

Planning in the Wildland–Urban Interface

Session: Planning in the Aftermath of Wildfires

Date/time: Wednesday, March 11, 2026, 3:10-3:30 p.m.

Concurrent Session: Emerging Issues Track

Format: Speed Session (The Speed Session block runs from 2:45-4:00 p.m., and you are the second session of the block.)

As California faces increasing wildfire threats, development in the Wildland Urban Interface (WUI) requires thoughtful planning, risk assessment, and regulatory compliance. This session, led by a seasoned fire planning expert, provides a high-level overview of the critical factors in planning for fire-prone areas. Drawing on decades of experience, the speaker will guide planning commissioners through the intersecting considerations of public safety, community design, defensible space, infrastructure requirements, and evolving state and local regulations. This presentation will equip decision-makers with a better understanding of how to evaluate development proposals in high-risk fire zones and ensure resilient, safe communities.

Presenter: Gene Begnell

Experience: 40 years in Fire Service – 29 as a chief officer
24 years as a Division Supervisor/Strike Team Leader
BS degree in Fire Protection Administration and Technology (CalState LA)
Master in Public Administration (CalState Long Beach)
Completed Executive Fire Officer Program at the National Fire Academy
Master Instructor for State Fire Marshal Certification Program



2026 Planning Commissioners Academy



Why This Matters Now

- Wildfire intensity and losses are increasing. The interface is increasing
- Most structure loss is from **ember exposure**, not flames. But we must protect from both
- Development decisions today shape risks for decades.
- Commissioners are the generally the final policy checkpoint.

Remember:

You are not just approving a subdivision — you are approving **long-term risk**.

What are the Regulations?

Fire Hazard Severity Zones

California Public Resources Code, Sections 4201 through 4204 for State Responsibility Areas
Government Code, Sections 51175 through 51189 for Local Responsibility Areas.

State Minimum Fire Safe Regulations California Code of Regulations, Title 14 Natural Resources, Division 1.5 Department of Forestry, Chapter 7 - Fire Protection, Subchapter 2 State Minimum Fire Safe Regulations, Articles 1-5 All SRA and Very High Fire Hazard Severity Zones in LRA.

California Wildland Urban Interface Code

Formerly Chapter 7A of the Buildings Code; Chapter 49 of the Fire Code and Section R337 of the Residential Code.

Public Resource Code (PRC) 4290

Enacted to implement minimum fire safety standards and defensible space requirements around all residential, commercial, and industrial buildings in state responsibility areas and lands designated as very high fire hazard severity zones.

Public Resource Code (PRC) 4291

Enacted to protect wildland and watershed areas from the risks of fire presented by development, PRC 4291 requires any person that owns, leases, controls, operates, or maintains a building or structure in defined areas to maintain a minimum of 100 feet of defensible space at all times around the entire structure, but not beyond the property line.

Local Ordinance/Code



Fire Hazard Severity Zone Viewer

FHSZ in State Responsibility Area effective April 1, 2024

FHSZ in Local Responsibility Area - All Phases



State Responsibility Area (SRA)

Local Responsibility Area (LRA)

Federal Responsibility Area (FRA)

Legend

Fire Hazard Severity Zones in State Responsibility Area

Adopted April 1, 2024



Very High



High



Moderate

State Responsibility Areas



Local Responsibility Area (LRA)



State Responsibility Area (SRA)



Federal Responsibility Area (FRA)

Documents You May See

Site Plan. Including topography, width and percent of grade of access roads, landscape and vegetation details, locations of structures or building envelopes, existing or proposed overhead utilities, occupancy classification of buildings, types of ignition-resistant construction of buildings, structures and their appendages, roof classification of buildings and site water supply systems.

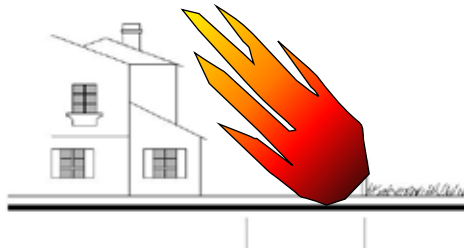
Vegetation Management Plan or Fuel Modification Plan. Prior to the building permit final approval, the property shall be in compliance with the vegetation management requirements prescribed in Section 603, including California Public Resources Code 4291 or California Government Code Section 51182. Acceptable methods of compliance inspection and documentation shall be determined by the enforcing agency and shall be permitted to include any of the following:

Fire Protection Plan. Where required by the code official pursuant to CWUIC Section 602, a fire protection plan shall be prepared and shall be submitted to the code official for review and approved as a part of the plans required for a permit. Normally includes a hazard analysis, fire behavior analysis, water supply, protection measures, responsibility of each party and an assessment of the overall risk.

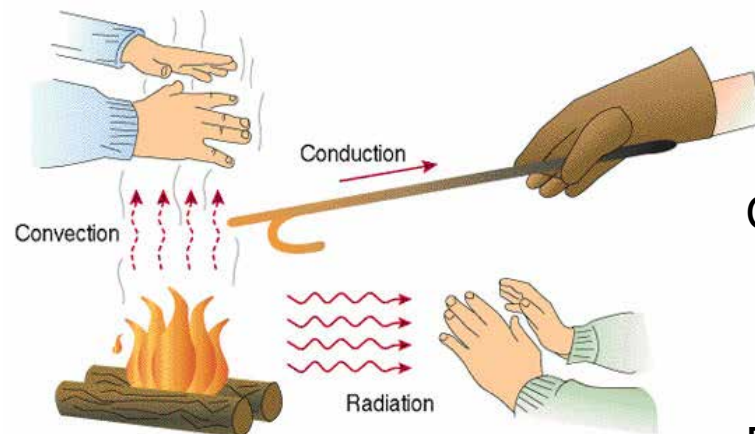
Fire Behavior Analysis. Justifications, assumptions and outputs from fire behavior models such as BehavePlus, FlamMap or Farsite. This can be used to provide some additional data on the fire intensity, expected travel and timing as well as the impacts of topography, weather (including wind and RH) and the impact to a new development site.

Fire Master Plan (not all fire department use these). Graphic representation of fire department features including turning radius, turnarounds, street width, fire hydrant locations, hosepull calculations, fire access roadway and pathway, wildland access points, fire department connections, fire lanes, expected building construction type and fire flow.

How does the fire get into the homes???



Direct Fire Impingement



Radiated Heat

Convected/Conducted Heat

Ember Intrusion



What Actually Causes Most Structure Loss

Most people assume flames destroy homes. In California wildfires: **Embers cause the majority of structure ignitions — not the flame front.**

- Ember intrusion into vents, eaves, roofs, and landscaping is the primary ignition pathway
- Ignition-resistant construction is critical. Including rated venting designed to withstand Ember Intrusion
- The 0–5 foot “Zone 0” noncombustible area is one of the most effective mitigation measures. **Law passed several years ago (Still waiting on standard from Board of Forestry and Fire Protection for implementation)**
- **Zone 0 will be retroactive to some homes**

Examples of State Minimum Requirements



SRA

LRA

VERY HIGH

Adopt FHSZ

CEQA

Subdivision Map Act

Safety Element

Fire Safe Regulations

CWUIC

Defensible Space

Hazard Disclosure

Subdivision Review

Adopt FHSZ

CEQA

Subdivision Map Act

Safety Element

Fire Safe Regulations

CWUIC

Defensible Space

Hazard Disclosure

Subdivision Review

HIGH

Adopt FHSZ

CEQA

Subdivision Map Act

Safety Element

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CWUIC

Defensible Space

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Subdivision Review

Adopt FHSZ

Hazard Disclosure

CWUIC
Effective January 1, 2026

MODERATE

Adopt FHSZ

CEQA

Subdivision Map

Safety Element

Fire Safe Regulations

CWUIC

Defensible Space

Subdivision Review

Adopt FHSZ

The 5 Critical Evaluation Areas

Commissioners should evaluate:

Access & Evacuation

Ignition-Resistant Construction

Fuel Modification

Water Supply

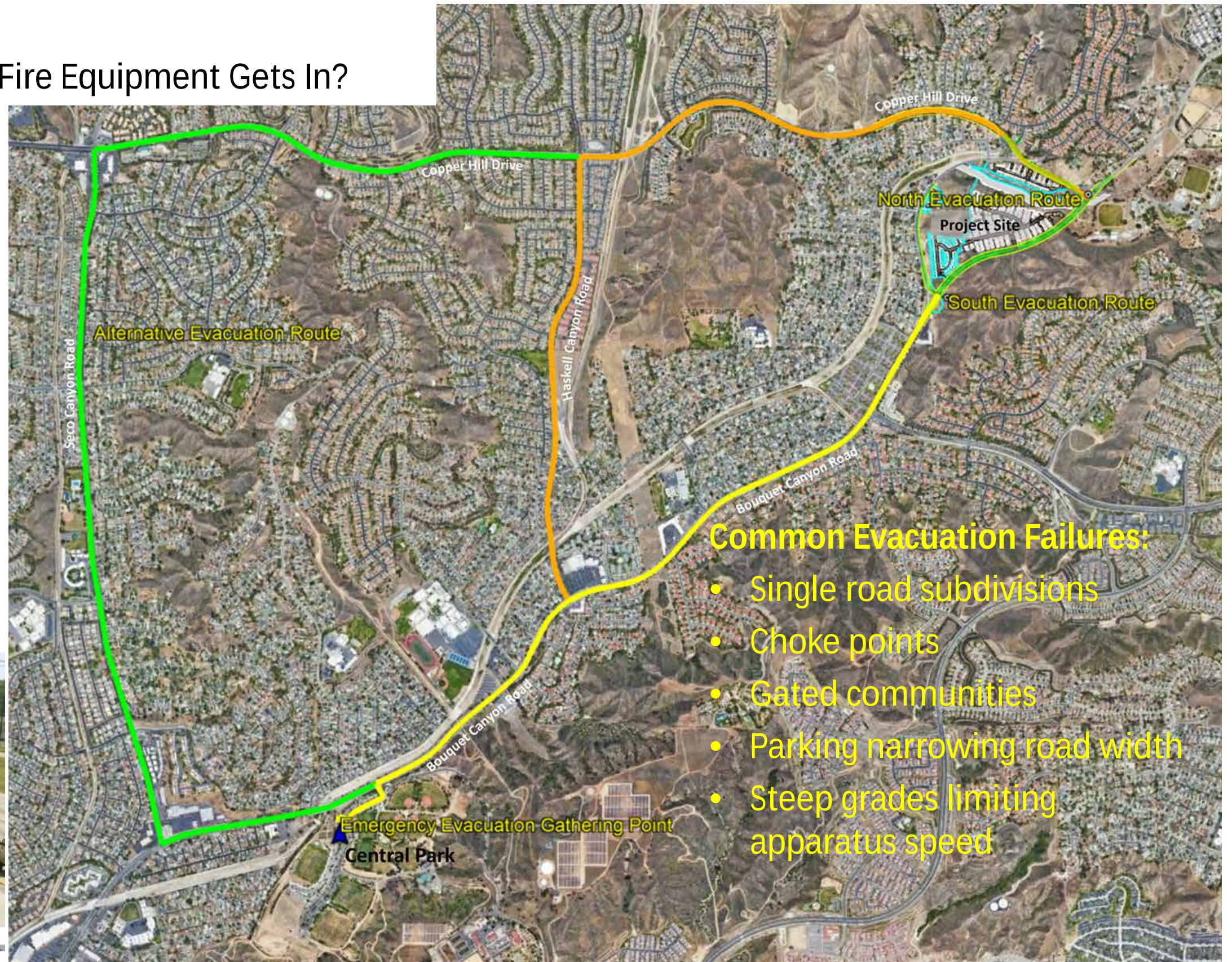
Long-Term Enforcement

Access & Evacuation

Can Residents Get Out While Fire Equipment Gets In?

- 20+ ft unobstructed width
- Secondary access (where required)
- Turnarounds/pull outs
- Vegetation clearance (roadside)
- Signage/Directions/Maps
- Area(s) of Refuge
- Staging Area(s)

Evacuation feasibility is a life safety decision.



Common Evacuation Failures:

- Single road subdivisions
- Choke points
- Gated communities
- Parking narrowing road width
- Steep grades limiting apparatus speed

Ignition-Resistant Construction

Design for Ember Exposure

CWUIC compliance

- Class A roof
- Ember-resistant vents
- Gutter Covers
- Hardened Exterior
- Tempered windows
- 0–5 ft noncombustible zone

Insurability:

IBHS (Institute for Business and Home Safety)

Wildfire Prepared Home™ is a voluntary, research-based mitigation and assessment program designed to meaningfully reduce **wildfire** risk.

Base Level for existing Homes

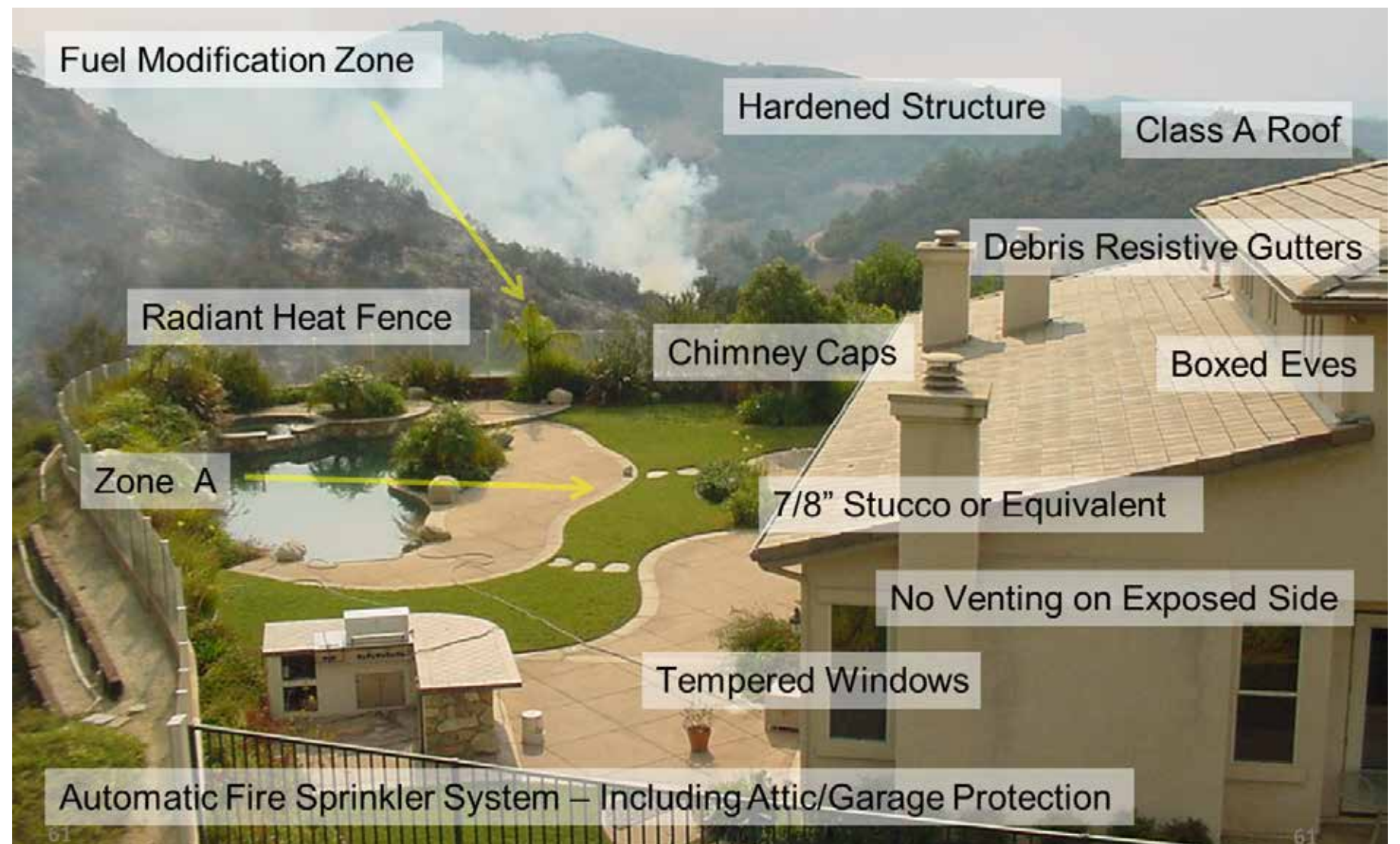
Plus Level for new construction

Wildfire Prepared Neighborhood

The Wildfire Prepared Neighborhood Standard moves toward a community-scale, performance-based design rather than prescriptive elements.



The first 5 feet around the structure is the most critical defensible space zone.



Required Wildfire Mitigation Actions	Wildfire Prepared Home Base	Wildfire Prepared Home Plus
Create a 5-foot noncombustible buffer , often known as Zone 0	X	X
Replace combustible fencing within 5 feet of the home	X	X
Ensure the roof is Class A fire-rated	X	X
Choose noncombustible gutters and downspouts	X	X
Routinely clear tree debris from the roof and gutters	X	X
Install ember-resistant vents or cover vents with 1/8-inch metal mesh	X	X
Ensure 6 inches of vertical noncombustible material at the base of exterior walls and decks	X	X
Routinely clear debris from decks, replace combustible furniture, maintain the underdeck area, and enclose low-elevation decks	X	X
Maintain defensible space to 30 feet	X	X
Keep accessory structures compliant within 30 feet	X	No accessory structures within 30 feet
Cover gutters		X
Enclose the underside of eaves with noncombustible material		X
Install a metal dryer vent with louvers or a flap		X
Install noncombustible exterior siding		X
Ensure shutters, if present, are noncombustible		X
Upgrade to dual-pane tempered windows		X
Upgrade to noncombustible exterior doors		X
Enclose the space underneath bay windows		X
Upgrade to a noncombustible deck		X
Remove back-to-back fencing within 30 feet		X

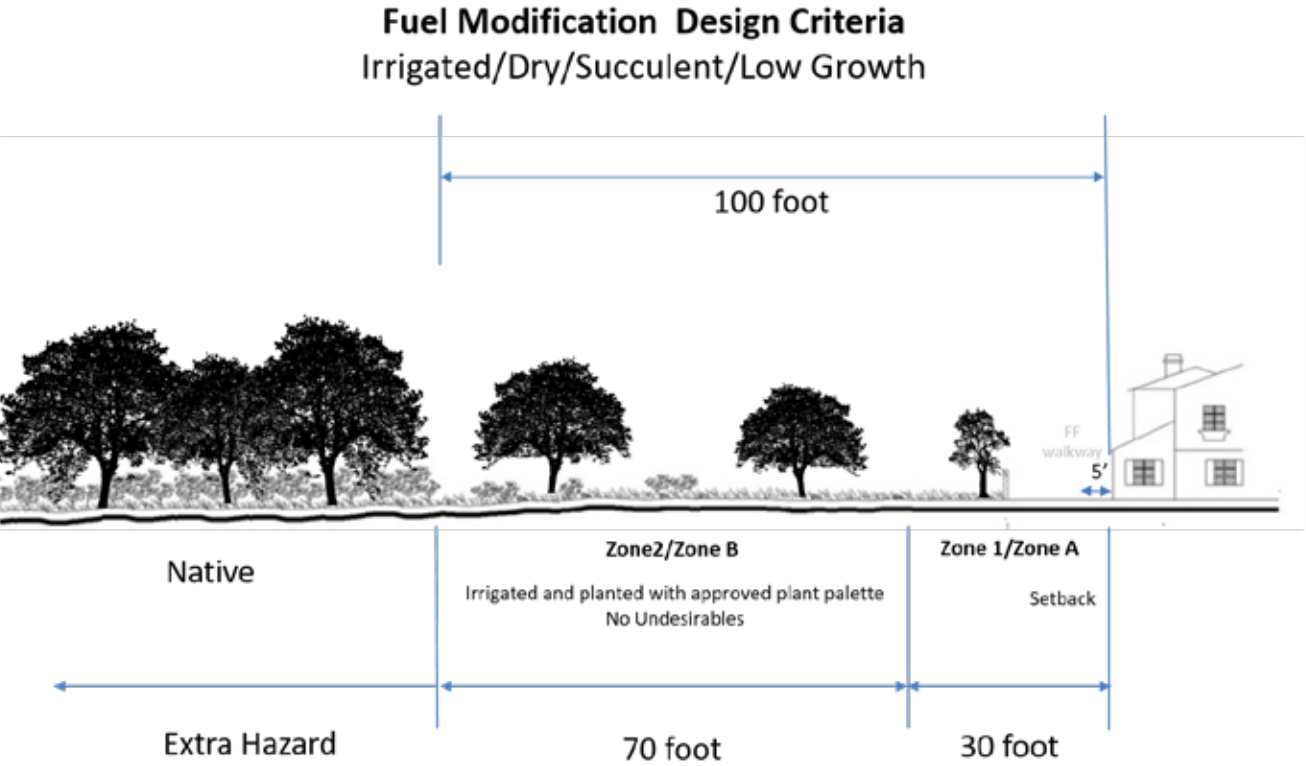
- Required by PRC 4291(a)(1)(A)
- Requirement of Zone 0 in CA
- Required by Chapter 705A.1
- **No Requirement**
- PRC 4291(a)(4)
- Required by Chapter 706A.2
- **No Requirement** Combination of Zone 0 and Chapter 709A
- Required by PRC 4291(a)(1)(A)
- Required by Chapter 710A within 50 feet to be constructed to the same requirements as the main structure.
- Required by Chapter 705A.4
- Required by Chapter 707A.5 and Chapter 707A.6
- **Required by 707A but not necessarily noncombustible.**
- **No Requirement**
- Required by Chapter 707A
- **Double pane/single tempered Required by Chapter 708A.2 not double tempered**
- Required by Chapter 708A.3
- Required by Chapter 707A.10
- Required by Chapter 709A.3
- Not allowed under Zone 0 requirement in CA (First five feet)

- Create a 5-foot noncombustible buffer: WFPH Base and Plus levels require a complete noncombustible 5 feet from the wall of the house and surrounding attachments like decks. The new CA draft Zone 0 regulation has the same requirement for the 5 feet starting at the edge of the wall and including around decks.
- WFPH Base and Plus requires noncombustible gutters and downspouts. The new draft Zone 0 regulation does not include any provisions for gutters. Also, Chapter 7A 705A.4 roof gutters is silent on the material the gutter is made of. **This is above CA's requirement.**
- Ensure 6-inches of vertical noncombustible material at the base of exterior walls and decks. This is not being addressed in the draft Zone 0 regulation. Also, 7A 709A.1.1 address this for decks only, not at the base of exterior walls; However, this may a requirement in code for termite protection.
- Install a metal dryer vent with louvers or a flap: The metal dryer louver or flap is not being addressed in the draft Zone 0 regulation. **This is above CA's requirement.**
- Remove back-to-back fencing within 30 feet: The draft Zone 0 regulation will only address back-to-back fencing with 5 feet of the home. From 5 - 30 feet will be above CA's requirement.

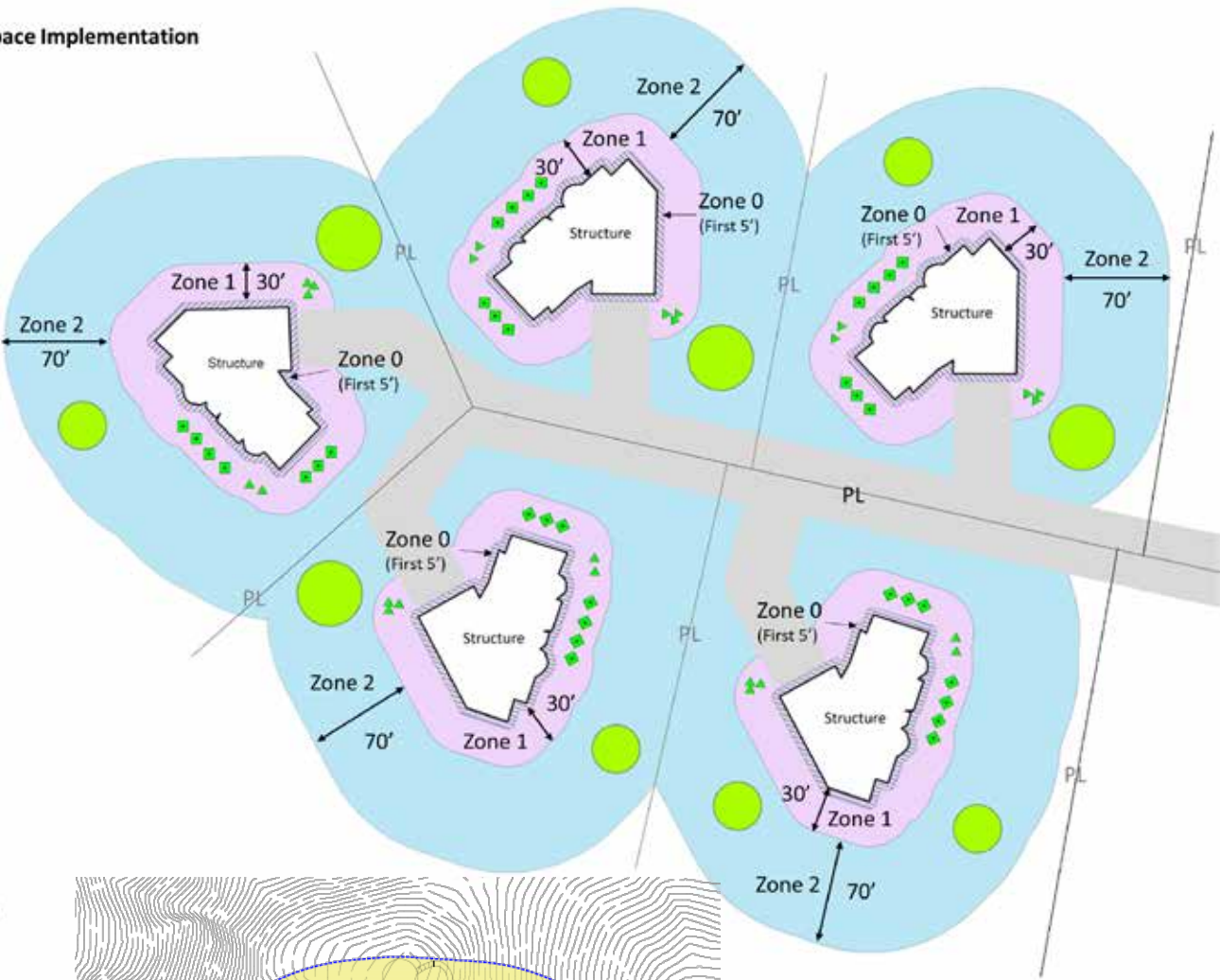
Fuel Modification/Defensible Space

Fuel Treatment Must Match Slope & Wind

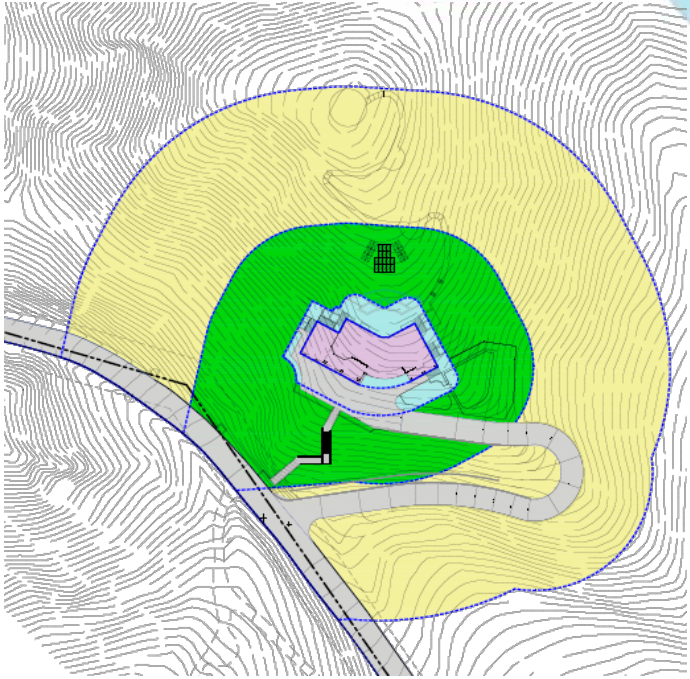
Fuel modification without maintenance fails quickly.



Defensible Space Implementation



Fuel Modification vs Defensible Space



Water Supply & Fire Flow Must Be Realistic

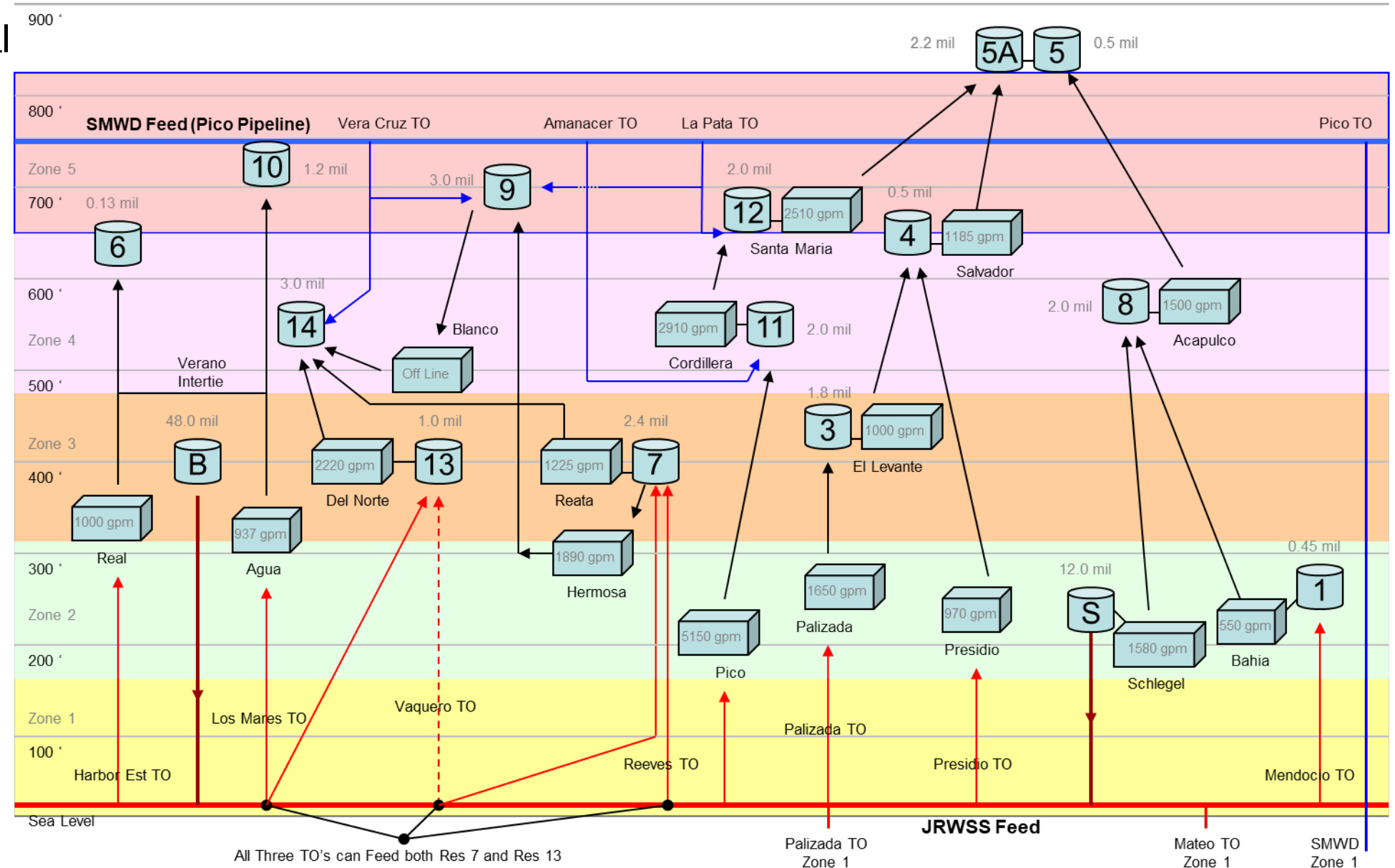
Fire Flow Must Be Real — Not Assumed

Water supply is critical during wind-driven structure defense.

- Verified hydraulic modeling
- Reliability during peak demand
- Fire flow calculations are based on actual Hydraulic modeling of hydrant flows
- Water system has redundancy and reliability
- Fire flow duration meets code
- Water availability is critical for structure defense during wind-driven events.



City Water System



🔥 Vital Wildfire Safety Information for Planning Commissioners

Long-Term Maintenance Is Critical

Initial approval means nothing if fuels are not maintained.

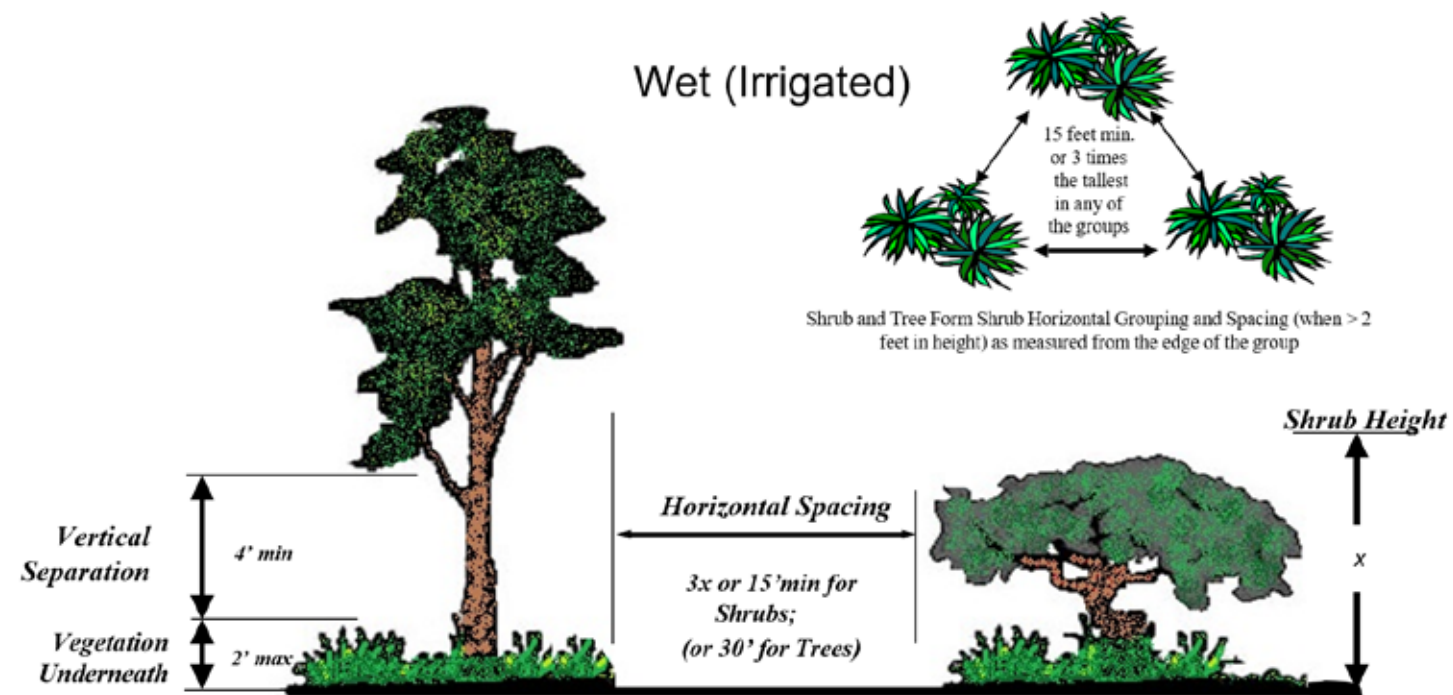
Commissioners should ensure:

- HOA or maintenance entity is legally responsible
- CC&Rs require defensible space compliance
- Perimeter fuel zones are maintained in perpetuity
- Inspection authority is preserved

Wildfire safety degrades quickly without ongoing vegetation management.



B Zone Horizontal and Vertical Spacing/Separation Requirements



Wildfire Risk Is Regional, Not Just On-Site

Even if a project site is well designed:

- Embers can travel from distant fires.
- Surrounding untreated land increases exposure.
- Cumulative development affects evacuation capacity.

Fire Direction

Commissioners should ask:

- Does this project increase cumulative evacuation load?
- Does it improve or worsen regional fuel continuity?

Cumulative Impact & Regional Context

- Does this project increase evacuation load?
- Does it rely on a single egress corridor?
- Does it add to fuel continuity?
- Is surrounding land treated or unmanaged?

Wildfire is regional — not parcel-based.

Worst-Case Scenario Planning Matters

Wind & Worst-Case Scenario Thinking

Always evaluate projects under worst-case fire weather — not average conditions.

Red Flag event scenario:

- Wind speeds calculated from actual data (RAWS, Utility Co. Site, CWOP)
- RH at lowest 1% in the data set
- Assumed Fully cured grass and Live Herbaceous at 30%
- Wind alignment with slope

In foothill terrain:

- South/west slopes cure earlier and burn hotter.
- Slopes >20% increase flame length.
- Wind-aligned ridges amplify fire behavior.
- Projects on slopes require enhanced mitigation.
- Ask Yourself:
- Can residents evacuate safely?
- Can fire apparatus enter simultaneously?
- Are edge lots protected from radiant heat or direct flame exposure?
- Are all lots protected from embers?
- Are evacuation routes shielded from flame impingement?

Wind Direction



Historic Fire Perimeter



Fire Origin



Progression Perimeters



Canyon II Fire ENE wind

Canyon ENE (60 mph)

Units: Minutes

No Data

30
60
90
120
150
180
210
240
300
360
420
480
540
600
660
720



Mitigation Hierarchy (What Actually Works)

From most to least impactful:

1. Ignition-resistant construction (CWUIC)
2. Zone 0 noncombustible zone
3. Adequate access width and clearance
4. Reliable water supply
5. Perimeter fuel modification
6. Ongoing maintenance enforcement
7. Public education

Landscaping aesthetics do not equal wildfire safety.



What Commissioners Should Ultimately Decide

They are not deciding: “Is there some fire risk?”

They are deciding: “Has the applicant reduced wildfire risk to a level consistent with public safety standards under worst-case fire weather conditions?”

5 Critical Questions Commissioners Should Ask

1. What is the ignition pathway most likely to destroy homes here?
2. How does wind direction affect this site specifically?
3. Is evacuation feasible under Red Flag conditions?
4. Who maintains fuel modification in perpetuity?
5. Does this project increase or reduce cumulative wildfire risk?

Three Biggest Planning Mistakes in the Wildland–Urban Interface

1. Approving Development With Limited Evacuation Capacity

- Single access roads
- Narrow streets with parking
- No secondary egress
- Evacuation routes exposed to flame or heavy fuels

2. Relying on Minimum Code Compliance Instead of Risk Reduction

- Code minimum road widths
- Basic defensible space assumptions
- Underestimating ember exposure
- Assuming “code compliant” equals safe

3. Approving Mitigation That Cannot Be Maintained

- Fuel modification without long-term funding
- HOA responsibilities without enforcement
- Vegetation returning within a few years
 - No inspection authority

**Wildfire disasters rarely occur because we lacked rules
They occur because risk was underestimated during planning**

Development in fire-prone areas is not inherently unsafe

But it must be:

- Technically defensible
- Resilient to actual hazards adjacent to the site
- Maintainable long-term (roles/responsibility/fiscally sound)
- Evaluated under worst-case conditions (based on data whenever possible)

Resilient communities are built at the entitlement stage — not during the emergency.