



60th Annual Business Meeting

Community Wildfire Preparedness and Mitigation

DANIEL BERLANT & STEVEN HAWKS

CAL FIRE / OFFICE OF THE STATE FIRE MARSHAL

BOB ROPER – CA FIRE SAFE COUNCIL

Why Are We Here Today?



True Costs of Wildfires

- Fire suppression costs only 40% avg.
- Plus:
 - * Economic
 - * Environment
 - * Ecological
 - * Health
 - * Infrastructure / Water
 - * Resources
 - * Life

The Costs of Wildfire in California
An Independent Review of Scientific and Technical Information



FULL REPORT

A Commissioned Report prepared by the
California Council on Science and Technology



A nonprofit, nonpartisan organization that supports the use of data and evidence to inform California's public policy and to improve the lives of Californians.

Wildfire Resiliency – is the GOAL

Adding more fire trucks is not the answer, we need to accomplish all three phases:

* **Pre-fire**

- Planning
- Mitigation
- Prevention
- Education

* **Fire**

- Robust actions

* **Recovery**

- Re-entry
- Rebuilding

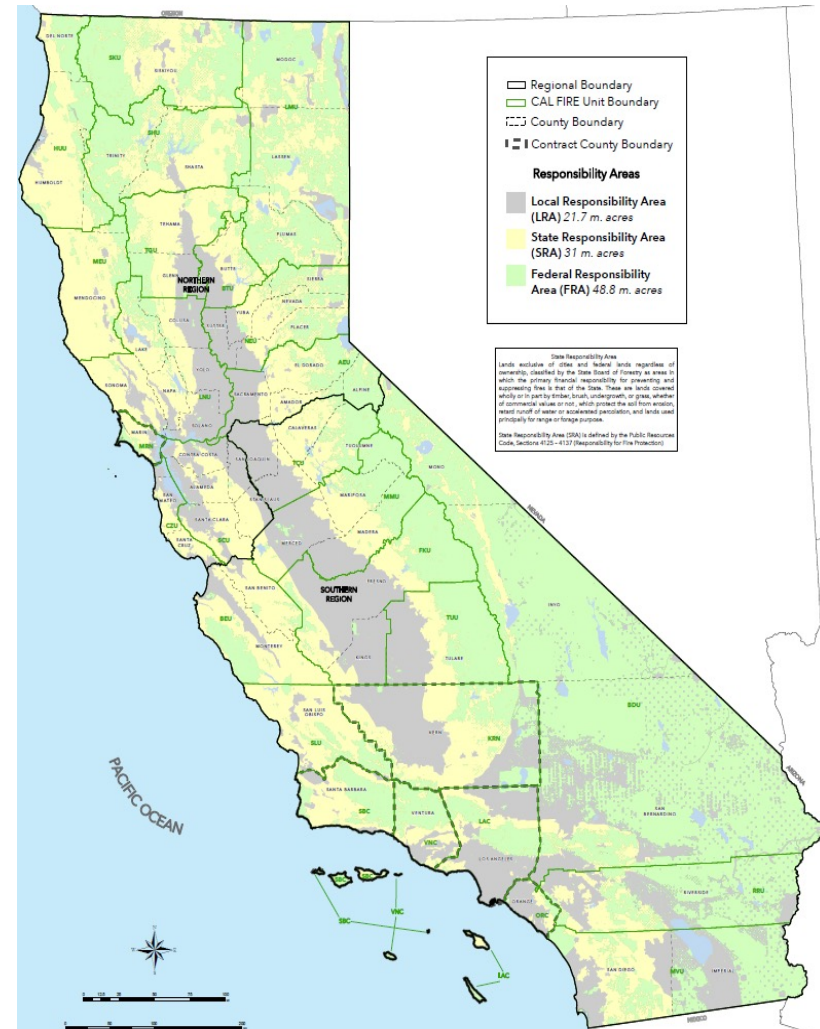
Wildfire Mitigation Strategy



Responsibility Area

- California is divided into three areas based on who has financial responsibility of preventing and suppressing wildfires, known as Responsibility Area
 - Federal (FRA) – green
 - State (SRA) – yellow
 - Local (LRA) – grey
- The State contains about 101 million acres of land.
 - FRA – 48%
 - SRA – 31%
 - LRA – 21%
- SRA is remapped every 5 years
 - Last Updated July 8, 2020

SRA viewer



Fire Hazard Severity Zones

- SRA Fire Hazard Severity Zones (FHSZ)
 - CAL FIRE is responsible for determining FHSZ ([PRC 4201-4204](#))
 - Long term map looking back decades
 - Maps hazards, not risk
 - They are like flood zone maps
 - 3 zones: moderate, high, and very high
- LRA FHSZ
 - CAL FIRE shall identify areas in the state as moderate, high, and very high fire hazard severity zones ([GC 51176-51179](#))
 - [AB 642](#) and [SB 63](#) require CAL FIRE to map the LRA moderate and high fire hazard severity zones



Fire Hazard Severity Zones

- [FHSZ Viewer](#) – Current maps 2007-2010

FHSZ Viewer

LEGEND

- City Boundaries**
 - Incorporated Area
- County Boundaries**
 -
- FHSZ in LRA**
 - VHFHSZ
- FHSZ in SRA**
 - Very High
 - High
 - Moderate
- SRA**
 - Local Responsibility Area (LRA)
 - State Responsibility Area (SRA)
 - Federal Responsibility Area (FRA)

LAYER VISIBILITY

Click to toggle the visibility of the various layers

- City Boundaries
- County Boundaries
- FHSZ
- FHSZ in LRA
- FHSZ in SRA
- SRA

Choose Which Basemap to Display:

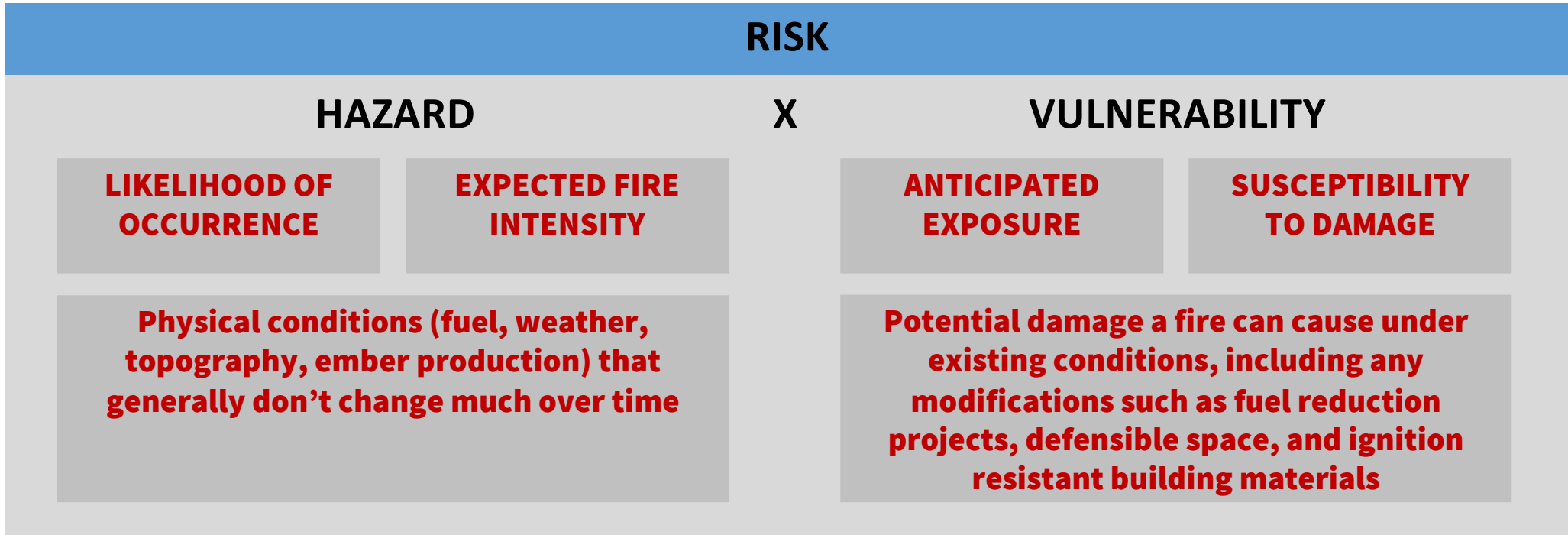
Streets

ADDRESS SEARCH

ZOOM TO ADDRESS
(Find street address using geolocator)

Example address format:
455 10th St. Davis, CA 95121

Hazard versus Risk



Fire Hazard Severity Zones

- Based on fire history, vegetation, flame length, blowing embers, terrain, and weather
- Areas of variable size ranging from 20 acres in urbanized areas to at least 200 acres in wildland areas
- With relatively homogenous characteristics
- Areas that have similar burn probabilities and fire behavior characteristics over a 30-50-year time horizon
- Expected fire behavior based on typical fire intensity on a normally severe fire weather day.
- Incorporates fire brand production and spot fire potential
- Does not consider short term modifications like fuel reduction projects

Fire Hazard Severity Zones 2022 Remap

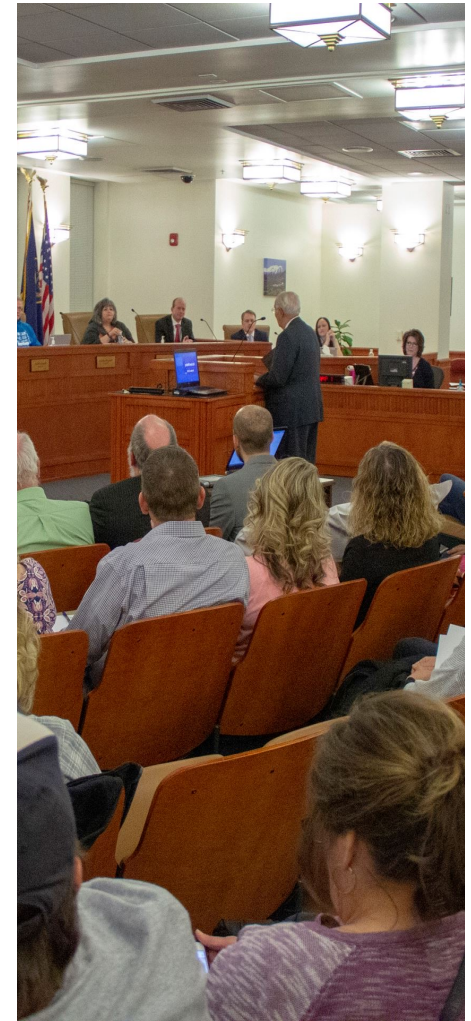
2022 FHSZ Remap for the SRA and LRA

- Being updated to more accurately reflect the zones in California that are susceptible to wildfire (burn probability – inclusive of 2020 fires)
- The hazard mapping process will incorporate new science in local climate data and improved fire assessment modeling in determining hazard ratings
- Updated fire environment footprint (urban/developed)
- A more spatially detailed model
- Updated vegetation density for urban areas
- Inclusion of slope in the urban zoning model
- Localized fire weather used in both wildland and urban models (wind)
- New firebrand production and transport model using discrete local winds

Fire Hazard Severity Zones 2022 Remap

2022 FHSZ Adoption Process

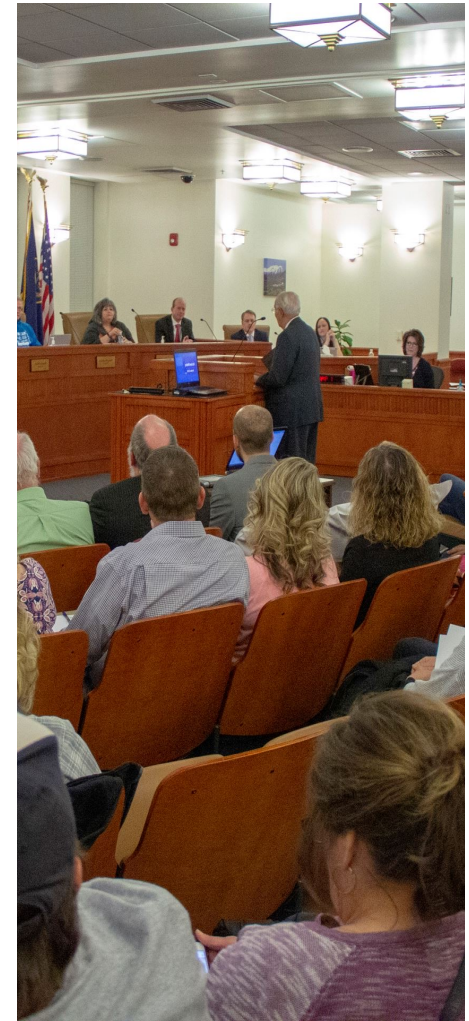
- SRA Map
 - Proposed regulation transmitted to the board of supervisors of each county that has SRA (56 of 58 counties) at least 45 days before the adoption of the proposed regulation
 - Public hearing held in each county during the 45-day period
 - Adopted through regulation in CCR Title 14



Fire Hazard Severity Zones 2022 Remap

2022 FHSZ Adoption Process

- LRA Maps
 - Draft map presented to local jurisdiction and receives local validation
 - Final draft map submitted to governing body
 - City/County has 30 days to make information available for public review and comment ([GC 51178.5](#))
 - City/County shall designate by ordinance within 120 days of receiving the final draft map ([GC 51179](#))
 - Local jurisdiction can add area(s) not identified by CAL FIRE
 - City/County shall transmit a copy of the ordinance to the Board within 30 days of adoption



Responsibility Area and Fire Hazard Severity Zones

Fire Hazard Severity Zone	Existing		Responsibility Area		
	New	Local (LRA)	State (SRA)		Federal (FRA)
			Local (LRA)	State (SRA)	Federal (FRA)
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)		

State Minimum Fire Safe Regulations

- Senate Bill 1075 (Rogers, 1987) established Public Resources Code 4290 requiring the Board of Forestry to adopt minimum fire safe standards
- Originally called the SRA Fire Safe Regulations (California Code of Regulations Title 14 Section 1270-1276), they became effective on January 1, 1991
 - Applicable in the SRA only
 - Applies to the perimeters and access to all residential, commercial, and industrial building construction
 - Road standards, road/building signage, water supply, and fuel breaks
- The Board of Forestry and Fire Protection (Board) has the regulatory responsibility to adopt these regulations
 - The state's minimum standard

State Minimum Fire Safe Regulations

- [Senate Bill 901](#) made the fire safe regulations effective in the Very High Fire Hazard Severity Zones of the LRA starting July 1, 2021
- Currently called the [SRA/VHFHSZ Fire Safe Regulations](#)
- Heard at the Board meeting on May 5th for the Board's consideration of options for the "State Minimum Fire Safe Regulations, 2021" rulemaking, including potential rule plead changes and approval of 15-Day Notice

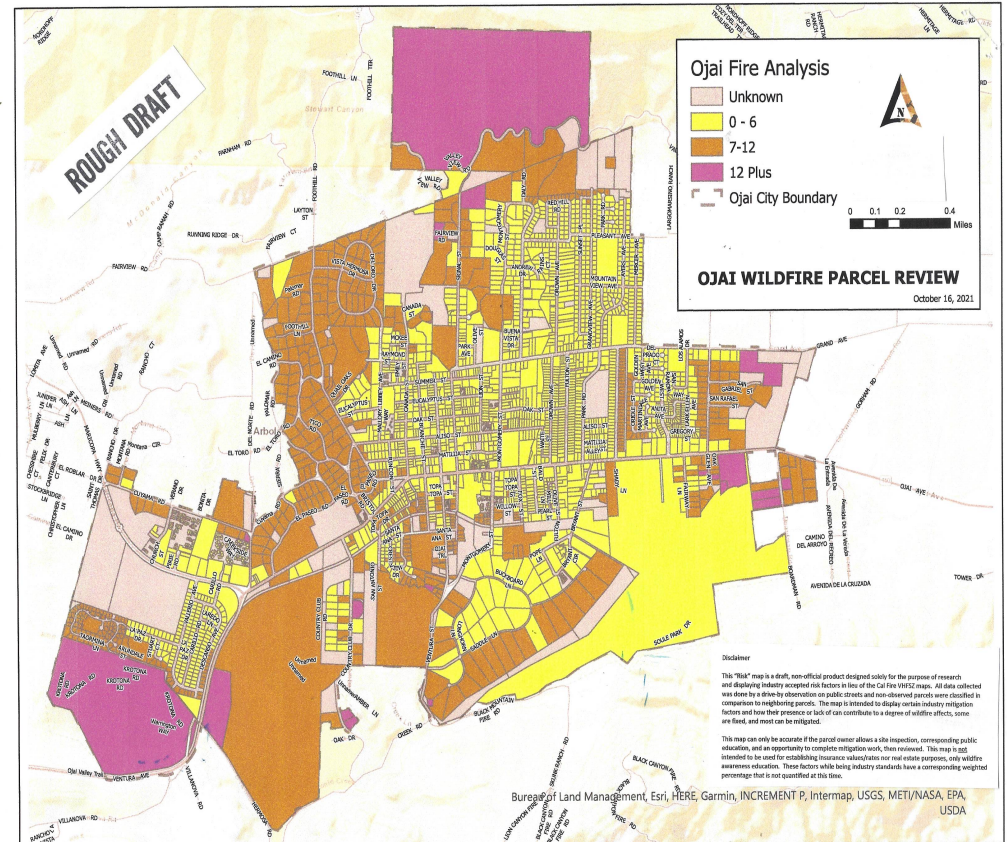
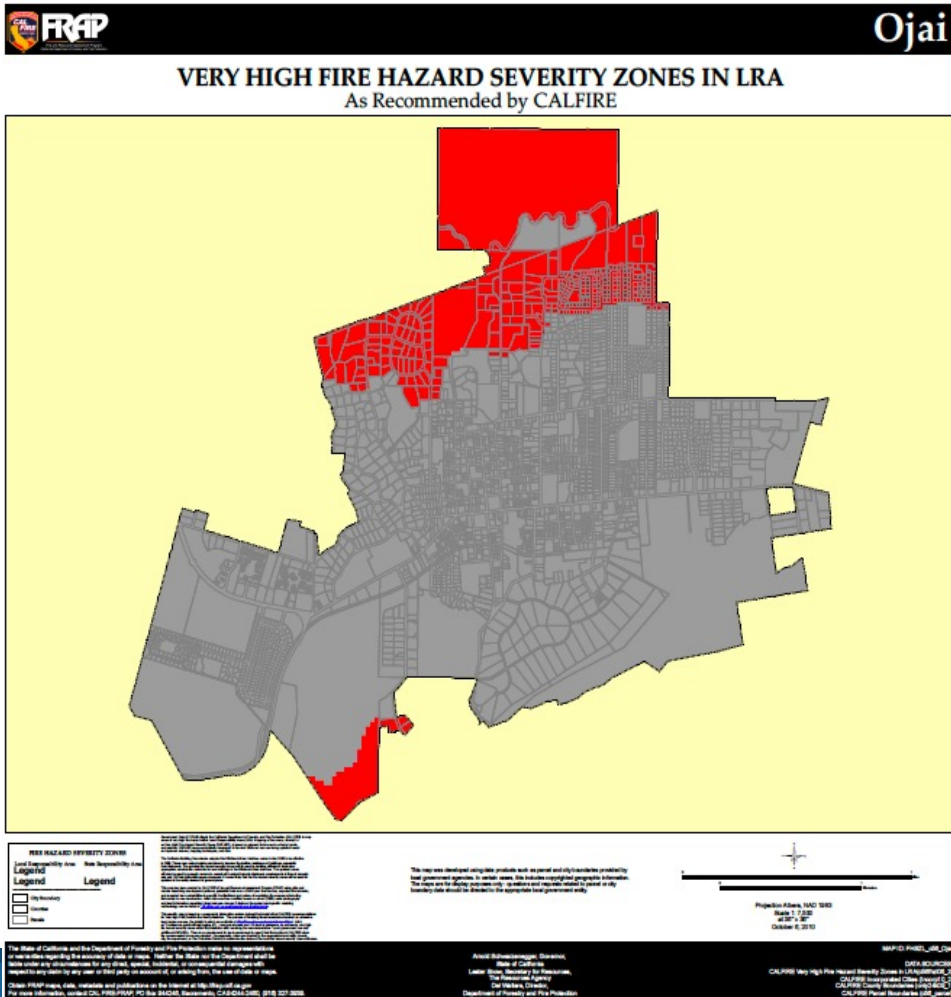
California Building Code Chapter 7A

- California Building Code Chapter 7A
 - **Scope:** Applies to building materials, systems, and/or assemblies used in the exterior design and construction of new buildings
 - **Purpose:** To establish minimum standards for the protection of life and property by increasing the ability of a building ... to resist the intrusion of flames or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses
 - **Application data:** Starting July 1, 2008
 - **Where Required:**
 - All the SRA
 - LRA Very High FHSZ
 - Land designated as Wildland Interface Fire Area by cities and other local agencies
 - LRA High FHSZ and potentially the Moderate FHSZ (SB 63)

California Building Code Chapter 7A

- Recent Changes to Chapter 7A
 - Require all roofs to be Class A (7/1/2021)
 - Require a cap sheet (ASTM D3909 – rolled asphalt) over the roof deck with a roof that has an airspace under the covering (7/1/2021)
 - Require ASTM E2886 compliant vents (not screens) – flame and ember resistant vents (7/1/2021)
 - Require a 6” inch metal flashing on the exterior walls above any deck (7/1/2021)
 - Brought California Fire Code Chapter 49 language into Title 24 (1/1/2023)
- Senate Bill 63 requires Chapter 7A in the High FHSZ and potentially in the Moderate FHSZ of the LRA
- Standing work group provides updates during the intervening and triennial code cycles

Wildfire Initiatives – Risk Maps



Wildfire Initiatives – IBHS & NFPA



3-Year Process:

- Self-Screen
- Designation process
- Annual review



According to NFPA, to solve the wildfire problem, these five tenets must be supported by all levels of government:

1. Require all homes and business in the wildland urban interface (WUI) to be more resistant to ignition from wildfire embers and flames.
2. Current codes & sound land use practices must be enforced.
3. Fire departments must be prepared.
4. Government must support landscape treatments.
5. The public must understand its role and take action.

<https://www.nfpa.org/About-NFPA/Outthink-Wildfire>

CA Fire Safe Council

INFORM. EMPOWER. MOBILIZE.



Actions:

- County Coordinators
- Grant clearinghouse
- Build capacity
- Educate, create synergy
- Policy advocate
- Collaborate

State Funding

Program	Early Action 2020-21	Budget Year 2021-22	Budget Year 2022-23	Budget Year 2023-24
Resilient Landscapes (Forest Health)	\$283	\$541	\$327	\$325
Wildland-Urban Interface (Fuel Reduction)	\$198	\$296	\$210	\$212
Community Hardening (Home Hardening/Dspace/Planning)	\$27	\$20	\$22	\$22
Economic/Research/Science	\$28	\$130	\$41	\$41
Total	\$536	\$988	\$600	\$600

Wildfire Prevention Grants Program

- Funds fire prevention projects in and near fire threatened communities that focuses on increasing the protection of people, structures, and communities ([PRC 4124.5](#))
- Eligible applicants include local agencies, fire protection districts, community services districts, RCDs, and nonprofit entities 501(c)3
- Eligible projects include hazardous fuel reduction, wildfire prevention planning, and wildfire prevention education



Wildfire Prevention Grants Program

- Align with CAL FIRE Unit/Contract County Fire Plans and other plans
- Supported by community
- Projects requiring CEQA review are required to provide documentation of compliance within 12 months from the grant execution date
 - Applicants should budget funds to cover the cost of CEQA compliance
 - Groundwork cannot begin until CEQA requirements have been met
- Coordination with other grant opportunities (matching funds) through
 - California Fire Safe Council
 - Cal OES FEMA Hazard Mitigation Grant Program
 - Housing and Community Development Federal HUD CDBG DR Grants
 - Others?

Wildfire Prevention Grants Program

Wildfire Prevention Grants Program

- Funding
 - FY 2020-21 \$123 million
 - FY 2021-22 \$120 million
 - FY 2022-23 \$115 million in Governor’s Proposed Budget
 - FY 2023-24 \$117 million in Governor’s Proposed Budget
 - Funding through FY 2028-29 (\$165 million to CAL FIRE)
- Website
 - CAL FIRE [Wildfire Prevention Grants](#)
- Contact
 - FPGrants@fire.ca.gov

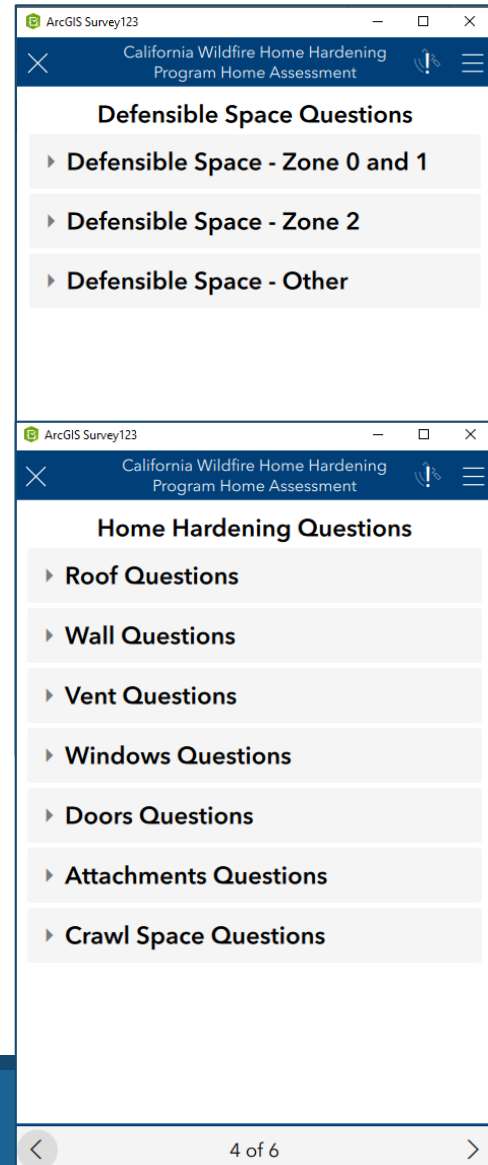
The screenshot shows the CAL FIRE website's navigation bar with the 'Grants' menu item highlighted. Below the navigation bar is a banner image of autumn trees. The main content area features the title 'Wildfire Prevention Grants Program' and a status message: 'STATUS: Closed. Please check back for future funding opportunities.' A dark red header for 'CAL FIRE- Fire Prevention Grants Tutorials' is followed by a list of links: 'CAL FIRE - Wildfire Prevention Grants SharePoint Tutorial', 'Project Mapping Program Video Tutorial', 'Project Mapping Program Quick Reference Guide', 'Wildfire Prevention Workshop PowerPoint', and 'Wildfire Prevention Grants Online Workshop Recording (from 12.17.2021)'. On the right side, there is a 'Contact Us' sidebar with the following text: 'Contact the FP Grants team at FPGrants@fire.ca.gov. The email box is monitored by multiple staff and will provide you with the quickest response. You can also call Diane Carpenter (916) 224-8442, Adriana Negrea (916) 462-0055, or Shaijal Kumar (916) 204-0073.' Below this is a section for 'Additional Grant Contacts' with links for 'CAL FIRE Wildfire Prevention Grants Unit Contact List', 'Northern Region Contact' (CNRgrants@fire.ca.gov), and 'Southern Region Contact' (SouthernRegionGrants@fire.ca.gov).

California Wildfire Mitigation Program

- [California Wildfire Mitigation Program](#) (Home Hardening)
 - Joint Powers Agreement established between Cal OES and CAL FIRE
 - Encourage cost-effective structure hardening and retrofitting that creates fire-resistant homes, businesses, and public buildings
 - Facilitate vegetation management, the creation and maintenance of defensible space, and other fuel modification activities that provide neighborhood or communitywide benefits against wildfire
 - Develop a comprehensive financial assistance program to help property owners, whole communities, and local governments with retrofits
 - Targeting low- to moderate-income and socially vulnerable homeowners
 - A community hardening approach that is a locally-led program with state support

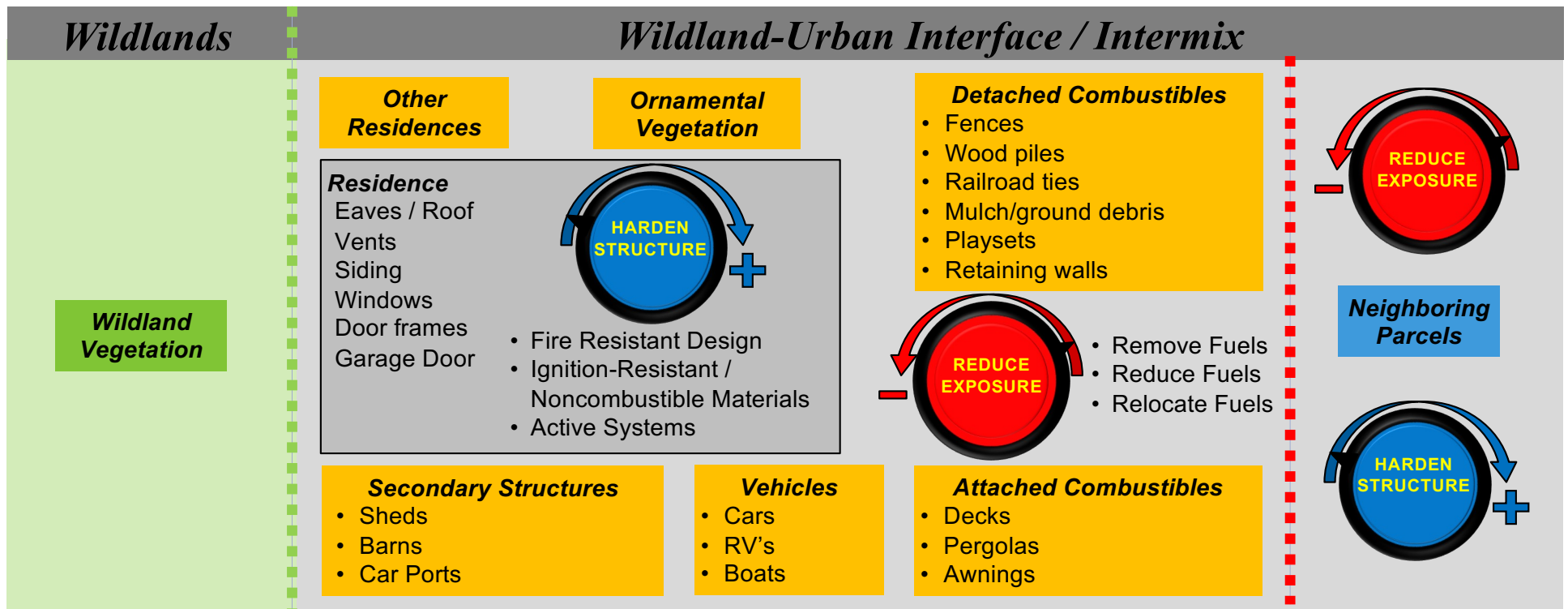
California Wildfire Mitigation Program

- [California Wildfire Mitigation Program](#) (Home Hardening)
 - Identify building retrofits and structure hardening measures eligible for financial assistance that are both cost-effective and provide for appropriate site or structure fire risk reduction
 - Home Assessment Application created
 - Provide training to local assessors
 - Pilot Projects
 - San Diego County – Community of Dulzura
 - Shasta County – Community of Whitmore
 - Lake County – Community of Kelseyville Riviera



California Wildfire Mitigation Program

Parcel-level combustible features that can contribute to various structure ignition pathways



California Wildfire Mitigation Program

Retrofit List

Table A. Structure and attached combustible hardening against ignition from embers.

Item #	Structure Component, Assembly, or Attached Combustible	Hardening Action	Performance Goal	Applicable Condition(s)	Notes	Expected Cost Range (\$, \$\$, \$\$\$)	Matched in Existing Code
Roof							
1	Skylights	Replace plastic skylight with multipaned glass with tempered glass outer pane. If skylight opens, install metal screen on the inside. If screen is non-metal replace with metal.	Minimize embers with enough energy to cause ignitions	Plastic skylight pane, nonmetal screen, no screen	Screen is needed only on openable skylights	\$	Chapter 7A NFPA 1140 ICC IWUIC

Table B. Surrounding parcel hazard mitigation – hardening structure and attached combustibles against ignition from fire (radiation, convection).

Item #	Structure Separation Distance (SSD) or Neighboring Parcel Exposure Distance (NPED) ^a	Slope and location of structure on the terrain (low, mid, high slope)	Hardening Action (on neighboring parcel) ^b	Notes	Minimum Required Fuel Separation Distance (MFSD) (ft)	Fuel Separation Range (FSR) (ft)	Hardening Structure and Attached Combustibles Against Ignition from Flames (radiation, convection)
1	Proximity of closest neighboring primary residence(s) – SSD			Hardening Structure is required only if neighboring structure falls within Fuel Separation Range		25 to 50	Required (in Table D) if 25<SSD<50

Table C. Primary parcel hazard mitigation – hardening structure and attached combustibles against ignition from fire (radiation, convection).

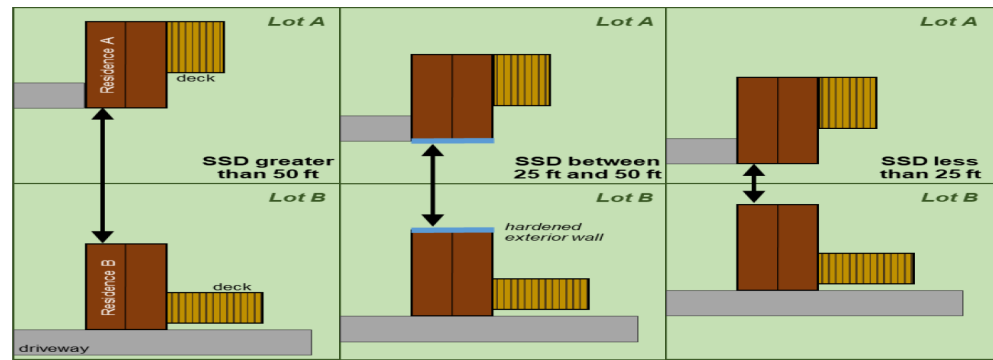
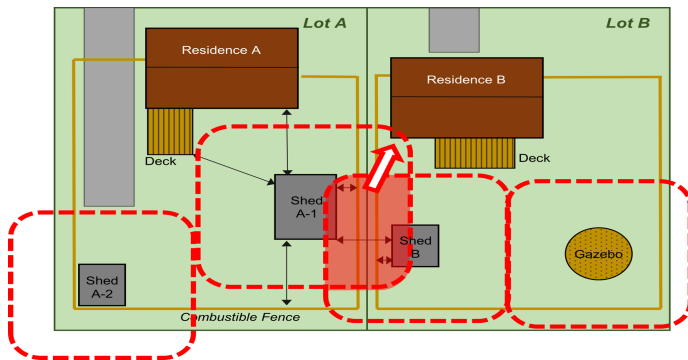
Item #	Parcel Feature – Exposure Distance (ED) or Structure Separation Distance (SSD)	Hardening Action	Performance Goal	Applicable Condition(s)	Notes	Expected Cost Range (\$, \$\$, \$\$\$)	Minimum Required Fuel Separation Distance ^a (MFSD) (ft)	Hardening Structure and Attached Combustibles Against Ignition from Flames (radiation, convection)
1	Firewood – ED	Replace firewood with other heating source, displace firewood 30 ft away from main residence and other Table C features, or store in a noncombustible enclosure 15 ft from Table C features	Prevent firewood from directly (flames) igniting residence or other Table C items	If closer than recommended separation distance	Defensible space expanded to account for all other Table C items	\$	30	Required (in Table D) if ED<MFSD

Table D. Structure hazard mitigation – hardening structure and attached combustibles against ignition from fire (radiation, convection).

Item #	Structure Component – Exposure Distance (ED) or Structure Separation Distance (SSD)	Hardening Action	Performance Goal	Applicable Condition(s)	Notes	Expected Cost Range (\$, \$\$, \$\$\$)	Matched in Existing Code
1	Roof covering and roof design (assembly) including dormer and bump out roofs	Replace non-Class A roofs by assembly or by covering alone	Prevent ignition of roof from flames	Non-Class A roof	n/a	\$\$\$	None

California Wildfire Mitigation Program

- [Hazard Mitigation Methodology](#) - NIST Technical Note 2205
 - Provides an implementable path forward by considering the spatial relationship between fuels, exposures, and hardening at the structure and parcel levels
 - Hazard Mitigation Methodology (HMM) demonstrates how complex structure hardening is, and how and why hazards associated with both ember and fire exposure need to be mitigated
 - Addresses housing density, structure separation distance, and parcel layouts
 - Addresses the current building stock to solve retrofit challenges, while limiting retrofit costs



California Wildfire Mitigation Program

- Exposure and Structure Hardening Relationship
 - WUI fire hazard mitigation is a **balance of reducing exposure and increasing structure hardening**
 - Hardening actions must be based on anticipated exposure
 - Embers must be accounted for in all situations
 - Harden structure when exposure cannot be reduced
 - Exposure can vary on a sub-parcel scale
 - Combinations of combustibles increases the hazard disproportionately
 - The combination of exposure reduction and structure hardening must prepare the structure to stand alone to high exposure

Final Comments & Questions

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