

Zone 0

Guidance,
interpretation, and
regulations for
enhanced defensible
space as directed by
AB 3074 (2020)

*Presentation given to the California Board of
Forestry's Resource Protection Committee of
the March 1, 2022*

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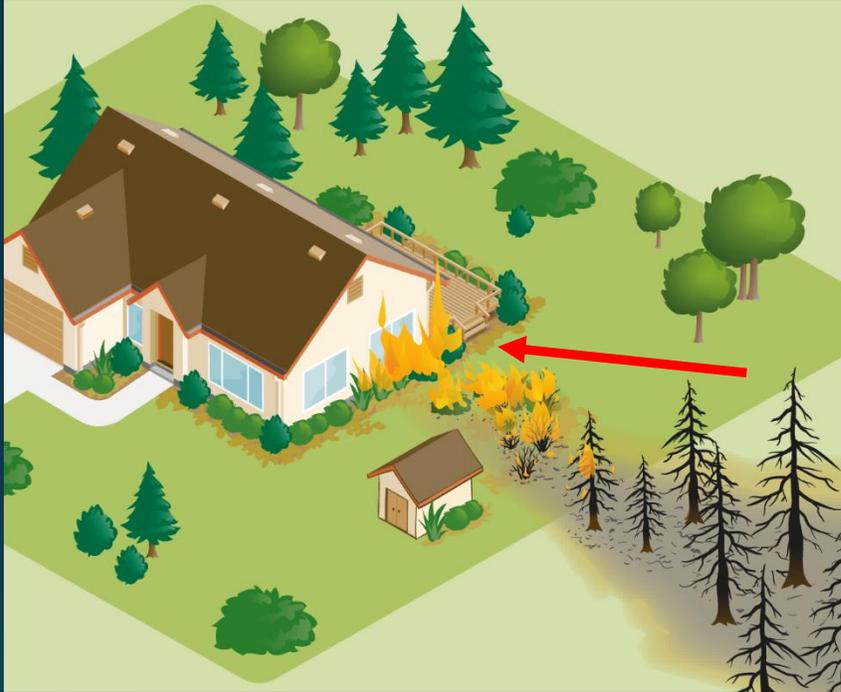
Crystal Sujeski



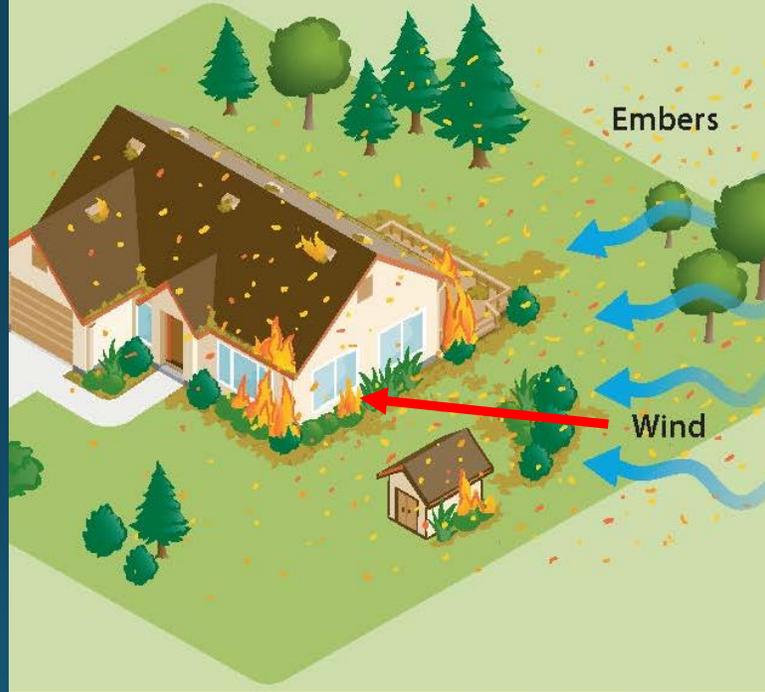
Photo: Institute for Business and Home Safety

Three types of fire exposures

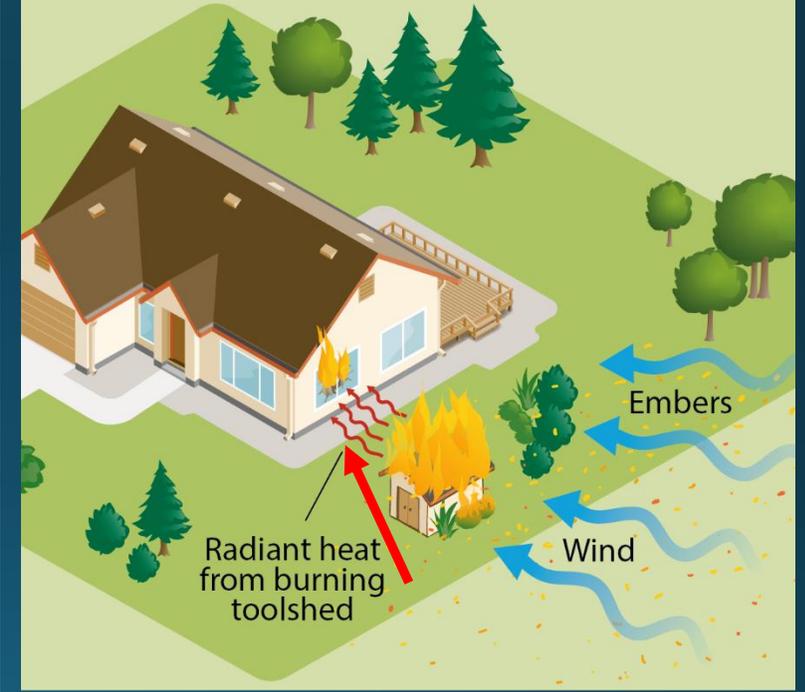
Direct flame contact



Embers



Radiant heat



- Defensible space strategies have focused on how to reduce direct flame contact.
- **Preparing for embers and radiant heat exposures takes a different approach.**

Purpose

Zone 0 reduces the likelihood of **structure ignition** by reducing the potential for **direct ignition of the structure from flame contact**, by embers that accumulate at the base of a wall, and/or indirect ignitions when embers ignite vegetation, vegetative debris or other combustible materials located close to the structure that result in either a radiant heat and/or a direct flame contact exposure to the structure.

Zone 0 is the **horizontal area within the first five feet around the structure and any outbuildings and attached decks, and stairs**. The zone also includes the area under attached decks and stair landings. To be most effective, the zone should incorporate a **6-inch vertical area** between the ground and the start of the building's exterior siding. *(Note: the appropriate vertical height would be dependent on whether combustibles are retained in Zone 0 and coupled with Chapter 7A requirements. The Office of the State Fire Marshal is the regulatory authority for this vertical zone since this zone would be part of the built environment.)*

Zone 0 is a critical component of structure defense and, when coupled with Zones 1 and Zone 2, is essential to defensible space.



Zone 0 is the 0-5' perimeter of the building and attached decks

Items commonly located in Zone O

- Rock, pavers, statuary, fountains, cement

- Mature tree
- Irrigated and mowed lawn
- Synthetic lawn
- Irrigated, non-woody plants
- Decorative structures
- Gate or fence that attaches to the building
- Parallel fence

- Covered storage facilities
- Bender board
- Landscape materials
- Potted plants
- Garbage, recycling receptacles
- Vehicles
- HVAC, heat pumps
- Outdoor kitchens
- Attached patio covers
- Portable BBQs
- Pet and animal structures

Workgroup viewpoint on allowances

- Rock, pavers, statuary, fountains, cement (7/7)
- Irrigated and mowed lawn (5/7)
- Irrigated, non-woody plants(5/7)
- Potted plants- noncombustible pot (5/7)
- Mature tree (4/7)
- Parallel fence (3/7)
- Bender board (3/7)
- Covered storage facilities (0/7)
- Potted plants- combustible pot (0/7)
- Gate or fence that attaches to the building (0/7)
- Landscape materials (1/7)
- Synthetic lawn (1/7)
- Decorative structures (1/7)
- Educational strategy for:
 - Garbage, recycling receptacles
 - Vehicles
 - HVAC, heat pumps
 - Outdoor kitchens
 - Attached patio covers
 - Portable BBQs
 - Pet and animal structures

Legend: Workgroup votes tallied (7 members voted)

Green- allowable

Orange- needs discussion

Red- not recommended

Yellow- use an educational approach

Strictest interpretation

No combustibles (vegetation, mulch, wooden structures) and no trees

Allowances (7 of 7)

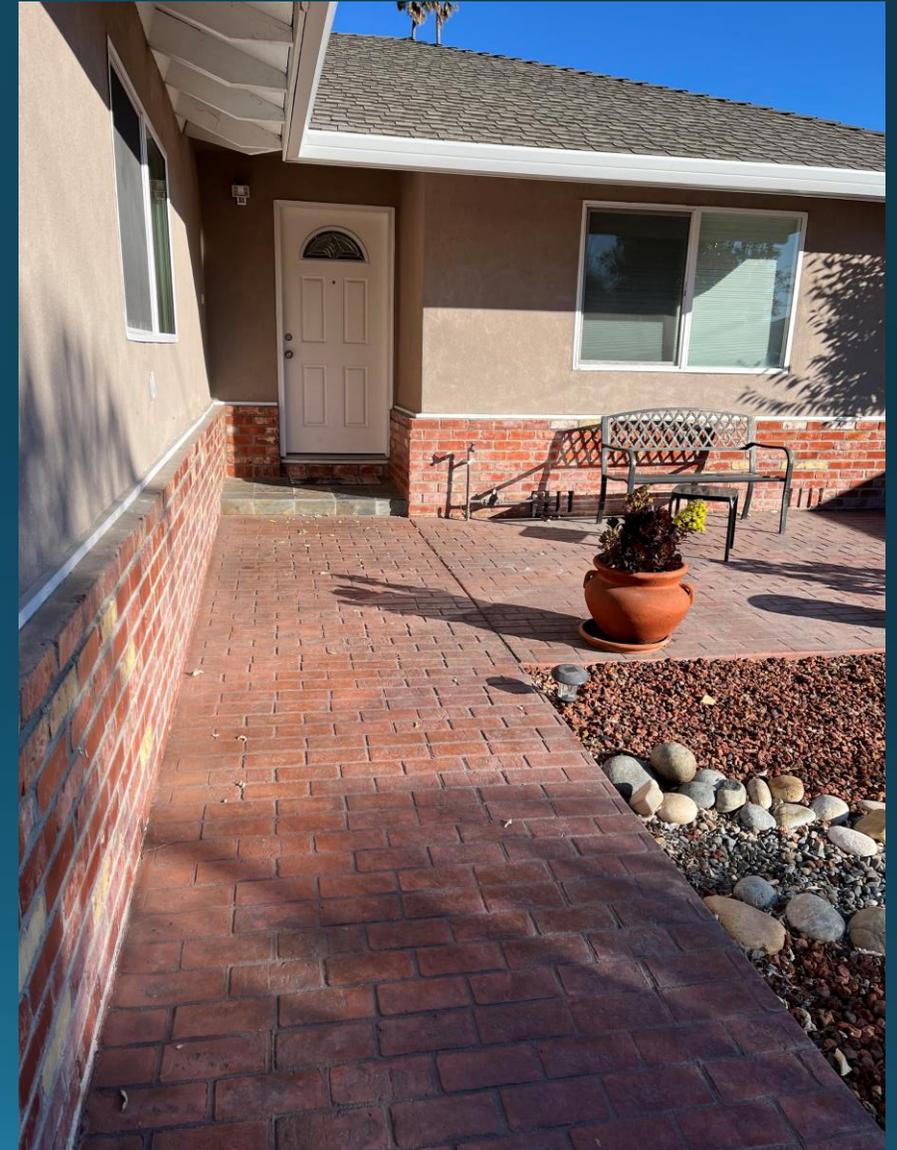
- Rock or other noncombustible mulch product (i.e., gravel, lava, decomposed granite)
- Statuary, fountain
- Attached decks and stairs
- Cement or stone pavers

Benefits

- Reduces the potential damage from ember deposition (and ignition) creating the potential for direct flame contact, and radiant heat exposure to the structure within the first 5 feet.

Considerations

- **Reduces need for interpretation** from the D-space inspector or Authority Having Jurisdiction (AHJ)
- Easiest to maintain
- Retrofitting (existing buildings) will be more costly than implementing for new construction.
- Easier to implement with new construction
- Implementation more difficult for buildings built on a slope.



Mature tree?

Bole within or touching the Zone o
Branches above the roof, not under the eaves, and no ladder fuels

(4 of 7 supported this allowance)

Considerations

- May help in gaining public support
- Trees provide **shade** (Green Energy Code consideration)
- Trees provide a regular source of **needles, leaves, branches**, and other items that will accumulate on or near the building.
- **Tree type** likely matters, with a greater tolerance for hardwoods over conifers. The bole of palm trees are very fibrous.
- Will inspectors be able to identify tree types or tree characteristics?

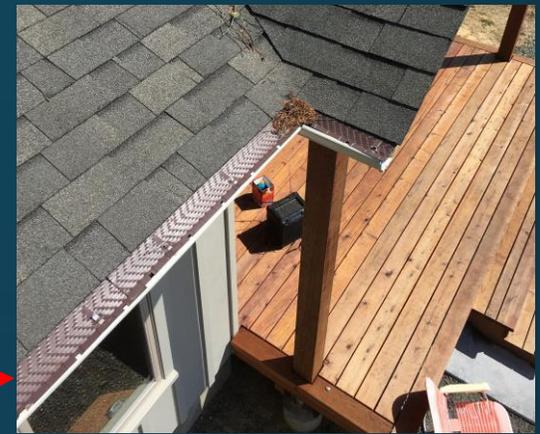


Trees outside of Zone 0



Mitigation option?

- **Require noncombustible gutter covers?**
- Chapter 7A will not apply to existing construction.
- Could a D-Space inspector evaluate construction details.
- LRA/SRA inspectors may have different training/skills.





Irrigated/mowed grass?

Max height 2-3 inches

(5 of 7 supported this allowance)

Considerations

- May help in gaining public support.
- Thatch can burn under certain conditions.
- Homeowner practices vary, and this requires sufficient water to maintain grass during dry conditions (including drought).
- Grass is a one-hour fuel
- Without water, plant conditions change quickly.
- The vertical noncombustible zone could be helpful for the allowance of a mowed and dry lawn.

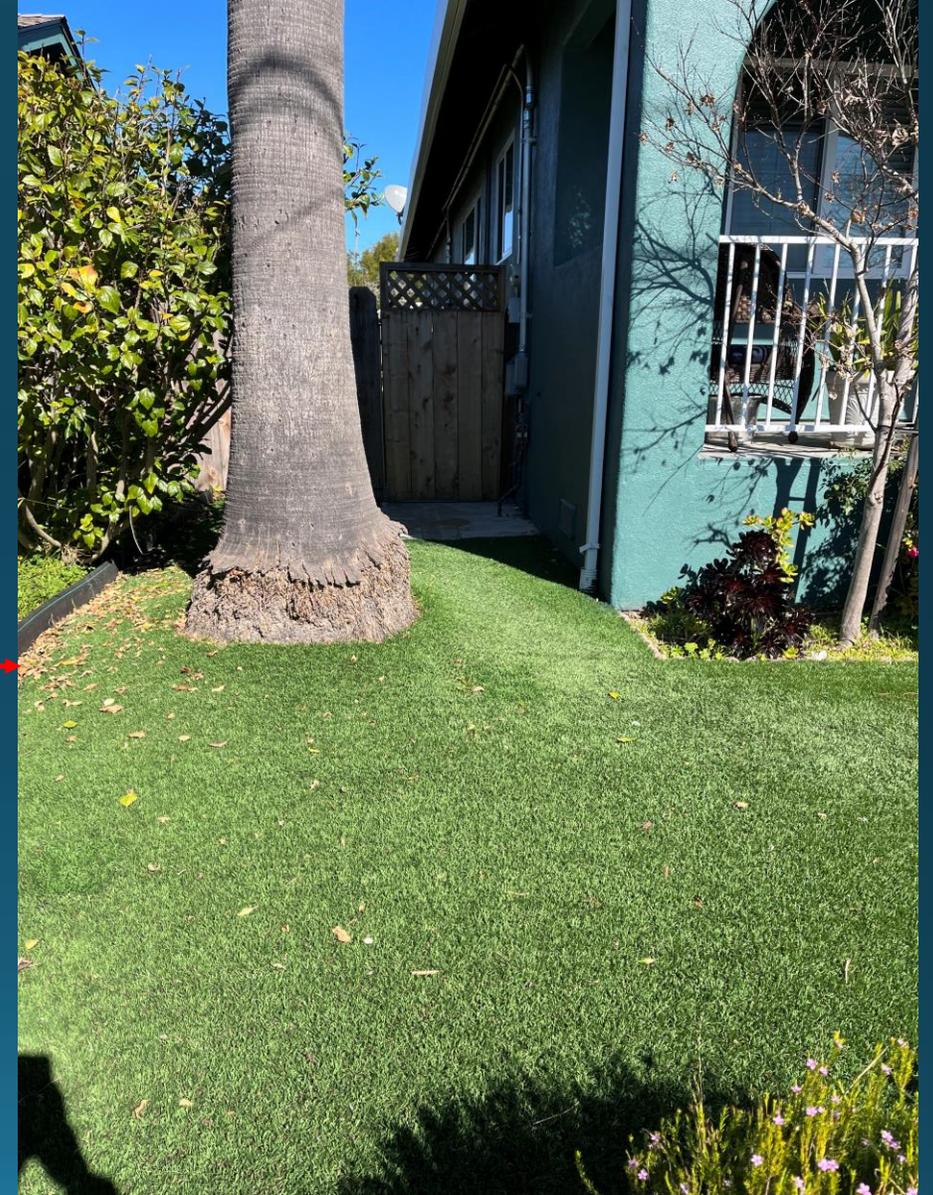


Synthetic lawn?

(1 of 7 supported this allowance)

Considerations

- Petroleum-based product.
- IBHS experiments suggest smoldering ignition. A NIST study suggested significant BTU production and flame heights.
- Combustible materials may accumulate on the surface. Ignition would result in a flaming exposure.
- Hazard does not change seasonally
- SYNlawn has met ASTM E 108 Class A in a roofing application. How would an inspector know the product rating?
- The vertical noncombustible zone could be helpful for an allowance



Irrigated, non-woody, herbaceous plantings, separated?

All ground cover (< 3" in height) and plants (< 16" in height) shall be minimally set back from structures, decks, and other plants 1.5 times the height of the plant or 12-inches, whichever is greater. Ground covers and plants shall have high water content. No combustible mulch.

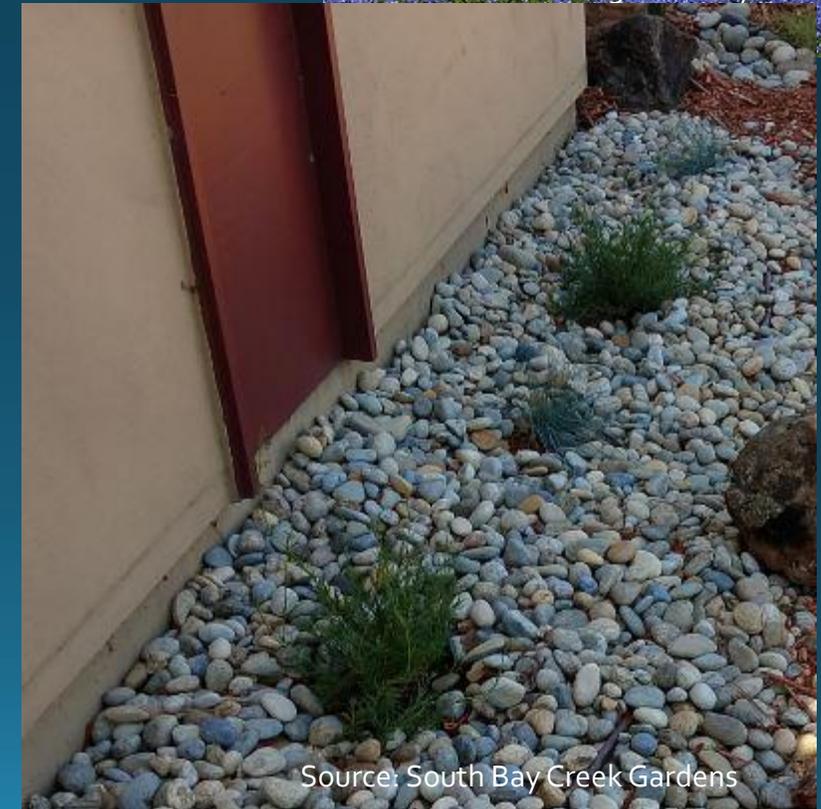
(5 of 7 supported this allowance)

Considerations

- Will help with public support
- The more vegetation allowed in Zone 0, the more likely the fire protection benefits will be compromised.
- Plants shed leaves and will require ongoing maintenance.
- Noncombustible mulch could be between plantings.
- This green vegetation can catch leaves, needles, and other debris, allowing for unanticipated accumulations of combustibles.
- Note that the vertical zone may need to increase in height if these combustibles are allowable.
- Succulents could be difficult to evaluate as many thatch and can be woody (e.g., ice plant is woody)



Source: High Country Gardens



Source: South Bay Creek Gardens

Combustible decorative structure?

Trellis, pergola, shade covering, planters, privacy wall, etc.

If these structures are a part of the deck, they would not be evaluated; however, the vegetation would be evaluated.

(1 of 7 supported this allowance)

Considerations

- Will help with public support
- Depending on the dimensions of the combustible materials and arrangement, these structures may compromise the fire protection benefits.
- These structures weather, vulnerability increases over time.
- Structures on decks are often unpermitted and added later.



Attached fence or gate?

Combustible attachment

(0 of 7 supported this allowance)

Considerations

- A combustible fence can transmit fire to the home via an attached gate.
- The gate can be replaced using noncombustible materials.
- Perpendicular attachment is the concern.



Parallel fence?

(3 of 7 supported this allowance)

Considerations

- Helps with public support
- More difficult to implement for existing construction
- Combustible fences directly ignite from embers on a privacy fence, less lightly on a good-neighbor fence.
- Embers ignite adjacent vegetation that can ignite the fence.
- Use of a steel fence along the property line, parallel to neighboring homes, would provide protection should one home ignite (Australia Bushfire CRC study)
- Could home hardening actions be used to mitigate the presence of the fence?



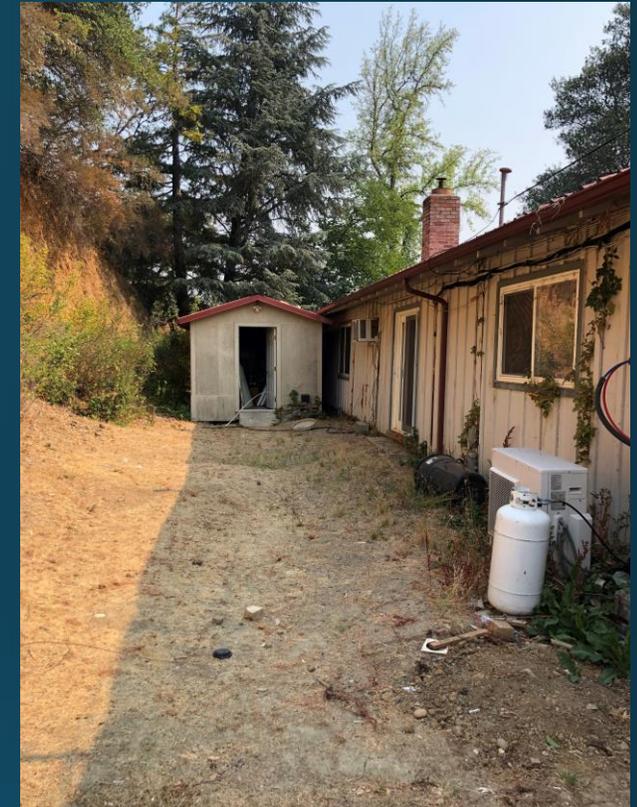
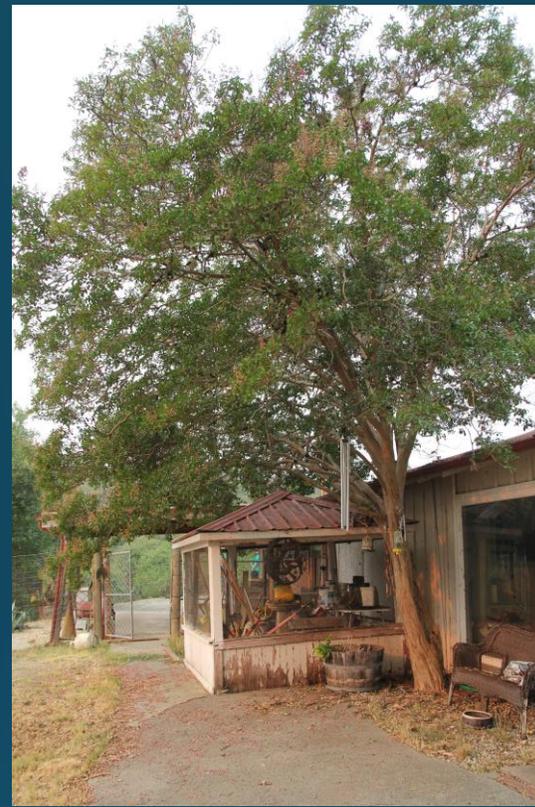
Storage structures?

Not built to 7A standards

(0 of 7 supported this allowance)

Considerations

- Helps with public support
- Difficult to implement
- If made of ignition-resistant material or ignition-resistant construction, could these be allowable?



Source: Reddit



Source: Dunnlumber

Bender board?

Combustible

(3 of 7 supported this allowance)

Considerations

- Wood or petroleum-based boards are the concern; some can be made of metal or cement.
- Used to separate garden beds and their placement can lead to the house or follow fence lines



Source: Southwestern Garden Supplies



Fire burned under the stucco wall

Landscape materials?

Lumber or round logs, railroad ties, creosote-treated, pressure-treated

(1 of 7 supported this allowance)

Considerations

- Always combustible
- Used as retaining walls
- Fences are often adjacent
- Logs can be used to make garden bed separation or create height
- Can be buried



Marshall Fire 2021

Potted plants, combustible pot?

Wine barrel, wood pot, plastic

(0 of 7 supported this allowance)

Considerations

- What plant?
- Maintained?
- Irrigated?
- Near to window?



Source: Stuff.co.nz



Source: Ana White Tall Wood Planters



Source: Interior Design Ideas



Source: Russet Street Reno

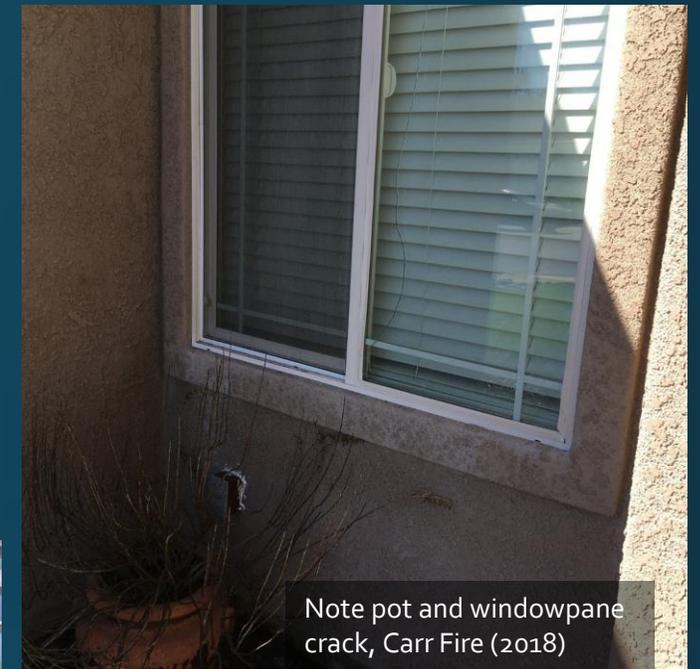
Potted plants, noncombustible pot?

Ceramic, metal, cement

(5 of 7 supported this allowance)

Considerations

- What plant?
- Maintained?
- Irrigated?
- Near to window?
- Near to combustible siding?



Use an educational strategy for:

- ✓ Garbage, recycling receptacles
- ✓ Vehicles
- ✓ HVAC, heat pumps
- ✓ Outdoor kitchens
- ✓ Attached patio covers
- ✓ Portable BBQs
- ✓ Pet and animal structures



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Workgroup has agreement on these:



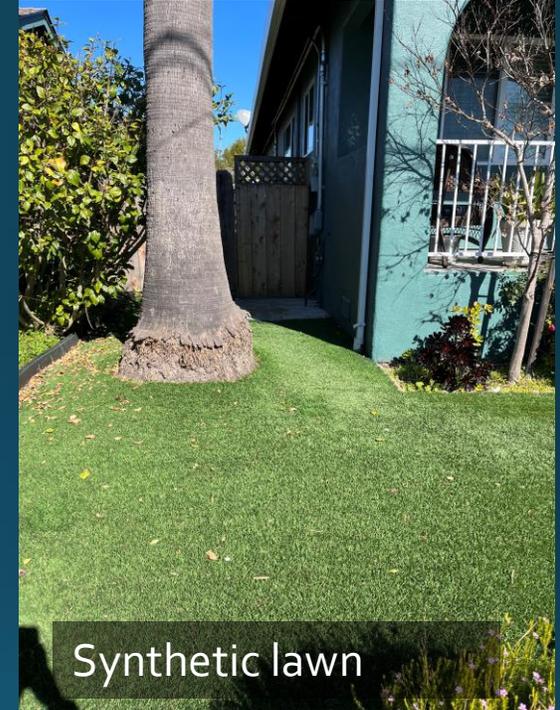
Attached fences



Woody plants



Combustible mulch



Synthetic lawn

- Covered storage facilities (0/7)
- Potted plants- combustible pot (0/7)
- Landscape materials (1/7)
- Decorative structures (1/7)

Next steps

- Workgroup is available to provide more information to RPC
- RPC provides guidance/direction to workgroup on what allowable elements could be included in Zone Zero
- Workgroup drafts Zone 1 and 2 changes accordingly to present to RPC
- Workgroup drafts regulatory language
- RPC forwards regulatory language to full BOF
- BOF shares draft out for comment
- *Note: for 1/1/2023 adoption, BOF approval is needed by 9/2022. As specified by AB 3074, the regulation will be phased in, starting with an educational approach.*

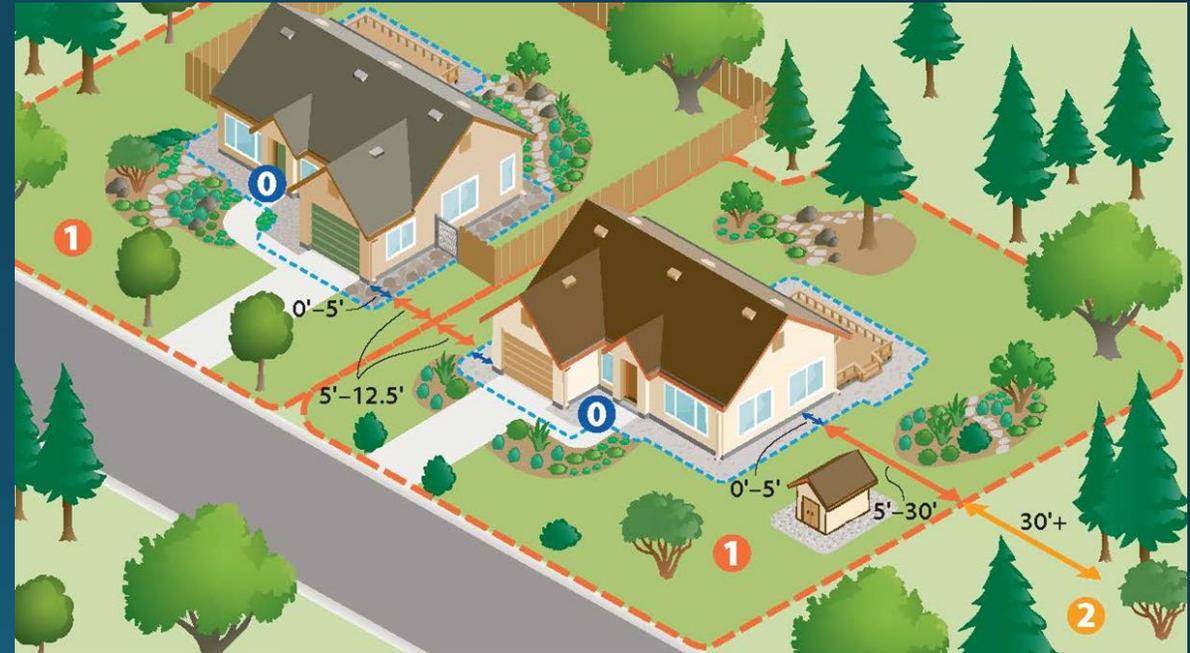


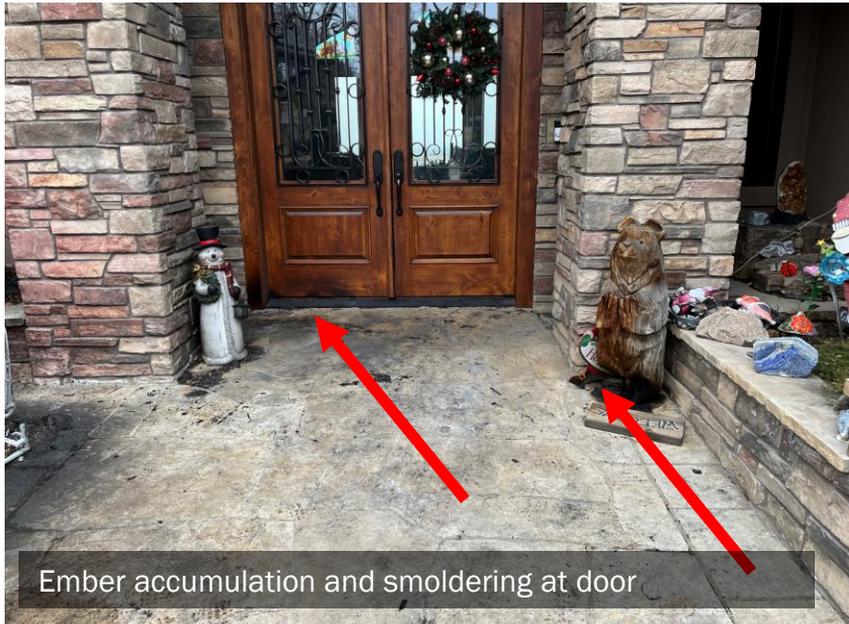


Photo: Insurance Institute for Business and Home Safety

**Structure survived without fire suppression.
Observed vulnerabilities in 0-5 zone of the front entry**



Ember ignition of vegetation in re-entrant corner area



Ember accumulation and smoldering at door



3-foot noncombustible zone

Zone 1 and 2 draft purpose

Zone 1 (5-30 feet) Lean, Clean, and Green Zone

Purpose: Zone 1 reduces the likelihood of fire burning directly to the structure. This is accomplished by modifying fuels and creating a discontinuity between planting groups that limits the pathways for fire to burn to the structure and reduces the potential for near-to-building ember generation and radiant heat exposures. An additional purpose of this zone is to provide a defensible zone for fire personnel to stage and take direct action.

Zone 2 (30-100 feet) Reduced Fuel Zone

Purpose: Zone 2 actions are designed to reduce the potential behavior of an oncoming fire in such a way as to drop an approaching fire from the crown to the ground. Fuel modification includes removing dead vegetation and reducing living vegetation to eliminate fuel ladders and create vegetation separation between individual or islands of trees or shrubs. These vegetation modification requirements are more significant for those properties with steeper terrain, larger and denser fuels, highly volatile fuels, and areas subject to frequent fires. Additional benefits of the Zone 2 include facilitating direct defense actions, improving the function of Zones 0 and 1 by reducing the flame heights, and the potential for ember generation and radiant heat exposure to structures.

Transition Examples



Images courtesy of the Insurance Institute for Business and Home Safety.



Images courtesy of the Insurance Institute for Business and Home Safety.