



# CAL FIRE

## Office of the State Fire Marshal

Community Wildfire Preparedness and Mitigation Division  
Assistant Deputy Director – Frank Bigelow

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July 19, 2023

Wildfire Prevention

# California's Wildfire Problem



Changing  
Climate



Overgrown  
Forests



Human  
Ignitions



Population  
Growth

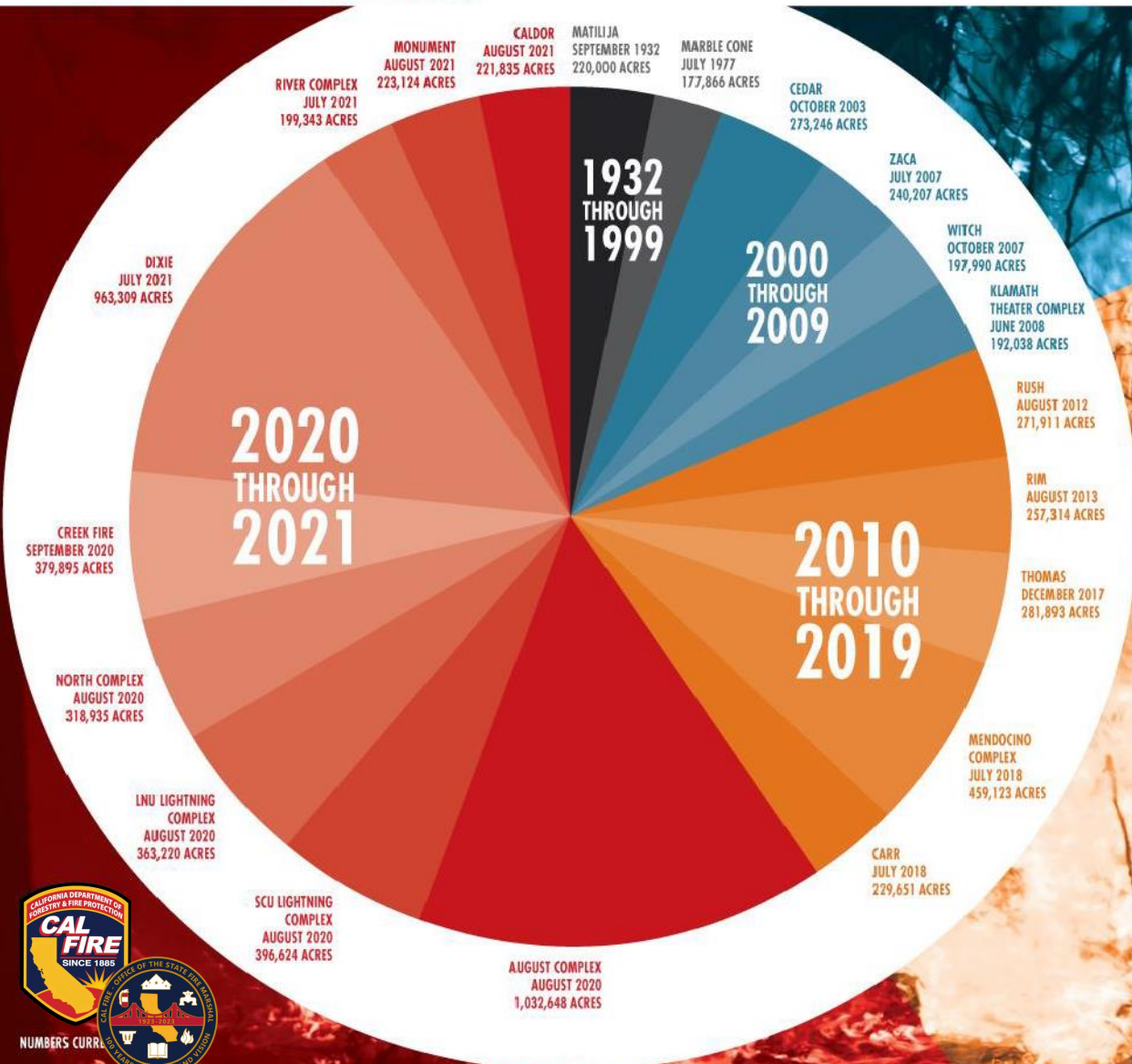




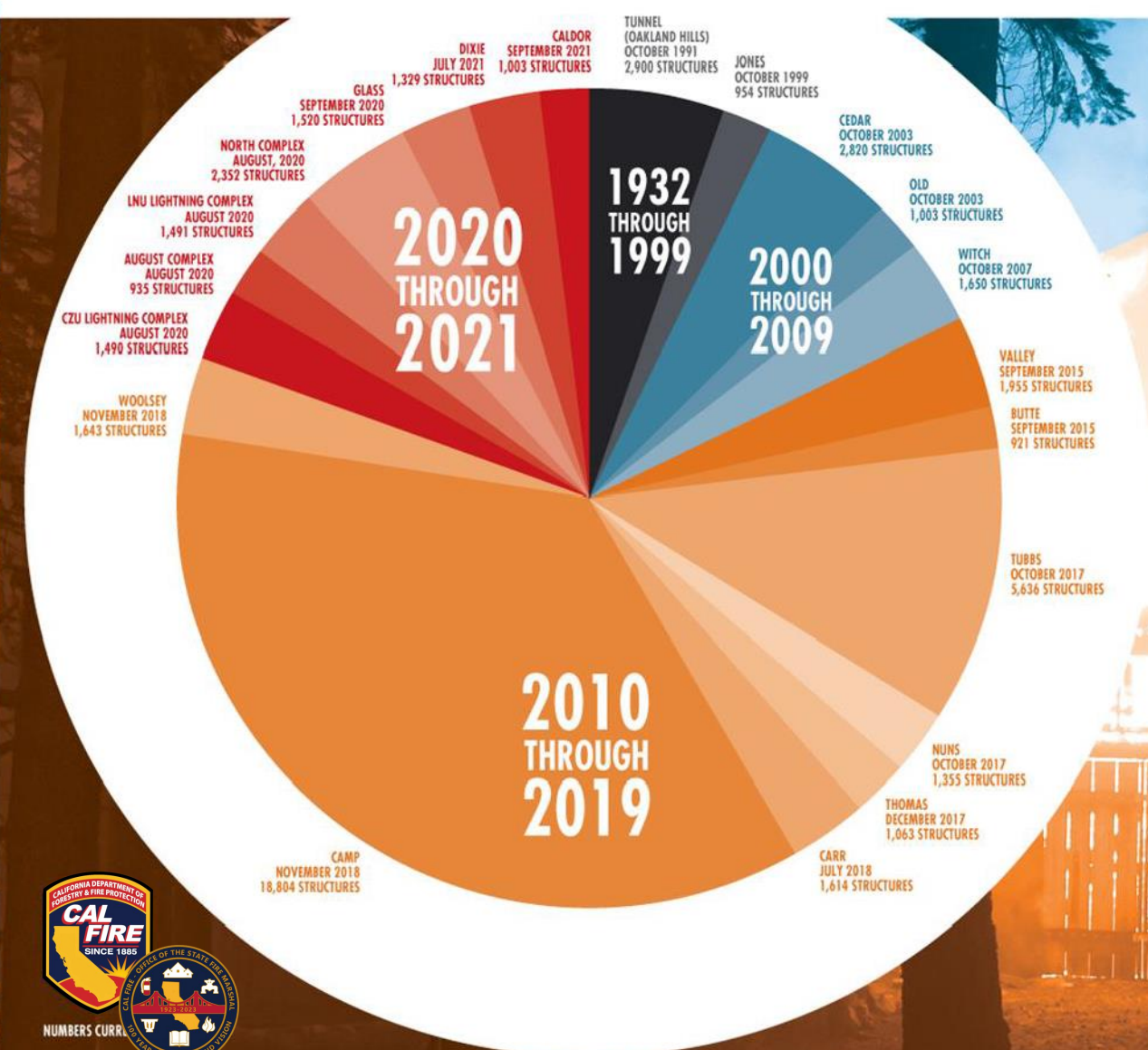


# Large & Destructive Wildfires

## TOP 20 LARGEST CALIFORNIA WILDFIRES



## TOP 20 DESTRUCTIVE CALIFORNIA WILDFIRES





# California's Wildfire Strategy



Parcel-level  
Mitigation



Community  
Hardening



Forest  
Health





# CALIFORNIA'S WILDFIRE AND FOREST RESILIENCE ACTION PLAN



**A Comprehensive Strategy  
of the Governor's  
Forest Management  
Task Force**

January 2021







OFFICE OF THE STATE FIRE MARSHAL

# COMMUNITY WILDFIRE PREPAREDNESS AND MITIGATION DIVISION



Land Use  
Planning



Pre-Fire  
Planning



Incident  
Data and Statistics



Wildfire Preparedness  
(D-Space, Home  
Hardening)



Wildfire  
Prevention Grants

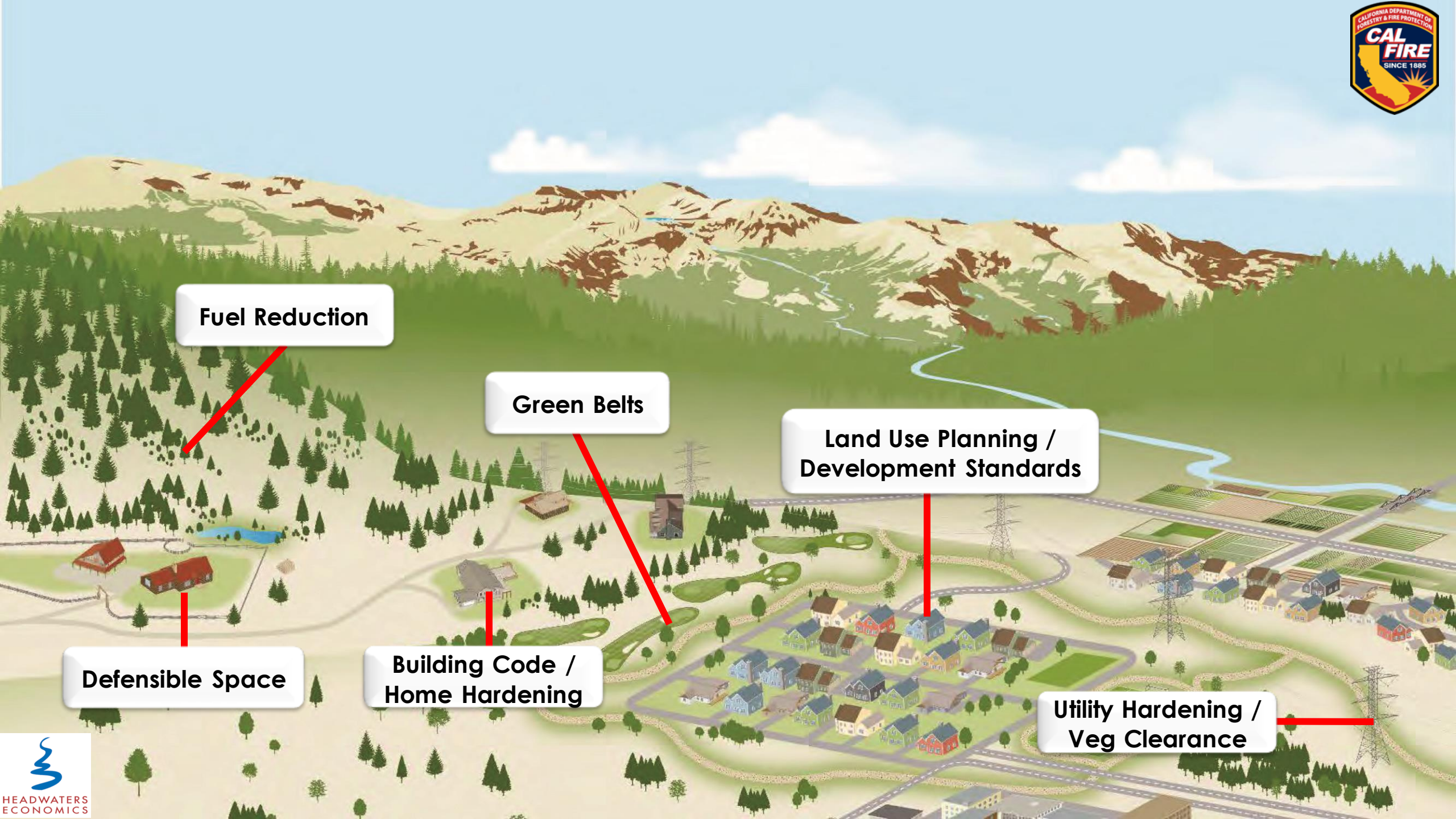


# Community Wildfire Preparedness and Mitigation Division

## AB 9 (2021) Wood

- ❑ Establishes the OSFM Community Wildfire Preparedness and Mitigation Division
- ❑ Establishes the State Fire Marshal's Wildfire Mitigation Advisory Committee to provide a public forum to solicit and consider public input on the Division
- ❑ On or before January 1, 2023, shall provide the Legislature with a report identifying known personnel and resource shortfalls in implementing the programs and activities of the Division
- ❑ Establishes the OSFM Community Wildfire Mitigation Assistance Program to coordinate regional and local efforts
- ❑ Establishes a statewide clearinghouse for use by state, regional, and local entities to provide a centralized source of data, information, tools, and other resources
- ❑ Replaces the Director with the State Fire Marshal in multiple fire prevention statutes





**Fuel Reduction**

**Green Belts**

**Land Use Planning /  
Development Standards**

**Defensible Space**

**Building Code /  
Home Hardening**

**Utility Hardening /  
Veg Clearance**





Source

Target

Wind

SSD





# Hazard vs Risk



## HAZARD

**LIKELIHOOD OF OCCURRENCE**

**EXPECTED FIRE INTENSITY**

**Physical conditions (fuel, weather, topography, ember production) that create a likelihood and expected fire behavior, and generally don't change much over time**

## RISK

**ANTICIPATED EXPOSURE**

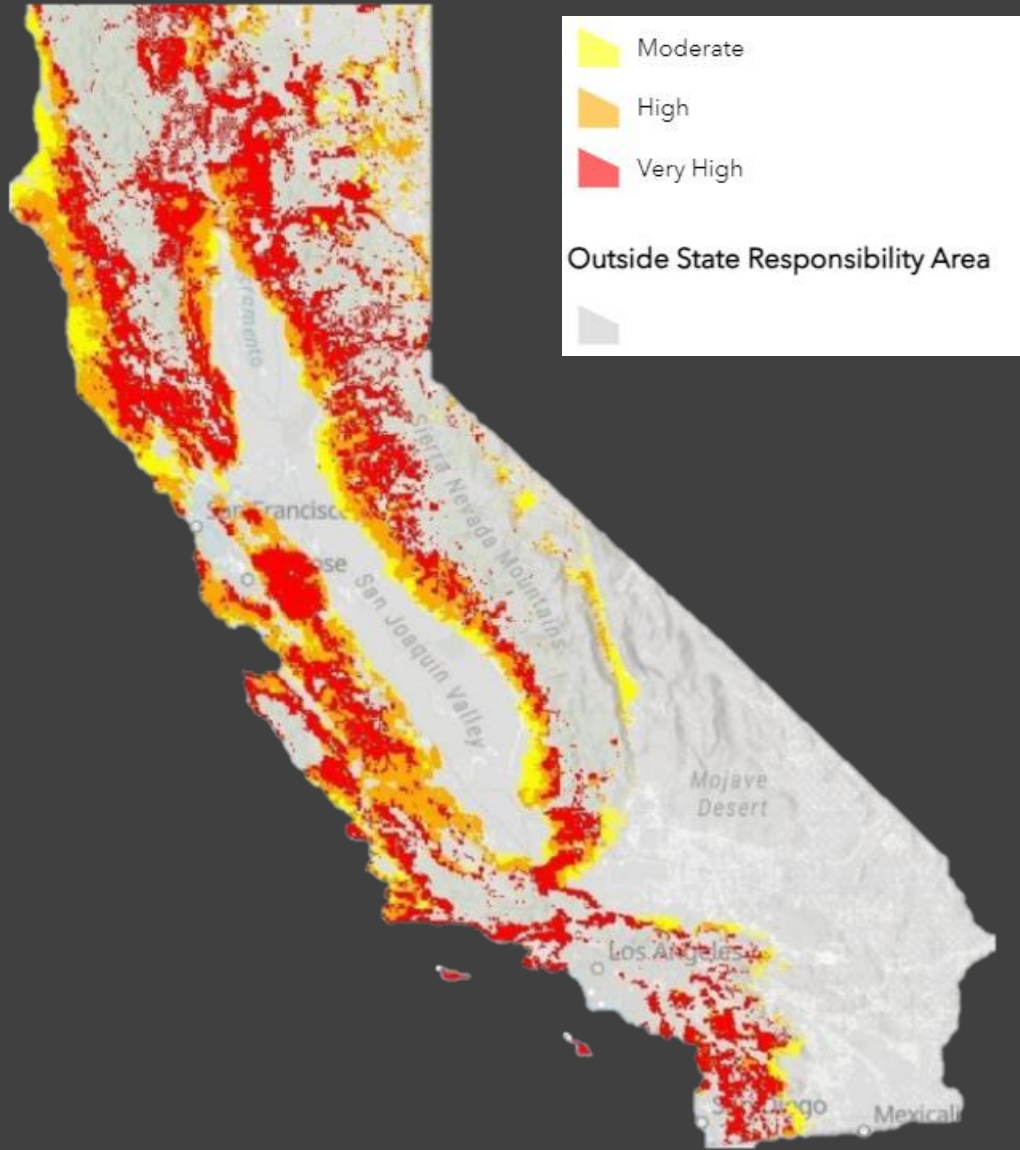
**SUSCEPTIBILITY TO DAMAGE**

**Potential damage a fire can cause under existing conditions, including any modifications such as fuel reduction projects, defensible space, and ignition resistant building materials, etc.**

Source: Wildfire Risk to California Communities 2021, USFS and PYROLOGIX



# Fire Hazard Severity Zones (FHSZ)



## What are the Zones?

- ❑ The maps are required by law
  - ❑ CCR 1280.0, PRC 4201-4204
  - ❑ CCR 1280.2, Gov Code 51178-51179
- ❑ Maps Hazard *not* "RISK"
- ❑ Identify levels of fire hazard
  - ❑ 3 levels (Moderate, High, & Very High)



# Fire Hazard Severity Zones (FHSZ)



## How the Zones are Determined

- ❑ Developed using a science-based model that assigns a hazard score based on the factors that influence fire likelihood and fire behavior.
  
- ❑ Factors:
  - ✓ Fire history
  - ✓ Vegetation
  - ✓ Topography
  - ✓ Climate
  - ✓ Ember production and movement





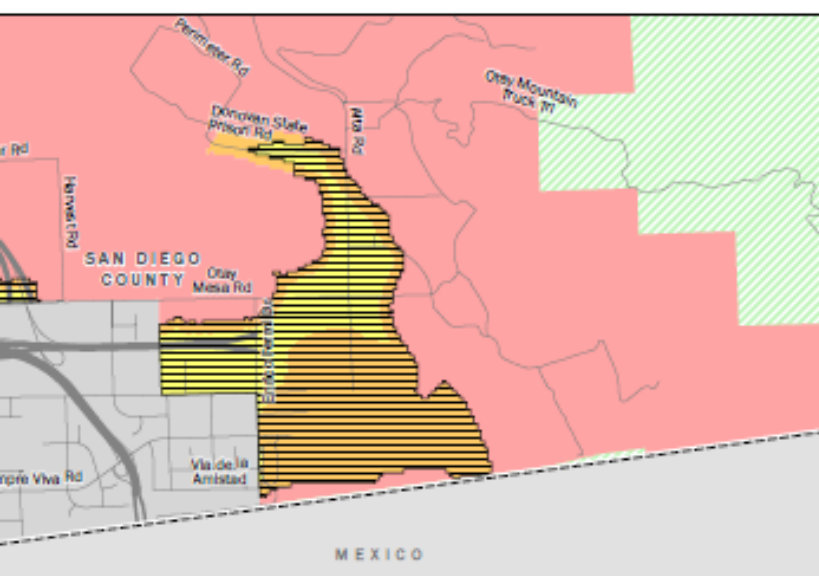
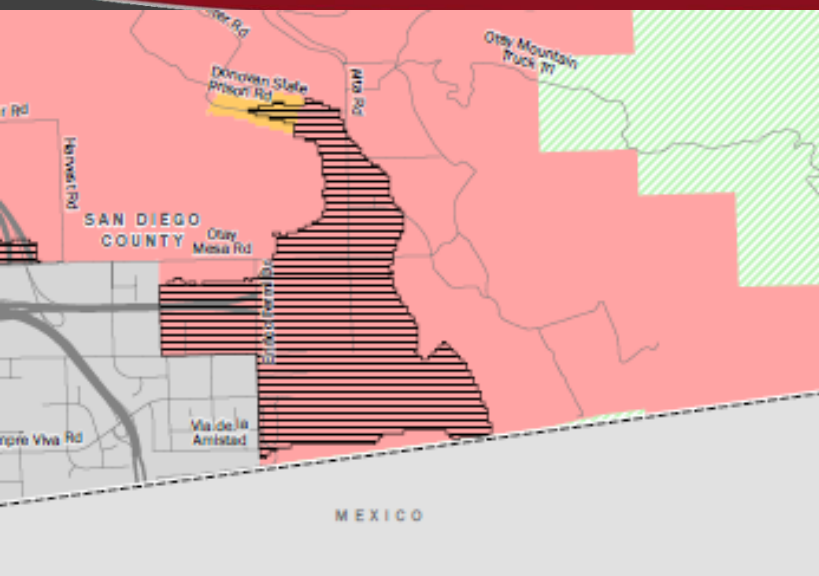


## New Updates

- ✓ Updated burn probabilities for wildland areas (inclusive of 2020 fires)
- ✓ Updated fire environment footprints (urban/developed)
- ✓ Updated Vegetation density for urban areas
- ✓ Inclusion of slope in the urban zoning model
- ✓ **Localized fire weather used in both wildland and urban models**
- ✓ **New firebrand production and transport model using discrete local wind vector distributions**



# Fire Hazard Severity Zones (FHSZ)



## New Public Comment Period

Ends August 9, 2023

## Statewide Change

- 106,543 acres were reclassified (0.34%)
  - Very High FHSZ down 67,096 acres
  - 37,829 High
  - 29,267 Moderate
  - Effects 52 Counties
    - Imperial, Kings, Glen, and Trinity Counties no change





Fire Hazard Severity Zone	Existing New	Responsibility Area		
		Local (LRA)	State (SRA)	Federal (FRA)
Fire Hazard Severity Zone	Very High	FHSZ Maps	FHSZ Maps	
		CBC Chapter 7A	CBC Chapter 7A	
		State Fire Safe Regulations	State Fire Safe Regulations	
		GC 51182 Defensible Space	PRC 4291 Defensible Space	
		CC 1102.19 Hazard Disclosure	CC 1102.19 Hazard Disclosure	
		Subdivision Review (AB 2911)	Subdivision Review (AB 2911)	
	High	FHSZ Maps (AB 642)	FHSZ Maps	
		CBC Chapter 7A (SB 63)	CBC Chapter 7A	
			State Fire Safe Regulations	
			PRC 4291 Defensible Space	
		CC 1102.19 Hazard Disclosure	CC 1102.19 Hazard Disclosure	
			Subdivision Review (AB 2911)	
	Moderate	FHSZ Maps (AB 642)	FHSZ Maps	
		CBC Chapter 7A (SB 63) TBD	CBC Chapter 7A	
			State Fire Safe Regulations	
			PRC 4291 Defensible Space	
				Subdivision Review (AB 2911)



# Fire Risk Reduction Community List



4290.1.

The board shall consider all of the following when developing the criteria for the list required under subdivision (a):

(1) Compliance with the board’s regulations, including minimum fire safety standards.

Cities: 4

(2) Participation in the National Fire Protection Association’s “Firewise USA” or the National Wildfire Coordinating Group’s “Fire Adapted Communities” programs.

Counties: 3

(3) Adoption of the board’s recommendations to improve the safety element pursuant to subdivision (b) of Section 65302.5 of the Government Code.

Non-City/County Agencies:  
25

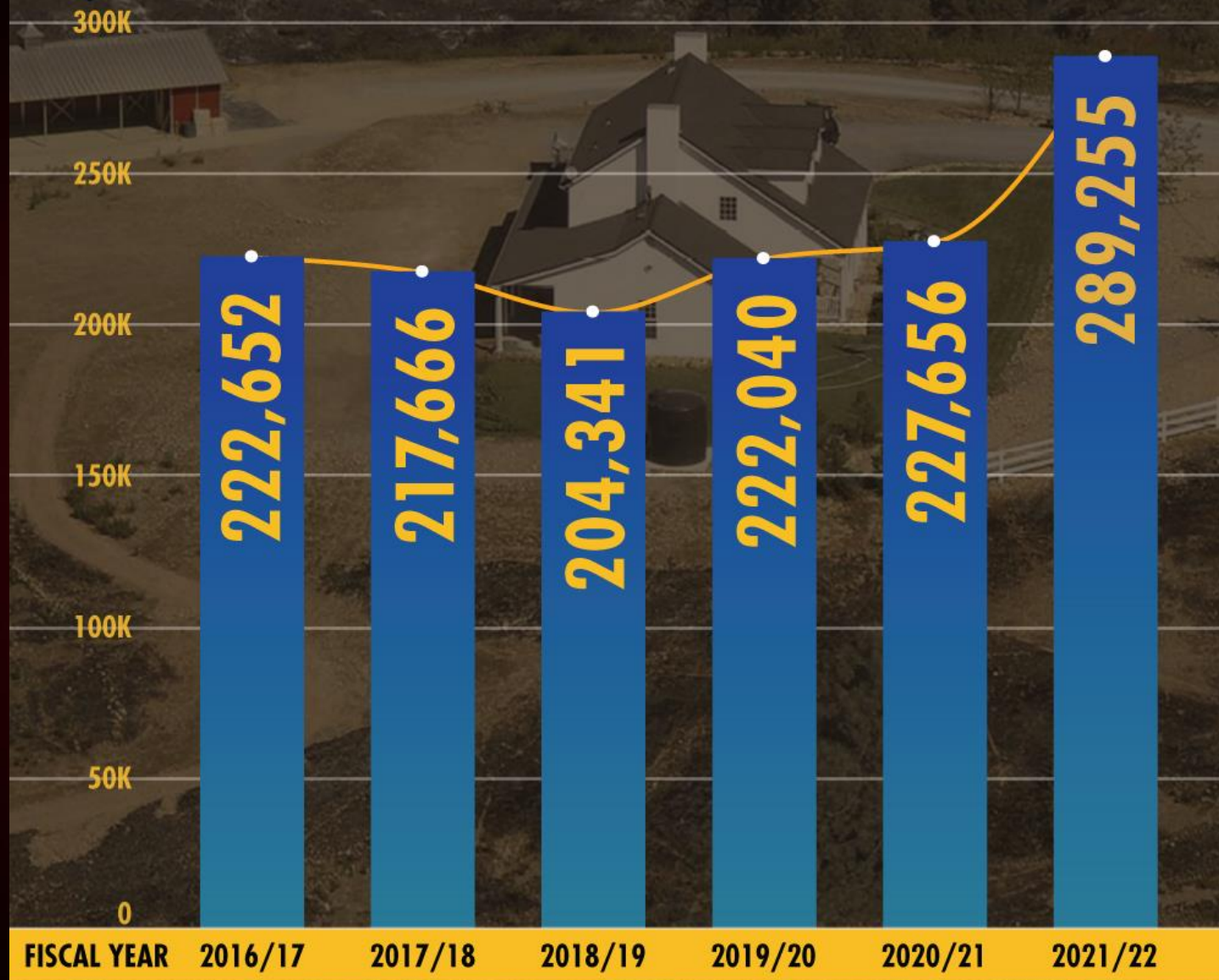
(4) Recently developed or updated community wildfire protection plans.

(c) The board shall post the “Fire Risk Reduction Community” list on its internet website.





# CAL FIRE DEFENSIBLE SPACE INSPECTIONS



A Defensible Space Inspection is the inspection of land around residential and commercial structures to determine if they meet the requirements set within Public Resource Code 4291 to create and maintain 100 feet of defensible space.

NUMBERS CURRENT TO 12/31/2022.



Space trees and remove brush from under

Grass mowed 4 inches (10cm)

Limb branches up 6ft (2m)

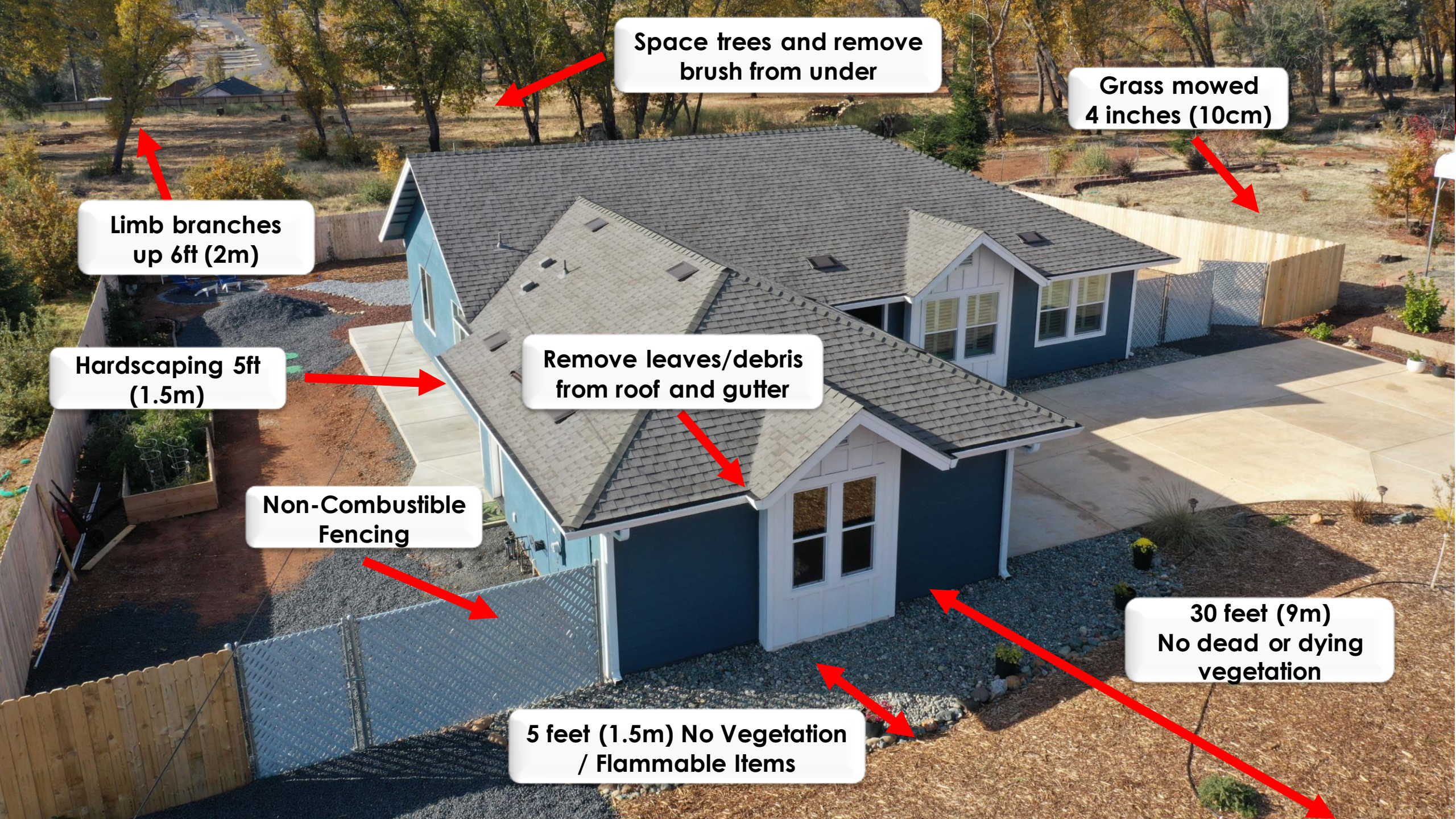
Hardscaping 5ft (1.5m)

Remove leaves/debris from roof and gutter

Non-Combustible Fencing

30 feet (9m) No dead or dying vegetation

5 feet (1.5m) No Vegetation / Flammable Items









# Why is 5 Feet so Important?







**Home Hardening**



# California Wildfire Mitigation Program (CWMP)



Assembly Bill 38, (Wood, 2019) Fire safety: low-cost retrofits: regional capacity review: wildfire mitigation

Directed the Office of Emergency Services (Cal OES) to enter into a *joint powers agreement (JPA)* with the Department of Forestry and Fire Protection (CAL FIRE) to develop and administer a *comprehensive wildfire mitigation program (CWMP)*.

- Encourage cost-effective structure hardening and retrofitting.
- Facilitate vegetation management, the creation and maintenance of defensible space, and other fuel modification activities.
- Offer financial assistance to those eligible under the program.



# California Wildfire Mitigation Program



Program currently funded 75% through FEMA Hazard Mitigation Grant Program funds; matched 25% with state appropriated funds.

Directed the JPA to develop criteria and a scoring methodology to prioritize financial assistance

- Area and community vulnerability to wildfire
- The impact of future climate risk factors and community wildfire vulnerability assessments
- Vulnerable Populations

Areas eligible for financial assistance under the CWMP

- State responsibility areas located within any FHSZ
- Local responsibility areas located within a very high fire hazard severity zone



# FEMA





# CWMP Accomplishments



The program is currently in the demonstration phase, being piloted in three select areas:

- Whitmore in *Shasta County*
- Dulzura in *San Diego County*
- Kelseyville-Riviera in *Lake County*
- \* *Tuolumne*
- \* *El Dorado*
- \*\* *Siskiyou – State only DSpace*

The lessons learned during the demonstration phase will be used to refine the program before expanding to additional areas within demonstration counties, and ultimately, across the state.





# What is Home Hardening?



## ① ROOF

Wood shingle

## ② EAVES

Open | Exposed

## ③ SIDING

Wood Siding

## ④ WINDOWS

Single pane  
No screens

## ⑤ MULCH

Bark | Wood Chips

## ⑥ OPENINGS

Non-Protected  
Vents | Openings

## ⑦ DECK

Standard spacing  
Combustible material



## ROOF ①

Class A  
Fire resistive

## EAVES ②

Closed | Boxed

## SIDING ③

Fire resistive material

## WINDOWS ④

Dual-Pane Tempered  
Screens

## MULCH ⑤

Rock | Pebbles

## OPENINGS ⑥

Metal screened  
Vents | Openings

## DECK ⑦

Increased joist space  
Foil-faced bitumen tape  
on top of joists  
Non-combustible | Fire resistive





RUFFY



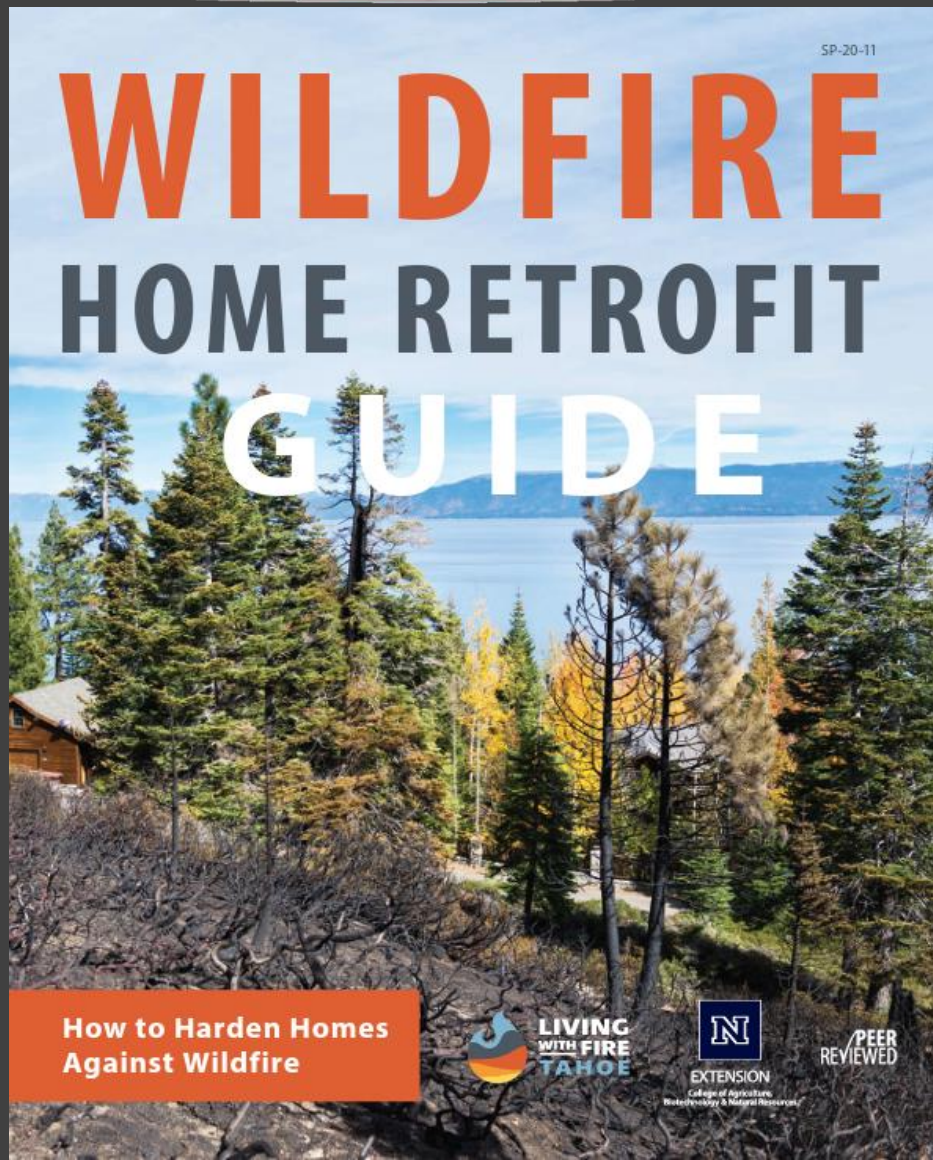








# Wildfire Home Retrofit Guide & Low-Cost List



## Low-Cost Retrofit List

### Low-Cost Ways to Harden Your Home

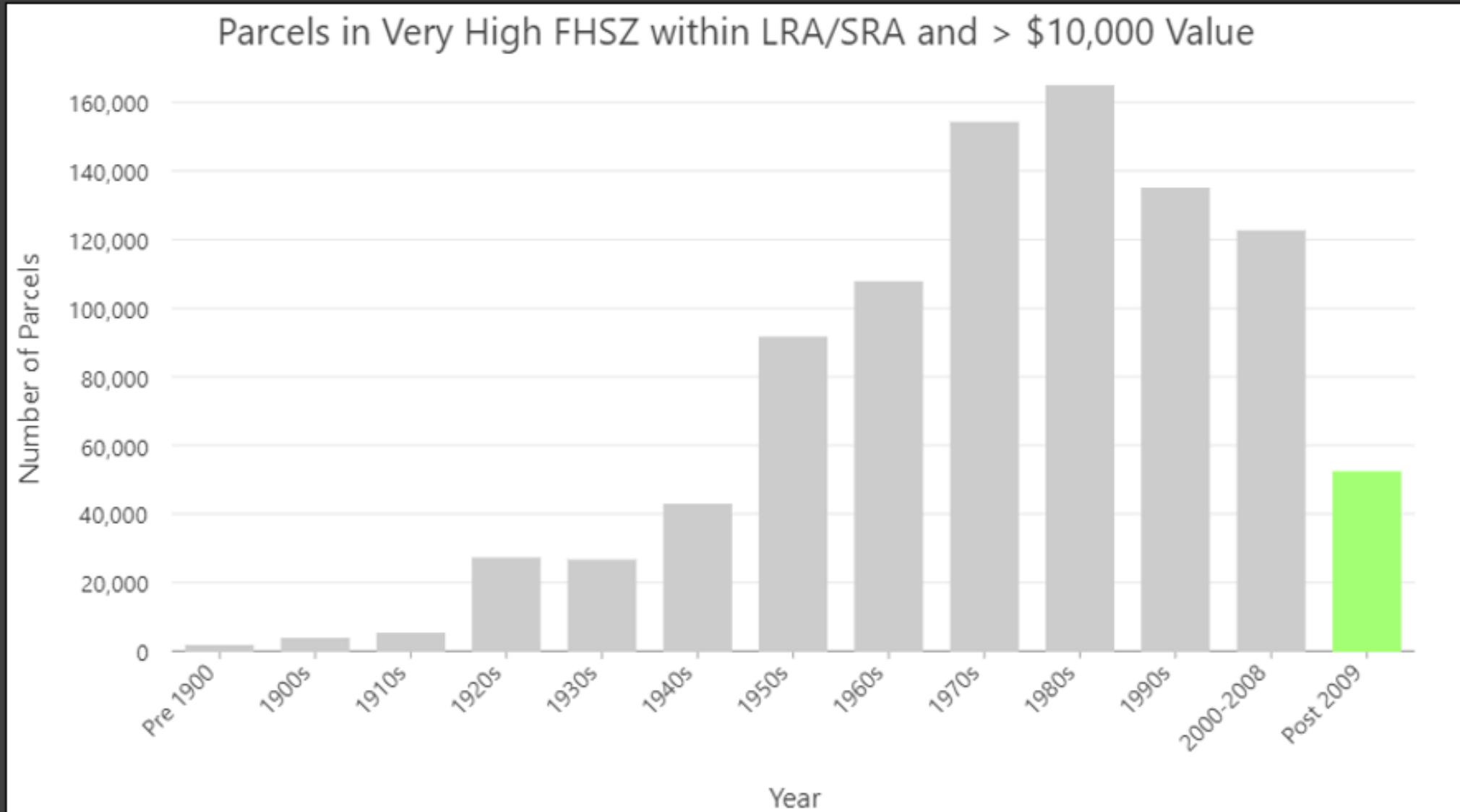
1. When it is time to replace your roof, replace it with a Class A fire rated roof. [OFSM Wildland Urban Interface \(WUI\) Products](#)
2. Block any spaces between your roof covering and sheathing with noncombustible materials (bird stops).
3. Install a noncombustible gutter cover on gutters to prevent the accumulation of leaves and debris in the gutter.
4. Cover your chimney and stovepipe outlets with a noncombustible corrosion resistant metal mesh screen ([spark arrestor](#)), with 3/8-inch to 1/2-inch openings.
5. Install ember and flame-resistant vents. [OFSM Wildland Urban Interface \(WUI\) Products](#)
6. Caulk and plug gaps greater than 1/8-inch around exposed rafters and blocking to prevent ember intrusion into the attic or other enclosed spaces.
7. Inspect exterior siding for dry rot, gaps, cracks, and warping. Caulk or plug gaps greater than 1/8-inch in siding and replace any damaged boards, including those with dry rot.
8. Install weather-stripping to gaps greater than 1/8-inch between garage doors and door frames to prevent ember intrusion. The weather-stripping must be compliant with UL Standard 10C.
9. When it's time to replace your windows, replace them with multi-paned windows that have at least one pane of tempered glass. [OFSM Wildland Urban Interface \(WUI\) Products](#)
10. When it's time to replace your siding or deck, use compliant noncombustible, ignition-resistant, or other [OFSM Wildland Urban Interface \(WUI\) Products](#)
11. Cover openings to operable skylights with noncombustible metal mesh screen with openings in the screen not to exceed 1/8-inch.
12. Install a minimum 6-inch metal flashing, applied vertically on the exterior of the wall at the deck-to-wall intersection to protect the combustible siding material.

\*This list was developed as a best practices guide and to assist homeowners to ensure their home is more ignition-resistant from wildfires. Low cost can be subjective. Some of these items are based on upgrading to more stringent materials when that feature is up for replacement due to normal maintenance or lifespan, i.e. roofs.

Updated 2/17/2022



# Scale of the Problem





# Community-Wide Mitigation







**Project Canyon Safe**  
AUBURN CA.





**NARROW  
BRIDGE**



# Fuel Breaks







217847

MALLON  
CAL FIRE

CAL FIRE

CAL FIRE





# CAL FIRE WILDFIRE PREVENTION GRANTS COMPETITIVE AND DIRECT AWARDS

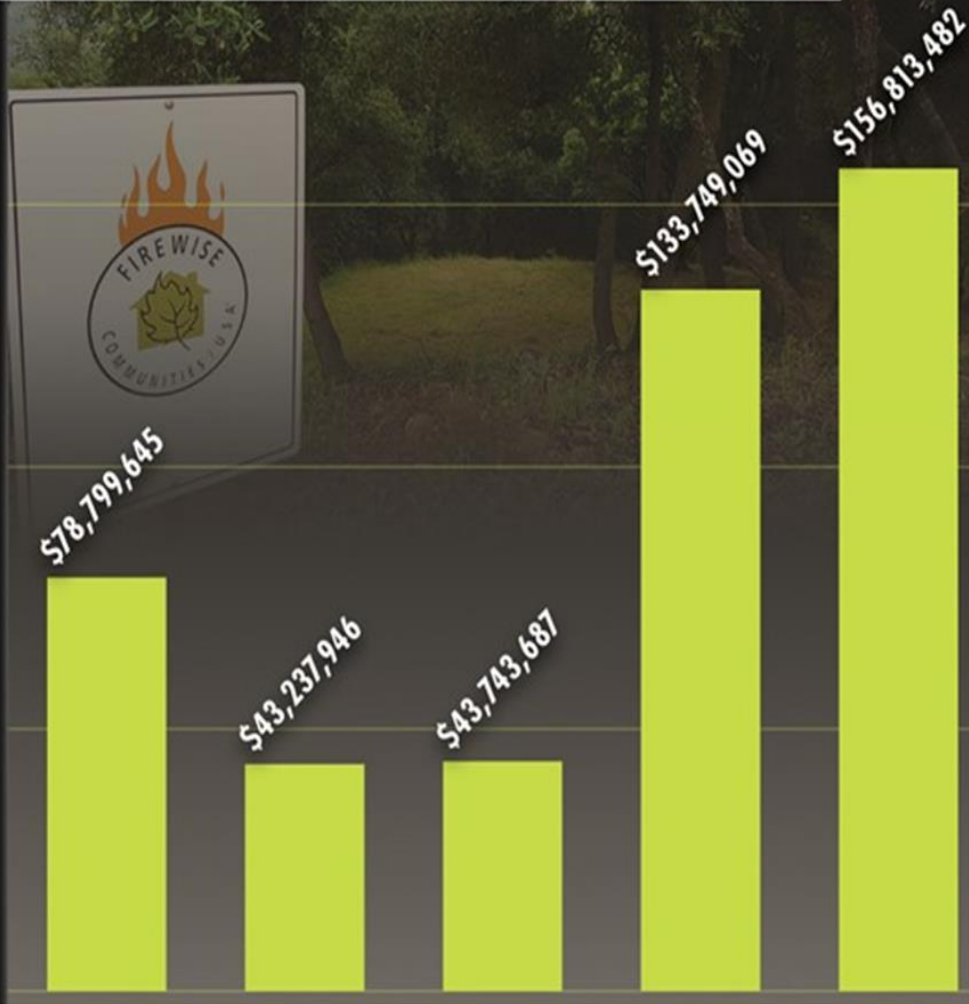
IN MILLIONS

\$150M

\$100M

\$50M

\$0



YEAR: FY 2017-18 FY 2018-19 FY 2019-20 FY 2020-21 FY 2021-22

NUMBERS CURRENT TO 12/31/2022.



# FUEL REDUCTION ACRES

(2015-22)

Acres treated by CAL FIRE and our grantees.

IN ACRES

120,000

100,000

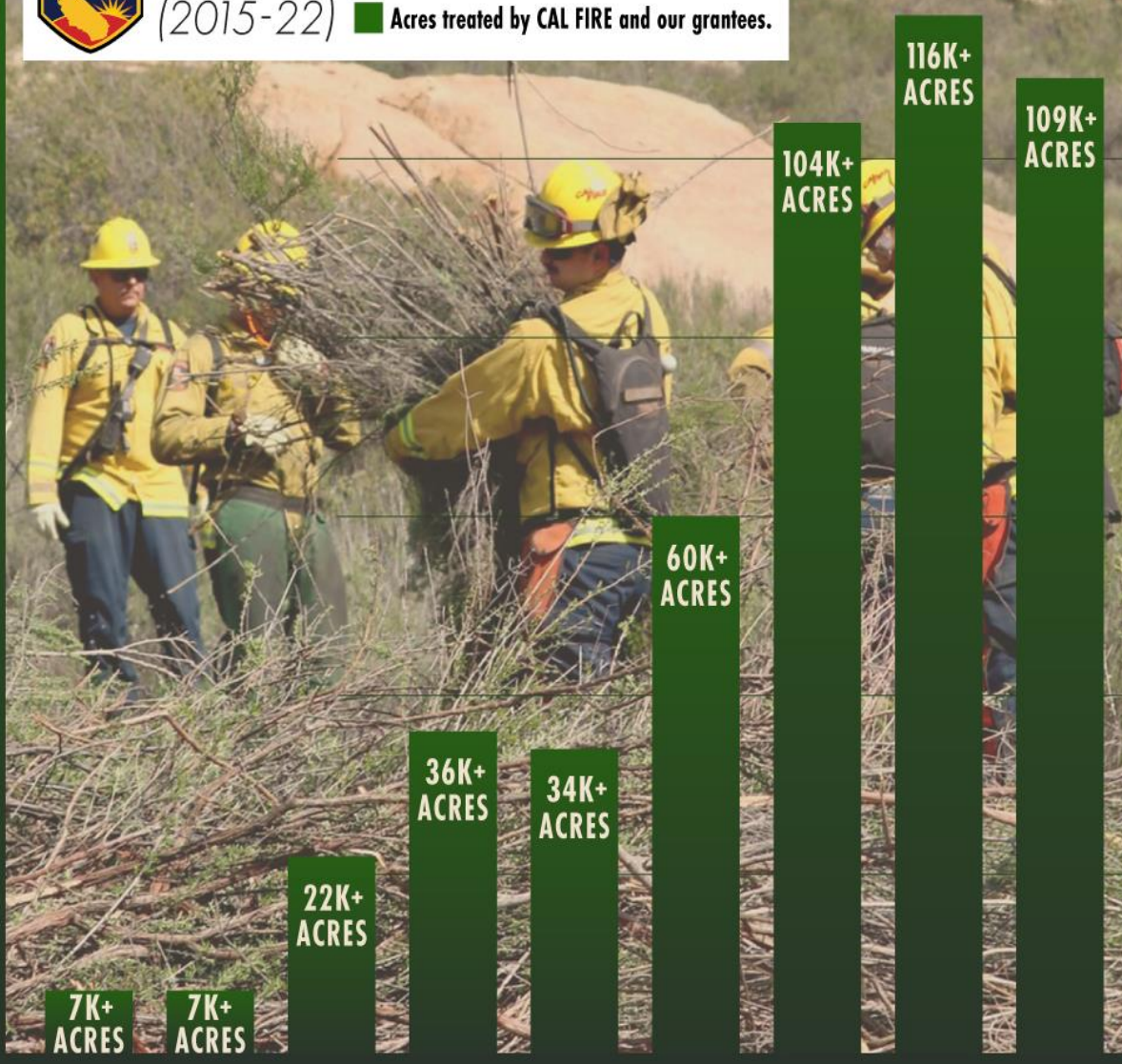
80,000

60,000

40,000

20,000

0



FISCAL YEAR: FY 13-14 FY 14-15 FY 15-16 FY 16-17 FY 17-18 FY 18-19 FY 19-20 FY 20-21 FY 21-22

NUMBERS CURRENT TO 12/31/2022.

Note: Acres may increase as grantee reporting is completed. Numbers rounded to the nearest thousand.



# Coupled Approach

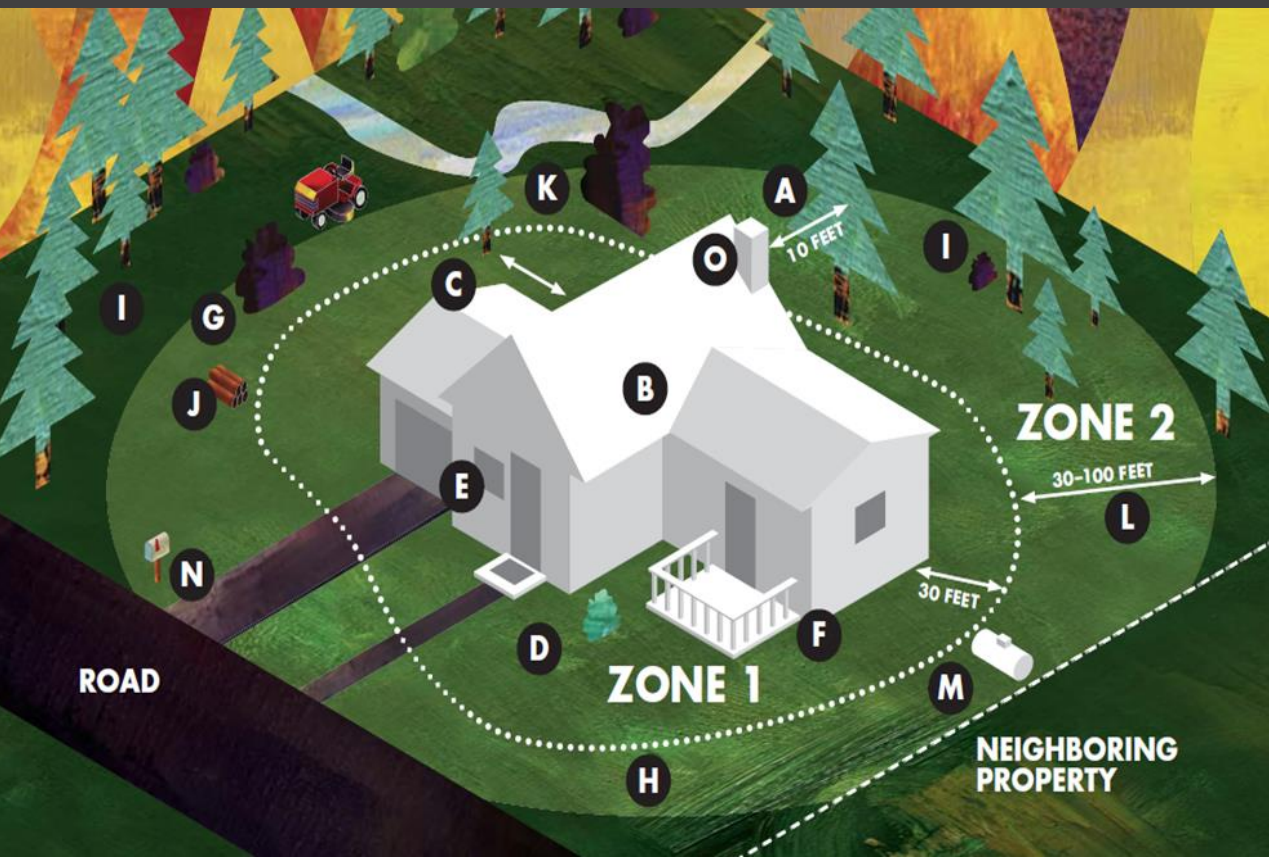


Hardening a home from wildfire is a coupled approach including defensible space and retrofitting. They MUST be done together to give a home the best chance of surviving a wildfire.

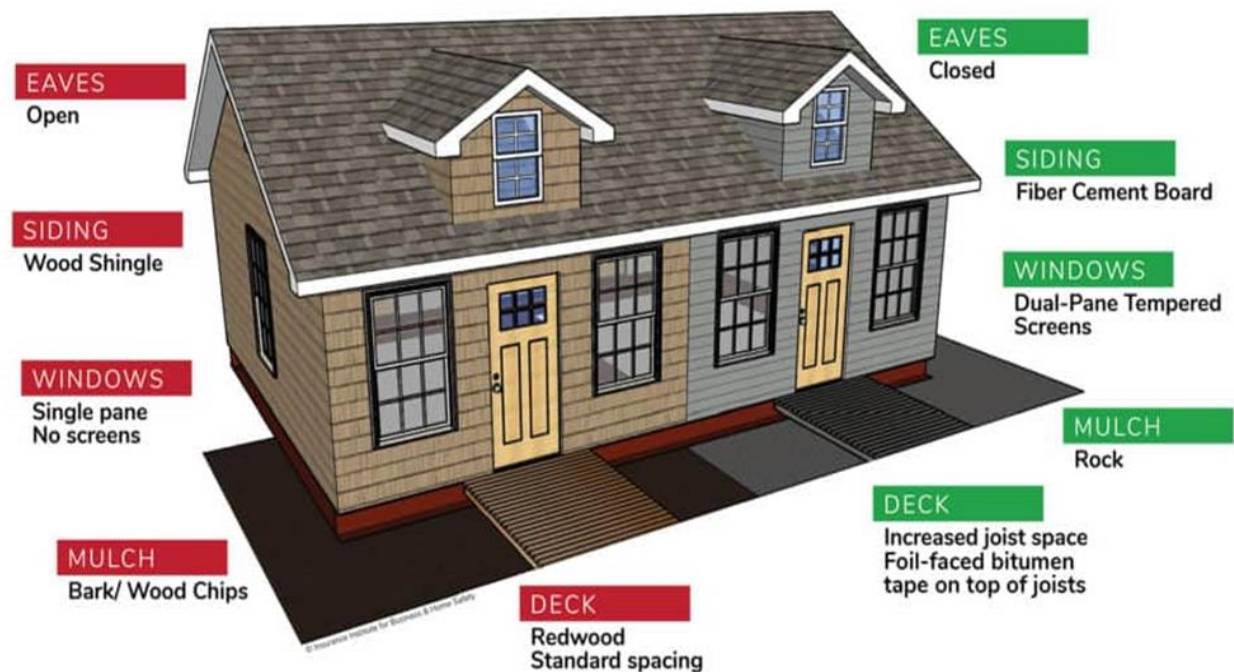
**Defensible Space**

**AND**

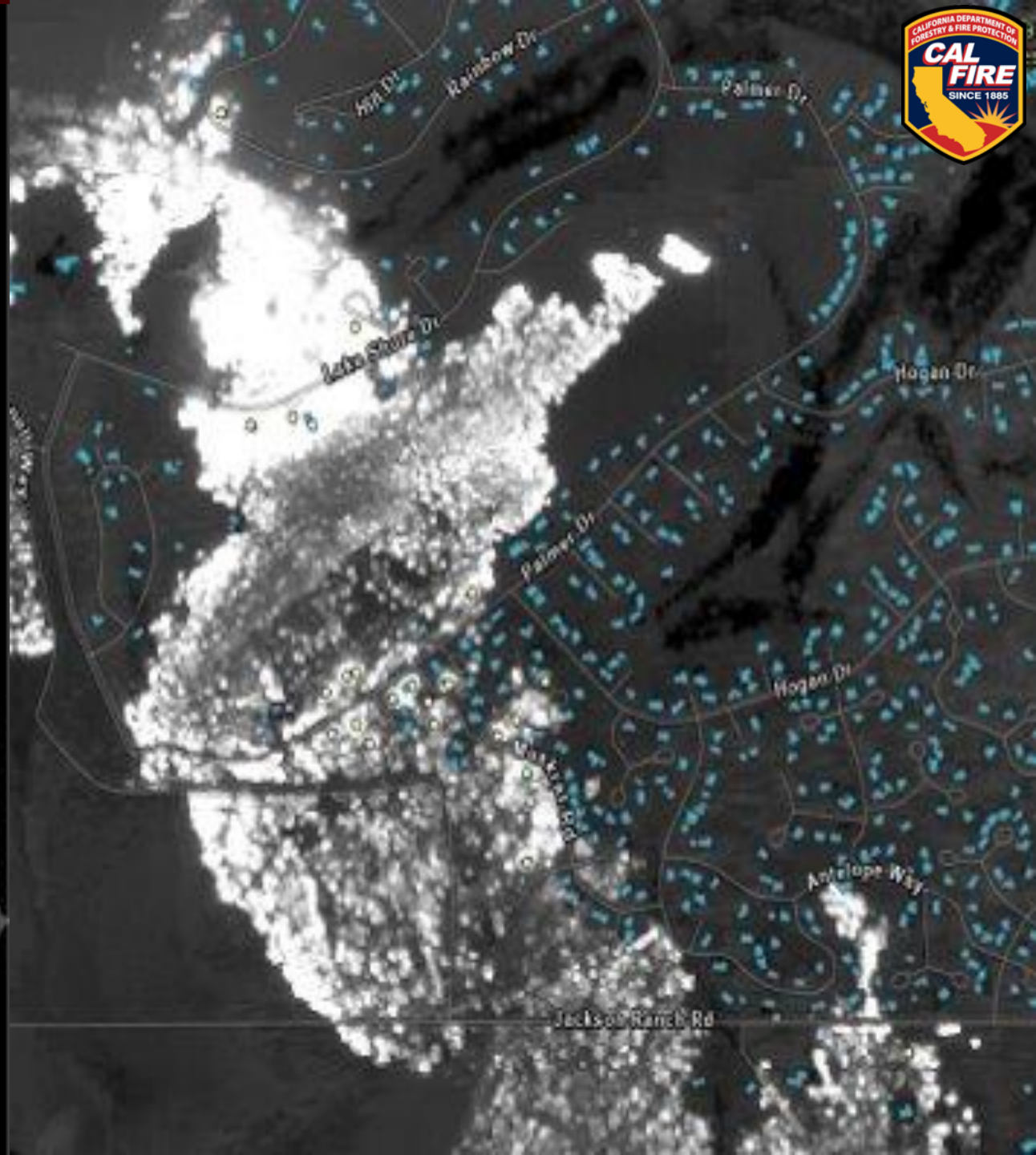
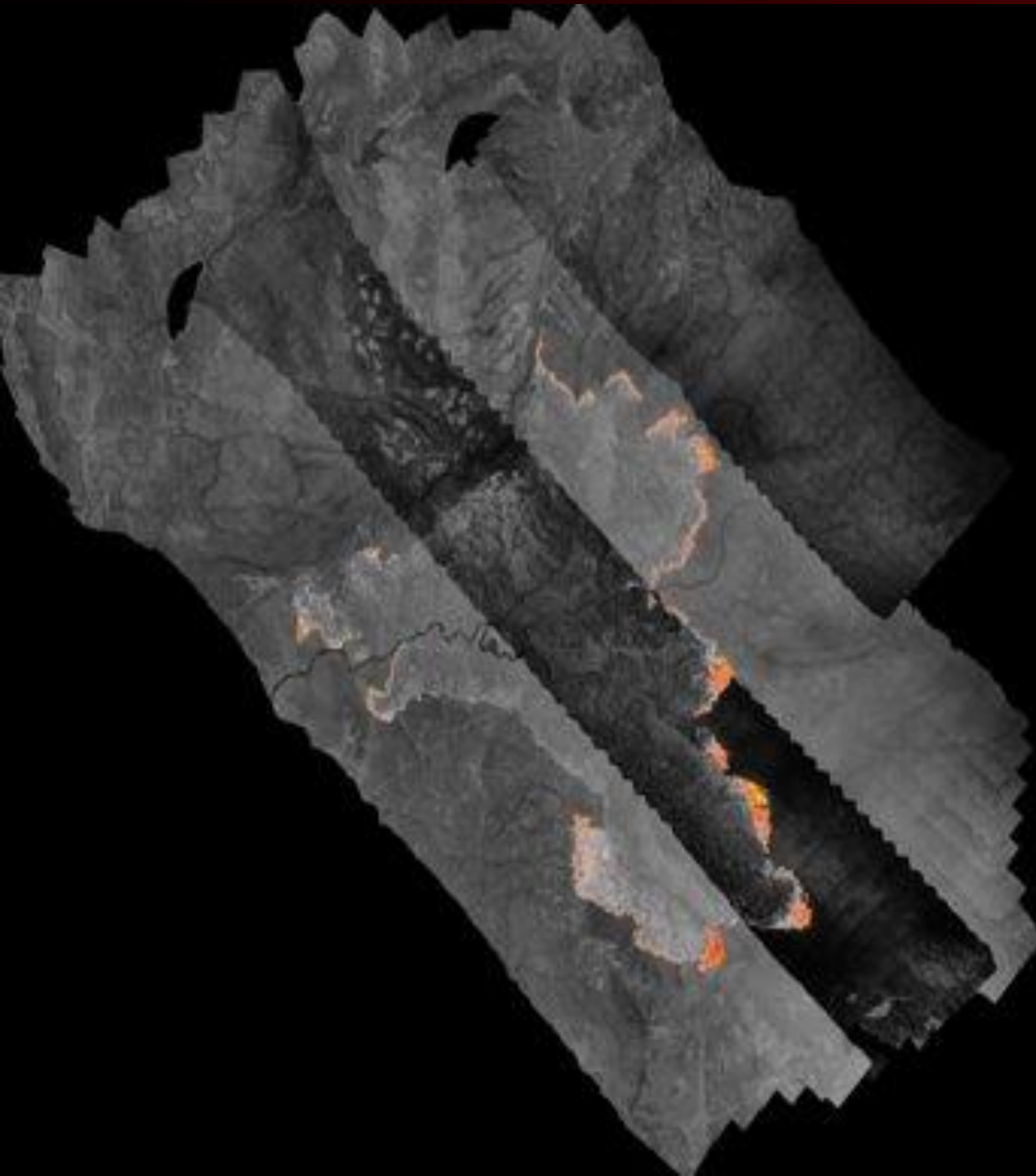
**Home Hardening**



Wildfire-Resistance: Make the **“RIGHT”** Choices











AEVEX FIRIS CAL OES INTEL 12  
 41°26.2502' N 122°27.5325' W  
 SPD 233 KTS HDG 325 °T  
 ALT 18637 FT

41°26.1972' N 122°23.3  
 SPD 0 MPH HDG  
 ELV 3865 FT SLT

09/02/22  
 14:01:35

LRF TARGET  
 40°02.2628' N  
 121°36.9925' W  
 ELV 3865 FT  
 SLT 6.2 NM

←N→

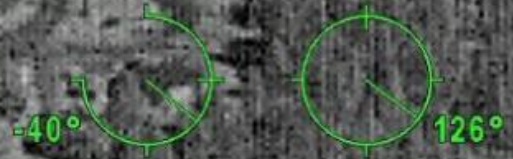
LRF L ARMED  
 LP C ARMED

SWIR  
 DDE  
 FOC MAN  
 EXP AUT

GEOPOINT  
 INS NAV 0.20°

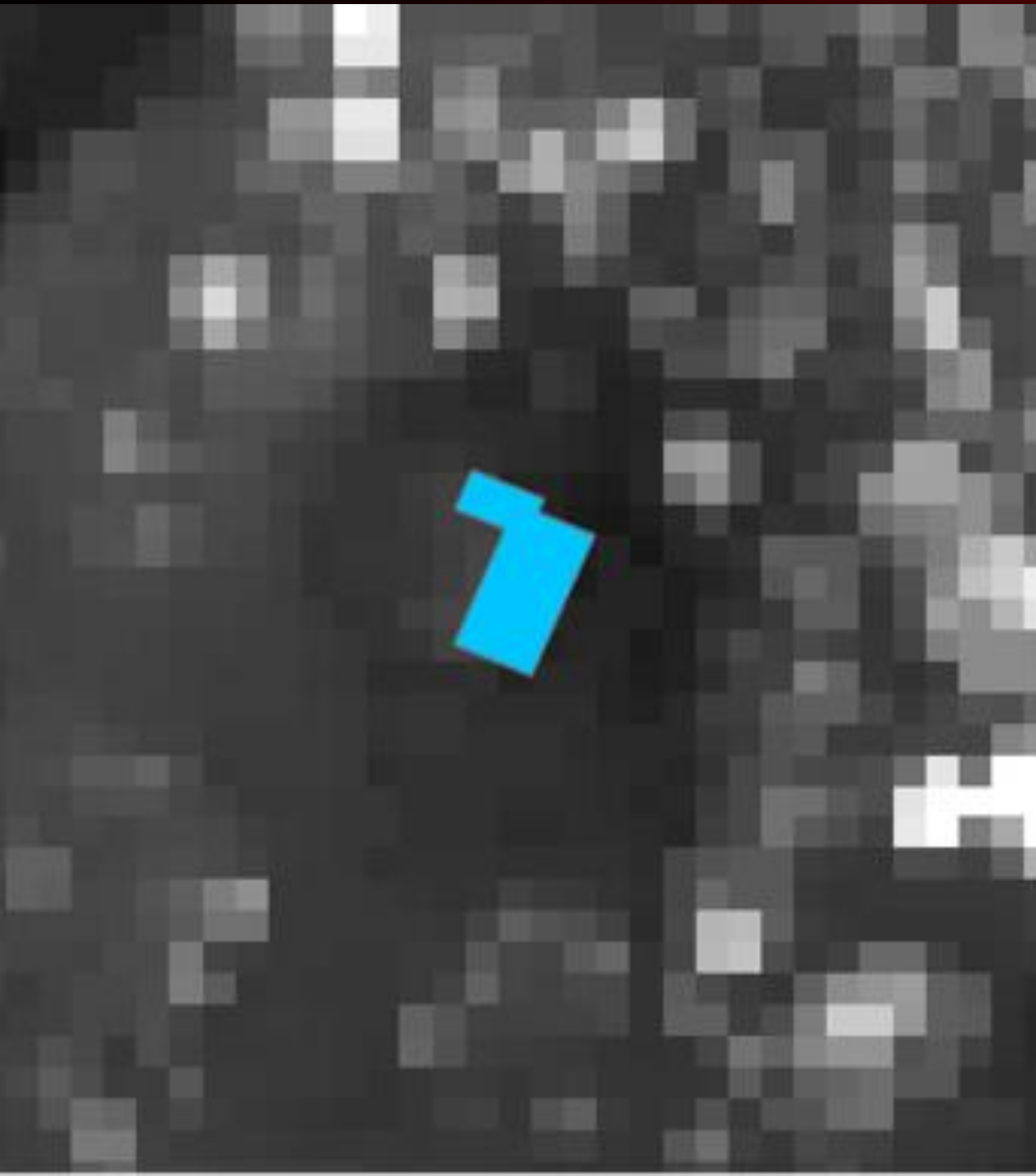
TRK GEN

W  N 310 FT

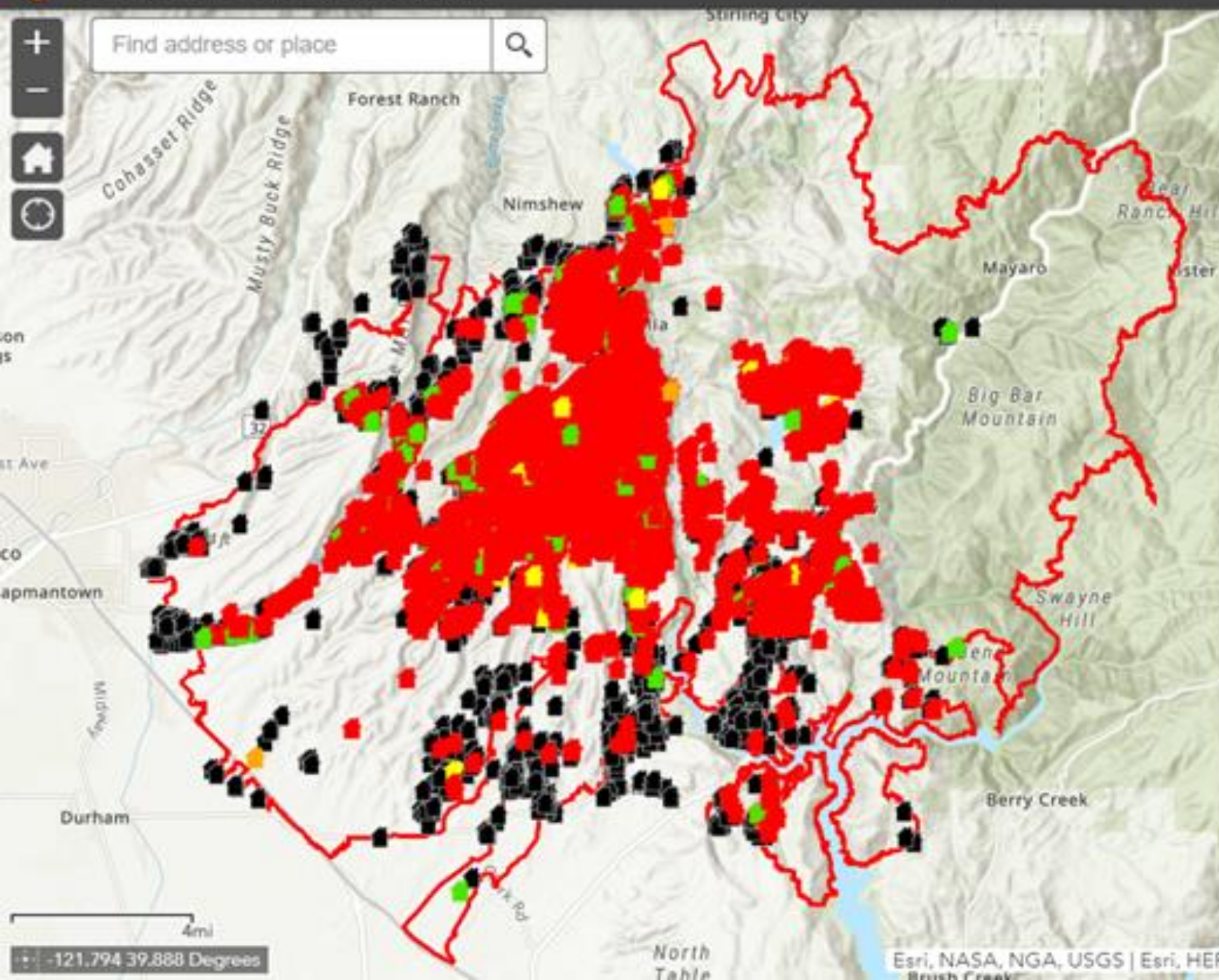


SLAVE ACTIVE









## Information

### About

Field damage inspection is still ongoing and subject to change. The points shown in this map are being updated regularly. Data is subject to change as information is gathered and verified. The icons on the map indicate the current known status of the structure. If your structure is not identified by an icon, it has not yet been identified.

Addresses may be entered into search bar to find a specific location.

### Legend

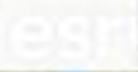
#### Damaged or Destroyed Structures

- Destroyed (>50%)
- Major (26-50%)
- Minor (10-25%)
- Affected (1-9%)

#### No Visible Damage

- No Visible Damage

Camp Perimeter 11-19







## Damaged

### Single Family Residence

Affec.	Minor	Major	Destroyed
263	98	81	20

Total Damaged (Not Destroyed)	No Damage
442	496

### Multi-Family Residence

Affec.	Minor	Major	Destroyed
2	11	0	3

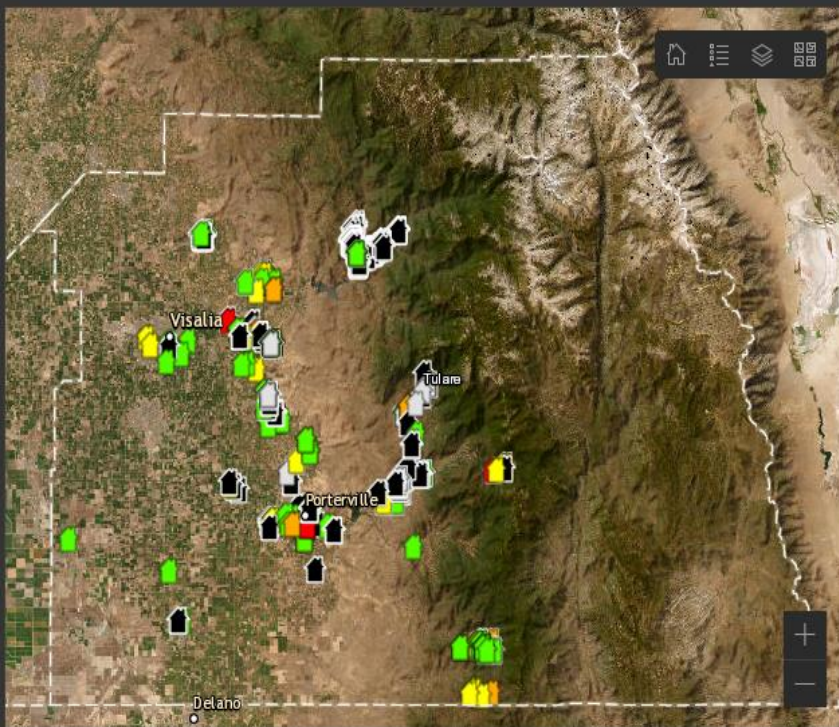
Total Damaged (Not Destroyed)	No Damage
13	9

### Commercial

Affec.	Minor	Major	Destroyed
6	1	2	1

Includes: schools, churches, hospitals, and commercial

Total Damaged (Not Destroyed)	No Damage
9	9



Earthstar Geographics | California Department of Forestry and Fire Protection | Esri, HERE, Gar... Powered by Esri

Total Destroyed	Total Damaged & Destroyed	Total Damaged
25	572	547

Total No Damage
642

Last update: 8 seconds ago

Inaccessible	Total Inspections
59	1,273

>50% Damage to structure

<50% Damage to structure

## Damaged

### Mixed Res/Commercial

Affec.	Minor	Major	Destroyed
0	0	1	0

Total Damaged (Not Destroyed)	No Damage
1	2

### Infrastructure

Affec.	Minor	Major	Destroyed
0	1	3	0

Total Damaged (Not Destroyed)	No Damage
4	4

### Other Minor Structure

Affec.	Minor	Major	Destroyed
44	16	18	1

Includes: Utility or Miscellaneous Structures > 120 sqft

Total Damaged (Not Destroyed)	No Damage
78	122



# Thank you!



<https://osfm.fire.ca.gov/>



[frank.bigelow@fire.ca.gov](mailto:frank.bigelow@fire.ca.gov)