Vulnerabilities of and Mitigation Strategies for Buildings Subjected to Wildfire Exposures

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by

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The focus of this presentation will be the building.

Fire in chaparral
Wildfire-to-home fire spread
Home-to-home fire spread (home-to-home spacing)
Document vulnerabilities and provide solutions for buildings exposed to wildfires –

✓ New construction
✓ Retrofit to existing
Wind-blown embers from wildfire or spot fires in or around the community or buildings ignited by fire.

Radiant heat and/or direct flame contact from wildfire (or spot fires) or near-building vegetation or buildings.
Vegetation burns relatively quickly...
… a building takes longer to burn
Building separation ~ 40’
Firewood stored next to the home (this pile moved by firefighters, the same ones that saved this home).
Combustible siding

Fire-resistance

Flame spread
Separation at horizontal to vertical surfaces & ember accumulation
Separation at horizontal to vertical surfaces
Noncombustible and combustible mulch

Rock

Rubber

Rubber
Protecting your home from wildfire – you must consider building materials / components and near-home vegetation

Home

Vegetation

Near-building “noncombustible” zone
An example house ...

- Roof & Edge
- Walls
  - Eave & Vents
  - Windows
  - Siding
  - Doors
- Decks & Other Attachments
Red circle – field of roof

Yellow square – edge of roof
Fire rating for roof coverings – Class A, B, & C

Burning [12”x 12”] Class A brand placed on roof covering.

Fire resistance test
Edge of Roof Vulnerability
Vents (and other openings in exterior enclosure)

- Through-roof
- Gable end
- Under Eave
- Foundation & other (dryer vent, doggie door, etc.)
Vents in open eave – embers easily entered

Vents in soffited eave – minimal ember entry

Gable End vents – embers easily entered
Embers at gap between roof sheathing and top of fascia. Photo taken inside the attic.
Combustible Decking

WPC, not 7A compliant

‘7A’ compliant

Class B brands

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Where building safety research leads to real-world solutions.
Slope and vegetation

Under-deck storage of combustible materials
Deck enclosure – potential moisture-related durability issues

Water staining on bottom deck boards

Long-term performance of joist and wood and joist hanger?
Thanks for your attention!

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http://www.disastersafety.org
http://www.eXtension.org/surving_wildfire