Fire Safe Building Materials & Design

The State of California is Burning: Is This Our Future?

California SAF Winter Meeting

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Agenda

• Vulnerabilities of buildings to wildfire (potential exposures)
• Defensible space
• Building Spacing
  – “far”
  – “close”
• Wrap up / Summarize
Importance of Wind-Blown Embers
Importance of Wind-blown Embers

K-Mart - Inside

K-Mart - outside
“Direct” and “Indirect” Ignition

Insurance Institute for Business & Home Safety
Radiant Heat Exposure
Home Survival: A Coupled Approach

- Vegetation and other combustibles on the property: Selection, Location and Maintenance
- Home: Construction materials and design features
Mitigation Strategies

http://calfire-forestry.maps.arcgis.com/apps/PublicInformation
Home-to-Home Spacing
Home-to-Home Spacing: Wide

- Creation and maintenance of defensible space
- Installation details & design features. Ember-resistant materials.

http://calfire-forestry.maps.arcgis.com/apps/PublicInformation
“... the resistance to (wild)fire is determined more by the details of construction than by the materials used in the walls.”

—G.J. Barrow, after the 1944 Beaumaris Fire in Australia
Wildland Fire-to-Home: Ember Ignition

Ember-resistant construction and details
Defensible Space: 0-5 ft
Fire Rating
Roof-to-Wall
Roof Edge
Vents – Ember Entry
Exterior Wall — Ground-to-Siding
Ignition of Decking via Ember Exposure

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Ignition of Decking via Ember Exposure
Before Ignition
After Ignition
Fencing

- Privacy
- Good Neighbor

No Mulch

Mulch
Home-to-Home Spacing - Close

http://calfire-forestry.maps.arcgis.com/apps/PublicInformation
Fire & Ignition Resistance

- Effective Defensible Space
- Noncombustible & Ignition Resistant Materials
- Multi-pane / Tempered Glass windows (minimum)
Ember Resistant vs Fire Resistant
The Building as a System

- Noncombustible cladding
- Foil-faced glass / windows
- Exterior sprinkler system
- Fire fighters on site
  - Timber / wood in under-eave area (detailing at eave-to-wall connection?)
  - Wood deck
  - Wood shingle roof covering
Summary

• Exposures
  o Direct and Indirect
• Coupled Approach
  o Defensible Space
  o Materials & Design
• Wildland fire-to-home versus home-to-home
Questions?

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Wildfire Exposures

Wind-blown Embers

Radiant Heat

Flame Contact
Wildfire Spread
Embers Through Deck Board Gaps
Fire Growth – Occurred in Under-deck Area