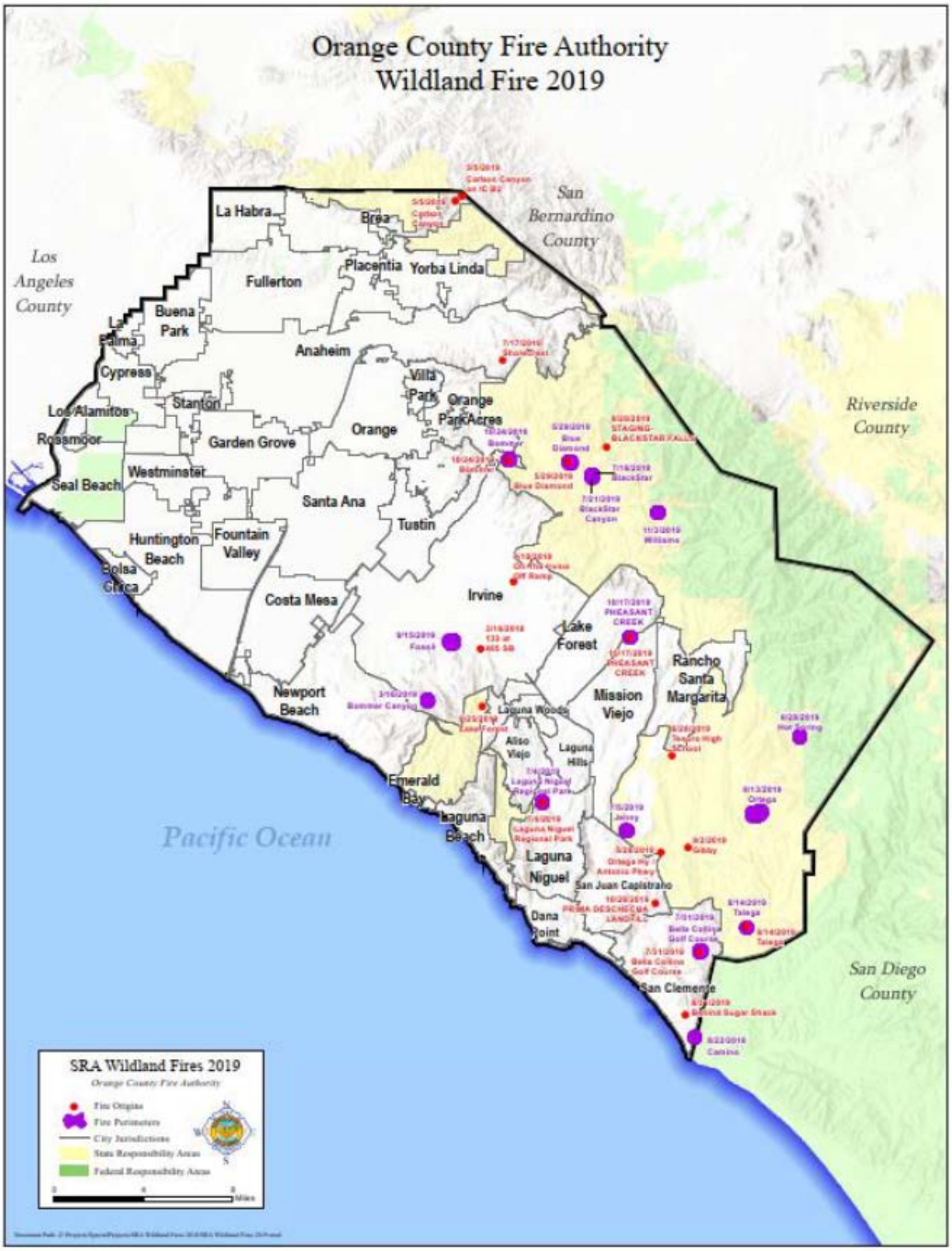


Figure 1. Vegetation Fires in Year 2019, from OCFA 2020 Unit Strategic Plan

2020 – New Record Setting Year; The Gigafire

Wildfires 2020 in Orange County included the Blue Ridge Fire, the Silverado Fire, and the Bond Fire. The Bond and Silverado fires burned next to each other, and some locations were burned by both.

2021 – Fire Season Outlook

While wildfires are a natural part of California's landscape, the fire season in California and across the West is starting earlier and ending later each year. Climate change is considered a key driver of this trend. The length of fire season is estimated to have increased by 75 days across the Sierras and seems to correspond with an increase in the extent of forest fires across the state.

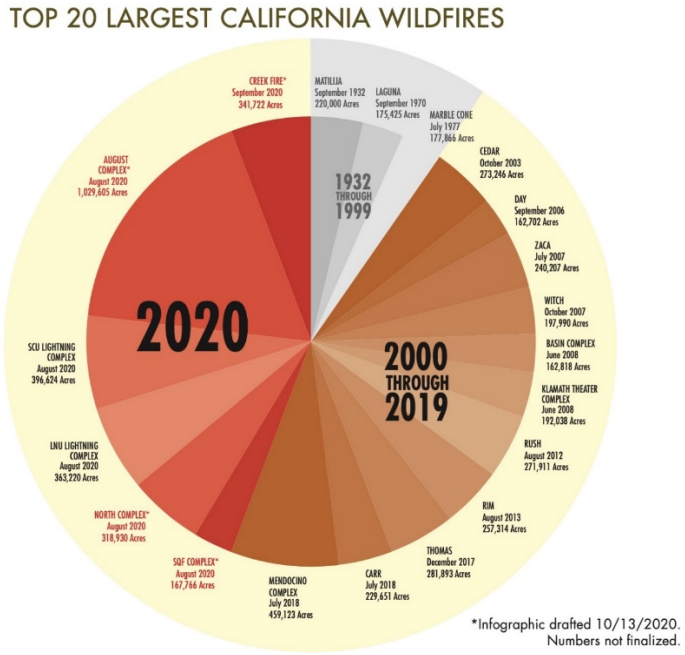


Figure 2. Top 20 Largest California Wildfires.[23]

[22] https://www.fire.ca.gov/incidents/2019/

[23] From California Wildfire and Forest Resilience Action Plan https://www.fire.ca.gov/media/ps4p2vck/californiawildfireandforestresilienceactionplan.pdf

SECTION I: COUNTY OVERVIEW

A.GEOGRAPHY

Orange County, California (County) is located along the Pacific coast, between Los Angeles County and San Diego County. It is among the smallest counties in California, with a total area of 947.98 square miles, of which 789.40 square miles (83.3%) is land, and 158.57 square miles (16.7%) is water. The Pacific Ocean is its southwest border, Los Angeles County its northern border, and San Diego County its southeastern border. Moving inland, Orange County is bordered on the northeast and east by both San Bernardino and Riverside counties.

While there is no formal geographic division, the County is often divided into north and south, with the 55 Freeway as the informal transition between the generally older established areas closer to Los Angeles County, and the recently developed areas to the south.

Orange County lies predominantly on an alluvial plain, generally less than 300 feet in elevation in the west and central section. Several low-lying mesas interrupt the plain along the northern coast. The plain is semi-enclosed by the Santiago Foothills and the Santa Ana Mountains, which rise to 5,600 feet on the east, plus the Puente and Chino Hills to the north, and the San Joaquin Hills to the south.

The County covers 511,476 acres, of which 59 percent (301,771 acres) is developed, and the remaining 41 percent (209,705 acres) is undeveloped, natural habitat. Approximately 75 percent (157,279 acres) of the undeveloped land has some form of protection through open space land designations, including conservation easements, open space zoning, or in existing public ownership with the expectation that it will remain as open space. Orange County falls in the South Coast Ecoregion of the California Floristic Province. The South Coast Ecoregion is considered a biodiversity “hotspot,” supporting more endemic and imperiled species than any

other region in the U.S.[24],in large part because of its diversity of geologic substrates, topographic features, climatic regimes, soil types, and other physical factors. The natural setting of Orange County provides a diverse combination of mountains, hills, flatlands, and shorelines. These landforms contribute to the diversity of Orange County's environment.

B. POPULATION

Orange County has 3.18 million residents, who reside in 1.0 million housing units. Orange County also has the distinction of being the second most densely populated county in the state and includes 34 incorporated cities, plus 16 unincorporated areas.[25] Santa Ana is the county seat.

According to the 2010 Census, compared to California overall, Orange County is relatively more educated, affluent, and increasingly diverse.

- **Median HH Income:** OC $75.4K vs. CA $61.0K
- **Bachelor Degree +:** OC 36.8% vs. CA 30.7%
- **Home Ownership:** OC 58.7% vs. CA 55.3%
- **MDU's**: OC 34.2% vs. CA 31.0%
- **Foreign Born**: OC 30.4% vs. CA 27.0%.
- **Non-English (spoken at home):** OC 45.5% vs. CA 43.7%

C. MAJOR TRANSPORTATION ARTERIES

With so many people and limited public transportation, Orange County roadways are of critical importance in keeping the resident population moving, along with the large daily influx of

[24] Stein, B.A., L.S. Kutner, and J.S.Adams, Eds. 2000. Precious Heritage: the status of biodiversity in the United States. Oxford University Press.

[25] Orange County Fire Authority, 2020. 2020 Unit Strategic Fire Plan. https://osfm.fire.ca.gov/media/tegprqoh/2020-orc-fire-plan.pdf accessed 6/14/21.

commuters from outside the County. However, most of the major and significant minor roads pass through wildfire prone SRA lands and open space areas, and are often the site of roadside wildfire ignitions, including Interstate 5, CA 57, CA 74 (Ortega Highway), CA 91, the 73, 133 and 241 Toll Roads, and SR142, SR261, and SR55.

D.TOPOGRAPHY

Topographically, Orange County rises from sea level, along the Pacific Ocean, to approximately 5,690 feet elevation in the Santa Ana Mountains, which are located within the Cleveland National Forest.

The County's major watercourse is the Santa Ana River, which flows from the Inland Empire, in Riverside County, through the middle of the County from northeast to southwest, and terminates at the Pacific Ocean on the Huntington Beach-Newport Beach border.

Geographic units based on topography include the following:

- The Los Angeles Basin, a low-lying expanse that encompasses the coastal plain of Los Angeles County southeast into Orange County. The portion of it that lies south of the Santa Ana River, between the Santa Ana Mountains and San Joaquin Hills, is technically called the Tustin Plain.
- San Joaquin Hills, paralleling the coastal cities of Newport Beach then south to Dana Point.
- Lomas de Santiago, a range of inland hills that parallels the coast, inland of the Tustin Plain.
- Chino Hills, a range of inland hills in the northeastern portion of the County. The northwestern portion of Chino Hills is called Puente Hills, and the two features are sometimes referred to as the Puente-Chino Hills.

- Loma Ridge, located west of the Santa Ana Mountains. It runs through the central part of the County, parallels the Santa Ana Mountains, and is separated from this mountain range by Santiago Canyon.

The Santa Ana Mountains are a range of peninsular mountains, that extend from the Santa Ana River, southeast into western Riverside and San Diego counties. These mountains are a steep-sided range of many peaks and deep canyons that support an abundance of native endemic plant and animal species. The Santa Ana Mountains include the Santa Margarita and Elsinore mountains and the Santa Rosa Plateau. Collectively, they cover 275,000 acres within Orange, Riverside, and San Diego counties. Santiago Peak (5,689 feet) and Modjeska Peak (5,489 feet) are the two highest peaks in the range. As the westernmost extension of the Peninsular Ranges, the Santa Ana Mountains jut out into a broad coastal basin and are largely surrounded by urbanization. The primary streams emanating from these mountains are San Mateo Creek, San Juan Creek, Trabuco Creek, and Santiago Creek. The Trabuco District of the Cleveland National Forest makes up 49 percent of this region.

E. CLIMATE AND WEATHER

The County is known for its generally mild weather and Mediterranean climate, characterized by relatively small changes in seasonal temperature, a dry summer, and a rainy winter. The average monthly temperatures range from about 52 Fº in the coastal areas in January to 72 Fº in the inland areas of the coastal plain in August. Annual precipitation averaging of 14 inches falls principally during the winter months (December to March). The dominant wind pattern is a daytime sea breeze (on-shore) and a nighttime land breeze (offshore).

Climate of Orange County is characterized by:

- **Variations in Weather and Microclimate Conditions** - Temperatures can vary as much as 18°F from inland areas to the coast, with a temperature gradient of over one degree per mile. The County's average rainfall has a wide variation year to year.

- **May Gray/June Gloom** – Often brings morning overcast skies to the coastal cities that usually give way to sunny skies by noon, during the late spring and early summer.
- **Santa Ana Winds** – Santa Ana winds, also called foehn winds, are strong, extremely dry winds that blow down the lee side of a mountain range. The winds become stronger and drier further down in slope due to adiabatic compression as the air descends. In Orange County these winds occur mostly from September to May but can arise at other times during the year. The winds often create the hottest, driest weather of the year and are infamous for fanning regional wildfires.

The fire threat never completely vanishes - especially during dry winters -- but usually it decreases as winter gets closer to spring.[26] Due to extensive development along the wildland urban interface, wildfire is a major hazard for residents of this densely populated county and is especially dangerous during Santa Ana wind events.

F. LOCAL FIRE HISTORY

Like most of Southern California, the County is prone to frequent large scale wildfires in, and near the SRA. Since the adoption of the 2017 plan, there have been three wildfires with perimeters in excess of 10,000 acres, and historic fires having perimeters of up to 30,000 acres.[27] Some of the County's major wildfires over the past century are listed below in Table 1 and Figures 1-3. Areas that have not burned recently may be more vulnerable to high intensity wildfires. For example, since 1978, there have been over 20 wildfires exceeding 2,000 acres in size, including the 1980 Owl Fire (18,332 acres), the 1980 Indian Fire (28,408 acres), the 2007 Santiago Fire (28,517 acres), the 2017 Canyon Fire (2,662 acres), 2017 Canyon II Fire (9,217 acres), and 2018 Holy Fire (22,885 acres).

1. Fire Season

Traditionally, fire season in Southern California has been from May through September. However, over the past 15 years Orange County has experienced some of its most devastating wildfires between October and April [e.g., the Sierra Fire (2/2006), Santiago Fire (10/2007), and the Freeway Complex Fire (11/2008)]. An analysis of fires with known start dates recorded in the County from 1940-2008 showed:

- Most fires occurred between June and November.[28]
- Approximately 60% of all fires were ignited from June through September, but accounted for only 26% of the area that burned.
- In contrast, 17% of all fires occurred in October/November and consumed 61% of the

[26] The Santa Ana Winds FAQ, Robert Fovell at: http://people.atmos.ucla.edu/fovell/ASother/mm5/SantaAna/santa_ana_faq.html

[27] Orange County Fire Authority, 2020. 2020 Unit Strategic Fire Plan. https://osfm.fire.ca.gov/media/tegprqoh/2020-orc-fire-plan.pdf accessed 6/14/21.

[28] Dudek. 2013. Wildland Fire Management Plan Volumes I-III. Prepared for the Nature Reserve of Orange County. 856 pp. and associated Appendices.

land burned between 1940 and 2008 (Dudek 2013).

- Although most ignitions take place between June-September, ignitions in October/November tend to be larger.

Fires need not be large to be damaging. While a small portion of the 30,304-acre Freeway Complex Fire in 2008 burned into the incorporated cities, it is in the cities that most of the structure damage occurred. For example, 10 single family residences and 50 apartment units were damaged or destroyed in the City of Anaheim.

Table 2. Fire History 1915-2020

Year	Fire Name	Acreage Burned	Year	Fire Name	Acreage Burned
1914	Unknown	16,754	1980	Owl	18,332
1915	Unknown	1,794	1980	Carbon Canyon	14,613
1917	Unknown	3,164	1980	Indian	28,938
1919	Unknown	2,225	1982	Gypsum	20,142
1920	Unknown	2,724	1985	Shell	1,635
1923	Unknown	2,150	1986	Bedford	13,956
1925	Unknown	8,650	1987	Bedford	4,070
1926	Unknown	9,934	1987	Silverado	6,018
1927	Unknown	1,837	1988	Ortega	2,471
1929	Unknown	1,085	1989	Ortega	8,170
1937	Unknown	4,916	1989	Assist 108	13,478
1943	Unknown	1,930	1990	Carbon Canyon	6,664
1943	Unknown	2,727	1990	Unknown	11,774
1947	Green River	53,079	1990	Yorba	7,864
1952	Indian Potrero	5,604	1993	Laguna Fire	14,337
1954	Weigand	4,956	1993	Ortega	21,010
1954	Jameson	7,881	1997	Baker	6,320
1955	Niger	1,606	1998	Santiago Canyon	7,760
1956	Cornwall	3,173	2002	Green	2,234
1958	Kelly	2,380	2002	Antonio	1,480
1958	Steward	69,444	2006	Sierra Peak	10,506
1959	Talega	3,187	2007	Santiago Fire	28,517
1961	Unknown	5,273	2007	Windy Ridge	2,036
1961	Outside Origin #2	5,019	2008	Freeway Complex	30,305*
1966	Indian	1,405	2017	Canyon Fire	2,662
1967	Paseo Grande	51,075	2017	Canyon Fire II	9217
1970	Nelson	3,586	2018	Aliso Fire	175
1975	Grundy	1,915	2018	Santiago Fire	155
1976	Pendleton	2,111	2018	Holy Fire	22,885
1977	Mine	4,956	2020	Blue Ridge Fire	13,964
1978	Soquel	5,428	2020	Silverado	12,466
1979	Paseo	3,644	2020	Bond Fire	6,686

Sources: Orange County Fire Authority Fire History database; Orange County Hazard Mitigation Plan and https://www.fire.ca.gov/incidents

* Origin of Freeway Complex Fire was in Riverside County; of the 30,305 acres burned, majority was in Orange County

Orange County Area Burned Perimeters, Categorized by Acreage

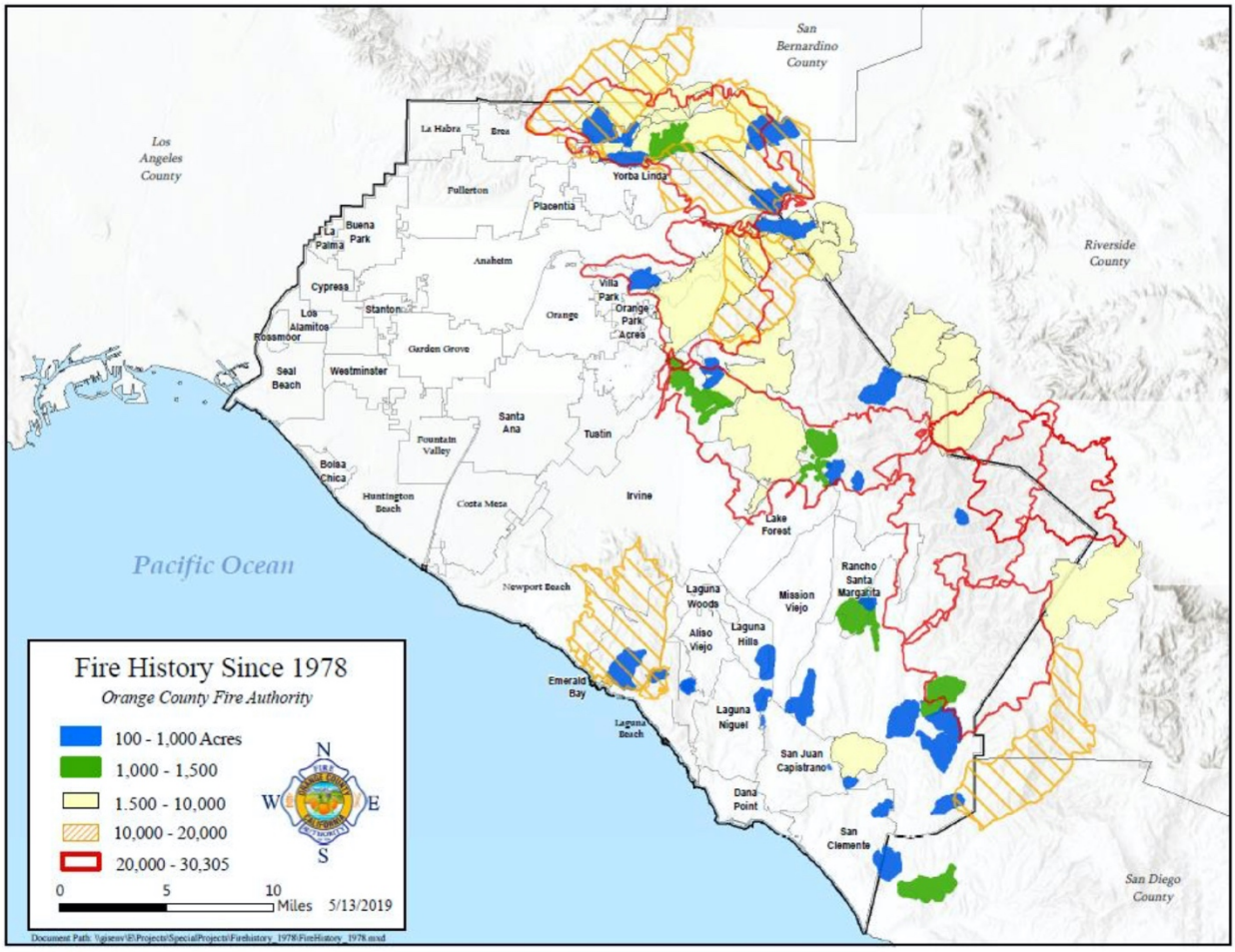


Figure 3. Fire by acreage since 1978. It is not unusual for Orange County's wildfires to have perimeters in excess of 10,000 acres, with some having perimeters of up to 30,000 acres.[29]

[29] Orange County Fire Authority, 2020. 2020 Unit Strategic Fire Plan. https://osfm.fire.ca.gov/media/tegprqoh/2020-orc-fire-plan.pdf accessed 6/14/21.

Orange County Wildfires: 1990 – 2000

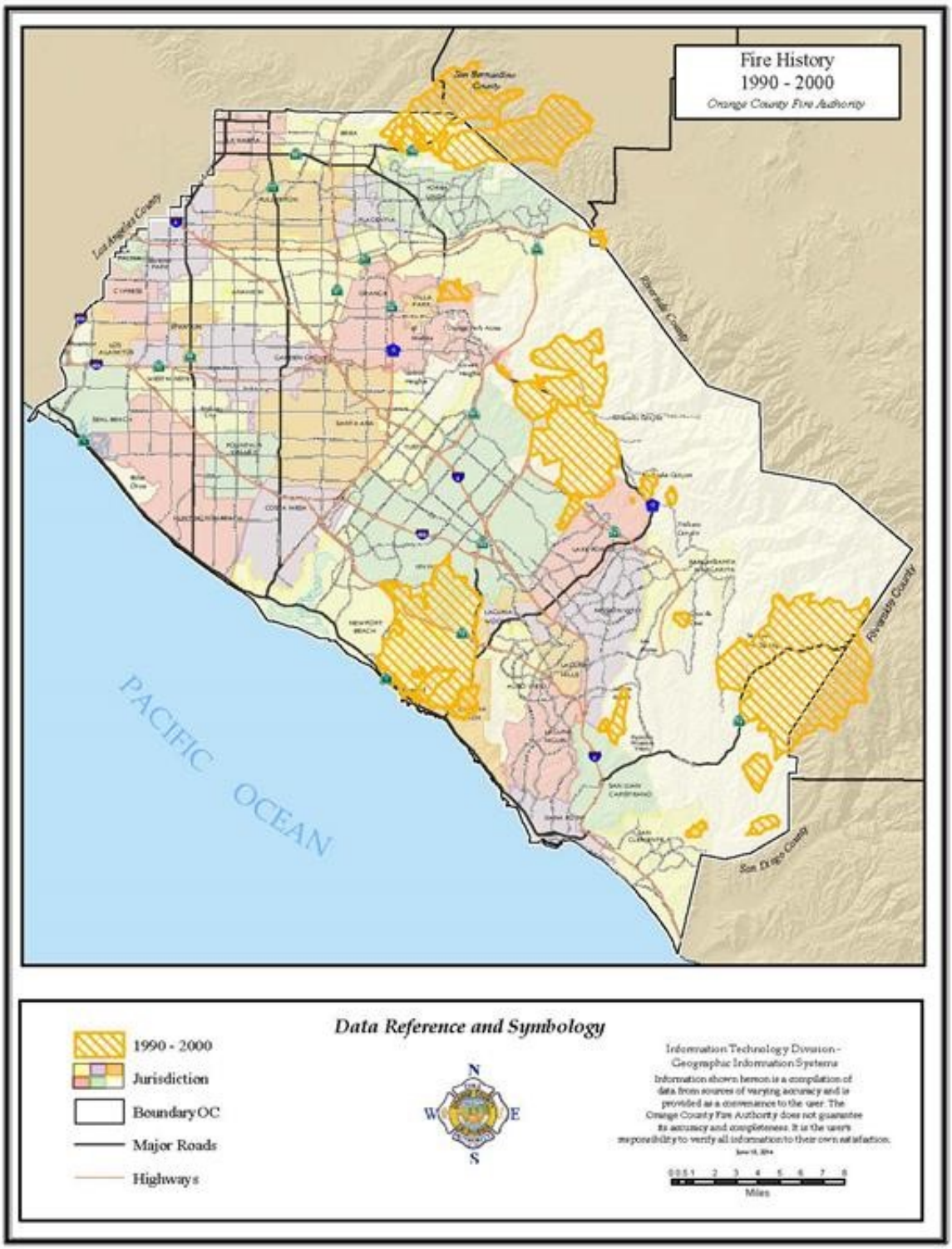


Figure 4. Area of wildfires burned in Orange County between 1990-2000.
Source: OCFA 2016 Unit Strategic Fire Plan

Orange County Wildfires: 2000 – 2016

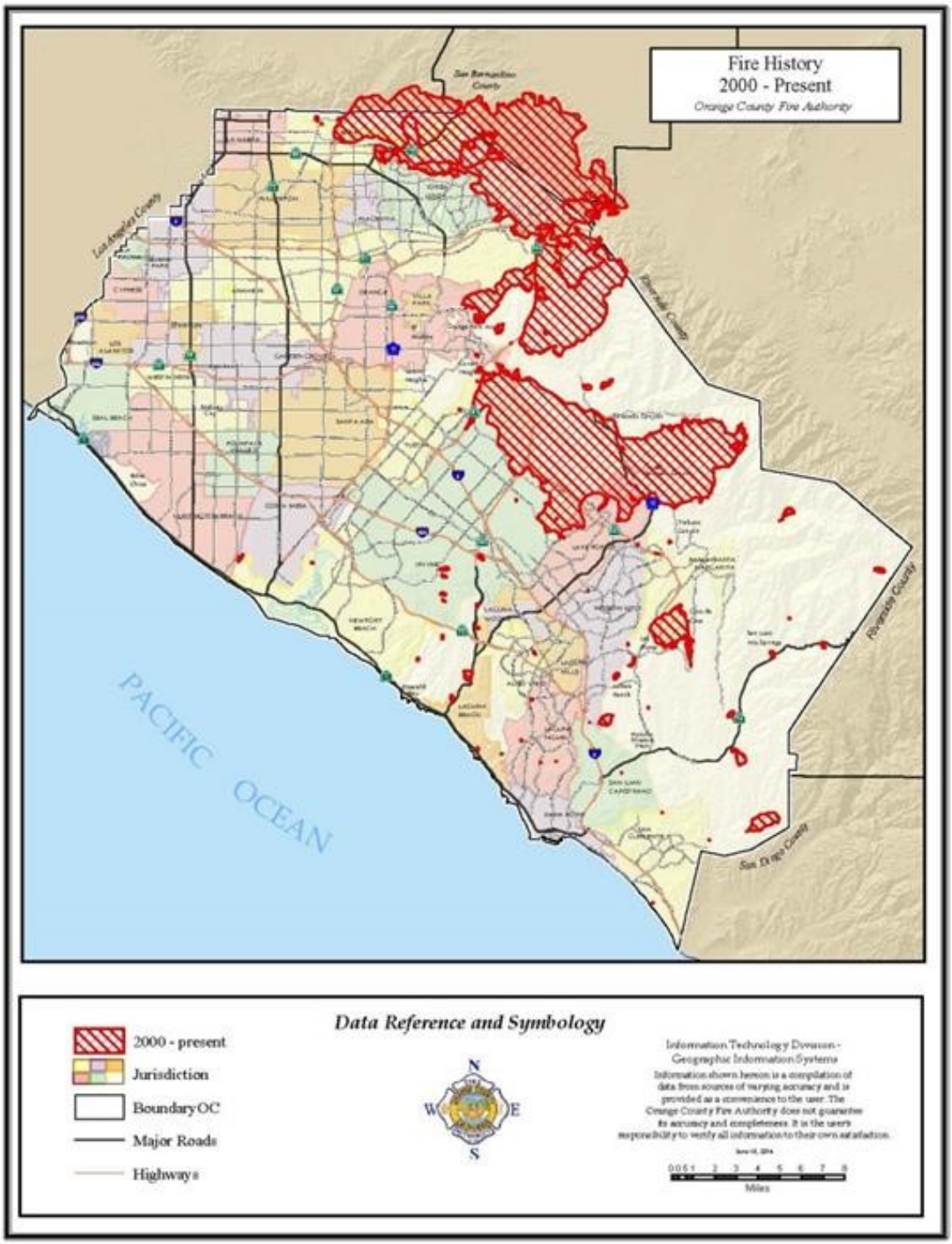


Figure 5. Area of Wildfires in Orange County between 2000 – 2016.
Source: OCFA 2016 Unit Strategic Fire Plan.

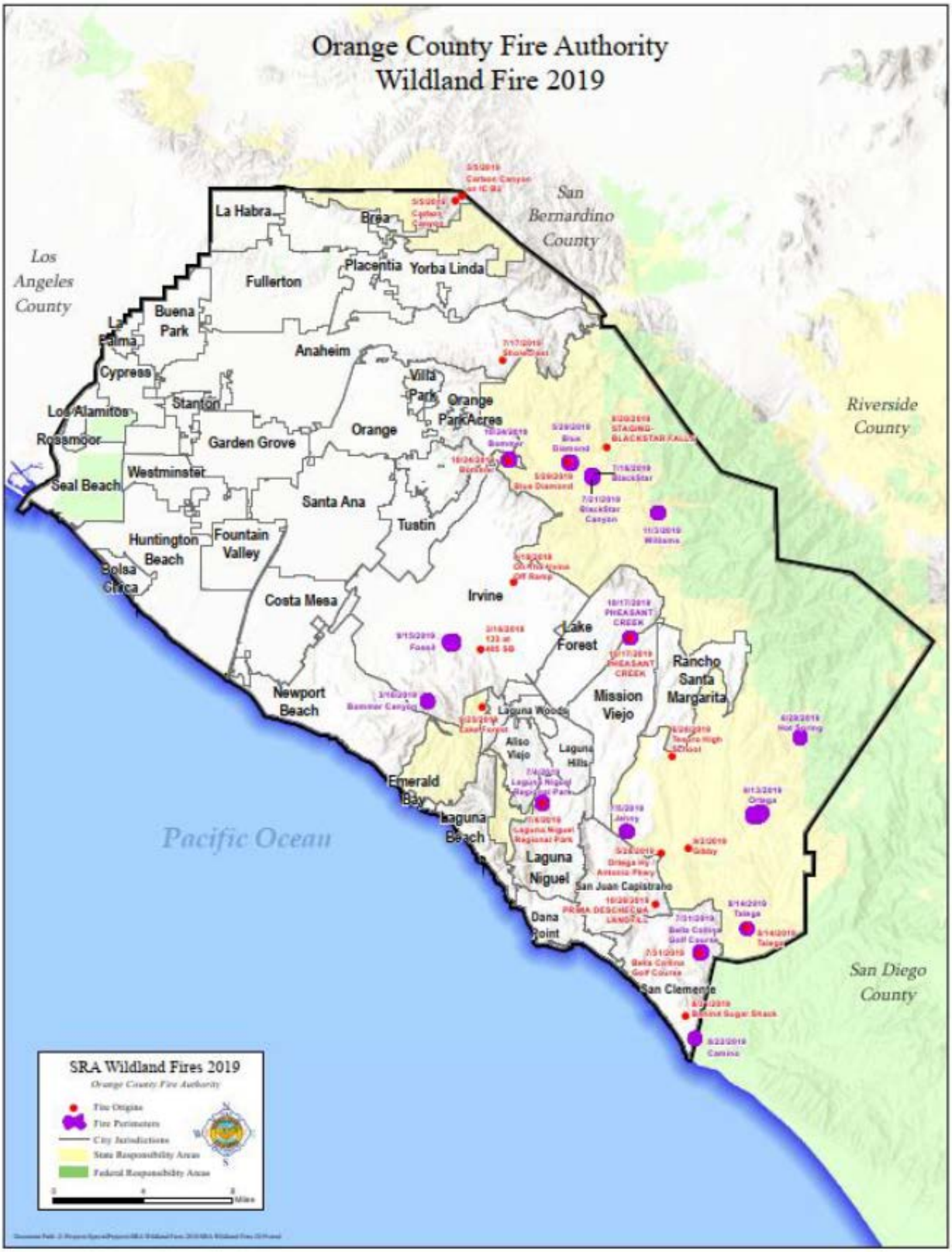


Figure 6. Vegetative Fires in 2019
Source: OCFA 2020 Unit Strategic Fire Plan.

2. Ignitions

While the vast majority of ignitions are classified as Unknown/Unidentified or Miscellaneous,[30] roadside ignitions are of particular concern in Orange County. Fire agencies, COAST member organizations, including the California Department of Transportation (Caltrans), the Transportation Corridor Agency (TCA), and the Orange County Transportation Authority (OCTA) are partnering to gather and analyze information on roadside ignitions, and to develop preventive measures, such as roadside hardening, to better address this issue. Over the past few years, as drought conditions persisted, the only definitive trend is that there are more fires, and a corresponding increase in the percentage of Unknown/Unidentified and Miscellaneous ignition causes.

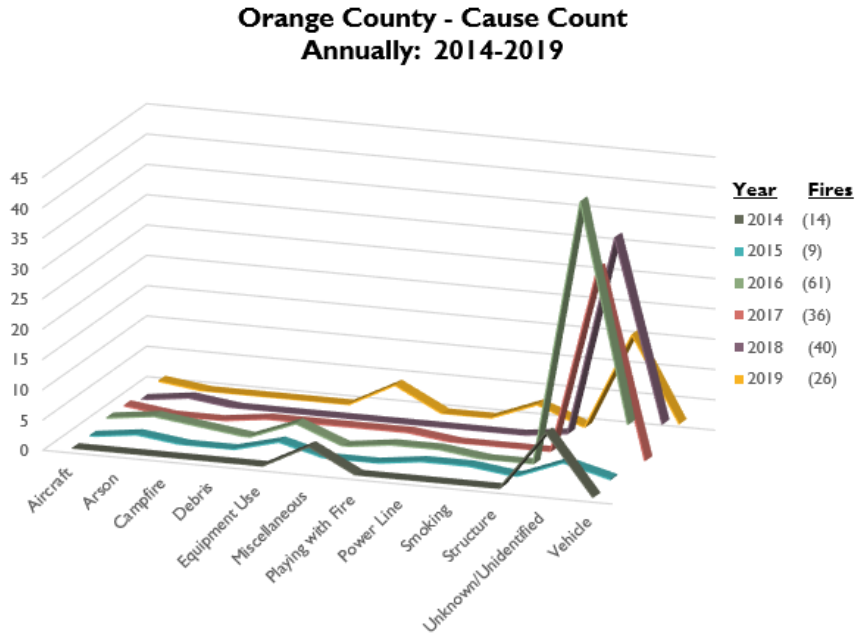


Figure 7: Ignition Cause Count 2014-2019

[30] Orange County Fire Authority, 2020. 2020 Unit Strategic Fire Plan. https://osfm.fire.ca.gov/media/tegprqoh/2020-orc-fire-plan.pdf accessed 6/14/21.ß

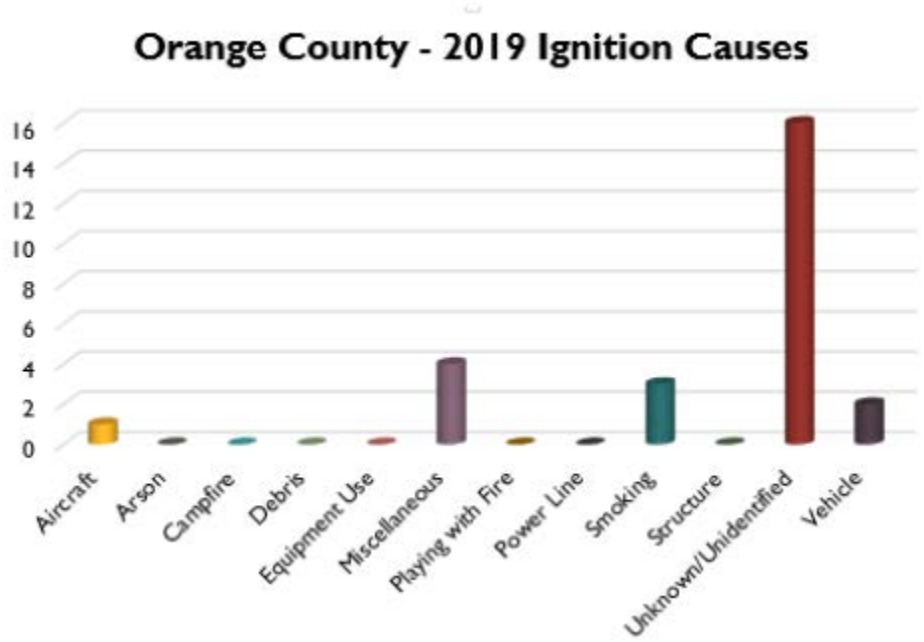


Figure 8: Causes of Ignitions in 2019 [31]

G. Habitat Types

As stated previously, the County is considered a biodiversity hot spot. The undeveloped areas of unincorporated Orange County support a wide variety of natural vegetation communities including coniferous forest, woodland, chaparral, scrub, grassland, riparian, wet meadows/marsh, and open water. It is no surprise that the vast majority of the area in the CWPP is included in one of three Natural Community Conservation Plans/Habitat Conservation Plans (NCCP/HCP), designed to protect sensitive habitats. More detail on these plans are provided in Section IVB later in this document.

According to the OCFA 2016 Unit Plan, approximately 60% of the wildland vegetation has experienced at least one catastrophic fire within the last decade. The OCFA 2020 Unit Plan demonstrates this through its maps and lists of significant fires. Even with this fire history, most wildland is burning at an interval that is compatible with its natural fire frequency. However, as drought conditions have worsened over the past few years, the vegetative fuels have become increasingly dry and more wildland fires are expected.

[31] OCFA 2020 Unit Strategic Plan

H. Protected Open Spaces and Roadside Rights-of-Ways[32]

Most protected lands in the CWPP area have a natural resources management component/obligation. The natural resources in these protected lands are both at risk from wildfire, and because of human ignitions of the wildland vegetation, pose a risk to other, adjacent values, such as residences in communities. It follows that wildland fire prevention is an important consideration in natural resource management decisions on all protected open spaces and rights-of-ways, regardless of land ownership or management status.

1. Public Lands

Public lands within, or adjacent to, Orange County's SRA lands include lands owned by the Federal government (e.g. Camp Pendleton Marine Base, Cleveland National Forest), state government (e.g. Chino Hills State Park, Crystal Cove State Park), County-owned lands (e.g., Whiting Wilderness Park, Laguna Coast Wilderness Park, or Irvine Ranch Open Space Park), and lands owned and managed by two regional transportation agencies, Orange County Transportation Authority (OCTA) and the Transportation Corridor Agency (TCA). The following sections provide an overview of existing open space landowners and managers in the Plan Area and identify the major land ownership of open space and parkland.

a. USDA Forest Service: Cleveland National Forest

Of the 424,709 acres of the Cleveland National Forest, 54,324 acres are within the CWPP boundary, and fall within the Trabuco Ranger District. All its land is located in eastern Orange County, and at higher elevations. Besides supporting a number of threatened, endangered, and sensitive species, and a number of plant species, these lands provide habitat linkages for several Orange County parks.

The fire hazard severity zones on federal lands were not mapped by CAL FIRE; however, using the same criteria as used in the State mapping project, it is likely the vast majority would not be categorized as very high fire hazard severity because structures are generally absent from the National Forest. However, the USFS states there are community protection concerns in the community of Silverado. The agency acknowledges it is a difficult location to fight wildland fire due to the lack of roads and fuelbreaks to provide firefighter access and defensible space.

Two communities (Rancho Carrillo and Rancho Capistrano) are located in and nearby Forest Service lands. Rancho Capistrano is located on the National Forest boundary and Rancho

[32] This section relied on information in the 2014 Orange County Transportation Authority Natural Community Conservation Plan/Habitat Conservation Plan, available at: http://www.octa.net/Measure-M/Environmental/Freeway-Mitigation/Conservation-Plan/

Carrillo is surrounded by the San Mateo Wilderness in the southwestern part of the Place. Several other private inholdings are also located within the wilderness or adjacent to the wilderness boundary. These communities are at risk from wildland fire and community protection projects are needed to reduce that threat.

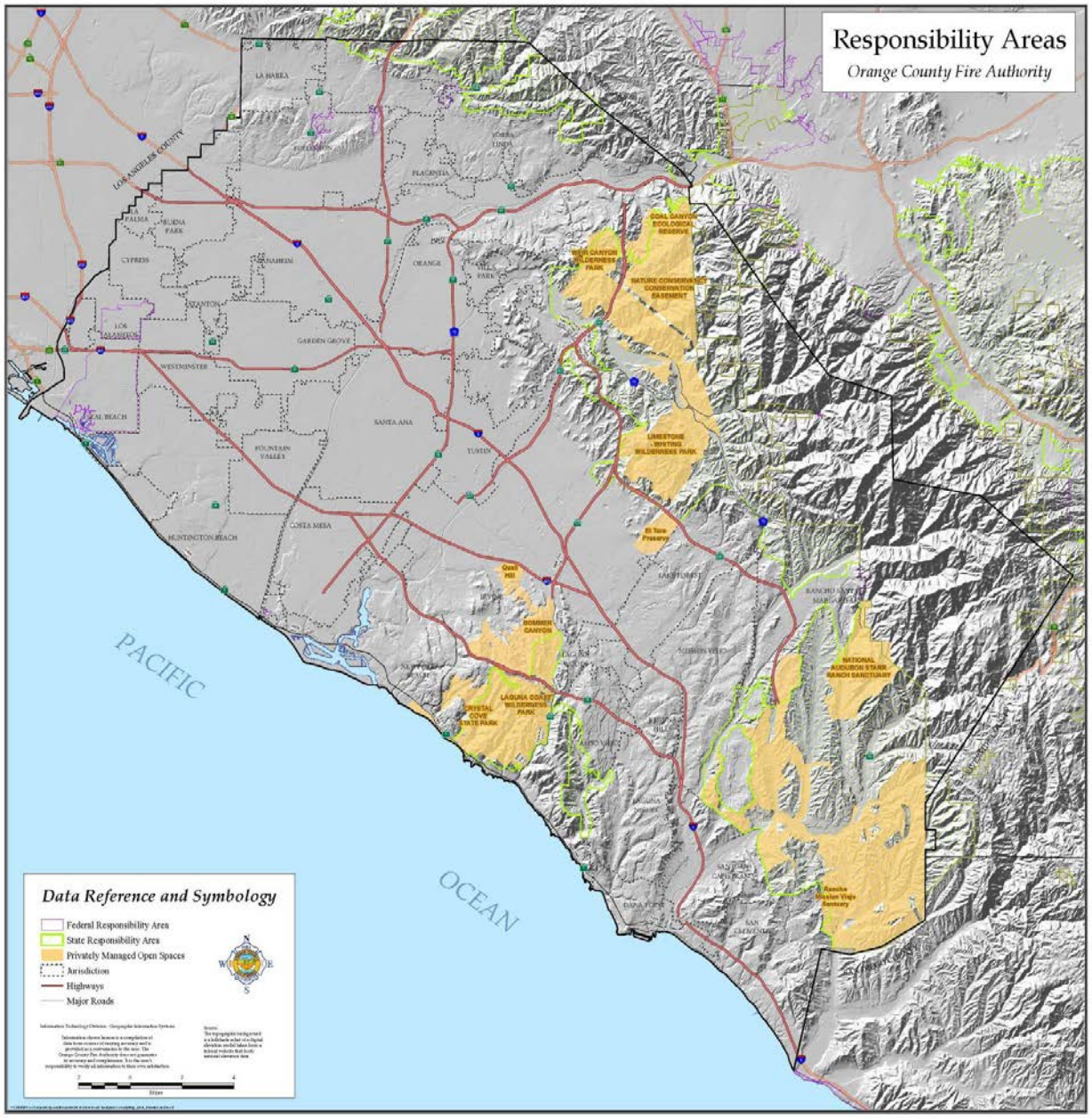


Figure 9. Responsibility Areas 2020.[33]

[33] From Orange County Fire Authority, 2020. 2020 Unit Strategic Fire Plan.

b. California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW) manages four properties within the CWPP boundary. None have areas mapped as VHFHSZ.

- Coal Canyon Ecological Reserve (901 acres within CWPP boundary)
- Laguna Laurel Ecological Reserve (79 acres within CWPP boundary)
- Trabuco Canyon (112 acres within CWPP boundary)
- Upper Newport Bay Nature Preserve (~1,000 acres within the CWPP boundary)

Coal Canyon Ecological Reserve is located in the northeastern portion of the CWPP area in the Santa Ana Mountains. It is known for its chaparral-dominated vegetation and last remaining stand of Tecate cypress in Orange County.

Laguna Laurel is located within the Laguna Coast Wilderness Park, in the City of Laguna Beach. This ecological reserve is part of the last remaining coastal canyon areas in southern California and is composed of coastal sage scrub communities with oak and sycamore woodlands.

The Trabuco Canyon Ecological Reserve is located in rural southeastern Orange County within the foothills of the Santa Ana Mountains. This property abuts OCTA Preserves. The vegetation on the site consists of extensive oak woodlands, chaparral, coastal sage scrub, grassland, and riparian areas. It also includes major ridgelines and riparian corridors of the Arroyo Trabuco/Trabuco Creek. This property provides a low elevation habitat linkage between the Southern Orange Subregion HCP and the Central Subregion NCCP/HCP to the north.
CDFW, along with Orange County Parks and the City of Newport Beach, is responsible for management of public space consisting of tidelands and adjacent upland areas in and around the Upper Newport Bay, specifically, the 752-acre Upper Newport Bay Ecological Reserve. The reserve is one of southern California's few remaining estuaries.

c. California Department of Parks and Recreation

The California Department of Parks and Recreation (State Parks) owns two state parks in the CWPP area. Portions of Chino Hills and Crystal Cove State Parks are in the SRA's Very High Fire Hazard Severity Zone (VHFSHZ)[34] and adjacent to areas that are or may be developed. For example, the area encompassed by the CWPP includes 2,791 acres in Crystal Cove State Park, most of which is mapped as a Very High Fire Hazard Severity Zone (VHFHSZ) as well as 6,782 acres in Chino Hills State Park.

Crystal Cove State Park is located off the Pacific Coast Highway, between Corona del Mar and Laguna Beach. The park consists of approximately 2,800 acres of coastline, wooded canyons, open bluffs, and offshore waters and supports a wide variety of sensitive, threatened, and endangered species. The entirety of the park was burned in the 1993 Laguna Fire.
Chino Hills State Park consists of 14,102 acres in the hills of Santa Ana Canyon, with portions of the grass-covered park found in Orange, Riverside, and San Bernardino Counties. The park serves as a critical link in the Puente-Chino Hills biological corridor. Three habitat linkages—Coal

[34] Fire Hazard Severity Zones are areas mapped by CAL FIRE and local jurisdictions that are significant fire hazards based on fuels, terrain, weather, and other relevant factors.

Canyon, Sonome Canyon, and Prado Basin—have been identified as important to the biological survival of the park.

d. California Department of Transportation (Caltrans)

Caltrans' transportation corridors and facilities, including state routes 73, 74 (Ortega Highway), 90, 91, 133, 142, 241, and 261 transverse a significant portion of the CWPP allowing considerable accessible to the public. With 240 road edge miles of exposure within the CWPP, Caltrans' facilities are at risk from fires. These public rights of ways contain valuable habitat and provide connectivity between open spaces.

e. Orange County Parks, Preserves, and Rights-of-Ways

Orange County Parks manages 22 parks covering nearly 60,000 acres of County-owned land, including roughly 32,000 acres of urban and wilderness parks, 7 miles of beaches and other coastal facilities, and 27,000 acres of open space lands. Of the land owned by Orange County Parks in the CWPP, 49,606 acres are within a VHFHSZ. The parks containing more than 100 acres that are within the CWPP boundary are listed below in Table 2 and shown on Figure 4.

Additionally, the County of Orange manages Fremont Canyon (110 acres within CWPP boundary), Modjeska Canyon and Tucker Wildlife Sanctuary (380 acres within CWPP boundary).

Table 3. Orange County Parks in CWPP (parks with more than 100 acres in the CWPP)

Park	**Acres in CWPP**
Aliso and Wood Canyons Wilderness Park	3,753
Brush Canyon	389
Carbon Canyon Regional Park	116
Featherly Regional Park	358
Irvine Ranch Open Space	20,120
Irvine Regional Park	495
Laguna Coast Wilderness Park	5,389
Limestone Canyon and Whiting Ranch Wilderness Park	4,892
Olinda Regional Park	162
O'Neill Regional Park	3,606
Peters Canyon Regional Park	340
Ronald W. Caspers Wilderness Park	7,617
Santiago Oaks Regional Park	1,269
Thomas F. Riley Wilderness Park	584
William R. Mason Regional Park	441

Source: GreenInfo's California Protected Areas Database at: http://www.greeninfo.org/products/park-data, OCTA NCCP/HCP 2016 at: http://www.octa.net/Measure-M/Environmental/Freeway-Mitigation/Conservation-Plan/

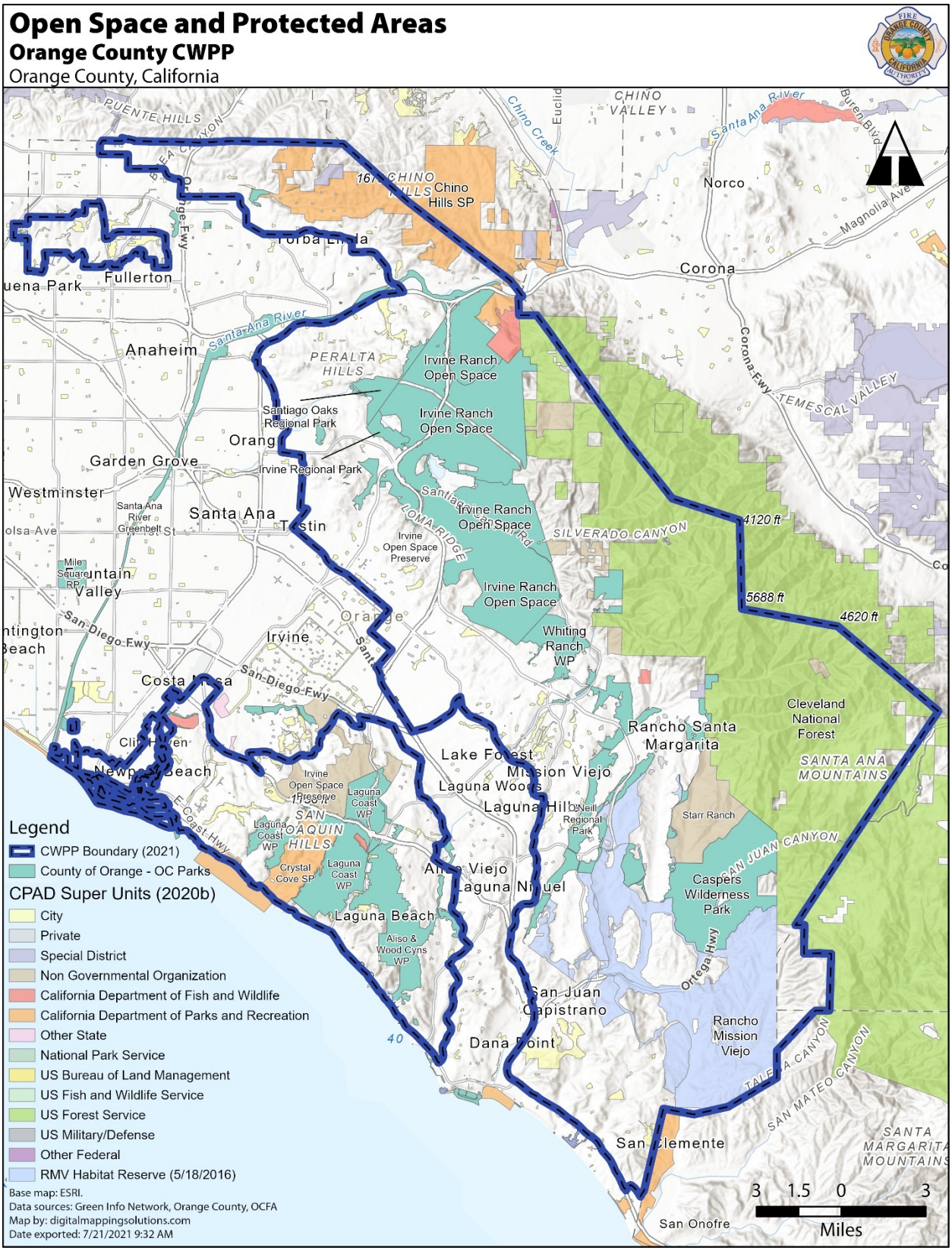


Figure 10. Open Space and Protected Areas in CWPP Boundary.
OCTA Preserves and Restoration Projects are displayed in Figure 11.

f. Orange County Transportation Authority

The Orange County Transportation Authority (OCTA) has acquired and protects approximately 1300 acres in Orange County through acquiring Preserves and developing restoration projects. The acquisition of Preserve lands is a primary component of OCTA's conservation strategy, which contributes to the existing regional network of protected areas within the County. Many Preserves adjoin protected open space. The Preserve in the Trabuco Canyon area has created a substantial block of conservation in an area that did not previously exist as protected open space. In addition, OCTA funds restoration throughout the County. The implementation of restoration projects provides greater flexibility for focused and directed conservation actions within particular locations and for habitats supporting Covered Species in OCTA's NCCP/HCP.

Figure 11. Orange County Transportation Authority Acquired Acquired Preserves and Restoration Projects Figure 5-1

Preserves and Restoration Projects[35]

g. Protected Lands within Incorporated Cities

Incorporated cities within the CWPP have smaller holdings within the CWPP boundary. For example, the City of Irvine has 930 acres or protected lands among 13 holdings. The City of Anaheim has two reserves: Deer Canyon Park reserve is a 130-acre protected area of environmentally sensitive habitat, with only one structure; and The Oak Canyon Nature Center, a 58-acre natural park nestled in the Anaheim Hills with a year-round stream and an Interpretive Center. Additionally, there are several city-owned parks that provide valuable habitat for sensitive and threatened and endangered species including, but not limited to, Buck Gully (in Newport Beach) and Bommer Canyon (Irvine).

2. Privately Owned and Managed Lands

Orange County is fortunate to contain significant privately owned and/or managed open space lands in, and near, the SRA. These include large properties, such as the Audubon Starr Ranch and Rancho Mission Viejo Land Trust as well as smaller preserves, such as the 29-acre Dana Point Preserve, which is managed by the Center for Natural Lands Management. All are important for natural resource protection, and all have concerns and opportunities to collaborate regarding wildland fire management.

Audubon Starr Ranch

a. Audubon Starr Ranch

This 6.25-square-mile (3,707 acres) Audubon Society sanctuary is located east of Rancho Santa Margarita and Coto de Caza. Access to the sanctuary headquarters is via Bell Canyon Road. The essentially undeveloped ranch lies in unincorporated Orange County and is bordered by the

[35] *Orange County Transportation Authority M2 Natural Community Conservation Plan/Habitat Conservation Plan. 2014*.

Cleveland National Forest on the north and east, the Ronald W. Caspers Regional Park on the south, and the developments of Dove Canyon and Coto de Caza on the west. Vegetation at the ranch is typical of lower elevation southern California: mosaics of grassland, oak woodland, riparian woodland, coastal sage scrub, and chaparral. The ranch is given a Very High Fire Hazard Severity rating on the Fire Hazard Severity Zones map. OCFA's 2016 Unit Strategic Fire Plan recommended removing flammable and drought-stressed vegetation along the main access road and in the critical locations and fuel breaks between homes and flammable vegetation. Since the 2017 CWPP was approved, Audubon Canyon Ranch completed a major fuel reduction project, including (in conjunction with OCFA) roadside treatments in 2020 and 2021. OCFA and Starr Ranch received funding from the State Coastal Conservancy for wildfire fuel reduction in the defensible space around the 12 headquarter buildings. The nearest OCFA fire stations are located at Coto de Caza (FS #40) and Trabuco Canyon (FS #18).

b. Center for Natural Lands Management

The Center for Natural Lands Management (CNLM) holds two preserves in the area of the CWPP. The Pacifica San Juan preserve consists of 42.8 acres split between a 33.2 acre and a 9.6 acre site in the City of San Juan Capistrano. CNLM holds a conservation easement as well as a long-term agreement to protect the imperiled species and their habitats on the preserve. The preserve is owned by third party. The Preserve was established as part of the 256.7 acre Pacifica San Juan development project located in the City of San Juan Capistrano. The 33.2 acre portion of the Preserve located within the approximately 1,000-acre Northwest Open Space, is comprised of a combination of privately and publicly owned open space land. A Habitat Mitigation and Monitoring Plan guides vegetation management. Upon completion of the restoration project, management of the Preserve will be taken over by CNLM. Due to the vulnerability of the species and habitats that exist on this preserve, it is not open to the public. However, public access for hiking, biking, and equestrian use is available adjacent to the Preserve on city-managed trails. The Dana Point Preserve, a 29.4 acre headlands promontory, is owned and managed by CNLM and was acquired to protect habitat for sensitive species, such as the Pacific pocket mouse and the coastal California gnatcatcher, associated with coastal sage scrub and bluff scrub habitats. The CNLM Dana Point Preserve is located adjacent to the City of Dana Point Nature Interpretive Center (NIC) and public access for hiking is available on the 1/2 mile trail along the edge of the Preserve.

c. Rancho Mission Viejo

Rancho Mission Viejo[36, 37] is a planned community occupying a small portion of a 23,000-acre property, also known as Rancho Mission Viejo, that also contains a habitat reserve and active cattle ranch in the unincorporated southern portion of Orange County. In approximately 20 years, 17,000 acres will be dedicated as a habitat reserve as the community is built out. Two of the Rancho Mission Viejo villages are complete, occupying a total of 1,580 acres, and 6,500 acres have been set aside as habitat reserve. The habitat reserve is closed to the public and is

[36] http://www.cityofrsm.org/DocumentCenter/Home/View/507
[37] http://www.cityofrsm.org/399/History

accessible to members through docent-led tours. Currently, ranching operations are conducted on the land that is not part of the villages or habitat reserve. The ranching land is essentially undeveloped with the exception of a roughly 25-acre "cow camp" that includes ranch worker housing, machine yards, corrals, and other infrastructure. The Habitat Reserve is a patchwork of properties with the bulk of the reserve lying east of San Clemente, but additional reserve lands are scattered around Ladera Ranch and Las Flores, and up toward Rancho Santa Margarita.[38]

The South County Habitat Conservation Plan (HCP) preserves 32,818 acres of south Orange County lands as the Southern Subregion Habitat Reserve. Included in these preserved acres are 20,868 acres of Rancho Mission Viejo lands and 11,950 acres owned by the County of Orange. The conserved Rancho Mission lands are called The Reserve at Rancho Mission Viejo. The Rancho Mission Viejo Land Trust is the steward of this preserve.

d. Trust for Public Land

The Trust for Public Land (TPL) owns and manages the 717-acre Baker Canyon. The property supports a variety of vegetation communities, including chaparral, nonnative grasslands, and riparian habitats and is managed primarily for the benefit of wildlife and habitats.

e. The Wildlands Conservancy

The Wildlands Conservancy and the San Bernardino Mountains Land Trust manage the Cleveland National Forest Wildlife Corridors (1,076 acres within CWPP boundary). Additionally, The Wildlands Conservancy owns more than 800 acres in the Mariposa Reserve, which is surrounded by the Cleveland National Forest.

3. Open Space Coordinating and Management Entities

In Orange County, two entities provide management and coordinating roles regarding natural resource management: the Natural Communities Coalition and the Irvine Ranch Conservancy. Both provide leadership on wildland fire protection and management as well as natural resource management.

a. Natural Communities Coalition

The Natural Communities Coalition (NCC), formerly known as Nature Reserve of Orange County (NROC), coordinates and supports management activities, monitoring and research with partners enrolled in The County of Orange Coastal/Central Subregion NCCP/HCP. The Reserve covers approximately 37,000 acres, and is located in two sections of the County, on the Coast (Coastal Subregion) and the other along the inland canyons (Central Subregion). Formed in 1989, signatories of the NCCP/HCP Implementing Agreement and Permit include many stakeholders, such as OC Parks, the County of Orange, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, Transportation Corridor Agencies, Irvine Ranch Water District,

[38] http://rmvreserve.org/about-us/maps/

UC Irvine, City of Newport Beach, City of Irvine, Irvine Company, and California State Parks. Lands in the Reserve are subject to the terms of the NCCP/HCP. As signatories, landowners are responsible for overseeing compliance with the provisions of the NCCP/HCP on their subject lands and for coordinating fire and utility infrastructure maintenance with NCC as part of their annual program of work.

b. Irvine Ranch Conservancy

The Irvine Ranch Conservancy is a non-profit, non-advocacy organization established in 2005 to ensure that the 50,000 acres of wildlands and parks on the historic Irvine Ranch are stewarded and enjoyed to the highest possible standards. To accomplish this mission, the Conservancy assists public landowners in the management of their open spaces (Irvine Ranch Conservancy 2011). The Conservancy currently manages more than 30,000 acres of habitat, including 20,000 acres donated to the County of Orange in 2010 by the Irvine Company (Table 2-3). The Conservancy actively collaborates with local fire agencies on fire prevention, and manages the OC Fire Watch Network, a program of trained volunteers deployed to deter and quickly report wildfires during high fire risk conditions. The lands managed by the Conservancy include at least 10 distinct open space management units— Fremont Canyon, Black Star Canyon, Weir Canyon, Gypsum Canyon, Limestone Canyon and Loma Ridge in the County of Orange; Bommer Canyon, Shady Canyon, and Quail Hill in the City of Irvine; and Buck Gully in the City of Newport Beach. All these units are within the Plan Area.

I. DELINEATION OF THE WILDLAND URBAN INTERFACE

1. Characteristics of the Wildland Urban Interface (WUI)

The WUI is the meeting point between wildland vegetation or fuels and structures. At this interface, the structure and vegetation are sufficiently close that a wildfire could spread to a structure or a structure fire could ignite vegetation. The proximity of vegetation and structures needed to spread fire varies with the vegetation (fuel) type, the siting of the structure, and the exterior characteristics (building material and design) of the structure itself. WUI is defined on a scale larger than one lot or neighborhood. The importance of spatial distribution of vegetation and structures in the WUI is discussed in more detail below.

In the past, the vast majority of wildfires occurred in remote locations and caused little damage to property or loss of human life. During the last 50 years, however, history is replete with examples of destructive fires in the WUI throughout California. Almost all of the wildfires within the CWPP boundary have been caused by humans, and are closer to developed areas. Because of the increased values that accompany structures and other improvements, most losses from wildfire occur in the WUI.

WUI areas are targeted for increased levels of fire prevention, preparedness, response, and recovery actions. Parcels in this designation are typically subject to more stringent regulations

regarding ignition-resistant construction, defensible space creation and maintenance, and heightened levels of education regarding fire prevention.

2. Types of Wildland Urban Interface (WUI)

Three types of WUI, each with its own demographic characteristic and land management problems, have been defined: (1) Classic Interface, (2) Intermix, and (3) Occluded Interface. The types and density of vegetation, and the size and spacing of homes and other structures vary widely in these different interfaces. The type of intermix is not easily categorized. Orange County contains both classic and intermix areas depending upon how the development tends to mix with wildland vegetation.

a. Classic Interface

By far the greatest number of people live in (and are currently moving into) what can be called the classic interface. This is the area of "urban sprawl" where homes, especially new subdivisions, press against the wildland. Fires starting in adjacent wildland areas can propagate a massive flame front during a wildfire, and numerous homes are put at risk by a single fire which sometimes overwhelms fire protection forces and water supplies.

b. Intermix

The intermix ranges from single homes or other buildings scattered throughout the wildland area to medium-sized subdivisions. Typical are summer homes, recreation homes, ranches, and farms in a wildland setting.

Usually these are isolated structures surrounded by large areas of vegetation-covered land. When a fire starts, the individual homes are very hard to protect because few fire agencies can provide a fire truck or two for each house that may be threatened in a major fire.

c. Occluded Interface

An occluded interface is characterized by isolated areas of wildland within an urban area. The same demographic trends that influence the classic interface affect this one. As cities grow together to make a super city, islands of undeveloped land are left behind. Sometimes, these are specifically set aside as natural parks. Again, they may be steep, difficult places that are unsuitable as building sites. Frequently they present a fire threat to adjacent homeowners.

3. Methods of Delineation

The federal HFRA enables communities to define their own WUI boundary. The WUI is defined within Orange County as those lands within SRA, plus all lands within a width of predicted ember cast from the SRA boundary. In addition, land within a likely containment line, should a fire originate in the SRA, is considered WUI. For the boundaries of this CWPP, wherever the political jurisdictions agree, all the WUI was included. Anaheim, Newport Beach, Fullerton, and

Brea are four incorporated cities that have WUI but do not fit the criteria above; regardless they have elected to be included in the CWPP.

OCFA staff drafted the boundaries where containment is likely to take place, then COAST members reviewed the maps and offered comments during the COAST meetings.

J. COMMUNITY BASE MAP

The community base map is an important component of the CWPP that serves to create a shared vision of the existing environments within the CWPP boundary (Figure 12). This map is required by the HFRA in order to obtain approval by cooperating federal and state agencies. The community base map provides baseline information from which the community can assess and make recommendations regarding protection and risk-reduction priorities. It also depicts features that orient the user to valuable resources at risk from wildfire, emergency response facilities, important infrastructure, and possible sources of wildfire hazard. Features depicted on the map include:

1. City and county boundaries
2. Land ownership
3. Fire station locations
4. Network of streets
5. Open spaces and parks
6. Nature preserves
7. State-determined high hazard areas

A draft of the community base map was presented at stakeholder meetings in the spring of 2016 and was refined, based on comments received during those meetings. The Cities of Fullerton and Brea were included in this Update, along with a wider area of potential ember cast. This enlarged area and revised boundary was presented at two COAST meetings (in March and May, 2021) and approved.

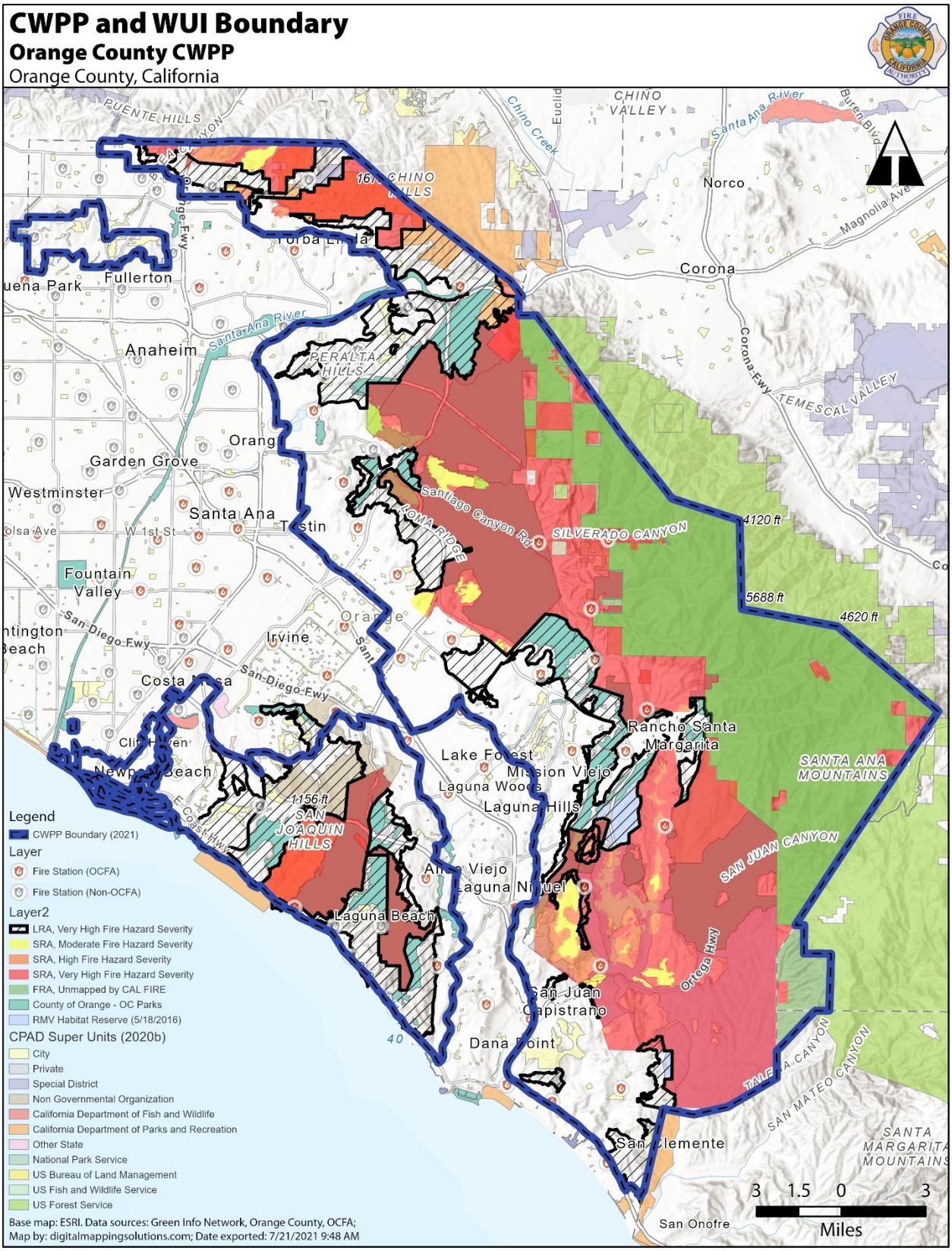


Figure 12. Community Base Map indicating CWPP boundary

SECTION II: DESCRIPTION OF FIRE AGENCIES WITHIN THE CWPP

The following fire agencies have fire response responsibility for portions of the area within the CWPP boundary. All these fire agencies have mutual aid agreements between them. Portions of 25 incorporated cities in the County are within the CWPP boundary. Some incorporated portions of these cities are included because of their proximity to SRA lands with a VHFHSZ rating. These lands are within the pre-determined zone where embers from a wildfire on SRA land could travel and ignite structures and other assets. Table 4 on page 77 lists each city within the CWPP boundary. Those portions of the cities served by OCFA are covered by the CWPP. Other cities who have their own fire departments can request to participate in the CWPP. These five cities are Anaheim, Brea, Fullerton, Laguna Beach, and Newport Beach.

A. ORANGE COUNTY FIRE AUTHORITY

Orange County Authority (OCFA) operates as a Joint Powers of Authority, and contracts with 23 of Orange County's 34 incorporated cities to provide a full spectrum of fire protection services. Additionally, OCFA is contracted by the County of Orange to protect its 16 unincorporated communities as well as Orange County Parks. OCFA protects over 1,984,758 residents from its 79 fire stations located throughout the County.[39] CAL FIRE also contracts with OCFA to protect Orange County's SRA lands, which include two California State Parks, plus portions of the Cleveland National Forest Trabuco Ranger District. OCFA serves 576 square miles, which includes over 172,000 acres of land in Federal and State Responsibility Areas. In terms of OCFA's SRA responsibilities, it's important to note that the geography extends beyond Orange County's borders, with OCFA being responsible for protecting designated adjacent SRA lands in both Riverside and San Diego counties.

1. Organization

OCFA is a special district governed by a Board of Directors that has 25 members, and OCFA has a governance structure that provides for more direct oversight by all participating agencies. Each city has a councilmember on the OCFA Board of Directors, along with two County Supervisors.[40] Member agencies are identified either as Structural Fire Fund (SF) members, or as Cash Contract Cities (CCC). SF members are those agencies where the portion of their property tax designated for fire protection is conveyed to OCFA to pay for services. CCC members pay for services on an agreed upon schedule. There are currently eight CCC members, and 15 SF members. Each member agency, regardless of type, has one voting member on the

[39] https://ocfa.org/AboutUs/PartnerCities.aspx Accessed 6/11/21.

[40] In 1980, the cities of Anaheim, Brea, Buena Park, Costa Mesa, Fountain Valley, Fullerton, Garden Grove, Huntington Beach, Laguna Beach, La Habra, Newport Beach, Orange, San Clemente, Santa Ana, Seal Beach, Stanton, and Westminster had their own municipal fire departments. Since then, Buena Park, San Clemente, Santa Ana, Seal Beach, Stanton, and Westminster joined the OCFD/OCFA.

Board of Directors, with the exception of the County of Orange, which has two members. Each OCFA Board member is appointed by, and from among, the current elected members of their agency's governing body.

- The Fire Authority is managed by the Fire Chief (currently Brian Fennessy), and is divided into five Departments, each led by an Assistant Chief. The five departments are:*Business Services Department*
- *Support Services Department*
- *Community Risk Reduction Department*
- *Operations Department*
- *Organizational Planning*

While all departments play a vital role in implementing its annual Unit Strategic Fire Plan, three sections are directly relevant to the development of the CWPP. Two of the sections are within the Community Risk Reduction Department (CRRD) and the other section is within the Operations Department.

Within CRRD, Wildland Pre-Fire Management is responsible for overseeing all aspects of fuel modification. The Wildland Pre-Fire Management Section systematically evaluates risk, fuels mitigation, and road conditions. This section also has responsibility for education about vegetation management and ignition-resistant construction, plus ongoing collaboration with partner organizations, land owners and communities. In addition, this section measures fuel moisture monthly to help evaluate its potential as a wildfire risk factor. Measurements are taken at two locations, Black Star Canyon, in the northern part of the County, and in the southern portion of the County, near CA 74 (Ortega Highway). In 2020 a Deputy Fire Marshal for Pre-Fire Management was added to support and lead the OCFA Pre-Fire Management section. This civilian position provides longevity, oversight, direction, and support of the pre-fire management mission at OCFA.

The Planning and Development Section adopts and enforces codes and ordinances relative to fire and life safety issues, reviews plans and conducts inspections of construction projects, coordinates annual life safety inspections of existing commercial buildings, provides long range analysis of impacts on resources associated with future land use and development, and investigates all fires. The section also ensures architectural development plans and proposals meet the fire protection requirements for buildings and developments. This department is managed by the Community Risk Reduction Assistant Chief/Fire Marshal**.**

The Operations Department is comprised of seven divisions and eleven battalions. OCFA's 79 fire stations (5-10 stations per Battalion) provide regional emergency prevention and response to all hazards, including fires, medical aids, rescues, hazardous materials incidents, wildland fire, aircraft fire and rescue services to John Wayne Airport, and other miscellaneous emergencies.[41]

[41] https://www.ocfa.org/AboutUs/Departments/Operations.aspx Accessed 6/14/21.

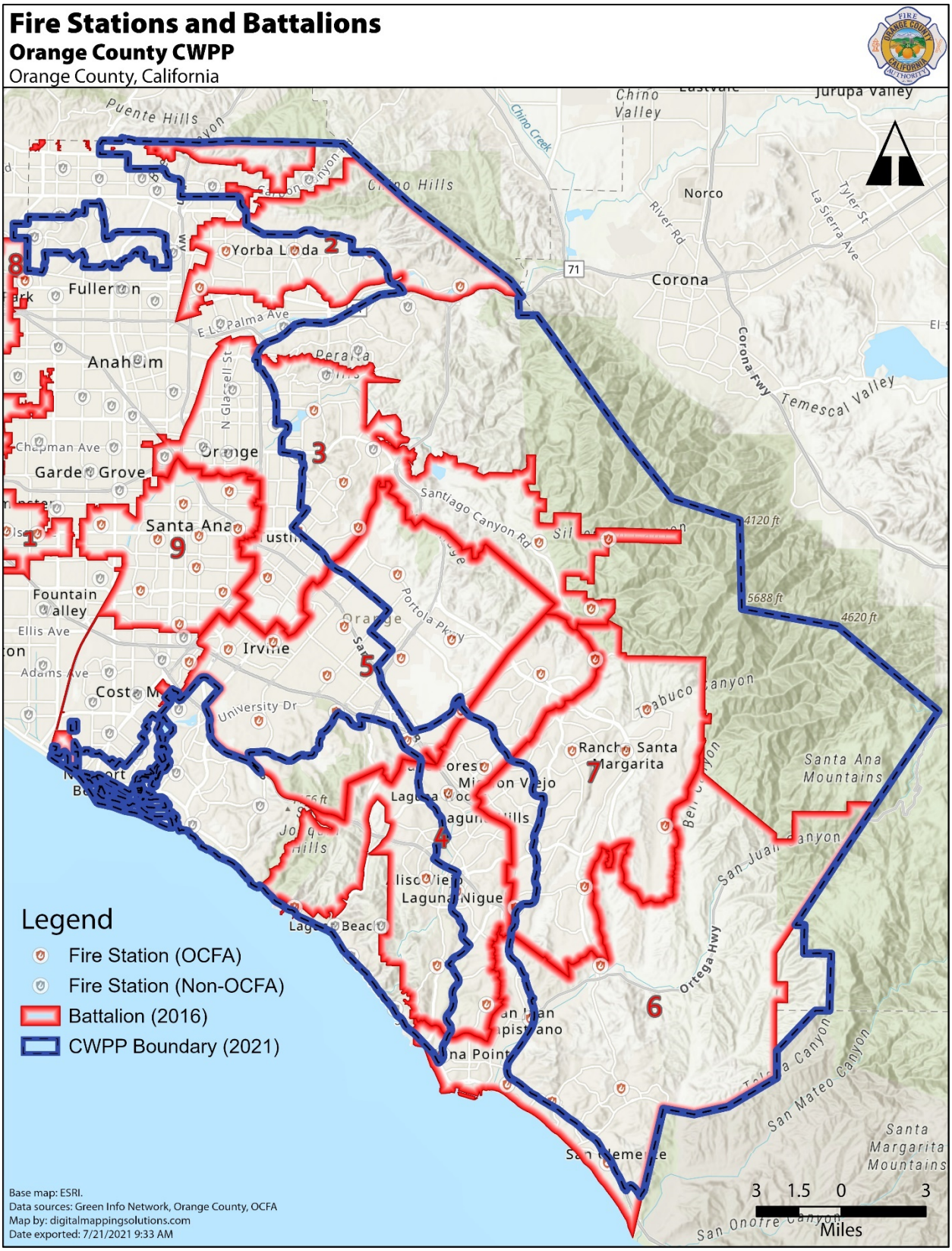


Figure 13. Location of Fire Stations in Orange County and OCFA Battalions

OCFA has developed and continues to make progress on collaborative programs, including: 1) establishing partnerships such as COAST, which has facilitated completion and management of the CWPP; 2) collecting information for fire hazard mapping; 3) planning and implementing vegetation management projects 4) conducting annual defensible space inspections on private and commercial properties in the SRA and in the Very High and High Fire Severity Zones; 5) working to re-establish a prescribed fire program; and 6) maintaining roads and trails.

OCFA has several specialty sections and programs that support wildland fire safety:

- *Permanent Hand Crew & Heavy Equipment*
- *Community Education and Outreach*
- *Geographic Information System (GIS)*
- *Wildland Pre-Fire Management*
- *Investigations Section*
- *Juvenile Arson Intervention Program*

2. 2020 Unit Strategic Fire Plan

The 2020 Unit Strategic Fire Plan (USFP) identifies and prioritizes both pre-fire and post-fire management strategies and tactics.[42] Many projects in the initial 2017 CWPP were based on recommendations in the 2016 USFP, which continues to be updated on an annual basis. In fact, the development of this CWPP was funded as a result of a recommendation in the 2016 USFP.

Except for a few minor updates and amendments, the USFP remained virtually the same since 2010. However, in 2017, with the completion of Orange County's CWPP and OCFA's FDOP, the USFP is now designed to be used in conjunction with both documents, which are included as addendums. Additionally, invasive pests, and the resulting tree mortality and fire danger remain a major concern in Orang e County and will continue to play a bigger role in the future.

[42] OCFA 2020 Strategic Unit Fire Plan.

Also, on the OCFA radar, fire risks associated with the increasing unhoused population in Orange County will need to be factored into the USFP if the current trend continues.

Among recent key accomplishments are:

- **Addition of a Deputy Fire Marshal (DFM) for Pre-Fire Management (2020) –** A DFM was hired in 2020 to support and lead the OCFA Pre-Fire Management section. This civilian position will provide longevity, oversight, direction, and support of the pre-fire management mission at OCFA.
- **Addition of an OCFA Hand Crew (2019) -** Crew 2 was added in March of 2019 to support fire suppression and vegetation management projects throughout Orange County. Crew 2 consists of a superintendent, assistant superintendent, and 15 hand crew firefighters.
- **CALFIRE Grants (2018-2020) –** OCFA was awarded two CALFIRE grants totaling approximately $5.5 million. One grant focuses on addressing the invasive shot-hole borers that have killed thousands of trees in OC and threaten to kill hundreds of thousands more. The second grant provides funding for the installation of remote wildfire cameras and meteorological sensors throughout Orange County.
- **Community Risk Reduction/Special Operations Pre-Fire Management Fuel Reduction Projects (2018-2020) -** OCFA crews and equipment conducted large vegetation management projects in Mason Park, Crystal Cove State Park, and Irvine Regional Park, as well as road grading and brushing operations throughout the County.
- **Remote Wildfire Detection Equipment (2017 - 2020)** - In addition to the two remote detection cameras previously installed on Orange County Sheriff's (OCSD) towers that can only be viewed by OCFA and the OCSD, the program has been recently expanded through a partnership with COAST, SCE, SDG&E, the University of California, and the County of Orange. Two new point-tilt-zoom (PTZ) cameras with meteorological sensors have been installed on additional towers secured by SCE and SDG&E to expand remote detection across Orange County and to provide visibility to the public.
- **Satellite Notifications** - Since October 2017, OCFA has been beta-testing NOAA's satellite-based "Hot Spot" notifications which have yielded encouraging results to date.
- **Drone/NVDI Mapping (2017-2020)** –Through grant funding, OCFA purchased a drone equipped with a normalized difference vegetation index (NVDI) camera and mapping software that will be used to map and monitor vegetation health and trends, especially in hard-to-access areas. Additionally, in 2020 the Pre-Fire Management section gained a drone with a thermal camera that will be used to detect and map hot spots on vegetation fires.
- **Demonstration Garden (2017- 2018)** - A new grant-funded exhibit is under construction at the Aliso Woods Canyon Visitors Center, which is located adjacent to the SRA, which will showcase both a Native Plant Demonstration Garden and a structure built with 7A construction features, to illustrate to residents how to help protect their homes and community from wildfire.
- **CWPP Completion (2017-2020)** - Funded by an SRA grant, OCFA, and other Orange County stakeholders, Orange County now has a CWPP with a prioritized project library for SRA/SRA-threat areas. The CWPP will be updated to include additional stakeholders in 2020/2021.
- **Fire Danger Operating Plan Completion (FDOP) (2017)** – OCFA's FDOP has scientifically-based data thresholds that now trigger leveled resource and communication responses, plus the FDOP also denotes who is responsible for each component.
- **OCFA GIS Wildland App Implementatio**n **(2016 - 2020**) - OCFA's Community Risk Reduction/Special Operations Pre-Fire Management section and Information Technology

Departments collaboratively developed a multi-faceted tablet application used for wildland and field inspections and is now being expanded to support suppression operations.

- **Tree Mortality (2015 - 2020)** - OCFA continues to assist with removal, monitoring and treatment efforts for trees affected by drought and invasive pests.
- **Grant Completions (2016-2018) -** In 2018, OCFA completed a grant for additional clearance in Emerald Bay, and another grant for East Orange County Canyons to improve emergency road clearance. Additionally, in 2017, OCFA finished installing grant-funded canyon area signage that features interchangeable prevention messages.
- **Emerging Tree Pests of Orange County Task Force Formation (2015-2020)** - OCFA continues to facilitate the coordinated effort in Orange County to deal with the growing issue of invasive pests (i.e. gold spotted oak borer, polyphagous and Kuroshio shot hole borers, etc.) that present a fire hazard and environmental concerns.
- **Additional RAWS Station (2015 – 2016, 2020)** - In cooperation with SDG&E, a third RAWS station in coastal Southern Orange County was installed in 2016 and now feeds data that will enable better decision making. In 2020, OCFA plans to install an additional RAWS at Chino Hills State Park at San Juan Hill.
- **New Third Weather Zone for Orange County (2015)** - This new NWS weather zone for Orange County is an important decision-making tool for resource deployments, facility closures, and activity restrictions.
- **Fully Staffed & Reconfigured OCFA Community Risk Reduction/Special Operations Pre-Fire Management Section (2015 - 2020) –** Since 2015, OCFA Community Risk Reduction/Special Operations Pre-Fire Management section has been comprised of three sub-sections which includes Wildland Resource Planning, Community Wildfire Mitigation, and Crews & Heavy Equipment, to help ensure Gray Book obligations are fulfilled and to better serve the community.
- **Acquisition of Additional Mechanized Equipment (2014 – 2020) -** A masticator, mower, chipper and an all-terrain skid steer tractor were purchased to improve efficiencies for vegetation management and roads projects. In 2019, OCFA purchased a second skid steer and mini skid steer. And in 2020, OCFA purchased an additional D6 bulldozer.
- **Adoption of MOU for OCFA and OC Parks (2014**) - This is an important step for fuels mitigation and training.
- **Formation of COAST (2013)** - A consortium of key organizations who have a vested interest in wildfire prevention and planning in Orange County, as well as the ability to influence policy and ensure progress continues.

Pre-Fire Management Tactics: OCFA continues to use its WUI pre-plan process including all high risk areas throughout County on a standard template. This set of pre-plans provide a regional approach to response.

OCFA presently implements an aggressive wildfire suppression strategy on all undeveloped lands without an approved Fire Management Plan. The OCFA can incorporate and recognize Fire Management Plans from other Agencies and land ownerships. These fire management plans are described in more detail in Section IVB of this document.

3. Stations and Equipment

OCFA is headquartered in Irvine, California at the Regional Fire Operations Training Center (RFOTC), and has 79 fire stations, all of which are equipped with wildland firefighting capabilities, including 22 with specialized wildland apparatus. Additional OCFA capabilities include:

- *Emergency Command Center*
- *Crews & Equipment*
- *Air Operations with 2 helicopters with water dropping and night vision capabilities, allowing for night operations and 24-hour coverage.*
-

Equipment includes:

- Battalion Chief: 35
- Division Chiefs: 7
- Type 1 *Engines (Front Line): 67 (All with wildland capabilities, including Paramedic Engines)*
- *Type 2 Engines: 1*
- *Type 3 Engines: 13*
- *Type 6 Engines with CAFS capabilities (12)*
- *Type I Relief Engines 28*
- *Type II Bulldozers: 2*
- *Type II Helicopters: 4*
- *Haz Mat: 2*
- *Heavy Rescue: 1*
- *Truck Companies: 15*
- *Paramedic Vans: 8*

4. Cities Served by OCFA within the CWPP Area

Fire protection within several Cities are provided by OCFA. OCFA has established a regional approach to response. Each city has one or two fire stations within their boundaries, and can be served by stations outside their boundaries, resulting in a regional benefit and level of protection. Those portions of the following cities that are located served by OCFA and are within the CWPP boundary are covered by this CWPP.

a. Aliso Viejo

The eastern half of Aliso Viejo is within the CWPP boundary (approximately 45% of the city). OCFA provides fire protection services for the city. It operates one fire station that is staffed with five firefighters including two paramedics who provide emergency services to the community 24/7.

b. Dana Point

The northwest corner and a small area bordering San Juan Capistrano in Dana Point are within the CWPP boundary (approximately 9% of the city). The city is served by OCFA operating from two stations.

c. Irvine

Portions of southern and eastern Irvine are within the CWPP boundary (approximately 35% of the city is within the CWPP boundary). OCFA provides fire protection services for the city and operates ten fire stations there.

d. Laguna Niguel

Much of eastern Laguna Nigel is within the CWPP boundary (approximately 23% of the city is in the CWPP boundary). OCFA provides fire protection services there and operates three fire stations in the city.

e. Laguna Woods and Laguna Hills

Portions of eastern Laguna Woods are within the CWPP boundary (approximately 26% of the city is in the CWPP boundary). OCFA provides fire protection services for the city. It operates one fire station in Laguna Woods and one in the adjacent community of Laguna Hills that also serves Laguna Woods. A small portion of Laguna Hills (2% of the city) is within the CWPP boundary.

f. Lake Forest

The northeastern part of Lake Forest is within the CWPP boundary (approximately 35% of the city). OCFA provides fire protection services for the city. OCFA operates from three fire stations in the city.

g. Mission Viejo

The eastern edge of Mission Viejo is within the CWPP boundary (approximately 17% of the city). OCFA provides fire protection services for the city. OCFA operates from one station in the city.

h. Rancho Santa Margarita

Nearly all (approximately 95%) of Rancho Santa Margarita is within the CWPP boundary. OCFA provides fire protection services for the city. OCFA operates from one station in the city plus there are two nearby fire stations.

i. San Clemente

The northern 75% of San Clemente is within the CWPP boundary. Pursuant to a joint powers agreement, OCFA provides fire protection services for the City of San Clemente. OCFA operates three fire stations in the city.

j. San Juan Capistrano

The eastern half of San Juan Capistrano is within the CWPP boundary. OCFA provides fire protection services for the city. OCFA operates from one station in the city.

k. Tustin

The northeastern part of Tustin is within the CWPP boundary (approximately 9% of the city). OCFA provides fire protection services for the city. OCFA operates from three stations in the city.

l. Villa Park

The northern 75% of San Clemente is within the CWPP boundary. Pursuant to a joint powers agreement, OCFA provides fire protection services for the City of San Clemente. OCFA operates three fire stations in the city. A small portion of the eastern side of Villa Park is in the CWPP area (.2 acres), comprising .02% of its land. The fire station serving Villa Park is located just outside the City's boundaries.

m. Yorba Linda

Much of the eastern portion of Yorba Linda (58% of the city) is within the CWPP boundary. OCFA provides fire protection services for the city. OCFA operates from two stations in the city.

B. CAL FIRE

The California Department of Forestry and Fire Protection (CAL FIRE) is responsible for wildland fire protection within State Responsibility Areas (SRA). In most cases, SRA is protected directly by CAL FIRE, however, in Orange County, SRA fire protection is provided by OCFA as county under contract with CAL FIRE. These are known as "Contract Counties." CAL FIRE provides funding to the Contract Counties for wildland fire protection services including wages for suppression crews, lookouts, maintenance of firefighting facilities, fire prevention assistants, Pre-Fire Management positions, dispatch, special repairs, and administrative services. The department's budget also provides for infrastructure improvements, and expanded firefighting needs when fires grow beyond initial attack.

Contract Counties are responsible for providing initial response to fires in SRA. When a wildland fire escapes this initial attack, CAL FIRE responds to assist the county. CAL FIRE continues to provide other services to Contract Counties including urban forestry grants, support during earthquakes, floods, and other disasters, and the services of California State Fire Marshal.

Under various agreements such as, the California Master Mutual Aid Agreement, CAL FIRE assists other fire departments within the State when Department resources are available, regardless of the type of disaster. In turn, CAL FIRE can access the local government fire departments through the same agreement for assistance in wildland fire suppression.

C. ANAHEIM FIRE AND RESCUE

Approximately 25% of the City of Anaheim is within the CWPP boundary; this is the foothill/mountain area at the east end of the city. The Anaheim Fire and Rescue provides fire protection for the city and operates 11 fire stations staffed by 270 trained fire professionals.[43] Anaheim Fire and Rescue consists of three divisions: Community Risk Reduction, Operations and Support Services.

a. Community Risk Reduction Division

The Community Risk Reduction Division operates under the direction of the Fire Marshal, and consists of four principle sections Fire/Life Safety, Hazardous Materials, Community Engagement and Administration.

The Fire/Life Safety Section of the Community Risk Reduction Division provides a number of services to the community, including fire safety inspections, fire/building code plan reviews for new construction and fire protection systems. The section also coordinates the Knox-Box program, private hydrant-testing program, public records requests of all documents related to fire department inspection activities and responds to citizen complaints. Other services include regulation of trade shows and outdoor assemblies, as well as issuing permits for pyrotechnic displays, tents and other types of one-time events requiring review by the California Fire Code.

[43] Data on Anaheim from the City's website at http://www.anaheim.net/665/Administration, Accessed 6/14/21.

This section also coordinates a fire mitigation program consisting of the weed abatement program, brush clearance inspections and fuel modification plan review for the Anaheim, Wildland Urban Interface Area and Very High Fire Hazard Severity Zone (VHFHSZ). These include currently developing a Fire Adapted Community approach for areas that fall into the WUI and VHFHSZ (including participating in this CWPP), currently designating areas within the WUI and VHFHSZ as Firewise Communities, and adding a Home Safety Visit to the Ready, Set, Go program.

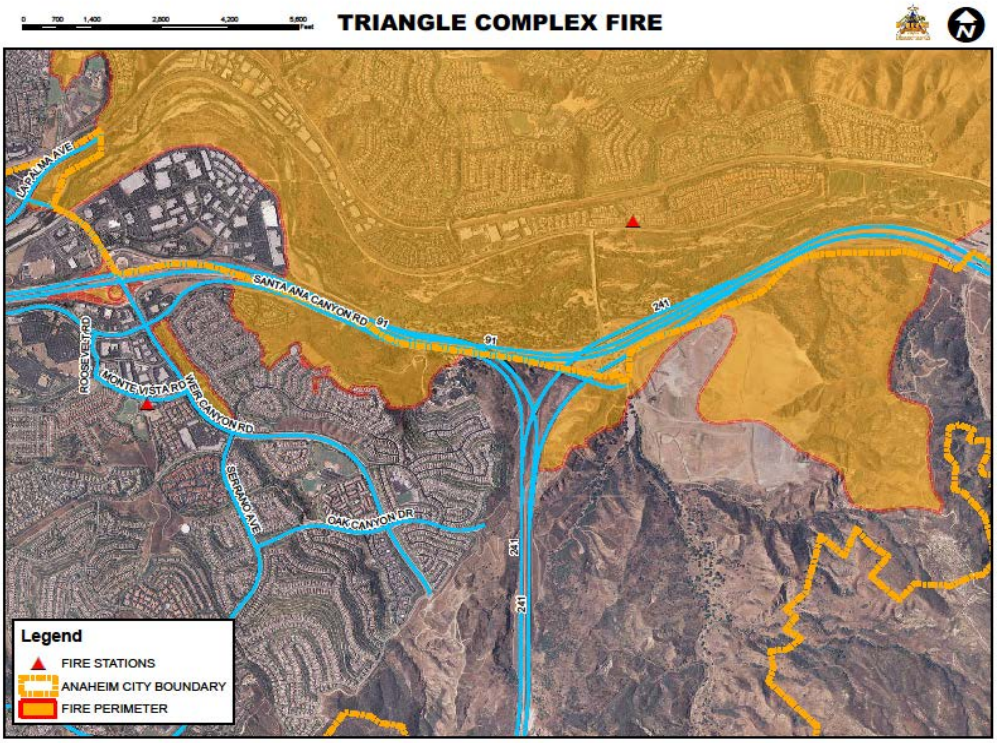
The Anaheim Fire and Rescue currently maintains a demonstration garden and scale house located at Fire Station 10, to educate residents regarding fire resistive plants and structural features. In addition, residents who live in the WUI can schedule a FREE one-on-one Wildfire Risk Assessment consultation with an Inspector to identify potential wildfire threats surrounding their home. Anaheim Fire and Rescue is currently collaborating with the City of Anaheim Parks Department in mitigating brush hazards in city parks and open spaces that are within the WUI areas. This includes contracts with the Orange County Conservation Corps conducting mechanical brush abatement and the use of goats for environmentally friendly maintenance and the eradication of invasive plant species.

b. Operations Division

The Operations Division is the largest division in the Anaheim Fire & Rescue and is focused on the provision of emergency services. Under the direction of the Operation's Deputy Chief, the Division employs 8 Battalion Chiefs, approximately 200 Suppression Personnel, Emergency Medical Services (EMS) Coordinator, an EMS nurse Educator, and a senior secretary. Field Operations handles approximately 40,000 emergency incidents a year to include fire, rescue, medical aid, and other calls for service. Operation Division manages all major emergency responses and staffs 10 engines and 6 truck companies in 11 Fire Stations. The purchase of Wildland Fire Apparatus addresses the City's wildland urban interface threat. This includes five Type-3, two Type-6, and one Type-2 OES fire apparatus currently in service. The training and safety section is also managed by the Operations Division, as well as the Type 3 Wildland Interface engines. All firefighters are trained and equipped to the minimum National Wildfire Coordinating Group (NWCG) standards in S-130 and S-190. In addition, all firefighters undergo annual RT-130 Refresher training.

Freeway Complex Fire

The Fire Investigation Section is responsible for investigating fires of suspicious origin, fires involving fatalities, and those that result in large dollar loss. All Fire Investigators are to be trained to NWCG FI-210, Wildland Fire Origin and Cause Determination, beginning 2017 and all Investigators are members of the California Conference of Arson Investigators and International Association of Arson Investigators.



c. Support Services Division

The Emergency Management and Preparedness Section within the Support Services Division is responsible for the management and oversight of the City of Anaheim's Emergency Operations Center, Disaster Preparedness, Grants, Homeland Security, Hazard Mitigation Plan, the Community Emergency Response Team (CERT) Volunteer Program and Radio Amateur Civil Emergency Services (RACES) Volunteer Program, including providing representation to the Orange County Intelligence Assessment Center. This section ensures that city employees and residents are as prepared as possible for disasters. This is accomplished by*:*

- Maintaining the City's Hazard Mitigation Plan
- Maintaining the City's Emergency Operations Plan
- Providing employee and citizen education in preparedness
- Training employees in disaster response, management, and recovery

The City has a robust Hazard Mitigation Plan. This and other city policies and programs aimed at reducing fire hazard in the city are described in more detail later in this CWPP, in Section VE.

D. Brea Fire Department

The City of Brea Fire Department operates 4 fire stations, staffed by 54 trained fire professionals.[44] The primary mission of the Brea Fire Services Department is the delivery of life safety services and has the appropriate level of funding for fire personnel, staff, and equipment to be able to maintain a four to six minute response time.[45] The Department provides 24-hour emergency response to a wide variety of critical situations, including fires, explosions, hazardous materials incidents, medical emergencies, accidents, and miscellaneous public assistance requests. In addition, the department operates a very active Fire Prevention and Emergency Preparedness Program, which provides for fire inspections, hazardous process permitting, fire code enforcement, public education, and business emergency planning in accordance with California Code of Regulations.

The Fire Department command staff is comprised of three Battalion Chiefs, three Division Chiefs, a Deputy Chief, and a Fire Chief who serve the municipalities of Brea and Fullerton. The Suppression Division uses a 56-hour work week. Personnel work 24-hour shifts in a three-platoon rotation. Firefighters participate in the required annual RT-130 training which includes communications groups, hose line construction, fire shelter deployment, structure triaging, WUI firefighting decision making, radio operations, FIRESCOPE/NWCG/Cal-Fire updates, ICS and air operations review. Additionally, Captains are responsible for their own crew day-to-day jurisdiction preplanning, off-road driving, fuel mitigation and routine WUI tool maintenance.

The City of Brea has an active Emergency Preparedness Program coordinated by a professional emergency manager. Public programs available range from those provided upon the request of an organization or group to the more structured Brea CERT classes offered periodically. The five key elements of the City's Emergency Preparedness Program are:

- Development and maintenance of the City's Emergency Response Plan;
- Development and maintenance of the City's Emergency Operations Center (EOC);
- Coordination of preparedness, training and exercises for city staff to be sure they are ready to respond to any emergency;
- Public education and outreach to the residents and businesses of Brea; and
- Fund recovery following disasters.

The Brea Fire Department has an internal equipment committee that identifies equipment needs, researches new equipment and tools, and makes recommendations for purchase. This applies to everything from small equipment to the purchase of new fire engines. The apparatus and equipment in the Brea Fire Department are generally of three types:

[44] Data source – City of Brea Fire Department website https://www.ci.brea.ca.us/297/Our-Department accessed 5/18/21.w

[45] Source: General Plan Annual Progress Report for 2019

- Engines and ladder trucks, including: Engine 1, 2012 Pierce; Engine 3, 2003 KME; Truck 1, 2006 Pierce Tiller; Pierce Brush Engine Type III; Attack Unit 4, 1997 E-One; Station 1 Reserve Engine, E-One; Station 2 Reserve Engine, E-One;
- Miscellaneous equipment; and
- Staff cars and light trucks including: Battalion 1, 1999 Chevrolet Suburban; Utility Truck, 2002 Ford F-550; and Battalion Chief Reserve Vehicle, 1990 Chevrolet Suburban.

The City of Brea Fire Department implements the Weed Abatement Enforcement Program and the Very High Fire Hazard Areas code requirements for new residential construction. The Department sends an annual mailer to over 3,000 homes located in the Very High Fire Hazard Areas. This mailer reminds and educates homeowners to be diligent in their weed abatement and clearance of hazards on their property. The Fire Department conducted more than 1,885 fire inspections in 2019.[46]

E. Fullerton Fire Department

The City of Fullerton has 6 fire stations located throughout the city.[47] The primary mission of the Fullerton Fire Department is to provide a range of programs designed to protect the lives and property of the inhabitants of the City of Fullerton from the adverse effects of fires, sudden medical emergencies or exposure to dangerous conditions created by either man or nature. The department has 3 divisions:

- Administration is responsible for the overall coordination and direction of the department. Command staff includes the Fire Chief, 2 Deputy Chiefs (administration/ Fire Marshal and operations, and a Division Chief (logistics).
- Operations/Training is responsible for providing continuous service for fire control and suppression, rescue and medical aid and emergency response for controlling hazardous materials incidents. Operations/Training is also responsible for providing: state and federally mandated training, ongoing continuing education related to hazardous materials, Emergency Medical Technician (EMT) and paramedic recertification. Additionally, the training function includes updating personnel in new technologies and methodologies to ensure preparedness for the broad range of situations to which the fire department responds. Under the direction of the Operation's Deputy Chief, the division currently employs 3 Battalion Chiefs, 63 Suppression Personnel, Emergency Medical Services (EMS) Coordinator, Emergency Manager. The Emergency Manager oversees the City's disaster preparedness plan, emergency operations center, hazard mitigation plan, Community Emergency Response Team (CERT) and Radio Amateur Civil Emergency Services (RACES) Volunteer Program.

[46] Source: General Plan Annual Progress Report for 2019. Memorandum to City Council form City Manager March 3, 2020. https://www.ci.brea.ca.us/DocumentCenter/View/10202/Final-General-Plan-Annual-Report-2019 accessed 5/10/21.

[47] Source: https://www.cityoffullerton.com/gov/departments/fire/about_us/fire_station_locations.asp Accessed 5/10/21.

- The Fire Prevention Division conducts ongoing inspection for the purpose of life safety, reduction in property loss, weed and rubbish abatement, hazardous materials, underground storage tanks, and the enforcement of federal, state, and local fire regulations.

Equipment includes five Type 1 engines (Frontline) and one ladder truck (Frontline). One Type 3 engine (Frontline), one SWAT medic van, and a mobile emergency operation center. Reserve equipment includes four Type 1 engine with wildland capabilities.

F. LAGUNA BEACH FIRE DEPARTMENT

Over 90% of Laguna Beach is within the CWPP boundary. The Laguna Beach Fire Department provides fire protection for the city and operates from four fire stations.[48] The Department has an approximately $9.5 million budget and has forty full-time employees, one part-time employee, and up to fifteen reserve volunteer firefighters. The non-OCFA department has seven engines and one wildland engine.

Laguna Beach Fire Department has an extensive program to meet the challenges of protecting the WUI in their district, including a vegetation management program.

G. NEWPORT BEACH FIRE DEPARTMENT

The Department's 150 full-time employees and 200 seasonal employees provide 24-hour protection and response to the City's residents and visitors. The fire department has four divisions, with Operations being the largest. The City is served by eight fire engines (one at each

[48] Data on Laguna Beach from the City's website at http://www.lagunabeachcity.net/

fire station), two aerial ladder trucks (one on each side of the City), and three Paramedic Rescue Ambulances.

Life Safety Services Division provides a full range of services encompassing community education and preparedness, emergency planning, life safety code enforcement, fire inspections, vegetation management, and plan check services of new and tenant improvement construction projects. Life Safety Services is focused on the prevention of the loss of life and property, and damage to the environment through education, enforcement, and preparedness.

Life Safety Services provides inspection services to all residential properties within the city's wildland interface areas. All Special Fire Protection Areas are inspected annually by one of the Life Safety Services Specialists to insure compliance. The City of Newport Beach Municipal Code contains several building code requirements that only apply to structures built adjacent to Special Fire Protection.

Photo credit: Mike Novak Photography

G. ORANGE CITY FIRE DEPARTMENT

The eastern hill area of the City of Orange (approximately 22% of the city) is within the CWPP boundary. Orange City Fire Department provides emergency services to a population of approximately 140,000 people spread out among a coverage area of 27 square miles. Orange City Fire operates with an annual budget of approximately $30 million[49]. The Department is separated into two different sections, Services and Operations.

[49] Data on Orange from the City's website at http://www.cityoforange.org/

The Department operates from eight fire stations equipped with seven Engine Companies, two Truck Companies, four Rescue Ambulances, and one Battalion Chief per platoon. In 2014, the Orange County Fire Authority generously donated a surplus 1992 Ford Type III Engine to the City of Orange. The rig was equipped, and all personnel were trained just in time for the 2014 fire season. Orange Engine 307 has served the City of Orange for three active seasons now. Orange anticipates approval for a new Type III engine for Fiscal Year 2017-18 to augment its Type III program.

The Services Section of the department is composed of the Fire Prevention Division, equipped with three Fire Safety Specialists, one Plan Examiner, and two Hazardous Materials Safety Specialists. The Services Section also includes Fire Investigation, the Administration Division, and the Emergency Preparedness Division.

I. USDA FOREST SERVICE

This agency focuses on protection and management of natural resources on its land. Because of this focus, wildland fire management is its primary mission, in contrast to the all-hazards responsibility of other fire departments. The role of the federal land managing agencies in the wildland /urban interface is reducing fuel hazards on the lands they administer; cooperating in prevention and education programs; providing technical and financial assistance; and developing agreements, partnerships and relationships with property owners, local protection agencies, states, and other stakeholders in wildland/urban interface areas. These relationships focus on activities before a fire occurs, which render structures and communities safer and better able to survive a fire occurrence.

SECTION III: COLLABORATION

Implementing projects to reduce wildfire risk can occur only if the community at risk and the agencies responsible for land use planning and fire response are fully involved in the planning and implementation process. Together, the people and entities at risk and those responsible for managing and responding to that risk are called the stakeholders in the plan. It is the goal of OCFA to collaborate with as many stakeholders in the delineated WUI as possible to reduce the fire risk.

Completion and implementation of the 2021 Update to the Orange County CWPP requires the continued collaboration of local, state, and federal agency representatives, and other interested parties, such as individual property owners, and special interest groups. Orange County has a rich history of collaboration of emergency response agencies, land managers, other agencies or special interest groups such as local firesafe councils, homeowner associations, and individual property owners potentially effected by a wildfire. The more diverse the stakeholders involved in the various stages the more resilient the community. Individual roles may be large or small, on-going or focused on one area.

Collaboration by many agencies, entities, and stakeholders, including the public, serves to reinforce existing bonds and forge new ones. Collaboration on fire protection programs, activities, and projects regularly takes place between residents, volunteers, HOAs cities, unincorporated communities, the four Fire Safe Councils, and COAST. Developing, drafting and completing the county-wide CWPP required engagement of these same entities. Ongoing dialogues and interactions, take place within OCFA, and externally, with residents, cities and communities throughout the County, local fire safe councils, HOA's, other fire agencies, COAST members, and the public.

During the 2021 Update, each of these groups were asked to become involved again by:

- Providing local knowledge of hazards, current wildfire mitigation practices
- Proposing projects, or actions to mitigate wildfire damage and participate in prioritization of those projects
- Participating in future online surveys about projects and priorities
- Reviewing and providing comments on the draft CWPP

Orange County benefits from COAST, an interagency organization, that was formed in 2013 to facilitate a more comprehensive, and effective approach to addressing wildfire issues in Orange County. COAST members include large open space land owners and managers, city, county, state and federal government organizations, utilities, road agencies, fire agencies, as well as others, all who have a vested interest in preventing wildfire ignitions and limiting the associated losses. Member organizations have the ability to influence policy and ensure progress is made.

COAST has been instrumental in helping to champion and develop the CWPP, which resulted in the recently awarded an SRA Fire Prevention Fee grant funding to help complete the

project. This group meets every other month to discuss items of mutual interest and benefit. The 2021 Update of the CWPP has been the focus of COAST meetings and has been instrumental in helping determine the base map, delineation of the WUI, what values are at highest risk, projects and action plans. The Cities of Brea and Fullerton are new participants in COAST.

County Organizations

- Orange County Parks (OC Parks)
- Orange County Communications
- County of Orange
- Orange County Sheriff Department Emergency Management
- Orange County Transportation Authority

State Organizations

- California Department of Fish & Wildlife, South Coast Region
- California State Parks (Chino Hills & Crystal Cove State Parks)
- California Department of Forestry and Fire Protection (CAL FIRE)
- California Department of Transportation (Caltrans)

Federal Agencies

- U.S. Forest Service
- U.S. Fish & Wildlife Service
- National Oceanic and Atmospheric Administration (NOAA)
- Department of Defense Marine base Camp Pendleton

Fire Agencies

- Anaheim Fire and Rescue
- Fullerton Brea Fire
- Laguna Beach Fire
- Newport Beach Fire
- Orange County Fire Authority
- Orange City Fire

Transportation Agencies

- Transportation Corridor Agency (TCA)

Utilities

- Southern California Edison (SCE)
- San Diego Gas & Electric (SDG&E)
- Irvine Ranch Water District (IRWD)
- Metropolitan Water District (MWD)

Private Land Managers

- Audubon Starr Ranch
- Irvine Ranch Conservancy (IRC)
- Natural Communities Coalition (formerly NROC)
- Rancho Mission Viejo Land Trust (RMV)
- Reserve at Rancho Mission Viejo
- The Wildlands Conservancy

Universities

- University of California, Irvine

Additionally, homeowner associations located in the WUI were contacted to solicit input in the CWPP. The following associations agreed to participate in the CWPP:

- Santiago Estates
- Dove Canyon
- Coto de Caza Master
- Coto de Caza Village
- Emerald Bay HOA
- Foothill Ranch
- Portola Hills
- Aliso Viejo Community Association
- Ladera Ranch Maintenance Corporation
- Monarch Point
- Santa Margarita Landscape and Recreation Corporation

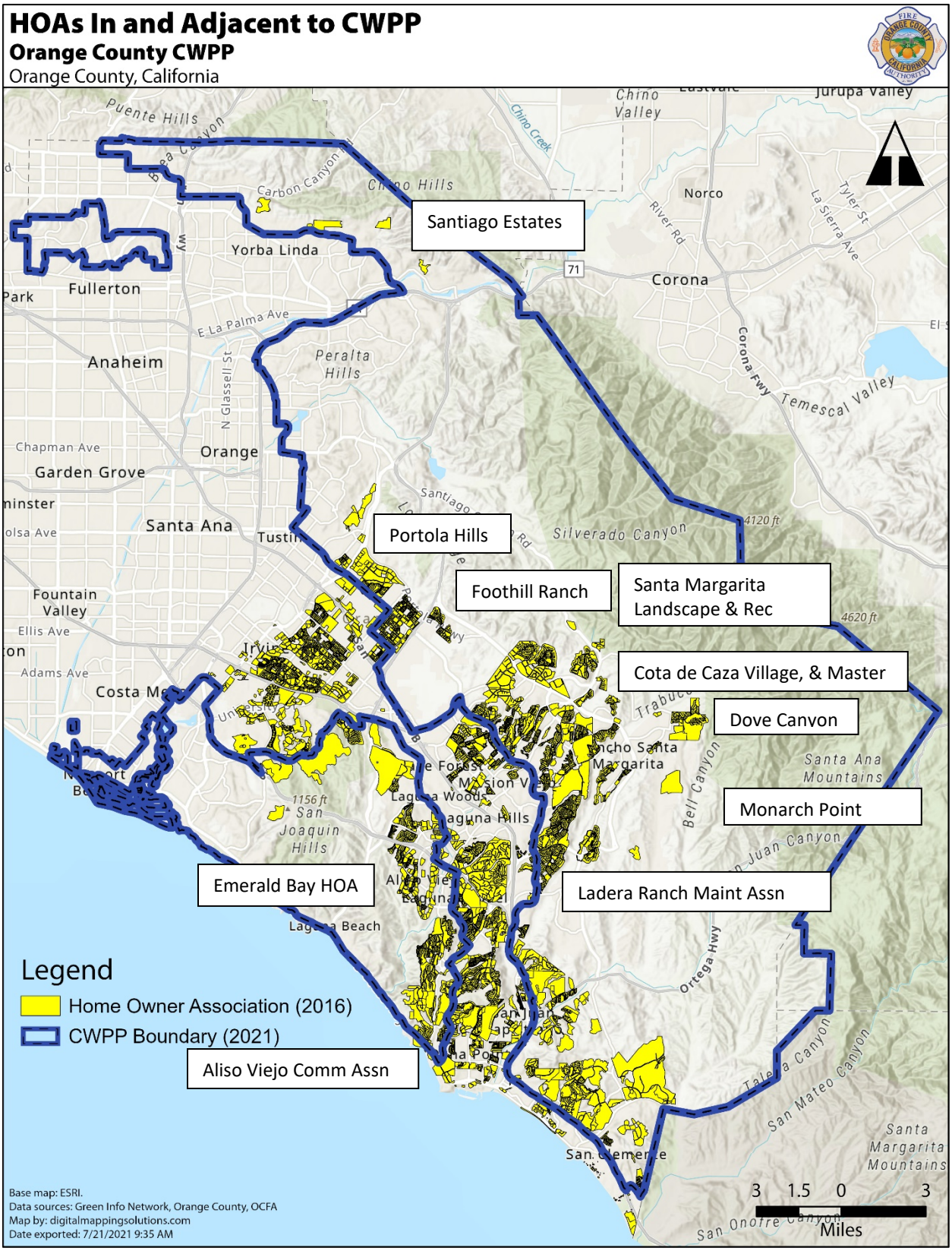


Figure 14. Area of Homeowner Associations within the CWPP

There are four Fire Safe Councils in the County: East Orange County Canyons, Carbon Canyon, Foothills Communities Association/North Tustin, and Greater Laguna Coast. A fire safe council is a grass-roots community of volunteers that focus on fire prevention through community awareness and pre-fire treatments of both vegetation and structures. All four fire safe councils were invited to participate in the development of the CWPP. The first three fire safe councils listed actively participated.

For references, the East Orange County Canyon has its own CWPP, which will soon be updated. The Carbon Canyon Fire Safe Council prepared a CWPP in 2011 which was updated in 2017[50]. The area and communities served by the previous CWPP will be included and superseded by this 2021 Update.

[50] http://www.carboncanyonfsc.org/cwpp.html Accesed 6/14/21.

SECTION IV: VALUES

A. VALUES AT RISK

CAL FIRE's California's Forest and Rangeland's 2017 Assessment[51] updated the 2010 assessment that identified and addressed the state's key wildfire risk issues pertaining to community water, ecosystem health, forest and range economics, infrastructure, recreation, open space, and wildlife. These areas of concern were spatially categorized as Priority Landscapes. The 2017 Assessment introduces 40 new indicators that collectively describe the status and trends of forest and rangelands across environmental and socio-economic dimensions. Based in part on the Montreal Process (an internationally recognized evaluation and reporting system), the updated Assessment uses 7 criterion and has expanded the criterion to include rangelands. The criterion are:

1. Conservation of biological diversity
2. Maintenance of productive capacity
3. Maintenance of forest ecosystem health and vitality
4. Soil and water resources
5. Forest contribution to global carbon cycles
6. Maintenance and enhancement of long-term multiple socio-economic benefits to meet the needs of societies.
7. Legal institutional and economic framework for conservation and sustainable management.

The 2017 Assessment provides updated information on the impacts, legislation, existing policies and programs, as well as measures of progress and future policy issues. It is organized into twelve chapters that provide a synthesis of indicators and key findings for: sustainable working forests, sustainable rangelands, urban forestry, wildfire, forest pests, population growth and

[51] California's Forest and Rangelands 2017 Assessment. August 2018. https://frap.fire.ca.gov/assessment/

development impacts, climate change, California's non-metro regional economy, water, wildlife habitat, reducing community wildfire risk, and renewable energy.

Based on the 11 Priority Landscapes from the 2010 Assessment, the following "values" (i.e. assets) at risk continue to be identified as OCFA's highest priorities and are mapped in the 2020 Unit Plan as to where and to what degree each one of is of concern in Orange County:
1. Population growth & development
2. Preventing wildfire threats to maintain ecosystem health
3. Restoring wildfire impacted areas to maintain ecosystem health
4. Preventing wildfire threats to community safety
5. Water supply
6. Water quality
7. Community wildfire planning
8. Conserving green infrastructure
9. Managing green infrastructure
10. Threat to forest carbon from wildfire, insect and disease
11. Threat to forest carbon from development

The following values continue to be identified as Orange County's highest concern:
Ecosystem - (as threatened by localized development and landscape level development).

- Man-made structures, their associated landscape, and the resulting ecological disruption or damage - can influence the severity of fire events. Development along the WUI likely contributes to more frequent ignitions, and can change how fire behaves. Additionally, altered fuel conditions can promote even further ecological damage (e.g. mortality within larger tree sizes, habitat-type conversion, soil impacts, etc.).

Structures, Major Roads & Transmission Lines - (as threatened by wildfire).

- Housing and other infrastructure are particularly susceptible to damage/loss from exposure to wildfire. Infrastructure can include maintenance shops and stations, signage along with sign structures and guard rails.

- Power delivery and communications sites are also susceptible to extended loss of service due to fire. Even the simple interruption of these services is a public safety/public welfare issue.
- Impacts from post-fire floods and debris flows include damage to downstream values, such as homes, roads, debris basins, and other infrastructure.
- While transportation facilities may not seem vulnerable to wildfire, many components may easily be damaged. For Caltrans, these include the roadway items such as the pavement, guardrail, signs, lighting, drainage systems, landscape, irrigation, as well as the interconnected portions of the Caltrans transportation system, namely traffic control systems (traffic lights), fiber optic lines and networks, traffic management cameras, and permanently mounted changeable message signs. Caltrans maintenance facilities including yards and storage locations are also vulnerable to fire. Toll Plaza facilities, owned and managed by the Transportation Corridor Agencies (TCA), are also at risk. The transportation corridors themselves contain valuable habitat for endangered species.

Water Supply & Water Quality – (as threatened by wildfire, and the effects of wildfire, on soil surfaces, plus threats to and from localized development, watersheds, and climate changes)

- Watersheds can burn in the dry season and then discharge torrents of debris into downstream populated plains during severe storms in subsequent wet seasons. Historically, California's South Coastal Plain has suffered the worst effects of the flood-fire sequence because it has the greatest concentration of fire-prone, high debris producing watersheds that discharge into populated areas.

Additionally, a number of other high consequence values require consideration:

- **Commerce:** Orange County contains abundant retail and wholesale businesses, as well as facilities for the service industry, entertainment, and dining. Many of these facilities lie within the WUI.
- **Recreation:** The recreational venues (i.e. Irvine Lake, camp grounds, sports facilities, state and local parks, national forest lands, beaches, etc.) in Orange County lie almost entirely in the WUI.
- **Nature Preserves and sensitive sites:** Various ecological and habitat preserves and sensitive sites (i.e. wetlands, tide pools, etc.).
- **Historical Sites:** Mission San Juan Capistrano, Richard Nixion Library, Crystal Cove Historic District, and numerous other historically and culturally significant places, archeological sites and associated properties are located in Orange County, with some in the communities at risk.
- **Military:** Seal Beach Naval Weapons, Camp Pendleton, Los Alamitos Joint Forces Training Base, etc. These facilities mostly lie outside the CWPP boundary, but is considered as values at risk in the Unit Plan.
- **Transportation:** John Wayne Airport, and various railroads, harbors, bridges and roads, etc. While the airport and harbors are located outside the CWPP boundary other

transportation infrastructure are important considerations in the CWPP, particularly as they influence ignitions.

- **Utilities:** Communications infrastructure, oil and gas facilities, water and power facilities, including the UCI nuclear facilities, etc. are abundant in the County. The power and communications infrastructure are especially important in the CWPP boundary.
- **Educational Facilities**: Universities (i.e. UCI, Cal State Fullerton, Chapman, etc.), community colleges, and K-12 facilities are located throughout Orange County. Most larger colleges lie outside the CWPP boundary.

B. COMMUNITIES

There are 23 Orange County communities identified as "Nationally Recognized Communities at Risk". Most are within OCFA's jurisdiction, but a few are protected by other fire agencies. In addition, OCFA has identified five other communities as being at risk from wildfire, including Emerald Bay, Lake Forest, Lemon Heights/North Tustin, Santiago Canyon, and Tustin Heights.

Table 4. List of Communities at Risk

COMMUNITY NAME	JURISDICTION
Aliso Viejo	OCFA
Anaheim	Anaheim F&R
Brea	Brea FD
Coto de Caza	OCFA
Cowan Heights	OCFA
Dana Point	OCFA
Emerald Bay	OCFA
Fullerton	Fullerton FD
Irvine	OCFA
Laguna Beach	Laguna Beach FD
Laguna Hills	OCFA
Laguna Niguel	OCFA
Laguna Woods	OCFA
Lake Forest	OCFA
Lemon Heights/ North Tustir	OCFA
Mission Viejo	OCFA
Modjeska	OCFA
Newport Beach	Newport Beach FD
Orange	Orange FD
Rancho Santa Margarita	OCFA
San Clemente	OCFA
San Juan Capistrano	OCFA
Santiago Canyon	OCFA
Silverado	OCFA

Trabuco Canyon	OCFA
Trabuco Highlands	OCFA
Tustin Heights	OCFA
Villa Park	OCFA
Yorba Linda	OCFA

SRA lands, which are the focus of the CWPP, are located within the unincorporated part of Orange County. Most existing development in the SRA lands occurs within several unincorporated communities, many of which are master-planned communities. The principal communities are discussed in this section of the CWPP. Many are identified by OCFA as of most concern due to their location in the WUI, their designation as within the Very High Fire Hazard Severity Zone, or because of the values and assets at risk. The CWPP also includes portions of 23 incorporated cities that border the Very High Fire Hazard Severity SRA lands. These cities are summarized after the summary of the unincorporated communities.

1. Unincorporated Communities within the CWPP Boundary

a. Canyon Communities

This community includes Modjeska, Silverado, Williams, Trabuco Canyons, and Live Oak as well as several smaller canyons including, Baker, Holy Jim, Ladd, Rose, Harding, and Black Star. All but the southernmost canyons connect to Santiago Canyon with access from Santiago Canyon Road. It also includes Santiago Canyon Estates, a community of luxury tract homes built in the late 1990s. The Canyon Communities are located at the base of the Saddleback Mountains; because of this, the area is also known as Saddleback Canyon. It is largely surrounded by the Cleveland National Forest and the Irvine Ranch Land Reserve.[52] Much of the residential development in the canyon areas is surrounded by wildland fuels and often steep terrain. The canyons can also experience strong Santa Ana winds. The SRA areas are ranked with a Very High Fire Hazard Severity rating. OCFA's 2020 Unit Strategic Fire Plan continues to identify Santiago Canyon as a community at risk from wildfire. That plan supports on-going, active, annual and planned project for improving defensible space and modifying roadside fuels in the canyons; constructing fuel breaks in Williams Canyon, Modjeska Canyon, and Trabuco Canyon; fuel modification on Live Oak Canyon Road; and developing shaded fuel breaks in the Limestone Canyon Wilderness Area. OCFA maintains five fire stations in the canyon areas. The FSCEOCC is currently removing dead trees throughout the canyons and modifying fuels in the Santiago Estates, funded by a CAL FIRE Fire Prevention Grant and the Climate Change Investments Fund.

Most of the canyon private roads have non-conforming street widths, which create emergency access constraints. As such, OCFA partnered with East Orange County Fire Safe Council to conduct roadside treatments on private roads within Silverado, Modjeska and Trabuco Canyons. Projects to realize this goal were included in OCFA's 2016 - 2020 Unit Strategic Fire Plans.

[52] http://www.ronforhomes.com/santiagocanyon.htm

Silverado Canyon - This northernmost canyon feeds into Santiago Canyon. Access is via Silverado Canyon Road. It is closest to the cities of Orange and Villa Park. The community of Silverado is situated in the canyon, with most of its buildings between the point where the canyon opens out into a valley and a U.S. Forest Service gate where the valley road enters the Cleveland National Forest. The town is mostly residential; there are, however, also a few stores, mostly on the east side. This community includes Santiago Canyon Estates, Wildcat Canyon, and Williams Canyon. Most of the homes here were built in the 1930s or 1950s; historically it was a silver mining area during the 1800s. In September of 2014, a wildfire burned approximately 1000 acres within the canyon. However, no structures were lost. OCFA maintains Fire Stations #14 and #15 in this canyon. OCFA's 2020 Unit Strategic Fire Plan identifies Silverado as a "Nationally Recognized Community at Risk" from wildfire, and in fact was burned in the 2020 Silverado and Bond Fires. OCFA's Silverado Fire Plan includes Silverado Canyon, Ladd Canyon, Baker Canyon and Williams Canyon. The plan is intended to guide fire and law enforcement agencies during major wildfire occurrence. Within the plan, sections identify the need for local residents to evacuate and the safest means of evacuation and potential rendezvous sites.

Williams Canyon is a small canyon located off Santiago Canyon Road, between Silverado and Modjeska Canyons. It is an enclave of large lots, horse properties, and custom homes.

Modjeska Canyon is located off of Santiago Canyon Road between Silverado Canyon to the northeast and Trabuco Canyon to the southwest. It contains a mix of older cabins and newer single-family homes, as well as the historic Helena Modjeska House and Gardens and the Tucker Wildlife Sanctuary, all of which sustained significant damage in the 2020 Silverado Fire. The canyon was also affected by the California wildfire of October 2007. About 14 homes in Modjeska were destroyed by the fire and another 8 homes were damaged (out of a total of approximately 220 homes in the canyon). It is served by a volunteer fire department. South of Modjeska Canyon is a small development off Crystal Canyon Road. OCFA maintains Fire Station #16 in this canyon. OCFA's 2020 Unit Strategic Fire Plan identifies Modjeska as a "Nationally Recognized Community at Risk" from wildfire. OCFA's Modjeska Fire Plan includes Modjeska Canyon, Santiago Canyon, and the Modjeska Grade. This plan is identical in nature to the Silverado Fire Plan, with the differences being locations, number of resources, and evacuation sites.

Trabuco Canyon is located south of Hamilton (see below) with access from Trabuco Canyon Road. There is development along Trabuco Canyon Road and more extensive residential development to the north with access from Trabuco Oaks Drive. There are also smaller canyons such as Rose Canyon, Holy Jim Canyon, as well as the gated Hidden Ridge, and Stone Cliffe communities. Trabuco is the southernmost of the major canyons, and hence is closest to the cities of Rancho Santa Margarita, Mission Viejo, and Lake Forest. OCFA's 2020 Unit Strategic Fire Plan identifies Trabuco Canyon, as well as Trabuco Highlands, as "Nationally Recognized Communities at Risk" from wildfire. Land use development in the Trabuco Canyon and adjacent areas is guided by the Foothill/Trabuco Specific Plan.[53] This plan includes fuel modification and

[53] County of Orange Environmental Management Agency, *Foothill/Trabuco Specific Plan*, 1991.

other fire-related requirements, though these fire hazard severity reduction requirements have been superseded by more recent County requirements set forth in OCFA's *Vegetation Management Guideline.* The community is also served by the Trabuco Fire Plan that includes Live Oak Canyon, Trabuco Oaks, O'Neill Regional Park, Rose Canyon, Holy Jim Canyon and Robinson Ranch. The significant difference of this plan, as compared to the Silverado and Modjeska Fire Plans, is Robinson Ranch. Robinson Ranch is a large modern residential area within the City of Ranch Santa Margarita that is nestled up against the Cleveland National Forest. Otherwise, the plans are somewhat identical to the previous fire plans. OCFA maintains Fire Station #18 in this canyon. The 2018 Holy Fire burned 22,886 acres in the Holy Jim Canyon Road and Trabuco Creek Road, in the Cleveland National Forest in Riverside and Orange Counties.

Live Oak is a small community located off Hamilton Trail east of Live Oak Canyon Road between Modjeska Canyon and Trabuco Canyon. Immediately south is a similar rural residential development off Hunky Dory Lane.

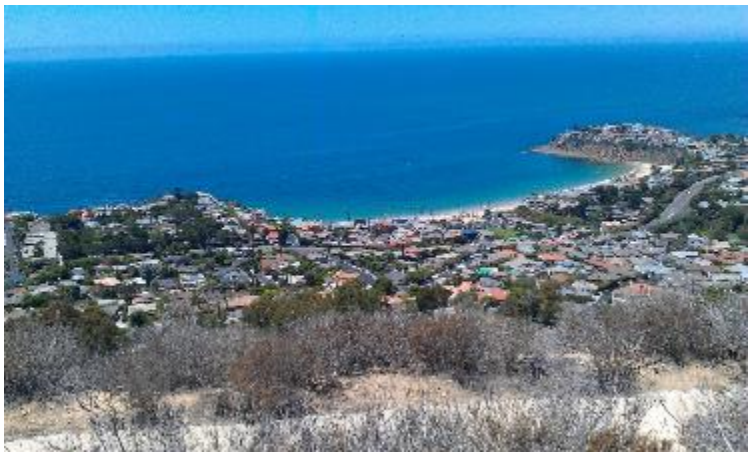
b. Coto de Caza

Coto de Caza is one of Orange County's oldest planned communities, covering 7.7 square miles. This census-defined gated community contains approximately 5,100 homes and a population of 15,056 (ACS 2019, 5-year census). It is contained within a roughly north-south running valley located north of Highway 74 and southeast of Highway 241 in southeastern Orange County. It consists of densely-built subdivisions interspersed with natural areas and parkland. The surrounding hills remain largely undeveloped. The fire hazard severity ranking for Coto de Caza is High to Very High. OCFA's 2016 Unit Strategic Fire Plan identifies Coto de Caza as a "Nationally Recognized Community at Risk" from wildfire. The community includes two golf courses and the Thomas F. Riley Wilderness Park, as well as the more affordable planned community of Wagon Wheel, which was built in the 1990s and is located in the southwestern portion of the community. Wagon Wheel is home to about 2,000 homes and 5,500 residents. There are many townhomes in the community, as well as single family homes. To the east is the National Audubon Society's Starr Ranch (see discussion below) and to the southeast the Ronald W. Caspers Wilderness Park. OCFA maintains one fire station (FS #40) in the Coto de Caza area. OCFA's 2016 - 2020 Unit Strategic Fire Plans recommend reducing hazardous fuels and clearing or widening of obstructed emergency access trails in the community. Land use in the Coto de Caza area is specified in the adopted *Coto de Caza Specific Plan*; this plan does not include any specific requirements for fire hazard reduction.[54] Those requirements are set forth by the County General Plan and OCFA's *Vegetation Management Guideline*. The 2016 Tortoise Fire burned 19 acres near Tortoise Shell in Coto de Caza. The fire was held in check due to best pre-fire management practices of fuel modification and defensible space.[55]

[54] Planners" Annex for the County of Orange, *Coto de Caza Specific Plan*, 1996
[55] OCFA 2020 Unit Strategic Fire Plan, page 31 and 41.

c. El Cariso Village

El Cariso Village is located in both Riverside County and Orange County. It includes 14 miles of roads, 70 homes, Los Pinos CCC Camp and older residential developments. It is accessed from Highway 74 (Ortega Highway). The SRA area of El Cariso Village is checker boarded with Federal Response Area (FRA).



d. Emerald Bay

The community of Emerald Bay is located on the coast of Orange County, slightly south of Crystal Cove State Park and west of Laguna Coast Wilderness Park. The gated community contains several hundred residences and some recreational facilities. The entire area was categorized as a SRA Very High Fire Hazard Severity Zone. The entire community was threatened by the 1993 Laguna Fire, and destroyed or damaged more than 50 structures in Emerald Bay (400 structures total in several communities), resulting in one of the 20 largest fire losses in US history. The community has a fire station that serves its residents.

e. Ladera Ranch

This unincorporated master-planned community is 4.9 square miles located east and south of the City of Mission Viejo. It is located west of Antonio Parkway and north of Crown Valley Parkway. Construction of the community began in 1999. It has a population of 27,277 and over 8,500 housing units (ACS 2019 5-year census). The fire hazard severity rating is primarily Moderate to High according to the CAL FIRE Fire Hazard Severity map. OCFA maintains a fire station (FS #58) at the northern end of this community. The 2016 Trabuco Fire burned 97 acres near Avery Parkway and the service road.

f. Las Flores

Las Flores is an unincorporated planned community started in 2010. It has a population of 5,861 people and 1,981 housing units (ACS 2019 5-year census). It is located on 2.2-square miles near the intersection of Oso Parkway and Antonio Parkway in unincorporated southern Orange County, extending several miles adjacent to Antonio Parkway and Oso Parkway. It is bordered to the west and north by the cities of Mission Viejo and Santa Margarita, respectively. Las Flores is primarily in the High to Very High Fire Hazard Severity Zone. OCFA maintains a fire

station (FS #58) near this community at the north end of Ladera Ranch.

g. North Tustin

North Tustin is a 6.7-square-mile Census Designated Place. It is an unincorporated community of 8,856 housing units with a population of 24,705 (ACS 2019 5-year census). Bounded by Orange City to the north and the city of Tustin to the south, North Tustin is the largest of Orange County's 34 unincorporated communities.[56] Formerly known as Tustin Foothills, the name was changed in 2005. Within North Tustin are the distinct communities of Cowan Heights, Lemon Heights, Panorama Heights, Red Hill, and East Tustin. The community is served by two school districts and three water districts; it falls in the sphere of influence of both Tustin and Orange. The Foothill Communities Association (FCA) is a nonprofit corporation begun in the 1960s to preserve the living environment, serving over 10,000 homes within the area. Portions of the communities are included in the CWPP due to their proximity to Very High Fire Hazard Severity areas of adjacent SRA lands. These areas are rated as Very High Fire Hazard LRA lands. OCFA's 2020 Unit Strategic Fire Plan identifies Cowan Heights as a "Nationally Recognized Community at Risk" from wildfire. That plan also identifies Lemon Heights, North Tustin, and Tustin Heights as communities at risk from wildfire. The aforementioned Tustin-Orange Foothills Fire Plan also addresses this community.

h. Orange Park Acres

This community is an unincorporated community of roughly 1.4 square miles surrounded by Orange City. It extends to Santiago Road from the north and to Chapman Road from the south and is loosely bounded to the west and east by El Modena Open Space and Irvine Park, respectively. Lots in Orange Park Acres tend to be large--often one acre or more, and/or have horse facilities. Portions of the community are included in the CWPP due to its proximity to Very High Fire Hazard Severity areas of adjacent SRA lands. This area is rated as Very High Fire Hazard LRA lands. The Tustin-Orange Foothills Fire Plan, developed by OCFA and Orange City Fire Department, addresses a very large area of intermingled open spaces and densely populated residential and commercial developments that lie within the incorporated cities Tustin and Orange, plus Peter's Canyon Regional Park.

i. Ortega Communities

Between the Orange County/Riverside County line at El Cariso Village are a number of small residential development along Highway 74, as well as the Lazy W Ranch on Hot Springs Canyon Road, and Sievers Canyon. OCFA has responsibility for the SRA portions of the community but would coordinate with the USFS when responding to incidents in the area. The nearest OCFA fire station is at Rancho Mission Viejo on Highway 74, approximately 20 miles from this community.

[56] http://www.ocregister.com/articles/tustin-663784-north-residents.html

j. Rancho Mission Viejo[57, 58]

Rancho Mission Viejo is a 23,000-acre property in the unincorporated southern portion Orange County, that contains a planned community, also known as Rancho Mission Viejo, a habitat reserve, and an active cattle ranch. More details regarding the habitat reserve appear in Section II.H.1.e. Ultimately, the planned community is slated to consist of six separate "villages" that will mainly be located along Highway 74 in the central portion of the property. Depending upon the market, the developers expect the project to be completed in 20 years, and to consist of 14,000 homes on a total of 6,000 acres. The remaining 17,000 acres will be dedicated as a habitat reserve as the community is built out. Currently, two of the Rancho Mission Viejo villages are complete, occupying a total of 1,580 acres, and 6,500 acres have been set aside as habitat reserve. As more development is completed, more acreage will be dedicated to the Habitat Reserve until the total 17,000 acres are included.[59]

The risk of fire is mainly rated as Moderate to High severity for the planned community, and Very High for the majority of the undeveloped portion of the property. OCFA maintains a fire station (FS #56) in this community. The Rancho Mission Viejo area has an adopted fire management plan. It is part of the Southern Sub-Regional Wildland Fire Management Plan that was developed for the Southern Subregion NCCP/MSAA/HCP Habitat Reserve Management Program. See the previous discussion of this Program and the Habitat Reserve for additional information about this fire plan. OCFA's 2015 - 2020 Unit Strategic Fire Plans recommend seven projects to reduce hazardous fuels and improve emergency access in this community.

Because of the high numbers of wildfires that have burned through Rancho Mission Viejo since the early 1900s, plus an active cattle grazing program, and the late 1980's and early 1990's Vegetative Management Program (prescribed burns), the wildland vegetation is fairly uniform throughout Rancho Mission Viejo. Most of the wildfires that have burned through the Rancho Mission Viejo property have originated on the Cleveland National Forest or Camp Pendleton and were driven through the Ranch property by very strong Northeast/East Santa Ana winds, usually in October or November. Because of the generally light fuel loadings (scattered sagebrush over cured grass) these wildfires burned through the Ranch property very rapidly with low to moderate intensity and resulted in very little ecological damage. The 2016 Reata Fire burned 14 acres near Lindura Street and Borra Place.

2. Unincorporated Portions of Riverside and San Diego Counties Served by OCFA

The OCFA service area includes parts of San Diego and Riverside Counties that are adjacent to Orange County. These SRA lands are serviced by OCFA because fire agencies in both counties have agreed that access for fire suppression response to these areas is faster and/or more efficient from OCFA than from fire suppression agencies in the other two counties. There are

[57] http://www.cityofrsm.org/DocumentCenter/Home/View/507
[58] http://www.cityofrsm.org/399/History
[59] Charlie Ware, Rancho Mission Viejo Corp., personal communication 2/25/16.

several isolated out-of-county areas served. These lands are privately owned parcels with few or no structures on them. There are 3800 acres of such land in Riverside County, and 640 acres in San Diego County. In addition, 2630 acres of SRA in the County of San Diego are covered by State Direct Protection Agreement (DPA), protected through contract by Orange County Fire Authority. These areas include several large, isolated ranches, which have multiple habitable structures, quarters for exotic animals, and outbuildings.

3. Incorporated Cities with Jurisdiction within the CWPP Boundary

Portions of the following incorporated cities are included in the CWPP due to their proximity to SRA Very High Fire Hazard Severity areas and their potential for being affected by fires occurring in the adjacent SRA lands. All areas of these cities within the CWPP boundary are rated as LRA Very High Fire Hazard Severity areas. All cities have been identified as a "Nationally Recognized Communities at Risk" from wildfire.

Table 5. Amount of City Land in the CWPP

City	Percent in CWPP Region	City Acres within CWPP	Total City Acres
Aliso Viejo	91%	4,027.28	4,430.02
Anaheim	31%	10,144.83	32,553.73
Brea	58%	4,567.32	7,822.98
Dana Point	17%	716.04	4,106.08
Fullerton	31%	4,496.63	14,365.81
Irvine	51%	21,381.19	42,220.61
Laguna Beach	92%	5,193.66	5,649.41
Laguna Hills	11%	471.31	4,254.42
Laguna Niguel	45%	4,245.73	9,460.22
Laguna Woods	52%	1,094.64	2,116.32
Lake Forest	72%	7,688.84	10,742.84
Mission Viejo	65%	7,436.50	11,526.89
Newport Beach	100%	15,307.94	15,307.96
Orange	42%	6,865.21	16,500.64
Rancho Santa Margarita	100%	8,287.88	8,287.88
San Clemente	79%	9,244.84	11,739.83
San Juan Capistrano	69%	6,329.82	9,221.10
Tustin	20%	1,409.12	7,128.42
Villa Park	99%	1,319.68	1,330.22
Yorba Linda	58%	7,411.72	12,803.83
All Cities	42%	127,640.17	
No Cities	58%	172,812.38	

a. Aliso Viejo

Aliso Viejo covers approximately 7.5 square miles and has a population of more than 47,823 people (2010 census). The eastern half of Aliso Viejo is within the CWPP boundary. In 2006, the City adopted a Local Hazard Mitigation Plan that includes recommendations to reduce fire hazards. The plan identifies areas on the city's southwest, west, and northwest sides as having Extreme Fire Hazard Severity, and this includes the area within the CWPP boundary.[60] The 2018 Aliso fire burned 175 acres near Alicia Parkway.

b. Anaheim

This Nationally recognized Community at Risk" covers approximately 28,000 acres (and 2,431 acres of unincorporated land within its sphere-of-influence) and has a population of 346,997 residents[61]. The northeastern extension of the city contains Very High Fire Hazard Severity LRA lands adjacent to Very High Fire Hazard severity SRA lands. Approximately 25% of the City of Anaheim is within the CWPP boundary; this is the foothill/mountain area at the east end of the city. The City has prepared a Local Hazard Mitigation Plan (2017) that addresses wildfire hazard and measures the City and its citizens can reduce risk.[62] The plan identifies areas on the city's southwest, west, and northwest sides as having Extreme Fire Hazard Severity, and this includes the area within the CWPP boundary. The 2017 Canyon II Fire burned 9,215 acres between east bound Highway 91 and Highway 241.

C. Brea

The City of Brea covers 12.43 square miles, with approximately 2,000 acres (26%)[63] located within the WUI. This nationally recognized Community at Risk has established its wildland boundary, known as the High Fire Hazard Area (Figure PS-2).[64] Most of the high fire areas are located in Tonner and Brea Canyons. It also includes the Unincorporated Area within Brea's Sphere of Influence: Puente Hills and Chino Hills to the north and west of the city. The Puente-Chino Hills have over 104 years of history of wildfires. In the years spanning 1914- 2018 there have been over 151 wildfires. [65]

The City of Brea has a residential population of more than 43,000 and a daytime population of approximately 120,000. Median age is 35 with 22% of population under the age of 18 and 14% over the age of 65. There are a total of 15,923 housing units, with an average of 2.8 persons per household. Sixty-four percent of the structures are single unit. [66]

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[60] the Local Hazard Mitigation Plan is available at:
[61] http://www.anaheim.net/ accessed January, 2017
[62] *Draft Hazard Mitigation Plan for the City of Anaheim*, City of Anaheim, 2015.
[63] Source – Personal communication Brea Fire Dept, March 2021.
[64] Source: The City of Brea General Plan. Adopted August 19, 2003. pg 6-18 (pg 376). https://www.ci.brea.ca.us/179/General-Plan accessed 5/18/21.
[65] Source: Updated Report: 104 Years of Wildfire History Near Chino Hills State Park. September 2019. https://www.hillsforeveryone.org/news-and-publications/research-reports/wildfire-studies/updated-fire-study/ Accessed 5/18/21.
[66] Source: https://censusreporter.org/profiles/16000US0608100-brea-ca/ accessed 5/10821.

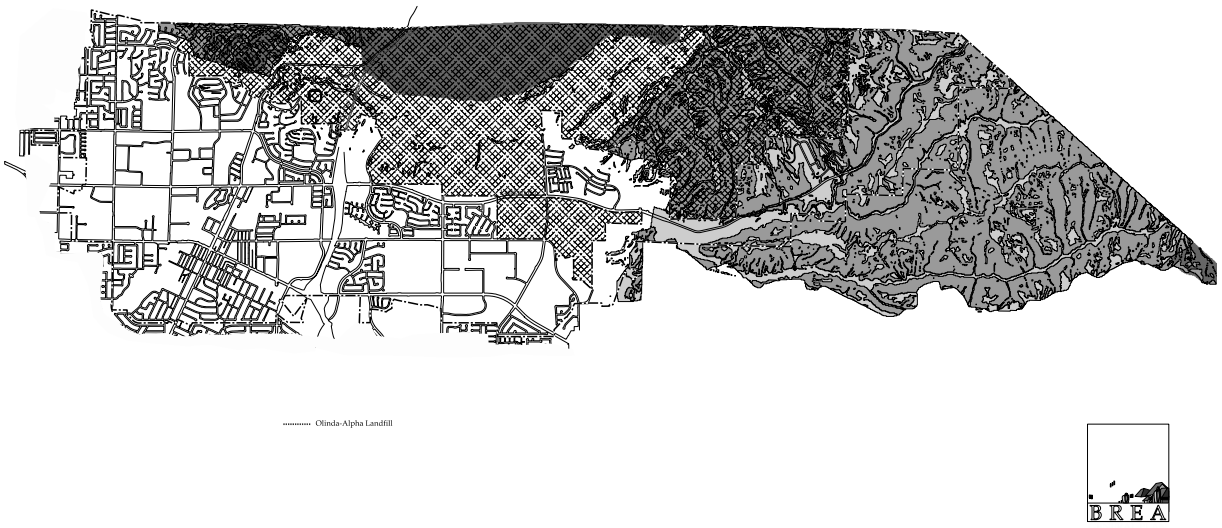

Figure 15. City of Brea High Fire Hazard Areas

The City of Brea General Plan Public Safety Goal to "protect the community from wildland fire" includes 6 policies that are identified in the Implementation Program and tracked annually[67]:

- Policy PS-6.1. Encourage residents to plant and maintain fire-retardant slope cover to reduce the risk of brush fire in areas adjacent to the canyons and develop and implement stringent site design and maintenance standards for areas with high fire potential to the extent possible, native, non-evasive plant material are encouraged. Implementation: Continue to implement the Very High Fire Hazard Area Requirements and the Fuel Modification Plan Guidelines for High Fire Hazards Areas as a preventative measure to avert wildland fires.
- Policy PS-6.2. Assure provision of adequate fire equipment access and fire suppression resources to all developed and open space areas.
- Policy PS-6.3. Continue to coordinate with community stakeholders and experts during fire planning efforts.
  Implementation of PS6.2 and PS6.3: Promote fire prevention in Brea in the following ways:
    - Work closely with the Orange County Fire Authority to implement fire hazard education and fire prevention programs, including fuel modification programs.

[67] Source: Brea General Plan. Page 6-37 (Chapter 6 Public Safety).

    - Utilize wildland urban fire hazard mitigation techniques involving vegetation/fuel modification including chipping, scattering, multi-cutting, crushing, pruning and other non-fire hazard abatement concepts.
    - Coordinate with the local water districts and Orange County Fire Authority to ensure that water pressure for urban and hillside areas and sites to be developed is adequate for firefighting purposes.
    - Adopt and implement the Uniform Fire Code provisions and appropriate amendments to reflect the unique Brea topography, climate, vegetation and urban form.
- Policy PS-6.4. Continue to coordinate with the County of Orange, the Orange County Fire Authority and the Carbon Canyon Fire Safe Council to include Brea in updates to the Local Hazard Mitigation Plan and Community Wildfire Protection Plan and investigate the possibility of preparing a plan component specific to the Brea community. Implementation: Review development proposals to ensure that the City's four to six-minute fire response time is undertaken.
- Policy PS-6.5 Minimize risks to existing development in Very High Fire Hazard Severity Zones by identifying existing non-conforming development to contemporary fire safe standards, in terms of road standards and vegetative hazard, and requiring all development to meet or exceed the City of Brea Ordinance 1211 under the Brea Municipal Code and applicable updates.
- Policy PS-6.6 Minimize new development in the Very High Fire Hazard Severity Zone; and, when feasible, locate all new essential public facilities outside of the Very High Fire Hazard Severity Zone. Require fire protection plans for new development in the Very High Fire Hazard Severity Zone.

The City has developed wildland interface construction standards for all new structures built within this boundary, to include: automatic fire sprinkler system, Class A roof covering, exterior wall surface made of one-hour fire rated material, spark arrestor on chimneys and site landscape fuel modification for a minimum distance of 170 feet beyond the construction boundary. There are also site planning and design standards for all new developments including: circulation, street design and water systems.

d. Dana Point

This incorporated city contains approximately 29.5 square miles (6.5 square miles of which are land and the remainder is water) and has a population of 33,351 people (2010). The northwest corner and a small area bordering San Juan Capistrano are within the CWPP boundary (9% of the city).

e. Fullerton

The City of Fullerton is located approximately 25 miles southeast of downtown Los Angeles and approximately 11 miles north-northwest of Santa Ana, the county seat. It is bordered by Brea and La Habra on the north, La Mirada on the northwest, Anaheim on the south, Buena Park on the west and Placentia on the east. The city is 22.3 square miles with a population over

138,600. All of Fullerton is potentially at risk of some type of fire hazard. Since 90 percent of the City's land is currently built-out, mostly with wooden-frame construction there is potential for fires to emerge at any location in the city.[68]

The East and West Coyote Hills have been designated a very high hire hazard severity zones (FHSZ) and by CAL FIRE.[69] These hills are one of the few remaining open spaces in Fullerton. Other sections of the city have been designated high and moderate FHSZ. These areas include residential developments at the base of the West Coyote Hills and the area surrounding Brea Dam. The St. Jude Medical Center, as well as several City-owned or -operated youth facilities, are also within this elevated fire risk area. Given Fullerton's position between the coast and the inland areas combined with the fuel found in the adjacent Puente Hills and Carbon Canyon, the city is at risk of being impacted by fires amplified by the Santa Ana winds.

The City of Fullerton Local Hazard Mitigation Plan (LHMP, 2021) identified 44 key facilities located within a Fire Hazard Severity Zone (FHSZ) in Fullerton. The majority of these are water pumps or sewage facilities, creating a significant risk to the city's water infrastructure. Water pumps can fail if they lose power during a fire, hampering firefighting efforts. Additionally, excessive water use from firefighting efforts can lower water pressure in pipes and raise the risk of contamination. Lower water pressure can cause non-potable water to backflow or make it easier for contaminants to be drawn in.

Table 6. City of Fullerton Key Facilities Threatened by Wildfire

Facility Type	Moderate Fire Hazard Severity Zone	High Fire Hazard Severity Zone	Very High Fire Hazard Severity Zone	Total
Emergency Gathering Areas [1]	0	1	1	2
Medical [2]	1	2	2	5
Municipal Government [1]	0	0	1	1
Transportation [1]	2	0	1	3
Water and Sewage [1]	3	4	26	33
Total	**6**	**7**	**31**	**44**

[1] – Critical Facilities
[2] – Facilities of Concern

[68] Source: City of Fullerton Local Hazard Mitigation Plan. Adopted May 21, 2020. Page 3-21. https://www.cityoffullerton.com/civicax/filebank/blobdload.aspx?BlobID=27643. Original source: The Fullerton Plan: Section 5.9, Hazards and Hazardous Materials 2012b. https://www.cityoffullerton.com/civicax/filebank/blobdload.aspx?BlobID=8949 Accessed 5/10/21.
[69] Source: CAL FIRE Very High Hazard Severity Zones in LRA. https://osfm.fire.ca.gov/media/5883/c30_fullerton_vhfhsz.pdf Accessed 5/10/21.

As shown in Table 6 from the LHMP, there are a number of medical-related facilities, such as assisted living and nursing facilities, in the wildfire hazard zone. In the event of a wildfire, these facilities may require specialized evacuation to ensure the safety of their occupants due to the high vulnerability of the persons living in these facilities. Figure 16 from the LHMP shows the critical facilities and facilities of concern located in fire hazard severity zones.

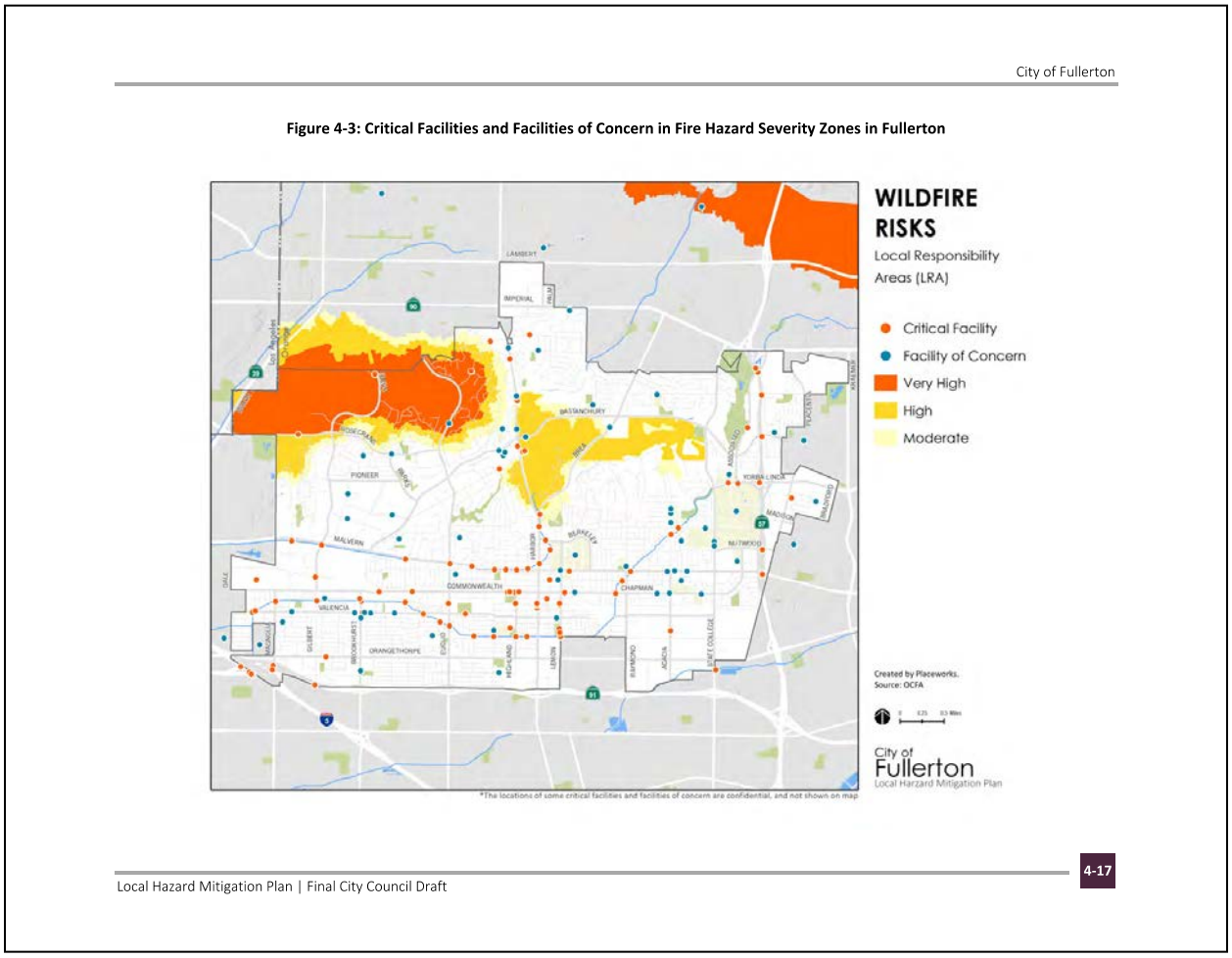

Figure 16. City of Fullerton Wildfire Risks

Fullerton's wildfire hazard zones are home to approximately 14,600 residents, most of whom live in the Very High FHSZ identified in the LHMP. Of the vulnerable populations, there is a large population of seniors (over 65) living in an FHSZ. Nearly one quarter (22 percent) of the population living within a medium, high, or very high FHSZ are seniors, compared to 12 percent within the City as a whole. In the moderate and high FHSZ, 24 percent of residents are seniors. In the very high FHSZ, 18 percent of the populations are seniors. Senior residents could be living with disabilities or debilitating medical conditions, have limited mobility options, or rely on caregivers for assistance. They may rely on medication, service animals, wheelchairs, or walkers or require family assistance when evacuating their homes.

Large wildfires can have a costly and devastating toll on a community. Approximately 60 percent of the land uses within the FHSZ are residential according to the LHMP. Flying embers can easily ignite the roofs of homes and other buildings that are not constructed with fire-resistant roofs and rapidly spread fire throughout a region. In addition to residential property, wildfires can damage water pipes and cause water contamination. Plastic water pipes can melt under extreme heat and cause ash, debris, and burned plastic resins to contaminate drinking water. In the aftermath of a fire, major damages to commercial, medical, or other nonresidential buildings could cause a significant number of people to permanently lose employment.

The City of Fullerton Climate Action Plan[70] recognizes that "climate change could result in increased occurrences and duration of wildfire events due to warmer temperatures, longer dry seasons, reduced winter precipitation, and early snowmelt. Fullerton experiences long periods of hot-dry weather and high velocity desert winds."

f. Irvine

Irvine contains approximately 66 square miles and has a population of 212,375 people (2010). Due to local topography and proximity to wildland vegetation on lands of NROC and Limestone-Whiting Wilderness Park portions of eastern Irvine are within the CWPP boundary; portions of southern Irvine include wildland vegetation in Bommer Canyon Open Space and other public and private wildlands (approximately 35% of the city is within the CWPP boundary). The City adopted a Local Hazard Mitigation Plan in 2020.

g. Laguna Beach

This seaside city covers approximately nine square miles with a population of 22,723 people (2010). Given topography and proximity to wildland vegetation at Laguna Coast Wilderness Park Crystal Cove State Park to the west and Aliso and Wood Canyons Wilderness Park to the east, over 90% of Laguna Beach is within the CWPP boundary. All three parks are in the SRA and are rated Very High Fire Hazard Severity. Land adjacent to these parks in Newport Beach, Irvine, Aliso Viejo, Laguna Beach, Laguna Nigel, and Dana Point are LRA lands that are rated as Very High Fire Hazard Severity. The City adopted a Local Hazard Mitigation Plan in 2018.

h. Laguna Hills

Laguna Hills contains approximately 6.7 square miles and has a population of 30,344 people (2010). OCFA provides fire protection services for the city. A small portion of Laguna Hills (2% of the city) is within the CWPP boundary.

i. Laguna Niguel

Laguna Niguel contains approximately 14.9 square miles and has a population of 69,979 people (2010). Due to topography and wildland vegetation on the adjacent Aliso and Wood Canyons

[70] Source: Climate Action Plan. Appendix H to The Fullerton Plan (General Plan). May 1, 2012. https://www.cityoffullerton.com/gov/departments/dev_serv/general_plan_update/the_fullerton_plan.asp and https://www.cityoffullerton.com/civicax/filebank/blobdload.aspx?blobid=8991 Accessed 5/10/21.

Wilderness Park, much of eastern Laguna Nigel is within the CWPP boundary (about 23% of the city is in the CWPP boundary).

j. Laguna Woods

Laguna Woods contains approximately 3.1 square miles and has a population of 16,507 people (2010). Due to local topography and proximity to wildland vegetation on Bommer Canyon Open Space and Crystal Cove State Park, the eastern part of Laguna Woods is within the CWPP boundary (26% of the city is in the CWPP boundary). The City's *Local Hazard Mitigation Plan* reports that the WUI includes approximately 2,243 residential dwelling units (and an estimated 3,185 residents), all within the gated community of Laguna Woods Village.

k. Lake Forest

Lake Forest contains approximately 17.9 square miles and has a population of 77,264 people (2010). Due to local topography and proximity to wildland vegetation on Whiting Ranch Wilderness Park and other adjacent public land, the northeastern part of Lake Forest is within the CWPP boundary (approximately 35% of the city).

l. Mission Viejo

Mission Viejo contains approximately 18.1 square miles and has a population of 93,346 people (2014). Mission Viejo is within the CWPP boundary (approximately 17% of the city) because of the presence of a WUI area. This is due to local topography and proximity to wildland vegetation at O'Neill Regional Park, on the City's eastern edge. The city's *Natural Hazards Mitigation Plan* reports that natural vegetation in the area is highly prone to wildland fire. A large portion of undeveloped land in the southeastern portion of the city is within the Very High Fire Hazard Severity Zone. There are some commercial properties, but mostly residential communities in close proximity to the city's undeveloped land and the unincorporated areas of the county. Commercial and residential properties that are in close proximity to Fire Hazard Severity Zones are subject to the threat of a major wildland fire spreading into their areas. Since its incorporation in 1988, no wildland fire that started outside the city has spread to or entered the city. However, as recent as January 2007, a fire started in the arroyo east of the city near Oso Parkway and threatened homes along the city limits. This area remains susceptible to large wildfires during low moisture and high heat conditions. Approximately 1,000 homes are adjacent to the historic fire corridor and are subject to wildfires.[71]

m. Newport Beach

Newport Beach contains approximately 53 square miles (23.8 square miles of land) and has a population of 85,287 people (2010). The entirety of Newport Beach is within the CWPP boundary. This area includes wildlands in the San Joaquin Hills, adjacent to Crystal Cove State Park and Bommer Canyon Open Space. The City's 2014 *Natural Hazards Mitigation Plan* shows

[71] *City of Mission Viejo Natural Hazards Mitigation Plan*, 2007.

the east end of the city as an area where additional protection is needed to augment existing approved fire breaks and fuel management.[72]

n. Orange

Orange is a city covering approximately 35 square miles with a "Sphere of Influence" covering 62 square miles. The city's population in 2010 was approximately 136,000 people. The eastern hill area of Orange City (approximately 22% of the city) is within the CWPP boundary. The entirety of the locally-defined Very High Fire Hazard Severity Zone, and all areas east of Hewes St. are included in the CWPP. The northeastern part of the City is adjacent to SRA lands rated as Very High Fire Hazard Severity. Correspondingly, the lands adjacent to these SRA lands within the city are rated as Very High Fire Hazard Severity LRA lands. The southeastern part of the city is also adjacent to Very High Fire Hazard Severity SRA lands and these lands within the City are rated as Very High Fire Hazard Severity LRA lands. This area includes the Santiago Hills II and East Orange Planned Communities. The northeastern corner of the city and other portions of its eastern edge are within the CWPP.

o. Rancho Santa Margarita

Rancho Santa Margarita contains approximately 13 square miles and has a population of 47,853 people (2010). Nearly all (95%) of Rancho Santa Margarita is within the CWPP boundary due to the presence of WUI characteristics such as local topography and wildland vegetation in the surrounding O'Neill Regional Park. OCFA provides fire protection services for the city. The City's *Natural Hazard Mitigation Plan* states that the topography, vegetation, and development patterns in the city make it highly susceptible to fire hazards.[73]

p. San Clemente

San Clemente contains approximately 18.7 square miles and has a population of 63,522 people (2010). The northern 75% of San Clemente is within the CWPP boundary. This area was included because of its topography, and remaining wildland vegetation within the city limits. OCFA provides fire protection services for the City of San Clemente and operates three fire stations (Stations 50, 59, and 60) in the city. The City has adopted a *Multi-Hazard Emergency Plan.*

q. San Juan Capistrano

San Juan Capistrano contains approximately 14.3 square miles and has a population of 34,593 people (2010). The eastern half of San Juan Capistrano is within the CWPP boundary. This portion of the city has complex topography and wildland vegetation adjacent to structures within the city. OCFA provides fire protection services for the city. The City adopted a Local Hazard Mitigation Plan in 2020. The 2016 San Juan Fire burned 55 acres near La Pata Avenue and Stallion Ridge.[74]

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[72] *City of Newport Beach Natural Hazards Mitigation Plan (Draft)*, 2008.
[73] *City of Rancho Santa Margarita Natural Hazard Mitigation Plan*, 2002.
[74] OCFA Strategic Fire Plan, 2020. Pp 36.

r. Tustin

Tustin contains approximately 11.1 square miles and has a population of 75,540 people (2010). The northeastern part of Tustin is adjacent to wildland fuels on NCC reserves and other County-managed lands that are rated as High to Very High Fire Hazard Severity and is within the CWPP boundary (approximately 9% of the city). The City adopted a Local Hazard Mitigation Plan in 20218.

s. Villa Park

In northern Orange County, Villa Park has a population of 5,812, and is the smallest city in Orange County by population. The acreage covered by the city is 2.1 square miles. The land in Villa Park is nearly 99% built out as single-family residences. Villa Park has winding streets and it is known for having a rural feel with larger lots (approximately ½ acre in size), abundant vegetation, and planted medians, and parkways that contribute to a rural, green-belt like ambiance. The City prepared a Local Hazard Mitigation Plan in 2014 with update in progress at the end of 2020.

t. Yorba Linda

Yorba Linda contains approximately 20 square miles and has a population of 65,237 people (2010). The city has hilly topography and wildland vegetation in Chino Hill State Park, Brush Canyon, and private lands. The eastern portion of Yorba Linda (58% of the city) is within the CWPP boundary.

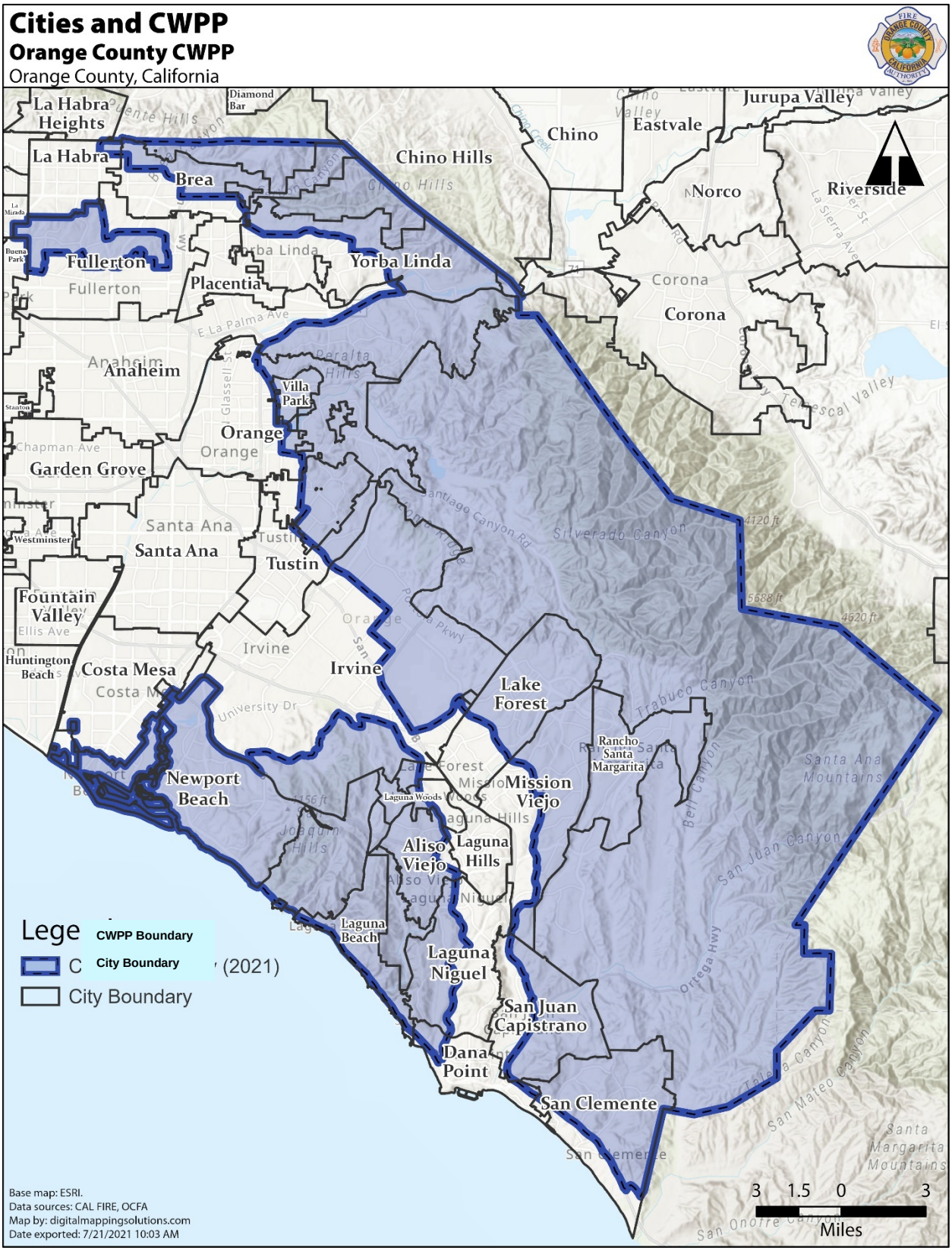


Figure 17. Boundaries of Incorporated Cities in CWPP

C. PROJECTED URBANIZATION

According to OCTA's Long-Range Transportation Plan (2010, updated 2018[75]), between 2015 (base year) and 2040 the population is projected to grow by 10% to 3.46 million residents, with an 11% increase in housing, with employment expected to grow by an even greater margin of 17%. The State Department of Finance estimates the 2021 population of Orange County to be 3,209,272 and the 2038 population is forecast to reach 3,317,528. After 2038, the population of the county is forecast to decline.[76]

The bulk of this population (97%) resides in the county's incorporated cities. In 2010, the unincorporated area outside these cities had a population of 121,180 people occupying 39,936 housing units. In 2010, if one excludes the more developed Census Designated Places (CDPs) of Coto de Caza CDP, Las Flores CDP, Ladera Ranch CDP, and North Tustin CDP, there were 32,726 people occupying 9,914 housing units; these suburban dwellers comprised about 1% of the County's population.[77] 2020 data show that 96% population continues to reside in incorporated cities (3,065,911 of the total 3,194,332 population). The unincorporated area has had an increase in population of 128,421 in 42,433 housing units.

The population of the unincorporated part of the county will continue to increase in the coming decades. Much of the future growth is forecasted to occur in the CDPs and master-planned communities, especially Rancho Mission Viejo. New development can be expected in unincorporated areas within the spheres of influence of some of the cities in the county. For example, in 2015, the County approved the Esperanza Hills Specific Plan for a 469-acre area located between Chino Hills State Park and the City of Yorba Linda; the area is within Yorba Linda's Sphere of Influence. This specific plan will allow development of 340 new residences.[78] Also west of Esperanza Hills is the proposed Cielo Vista development. That would allow 112 new residences. There are two other large undeveloped parcels to the west of the Esperanza Hills area, and it is likely these areas would be developed at a later date. The City of Orange's sphere of influence extends to the southeast, then to the east of Irvine Lake, and while much of this area is designated for open space, there are areas designated for future residential development in areas currently within the SRA and designated as Very High Fire Hazard Severity.

In addition, scattered new development can be expected in the canyon areas and other locations distant from existing population centers. New development can also be expected in some of the LRA areas that are included in the CWPP, including, for example, in eastern Orange and Irvine.

[75] http://www.octa.net/pdf/OCTALRTP111618FINAL.pdf
[76] https://www.dof.ca.gov/forecasting/demographics/projections/
[77] http://www.fullerton.edu/cdr/_resources/pdf/census/Census2010_OC_DP.pdf + http://www.fullerton.edu/cdr/ocff.pdf
[78] County of Orange, *Esperanza Hills Specific Plan, June 2, 2015.*

D. BUILDING CONDITIONS

While structures are very valuable to communities and the people who work and reside within them, they can contribute to fire risk. The more easily a structure can ignite, the more it contributes to the overall hazard. Structure ignitability can be related to density (and the pattern of development), construction type, and siting. The following describes how construction type and the siting of structures can influence fire risk.

Building construction includes both materials and design. Both interior structural and exterior finish materials determine a structure's flammability and ease of ignition. These features may be the distinguishing reasons why two adjacent houses might emerge from a fire with different damage levels. Frame construction with numerous small wood members is easier to ignite than a home built of large timbers. Predictably, a timber or log structure is more flammable than a masonry structure of brick or stone.

Roofing material and assembly has been determined to be key to a structure's survival in a WUI fire. A Class "A" roof assembly can be made of tile, composite shingle, or other material, and usually contributes little to fire spread. However, studies of house survival (Foote 1991) in wildfires indicate that roof related components such as eaves, soffits, and especially vents often undermine a Class A roof. Exterior sheathing material is also important. Wall sheathing and openings can be susceptible to ignition; however, windows play a larger role in house loss. A stucco finish is more flame resistant than a shingle or board finish, but even relatively flame-resistant brick structures are vulnerable if the vent and window openings allow embers to enter into the structure. As more structures become involved in a fire, local fire behavior becomes more erratic, with heavier convection columns and greater fire-generated wind patterns.
A structure's design can be as important as the choice of materials in determining whether a structure will ignite and add to the threat. Detrimental design elements include deep roof

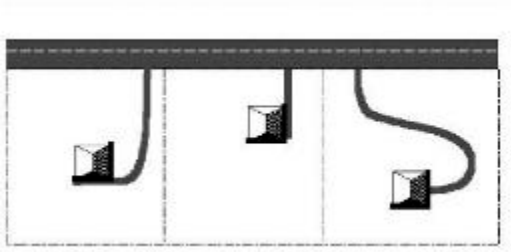
overhangs, projections, inside corners, and crevices that can harbor flaming embers, making it easier for a structure to ignite. The design components that can make a difference range from a simple screen on a chimney to prevent access of embers, to more technologically advanced fire sprinklers, barriers, and other fire suppression systems.
Whether the structure has interior fire sprinklers or smoke detectors that facilitate an early response can also change the character of a single-fire event.

E. STRUCTURE SITING

Structure siting or “setback” refers to the location of a structure in relation to nearby slopes, property boundary, and the edge of a wildland area. The location of structures relative to wildland fuels and to adjacent steep slopes, saddles, or chimneys relates to the ease of fire spread. It is generally accepted that a house sited within 30 feet of a slope greater than 30 percent with wildland brush below is in greater danger than one sited the same distance from the wildland fuel, but not on the top of a slope. Fuels on the top of a slope are pre-heated by the fire beneath it, so both vegetative and structural fuels are easier to ignite and burn with greater intensity. Siting ties directly back to basic fire behavior in steep environments.

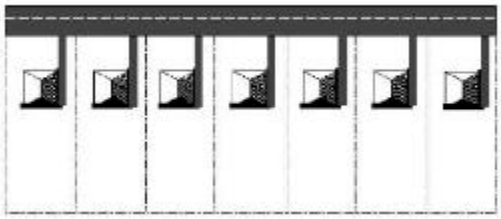
Placement of a structure near the property boundary also results in inadequate defensible space when the adjacent property owner does not maintain that portion of his/her lot. Siting of a structure also impacts access, which can greatly affect a fire responder’s ability to protect the structure. For example, structures placed in the rear of a lot will tend to have longer driveways, which can limit fire response access.

Structure density, or the distance between structures, relates directly to horizontal fuel continuity. The closer structures are together the greater the likelihood of fire spreading from structure to structure via radiant heat, with each structure contributing a high concentration of fuels and an additional ignition source.



Low Structure Density

- Large quantities of fuels left untreated
- House-to-house ignition less likely
- Inefficient suppression activities



High Structure Density

- Fuels between homes are likely removed
- House-to-house ignition more likely
- Efficient suppression activities

Whether it is wildland with limited development, or heavily developed urban areas with limited wildland, the form of the interface makes a difference. The presence of structures, even in low density, complicates wildfire suppression by requiring different tactics to protect homes than are used on the surrounding vegetation. This may limit the strategies available to restrict fire spread and contain the fire.

F. SPATIAL DISTRIBUTION OF RISK

1. Definition of Risk

Although the definitions of “hazard” and “risk” are relatively standardized, variations in the definition for a community-risk assessment can result in diverging perceptions across stakeholders. This CWPP uses the following definitions:

Hazard: a condition or element that provides a source of ignition or contributes to spread and severity of fire. In this CWPP, “hazard” is defined specifically as the “potential for and characteristics of wildfire as a source to inflict damage to the people, insurable property, and the environment within the Wildland Urban Interface Zone.”

Risk: the exposure to possible loss or injury from a hazard. This will include the effects of mitigation to reduce the hazard and the values associated with any potential damage.

Risk Assessment: involves identifying the risk impact and risk perception in order to support decision making and planning.

For the purposes of development this CWPP, the map of Very High Fire Hazard Severity Zones, delineated by CAL FIRE and adopted by the local fire protection jurisdictions was used as the risk assessment. From the Forest Resources Assessment Program website http://frap.fire.ca.gov/projects/hazard/hazard: VHFHSZ data was developed based on a hazard

scoring schema using subjective criteria for fuels, fire history, terrain influences, housing density, and occurrence of severe fire weather, designed to delimit areas where urban conflagration could result in catastrophic losses. CAL FIRE Units developed initial recommendation maps for areas meeting threshold hazard criteria, and these areas were then reviewed, modified, adopted or rejected by the local fire department. A more complete description of the mapping process is found at: http://frap.fire.ca.gov/projects/hazard/fhz.

The mapping criteria involve fire behavior, including a zone in which embers can create ignitions surrounding the SRA, terrain, weather, and values at risk. These are all important factors that predict the potential damage within the WUI. The mapping was vetted, reviewed, and critiqued throughout the state and has been adopted statewide.

2. Distribution of Risk in Orange County

The distribution of risk varies throughout Orange County, but a few generalities have been established.

- The entirety of the coastal portion of the CWPP is mapped as Very High Fire Hazard Severity.
- The eastern portion of the area within the CWPP was not mapped because it is Federal land. As part of the US Forest Service, no private structures are permitted.
- The vast majority of the area covered by the CWPP is designated as very high fire hazard severity.
- The western edge of the eastern section of the CWPP area also includes lands mapped within the CAL FIRE risk mapping as Moderate to High Fire Hazard Severity.

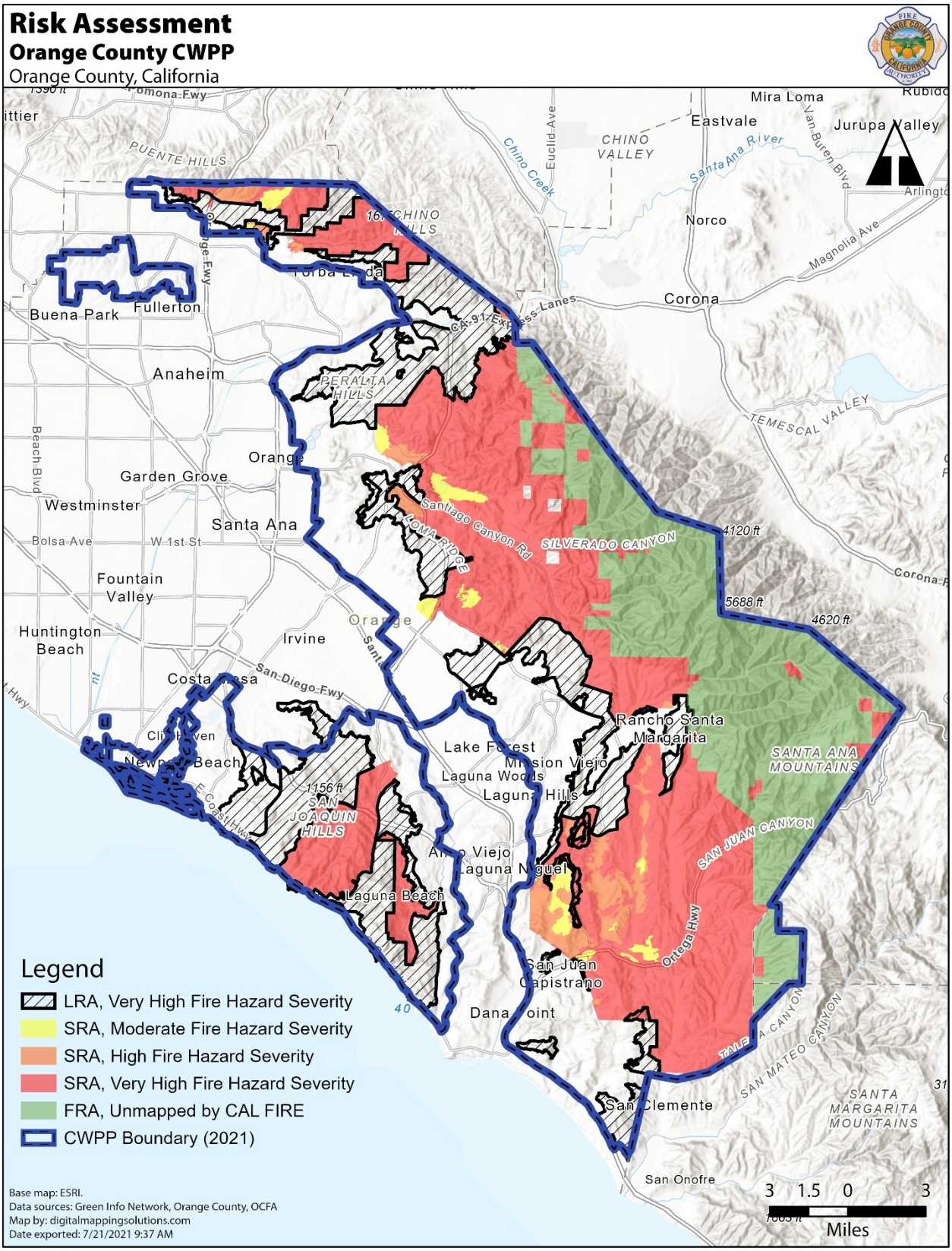


Figure 18. Map of Wildfire Risk within the CWPP

3. Challenges of Structure Protection in the WUI

In remote and rural areas of the county, firefighters are often faced with a limited water supply and lack of hydrant taps. Rural areas are characteristically outfitted with small diameter pipe water systems, which are inadequate for providing sustained firefighting flows. While not all these issues are within OCFA's control, prevention efforts for the ones that are, such as road clearance, fuels reduction, defensible space inspections and resident education will continue to be incorporated into this plan.

Some of the most difficult fire protection problems encountered in the WUI are:

- Multiple-story, wood-frame, high-density developments
- Large contiguous built up areas with combustible roofing materials
- Response times for emergency equipment
- Street structure, such as truck trails, non-surfaced private roads, and/or curvilinear roads, with dead-ends and narrow street widths
- Inadequate and unreliable water supply with poor hydrant distribution
- Sensitive and protected natural and cultural resources on adjacent open space lands

However, perhaps the most pressing problem overall is public apathy and unawareness regarding wildfire risks. The ongoing challenge will be for people to understand that surviving a wildfire may depend on their willingness to accept personal responsibility for protecting their homes, families, and communities, by implementing proven preparedness and prevention strategies before fire occurs.

SECTION V: EXISTING PRE-FIRE MANAGEMENT STRATEGIES

A. EXISTING SOCIAL ENVIRONMENT – ORGANIZATIONAL INFLUENCES

Several organizations support wildland fire safety through existing programs and pre-fire management strategies. These include Fire Safe Councils and Homeowner Associations. In addition, cities, fire departments and the county have all developed pre-fire management strategies that are in place. The combination of land use planning, public education and, outreach programs, as well as the regulatory programs, form a powerful component of pre-fire management strategies. Fuel modification, ignition prevention and firefighting improvements complete the suite of pre-fire actions that bolster wildland fire safety.

1. Major Homeowner Associations

Homeowner associations throughout Orange County have a pre-fire strategy that cover education of their residents and fuel modification of the vegetation in their area of concern. Additionally, most have a design review process that addresses structural fuels to ensure continued compliance with ignition-resistant construction requirements. The following associations agreed to participate in the CWPP:

- Santiago Estates
- Dove Canyon
- Coto de Caza Master
- Coto de Caza Village
- Emerald Bay HOA
- Foothill Ranch
- Portola Hills
- Aliso Viejo Community Association
- Ladera Ranch Maintenance Corporation
- Monarch Point
- Santa Margarita Landscape and Recreation Corporation

2. Fire Safe Councils

One response to the increased threat of wildfire in the WUI has been the emergence of Fire Safe Councils (FSCs). These are locally-based groups of volunteers whose goal it is to reduce wildfire hazards to communities. Today, there are over 150 FSCs in California, of which four are in Orange County. All four serve areas in the CWPP. These are rural and urban councils focused on fuel treatments and public education. While some have paid staff, most are volunteer-led. Councils carry out a wide range of critical fire preparedness activities that are beyond the capacity of formal fire services.

a. Fire Safe Council of East Orange County Canyons

Originally formed in 2002 as the Inter-Canyon League Fire Safe Council, the Fire Safe Council of East Orange County Canyons is an independent 501(c)3 nonprofit corporation. Due to efforts to reduce the vulnerability of homes and landscapes to wildfire, the Fire Safe Council of East Orange County Canyons (FSCEOCC), is the first to be recognized as a Firewise Communities/USA® in Orange County. FSCEOCC is a recognized leader among its peers, having worked side by side with the California Fire Safe Council, OCFA, Collaborating Organizations Active in Disaster-Orange County, and other agencies. Directors and active members include retired and active professional firefighters, Canyon Emergency Preparedness Academy (CEPA) and Community Emergency Response Team (CERT) trained individuals.

This FSC serves East Orange County canyons and foothills from the 241 Toll Road to Holy Jim Canyon. All area stakeholders, including residents, property owners, landlords, businesses, and park districts are automatically members. No dues are required.

Its main activities include distributing email community bulletins and Red Flag Alerts and warnings, distributing fire prevention literature, conducting a road clearance program, fire hazard reduction programs, dead tree removal, chipper (brush clearance) days, canyon clean-ups, Disaster Preparedness Day, and other community events. They work with local, state, and federal agencies and local groups in time of emergency.

b. Foothills Community Association Fire Safe Council

The Foothills Community Association Fire Safe Council (also known as the North Tustin Fire Safe Council) serves the unincorporated areas of the County bounded by the cities of Santa Ana, to west, Tustin, to south and east, and Orange, to the north. The parent organization of the Fire Safe Council is the Foothill Communities Association (FCA), a nonprofit corporation located in the unincorporated area known as North Tustin. Since the 1960s, FCA has strived to preserve and enhance community. Over 10,000 homes are within the charter area. Several of the

included communities are also known as North Tustin, Cowan Heights, Panorama Heights, Lemon Heights, and Crawford Canyon.

Planned activities include a variety of education programs such as improving its website, placing fire safety in school curriculum, reaching parents through students, holding BBQs with education component, and placing educational tables at events such as Car Shows. The fire safe council also seeks collaboration between other local and out-of-the-area fire safe councils, homeowner associations, fire departments and COAST through meetings. It also plans to locate and install blue dots at hydrant locations, and post those locations on its website. Last, the fire safe council hopes to expand chipper day programs, although the cost is daunting.

c. Greater Laguna Coast Fire Safe Council

On October 27th, 1993, Laguna Beach lost over 200 homes to wildfire (total of 400 in several communities). To help protect the local region from future disaster, the Greater Laguna Coast Fire Safe Council was organized. This council, which has received grants from both the Bureau of Land Management and the U.S. Forest Service, seeks to develop activities that will keep residents informed about fire dangers and to promote fire mitigation measures. Its focus is fire prevention through community awareness.

d. Carbon Canyon Fire Safe Council

The Carbon Canyon Fire Safe Council was established in 2001. The area served by the Carbon Canyon Fire Safe Council straddles the San Bernardino, Orange and Los Angeles County lines and includes the cities of Chino Hills to the east, Yorba Linda to the south, Brea in the west and portions of unincorporated Los Angeles County to the north.

Although Carbon Canyon is several miles from federal land, it is impacted by fires originating in the Cleveland National Forest. A concern in this area is a pattern of frequent fires that promote non-native plant species which are more hazardous and easier to ignite.

The Carbon Canyon Fire Safe Council developed its own CWPP in 2011, where it assessed the assets at risk by developing a matrix based on Fire Risk, Protection Capabilities and Values. Several projects were prioritized in the 2011 CWPP. These include ignition prevention along Carbon Canyon Road, communication and enforcement of codes, vegetation management within 100 ft of structures, collection of accurate weather information, and development of pre-attack plans and evacuation plans[79]. The Fire Safe Council updated this plan in 2017. Since 2017, they have developed accomplished several projects:

- Distributed an evacuation guide to every resident in the Canyon.
- Distributed fire safe education materials to help residents harden their homes from fire.
- Conducted fire safe fairs and workshops in the community.

[79] Carbon Canyon Community Wildfire Protection Plan, December, 2011.

- Conduct an annual Fire Safe Trunk or Treat Halloween event with the local fire agencies.
- Planned a canyon-wide private repeater radio system for resident communication during an emergency.
- Coordinated with local agencies in the continued spaying and removal of Arundo from Carbon Creek.

Communication continues to be the biggest challenge, because cell service is normally inconsistent and absent in times without power. The Fire Safe Council continues to work with the local agencies to solve this problem.

B. FIRE MANAGEMENT PLANS/PROGRAMS OF LANDOWNERS AND/OR RESOURCE MANAGERS

Wildland fire safety is also bolstered by the plans and actions of landowners and resource managers of large open space properties. The fire management plans of these groups affect numerous acres, often in the WUI. These land owners and managers also have the responsibility to protect sensitive habitats and regulated species.

1. Cowan Heights – Peters Canyon Project

This project completed in 2015 was a collaborative effort between Orange County Public Works, Orange County Fire Authority, and Orange County Parks. The intended result was to reduce hazardous fuels to a minimum of 50% of the current available hazardous fuels (responsible agency – OCFA) and the restoration of the Lower San Diego Creek riparian area (responsible agency – OC Public Works). OCFA also conducted outreach and education activities on the necessities of vegetation treatments and maintenance, plus home improvements that will add to survivability during a wildfire.

2. Crystal Cove State Park Wildfire Management Plan

Crystal Cove State Park's Wildfire Management Plan was last updated in 2003. They completed a wildfire annex designed to provide Crystal Cove State Park first responders and neighboring jurisdictions with information on park evacuation protocols and areas to be protected within the park during a wildland or urban fire. They are seeking funding for updates to the Wildfire Management Plan.

3. Irvine Ranch Conservancy-Wildland Fire Ignition Reduction Strategy

A collaborative effort between the Irvine Ranch Conservancy (IRC) and OCFA, this plan focuses on actions that will reduce the probability of wildland fire ignitions, particularly during Santa Ana Wind conditions. The plan highlights five (5) major action areas: a Fire Watch Network, Fire-Hardening Roadways, Power Line Safety, Wildland Access, and Urban-Wildland Edge. Once again, this plan is the conduit to discuss and develop pre-suppression and prevention activities

to reduce the loss of life, property, environment, and suppression costs. However, emphasis on ignition reduction for environmental concerns is the highest priority.

4. Orange County Central/Coastal NCCP/HCP Wildland Fire Management Plan

The Orange County Central and Coastal Sub region NCCP/HCP has a Wildland Fire Management Plan (WFMP) that addresses pre-suppression, suppression, and post-suppression tactics. The suppression tactics identify desired actions and locations, while the post-suppression tactics identify the actions and responsibilities for fire suppression repair. The WFMP plan is the conduit to discuss and develop pre-suppression and prevention activities to reduce the loss of life, property, environment, and suppression costs.

The plan established fourteen (14) Fire Management Compartments (FMC's) in the Nature Reserve that were further subdivided into Fire Management Units (FMU's). In addition, specific fire suppression strategies were identified for each FMU, which can be adjusted annually as inventories of species and habitat conditions improve.

5. Orange County Transit Authority Wildland Fire Management Plans

In 2006, Orange County voters approved the renewal of Measure M (M2), effectively extending the half-cent sales tax to provide funding for transportation projects and programs in the County. In 2017, Measure M2 was rebranded as OC Go. As part of M2 OC Go, a portion of the freeway program revenues was set aside for the Environmental Mitigation Program (EMP). The EMP allocates funds three ways: to purchase conservation properties, to restore habitat, and to manage those lands in exchange for streamlined project approvals for 13 freeway improvement projects included in the OC Go Measure.

The M2 OC Go freeway projects impact protected habitats and biological resources including plants and wildlife. State and federal laws require that impacts to these resources be reduced (mitigated). To do this, the Orange County Transportation Authority (OCTA) coordinated with the California Department of Fish and Wildlife (CDFW) as well as the United States Fish and Wildlife Service (USFWS) (collectively referred to as Wildlife Agencies) and developed a Natural Community Conservation Plan/Habitat Conservation Plan (Conservation Plan). Conservation properties (Preserves) that possess habitat and important wildlife species that are similar to those affected by the construction of the M2 OC Go freeway projects have been purchased from willing sellers and are included in the Conservation Plan. These Preserves will remain in a natural state and will remain protected in perpetuity from development.

In 2020, OCTA prepared Fire Management Plans for these preserves is to provide a blueprint for protecting the natural environment to the greatest extent possible against both wildfire and also damage from suppression activities. Simultaneously, OCTA also aims to provide safety to neighboring vulnerable assets. The plans include overviews of regulations, policies and guidelines, as well as documentation of the existing conditions. Fire Management Plans are to be approved by both the Wildlife Agencies as well as the Orange County Fire Authority (OCFA).

6. Southern Sub-Regional Wildland Fire Management Plan – Rancho Mission Viejo

Development for the Rancho Mission Viejo Land Trust is designed to manage the natural resources of the ranch lands of Rancho Mission Viejo. OCFA, California Department of Fish and Game, U.S. Fish and Wildlife, the RMV Land Trust and a variety of other regulatory agencies were involved in the development. This plan addresses suppression tactics by identifying desired actions and locations, plus post-suppression tactics for actions and responsibilities for fire suppression repair. This plan is the conduit to discuss and develop pre-suppression and prevention activities to reduce the loss of life, property, environment, and suppression costs.

The Orange County Fire Authority established eighteen (18) Fire Management Compartments (FMC's) in the Rancho Mission Viejo Reserve that were further subdivided into Fire Management Units (FMU's). In addition, specific fire suppression strategies were identified for each FMU, which can be adjusted annually as inventories of species and habitat conditions improves.

A plant palette was established that applies to future development within the RMV Planning Area because of the high fire hazard severity designation for this area. The plant palette emphasizes the use of native plant species that enhance the biological integrity of the Habitat Reserve, establishes an appropriate transition at the urban/wildland interface, and provides an acceptable level of wildland fire protection.

7. USDA Forest Service Wildland Fire Management Plan

For this plan, the Cleveland National Forest and the Marine Corps Base Camp Pendleton have addressed the NCCP/HCP guidelines. Both agencies utilize a combination of using prescribed fire and an Aggressive "A" Wildfire Suppression Operations Mode (please refer to Section III for the description of the three Wildfire Suppression Operational Modes). The Cleveland National Forest and Camp Pendleton are the only entities in the Southern Subregion, or adjacent to the Southern Subregion, that have completed Fire Management Plans that consider the rich biodiversity found on the lands they manage.

8. Vegetation Treatments in OCFA's 2016 Strategic Unit Fire Plan

The OCFA 2016 Strategic Unit Fire Plan developed a pre-fire strategy that addresses several large landowners, which recommended the following. Many of these strategies are on-going and continue in the 2020 Strategic Unit Fire Plan.

California State Parks

- Roadside vegetation treatment in several locations in Chino Hills State Park
- Maintain treatments along fire roads at Crystal Cove State Park to reduce hazards to Newport Beach and the community of Emerald Bay

Orange County Parks

- Several vegetation management projects, including projects in Casper's Wilderness Park and O'Neill Regional Park
- Construction of several fuel breaks on Laguna Coast Wilderness Park and Aliso and Wood Canyons Wilderness Park to reduce hazards to the cities of Laguna Beach, Irvine, and Aliso Viejo

Starr Ranch

- Remove flammable and drought-stressed vegetation along the main access road, and in the critical locations and fuel breaks between homes

The Canyon Communities

OCFA is partnering with East Orange County Fire Safe Council to conduct roadside treatments on private roads within Silverado, Modjeska, and Trabuco Canyons. Most of the canyon private roads have non-conforming street widths, which create emergency access constraints. The following are recommendations for Santiago Canyon:

- Improve defensible space
- Modify roadside fuels in the canyons
- Construct fuel breaks in Williams Canyon, Modjeska Canyon, and Trabuco Canyon
- Modify fuels on Live Oak Canyon Road
- Develop shaded fuel breaks in the Limestone Canyon Wilderness Area

For Silverado Canyon residents, (including Ladd Canyon, Baker Canyon and Williams Canyon) and for Modjeska Canyon including Modjeska Canyon, Santiago Canyon, and the Modjeska Grade:

- Develop the safest means of evacuation with potential rendezvous sites for residents, and to help fire and law enforcement agencies during major wildfire occurrence.

C. LAND USE POLICIES

One of the principle ways that local jurisdictions and agencies can reduce the risk of wildfire damage in their community is to require to the maximum extent feasible that new development within the WUI be capable of withstanding a wildfire burning in the area. Land use planning represents a shift in traditional thinking from trying to eliminate wildfires, or even increasing resilience to them, toward avoiding exposure to them through the informed placement of new residential structures. For land use planning to be effective, it needs to be based on solid understanding of where and how to locate and arrange new homes.

Typically, a county or city that includes WUI within its boundary regulates land use within the WUI to ensure that new development: (1) maintains defensible space around the new structures; (2) has sufficient water and access; (3) is able to be served with adequate fire suppression staff and equipment available; and (4) is addressed by a fire plan that coordinates the above with a wider area system of fuel reduction zones and access routes that allow fire suppression agencies to take a stand to reduce fire spread. In cases where either the county or

city review of a new development application shows that all these resources are not available, it may be necessary to restrict the amount or location of development in High Hazard Severity Zones or provide additional measures to provide the desired level of protection.

The county and the cities with jurisdiction within the CWPP boundary all have general plans that contain policies aimed at reducing the risk of wildfire in their jurisdiction. For example, the County General Plan contains the following Goal, Policies and Action in its Safety Element:

Goal 1

Provide a safe living environment, ensuring adequate fire protection facilities and resources to prevent and minimize the loss of life and property fire.

Policies:

1. To encourage periodic updating of fire hazard mapping and continue to analyze existing fire hazard data as it pertains to Orange County.
2. To establish improved development standards for location of new construction, structural design, emergency vehicular access, and detection hardware.
3. To improve building code regulations to provide increased built-in fire protection.
4. To improve mutual aid and interagency automatic aid programs to maximize utilization of existing facilities.
5. To continue to improve the minimum water system design requirements for fire protection.
6. To provide technical and policy information regarding structural and wildland fire hazards to developers, interested parties, and the general public through all available media.
7. To increase public awareness through educational programs, which promote fire safe practices and fire prevention.
8. To inform the public of Fire Authority emergency services with special emphasis on prompt notification.
9. To encourage improvement of fire defense systems in hazardous areas.
10. To encourage the continued training of police officers and firefighters in arson detection to expand capabilities of the agencies in their detection and investigation of incendiary fires.
11. To maintain fire hazard information in the County's Buyer Notification Program.
12. To plan for the lowest fire insurance rating, based on fiscal considerations and physical limitations (e.g., topography, response time).
13. To improve emergency response times for emergency responders through the use of a computer-aided dispatch system and "pre-empt traffic signal control" system.
14. To promote increased volunteerism in the various fire protection fields (e.g., public education, reserve firefighters, and support services).

Action:
Review and impose conditions of approval at the appropriate project development level to assure that adequate site design, fire safe construction materials, and fire detection and

protection systems are incorporated into the proposal in order to achieve maximum fire protection and to minimize the extent of loss associated with fire incidence.

The city general plans have similar goals and policies. As highlighted in the "What's New" section of this Update, California has passed several pieces of legislation related to planning and land use policy since the adoption of the 2017 CWPP. These new laws require wildfire be incorporated into the General Plan, Safety Element, and updated along with the Housing Element. (See Appendix "Wildfire Related Legislation and New Laws Since 2017" for excerpts from the new 48 pieces of legislation, including AB747, SB99, AB2911, and SB379.)

To implement such policies, these jurisdictions have adopted fire hazard reduction requirements in their Ordinance Code, or Municipal Codes.

D. CODES

Every three years the State of California adopts new fire standards that are codified in the California Code of Regulations, referred to as the California Fire Code. The new 2019 California Fire Code established minimum standards for California and became effective statewide on January 1, 2020.

Orange County Fire Authority (OCFA) proposed a total of 61 local amendments to the 2019 California Fire Code; four of which are new amendments and 57 amendments that carried forward from the 2016 amendments either as-is or with revisions. These recommendations were shared with each of the local municipalities within the OCFA service area. Existing and revised amendments related to wildfire included (2019 CFC Code section):

- vegetation maintenance to align with OCFA Guideline C-05 requirements (304.1.2),
- hazardous conditions - prohibitions of outdoor fire during hazardous weather conditions (305.6),
- sky lanterns (308.1.6.3),
- fuel modification requirements for new construction (321),
- clearance of brush or vegetation growth from roadways (322),
- unusual circumstances (alternative methods for compliance) (323),
- use of equipment/ devices generating heat, sparks or open flames/ spark arresters (324, 324.1, 324.2),
- OCFA vegetation management guideline (4906.3),
- Fuel modification requirements for new construction (4908).

The California Building Code also contains standards that are updated every three years and relate to wildland fire. OCFA recommended that buildings within the very high fire hazard severity zone be required to incorporate fire resistive construction features of Chapter 7A of the California Building Code and Section R337 of the California Residential Code. They recommended that enhanced construction standards for new home and room additions,

including retrofitting the remainder of the existing residence, when located within a VHFHSZ. These would include:

- Room additions
- Decks/ balconies
- Accessory structures

Every city and county statewide has the authority to adopt more restrictive standards as "local amendments" based on local climatic, geological, or topographical conditions. Table 9 provides a summary of local adoptions of the 2019 Code.

The State Fire and Building Codes currently contain several regulations for protection of structures from wildfires. The California Fire Code contains extracts from the Public Resource Code regarding minimum defensible space distances (30 to 100 feet) and other safety measures in interface areas. Many local jurisdictions in Orange County developed local amendments that more specifically address risks within their communities. OCFA, through its partner cities and the County, adopted fuel modification standards (170 feet minimum) and building construction requirements (i.e., Class A roofs, boxed eaves, protected vents, dual-paned windows, etc.) applicable in identified fire hazard areas.

Some codes are specific to utilities. Public Resources Code 4292 (Powerline Hazard Reduction) presents guidelines for minimum clearance requirements around utility poles. Other state codes are aimed at preventing ignitions and spread of those ignitions at locations where industrial operations occur in the wildlands. These require minimum equipment and also require spark arrestors.

While not technically a code, the California Public Utilities Commission General Order 95 has been the central standard governing the design, construction, operation, and maintenance of overhead electric lines in the State. The 2014 update of GO 95 includes safety standards for overhead electric lines, including minimum distances between conductors, and between conductors and the ground, as well as standards for calculating maximum sag, and minimum distances between conductors and vegetation. As detailed in the "What's New" section of this CWPP Update, on January 19, 2018, the CPUC adopted, via Safety and Enforcement Division's (SED) disposition of a Tier 1 Advice Letter, the final CPUC Fire-Threat Map.[80] In 2019 Southern California Edison submitted the first annual submission of its Wildfire Mitigation Plan. Approximately 35 percent of SCE's service area is located in high fire risk areas. Updates and progress reports have been submitted annually.[81] In October 2019, SCE also introduced Public Safety Power Shutoff (PSPS) to the region).

[80] Source: https://www.cpuc.ca.gov/firethreatmaps/ accessed 3/26/21

[81] Source: https://www.sce.com/wildfire/wildfire-mitigation-efforts. .

2019 Fire code adoption by jurisdiction

Jurisdiction	Adopted 2019 Fire Code yes	no	Adopted (Whole Code, Sections & Appendices)	Addendum or revisions Chapter/ Section of added items related to wildfire	Link to Code adoption resolution or ordinance
Aliso Viejo	x		Whole + Appendix B, B, C, CC	13.04.110 Chapter 49 Requirements for WUI fire areas amended	https://www.ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Aliso%20Viejo.pdf
Anaheim	x		Whole + Appendix B, E, F, G and H	4902.1 WUI Fire Area. 4905.4 Fuel modification rquirements for new construction, 4906.1 Hazardous Vegetation and Fuel management	https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjztLezyY3xAhXNi54KHR-3DegQFjAAegQIBhAD&url=https%3A%2F%2Fcodeli
Brea	x		Whole + Chapter 4 Appendices A, B, B, C,CC,D,E,F, G, I, K, M, N, O	OCFA amendments	https://codelibrary.amlegal.com/codes/brea/latest/brea_ca/0-0-0-66571
Dana Point	x		Whole	OCFA amendments + Section R337.1.3.1.1-,3 Ember zone 1 & 2.	https://www.danapoint.org/Home/ShowDocument?id=29002
Irvine	x		Whole + Appendix B, B, C, CC	OCFA amendments + Section 5-9-401 Building code materials and construction comply with Chapter 7A. Section R337.1.7 Fuel modificaton requirements.	https://library.municode.com/ca/irvine/codes/code_of_ordinances
Laguna Beach	x		Whole + Apendix B, BB, C, CC, D, H and K	Amendment to Chaper 49 Section 4906.3 Fuel modification. Section 4909 Explosives and blasting.	http://qcode.us/codes/lagunabeach/?view=desktop&topic=15-15_01-15_01_075
Laguna Niguel	x		Whole + OCFA amendments	OCFA amendments + adopt VHFSHZ	https://www.cityoflagunaniguel.org/DocumentCenter/View/17920/CD-1-2019-CBSC-Very-High-Fire-Hazard-Severity-Zones
Laguna Woods and Laguna Hills	x		Whole + Apendix B, BB, C, CC, and H	OCFA amendments	https://www.ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Laguna%20Woods.pdf
Lake Forest	x		Whole + Apendix B, BB, C, CC, and H	OCFA amendments	https://ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Lake%20Forest.pdf
Mission Viejo	x		Whole + Apendix B, BB, C, and CC	OCFA amendments	https://www.ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Mission%20Viejo.pdf
Newport Beach	x		Whole + Apendix B, BB, C, CC, E, F, G, I and N	OCFA amendments + VHFHSZ	https://www.codepublishing.com/CA/NewportBeach/html/NewportBeach09/NewportBeach0904.html
Orange City	x		Whole + Apendix B, BB, C, and CC	OCFA amendments	https://library.municode.com/ca/orange/codes/municipal_code?nodeId=TIT15BUCO_CH15.32CIORFICO_15.32.010ADRE
Orange County	x		Whole + Appendix B, B, C, CC, H	OCFA amendments	https://www.ocfa.org/Uploads/CommunityRiskReduction/Fire Code - County of Orange.pdf
Placentia	x		Whole + Appendix B, B, C, CC	OCFA amendments + See http://qcode.us/codes/placentia/?view=desktop&topic=18-18_04-18_04_050	http://www.qcode.us/codes/placentia/view.php?version=beta&view=mobile&topic=18-18_04-18_04_030
Rancho Santa Margarita	x		Whole + Appendix B, B, C, CC	OCFA amendments	https://ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Rancho%20Santa%20Margarita.pdf
San Clemente	x		Whole	OCFA amendments	https://ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20San%20Clemente.pdf
San Juan Capistrano	x		Whole + Appendix B, B, C, CC, H	OCFA amendments	https://www.ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20San%20Juan%20Capistrano.pdf
Tustin	x		Whole + Appendix B, B, C, CC, H	OCFA amendments	https://ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Tustin.pdf
Villa Park	x		Whole + Appendix B, BB, C, CC	OCFA amendments	https://ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Villa%20Park.pdf
Yorba Linda	x		Whole + Appendix B, B, C, CC, H	OCFA amendments	https://www.ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Yorba%20Linda.pdf

Table 7. 2019 Fire Code Adoption by Jurisdiction; a larger version of this table appears as Appendix A

E. GUIDELINES

Each jurisdiction has adopted vegetation or fuel management/modification requirements to be followed when new development is designed and constructed. The following summarizes those guidelines for jurisdictions within the CWPP boundary. Most of these jurisdictions have also adopted hazard mitigation plans that include recommended action items to address wildfire hazards (described elsewhere in this document).

1. OCFA Vegetation Management Guidelines

The guideline that affects the large area and greatest number of landowners is OCFA's most recent *Vegetation Management Guideline C-05 – Technical Design for New Construction Fuel Modification Plans and Maintenance Program, January 1, 2020*.[82] Since the late 1970's, planning and building department agencies served by Orange County Fire Authority (OCFA) have adopted local fire codes that require that new buildings be protected by landscape Fuel Modification Zones. Fuel Modification Zones are landscaping areas in which existing combustible vegetation is removed from strips of land and replaced with spaced and irrigated fire-resistant plants and further from adjoining strips of land in which vegetation is partially removed. The zones provide protection for structures from wildfires by slowing the speed and reducing the intensity of the fire.

The guidelines require fuel modification on all new development adjoining grass-covered, brush-covered or chaparral covered land, canyons, foothills, mountains, and other lands containing combustible vegetation. An assessment of interior vegetative areas within the community is also required.

Prior to beginning the grading and/or construction process, developers and builders are required to receive approval from OCFA for the design of a Fuel Modification Plan and for the installation of Fuel Modification Zones. OCFA's Guideline addresses the Fuel Modification design and maintenance process requirements.

Separately, the California Fire Code and Public Resources Code both require landowners to implement and annually maintain a Defensible Space vegetation reduction plan between their structure and the wildfire area for a distance up to 100 feet, measured from their structure to their property line. Defensible Space is required for land owners in Orange County when a Fuel Modification Plan and installation was not previously approved, and for their current remaining landscape area located between the approved Fuel Modification Zone "A" and their structure. For existing structures that were not developed with a fuel modification plan or condition, maintenance is completed as required in the Vegetation Management Maintenance Guideline for Property Owner.[83]

[82] https://www.ocfa.org/Uploads/CommunityRiskReduction/OCFA%20Guide-C05-Fuel%20Modification.pdf
[83] https://ocfa.org/RSG/VegetationManagement

Design of Zones: The minimum width of a fuel modification area is 170 feet.[84] Zone A will not be approved when separated more than 100 feet from the protected structure. A new fuel modification installation consists of:

- 20-Foot Level Structure Setback (Zone A)
- 50-Foot Re-planted Irrigated (Zone B)
- 50-Foot Vegetation Thinning (Zone C)
- 50-Foot Vegetation Thinning (Zone D)
- An Assessment of Interior Areas from the Community Perimeter (Section 7)

The Guideline provides a plant palette to be used for the plans, approved configurations, and maintenance requirements for all zones. Specific vegetation management guidelines are also provided for interior common areas, manufactured slopes, and areas with non-irrigated vegetation (called Special Management Areas). The Guideline lists the required OCFA inspections to ensure property fuel modification implementation.

The property owner is responsible for all maintenance of the fuel modification. All areas must be maintained indefinitely in accordance with notes on the approved fuel modification plans. This includes a minimum of two growth reduction maintenance activities throughout all fuel modification zones each year. Maintenance will be performed sometime within time periods of mid to late spring and once again in early to mid-fall. Other activities include maintenance of irrigation systems, replacement of dead or dying vegetation with approved species, removal of dead plant material, removal of trees and shrubs not on the approved plans, and removal of undesirable highly combustible species. The landscape maintenance company and/or property manager is required inspect the fuel modification zones throughout the year to identify where specific activities need to take place. OCFA may conduct inspections of established fuel modification areas. The property owner shall retain all approved fuel modification plans. As property is transferred, property owners shall disclose the location and regulations of fuel modification zones to the new property owners.

[84] In some cases the width could be increased prior to approval, due to the type of terrain and/or type and mass of vegetation.

2. City of Laguna Beach Landscape/Fuel Modification Guidelines

These guidelines provide information on how landscape and fuel modification zones are to be integrated, designed, installed, and maintained in order to meet safety requirements. Properties required to follow these guidelines are identified in the City's GIS with a "FM" designation. All proposed new structures designated with an FM are required to follow the *Landscape/Fuel Modification Guidelines*. All existing structures with an FM designation which propose an addition, alteration or repairs having a valuation of 50% or more of the valuation of the building prior to the additions, alterations, or repairs are required to follow the Landscape Fuel Modification Guidelines. A typical landscape/fuel modification installation consists of a 20-foot setback zone (Zone A), a minimum 50-foot zone, typically irrigated (Zone B), with an additional 125-foot minimum of vegetation thinning zones (Zones C and D). The minimum width of a fuel modification area is 195 feet, and in some cases, the width increases due to type of terrain and/or type and mass of vegetation.

Laguna Beach's plan requirements, submittal process, required inspections, and maintenance provisions are basically the same as for OCFA and Orange City. The one difference is that the Laguna Beach Guidelines do not include specific requirements for interior common areas, manufactured slopes, and areas with non-irrigated vegetation[85] .

The City drafted a Defensible Space Guideline for Existing Structures in the Very High Fire Hazard Severity Zone in May 2021. This document includes a five-foot ember resistant zone and details required actions in that area. Actions in Zones spanning 5-30 feet and 30-100 feet are likewise prescribed.

3. City of Anaheim Fuel Modification Plans

The city has prepared a Local Hazard Mitigation Plan that addresses wildfire hazard and the measures the city and its citizens can implement to reduce risk.[86] The city has adopted the State's mapping of fire hazard severity zones (per City Code Section 16.40) and requires that property within VHFHS zones comply with State law. The Anaheim Fire and Rescue requires fuel modification plans based on the four-zone approach. The requirements for these plans that target hazardous vegetation and fuel management are similar to those discussed above for the county and other cities. In particular, developments in the Special Protection Zone must provide fire protection plans. In this area, the landowner must implement a Vegetation Management Plan, which results in proper vegetation modification on an ongoing basis within the Special Protection Area. The City aims to modify fuels in naturalized canyons and hills to protect life and property from wildland fires yet leave as much of the surrounding natural vegetation as appropriate.

[85] The 2005 City's plan can be accessed at:
https://www.lagunabeachcity.net/civicax/filebank/blobdload.aspx?blobid=4867
[86] Hazard Mitigation Plan for the City of Anaheim, City of Anaheim, 2017.
http://anaheim.net/DocumentCenter/View/27741/City-of-Anaheim-LHMP-2017

4. City of Newport Beach Landscape/Fuel Modification Guidelines and Maintenance Program

The Newport Beach WUI is comprised of areas in the City defined as a Very High Fire Hazard Severity Zone (VHFHSZ). The Newport Beach Fire Department Fire Prevention Division administer three different vegetation management programs. Weed Abatement, Hazard Reduction, and Fuel Modification Zone. Properties located in these VHFHSZ must comply with more restrictive building codes when new construction or a significant remodel occurs. The City also supports the Ready! Set! Go! Program, with brochures and other education information.

There are 82 properties in the weed abatement program. The purpose of this program is to reduce potential fire hazards due to accumulation of weeds, dry vegetation and or rubbish. Fire Operations staff inspect the properties once per year, starting in the beginning of May. Homeowners, landowners, or property managers must comply with the vegetation requirements by the first week of May to avoid receiving a non-compliance letter.

There are approximately 260 parcels designated as Hazard Reduction Zones that need to comply with the G.01 Guidelines and Standard for Hazard Reduction Zones.[87] Hazard Reduction Zones are located where structures directly abut wildlands and were built prior to July 1999, and are not otherwise classified as a Fuel Modification Zone. Upper, Middle, and Lower Buck Gully - including Big Canyon, Morning Canyon, and Newport Coast - are areas determined as a Hazard Reduction Zone. The Hazard Reduction guidelines specify vertical and horizontal separation between vegetation and require the use of fire resistive plants out to minimum of 100-feet from a structure. Not all Hazard Reduction Zones are located in a VHFHSZ; however, if a new structure or significant remodel is proposed, it must then comply with the more stringent requirements of a Fuel Modification Zone. The goal is to eventually upgrade the Hazard Reduction Zones into Fuel Modification Zones as residents develop their property. Fire Prevention staff conducts these inspections on an annual basis. Homeowners, landowners, or property managers must comply with the vegetation requirements by the last week of May to avoid receiving a non-compliance letter. Inspections conducted by the Fire Prevention staff begin the first week of June.

[87] Guideline G.01 – Hazard Reduction Zones. 2/25/2020. https://www.newportbeachca.gov/home/showdocument?id=66683

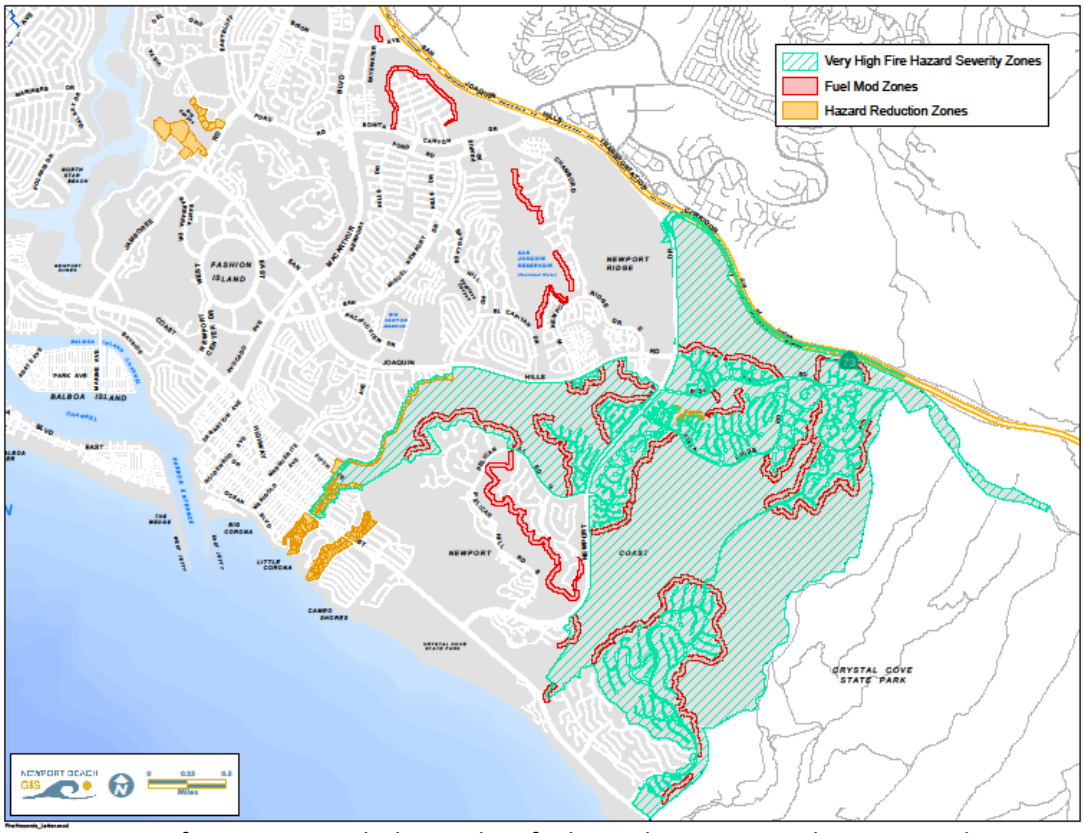


Figure 19. Area of Newport Beach that is classified as either a Very High Fire Hazard Severity Zone or a Hazard Reduction Zone. The entirety of the City is included in this CWPP.

There are 24 communities that are required to maintain Fuel Modification Zones.[88] Those locations need to comply with the City's G.02 Fuel Modification Plans and Maintenance Standard.[89] All developments which abut the WUI must modify and maintain vegetation to reduce risk; for a Fuel Modification Zone, the minimum fuel modification area is 170-feet wide. Four treatment zones are defined with more treatment required near the structure (Zone A) and less irrigation and vegetation treatment at the more distal zones (Zone B through D), this provides a progressive reduction in fuels leading to the built environment. All plants must be fire resistive and maintained per the guideline. Fuel Modification Zones are inspected twice per year, once in the spring, and once in the fall.

5. City of Orange Vegetation Management Program and Safety Element Policies

The Orange City Fire Department helps the community to stay fire safe is by ensuring that overgrown brush does not accumulate throughout the city, and that "defensible space" is

[88] https://www.newportbeachca.gov/government/departments/fire-department/life-safety-services-division/wildland-urban-interface

[89] Guideline G-02. Fuel Modification Plans and Maintenance Standards for Development, 2016. http://www.newportbeachca.gov/home/showdocument?id=9340

established and maintained between urban development and the "wildland" interface. The department does this, in part, through a Weed Abatement Program and a Fuel Modification Program[90]. The Weed Abatement Program focuses on treatments near roads and within 100-feet of structures. Flammable vegetation and other combustible growth within 100 feet of combustible structures shall be removed. Flammable vegetation and other combustible growth within 10 feet of roads or highways shall be removed. Fifty feet of such treatments is recommended. Fire department-approved standards provide specifics for treatments in these zones. These include the need to prune lower branches of trees to six feet, maintenance of shrubs to a maximum height of two-to three feet, and clearance of 13.5 feet over roads. Weed Abatement inspections are conducted twice a year, starting in March and again in September.

The City considers fuel modification as the most effective step the community can take to prevent loss of life and property in the future. The Fuel Modification Program focuses on controlling the types, density, and moisture content of plants to create defensible space. Similar to programs described above, the city uses four zones for a combined width of 170 feet[91]: Zone A is 20 feet wide and typically falls within an individual home owner's property. All other zones are 50 feet wide and are usually the responsibility of a homeowner association. Like other programs, Zone A is to be planted with approved species, irrigated, and contain minimal fuel volume with non-combustible structures. Zone B is irrigated and planted with a selected number of fire resistant plant species; combustible construction is not allowed. Zones C and D consist of natural vegetation that has been thinned, leaving 70% of the material in Zone D and 50% in Zone C.

The Public Safety Element[92] of the City's General Plan recognizes that new development, particularly in the eastern portion of Orange, will result in increased fire hazards due to higher

[90] Information regarding these programs are available at the City's website, https://www.cityoforange.org/180/Fire-Prevention

[91] https://www.cityoforange.org/DocumentCenter/View/67/Fuel-Modification-Zones-PDF?bidId=

[92] https://www.cityoforange.org/DocumentCenter/View/573/General-Plan---Public-Safety-Element-PDF Adopted 2010.

levels of interface between residential development and open grassland and vegetation along hillsides. It states that keeping neighborhoods buffered from both urban and wildland fire hazards reduces incidents requiring response and minimizes damage to property when fires do occur. Three policies established in the plan specifically address fires in the wildland urban interface:

- Policy 3.2: Consider non-traditional methods of controlling vegetation in undeveloped areas.
- Policy 3.3: Require planting and maintenance of fire-resistant slope cover to reduce the risk of brush fires within the wildland-urban interface areas located in the northern and eastern portions of the City and in areas adjacent to canyons, and develop and implement stringent site design and maintenance standards for all areas with high wild land fire potential.
- Policy 3.4: Provide adequate fire equipment access and fire suppression resources to all developed and open space areas.

F. HAZARD MITIGATION PLANS

Local governments engage in hazard mitigation planning to identify risks and vulnerabilities associated with natural disasters and develop long-term strategies for protecting people and property from future hazard events. It is most effective when implemented under a comprehensive, long-term mitigation plan, as mitigation plans are key to breaking the cycle of disaster damage, reconstruction, and repeated damage.

To be eligible for Hazard Mitigation Grants from FEMA, a jurisdiction must have a FEMA-approved Hazard Mitigation Plan. Following a major disaster declaration, the FEMA Hazard Mitigation Grant Program provides funding for long-term hazard mitigation projects and activities.

The Hazard Mitigation Plan is similar to a CWPP or Strategic Unit Fire Plan except that it addresses a broad spectrum of hazards, including floods, earthquakes, hazard materials, as well as wildfire. The *Orange County Hazard Mitigation Plan* has the mission to promote sound public policy, designed to protect residents, critical facilities, infrastructure, private property, and the environment from hazards in the unincorporated areas of the county and county-owned facilities. Hazard mitigation is approached in the plan through increased public awareness, documentation of resources for risk reduction and loss-prevention, and identifying activities to guide the County toward building a safer, more sustainable community.

Recommended Action Items related to wildfire, include efforts to enhance the efficiency of fire suppression agencies, coordinate with and communicate between agencies and with the public, and provide outreach and education to homeowners. One item is to “encourage implementation of wildfire mitigation activities in a manner consistent with the goals of promoting sustainable ecological management and community stability.” Consequently, this CWPP is one method of implementing the County’s Hazard Mitigation Plan.

Some cities have adopted local hazard mitigation plans that address the wildland fire hazard, as shown in Table 8. Local Hazard Mitigation Plan Adoption. Newport Beach's Natural Hazards Mitigation Plan shows the east end of the city as an area where fire protection is needed to augment existing approved fire breaks and fuel management.[93] In addition, the following jurisdictions have adopted Hazard Mitigation Plans:

- Aliso Viejo Local Hazard Mitigation Plan - This 2006 plan identifies areas on the city's southwest, west, and northwest sides as having extreme fire hazard severity, and includes the area within the CWPP boundary[94]
- Chino Hills Hazards Mitigation Plan
- Anaheim Hazard Mitigation Plan
- Fullerton Local Hazard Mitigation Plan
- Irvine Natural Hazards Mitigation Plan
- Laguna Beach Local Hazard Mitigation Plan
- Laguna Woods Local Hazard Mitigation Plan
- La Habra Hazard Mitigation Plan
- Mission Viejo Natural Hazards Mitigation Plan- The 2007 plan recommends OCFA continue to enforce the brush clearance requirements set forth in the Uniform Fire Code. It recommends mechanical thinning and prescribed burning to abate fire risk.
- Newport Beach Local Hazard Mitigation Plan
- Rancho Santa Margarita Hazard Mitigation Plan
- San Clemente Multi-Hazard Emergency Plan – as is the case for all cities where OCFA provides fire suppression services, new development must be implemented consistent with OCFA's *Vegetation Management Guideline.*
- San Juan Capistrano Hazards Mitigation Plan
- Tustin Hazard Mitigation Plan

These plans are all similar to the county's plan in recommending action items to address wildfire hazard. Again, this CWPP will help implement those action items. For reference, the City of Orange and Dana Point are in the process of preparing hazard mitigation plans.

[93] *City of Newport Beach Natural Hazards Mitigation Plan (Draft)*, 2008.

[94] the Local Hazard Mitigation Plan is available at:

Local Hazard Mitigation Plan Adoption

Jurisdiction	Adopted LHMP yes	Adopted LHMP no	Date	Link to LHMP
Aliso Viejo		x		
Anaheim	x		May 9, 2017	http://anaheim.net/DocumentCenter/View/27741/City-of-Anaheim-LHMP-2017
Brea		x		
Dana Point		x		
Fullerton	x		May 21, 2021	https://www.cityoffullerton.com/government/departments/community-and-economic-development/planning-zoning/long-range-plans-programs/local-hazard-mitigation-plan
Irvine	x		October 27, 2020	https://online.flippingbook.com/view/593885/132-133/
Laguna Beach	x		August 8, 2018	https://www.lagunabeachcity.net/cityhall/police/emergprep/local_hazard_mitigation_plan.htm
Laguna Niguel		x		
Laguna Woods and Laguna Hills		x		
Lake Forest		x	2040 General Plan Safety Element (June 2020) identified to explore grant funding for preparation of LHMP	https://lakeforestca.gov/DocumentCenter/View/10682/Lake-Forest-General-Plan-Entire-document-excluding-Housing-Element

Mission Viejo		x		
Newport Beach	x		2014 Update of 2008 plan	https://www.newportbeachca.gov/Home/ShowDocument?id=19741
Orange City		x		
Orange County	x		May 2021 public review draft for update of 2015 plan	https://www.ocsheriff.gov/sites/ocsd/files/2021-05/May%202021%20County%20of%20Orange%20Hazard%20Mitigation%20Plan%20PUBLIC%20REVIEW%20DRAFT.pdf
Rancho Santa Margarita	x		December 11, 2019	https://www.cityofrsm.org/565/Local-Hazard-Mitigation-Plan
San Clemente		x		
San Juan Capistrano	x			
Tustin	x		July 1, 2018	https://www.tustinca.org/1019/Hazard-Mitigation-Plan
Villa Park		x	in progress Nov 2020	
Yorba Linda		x		

Table 8. Local Hazard Mitigation Plan Adoption

G. OTHER RESPONSE AGREEMENTS AND MOUS

As described previously, MOUs and Response Agreements exist between a number of other public entities to enhance fire suppression activities within the CWPP area. They include initial attack, communications and response plans between counties, and include Camp Pendleton Marine Base, as well as response agreements with adjacent counties, the USDA Forest Service, and Camp Pendleton Marine Base to ensure the closest resource responds. There is another agreement with Orange County Parks to coordinate fuels mitigation and training, plus a multi-organizational task force has been established to address the growing problem of invasive pests that can increase hazardous fuels and impact the ecosystem.

H. OPERATING PLANS AND FIRE PREVENTION PLANS OF ENTITIES MANAGING INFRASTRUCTURE

Ongoing maintenance standards, contracts, training, and incentives are another way to prevent ignitions and slow fire spread. For example, Caltrans adopted a Maintenance Strategic Plan with comprehensive goals. One of the goals is to prevent ignitions and maintain a fire-safe right of way. Caltrans currently mows, sprays, and uses hand labor where appropriate to remove litter (which is a fuel) and keep fuels in a low hazard condition, on a structured schedule. Caltrans installed and maintains traffic management cameras and fencing and gates to deter unauthorized access. Additionally, Caltrans uses permanently mounted changeable message signs in various locations to inform the public of Red Flag fire hazard conditions. Caltrans' construction contracts specify an operating plan that prohibits certain types of work during dangerous fire weather conditions. Additionally, training is performed during pre-construction meetings. For its part, the TCA conducts as-needed maintenance activities around its Toll Plazas including weeding and brush control to remove dense annual grasses as well as removing trash and debris.

In addition to complying with the codes specified previously, both SDG&E and SCE have operating plans and fire prevention plans that specify conditions under which work can take place. Since 2019, both companies have added Public Safety Power Shutoff (PSPS) to their operation protocols to reduce the chances of fire during extreme and potentially dangerous fire conditions [95]. (See What's New for additional detail on PSPS).

[95] Source: https://www.sce.com/wildfire/psps and https://newsroom.edison.com/internal_redirect/cms.ipressroom.com.s3.amazonaws.com/166/files/20189/psps_one%20pager_english.pdf accessed 3/26/21.

SECTION VI: PROPOSED PROJECTS AND ACTION PLAN

A. PROPOSED PROGRAMS AND PROJECTS

The stakeholders in the CWPP identified a suite of programs and projects that would improve conditions and limit ignitions. As part of the Update process, the stakeholders were asked to confirm or revise the projects in the 2017 CWPP. Only one project was deleted, and that was simply because it was completed. A few of the projects (those pertaining to the treatment for, tree pests, removing dead trees, and replanting infested areas) were funded, but still needed additional funding for completion and maintenance. Projects from the City of Brea, the FSCEOCC and NCC were added.

The following list of projects, included under the CWPP, was developed by soliciting input from stakeholders at public meetings and through individual contacts with stakeholders and is designed to improve conditions and limit ignitions. Many programs and projects serve many goals, including those other than reduction of fire risk (e.g., worker safety and environmental enhancement).

The projects include areas of focus required for CWPPs in the FHFRA such as community collaboration, fuels reduction projects, and treatment of structure ignitability. They are organized into the following categories: Ignition Prevention, Planning, Structure Survivability / Defensible Space, Community Outreach and Education, Fuel Management on Public Lands and Large-Scale Landowners, and Firefighting and Mitigation.

1. Ignition Prevention

- Develop a multi-agency, comprehensive program to address fire ignitions along roadways
    - Maintain or increase buffers along public roads as needed.
      - Explore full native vegetation restoration/replanting to remove exotics and return site to reduced-fuel, native condition.
      - Mow flashy fuels in spring as needed.
      - Explore and incorporate other technologies (i.e. long-term retardant, walls and/or weed management mats).
    - Address roadside ignition prevention in fire safe community education programs.
    - Wildland management and oversight [e.g. Red Flag (forecasts, patrols, use policies), enforcement, strategic fuel treatment planning and implementation, possibly with hand crews and goats].
    - Adopt and/or enhance existing prevention educations program (One Less Spark, Smokey, Red Flag: what to do, what not to do, etc.).

    - Develop model contract specifications to address ignition prevention by contractors/employees, to include enforcement and "scared straight" components.
    - Expansion of Countywide Fire Watch, including local HOAs engagement, and monitoring patrols for ignitions, unauthorized access during Red Flag Warning.
    - Expansion of CERT/RACES Fire Watch
    - Install an early fire detection and monitoring system, such as webcams, flame/heat detectors or similar automated systems for viewing remote areas on Red Flag Warning days.
    - Support access restrictions during Red Flag Warning days/weather, recognizing camping reservations.
    - Prohibit camping on Red Flag Warning days (address current reservations), and prohibit open flames.
    - Manage pull-out areas w/ regulation-consistent gates and/or other access restrictions that limit possibility of vehicle-caused fire spread into vegetation or arson access.
    - Assemble a multi-agency law enforcement (OCSD/CHP) task force on Red Flag Days for fire prevention, e.g. law enforcement patrol for cigarette ignitions.
    - Conduct a study of effectiveness of various prevention methods.
- Implement roadside ignition plan, potentially through funding from SRA grants.

2. Planning

- Participate fully in General Plan revisions and Local Hazard Mitigation Plans:
    - Comply with SB1241, submitting Safety Element and Housing Element to Board of Forestry.
    - Develop policies for development that promote fire safety, and include these in the next general plan revision and in Local Hazard Mitigation Plans.
- Work with local law enforcement agencies to map and convey to the public local evacuation routes .
- Test plans in a drill scenarios with partners and stakeholders to identify weaknesses and prepared for actual wildfire response.
- Develop a model to prioritize fuel management projects:
    - Make data and GIS layers of fuel modification zones, biological resources, and cultural resources (as legally allowable), etc., available to stakeholders.
    - Identify and incorporate in plans the locations of critical infrastructure and resources to protect (natural and cultural).
    - Develop a fire risk model based on projected urban growth patterns and relationships to ignitions, vegetation, and fire regimes.
    - Develop a model and an automated live and dead fuel moisture reporting system across the county. This may be a remote sensing-based model to help describe some seasonal, successional, patterns of occurrence.

    - Develop an inventory and monitoring plan for tree mortality/dead aerial fuels due to past invasions (e.g. boring beetles).
- Develop or update plans for high-priority locations:
    - Specific fuel reduction/point protection for Tecate Cypress groves.
    - Update Wildfire Management Plan for Crystal Cove State Park/section in Natural Resource Management Plan.
    - Update Emerald Bay Conceptual Fuel Modification Zone Plan. Use updated Plan to inform the Irvine Crest Conceptual Fuel Modification Plan.
    - Vegetation management along utility roads.
- Identify priority restoration projects that minimize potential for ignitions and catastrophic fire in order of biggest hazard reduction potential.
- Develop carbon sequestration models for non-forest vegetation types (i.e. coastal sage scrub/chaparral) to address GHG and climate change. Link to potential and real carbon/habitat loss from wildfire with justification for strategically placed fuel treatments and other fire prevention activities.
- Develop and implement a multi-agency comprehensive roadside ignition reduction plan and implementation plan.
    - Include regulatory agencies .
    - Conduct a risk assessment.
    - Prioritization schemes based on risk.
- Pursue funding for staff to coordinate and promote prioritized implementation and planning for projects in the CWPP.
- Develop post-fire response plan (i.e., a Burn Area Emergency Response-like plan) for wildlands. In large wildfire scenarios, it includes multiple agencies and organizations.
- Secure funds and resources to address post fire rehabilitation (e.g. seeds or plant materials for dozer line repair and/ or erosion control.
- Develop an early warning system for predicting summer and fall fire risk based on antecedent weather conditions and status of vegetation at sub-seasonal to seasonal time scales.
- Ensure development of a wildfire mitigation plan for electric utilities within the Very High Fire Hazard Severity Zones of Anaheim as mandated by SB1028.

3. Structure Survivability and Defensible Space

- Update home assessment tool on OCFA.org/rsg.
- Education on home ignitions.
- Develop practical retrofit techniques.
- Expand "First 30-feet" program.
- Educate homeowners on landscaping through consistent and frequent messaging.
- Educate homeowners on fire safety and structural protection.
- Maintain and improve defensible space/fuel modification by increasing width and/or reducing fuel densities via native vegetation restoration/replanting by removing exotic

species, focusing from structure outward. Focus on local native species with habitat benefits (e.g. *opuntia* cactus plantings which benefits Coastal cactus wrens) while achieving reduced fuel loads and defensible space goals.

- Establish Firewise and Fire Adapted Communities within the Very High Fire Hazard Severity Zones within the City of Anaheim.
- Research on drought tolerant plant pallet for use in the fuel modification area.
- Develop plan how to retrofit—phased, focusing on specific elements—i.e. roof vents first.
- VR tour within structure to reduce structure risk in demonstration garden and structure—Include QR codes at "stations" throughout the house and the garden. Explore new technology like thingalink and others.
- Fund brush/fuel treatments—for HOA's, local FDs for existing priorities in Open Spaces and HOAs areas.
- Defensible space education/ persuasion/ enforcement.
- Develop financial assistance/ incentive program to fund work for properties that aren't getting defensible space zone work completed. Consider structure hardening assistance / guidance.
- Seek seed funding for projects.
- Share effective techniques for defensible space maintenance (e.g. pampas grass control)
- Demonstration of a Fuel Modification Zone (Garden) comparing fuel management goals and current standards, evaluate impacts to habitat, vulnerability from invasive plants.
- Share techniques and strategies for maintaining a Fuel Modification Zone (Garden) consisting of local native plant that are effective and attractive while providing habitat (e.g. *opuntia* plantings that benefit coastal cactus wren species).
- Explore use of goats for fuel maintenance in/along fuel modification zones, develop consistent contract specifications for goat usage (i.e., when to move goats based on resource health, how to avoid invasive plant seeds), develop guidelines on how to solicit and manage goat herds.
- Expand chipper day programs.

4. Communication, Education, Awareness

- Develop and distribute joint messages through ongoing collaboration with partners.
- Share best practices regarding communication, education, and awareness
  - Promote and prompt change in the expected aesthetic of home gardens
  - Adopt and enhance a program, such as Ready, Set, Go! to enhance local preparedness.
  - Convey the benefit of action that can possibly obtain or reduce the cost of insurance.
  - Make GIS layers of fuel modification zones, biological resources, + cultural resources (when legally allowed), etc. available to stakeholders .

  - Share best practices about communication mediums, i.e., email/text/signs/website, etc.
  - Promote Red Flag Warnings, access restrictions, weather dangers and other fire safety messages through enhanced communication and alerts (i.e., websites, apps, online alerts). Note: signage as separate project.
  - Educate recreationists about fire safety, such as how to report illegal activity and a fire, create a fire safety program/messages at Nix Nature Center and other similar facilities, such as parks, golf courses and on willing private land.
  - Broaden situation awareness app similar to "LACO SitStat".
  - Develop and/or enhance and distribute a program to the reduce spread of tree pest through firewood ("Buy It Where You Burn It", etc.).
  - Create new outreach materials and programs and utilize existing opportunities like campfire programs at campgrounds, school groups, community events, etc. Develop non-traditional strategies to share messaging like thingalink and other social media type messaging.
- Build on passive and active surveillance, such as monitoring detection systems, expanding HPWREN and Firewatch programs.
- Seek funding to support staff collection of structural data (Preparedness).
- Include willing partners outside the CWPP boundaries if the project extends and provides mutual benefit.
- Develop a collection of pre-fire plans that communicates what agencies will do during a fire and what the public needs to do to prevent ignitions.
- Create a California native plant education garden with a pathway that has signage to educate people on the type of plant, fire risk, spacing of plants and the best location within the property.
- Develop a contractor training program, incentives to address ignition prevention techniques and fuel management best practices
- Support FSCs education programs (i.e., websites, placing fire safety in school curriculum, reaching parents through students, holding ice cream socials, BBQs with education component, placing educational tables at events such as Car Shows)
- Develop and distribute fire evacuation plans, such as for neighborhoods in the City of Anaheim

5. Fuel Management on Public and Large-Scale Private Lands

- Inventory and map fuel loads, invasive plants, and tree mortality
  - Monitor for invasive tree pests, such as GSOB, PSHB, KSHB that cause tree mortality and increase fuel loads
- Conduct fuel management on high priority locations
  - Perform vegetation clearance on T-line and distribution lines, and "General Order 95" vegetation management

    - Remove pest infested trees and implement other measures to reduce spread of boring beetles and other pests where appropriate
    - Reduce fuel loads to reduce fire hazards through removal of trees killed by invasive pests (GSOB, ISHB, palm weevils and others)
    - Establish FMZ, subject to landowner and regulatory approval, along the interface between structures/properties and the Reserve
    - Explore purchase of strategically important lands as a means of protecting natural resources and structures
    - Where appropriate, and in collaboration with managing agencies, manage wildlands in Parks and Open Spaces utilizing hand crews and goats in the City of Anaheim
- Seek methods for treatments that both enhance fire safety and resource values
    - Utilize the outer 50 to 100 feet of FMZ for cactus wren (Opuntia) habit that functions as fuel modification
    - Replace trees killed by pests
- Maintain treatments
- Plan and fund community level hazardous fuel reduction projects (e.g. community fuel modification zones, fire breaks)
- Seek funding and approvals for projects

6. Firefighting and Mitigation

- Increase water sites for air operations throughout the county
- Develop and conduct annually a multi-agency program that includes specific training on best management strategies and tactics
    - Integrate Resource Advisors in the fire response.
    - Incorporate MIST (minimal impact suppression techniques) into firefighting strategies and response.
    - Support development of a Countywide resource advisor program, including training for fire response
    - Protocol for fire access through private land to allow for improved monitoring and prevention
    - Purchase of simulation table for wildfire planning and training (for Anaheim and others)
    - Conduct cultural resource surveys along fire roads and trails to assist in updating fire management
    - Identify strategic, mutually agreed-upon anchor points. Maintain trails to at least 10 feet for backfiring or anchor-point operations
    - Prepare and coordinate for current fire season
- Build upon and improve existing fire plans to support implementation of pre-fire decisions (i.e. containment lines in existing delineated FMUs)
    - Develop 3-fold brochure-type pre-plan and evacuation guide, like those used in Salinas, San Luis Obispo, Napa, etc.

- Build on natural resource mitigation programs to improve firefighting strategies
- Fund post-fire habitat restoration/fire remediation, including performance monitoring
- Fund (subsidize) the purchase and installation of compliant public/private road signs and address numbers
- Promote evacuation awareness by working with the local law enforcement agencies to enhance signage (possibly a wildfire evacuation route symbol)
- Locate and install blue dots at hydrant locations, post locations on FSC website

B. ACTION PLAN

The Action Plan is the tool for implementing the CWPP, and it outlines the guiding components necessary to implement it, which includes the roles and responsibilities of the stakeholders and potential funding sources. The types of information to be measured, the schedule of monitoring, and the ways to define progress and success are outlined in this Action Plan as a method to assess the level of completion, or effectiveness of the projects identified in the CWPP. The feedback mechanisms are intended to allow the evaluation of tradeoffs between actions as the CWPP is implemented to ensure relevance and effectiveness over the long term.

1. Roles and Responsibilities

The CWPP is a living document that will be updated as projects get implemented, lessons are learned, and new partners become involved or new areas become developed. In addition, there may be a shift in priorities as circumstances, such as new pests or funding possibilities, arise. Updates are planned to be done every year.

The agencies, organizations and individuals that benefit from a specific project play an important role in planning, implementing, and sustaining the project. Several project partners have agreed to participate in project planning and implementation, including members of COAST, and several homeowner associations. The types of roles and responsibilities vary with each project. Some projects require only collaboration, while others require development of treatment prescriptions, equipment, and staff time to implement on-the-ground projects. Other projects require staff time to develop training or collect data. See Appendix A for the list of projects, the primary beneficiaries associated with those projects, the possible sources of funds to implement the project, and potential leads to obtain those funds. This same table describes the types of resources needed, which is associated with the roles and responsibilities required. It is important to note that community leaders play a vital role in the CWPP by approving the document. By doing so, these leaders have approved and endorsed the planning process and the initial set of projects that stakeholders have identified.

2. Funding Sources

Some of the projects do not require funding, but are sustained instead through collaboration, staff time, volunteerism, and the self-interest of parties involved. However, many projects

require funds to develop, hire staff, purchase equipment, or increase training, and to pay for vendors to conduct work and perform services.

Funding for wildfire mitigation projects comes from a variety of sources, such as Federal, State or corporate grants, donations, property tax, or department budgets. Each funding mechanism has unique requirements, strengths, and weaknesses. Some are best suited for one-time expenditures, such as capital improvements, others are suited for ongoing maintenance activities. The conditions attached to each mechanism should not be overlooked.

Most funding sources require that projects be developed through collaborative planning (e.g. the Healthy Forest Initiative requirement for a Community Wildfire Protection Plan). Some funding sources are relatively easy to obtain, while others require an elaborate application process, or include administrative burdens associated with monitoring how funds are spent and/or complex reporting requirements. A local community or homeowner association may be willing to fund solutions that add value and are worth their cost, but may only fund projects with citizen committee oversight, or if connected to other efforts the community favors. The sustainability of funds is another key difference.

The use of interns, reserves, and recruits offers ways to collect data, analyze conditions, and develop reports. This type of labor is lower cost and may be a viable option for some projects. Barriers to this type of assistance include the need for liability insurance, so organizations that already have that insurance for interns and volunteers should be pursued. Groups associated with parks, homeowner associations and environmental groups might be useful for tailored fuel management work that doubles as restoration activities. Opportunities that serve both purposes should be developed.

The implementation of the CWPP is likely to use a “funding quilt,” made up of a patchwork of mechanisms to cover fire mitigation projects. Multiple sources provide greater stability, more funds, increased continuity, more stakeholders with greater buy-in, and the ability to expand the scope of work. Each stakeholder can stitch together the funding quilt by collaborating on the acquisition of funds. For example, some funding can be obtained by only fire departments, while other sources require private non-profit entities or communities to receive funds. Anticipated sources of funding include:

a. Department Funding

Budgets for fire departments or fire districts often cover education, inspection, enforcement, and capital improvements. If the department so chose, selected projects could be funded through a regular department funding mechanism.

b. Federal and State Aid Programs

Federal funding is distributed through many avenues, and most federal grants can be researched electronically. Commonly-used major programs for fire safety fund mitigation are

the National Fire Plan and the Healthy Forest Restoration Act. Major grants are provided through the Federal Emergency Management Agency (FEMA) and the U.S. Fire Administration. Many grants are extremely competitive, with requests for funding far exceeding available funds, while others have a specific focus.

Two primary programs funded by FEMA provide assistance to fire departments, these vary on grant size, non-Federal match requirements, the population size a fire department serves, and the location in relation to the funding agency's lands. They typically provide funding for organizing, training, prevention materials, and equipment to protect the health and safety of the public and firefighting personnel.

Assistance to Fire Fighters - This FEMA grant program includes the overall Assistance to Firefighters Grant (AFG) and the Fire Prevention and Safety Grant Program. AFG is limited to fire departments. Fire Prevention and Safety Grants are open to a wider range of organizations.

FEMA Disaster Mitigation Programs - The Disaster Mitigation Program includes the Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM). In order to qualify for these funds the local jurisdiction must have a Local Hazard Mitigation Plan (LHMP) that is reviewed by the State Mitigation Officer and then approved by FEMA.[96]

HMGP funds are available after a disaster has been declared to mitigate future risk from any type of disaster (amounts available are linked to the total emergency funds). The HMGP program coordinates with CAL OES and their local support of their Hazard Mitigation Planning[97].

- The PDM facilitates cooperation between state and local authorities with funds awarded competitively for both planning and project implementation activities at the state and local level, as a subgrantee.

Community Assistance State Fire Assistance (SFA) - This funding source includes a supplemental appropriation allocation through the National Fire Plan, in addition to a regular appropriation distributed by a formula to state foresters through the USDA Forest Service. These funds can be used to plan and implement hazard mitigation projects, including fuel reduction, prevention and mitigation education, and community hazard reduction. The funds are competitive and available nationwide, with 35 percent distributed among the states to meet firefighting preparedness and safety needs.

National Conservation of Resources Services (NCRS) - NRCS implements a grant program aimed at promoting effective and safe land management practices on private lands. Grants are

[96] Local governments must have a Local Hazard Mitigation Plan (LHMP) that is reviewed by the State Mitigation Officer and then approved by FEMA, prior to November 1, 2004, as this is a required condition of receiving FEMA mitigation project assistance. LHMPs must be revised, reviewed, and approved every five years. Source: Governor's Office of Planning and Research. Fire Hazard Planning Technical Advisory. 2020 Update. https://opr.ca.gov/docs/20201109-Draft_Wildfire_TA.pdf

[97] https://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/hazard-mitigation-planning

provided for equipment, planning and management, and reward collaboration and cooperation between adjacent landowners. Fire hazard reduction that increases habitat and watershed value is more likely to be funded.

Joint Fire Science Programs (JFSP) - This interagency program funds research to provide a scientific basis and rationale for implementing fuels management activities, tailored to the emerging needs of fire and fuel managers. Research is carried out by Federal USDA research staff and colleges and universities. An annual cycle of proposal solicitation, review, and funding ensures timely response to evolving conditions.

State Aid Programs – The State of California operates a Grants Portal[98] that can be used to find out about the latest grants that could support fire hazard planning or implementation, including: fire hazard mitigation, climate adaptation, forest management, and other related projects and programs.

There are two primary sources of funding from the State of California that may be accessed to fund implementation of the Action Plan. One of these, large-scale project implementation grants programs administered by CALFIRE, is established and highly competitive, and allocates grants using monies from the National Fire Plan budget and other sources including the annual state budget.[99]

The other, the Regional Forest and Fire Capacity Program (RFFC) of the Department of Conservation in the Resources Agency,[100] is emerging as a key source of funding to address gaps in capacity for project development, testing and evaluation of innovative risk reduction strategies, and support for regional collaborations and networks such as Orange County's COAST Fire Prevention Working Group. In addition, recent state budget actions including the approved California Fiscal Year 21-22 Early Action Budget and the proposed State FY21-22 Annual Budget have made or will make several hundred million dollars available to CALFIRE through established project implementation funding pathways.

The RFFC Program is a newer funding program of the state administered through the Department of Conservation. It makes block grants to regions based on a formula, to increase regional capacity to collaboratively prioritize, plan, develop and implement projects and initiatives to reduce wildfire risk and improve habitat health and resilience including increasing carbon sequestration.

RFFC grants are made to qualified entities such as state conservancies, resource conservation districts, and non-profits including conservancies and regional Fire Safe Councils. This key source of funding closes the gap between identification, prioritization and development of

[98] https://www.grants.ca.gov/

[99] Fire Prevention Grants https://www.fire.ca.gov/grants/fire-prevention-grants/ Forest Heatlh Grants https://www.fire.ca.gov/grants/forest-health-grants/

[100] https://www.conservation.ca.gov/dlrp/grant-programs/Pages/Regional-Forest-and-Fire-Capacity-Program.aspx.

projects and initiatives such as contained in this CWPP and Action Plan, and the large-scale implementation funding for "shovel ready" projects available through CALFIRE grant programs. Given the significant capacity challenges of converting the projects in this Action Plan and CWPP into collaborative interventions on the ground, as well as some of the unconventional strategies prioritized here (such as ignition prevention along roadsides) that do not fit neatly into Unit Fire Plans or conventional project implementation grant funding through CALFIRE, the RFFC program is a potentially important source of funding for the OC CWPP.

CALFIRE also plays an important role in distributing implementation grant funds aimed at assisting private landowners. The following programs are under the State and Private Forestry branch of USDA Forest Service, the Natural Resources Conservation Service, and the Cooperative State Research, Education, and Extension Service:

- Cooperative Forestry includes Landowner Assistance Programs such as the Forest Stewardship Program (FSP), the Stewardship Incentives Program (SIP), the Watershed Forestry Initiative, the Forest Legacy, an Urban and Community Forestry (U&CF) Program, and the Economic Action Program (EAP).

- Forest Health Management Program includes the Federal Lands Forest Health Management and Cooperative Lands Forest Health Management sources of funds

- California Forest Stewardship Program provides technical and financial assistance to communities and private landowners, includes a number of programs that can be related to fire safety. The Vegetation Management Program (VMP) will have CALFIRE conduct a prescribed burn and/or other treatments on private land to control unwanted brush and other vegetation that creates wildfire hazards.

- The Western State Fire Assistance Competitive Grant Program provides a forum for state agencies to submit grants on behalf of cooperators, partners, or clients.

- Urban and Community Forestry Program funds local grants that optimize the benefits of trees and related vegetation through multiple-objective projects as specified in the California Urban Forestry Act of 1978 (PRC Section 4799.06-4799.12). These projects further the goals of AB 32, result in a net greenhouse gas benefit, and provide environmental services and cost-effective solutions to the needs of urban communities and local agencies. This program is funded by California Climate Investments (CCI). In recent years the program has funded: urban forest expansion and improvement, urban forest management activities, and urban wood and biomass utilization. Three types of grants are currently being provided: Urban Forest Expansion and Improvement, Urban Forest Management Activities, and Urban Wood and Biomass Utilization.[101]

[101] CAL FIRE Urban and Community Forestry Grant programs at https://www.fire.ca.gov/grants/urban-and-community-forestry-grant-programs/

Private Grants and Donations - Private funds and volunteerism usually play a large role in the implementation of community fire plans. For instance, large national businesses often have grant programs, while local nurseries, contractors, and small businesses are often key partners. Typical partnerships include:

- A private-public partnership can be created formally, happen organically, or can be regulated around a specific issue or problem.
- Formal partnerships may take the form of fire safe councils or homeowner associations that agree to work on fire safety in a community, in conjunction with local government, citizens, and businesses, they may fund their work through dues, gifts, in-kind contributions, or seek funding from outside sources.
- Informal partnerships usually involve voluntary participation with no money changing hands, and little recognition of common goals (when things go well, peer pressure holds a community to an accepted standard); informal partnerships may take the form of local agencies, citizens, and businesses each taking care of their own lands and funding the work themselves; a formal partnership may occur when the informal relationship no longer meets the participants' needs.
- Regulated partnerships include private property owners required to comply with state or local regulations, such as weed abatement or defensible space ordinances. Fire departments may take the lead with inspections and notifications of non-compliance. To abate effectively, a program must have teeth, but funding these efforts can be difficult, as those regulated may not wish to fund enforcement. Regulations happen when informal or formal partnerships break down and no longer meet the community's needs.

Private Foundations - Several private foundations, such as the California Fire Foundation,[102] offer small grants that can be used to reduce fire hazards, increase community capacity to collaborate, and promote environmental awareness and action. Some grants are from national corporations, such as the Urban Land Institute's ULI Foundation, that have instituted Community Action Grants. Applicants must be ULI members or part of a ULI District Council. Other local private foundations donate to local projects, and typically to a local non-profit organization, such as a nascent fire safe council.

3. Results of a Mini-Grant Workshop

As part of the development of the 2017 CWPP, members of COAST and invited guests participated in a mini-grant workshop to augment grant application skills.

The workshop handouts, which included an Agenda, Program Action-Logic Model, Finding Your Funder, CEQA, GHG Grant Application, RMV Proposal, and a SRA CAL FIRE Grant Package were

[102] California Fire Foundation grant program https://www.cafirefoundation.org/programs/fireprevention/

uploaded to the COAST OneDrive link. This formed the start of COAST's grant library. Ideally, COAST members will add the request for grant applications, the grant applications themselves, from anyone, and grant distribution/award information to this library on an ongoing basis. For example, as a result, COAST was made aware of an opportunity to apply for Urban Greening Funds.

COAST selected three topics to address in the grant workshop, including: (1) Ignition Prevention Along Roadsides, (2) Monitoring and Treating Mortality of Trees from Pests, and (3) the Creation of a Pre-Fire Plan to Aid Evacuation. The first two groups were subjects of group participation throughout the mini-workshop; the third was used to illustrate how to use the Logic Model, which is explained further in Appendix B.

The workshop looked at four aspects of grant applications through exercises and group discussions:

1. Grant Framework: Logic Model - how to order thinking
2. Group Knowledge, Skills, & Abilities (KSAs): Who to call, or the brain trust (when your brain is not enough)
3. Finding Your Funder (i.e., finding fit) - The heart of grant-writing
4. Showing How - Guts of the grant

Participants in the August 4, 2016 Grant Workshop

4. Monitoring for Sustainability

The following framework offers strategies to monitor, evaluate, and adapt the elements of the CWPP (from the Institute for a Sustainable Environment 2008).

- **Monitor what matters**. Partners should identify key goals and objectives and make decisions to monitor what is most important to the long-term sustainability of their CWPP.
- **Track accomplishments and identify the extent to which CWPP goals have been met**. This might include development of "success stories."
- **Examine collaborative relationships** and their contributions to CWPP implementation.

- **Identify actions and priority fuels reduction projects** that have not been implemented and determine why.
- **Set a course for future actions** and update the plan.

Program performance indicators assist in tracking progress towards key goals and assessing the overall success of the program and various program elements. It's best to limit the performance indicators to those factors that are essential to achieving program goals to keep everyone's attention focused on achieving the same goals. However, since many program goals, and therefore measurement, are long term, it is also necessary to identify short-term measures that feed the long-term results and impacts. Therefore, three levels of measurement are suggested: impact, result, and activity.

a. Impact

At the highest or most conceptual level, long term impact of the program is measured by a reduction in wildfire losses (e.g., reduction in deaths, injuries, property or environmental loss, suppression cost, etc.).

b. Desired Results

At a slightly lower level, intermediary impact is measured by the degree to which the culture supports a reduction in wildfire losses (i.e., increase in actions to reduce risk by individuals and collaborative partners). In theory, if the desired results are achieved, the impact will be achieved. Progress toward program results can be measure in terms of the actions taken by individuals and community groups to reduce their risks. Even when actions are not yet demonstrated, progress toward taking action can be measured in terms of community sentiment and belief systems.

c. Activity

At the lowest level of detail, outputs and activities are measured by the degree to which they contribute to the desired results, e.g., increase in specifically targeted actions by designated individuals and groups. In theory, if the output measures are positive, the desired results will be achieved.

5. California Environmental Quality Act (CEQA) Documentation for Projects[103]

The following is a handout from a grant workshop held August 4, 2016, for COAST members and invited participants. This guideline for preparing CEQA documents pertains to typical fire hazard

[103] References:

1. P*rocedures for Compliance with CEQA on Cal Fire Projects*, Allan S. Robertson and Daniel Foster, CAL FIRE, 2005 and revised 2010, and *CEQA and Fuels Treatment*, Allan S. Robertson. Available on-line.

reduction and ignition prevention projects. This guideline follows CAL FIRE directions and can be useful in both designing a project and fulfilling the requirement for environmental review. The CWPP itself does not need to have CEQA review, but most projects do.

In December 2019, the California Board of Forestry and Fire Protection adopted the California Vegetation Treatment Program (CalVTP). The CalVTP Program Environmental Impact Report (Program EIR) provides a resource that can expedite the development of CEQA review documents (see What's New page 12 for detail).

a. An Outline of Project Environmental Review Requirements

If your department or agency proposes an action that may directly and/or indirectly affect the environment, the proposed action is considered a "project" under the California Environmental Quality Act (CEQA), and therefore it must undergo a CEQA review. Even if the project may benefit the long-term health of the environment (e.g., reduce the risk of catastrophic wildfire), it may still require environmental review of its potential short or long-term effects on sensitive local resources, land use, or other elements addressed in CEQA. This need for environmental review will be determined by the Lead Agency, defined in the CEQA Guidelines as "the public agency which has the principal responsibility for carrying out or approving a project, which may have a significant effect upon the environment".

b. Design the Project to Avoid Significant Environmental Impacts

When designing a project, ensure that all possible environmental impacts have been identified but strive to design the project to avoid as many impacts are possible. In addition, all sensitive resources that could be affected (e. g., wetlands, special-status species, scenic views, cultural resources) by the proposed project, as well as any impacts to these resources must be identified, including both direct and indirect effects. Ideally, a project should attempt to first avoid, then minimize, and lastly, mitigate any identified impacts. If impacts cannot be avoided, then include minimization and/or mitigation measures as part of the project that eliminate if possible, or reduce those impacts to a less-than-significant level. This may require hiring a biological consultant or other specialists to survey your project area for sensitive resources. Examples of minimization measures include: no broadcast burning (pile okay), no heavy equipment off road except in existing fire breaks, avoidance of wetlands, avoidance of archeological or tribal resources, watercourses, vernal pools, avoidance of identified sensitive habitats; no trimming or brushing during the avian breeding season, no "commercial" tree removals (no THP/THP Exemption) and minimize noise, dust, aesthetic effects to neighbors through restricted days/hours of operation and buffers.

2. *2016 CEQA Statute and Guidelines,* Association of Environmental Professionals. Available on-line.

Disclaimer

This handout is intended as a summary outline of State CEQA and CAL FIRE CEQA requirements and processes and should not be considered a description of all requirements nor the full review process for your specific project.

If a project has been determined by the Lead Agency to not have a significant effect on the environment, then it is exempt from CEQA. Applicable Categorical Exemptions include operation, repair, maintenance, etc. of existing facilities, and small habitat restoration projects (i.e., less than 5 acres). Emergency exemptions may also apply. It is beneficial to identify and then avoid potential impacts at the outset to exempt the project from CEQA review. If a project is not exempt from CEQA review, then an Initial Study is usually prepared by the Lead Agency. The Initial Study will determine if a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report (EIR) will be required, which can add substantial delay and add additional costs to the project approval process.

c. Project Exempt Under CEQA?

As mentioned, the Lead Agency under CEQA is typically the public agency that has the principal responsibility for carrying out or approving the project and, consequently, has the primary responsibility for CEQA compliance. A Responsible Agency is an agency that has discretionary approval over a project for which the Lead Agency is preparing or has prepared a Negative Declaration or EIR. For example, CAL FIRE is a Responsible Agency for projects that require CAL FIRE approval, receive CAL FIRE funding, receive State funding passed through CAL FIRE, receive federal funding passed through CAL FIRE, and/or projects that CAL FIRE facilitates (e.g., a Vegetation Management Program project).

The first responsibility of a Lead Agency is to determine whether the proposed project is subject to CEQA. Certain activities that CAL FIRE supports may not require further CEQA analysis because it is not a project as defined by CEQA, there is a statutory exemption that covers the activity, or the project fits one or more categorical exemptions. Examples of exempt projects are described below.

Several classes of activities are generally considered to be exempt from the requirement to conduct further environmental analysis; however, where the potential exists for environmental impacts due to the specific location, specific agency policies or procedures, scenic highways, hazardous materials sites, unusual circumstances, or cumulative effects, the exemptions do not apply.

CEQA does not require Lead Agencies to file Notices of Exemption (NOE), though it is advisable to at least keep a file of NOEs your agency adopts. The NOE should explain why the Lead Agency has determined there is no evidence that your activity would have a significant environmental effect. For projects where CAL FIRE is the Lead or Responsible Agency, CAL FIRE requires the completion of the Environmental Review Report Form (ERRF), which is available from CAL FIRE. This form is required in order to check for possible exceptions and confirm that a project does indeed fit within one or more categorical exemption classes. If the ERRF supports issuance of a Notice of Exemption, then it should include a level of analysis that ensures that there will not be a significant effect to sensitive resources as a result of the project. CAL FIRE staff will review both the proposed project and the ERRF to determine if and which Exemption may apply. CAL FIRE files all NOEs with the State Clearinghouse.

CAL FIRE may require your agency to prepare CEQA checklists, provide Natural Diversity Data Base (NDDB – sensitive biological resources) and Information Center (archaeological/historical resources) data searches, conduct surveys for possible sensitive species and resources, and assemble draft documents. Therefore, the project budget may need to include funding to hire Registered Professional Foresters, biologists, archaeologists, and/or other consultants.

The following classes of categorically exempt activities are routinely carried out by CAL FIRE:

- Class 1 - Existing Facilities: Routine maintenance and ongoing operations at CAL FIRE facilities, maintenance, or re-establishment of existing fuel breaks, building additions, minor demolitions, grading of roads
- Class 3 - New Construction or Conversion: Small buildings and facilities, new fuel breaks, minor roads (not requiring other permits)
- Class 4 - Minor Alterations to Land: Minor grading, trenching, minor vegetation removal, community shaded fuel breaks, fire safe demonstrations, fuel management within 100 ft. of structures,
- Classes 7 or 8 - Actions to protect the environment or natural resources: Fuels treatments, extensive shaded fuel breaks along roads/ridges, piling and burning.

d. Negative Declarations and EIRs

A project requiring mitigation is not eligible for a Notice of Exemption (NOE). Therefore, it is important to devise your project to avoid significant impacts. If there is substantial evidence that the project could significantly affect sensitive resources, then the Lead Agency must prepare an Initial Study that will determine whether a Negative Declaration/Mitigated Negative Declaration or an EIR must be prepared. An Initial Study addresses possible project impacts to all resources listed in Appendix G of the CEQA Guidelines. The preparer of the Initial Study may identify mitigation measures that would reduce the impact to a less-than-significant (LTS) level. If all impacts can be reduced to a LTS level, the project may be approved with a Mitigated Negative Declaration (or a Negative Declaration if the Initial Study finds there are no significant impacts). If the impacts cannot be reduced to a LTS level at the preliminary analysis level for a review done for an Initial Study, then an EIR will need to be prepared. This is a much more complex endeavor and will require input from CAL FIRE, other agencies, and possibly CEQA consultants.

e. Other Considerations

If a project is a Federal action, then the project may also be subject to the National Environmental Policy Act (NEPA) and other federal regulatory and permitting processes. However, NEPA does not apply where Federal grants are passed through the California Fire Safe Council, though there may be a need to consult with other federal agencies, including permitting agencies. If an action has Federal funding or a Federal permit is required, there may be a nexus to NEPA or other Federal review and permitting.

All your agency's actions and projects must also comply with other pertinent environmental laws, including State/Federal Endangered Species Acts, Migratory Bird Treaty Act, South Coast Air Quality District Burn Permits, Army Corps 404 Permits, DFW Stream Bed Alteration Agreements, Section 401 Certifications from the Regional Water Quality Boards, and Section 106 of the National Historic Preservation Act. Depending on the project location in Orange County, projects also must be consistent with the Central and Coastal Subregion NCCP/HCP and the Orange County Southern Sub-Region NCCP/HCP.

f. Locations Where Existing CEQA Documents are in Existing Plans

For much of the CWPP in Orange County, some sort of CEQA analysis has been completed that address the types of work likely to be undertaken in fire management or fuel modification activities. For example, the County of Orange Central/Coastal NCCP/HCP has an approved final programmatic EIR that addressed operation and maintenance activities that can occur in the Reserve, which included fuel modification in some areas, such as along roads and access routes for specific utilities. This document and others specify the activities are that allowed and the mitigations that is/was required.

Below is a map of those areas with either an NCCP/HCP or an HCP and associated EIR as of December 2016. Many other locations may also have also completed the CEQA review process and should be added to the mapping database.
Regardless of having an environmental review completed in the project area, CAL FIRE will require a review of the project impacts. Fortunately, the environmental review documents are likely to be valuable references when determining what possible impacts might result from the project and what conditions that projects must abide by.

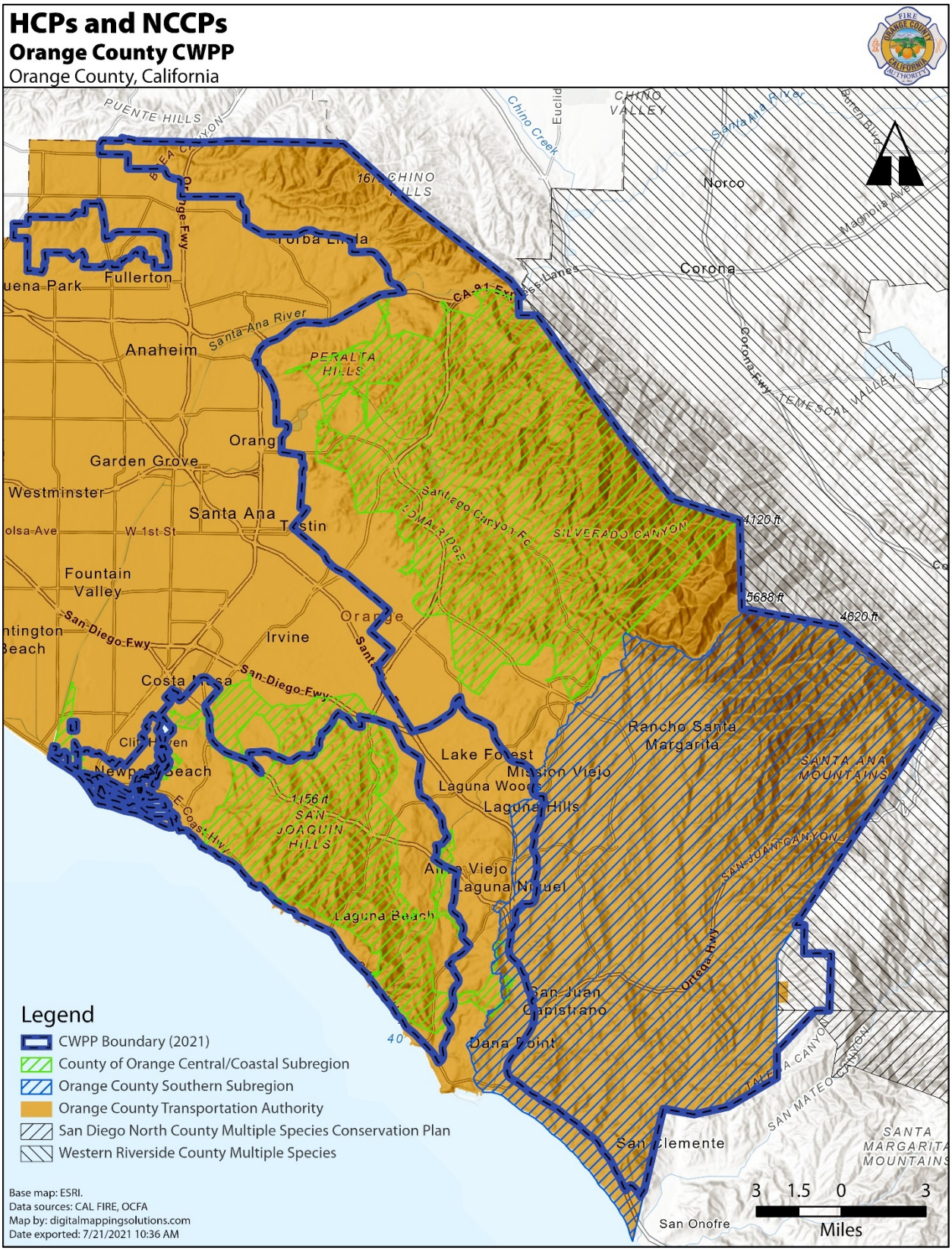


Figure 20. Map of NCCP/HCPs where environmental reivew is complete. The OCTA NCCP/HCP covers freeway projects throughout the County as well as Preserve and Restoration Projects.

6. 2021 Update Process

The Countywide CWPP is a multi-year guiding document that will facilitate the implementation of present and future mitigation efforts. The projects identified within this 2021 CWPP Update include actions that are reasonably foreseeable, based on the current environmental conditions within the CWPP boundaries and available data and information.

It is important to note that this CWPP is a working document and will continue to need to be updated annually and after major “events”, such as wildfire, flood, insect infestation or even significant new home development. Stakeholders recommend that it also be reviewed in more detail in conjunction with regional updates of the Local Hazard Mitigation and General Plan Safety Element updates by local jurisdictions, and the OCFA Unit Strategic Fire Plan.

To ensure timely review of the plan, it will be the topic of a brief update at every COAST meeting, when members are expected to report on progress with funding and/or implementation of projects. COAST intends to make the update of the CWPP the main agenda item annually, probably around July every year.

Minor revisions will not require updated authorization, however, if major changes (which are not expected) and amendments are necessary, a re-authorization of the signatories would be warranted.

APPENDIX A: 2021 ACTION PLAN TABLES

IGNITION PREVENTION PROJECTS

		PROJECTS	Treatment Location	Primary Beneficiaries	Type of Funding Request	Funding Source	Funding Lead	In Unit Plan?
1		**Develop a multi-agency, comprehensive program to address fire ignitions along roadways**	Roadsides throughout Orange County	Caltrans, OCTA, OC Parks, St Pks, HOA	Design, engineering, physical and education material	State - Line item in budget	IRC, Caltrans, NCC	
	a	Maintain or increase buffers along public roads as needed						
		Explore full native vegetation restoration/replanting to remove exotics and return site to reduced-fuel, native condition	Roadsides throughout Orange County	Utilities, Transportation Agencies, Parks, Preserves, Caltrans	Labor +equip for veg mgt	Urban Forestry Grants, Caltrans	Transportation Agencies, IRC, NCC, Caltrans	
		Mow flashy fuels in spring as needed	Roadsides throughout Orange County	Transportation Agencies, Parks, Preserves, HOAs, Caltrans	Labor +equip for veg mgt	Transportation Agencies, Parks, Preserves, HOAs	Transportation Agencies, IRC, NCC, Caltrans	
		Explore and incorporate other technologies (i.e. long-term retardant, walls and/or weed management mats)	Roadsides throughout Orange County	Transportation Agencies, Parks, Preserves, HOAs, Caltrans	Labor +equip for veg mgt,	Transportation Agencies, Parks, Preserves, HOAs	Transportation Agencies, IRC, NCC, Caltrans	
	b	Address roadside ignition prevention within fire safe community education programs	Roadsides throughout Orange County	Parks, Preserves, HOAs, Caltrans	Community Outreach & Education	SRA Fire Prev Fee, HFRA,	OCFA, NCC, Caltrans	
	c	Wildland management and oversight [e.g. Red Flag (forecasts, patrols, use policies), enforcement, strategic fuel treatment planning]	Parks, Preserves, Caltrans	Parks, Preserves, Caltrans	none needed	none needed	none needed	✓
	d	Adopt and/or enhance existing prevention educations program (One Less Spark, Smokey, Red Flag: what to do, what not to do, etc.)	Parks, Preserves, HOAs	Parks, Preserves, HOAs	Community Outreach+Education	SRA Fire Prev Fee, HFRA,	none needed	✓
	e	Develop model contract specifications to address ignition prevention by contractors/employees, to include – – enforcement and/ "scared straight" components	Utilities, Transportation Agencies, Parks, Preserves, HOAs	Utilities, Transportation Agencies (e.g. Caltrans), Parks, Preserves, HOAs	none needed	none needed	none needed	
	f	Expansion of Countywide Fire Watch, including local HOAs engagement, and monitoring patrols for ignitions, unauthorized access during Red Flag Warning	Parks, Preserves	Parks, Preserves, HOAs	Funds for labor + equipment	SRA Fire Prev Fee, HFRA,	IRC, OC Parks	
	g	Expansion of CERT/RACES Fire Watch	Parks, Preserves	Parks, Preserves, Homeowners, HOAs	Funds for labor + equipment	SRA Fire Prev Fee, HFRA,	City of Anaheim	
	h	Install an early fire detection and monitoring system, such as webcams, flame/heat detectors or similar automated system for viewing remote areas on Red Flag Warning days	Strategic locations	Utilities, Transportation Agencies, Parks, Preserves, Sheriff Depts	Equipment and software	Utilities, Public Safety Departments	OCFA, IRC	
	i	Support access restrictions during Red Flag Warning days/weather, recognizing camping reservations	Parks, Preserves	Parks, Preserves, Hos	none needed	none needed	none needed	
	j	Prohibit camping on Red Flag Warning days (address current reservations), and prohibit open flames	Parks, Preserves	Parks, Preserves	none needed	none needed	none needed	
	k	Manage pull-out areas w/ regulation-consistent gates and/or other access restrictions that limit possibility of vehicle-caused fire spread into vegetation or arson access	Roadsides throughout Orange County	Transportation Agencies, Parks, Preserves, Caltrans	Labor+equip for veg mgt, equipment purchase	Transportation Agencies, Parks, Preserves	Transportation Agencies (e.g., Caltrans), IRC, NCC	
	l	Assemble a multi-agency law enforcement (OCSD/CHP) task force on Red Flag Days for fire prevention, e.g. law enforcement patrol for cigarette ignitions	Parks, Preserves	Parks, Preserves, Hos	none needed	none needed	none needed	
	m	Conduct a study of effectiveness of various prevention methods	Targeted locations of study	Transportation Agencies (e.g. Caltrans), Parks, Preserves, HOAs, Caltrans	Staff time	JFSP?	NCC, Caltrans	
2		Implement roadside ignition plan, potentially through funding from SRA grants	Roadsides, targeted tower locations, HOA, Preserves, Parks	Transportation Agencies (e.g. Caltrans), Parks, Preserves, HOAs	Staff time (design, engineering, supervision, admin), equipment (mowers), contract labor + equipment, printing	SRA Fire Prev Fee, HFRA,	NCC, IRC, OCFA, Transportation Agencies (e.g., Caltrans)	✓

COMMUNICATION, EDUCATION, AWARENESS

		PROJECTS	Treatment Location	Primary Beneficiaries	Type of Funding Request	Funding Source	Funding Lead	In Unit Plan?
1		**Develop and distribute joint messages through ongoing collaboration of partners**	County-wide	All stakeholders	Printing, staff time, media ads	SRA Fire Prev Fee, US HRA	OCFA	
2		**Share best practices regarding communication, education and awareness**						✓
	a	Promote and prompt change in the expected aesthetic of home gardens	HOAs	HOAs, Preserves, Parks	Printing, staff time, media ads	SRA Fire Prev Fee, US HRA	NCC, OCFA	
	b	Adopt and enhance a program such as Ready Set Go to enhance local preparedness	HOAs	HOAs	Community Outreach+Education	SRA Fire Prev Fee, HRA	OCFA, Other FD	
	c	Convey the benefit of action to that can possibly obtaining or /reduceing the cost of insurance	HOAs	HOAs	Community Outreach+Education	SRA Fire Prev Fee, HRA	OCFA, Other FD	
	d	Make GIS layers of fuel modification zones, biological resources, + cultural resources (when legally allowed), etc. available to stakeholders	County-wide	Stakeholders, e.g. Caltrans	staff time	Stakeholder staff time (e.g. Caltrans)	OCFA, Caltrans	
	e	Share best practices about the medium of communication mediums, i.e.,: email/text/signs/website, etc.	County-wide	HOAs	staff time	SRA Fire Prev Fee, HRA	OCFA, Other FD	
	f	Promote Red Flag Warnings, access restrictions, weather dangers and other fire safety messages through enhanced communication and alerts (i.e., websites, apps, online alerts). Note:* (i.e. signage as separate project)	Parks, Preserves, HOAs, Rows of Transportation Agencies (e.g. Caltrans)	Parks, Preserves, HOAs	Staff time, contract for software	SRA Fire Prev Fee, HRA	none needed	
	g	Educate recreationists about fire safety, such as how to report illegal activity and a fire, create a fire safety program/messages at Nix Nature Center, and other similar facilities such as parks, golf courses and on willing private land	Parks, Preserves, HOAs	Parks, Preserves, HOAs	Staff time, graphic artist	SRA Fire Prev Fee, HRA	NCC, OC Parks, IRC	
	h	Broaden situation awareness app similsar to "LACO SitStat"	County-wide	Fire departments	Staff time	Fire Dept budget	Anaheim	
	i	Develop and/or enhance and distribute a program to reduce the spread of tree pest through firewood ("Buy It Where You Burn It", etc.)	County-wide	Parks, Preserves	Staff time, graphic artist, marketing contract	SRA Fire Prev Fee, HRA	NCC, MRV	
	l	Support collaboration between FSCs, HOAs, FDs and COAST, through meetings with local FSCs, HOAs, and out-of-the-area FSCs	County-wide	HOAs, FSCs, FDs, Homeowners	Staff time, volunteer time	CA FSC, SRA Fire Prev Fee, Fire Dept Budgets	FSCs, Fire Depts	
3		**Build on passive and active surveillance, such as monitoring detection systems, expanding HPWREN and Firewatch programs**	Strategic locations, ROWs of Transportation Agencies (e.g. Caltrans)	Parks, Preserves, Transportation Agencies (e.g. Caltrans), Sheriff Depts, CHP	Equipment and software	Public Safety Departments, Utilities	OCFA, IRC, Caltrans	
4		**(Preparedness)**	County-wide	Fire departments	Staff time	Fire Dept budget	OCFA	
5		**Include willing partners outside the CWPP boundaries if the project extends and provides mutual benefit**	Partners outside Orange County	All stakeholders	Staff time, contract costs	Willing partner	Willing Partner	
6		**agencies will do during a fire and what the public needs to do to prevent ignitions.**	County-wide	Fire departments	Staff time	Fire Dept budget	OCFA	
7		**Create a California native plant education garden with a pathway that has signage to educate people on the type of plant, fire risk, spacing of plants and the best location within the property.**	HOAs	HOAs	Staff time, plant purchase + installation	SRA Fire Prev Fee, HRA	OCFA, IRC	
8		**Develop a contractor training program, incentives to address ignition prevention techniques and fuel management best practices**	Parks, Preserves, HOAs	Parks, Preserves, HOAs	Staff time	SRA Fire Prev Fee, HRA	NCC, OCFA	
9		**Support FSCs education programs (i.e. websites, placing fire safety in school curriculum, reaching parents through students, holding ice cream socials, BBQs with education component, placing educational tables at events such as Car Shows**	County-wide	FSCs, FDs, Homeowners	Staff time	CA FSC, SRA Fire Prev Fee, Fire Dept Budgets	FSCs, Fire Depts	
10		**Develop and distribute fire evacuation plans, such as for neighborhoods in the City of Anaheim**	City of Anaheim	Homeowners, FDs	Staff time, printing costs	CA FSC, SRA Fire Prev Fee, Fire Dept Budgets	Anaheim, Fire Departments	

FUEL MANAGEMENT ON PUBLIC AND LARGE SCALE PRIVATE LANDS

		PROJECTS	Treatment Location	Primary Beneficiaries	Type of Funding Request	Funding Source	Funding Lead	In Unit Plan?
1		**Inventory and map fuel loads, invasive plants, tree mortality**						
	a	**Monitor for invasive tree pests such as GSOB, PSHB, KSHB that cause tree mortality and increase fuel loads**	Preserves, Parks, protected lands, ROWS of Transportation Agencies (e.g., Caltrans)	State Parks, OC Parks, NCC, RMV, Wildlands Conservancy, Starr Ranch, CNF, Transportation Agencies (e.g., Caltrans)	Staff time	SRA Prev Fee, State Urban Forestry Grants	Caltrans, Land managers	
2		**Conduct fuel management on high priority locations:**						
		Perform vegetation clearance on T-line and distribution lines, and "General Order 95" vegetation management	Preserves, Parks, protected lands, HOA Open Spaces	Utilities, Preserves, Parks, Protected Lands, HOAs	Staff time, contract labor+equip	Utilities' Drought Augmentation Funds,	Utilities	
		Reduce fuel loads to reduce fire hazards through removal of trees killed by invasive pests (GSOB, PSHB, KSHB), as allowed by existing management goals	Preserves, Parks, protected lands, ROWS of Transportation Agencies (e.g., Caltrans)	State Parks, OC Parks, NCC, RMV, Wildlands Conservancy, Transportation Agencies (e.g., Caltrans)	Staff time, contract labor+equip	SRA Prev Fee, HFRA, W Govs WUI	OCFA, Land Managers	
		Remove pest infested trees and implement other measures to reduce spread of boring beetles and other pests,	Preserves, Parks, protected lands, ROWS of Transportation Agencies (e.g., Caltrans)	State Parks, OC Parks, NCC, RMV, Wildlands Conservancy, Transportation Agencies (e.g., Caltrans)	Staff time, contract labor+equip	SRA Prev Fee,	Caltrans	
		Establish FMZ, subject to landowner and regulatory approval, along the interface between structures/properties and the Reserve						
		Explore purchase of strategically important lands as a means of protecting natural resources and structures						
		Where appropriate, and in collaboration with managing agencies, manage wildlands in Parks and Open Spaces utilizing hand crews and goats in the City of Anaheim	Preserves, Parks, protected lands, ROWS of Transportation Agencies (e.g., Caltrans)	State Parks, OC Parks, NCC, RMV, Wildlands Conservancy, Transportation Agencies (e.g., Caltrans)	Staff time, contract labor+equip	SRA Prev Fee,	Caltrans	✓
3		**Seek methods for treatments that both enhance fire safety and resource values**						
	a	Utilize the outer 50 to 100 feet of FMZ for cactus wren (Opuntia) habitat that functions as fuel modification	Preserves, Parks, protected lands, HOA Open Spaces, ROWS of Transportation Agencies (e.g., Caltrans)	Utilities, Preserves, Parks, Protected Lands, HOAs, Transportation Agencies (e.g., Caltrans)	Cactus, staff time, contract labor+equip	Agreements w/ Developers, SRA Prev Fee, HOA fees	OC Co Pks, St Pks, IRC, NCC, HOAs	✓
	b	Replace trees killed by pests	Preserves, Parks, protected lands, HOA Open Spaces, ROWS of Transportation Agencies (e.g., Caltrans)	Preserves, Parks, Protected Lands, HOAs, Transportation Agencies (e.g., Caltrans)	Trees, staff time, contract labor+equip, irrigation	Urban Greening, Urban Forestry Grants, HOA fees, Cities, Counties , Preserve Managers	OCFA, NCC	
	c	Explore purchase of strategically important lands as a means of protecting natural resources and structures	Private lands, HOAs	Preserves, Parks, protected lands, Homeowners	Land purchase	Developer fees, City/County budgets	Orange County, CA Fish & Wildlife, NCC	
4		**Maintain fire hazard reduction treatments**	Preserves, Parks, protected lands, HOA Open Spaces	Preserves, Parks, Protected Lands, HOAs	Trees, staff time, contract labor+equip, irrigation	HOA Fees, agency budgets	HOAs, Cities, Counties, Preserve Managers	
5		**Plan and fund community level hazardous fuel reduction projects (e.g. community fuel modification zones, fire breaks)**	Preserves, Parks, protected lands, HOA Open Spaces, ROWS of Transportation Agencies (e.g., Caltrans)	Preserves, Parks, Protected Lands, HOAs, Transportation Agencies (e.g., Caltrans)	Staff time, contract labor+equip	SRA Fire Prev Fee, W Govs WUI, HOA Fees, agency budgets	HOAs, Cities, Counties, Preserve Managers, Caltrans	✓
6		**Seek funding and approvals for projects**	Preserves, Parks, protected lands, HOA Open Spaces, ROWS of Transportation Agencies (e.g., Caltrans)	Preserves, Parks, Protected Lands, HOAs, Transportation Agencies (e.g., Caltrans)	Staff time	SRA Fire Prev Fee, Urban Forestry, HOA fees, Cities, Counties , Preserve Managers	NCC, OCFA, Caltrans	

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FIREFIGHTING AND MITIGATION

		PROJECTS	Treatment Location	Primary Beneficiaries	Type of Funding Request	Funding Source	Funding Lead	In Unit Plan?
1		**Increase water sites for air operations throughout the county**	County-wide	Fire departments	Equipment rental, operator time	Fire Dept budget	Fire Dept budget	
2		**Develop and conduct annually a multi-agency program that includes specific training on best management strategies and tactics**						
	a	Integrate Resource Advisors in the fire response	County-wide	Fire departments	Staff time	Fire Dept budget	OCFA	
	b	Support development of a Countywide resource advisor program, including training for fire response	County-wide	Fire departments, land management agencies	Staff time	Fire Dept, land management agency budget	OCFA	
	c	Protocol for fire access through private land to allow for improved monitoring and prevention	County-wide	Fire departments	Staff time	Fire Dept budget	Anaheim	
	d	Purchase of simulation table for wildfire planning and training (for Anaheim and others)	County-wide	Fire departments	Staff time	FEMA AFG	Anaheim	
	e	Conduct cultural resource surveys along fire roads and trails to assist in updating fire management	County-wide	Parks, Open Space,s, Fire departments	Staff time	Fire Dept budget	OCFA	
	f	Identify strategic, mutually agreed-upon anchor points. Maintain trails to at least 10 feet for backfiring or anchor-point operations	County-wide	Fire departments	Staff time	Fire Dept budget	OCFA	
	g	Prepare and coordinate for current fire season	County-wide	Fire departments	Staff time	Fire Dept budget	OCFA	
4		**Build upon and improve existing fire plans to support implementation of pre-fire decisions (i.e. containment lines in existing delineated FMUs)**						
	a	Develop 3-fold brochure-type pre-plan and evacuation guide like those used in Salinas, San Luis Obispo, Napa, etc.	County-wide	Fire departments	Staff time	SRA Fire Prev Fee, HFRA, FEMA AFG	OCFA	
5		**Build on natural resource mitigation programs to improve firefighting strategies**	Preserves, Parks, Protected Lands, HOA Open Spaces	Preserves, Parks, Protected Lands, HOAs	Staff time	SRA Fire Prev Fee, HFRA, FEMA AFG	NCC, IRC	
6		**Fund post-fire habitat restoration/fire remediation including performance monitoring**	Preserves, Parks, Protected Lands, HOA Open Spaces, ROWs of Transportation Agencies (e.g. Caltrans)	Preserves, Parks, Protected Lands, HOAs, Transportation Agencies (e.g. Caltrans)	Staff time, seeds, plant material, equipment, tools	HOA Fees, agency budgets	NCC, IRC, Caltrans	
7		**Fund (subsidize) the purchase and installation of compliant public/private road signs, and address numbers**	HOAs, residences, ROWs of Transportation Agencies (e.g. Caltrans)	HOAs, homeowners, Transportation Agencies (e.g. Caltrans)	Purchase of signs, installation, labor	SRA Fire Prev Fee	OCFA, Caltrans	
8		**Promote evacuation awareness by working with the local law enforcement agencies to enhance signage (possibly a wildfire evacuation route symbol)**	County-wide	Fire depts, sheriff depts, State Parks	Staff time	SRA Fire Prev Fee, HFRA, FEMA AFG	OCFA	
9		**Locate and install blue dots at hydrant locations, post locations on FSC website**	Service area of N Tustin FSC, other locations thrughout County	Fire Depts, Homeowners, FSCs	Staff time, volunteer time	CA FSC, volunteers, FD or IRWD staff time	N Tustin FSC	

PLANNING

		PROJECTS	Treatment Location	Primary Beneficiaries	Type of Funding Request	Funding Source	Funding Lead	In Unit Plan?
1		**Participate fully in General Plan revisions**						
	a	Comply with SB1241, submitting Safety Element and Housing Element to Board of Forestry	County-wide	Private landowners	Staff time	none needed	none needed	
	b	Develop policies for development that promote fire safety, and include these in the next general plan revision	County-wide	Private landowners, fire departments	Staff time	none needed	none needed	
2		**Work with local law enforcement agencies to map and convey local evacuation routes to the public**	County-wide	Residents, fire depts, sheriff depts	Staff time	SRA Fire Prev Fee, HFRA	OCFA	
3		**Develop a model to prioritize fuel management projects**						
	a	Make data and GIS layers of fuel modification zones, biological resources, and cultural resources, etc. available to stakeholders	County-wide	Stakeholders (e.g., Caltrans)	Staff time	Stakeholder agency budget (e.g., Caltrans)	OCFA, Caltrans	
	b	Identify and incorporate in plans the locations of critical infrastructure/ resources to protect (natural and cultural) as allowed by law	County-wide	Stakeholders	Staff time	Stakeholder agency budget	OCFA	
	c	Develop a fire risk model based on projected urban growth patterns and relationships to ignitions, vegetation and fire regimes.	County-wide	Residents, fire depts	Staff/research time	JFSP, Stakeholder agency budget	NCC, UCI	
	d	Develop a model and an automated live and dead fuel moisture reporting system across the county. This may be a remote sensing based model to help describe some seasonal, successional, patterns of occurrence	County-wide	Preserves, parks, OCFA	Staff time	Stakeholder agency budget	NCC	
	e	Develop an inventory and monitoring plan for tree mortality/dead aerial fuels due to past invasions (e.g. boring beetles)	County-wide	Preserves, parks, HOAs	Staff time	Stakeholder agency budget	NCC, IRC	
4		**Develop or update plans for high-priority locations:**						
	a	Specific fuel reduction/point protection for Tecate Cypress groves	Carbon Canyon, locations of Tecate Cypress	OC Parks, Preserves	Staff time	SRA Fire Prev Fee, HFRA	NCC, IRC, OC Parks	
	b	Update Wildfire Management Plans for State Parks (e.g. Crystal Cove State Park/section in Natural Resource Management Plan)	Crystal Cove SP	Crystal Cove SP	Staff time	SRA Fire Prev Fee, HFRA	NCC. St Pks	
	c	Vegetation management along utility roads in wildlands	Preserves, Parks, Protected Lands, HOA Open Spaces	Utilities, Preserves, Parks, Protected Lands, HOAs	Staff time, contract labor+equip	Utilities' Drought Augmentation Funds,	Utilities, landowners, land mgrs	✓
5		**Identify priority restoration projects that minimizes potential for ignitions and and catastrophic fire (in order of biggest hazard reduction potential**	County-wide	Preserves, parks, OCFA	Staff time	Stakeholder agency budget	NCC	
6		**Develop carbon sequestration models for non-forest vegetation types (i.e. coastal sage scrub/chaparral) to address GHG and climate change. Link to potential (and real) carbon/habitat loss from wildfire with justification for strategically placed fuel treatments and other fire prevention activities.**	County-wide	Preserves, parks, OCFA	Staff time	Stakeholder agency budget	NCC	
7		**Develop and implement a multi-agency comprehensive roadside ignition reduction plan and implementation plan (See Ignition Prevention Action Projects)**	Roadsides targeted tower locations, HOA, Preserves, Parks	Transportation Agencies (e.g. Caltrans), Parks, Preserves, HOAs	Staff time, equipment, contract labor + equipment, printing	SRA Fire Prev Fee, HFRA	Transportation Agencies, NCC, IRC, OCFA	
	a	Include regulatory agencies	see above	see above	see above	see above	see above	
	b	Conduct a risk assessment	see above	see above	see above	see above	see above	
	c	Prioritize schemes based on risk	see above	see above	see above	see above	see above	
8		**Pursue funding for staff to coordinate and promote prioritized implementation and planning for projects in the CWPP**	County-wide	Stakeholders (e.g., Caltrans)	Staff time	Stakeholder agency budget	NCC, Caltrans	✓
9		**Develop post-fire response plan (i.e., a Burn Area Emergency Response-like plan) for wildlands. In large wildfire scenarios, it includes multiple agencies and organizations.**	County-wide	Preserves, parks, OCFA	Staff time	Stakeholder agency budget e.g., Caltrans	NCC	
10		**Develop an early warning system for predicting summer and fall fire risk based on antecedent weather conditions and status of vegetation at sub-seasonal to seasonal time scales.**	County-wide	Preserves, parks, OCFA	Stakeholder (e.g. UCI) staff time	JFSP	UCI, NCC	
11		**Ensure development of a wildfire mitigation plan for electric utilities within the Very High Fire Hazard Severity Zones of Anaheim as mandated by SB1028.**	County-wide along utility rights-of-ways in VHFHSZs	Electrical utilities, preserves, parks, HOAs	Staff time	Utility budgets, stakeholder agency budget		

STRUCTURE SURVIVABILITY AND DEFENSIBLE SPACE

	PROJECTS	Treatment Location	Primary Beneficiaries	Type of Funding Request	Funding Source	Funding Lead	In Unit Plan?
1	Update home assessment tool on OCFA.org/rsg	Homeowners, HOA-controlled	Homeowners, HOAs	Staff time	OCFA budget	OCFA	
2	Education on home ignitions	HOA-controlled land	Homeowners, HOAs	Staff time	SRA Fire Prev Fee, HFRA	OCFA	✓
3	Develop practical retrofit techniques	HOA-controlled land	Homeowners, HOAs	Staff time	SRA Fire Prev Fee, HFRA	OCFA	✓
4	Expand "First 30 feet" program	Private yards, HOA-controlled	Homeowners, HOAs	Staff time	SRA Fire Prev Fee, HFRA	OCFA	
5	Educate homeowners on landscaping through consistent and frequent messaging	HOA-controlled land	Homeowners, HOAs	Staff time, printing	SRA Fire Prev Fee, HFRA	OCFA	✓
6	Educate homeowners of fire safety and structural protection	HOA-controlled land	Homeowners, HOAs	Staff time	SRA Fire Prev Fee, HFRA	OCFA	✓
7	Maintain and improve defensible space/fuel modification by increasing width and/or reducing fuel densities via native vegetation restoration/replanting by removing exotic species, focus from structure outward	structures, Caltrans ROW when within 170-ft of structures	Homeowners, HOAs, Parks, Preserves, CalTrans, owners of protected lands	Staff time	SRA Fire Prev Fee, HFRA	OCFA, Caltrans	
8	Establish Firewise and Fire Adapted Communities within the Very High Fire Hazard Severity Zones within the City of Anaheim	VHFHSZs within City of Anaheim	Homeowners, HOAs	Staff time	SRA Fire Prev Fee, HFRA	City of Anaheim	
9	Research on drought tolerant plant pallet for use in the fuel modification area	w/in 170-ft of structures	Homeowners, HOAs	Staff time	SRA Fire Prev Fee	OCFA, HOAs	
10	Develop plan how to retrofit—phased, focusing on specific elements—i.e. roof vents first	HOA-controlled land	Homeowners, HOAs	Staff time	SRA Fire Prev Fee, HFRA	OCFA	
11	VR tour within structure to reduce structure risk in demonstration garden and structure. Include QR codesthroughout the house and the garden	HOA-controlled land	Homeowners, HOAs	Staff time	SRA Fire Prev Fee, HFRA	Anaheim	
12	Fund brush/fuel treatments—for HOA's, local FDs for existing priorities in Open Spaces and HOAs areas	w/in 170-ft of structures	Homeowners, HOAs	Contract labor+equip	SRA Fire Prev Fee, HFRA	OCFA	
13	Defensible space education/ persuasion/ enforcement	HOA-controlled land	Homeowners, HOAs	Contract labor+equip	SRA Fire Prev Fee, HFRA	OCFA	✓
14	Seek seed funding for projects	Private yards, HOA-controlled	Homeowners, HOAs	Staff time	SRA Fire Prev Fee, HFRA	OCFA	
15	Share effective techniques for defensible space maintenance (e.g. pampas grass control)	Private yards, HOA-controlled land	Homeowners, HOAs, Parks, Preserves, CalTrans, owners of protected lands	Staff time	SRA Fire Prev Fee, HFRA	OCFA	
16	Demonstration of a Fuel Modification Zone (Garden) comparing fuel management goals and current standards, evaluate impacts to habitat, invadability by invasives	Private yards, HOA-controlled land	Homeowners, HOAs	plant purchase + installation	SRA Fire Prev Fee, HFRA	OCFA	
17	Explore use of goats for fuel maintenance in/along fuel modification zones, develop consistent contract specifications for goat usage (i.e., when to move goats based on resource health, how to avoid invasive plant seeds), develop guidelines on how to solicit and manage goat herds.	w/in 170-ft of structures	Homeowners, HOAs	Staff time	SRA Fire Prev Fee	HOAs	
18	Expand chipper day programs	Private yards, HOA-controlled lands	Homeowners, HOAs, FSC	Staff time, chipper	SRA Fire Prev Fee, HFRA, CA FSC, HOA fees, donations to	Tustin FSC	

APPENDIX B: Wildfire Related Legislation and New Laws Since 2017

Excerpts from League of Cities
Annual Legislative Reports[104]

Each year, the League of California Cities develops a comprehensive summary of the legislative year, along with descriptions, divided by issue area, of the hundreds of bills of interest to cities that passed the Legislature and were signed into law by the Governor. Dubbed the "Legislative Report," this compilation of statutes includes chaptered bill and resolution summaries and analyses. Cal Cities prepares this document at the conclusion of each legislative year as a resource to assist city officials in understanding laws enacted during that legislative session.

Following are excerpts from the reports to identify what has changed in the statutes related to "wildfire" since the Orange County Community Wildfire Protection Plan was prepared in 2017.

2017 Legislative Year in Review

In the policy arena, continued efforts to address affordable housing and homelessness can be expected, including reviving options for local rent control. Recreational marijuana regulations take effect in 2018. Financial difficulties for cities are increasing as pension costs escalate and affect fiscal sustainability and service delivery. Discussions are expected on water conservation and energy policy, responding to the devastating 2017 wildfires and crafting a more balanced telecom bill. Unknown elements for 2018 include the state budget. Besides the major vulnerabilities with a federal repeal of the Affordable Care Act, at some point the economy will slow and reduce state revenues. (League of Cities, 2017 pg 12)

AB 733 (Berman, 2017) Enhanced Infrastructure Financing Districts. Climate Change. Chapter 657, Statutes of 2017

This measure adds climate change projects to the list of projects that may be financed by cities or counties through an Enhanced Infrastructure Financing Districts (EIFD). Climate change projects include higher average temperatures, decreased air and water quality, the spread of infectious and vector-borne diseases, other public health impacts, extreme weather events, sea level rise, flooding, heat waves, wildfires, and drought.

[104] https://www.cacities.org/Policy-Advocacy/Legislative-Resources/Annual-Legislative-Reports.aspx

2018 Legislative Year in Review

Smoke filled the skies as wildfires raged and legislators debated how to mitigate dangers and allocate responsibility, liability and costs." - (League of Cities, 2018 pg. 1)

Wildfire Response. The devastating wildfires of 2017 — including the Tubbs Fire in Santa Rosa that destroyed over 5,000 homes — triggered more than 70 bills responding to issues including forestry management, homeowner insurance policies, pre-positioning of fire suppression equipment and efforts to shift liability for utility-caused fires by reversing the long-established principle of inverse condemnation. To prepare for these issues, the League worked through its policy committees to update and clarify its policies and then engaged as a major player in the successful effort to improve fire safety and prevention and to protect fire victims and cities from absorbing increased liability for utility-caused fires. (League of Cities, 2018 pg. 9)

A comprehensive legislative package was developed in a conference committee and amended into SB 901 (Dodd) (see appendix report). The measure:

- Includes over $1 billion over five years for forest management and fire prevention;
- Streamlines procedures associated with forest thinning and fuel reduction;
- Increases energy production from biomass fuels;
- Expands the mutual aid system to allow for advance placement of firefighters and equipment and fuel reduction;
- Requires utilities to adopt wildfire mitigation plans and provides some additional flexibility for utilities to securitize wildfire-related debts and recover costs from ratepayers; and
- Establishes the Commission on Wildfire Cost Recovery.

In related efforts, the League worked in partnership with the California Fire Chiefs Association to secure $50 million for pre-positioning emergency equipment and supported SB 833 (McGuire), which improves emergency notifications.

AB 1875 (Wood, 2018) Residential Property Insurance.

Chapter 629, Statutes of 2018

This measure, in response to the large number of underinsured victims of the devastating 2018 wildfires, requires the DOI to establish the California Home Insurance Finder on its Internet Web site to help homeowners connect with an insurance agent or broker for residential property insurance. This tool will help homeowners find insurers that are offering homeowner's policies in their area. This measure also requires an insurer that refuses to offer or renew a homeowner's insurance policy or doesn't offer or declined to offer extended replacement cost coverage to refer the homeowner to the DOI home insurance finder. DOI is required to make this tool available by July 1, 2020.

AB 1954 (Patterson, 2018) Timber Harvest Plans. Exemption. Reducing Flammable Materials.

Chapter 207, Statutes of 2018

This measure extends the sunset date for an exemption from timber harvest plan's

requirements for defensible space surrounding a habitable structure and deletes a duplicative reporting requirement. This measure sunsets on January 1, 2022.

AB 1956 (Limón, 2018) Fire Prevention Activities. **Local Assistance Grant Program.** Chapter 632, Statutes of 2018
This measure establishes a local assistance grant program through CAL FIRE to improve fire prevention in California and ensure that fire prevention activities happen year-round. This bill also requires local agencies, resource conservation districts, fire safety councils, the California Conservation Corps, certified local conservation corps, University of California (UC) Cooperative Extension, Native American tribes, and qualified nonprofit organizations to be eligible for grants.

AB 2091 (Grayson, 2018) Fire Prevention. Prescribed Burns. Insurance Pool.
Chapter 634, Statutes of 2018
This measure expresses the intent of the Legislature to enact legislation to increase the pace and scale of the use of prescribed fire and to reduce barriers for conducting prescribed burns. This bill also requires the Forest Management Task Force, in coordination with the DOI, to develop recommendations for an insurance pool or other mechanism to assist prescribed burn managers and reduce the cost of conducting prescribed fire.

AB 2126 (Eggman, 2018) California Conservation Corps. Forestry Corps Program.
Chapter 635, Statutes of 2018
This measure requires the Directors of the California Conservation Corps to establish a forestry corps program by July 1, 2019 with one crew in place in the Central Valley, one in the Inland Empire, and two in state responsibility areas or a very high hazard fire zone by January 1, 2020. Forest health projects undertaken by the program may include, but are not limited to, fuels reduction and hazardous fuels removal, seedling and tree planting, cone and seed collection, tree mortality and tree felling, tree nursery and arborist training, forestry and conservation awareness and educational outreach, participation in forestry pilot programs, and wildlands forest firefighting training.

AB 2380 (Aguiar-Curry, 2018) Fire Protection. Privately Contracted Private Fire Prevention Resources. Chapter 636, Statutes of 2018
This measure requires CalOES, in collaboration with CAL FIRE, to develop standards and regulations for any privately contracted fire prevention resources operating during an active fire incident in the state.

AB 2411 (McCarty, 2018) Solid Waste. Use of Compost. **Planning.**
Chapter 238, Statutes of 2018
This measure requires CalRecycle to develop and implement a plan, by December 31, 2019, to maximize the use of compost for slope stabilization and establishing vegetation in the course of providing debris removal services following a wildfire. It also requires CalRecycle, in coordination with Caltrans, to identify best practices regarding cost- effective use of compost

along roadways and to develop a plan to implement those best practices in each of the 12 Caltrans districts.

AB 2551 (Wood, 2018) Forestry and Fire Prevention. Joint Prescribed Burning Operations. Watersheds. Chapter 638, Statutes of 2018
This measure authorizes the director of CAL FIRE to enter into agreements with landowners or public agencies that have authority over wildland to conduct prescribed burning operations that serve the public interest and are beneficial to the state. This measure also authorizes the California Natural Resources Agency and CalEPA to develop and submit to the Legislature a plan for forest and watershed restoration investments for the drainages that supply the Oroville, Shasta, and Trinity Reservoirs, and to develop and propose a pilot project for certain watershed restoration activities in those areas.

AB 2889 (Caballero) Timber Harvest Plans. Guidance and Assistance.
Chapter 640, Statutes of 2018 (Urgency)
This measure requires CAL FIRE to provide guidance and assistance to ensure the uniform and efficient implementation of procedures regulating the filing, review, approval, required modification, completion, and appeal of decisions relating to timber harvesting plans.

AB 2911 (Friedman, 2018) Fire Safety.
Chapter 641, Statutes of 2018
This measure makes various changes to fire safety planning efforts, defensible space requirements, and electrical transmission or distribution lines' vegetation clearance requirements with the intent to improve the fire safety of California communities. Specifically, this measure:

- Requires a local agency to transmit a copy of its adopted ordinance designating very high fire hazard severity (VHFHS) zones to the Board of Forestry and Fire Protection (Board);
- Removes exemptions from requirement that a local agency designate, by ordinance, very high fire hazard severity zones in its jurisdiction within 120 days of receiving recommendations from the director of CAL FIRE;
- Requires, no later than January 31, 2020, the State Fire Marshal (SFM), in consultation with CAL FIRE and the HCD to recommend building standards that provide for comprehensive site and structure fire risk reduction to protect structures from fire risk, based on information learned from the 2017 wildfire season;
- Requires, no later than January 31, 2020, the SFM, in consultation with CAL FIRE and HCD to develop a list of low-cost retrofits that provide for comprehensive site and structure fire risk reduction to protect structures from fire risk;
- Requires CAL FIRE to incorporate the list in its fire prevention education and outreach efforts;
- Requires, before July 1, 2020, the Office of Planning and Research to update the guidance document entitled "Fire Hazard Planning General Plan Technical Advice Series" and update not less than once every eight years;
- Authorizes the Board, within 15 days of receipt of notification that its fire prevention recommendations will not be accepted by the local government, to request a

consultation, prior to approval of the draft element or amendment, conducted in person, electronically, or by phone;

- Requires on or before July 1, 2021, and every five years thereafter, the Board, in consultation with the SFM, to survey local governments to identify existing subdivisions in SRA or VHFHS zones without a secondary egress route that are at significant fire risk; and
- Authorizes owners of any electrical transmission or distribution line to traverse land as necessary, regardless of land ownership or permission from the owner, after providing notice and an opportunity to be heard to the land owner, to prune trees to maintain and to abate, by pruning or removal, any hazardous, dead, rotten, diseased, or structurally defective live trees.

SB 465 (Jackson, 2018) Property Assessed Clean Energy Program. Wildfire Safety Improvements. Chapter 837, Statutes of 2018

This measure expands, until January 1, 2029, PACE financing to allow cities and counties in very high fire hazard severity zones to authorize contractual assessments for property owners to finance wildfire safety improvements. Eligible wildfire safety improvements are improvements identified by CAL FIRE at a specified website that can be fixed to an existing residential, commercial, industrial, agricultural or other building or structure, including ember-resistant roofs, dual-paned windows, driveways, and various ignition-resistant products such as walls, decks, and patio covers. This measure outlines a procedure to be taken by the local agency before PACE financing can be used for wildfire improvements, as follows:

- Authorizes the legislative body of any public agency that has accepted the designation of very high fire hazard severity zones to designate an area within which authorized public agency officials and property owners may enter into these PACE agreements; and
- Requires the legislative body to adopt a resolution indicating its intention to establish this program and requires the resolution to identify the kinds of wildfire safety improvements that may be financed, among other things.

SB 824 (Lara, 2018) Insurers. Declared Disaster. Homeowners' Insurance Policies. Chapter 616, Statutes of 2018

This measure prohibits an insurer from canceling or refusing to renew a homeowners' insurance policy for one year from the date of a declaration of a state of emergency. Eligible homeowners must live in a zip code within, or adjacent to, a fire perimeter. This bill also requires insurers with at least $10 million in written premiums in California to twice a year report to the DOI specific fire risk information on residential property policies. This information includes:

- Fire- or wildfire-incurred losses, if any, reported by property coverage category and the date of the loss;
- The public protection class or its equivalent, if utilized by the insurer;
- The specific numerical or other fire risk score and source of fire risk score;
- Premium; and
- ZIP Code.

SB 901 (Dodd, 2018) Wildfires.
Chapter 626, Statutes of 2018
This measure addresses numerous issues concerning wildfire prevention and recovery, including forest management and fuel reduction, mutual aid, wildfire mitigation planning by electric utilities, and cost recovery for wildfire-related damages. *(The League has prepared a comprehensive summary of this measure in Appendix A.)

SB 1079 (Monning, 2018 Forest Resources. Fire Prevention Grants. Advance Payments.
Chapter 622, Statutes of 2018 (Urgency)
This measure authorizes CAL FIRE to make advance payments to grantees, including local governments, from specified grants it administers. This bill limits these payments to 25% of the total grant award and requires CAL FIRE to report to the Legislature on the program by January 1, 2023. This measure sunsets on January 1, 2024.

SB 1181 (Hueso, 2018) Emergency Services. Certified Community Conservation Corps.
Chapter 623, Statutes of 2018
This measure authorizes Cal OES to directly enter into an agreement with one or more certified community conservation corps, to perform emergency or disaster response services.

SB 1260 (Jackson, 2018) Fire Prevention and Protection. Prescribed Burns.
Chapter 624, Statutes of 2018
This measure is an omnibus fire prevention and forestry management bill with the intent of promoting long-term forest health and wildfire resiliency. It makes various changes related to local fire planning, prescribed fire requirements, and broader fire prevention efforts, including the following:

- Requires a local agency to transmit a copy of its adopted ordinance designating VHFHS zones to the Board within 30 days of adoption;
- Removes exemptions from the requirement that a local agency designate, by ordinance, VHFHS in its jurisdiction within 120 days of receiving recommendations from the director of CAL FIRE;
- Authorizes the Board to recommend changes to a planning agency's safety element for methods and strategies accepted as best practices in the most recent guidance document entitled "Fire Hazard Planning, General Plan Technical Advice Series";
- Requires a city or county that contains either SRA or VHFHS zones to notify the Board if it adopts or amends the safety element of its general plan;
- Requires, upon approving a tentative map or a parcel map for an area located in either the SRA or VHFHS zone, the local agency to transmit a copy of the minimum fire safety standards findings required and accompanying maps to the Board;
- Authorizes the air pollution control officer of Los Angeles County to permit open outdoor fires to dispose of agricultural wastes, wood waste from trees, vines, bushes, or other wood debris free of non-wood materials, in a mechanized burner to limit air contaminants;
- Authorizes a person with a CAL FIRE burn permit to use fire to abate a fire hazard;

- Prescribes rules for CAL FIRE to authorize prescribed burns under certain conditions, execute burn agreements with the federal government, and enhance public education regarding fire prevention and public safety; and
- Requires CAL FIRE and the CARB, in coordination with local air districts, to develop and fund a program to enhance air quality and smoke monitoring and to provide a public awareness campaign regarding prescribed burns, subject to appropriation by the Legislature.

2019 Legislative Year in Review

Throughout the 2019 legislative session, the Legislature spent considerable time and attention addressing the destabilizing effects that catastrophic wildfires have had on the state. Earlier in the year, more than 90 bills were introduced that would have affected various aspects of law, including wildfire recovery and prevention, emergency services, utility liability, and more. The Town of Paradise was in ashes after a utility-caused wildfire. Pacific Gas and Electric Company (PG&E) declared bankruptcy, requiring a major utility recovery and stabilization package to be crafted. Cities were protected from liability for utility-caused wildfires though a repeal of inverse condemnation.

To address future vulnerabilities, the budget included $300 million for disaster preparedness, emergency response, disaster-related planning, improving communications, purchasing additional equipment, and pre-positioning first responder resources. The Governor also signed two emergency response bills. SB 209 (Dodd) establishes the Wildfire Forecast and Threat Intelligence Integration Center as the integrated central organizing hub for wildfire forecasting, weather information and threat intelligence gathering. SB 670 (McGuire) requires telecommunications service providers to submit a specified outage notification to the Office of Emergency Services (OES) when a telecommunications outage impacting 911 service and emergency notifications occurs.

AB 38 Fire safety: low-cost retrofits: regional capacity review: wildfire mitigation. (Wood, 2019) Chapter 7, Statutes of 2019

A comprehensive program including regional capacity review, disclosure during real estate transfers, and new financial assistance program for cost-effective structure hardening and retrofitting. Adds Section 4123.7 to the Public Resource Code requiring By July 1, 2021, the Natural Resource Agency, with State Fire Marshal and Forest Management Task Force, to review regional capacity of each county that contains a very high fire hazard severity zone to improve forest health, fire resilience and safety. This review shall include recommendations to improve regional capacity and collaboration.

Requires disclosures of compliance with local vegetation management ordinances or PRC 4291 as of July 1, 2021. Also adds to Civil Code Section 1102.6f and 1102.19 the requirement of seller of real property located in a high or very high fire hazard severity zone to provide a disclosure notice if the home was constructed before January 1, 2020, of the home's vulnerability to wildfire and flying embers. His disclosure includes documentation to buyer of compliance with wildfire protection measures and information related to fire hardening improvements. By July 1, 2025, the notice shall disclose what listed retrofits have been completed by the seller.

Creates the California Wildfire Mitigation Financial Assistance program (new program in Government Code Article 16.5 8654.2 added to Chapter 7, Division 1 of Title 2). Adds to Government Code Section 51189, the requirement for the State Fire Marshal to identify building retrofits and structure hardening measures, and the Department of Forestry and Fire

Protection to identify defensible space, vegetation management, and fuel modification activities, that are eligible for financial assistance. The Office of Emergency Services and the Department of Forestry and Fire Protection are required to develop and administer a comprehensive wildfire mitigation program to encourage cost-effective structure hardening and retrofitting to create fire-resistant homes, businesses, and public buildings. By July 1, 2025. operation of the financial assistance program contingent upon an appropriation by the Legislature.

AB 72 (Committee on Budget, 2019) Budget Act of 2018. Chapter 1, Statutes of 2019 (Urgency) This measure appropriated funding related to emergency and disaster events. Specifically, it:

- Appropriates $50 million for an emergency preparedness campaign, which includes:
    - $30 million for a statewide campaign through California Volunteers within the Office of Planning and Research (OPR) that is primarily focused on vulnerable populations, including the elderly, disabled, and those in disadvantaged communities; and
    - $20 million for local grants through the Governor's Office of Emergency Services (Cal OES). These grants are allocated to community-based organizations and other local entities to conduct outreach on emergency preparedness and provide resources to vulnerable populations.
- Appropriates $64.3 million to reimburse counties for property tax losses incurred in the 2017–18 and 2018–19 fiscal years as a result of wildfires;
    - $31.3 million is allocated to backfill property tax losses incurred as a result of wildfires including current year losses for Butte, Lake, Los Angeles, Orange, Riverside, Shasta, and Siskiyou Counties as well as estimated losses in 2019–20 and 2020–21 for the Counties of Butte and Lake.
    - Appropriates $10 million in loans to the State Emergency Telephone Number Account (SETNA) towards upgrading the Next Gen 9-1-1 system;
    - Appropriates $10 million to continue emergency water funding for emergency drinking water and technical assistance;
    - Appropriates $10 million to local water districts for technical assistance related to compliance with current drinking water standards; and
    - Appropriates $15 million to the California Department of Finance (DOF) to retain legal counsel and audit services for any public utility liability issues.

AB 74 (Ting, 2019) Budget Act of 2019.
Chapter 23, Statutes of 2019 (Urgency)
This measure enacted the principal state government budget allocations for the 2019–20 fiscal year, and includes the following provisions relevant to local government (detailed by policy area). Wildfire related provisions included:

- Funding for Disaster-Impacted Communities
    - $518,000 for counties of Los Angeles, Mendocino, Napa, Orange, San Diego, Solano, Tuolumne, and Ventura for property tax losses from the 2018-19 wildfires;
- Water Conservation and Flood Protection
    - $2 million to cover planning costs for recovery from 2017 and 2018 wildfires;

AB 110 (Ting, 2019) Budget Act of 2019.
Chapter 80, Statutes of 2019 (Urgency)
This measure provides $2 million to the Department of Finance (DOF) for costs associated with the implementation of the utility wildfire liability measure AB 1054 (Holden, Chapter 79, Statutes of 2019), which seeks to address the threat of catastrophic wildfires and their impacts on victims, ratepayers, utilities, and other stakeholders. (*The League has prepared a comprehensive summary on this measure in Appendix A of this document.*)

AB 111 (Committee on Budget, 2019) Wildfire Agencies. Public Utilities. Safety and Insurance.
Chapter 81, Statutes of 2019 (Urgency)
This measure establishes the California Catastrophe Response Council (Council), to oversee the California Earthquake Authority (CEA) and the Wildfire Fund Administrator who manages and operates the Wildfire Fund. Also creates the Office of Energy Infrastructure and Safety, Wildfire Safety Division at the CPUC

AB 178 (Dahle, 2019) Energy. Building Standards. Photovoltaic Requirements.
Chapter 259, Statutes of 2019
This measure specifies that residential construction intended to repair, restore, or replace a residential building damaged or destroyed as a result of a disaster in an area in which a state of emergency has been proclaimed by the Governor, before January 1, 2020, is required to comply with the solar photovoltaic requirements, if any, that were in effect at the time the damaged or destroyed residential building was originally constructed and is not required to comply with any additional or conflicting solar photovoltaic requirements in effect at the time of repair, restoration, or replacement. This measure sunsets on January 1, 2023.

AB 661 (McCarty, 2019) Wildfire Smoke Air Pollution Emergency Plan. Sacramento Metropolitan Air Quality Management District.
Chapter 392, Statutes of 2019
This measure requires the Sacramento Metropolitan Air Quality Management District (SMAQMD) to prepare a wildfire smoke air pollution emergency plan to serve as an informational source for local agencies and the public during an air pollution emergency caused by wildfire smoke. This measure also requires the SMAQMD to develop the wildfire smoke air pollution plan in coordination with its county health officer and in consultation with local offices of emergency management or emergency services, school districts, CARB, and regional planning agencies.

AB 747 (Levine) Planning and Zoning. General Plan. Safety Element.
Chapter 681, Statutes of 2019
This measure requires cities and counties to identify evacuation routes and their capacity, safety, and viability under a range of emergency scenarios in the safety element of their general plan by January 1, 2022. A city or county that has adopted a local hazard mitigation plan, emergency operations plan, or other document that fulfills commensurate goals and objectives may use that information in the safety element to comply with this requirement.

AB 836 (Wicks, 2019) Wildfire Smoke Clean Air Centers for Vulnerable Populations Incentive Pilot Program.
Chapter 393, Statutes of 2019
This measure establishes the Wildfire Smoke Clean Air Centers for Vulnerable Populations Incentive Pilot Program. The grant program creates a network of clean air centers by providing funding to public facilities for smoke-protective filtration systems. The grant program prioritizes applications for projects located in a documented high smoke exposure area to mitigate the adverse public health impacts that result from wildfires and other smoke events. This measure sunsets on January 1, 2025.

AB 1054 (Holden, 2019) Public Utilities. Wildfires and Employee Protection.
Chapter 79, Statutes of 2019 (Urgency**)**
This measure creates additional safety oversight and processes for utility infrastructure, modifies cost recovery standards from wildfire damages between investor owned utilities (IOUs) and third-parties, and authorizes an electrical corporation and ratepayer jointly funded Wildfire Fund to address future related wildfire liabilities.

AB 1168 (Mullin, 2019) Emergency Services. Text to 911.
Chapter 237, Statutes of 2019
This measure requires, by January 1, 2021, each public safety answering point (PSAP) to deploy a text to 911 service that enables an individual to text "911" for emergency services, and that is capable of accepting Short Message Service (SMS) messages and Real-Time Text (RTT) messages.

AB 1432 (Dahle, 2019) Water Shortage Emergencies. Declarations. Wildfires.
Chapter 19, Statutes of 2019
This measure authorizes a public water supplier to declare a water shortage emergency condition without holding a public hearing in the event of a wildfire.

AB 1513 (Holden, 2019) Energy.
Chapter 396, Statutes of 2019
This measure makes several technical and clarifying changes to current law, which concern programs under the jurisdiction of the CPUC and other energy programs. This measure also modifies a provision, created in AB 1054 (Holden, Chapter 79, Statutes of 2019), that requires funds leftover from the wildfire fund after it is terminated be distributed to ratepayers, to instead transfer the funds to the General Fund with the intent that it be used for wildfire mitigation.

AB 1699 (Levine, 2019) Telecommunications. Mobile Internet Service Providers. First Response Agencies. Emergencies.
Chapter 398, Statutes of 2019
This measure prohibits telecommunications providers from throttling internet traffic for first responder agencies during an emergency.

AB-1823 (Friedman, 2019) Fire protection: local fire planning
Amended PRC Section 4290.1 to require that, on or before July 1, 2022, the State Board must develop criteria for and maintain a list of local agencies considered to be a "Fire Risk Reduction Community" located in the SRA or VHFHSZ, identified pursuant to GC § 51178, that meet best practices for local fire planning. Criteria that must be used to develop the Fire Risk Reduction Community list include recently developed or updated CWPPs, adoption of the board's recommendations to improve the Safety Element, participation in Fire Adapted Communities and Firewise USA programs, and compliance with the Board's minimum fire safety standards. For example, any new road in areas of State Responsibility will need to comply with State regulations governing access. Standards extend to road steepness, curvature, and width. The result is to add costs to construction and further constrain housing sites.

SB 70 (Nielsen, 2019) Electricity. Undergrounding of Electrical Infrastructure.
Chapter 400, Statutes of 2019
This measure requires each electrical corporation's wildfire mitigation plan to include where and how it considered undergrounding electrical distribution lines in areas with the highest wildfire risk.

SB 99 (Nielsen, 2019) General Plans. Safety Element. Emergency Evacuation Routes.
Chapter 202, Statutes of 2019
This measure requires the safety element of the general plan, upon the next revision of the housing element on or after January 1, 2020, to identify any residential developments in any hazard area that does not have at least two emergency evacuation routes. Cities and counties must regularly review and update this information on the same schedule as other safety element updates.

SB 167 (Dodd, 2019) Electrical Corporations. Wildfire Mitigation Plans.
Chapter 403, Statutes of 2019
This measure requires each electrical corporation, as part of submitting their wildfire mitigation plans to the CPUC, to additionally include the impacts on customers who are receiving medical baseline allowances as part of their protocols related to mitigating the public safety impacts of disabling reclosers and deenergizing portions of the electrical distribution system.

SB 209 (Dodd, 2019) Office of Emergency Services. Wildfire Forecast and Threat Intelligence Integration Center.
Chapter 405, Statutes of 2019
This measure requires the California Office of Emergency Services (Cal OES) and CAL FIRE to jointly establish the Wildfire Forecast and Threat Intelligence Integration Center. The Center will be the State's integrated central organizing hub for wildfire forecasting, weather information, and threat intelligence gathering.

SB 247 (Dodd, 2019) Wildland Fire Prevention. Vegetation Management.
Chapter 406, Statutes of 2019
This measure requires an electrical corporation, within one month of the completion of each

substantial portion of the vegetation management requirements in its wildfire mitigation plan, to notify the CPUC's Wildfire Safety Division. This measure also requires the Wildfire Safety Division to audit the completed work and requires the audit to specify any failure of the electrical corporation to fully comply with the vegetation management requirements, among other required actions.

SB 397 (Glazer, 2019) Public Transit Operators. Passengers with Pets. Evacuation Orders.
Chapter 702, Statutes of 2019
This measure requires Cal OES and the California Department of Food and Agriculture (CDFA), in consultation with public transit operators and county emergency management officials, to develop best practices for allowing pets on public transit vehicles serving areas subject to an evacuation order. This measure requires public transit operators to allow passengers to board transit vehicles with their pets in areas under an evacuation order, per the development of best practices.

SB 513 (Hurtado, 2019) State Water Resources Control Board. Grants. Interim Relief. Private Water Wells.
Chapter 373, Statutes of 2019
This measure authorizes SWRCB to provide grants to a county, community water system, local public agency, or nonprofit organization to provide relief to households where a private water well has gone dry or has been destroyed, due to drought, wildfire, or other natural disasters. This measure also authorizes ten percent of this funding to be used for planning related to permanent solutions for dry private wells.

SB 560 (McGuire, 2019) Wildfire Mitigation Plans. Deenergizing of Electrical Lines. Notifications. Mobile Telephony Service Providers.
Chapter 410, Statutes of 2019
This measure requires public and private utilities to notify all public safety offices, critical first responders, health care facilities, and operators of telecommunications infrastructure with premises within the footprint of potential de-energization for a given event. This measure also requires telecommunications providers to designate points of contact within the company to receive notifications from public and private utilities in anticipation of possible de-energization events and to notify stakeholders, such as public safety offices and emergency response offices, about the impacts to communications capabilities during such events.

SB 670 (McGuire, 2019) Telecommunications. Community Isolation Outage. Notification.
Chapter 412, Statutes of 2019 (Urgency)
This measure requires telecommunications providers to notify the Governor's Office of Emergency Services (Cal OES) whenever there is an outage limiting the ability for customers to make 911 calls or receive emergency notifications within 60 minutes of discovering the outage. This measure also requires Cal OES to notify the affected county office(s) of emergency services, the sheriff of any county, and any public safety answering point affected by the outage.

Housing Elements
Process changes: AB 101 requires the California Department of Housing and Community Development (HCD) to publish an annual list of cities that have failed to adopt an HCD-approved housing element. Details financial penalties and incentives.

Summary of Accessory Dwelling Units (ADU) Bills Effective January 1, 2020
AB 68 (Ting), AB 587 (Friedman), AB 671 (Friedman), AB 881 (Bloom), SB 13 (Wieckowski)
The Legislature passed several bills that may require a city to amend its existing ordinance regarding development of ADUs and Junior ADUs. Gov't Code 65852.2 requires a city to adopt an ordinance that allows ADUs subject only to ministerial (non-discretionary approval). Generally, the ordinance must allow ADUs in areas zoned to allow single family or multi-family units.

2020 Legislative Year in Review

The year 2020 was a year of many firsts. COVID-19 altered almost every facet of life for people around the globe, more Americans voted in the November general election than ever before, and Californians were rocked by unparalleled heatwaves, wildfires, and civil unrest. Many have called this year "unprecedented," but even that does not seem to capture the unequaled havoc that 2020 wreaked upon us all, the California State Legislature included.

In the end, the number of bills sent to the Governor's desk for his signature was a mere fraction of what the legislature typically passes in a year. Of the nearly 2,200 bills introduced this year, 428 made it to the Governor's desk. In comparison, 1,217 bills were sent to the Governor in 2019. The tumultuous session concluded with the Governor signing 372 bills and vetoing 56, a 15 percent veto rate.

Notable Legislation. This legislative year seemed to be more about what legislative proposals did not pass, rather than what passed. Legislation including wildfire funding, numerous high-profile housing bills, police reform, and a comprehensive broadband proposal were considered high priorities, but they all stalled at the end of the legislative year. The unfinished business will certainly define part of the agenda for the Legislature next year. While there was a lot left undone legislatively, several impactful proposals were signed into law this year.

When wildfires began to ravage the state, Cal Cities created a "Wildfire: Resources for Cities" webinar series for League of Cities members https://www.cacities.org/WildfireSeriesAll with experts from state and federal agencies to assist cities with disaster preparedness and response. .

SB 74 (Mitchell, 2020) Budget Act of 2020. Chapter 6, Statutes of 2020 (Urgency)
This measure is the 2020 Budget Act. Notable for local governments, this measure includes the following provisions:
California Governor's Office of Emergency Services

- $50 million one-time from the General Fund for Community Power Resiliency to support additional preparedness measures that bolster community resiliency; and
- $2 million for the Wildfire Forecast and Threat Intelligence Integration Center, consistent with SB 209 (Dodd, Chapter 405, Statutes of 2019).

AB 2386 (Bigelow, 2020) Office of Emergency Services. Disaster Council Plans.
Chapter 254, Statutes of **2020**
This measure requires Cal OES to annually review ten local emergency plans to determine if they conform or exceed best practices identified by the Federal Emergency Management Agency and in carrying out this new requirement, prioritize a plan submitted from a county determined to be at a high risk of wildfire disaster.

AB 913 (Calderon, 2020) Electrical Corporations. Wildfire and Under Collection.
Chapter 253, Statutes of 2020

This measure authorizes the California Public Utilities Commission (CPUC) to approve the securitization by electric investor-owned utilities of under collection of utility bill amounts for the year 2020. Additionally, this measure revises the definition of "eligible claim" to change "calendar year" to "year."

AB 2213 (Limón, 2020) Office of Emergency Services. Planning Guidance. Telecommunications. Chapter 98, Statutes of 2020
This measure requires the California Governor's Office of Emergency Services and California Volunteers to develop planning guidance to identify volunteers and donation management resources that could assist in responding to or recovering from disasters. This measure also expands existing emergency notification programs to include cities and universities, by clarifying that emergency alerting authorities may use wireless telephone subscriber data to enroll residents in local alerting systems, and authorizes county social service departments to share contact information of seniors and disabled individuals with emergency responders to facilitate mandatory evacuations.

AB 2421 (Quirk, 2020) Land Use. Permitting. Wireless Communications. Emergency Standby Generators. Chapter 255, Statutes of 2020
This measure sets forth a streamlined local permitting process for siting back-up power generators on macro cell tower sites through January 1, 2024. Specifically, this measure provides that siting an emergency standby generator proposed at an existing permitted macro cell tower site is subject only to a ministerial permitting process. Additionally, a local agency that receives a permit application to install an emergency standby generator is required to approve or deny the application with 60 days of submittal of the application, or the application will be deemed approved. Local agencies can impose a fee to cover costs associated with administering these permits. Local agencies can also revoke a permit or approval status for an emergency standby generator that is determined to violate state or local laws or regulations, including building and fire safety codes.

AB 2730 (Cervantes, 2020) Access and Functional Needs. Local Government. Agreement for Emergency Management and Transportation.
Chapter 256, Statutes of 2020
This measure authorizes a county, including a city and county, to enter into an agreement with an adjacent county to borrow, for compensation, the county's emergency management and transportation services in the event of an emergency that requires the evacuation and relocation of the access and functional needs population. If a county chooses to enter into such an agreement, it must integrate the agreement into its emergency plan within 90 days.

ACA 11 (Mullin, 2020) The Home Protection for Seniors, Severely Disabled, Families, and Victims of Wildfire or Natural Disasters Act. Chapter 31, Statutes of 2020
This measure is Proposition 19 on the November 2020 ballot. This measure authorizes an owner of a primary residence who is over 55 years of age, severely disabled, or a

victim of a wildfire or natural disaster to transfer the taxable value, defined as the base year value plus inflation adjustments, of their primary residence to a replacement primary residence located anywhere in the state, regardless of the location or value of the replacement primary residence, that is purchased or newly constructed as that person's principal residence within two years of the sale of the original primary residence.

APPENDIX C

2019 Fire code adoption by jurisdiction

Jurisdiction	Adopted 2019 Fire Code yes	Adopted 2019 Fire Code no	Adopted (Whole Code, Sections & Appendices)	Addendum or revisions Chapter/ Section of added items related to wildfire	Link to Code adoption resolution or ordinance
Aliso Viejo	x		Whole + Appendix B, B, C, CC	13.04.110 Chapter 49 Requirements for WUI fire areas amended	https://www.ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Aliso%20Viejo.pdf
Anaheim	x		Whole + Appendix B, E, F, G and H	4902.1 WUI Fire Area. 4905.4 Fuel modification requirements for new construction, 4906.1 Hazardous Vegetation and Fuel management	https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjztLezyY3xAhXNi54KHR-3DggQFjAAegQIBhAD&url=https%3A%2F%2Fcodelibrary.amlegal.com%2Fcodes%2Fanaheim%2Flatest%2Fanaheim_ca%2F0-0-0-63233&usg=AOvVaw3rm5S2OsmOuBBU5EHqsa9
Brea	x		Whole + Chapter 4 Appendices A, B, B, C,CC,D,E,F, G, I, K, M, N, O	OCFA amendments	https://codelibrary.amlegal.com/codes/brea/latest/brea_ca/0-0-0-66571

Dana Point	**x**		Whole	OCFA amendments + Section R337.1.3.1.1-,3 Ember zone 1 & 2.	https://www.danapoint.org/Home/ShowDocument?id=29002
Irvine	**x**		Whole + Appendix B, B, C, CC	OCFA amendments + Section 5-9-401 Building code materials and construction comply with Chapter 7A. Section R337.1.7 Fuel modification requirements.	https://library.municode.com/ca/irvine/codes/code_of_ordinances
Laguna Beach	**x**		Whole + Appendix B, BB, C, CC, D, H and K	Chapter 1 – Violations; Chapter 2 – Definitions: Spark Arrestor & Hazardous Fire Area; Chapter 3 – Vegetation, Hazardous Conditions, Outdoor Fires, Sky Lanterns, Equipment, Brush Clearance, Fuel Modification Requirements, Spark Arrestor; Chapter 49 – Fuel Modification Requirements.	http://www.qcode.us/codes/lagunabeach/
Laguna Niguel	**x**		Whole + OCFA amendments	OCFA amendments + adopt VHFSHZ	https://www.cityoflagunaniguel.org/DocumentCenter/View/17920/CD-1-2019-CBSC-Very-High-Fire-Hazard-Severity-Zones

Laguna Woods and Laguna Hills	**x**		Whole + Appendix B, BB, C, CC, and H	OCFA amendments	https://www.ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Laguna%20Woods.pdf
Lake Forest	**x**		Whole + Appendix B, BB, C, CC, and H	OCFA amendments	https://ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Lake%20Forest.pdf
Mission Viejo	**x**		Whole + Appendix B, BB, C, and CC	OCFA amendments	https://www.ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Mission%20Viejo.pdf
Newport Beach	**x**		Whole + Appendix B, BB, C, CC, E, F, G, I and N	OCFA amendments + VHFHSZ	https://www.codepublishing.com/CA/NewportBeach/html/NewportBeach09/NewportBeach0904.html
Orange City	**x**		Whole + Appendix B, BB, C, and CC	OCFA amendments	https://library.municode.com/ca/orange/codes/municipal_code?nodeId=TIT15BUCO_CH15.32CIORFICO_15.32.010ADRE
Orange County	**x**		Whole + Appendix B, BB, C, CC, H	OCFA amendments; Chapter 1 – Violations; Chapter 2 – Definitions: Spark Arrestor; Chapter 3 – Vegetation, Hazardous Conditions, Open Burning, Sky Lanterns, Brush Clearance, Equipment Use. Section 3-3-31. Chapter 49 revisions.	https://www.ocfa.org/Uploads/CommunityRiskReduction/Fire Code - County of Orange.pdf

Rancho Santa Margarita	**x**		Whole + Appendix B, B, C, CC	OCFA amendments	https://ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Rancho%20Santa%20Margarita.pdf
San Clemente	**x**		Whole	OCFA amendments	https://ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20San%20Clemente.pdf
San Juan Capistrano	**x**		Whole + Appendix B, B, C, CC, H	OCFA amendments	https://www.ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20San%20Juan%20Capistrano.pdf
Tustin	**x**		Whole + Appendix B, B, C, CC, H	OCFA amendments	https://ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Tustin.pdf
Villa Park	**x**		Whole + Appendix B, BB, C, CC	OCFA amendments	https://ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Villa%20Park.pdf
Yorba Linda	**x**		Whole + Appendix B, B, C, CC, H	OCFA amendments	https://www.ocfa.org/Uploads/CommunityRiskReduction/Fire%20Code%20-%20Yorba%20Linda.pdf

Addendum 2: Fire Danger Operating Plan (FDOP)

2024

Fire Danger Operating Plan

Contents

FDOP Executive Summary

OCFA's Fire Behavior Decision Support Team performed an in-depth review of the methodologies which drive OCFA's Fire Danger Adjective and Watershed Dispatch policies. Specifically, we completed a significant critique of OCFA's fire occurrence data, which ultimately provided enhanced, long-term accuracy in determining OCFA's daily SRA wildfire risk. This audit positions the OCFA to take full advantage of available and emerging technologies, including the latest NFDRS V4 logic.

To comply with the Annual Operating Plan between Orange County Fire Authority (OCFA) and CALFIRE, this Fire Danger Operating Plan (FDOP) has been developed based on scientific analysis of historical fire and weather data to help OCFA administrators, fire managers, dispatchers, and firefighters effectively implement the National Fire Danger Rating System (NFDRS) for Orange County. At its core, this plan outlines how designated data thresholds trigger tiered resource and communication responses, and identifies who is responsible for each component. As a dynamic document, it will be reviewed and updated at least annually, or more frequently if needed.

Updated April 2024.

Section 1: Introduction

This Fire Danger Operating Plan (FDOP) is designed to help guide the application of the National Fire Danger Rating System (NFDRS) at the local level. It will provide a framework for a consistent thought process by Orange County Fire Authority (OCFA) agency administrators, fire managers, dispatchers, and firefighters, and is based on scientific methods for analyzing and evaluating historical fire and weather data to determine accurate predictors of fire danger. For reference, fire danger is defined as the likelihood that an ignition source will cause a fire that requires suppression action by the responding agency. Management decisions dealing with dispatch levels and staffing levels are assessed based on vegetation, climate, and topography, in conjunction with NFDRS modeling.

This plan covers OCFA's Fire Danger Rating Areas (FDRAs). A Fire Danger Rating Area is a geographic area with relatively homogenous fuels, climatology, and topography. Orange County is divided into three FDRAs: the Santa Ana Mountains FDRA, the Orange County Inland FDRA and the Orange County Coastal FDRA, which was established in 2016 by splitting the previous Orange County Coastal FDRA into two distinct areas to more accurately reflect the difference in climatology between the coastal zone and the inland areas of Orange County. The new FDRA also matches the Orange County Coastal Forecast Zone established by the San Diego office of the National Weather Service in 2015. This split was made possible by the addition of a Remote Automated Weather Station (RAWS) installed in Aliso-Woods Canyon Park. As of 2024, OCFA is evaluating the validity of determining fire danger using the Santa Ana Mountains FDRA; as this area is the responsibility of the Cleveland National Forest and is covered by their FDOP.

This plan provides decision support information and helps to quantify elements that establish agency planning and response levels. Additionally, procedures for developing seasonal risk analysis and fire severity decision points are outlined, along with the implementation and analysis processes of this plan.

Section 2: Objectives

The objectives of this Fire Danger Operating Plan are to:

- Provide a tool for OCFA administrators, fire managers, dispatchers, agency cooperators, and firefighters to correlate fire danger ratings with appropriate fire business decisions.
- Define roles and responsibilities to make fire preparedness decisions, manage weather information, and brief fire suppression personnel regarding current and potential fire danger.
- Maintain a fire weather-monitoring network consisting of Remote Automated Weather Stations (RAWS), which comply with NFDRS Weather Station Standards (PMS 426-3).
- Develop and distribute Fire Danger Pocket Cards to all personnel involved with fire suppression activities within the Orange County Fire Danger Rating Areas.
- Delineate Fire Danger Rating Areas (FDRAs) in Orange County possessing similar climate, fuels, and topography.
- Analyze seasonal risks and develop criteria to establish general fire severity thresholds.
- Determine fire business thresholds by analyzing historical weather and fire occurrence data using the Weather Information Management System (WIMS), National Fire Danger Rating System V4 (NFDRS), and FireFamilyPlus software.
- Determine the most effective communication methods for OCFA to communicate potential fire danger to cooperating agencies, industry, and the public.
- Identify program needs and suggest improvements for the Fire Danger Operating Plan.
- Meet the requirements of the Annual Operating Plan (AOP) agreement between the OCFA and the California Department of Forestry and Fire Protection (CAL FIRE).

Section 3: Overview

Orange County Fire Authority

The Orange County Fire Authority is an all-risk response agency and is fully staffed for emergencies of all natures regardless of time of year, month or day. During periods when local preparedness levels are high to extreme, fire management officers strive to staff resources at response levels appropriate with the risk. This may require pre-positioning or augmenting suppression staffing levels and resources, and can require OCFA fire managers to request out-of-unit resources or support personnel throughout the fire season, in accordance with Appendix J of the Annual Operating Plan (AOP).

FDOP Fire Data

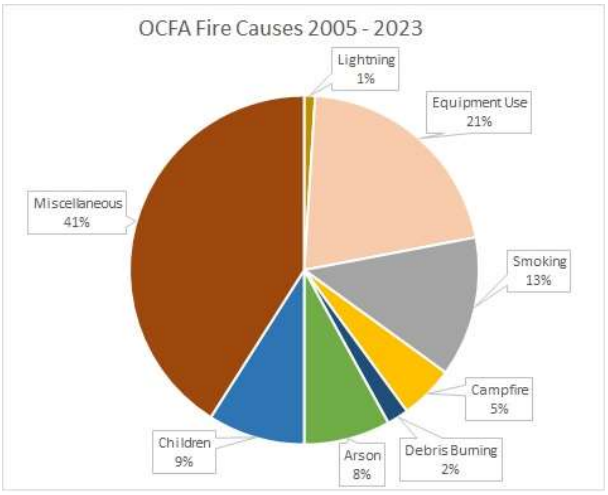
To develop this plan, wildland fire occurrences within Orange County were identified and used to determine the appropriate fire danger indices to best predict when individual and large fires are likely to occur. Only vegetation fires were included from 2005 - 2023, which totaled 1,521 fires that were either in, or that threatened Orange County. The highest fire occurrence months were July (258), June (178), August (165), and May (156).

Orange County Fire History

From 2005 - 2023, 58% of Orange County Fires were determined to be human-caused, including:

- 21% - Equipment Use
- 13% - Smoking
- 9% - Children
- 8% - Arson
- 5% - Campfire
- 2% - Debris Burning

In this same time-period, 41% of fires were codes as Miscellaneous, most of which were most likely to be human-caused.



Fire Weather Data

Fire weather data was obtained from the FAMWEB data warehouse. FireFamilyPlus software was utilized to create statistics and graphs.

Fire Data Quality Issues

Due to human and mechanical errors, some data had to be edited or omitted in order to keep the statistical analyses representative of the geographic regions. If all necessary attributes of an ignition were not obtainable when cross-referencing the data, fires were eliminated from the database. This had to be done as incomplete data would negatively affect the statistical analysis.

Prevention

Through an innovative Wildland Pre-Fire Management section, OCFA has a number of prevention initiatives in place, including Defensible Space Disclosure inspections, road and fuel break installations and maintenance, fire danger signage, plus community outreach and education. With a focus on preventable fires, OCFA will continue to improve and deliver programs and information to keep fire prevention at the forefront of the public.

Section 4: Tools, Processes & Roles

At its core, this plan outlines how designated data thresholds trigger tiered resource and communication responses, and identifies who is responsible for various components. The key tools and processes used to develop this plan are outlined below:

Fire Danger Operating Areas (FDRA's)

A Fire Danger Rating Area (FDRA) is a geographic area that is relatively homogenous in climate, vegetation and topography. It can be assumed that the fire danger within a region is relatively uniform. Historically, Orange County had two FDRA's: the Orange County Coastal/Inland FDRA and the Santa Ana Mountains FDRA.

In 2015, through the efforts of the County of Orange Area Safety Task Force (COAST), the National Weather Service added a third forecast zone for Orange County, the Coastal Zone. Establishment of this zone identified a need to provide a more focused set of weather data for the zone. This would allow better assessment and forecasting of fire danger along Orange County's coast. Through a cooperative effort between OCFA, Orange County Parks and San Diego Gas & Electric, an additional Remote Automated Weather Station (RAWS) was acquired and installed in Aliso-Woods Canyon Park in July, 2016. This permitted the split of the Orange County Coastal/Inland FDRA into two FDRA's, now known as the Orange County Coastal FDRA and the Orange County Inland FDRA. The result is that both areas have more accurate representations of fire danger, consistent with the intent of the FDOP.

In future analysis, the Santa Ana Mountain Zone will likely be removed because OCFA doesn't have any ability to edit the El Cariso weather station data in the WIMS interface. The Cleveland National Forest has firefighting responsibility for this area, and currently

manages their own FDOP. Removing this FDRA from the analysis eliminates unnecessary conflict in fire business thresholds.

The boundaries for each FDRA were determined using the following process:

- Predefined fire weather zones were obtained from the National Weather Service (NWS) to help distinguish existing fire weather zones in Orange County.
- NWS fire weather zones were adjusted to meet specific criteria for the purposes of this plan and to correspond to the fuels, topography, and weather conditions of the region.
- The zones were then adjusted to accommodate operational realities and limitations.
- These FDRA boundaries were later synced to OCFA's Direct Protection Area (DPA) and OCFA's responsibility areas as a Contract County for CAL FIRE.

Orange County's FDRA Map

Remote Automated Weather Stations (RAWS)

Each FDRA has a weather station that provides weather information for that geography. In addition to the Fremont Canyon RAWS, Bell Canyon RAWS, and Aliso Laguna RAWS, two adjoining RAWS are close enough to be useful for data analysis: El Cariso (Riverside County) and Tonner Canyon (Los Angeles County). Through a cooperative agreement,

OCFA is able to capture meaningful data from the adjoining RAWS which aligns with the settings of the OCFA controlled RAWS. The determination of which RAWS station to use for the collection of fire weather data was based on its proximity within and representation of the FDRA.

- The Fremont Canyon RAWS station was deemed representative of the lower elevations of the geographic region.
- The Bell Canyon RAWS station sits within the Orange County Inland FDRA and was determined to be representative of that geographic region.
- The Aliso Laguna RAWS provides accurate data for the Coastal FDRA and was determined to be representative of that geographic region.
- Sufficient weather data is not yet available from the Chino Hills RAWS due to its recent installation, but it will be included in subsequent FDOP analysis.
- An additional RAWS location in Santiago Canyon will provide additional data in a traditional fire corridor. The estimated installation will occur in the second half of 2024.
- The Chino Hills RAWS will replace Tonner Canyon in future FDOP analysis once there is sufficient data available (5 years of data as of March 2026).

RAWS Maintenance

All RAWS stations, regardless of ownership, are maintained to a national standard and the data is made available for inter-agency applications. The Orange County Fire Authority is responsible for scheduling maintenance of the RAWS station sensors with the Bureau of Land Management's Remote Sensing Fire Weather Support Unit (RSFWSU), located at the National Interagency Fire Center in Boise, ID.

RAWS Data Summary Table

Station ID	Station Name	Status	Agency / Owner	Data Years*	Elevation	Reporting Time	Latitude	Longitude
045735 (RAWS)	Bell Canyon	Active	OCFA	2005 – 2023 (WIMS)	764'	1300 hours	33.55167	-117.57294
045736 (RAWS)	Fremont Canyon	Active	OCFA	2005 – 2023 (WIMS)	1750'	1300 hours	33.81111	-117.70833
045509 (RAWS)	Aliso Laguna	Active	OCFA	2005 – 2023 (WIMS)	820'	1300 hours	33.53597	-117.75336
045510 (RAWS)	Chino Hills	Active	OCFA	2020-2021 (WIMS)	1776'	1300 hours	33.91381	-117.73824
045453 (RAWS)	Tonner Canyon	Active	LA County	2005 – 2023 (WIMS)	1340'	1300 hours	33.94753	-117.82219
045619 (RAWS)	El Cariso	Active	USFS	2005 – 2023 (WIMS)	2733'	1300 hours	33.64711	-117.41203

*El Cariso and Tonner Canyon are managed by cooperative agreement with their respective owners.

ECC's Role

OCFA's Emergency Command Center (ECC) has primary responsibility for implementing this Fire Danger Operating Plan in terms of resource deployment, which involves Fire Communications Dispatchers, ECC Supervisors, the ECC Battalion Chief, and the ECC Division Chief. In addition, as illustrated in the chart below, ECC, along with the Duty Chief, also has the responsibility of overseeing the management of daily weather observations, used for rating daily fire danger levels, from the Fremont Canyon, Bell Canyon, Chino Hills, and Aliso-Laguna RAWS, as required by the Weather Information Management System (WIMS).

Weather Information Monitoring Systems (WIMS)

Weather Information Management System (WIMS) is a centralized weather data processing system, where daily fire danger ratings are produced for each of Orange County's three FDRAs, which impacts staffing levels. Manual state of the weather has been automated with the new NFDRA V4 software, eliminating the need for a state of the weather observation. The following chart outlines the information flow:

Resource Deployment Information Flow

RAWS Data *Remote Automated Weather Stations* *(4 in Orange County)*	**WIMS** *Weather Information Management System*	**Watershed Dispatch Level** *Dictates Staffing & Resource Levels*	**Possible Modifications** *Per Weather Conditions or Fire Activity Levels*	**ECC's Initial Attack Response** *If a fire happens*
Each OCFA RAWS, including Fremont Canyon, Bell Canyon, Chino Hills, and Aliso Laguna, supports an OC FDRA*, which are based on NWS zones, and possess relatively uniform fire danger. **Note: Only the Bell Canyon, Aliso Laguna, and Fremont Canyon RAWS were used for this plan, as Chino Hills is new*	WIMS is a centralized weather data processing system, that produces daily fire danger ratings impacting staffing levels.	Watershed Dispatch Levels (WSDL) are determined by WIMS indices forecasts and are validated by OCFA Fire Behavior Decision Support Team.	OCFA's Duty Chief can modify WSDL's for each OC FDRA, with coordination from ECC.	For purposes of resource dispatching, the highest forecast at 1600 or later determines staffing levels for all OCFA for the following day and is effective for 24 hours from 0800 – 0800.

Data Quality

Data entry into WIMS is required on a regular basis for the NFDRS decision support tool to function properly. Measures have been instituted to ensure data accuracy. The Fire

Behavior Decision Support Team will continue to monitor, validate, and coordinate the WIMS interface.

Fire Business Breakpoints

A breakpoint is a threshold which corresponds to a change in historical fire activity. For this plan, FireFamilyPlus software was used to establish the fire business breakpoints. A statistical analysis, based on historical weather and adjusted for fire activity, determined the appropriate staffing index and associated breakpoints for each FDRA.

WIMS Weather Station Catalogs

A Weather Station Catalog is a component of WIMS, which tells the NFDRS processors the characteristics of the station. For example, the table below displays the station catalog information for the four RAWS owned by OCFA:

OCFA RAWS Station Catalog Information

Catalog Information	Aliso Laguna	Bell Canyon	Fremont Canyon	Chino Hills
WIMS ID	045509	045735	045736	045510
Average Precipitation	11.50”	11.40”	10.50”	9.80”
Latitude	33.53597	33.55167	33.81111	33.91381
Longitude	-117.75336	-117.57294	-117.70833	-117.73824
Aspect	Flat (South)	Flat (South)	Flat (South)	Flat (South)
Elevation	820’	764’	1750’	1776’
Site	Ridgetop	Ridgetop	Ridgetop	Ridgetop
Time Zone	PST	PST	PST	PST
Observation Time	1300	1300	1300	1300
FDRA	OC Coastal	OC Inland	OC Inland	OC Inland

WIMS station catalogs are updated annually by the Fire Behavior Decision Support Team to reflect the staffing level breakpoints and to properly calculate adjective class. The following screen capture displays the information that personnel adjust for the Fremont Canyon RAWS:

WIMS Station Catalog Screen

National Fire Danger Rating Systems (NFDRS)

The purpose of NFDRS is to rate relative fire danger as a worst-case scenario for a given Fire Danger Rating Area. Orange County is unique in its complexity of weather, fuels, and topography, so a concerted effort was made to account for these complexities with the goal of providing a baseline for decision-making. It is important to note that each FDRA has areas that will be well represented by its fire danger indices.

Historical Fire Perspective

Looking at all available fire occurrence data in Orange County, each of the largest fires have been a function of fuels, topography, and climate. With respect to NFDRS indices large fires in Orange County are highly dependent on wind activity. Due to a combination of low 10-hour fuel moistures and high wind speeds, most recent data analysis revealed that the largest fires in Orange County have occurred during periods of an elevated Burning Index. Though it is important to recognize and take into consideration the role of wind activity; dry fuels, topography, and climate, are also significant factors of large fires in Orange County.

NFDRS Fire Danger Index Definitions

The following list represents the array of NFDRS indices that are used to quantify fire danger:

- *Spread Component* **(SC)** is a rating of the forward rate of spread at the head of the fire. It is projecting the potential rate of a fire's spread at its head, in feet per minute, under the assumed weather, fuels, and topographic conditions associated with the fire danger rating area. Spread component is a highly sensitive index that accounts for live and dead fuels, and is highly dependent on wind.

- *Energy Release Component* **(ERC)** is a number related to the available energy in British Thermal Units (BTU) per unit area (sq. ft.) within the flaming front at the head of the fire. It evaluates the contribution of various fuel loadings represented mathematically in the NFDRS Fuel Models. ERC is utilized for modeling preparedness levels because it is a trending index, which depicts seasonal conditions well.

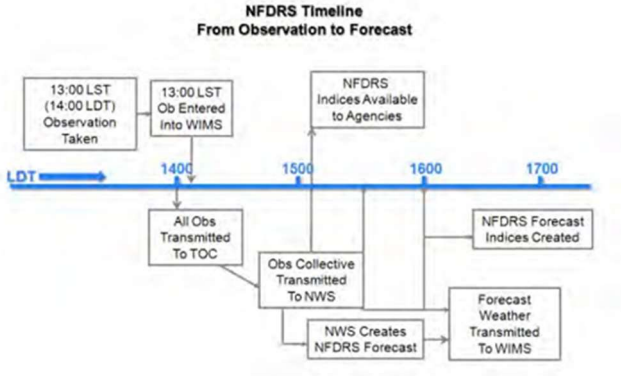
- *Burning Index* **(BI)** is a number that relates the contribution of a fire's behavior in containing the fire. Containment difficulty directly relates to fire line intensity (BTU/ft./sec). This is the heat release along the fire perimeter at its head. BI is an index that rates fire danger related to potential flame length over a fire danger rating area. This index is ideal to use when determining dispatch and staffing levels due to its moderate sensitivity. Since BI is a combination index that takes into account ERC and SC, it is very good for determining variation during the day. The nature of BI makes it suitable for many different geographic locations and is a universal index.

- *Ignition Component* **(IC)** is an expressed probability that a firebrand will cause an actionable fire that requires suppression action. Ignition component is analogous to probability of ignition, but takes into consideration small amounts of wind.

Since the greatest risk of large fires within Orange County has historically been tied to high wind speeds and available dry fuels, Burning Index (BI), in the "X" Fuel Model, has been determined to be the best NFDRS index that statistically correlates to fire ignition and spread. Burning Index's combined sensitivity to wind and dry fuel matches well with weather conditions that drive the development of large fires within Orange County.

NOTE: Due to the recent installation of the Chino Hills RAWS, sufficient weather data is not available to provide an accurate analysis for the Inland FDRA. In order to ensure that forecasting is possible, cooperative values from the locally representative RAWS (Tonner Canyon) are used. These values are based on the "X" fuel model and Burning Index.

NFDRS Observation Processing Timeline



Note: Fire weather forecasts are developed by the National Weather Service daily and are available to the Orange County Fire Authority.

Watershed Dispatch Levels

The Watershed Dispatch Level (WSDL) is a three-tier (Low, Medium & High) system that is based on the Staffing Level in WIMS. For reference, the Watershed Dispatch Level is detailed in the OCFA Standard Operating Procedures and Appendices A and J within the Annual Operating Plan (AOP). The breakpoints for the Staffing Levels were set using a historical analysis of fire business and its relationship to Burning Index (BI) in the "X and Z" Fuel Models using FireFamilyPlus. The Burning Index provides the best response to weather conditions when determining the Watershed Dispatch Level and Fire Danger Adjective Rating level.

Watershed Dispatch Levels (WSDL)

				Index Breakpoints (WSDL)			
FDRA	RAWS	Fuel Model	NFDRS Index	**Low SL 1, 2**	**Medium SL 3**	**High SL 4**	***High *SL 5**
Santa Ana Mountains	Fremont Canyon/El Cariso	16Z	BI	**0-79**	**80-159**	**160+**	**160+**
Orange County Inland	Bell Canyon/ Fremont Canyon	16X	BI	**0-149**	**150-249**	**250+**	**250+**
Orange County Coastal	Aliso Laguna/Bell Canyon	16X	BI	**0-99**	**100-249**	**250+**	**250+**

*Indicates 97th percentile day, most likely Red Flag conditions. Consider augmenting staffing, based on Duty Chief's direction and Appendix J.

WIMS calculates the Staffing Level based on the inputs from the daily RAWS observations:

- WIMS Staffing Levels of 1 and 2 will be considered a “Low” Watershed Dispatch Level.
- A WIMS Staffing Level of 3 will be considered a “Medium” Watershed Dispatch Level.
- A WIMS Staffing Level of 4 (90th percentile BI) will be considered a “High” Watershed Dispatch Level.
- A WIMS Staffing Level of 5 (97th percentile BI) will also be considered a “High” Watershed Dispatch Level. Values at this level are consistent with extreme fire danger and extreme fire behavior. This level is almost always reached when Santa Ana wind conditions are coupled with low fuel moistures.

Each FDRA’s Watershed Dispatch Level is determined independent of the other FDRAs. Differences in weather conditions may result in different Watershed Dispatch Levels in each FDRA on the same day. For example, the Coastal FDRA can be in a “Low”, while the Santa Ana Mountain FDRA is in a “High”. For purposes of resource dispatching, the highest Watershed Dispatch Level of the three FDRAs will be utilized for OCFA as a whole.

OCFA ECC personnel will utilize the Watershed Dispatch Level to assign initial attack resources in accordance with Appendix A of the Annual Operating Plan agreement, approved by CAL FIRE and OCFA. Appendix A dictates the amount and type of suppression resources dispatched to a reported wildland fire based on the WSDL. During periods of actual or forecasted “High” WSDL days, or during a Red Flag Warning, additional resource staffing and response augmentation may be utilized in accordance with Appendices A and J of the AOP. Please note that a Red Flag Warning can only be issued by the National Weather Service.

Adjective Fire Danger Rating

The Adjective Fire Danger Rating will be used by OCFA to inform the public and cooperating land management agencies of the current level of fire danger in Orange County. Adjective Fire Danger Ratings are calculated by the NFDRS processor using the previously referenced weather inputs and selected fuel models. These ratings describe fire danger conditions over a large geographic area and reflect the potential for a fire to ignite and spread. There are five fire danger levels, which include Low, Moderate, High, Very High, and Extreme. In addition to the adjective descriptor, each level is also represented visually by a different color, starting at the lower end with green, blue and yellow, then elevate to orange and red, respectively, as detailed in the table below:

NWCG Adjective Fire Danger Ratings

Value	Color	Description
Low (L)	**Green**	Fuels do not ignite readily from small firebrands although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.
Moderate (M)	**Blue**	Fires can start from most accidental causes but, with the exception of lightning fires in some areas, the number of starts is generally low. Fires in open cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
High (H)	**Yellow**	All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while small.
Very High (VH)	**Orange**	Fires start easily from all causes and, immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.
Extreme (E)	**Red**	Fires start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.

Operations Bureau Role

The Orange County Fire Authority Operations Bureau provides input and guidance regarding preparedness and response levels. Specifically, the Operations Bureau roles and responsibilities under this plan are to:

- ECC Division Chief or Designee: Collect and distribute the daily Fire Danger Rating Adjective Level as required by this plan.
- Deputy Chief Operations Bureau or Assistant Chief of Field Operations: Receive, evaluate, and if necessary, modify the Watershed Dispatch Level, noting that modification of the Watershed Dispatch Level must be coordinated with the OCFA Emergency Command Center (ECC).
- ECC Division Chief or Designee: Confirm the daily fire weather forecasts, including NFDRS indices, are retrieved and that the Adjective Fire Danger Rating and Watershed Dispatch Levels are determined at least once daily, then distributed and stored. Validation of daily watershed dispatch levels will

be distributed by the designated Fire Behavior Decision Support Team member at 1700.

- ECC Division Chief or Designee: Keep OCFA management and staff updated of changes to the Watershed Dispatch Level during fire season as appropriate.

Section 5: Communications

OCFA's Fire Danger Communication Plan is based on the Adjective Fire Danger Rating, which is calculated by the NFDRS processor, using weather inputs and selected fuel models for each of the three Orange County FDRA's, as illustrated in the table below:

Communication Plan Information Flow

Local RAWS	NWS	NFDFRS Indices	Adjective Fire Danger Rating	OCFA Communication Plan
	NWS Fire Weather forecasts are distributed daily	Selected indices** correlate to each FDRA's characteristics and quantifies its Fire Danger	Calculated by a NFDRS processor	As outlined in this plan

Published Adjective Fire Danger Rating values will be set according to the forecast values derived from WIMS and will be assigned to each FDRA independent of the other FDRAs. In other words, each FDRA will have its own Adjective Fire Danger Rating and associated color indicated on any sign, map, banner, widget, applet, etc. that is posted within, or on behalf of that FDRA to communicate the Fire Danger rating to the public.

Internal, Partner & Public Fire Danger Communications Plans

Fire Danger Rating Signs

OCFA and selected partner agencies will communicate Fire Danger Ratings to the public, via Fire Danger Rating Signs at various locations throughout the County using both the adjective descriptor and the associated color whenever possible. Additional effective methods for communicating fire danger will also be explored and implemented as appropriate.

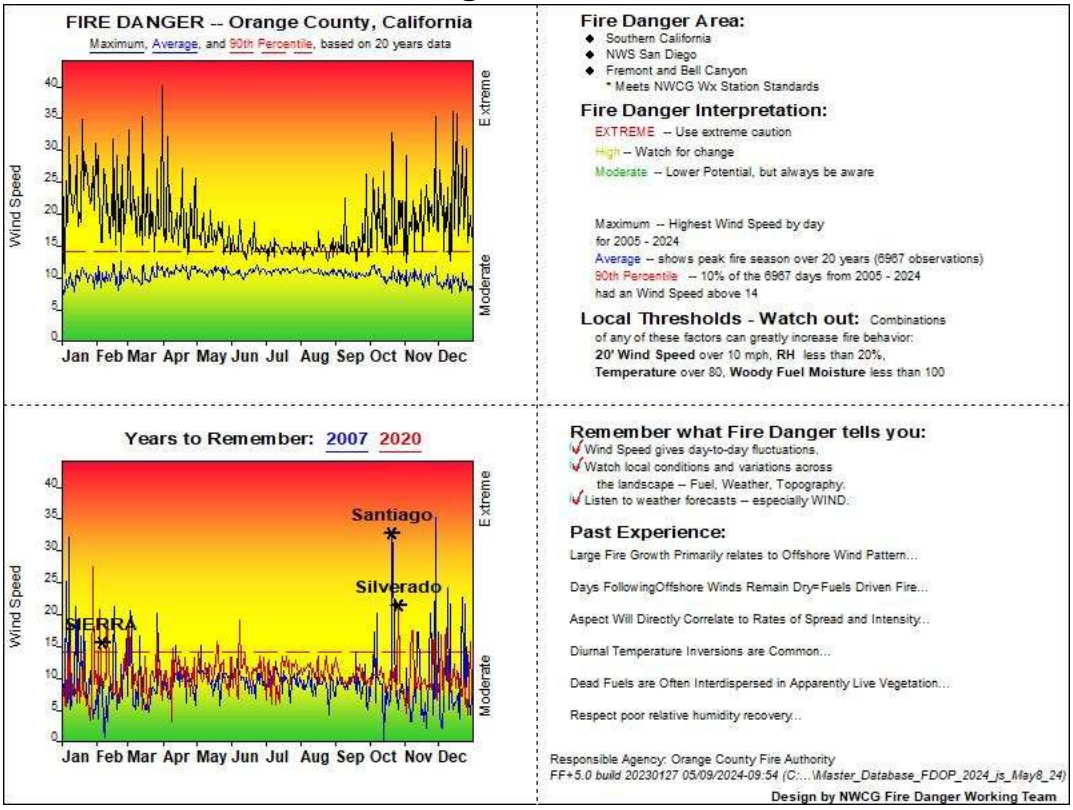
OCFA & Partner Firefighting Agencies

ECC will announce the Watershed Dispatch Level via radio on the primary dispatch frequency at 0800 hours each day to provide enhanced situational awareness during fire season to OCFA Operations personnel and our partnering agencies.

Fire Danger Pocket Cards

The FDOP coordinator, who is the Wildland Resource Planner in OCFA's Pre-Fire Management section, will ensure that Fire Danger Pocket Cards are prepared and distributed to all local and incoming interagency firefighters and Incident Management Teams (IMT). In the event of a fire within Orange County, we will use both printed cards, and will also place it online on OCFA's intranet. Also, fire suppression supervisors will use the Pocket Cards to train and brief suppression personnel.

Fire Danger Pocket Cards



Non-Fire Agency Partners

A number of non-fire agencies maintain a variety of fire danger rating signs at locations within Orange County, including at most county parks locations. These signs are intended to raise public awareness of fire danger in a simple, easy to communicate form, and are used as a tool to support wildland fire prevention efforts. Additional methods of providing these agencies with the forecast adjective level will be explored and implemented to ensure a consistent message to the public across all agencies.

General Public

Various media outlets (i.e. print, radio/TV, online, social media, etc.) may also be useful to communicate fire danger to the public, especially during times of High, Very High, or Extreme fire danger when weather conditions (i.e. Santa Ana winds) often contribute to the development of a large fire. Adjective Fire Danger Rating levels are also available through a link on OCFA's public website homepage.

Section 6: Methodology

Fire Weather Station Analysis Summary

Regression analysis was performed using FireFamilyPlus to statistically determine which combination of weather station observations, NFDRS fuel models, and NFDRS index best correlates to historic fire occurrence (individual fire occurrence, large fire occurrence, and multiple fires per day occurrence) for the Inland FDRA, Coastal FDRA, and Santa Ana Mountain FDRA. Data was analyzed in the FireFamilyPlus with all 5 NFDRS fuel models and indices. The analysis uses logistic regression to relate models and indices with fire occurrence by reviewing:

Chi-square: The chi-square value provides a way to quantify the visual graphs and models created in FireFamilyPlus. It serves as the "goodness of fit" of the data points. A chi-square value less than 13 is considered to be best, less than 20 is good, and anything over 26 is not acceptable.

R-square: The R-squared value is used to describe how well a regression line fits a set of data. The closer the R-squared value is to one, the better. It is a way to measure how well the applied model can predict future outcomes.

Distribution of data in the Orange County Coastal, Inland, and Santa Ana Mountain FDRAs: Burning Index (BI) was used when considering the "goodness of fit" of data for each FDRA for fire seasons from 2005-2023. The constraints used in this analysis consisted of RAWS weather data from the same years. For analysis purposes, large fires were defined as fires over 10 acres and multi-fire days were defined as days with two or more fires. ***Analysis proved Burning Index (BI) best correlated with fire danger levels within Orange County.***

The statistics used were based on Fire Days for each FDRA. The values were derived by comparing the number of Weather Days against the number of Fire Days. Running statistics on Fire Days gives a better idea of the appropriate fuel model to apply to the FDRA rather than the statistics derived from Large Fire Days or Multi-Fire Days. It is preferable to consider more data than less data in analysis. Since both Large Fire Days

and Multi Fire Days occur at a lesser frequency than Fire Days, there would be less data analyzed. Therefore, using Fire Days as the parameter for our statistics was appropriate.

The selected fuel model was chosen based on the distribution of fire and weather data. It is important to recognize that one particular fuel model may not possess all favorable conditions. There is discretion involved when choosing the fuel model that best represents each FDRA as a whole. After having adjusted for data that was inadequate for statistical analysis, every NFDRS fuel model was run against the dataset in order to determine which had the best statistical fit for our purposes. The Coastal and Inland ***FDRAs proved to have been best represented by Fuel Model X while the Santa Ana Mountain FDRA was best represented by Fuel Model Z.*** Although not an exact physical representation of the fuels in our FDRAs, it yielded a good correlation of fire and weather data over an appropriate continuum.

Limitations

The process of obtaining the necessary weather data required quality control. Due to human and mechanical errors, some data had to be edited or omitted in order to keep the statistical analyses representative of the geographic regions.

Fire data also required quality control. If all necessary attributes of an ignition were not obtainable when cross-referencing the data, fires were eliminated from the database. This had to be done as incomplete data would negatively affect the statistical analysis of the rest of the dataset.

New RAWS Stations

Since the Chino Hills RAWS is new, limited historical weather data is available. Once five years of data has been collected, analysis can be conducted and a determination can be made as to the appropriate fuel model and fire danger indices to use for the Inland FDRA.

An additional RAWS is scheduled to be installed in 2024 in the Santiago Canyon corridor to provide additional coverage for the Orange County Inland FDRA.

Section 7: Moving Forward

1. **NFDRS 2016 V4 Changes:** There were a number of changes within the NFDRS system. A complete retooling of the NFDRS has occurred. Of critical importance is the reduction in the number of fuel models used from twenty to five. This has required a re-analysis of weather and fire occurrence data to determine the best fuel model and fire danger index to use to meet the objectives of this plan. To validate accuracy, a comprehensive review and update of the plan will need to continue.

2. **Plan Monitoring and Updating:** As is the case with any living document, this Fire Danger Operating Plan must undergo continuous reviews and updates to ensure the plan is functioning as needed to fulfill operational objectives. As this product is rolled out to the field, it will require input from responding field staff to validate the appropriateness of the decisions that are made throughout the season. Evaluations and reviews must be as objective as possible and address the problems with a given incident or administrative decision in an honest manner. Field staff will be encouraged to provide continuous feedback. When issues are identified and corrective actions taken, this plan should be updated to reflect the changes, ensuring the most current information is available.

After implementation of this plan, it will be important to monitor fire occurrence and weather patterns to ensure the criteria utilized are still valid. It may prove necessary to relocate existing RAWS or to add additional RAWS to provide better weather data for updating the plan.

Weather Station Maintenance: It is important that each RAWS site receives regular maintenance. This maintenance should include sensor cleaning and calibration, sensor replacement as needed, and controlling site conditions that may affect the sensor accuracy (e.g. vegetation clearance). For the most efficient absorption of solar radiation to help power the equipment, the solar panel angle should be adjusted between seasons.

1. **WIMS & NFDRS Training:** WIMS and NFDRS training needs to be a priority for OCFA staff, especially personnel that are charged with implementing or maintaining this plan. While the ECC is the anchor point for the implementation of this Fire Danger Operating Plan, the technical specialists on the Fire Behavior Decision Support Team will continue to make WIMS and RAWS maintenance training a priority. Efforts should be made to identify candidates for the RAWS technical course offered at McClellan Training Center in Sacramento, CA. This course will provide OCFA staff the skills to rapidly troubleshoot and maintain critical RAWS infrastructure.

2. **Quality Assurance and Analysis:** One of the largest hurdles in this analysis was assessing data quality and locating data anomalies. Fire occurrence and weather data will need to be continuously evaluated for quality and completeness. Regular statistical analysis should be performed by the Fire Behavior Support Team to ensure both the fuel model and fire danger index selected for the various components of this plan are still valid and, if necessary, adjustments should be made to one or the other to provide an accurate determination of fire danger ratings and staffing levels.

References: Please note that the design and much of the wording of this plan and document is based on a number of Fire Danger Operating Plans throughout the United

States, which have been utilized as templates for this plan. Many of the resources and information supporting this document have been referenced from online repositories of information.

Amendments and Updates: The subject of this plan is dynamic, and will require regular review and updates, occurring at least annually or as needed. Consequently, the Orange County Fire Authority will ensure that necessary amendments or updates to this plan are completed, approved by the Fire Chief, then published and distributed.

Signature Page

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