

# Wildfire and Resiliency Improvements for Existing Homes

# Speakers



**Carolyn Glanton**  
Programs Manager,  
Sonoma Clean  
Power



**Dr. Steve Quarles**  
UC Cooperative  
Extension Advisor  
Emeritus and Chief  
Scientist for Wildfire  
and Durability, IBHS,  
Retired



**Christine Condon**  
Energy and  
Sustainability Analyst,  
County of Sonoma,  
Energy and  
Sustainability Division



# Agenda

- 3:00pm – Welcome
- 3:05pm – Introduction
- 3:10pm – Home Survival in Wildfire Prone Areas
- 4:05pm – Financing for Wildfire Safety and Energy Efficiency
- 4:15pm – Question and Answers
- 4:30pm – Closing



# Webinar Logistics

- All attendees are in listen only mode
- We will be answering questions after the presentation
- Please send us questions using the chat box at any time
- Webinar is being recorded
  - Link will be sent to you after the webinar



# SCP's Mission

Sonoma Clean Power is turning the tide on the climate crisis, through bold ideas and practical programs.

- Provide higher percentages of renewable energy and reduce greenhouse gas emissions
- Help solve the climate crisis at a local level
- React and respond to local needs
- Deliver customer programs that make a difference

# Reducing Greenhouse Gas Emissions



# Climate Change Hazards

- Hotter, Drier Weather with Longer Summers
  - More extremely hot days
  - More frequent and intense droughts
  - More frequent and intense wildfires



# Responding to Vulnerabilities



# Advanced Energy Center



**Sonoma  
Clean Power**

Innovation. Grown Locally.

Hablamos Español

MENU



## The Latest Technologies for Energy Efficient Homes.

Scheduled to open in 2020, Sonoma Clean Power's Advanced Energy Center in downtown Santa Rosa will give our community members an opportunity to view new clean energy technologies, attend free energy classes, and buy discounted products for their homes and businesses. We're still working on solidifying vendors, technologies, contracts, and incentives but hope to have more information to share soon.

## Advanced Energy Center



# Home Survival in Wildfire Prone Areas

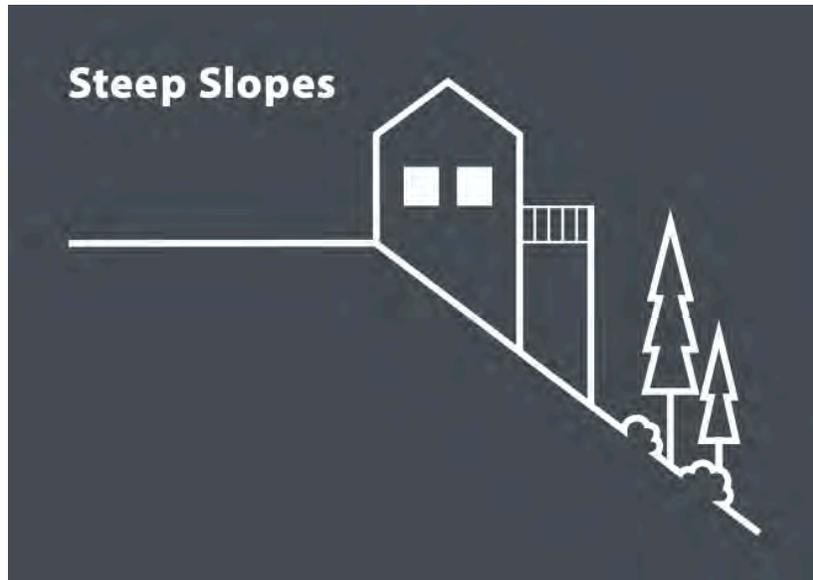
Sonoma Clean Power Webinar  
August 6, 2020

Steve Quarles, UC Cooperative Extension Advisor Emeritus and  
Chief Scientist for Wildfire and Durability, IBHS, Retired

# Home location scenarios



Large Lot – Neighbor Far Away



Home on a Slope



Neighbor Close

# Exposures

Wind-blown Embers



Flame Contact



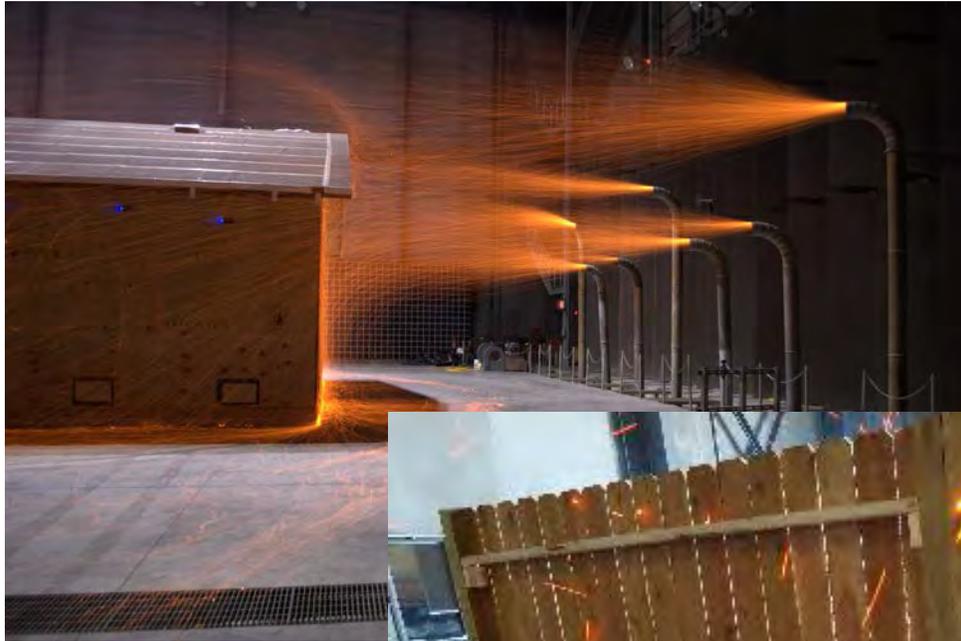
Radiant Heat



# Importance of wind-blown embers in home ignitions



# “Direct” and “Indirect” Ignition





# Home Survival: A Coupled Approach



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

# Noncombustible Zone: 0-5 ft



©Insurance Institute for Business & Home Safety



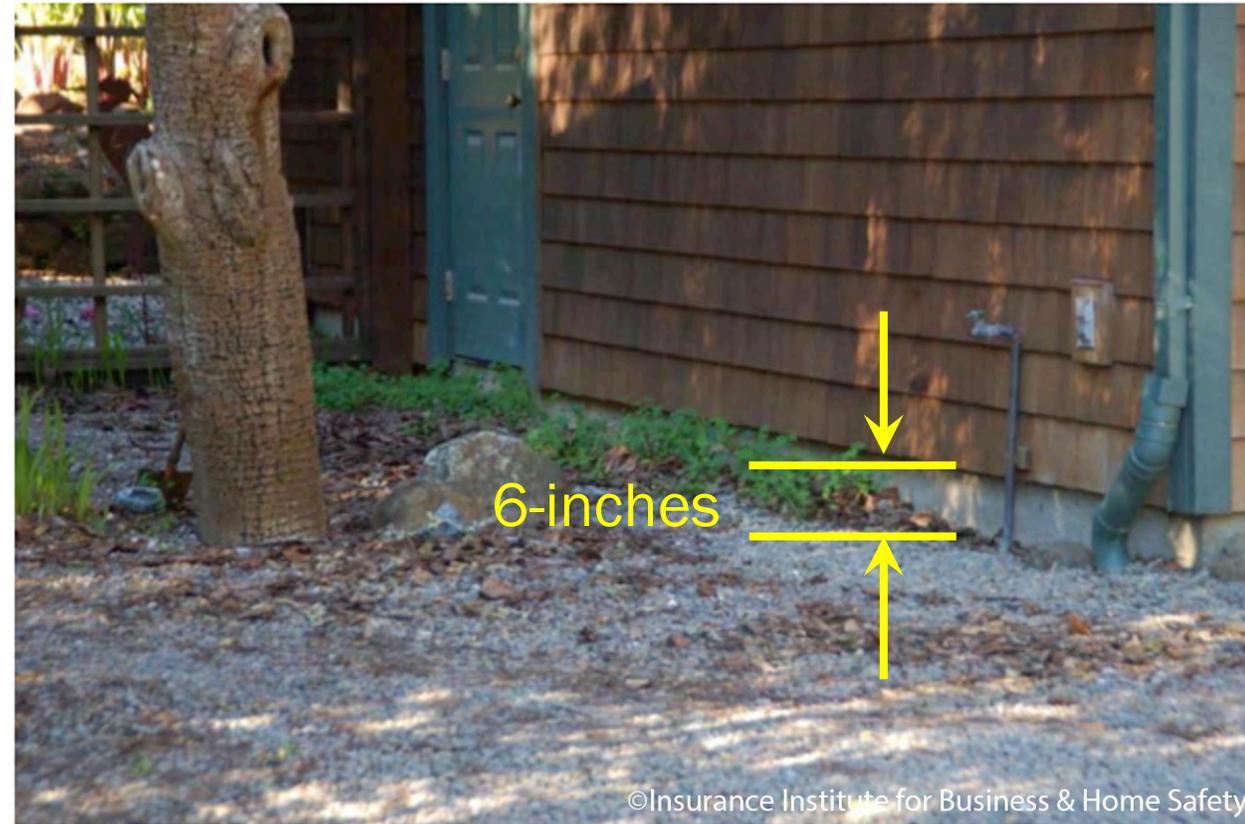
©Insurance Institute for Business & Home Safety



Stephen Quattlebaum

# Exterior Wall — Ground-to-Siding

(treat as the vertical part of the noncombustible zone)



*Improved moisture-related durability*

# Tubbs Fire – Coffey Park



<http://calfire-forestry.maps.arcgis.com/apps/PublicInformation>

# Wildfire Exposures: Radiant Heat



# Roof



# Roof Edge – Complex Roof



©Insurance Institute for Business & Home Safety



©Insurance Institute for Business & Home Safety

Simple roofs – air seal & insulation advantages

# Roof – Gutter & Drip Edge



©Insurance Institute for Business & Home Safety



Stephen Quarles

# PV Panels

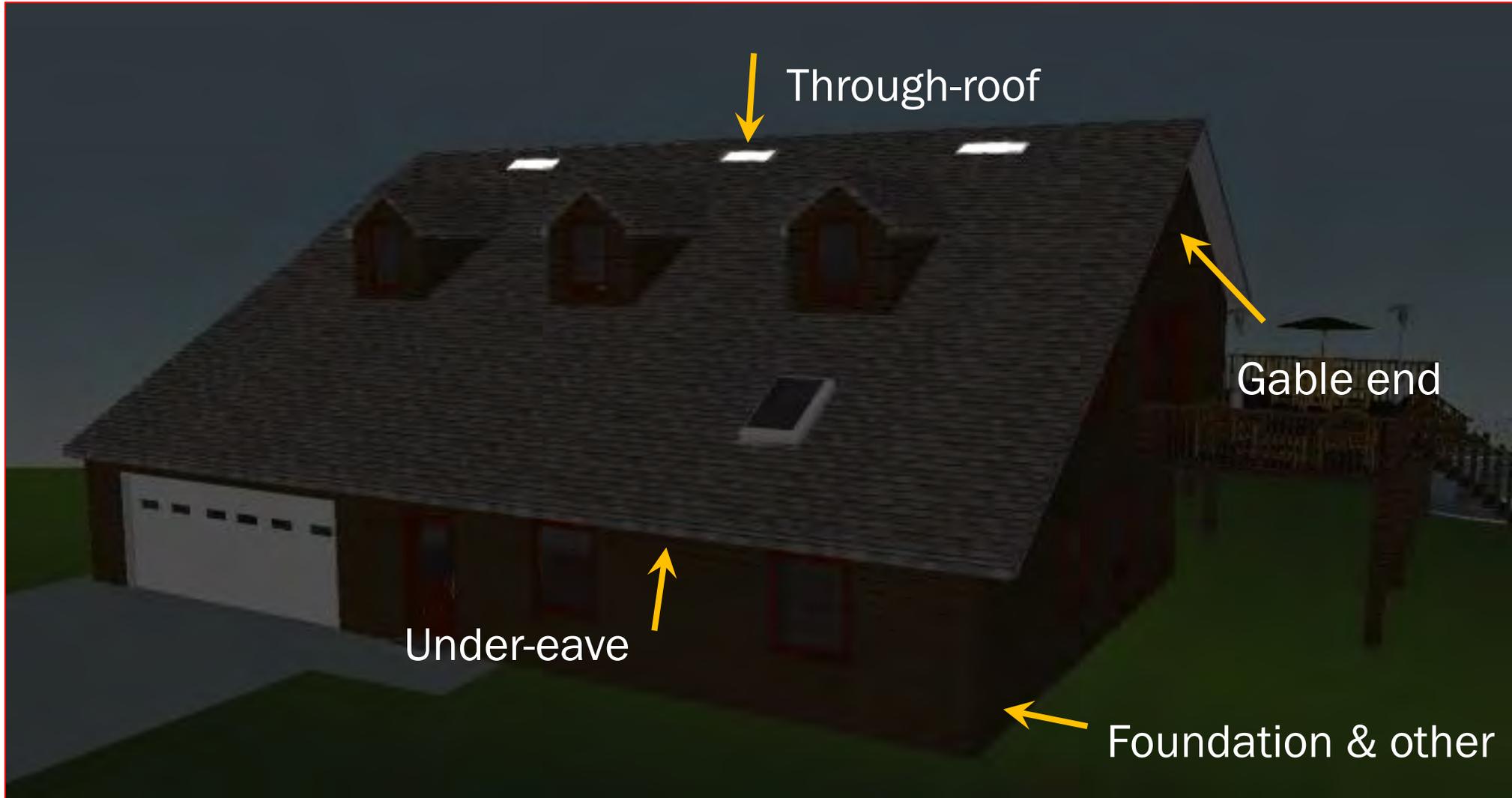


# Roof - Skylights



Eliminating skylights: improved thermal comfort, reduced utility bills

# Vents





# Vents - Under-eave



# Ridge Vents



# Flame & Ember Resistant Vents



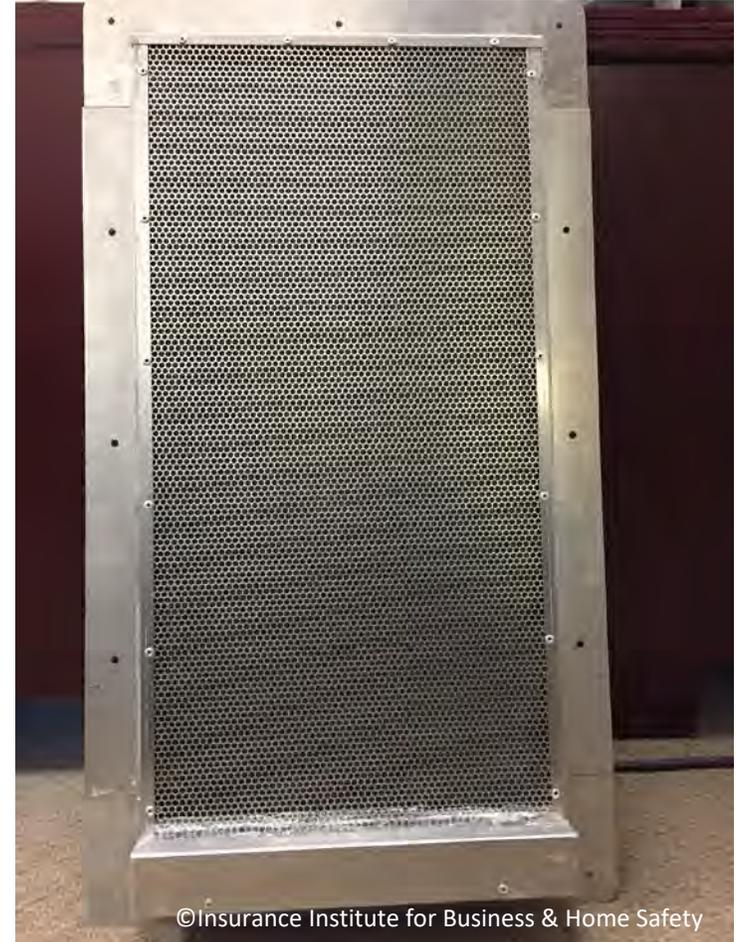
Stephen Quarles



Stephen Quarles



Stephen Quarles



©Insurance Institute for Business & Home Safety

# Unvented Design – New Construction versus Existing



*Energy Efficiency Opportunity*

# Exterior Walls



# Noncombustible Exterior Walls



# Vertical separation / EIFS-like design



Insurance Institute for Business & Home Safety



Insurance Institute for Business & Home Safety

*Energy Efficiency Opportunity*

# Flame Spread



Insurance Institute for Business & Home Safety

# FR Coatings as a Protective Measure?



©Insurance Institute for Business & Home Safety



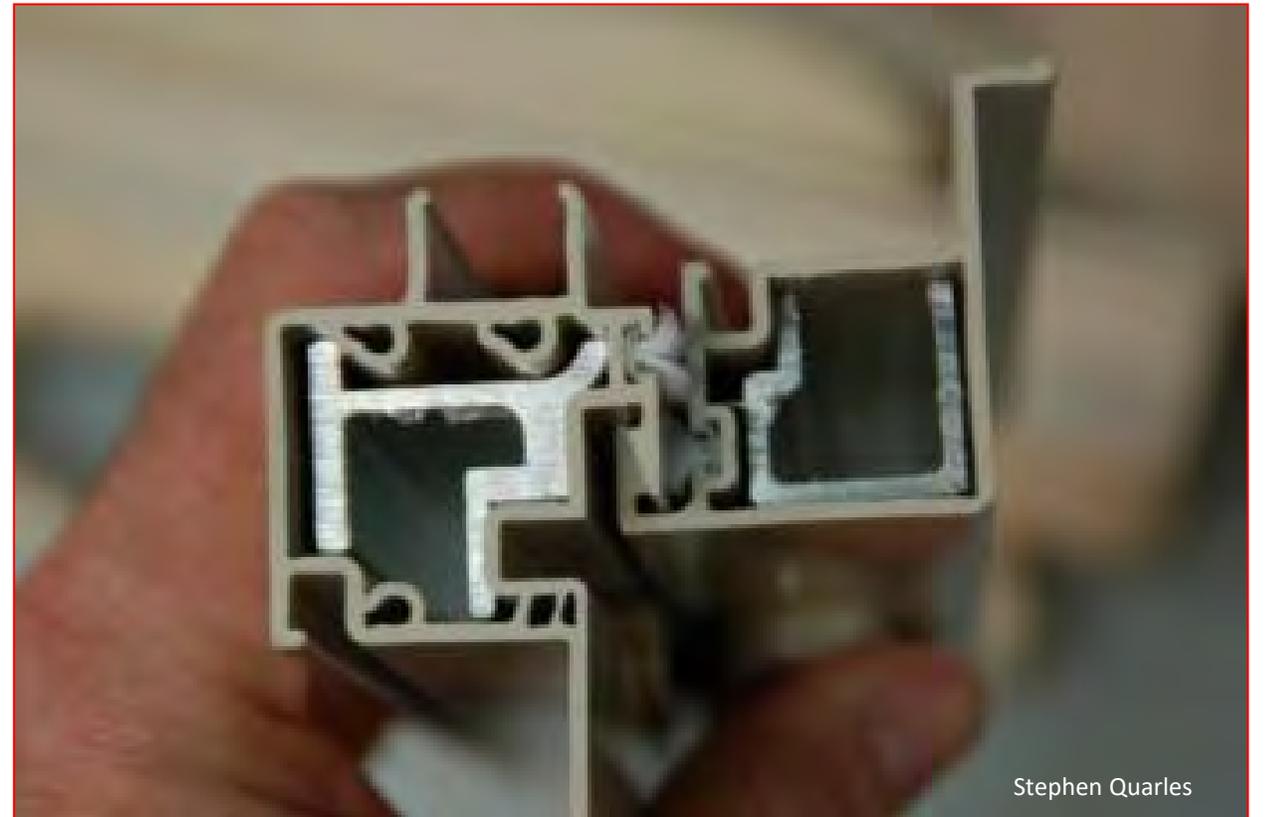
©Insurance Institute for Business & Home Safety

# Windows



*Energy Efficiency Opportunity*

# Vinyl Windows



# Destroyed versus Damaged



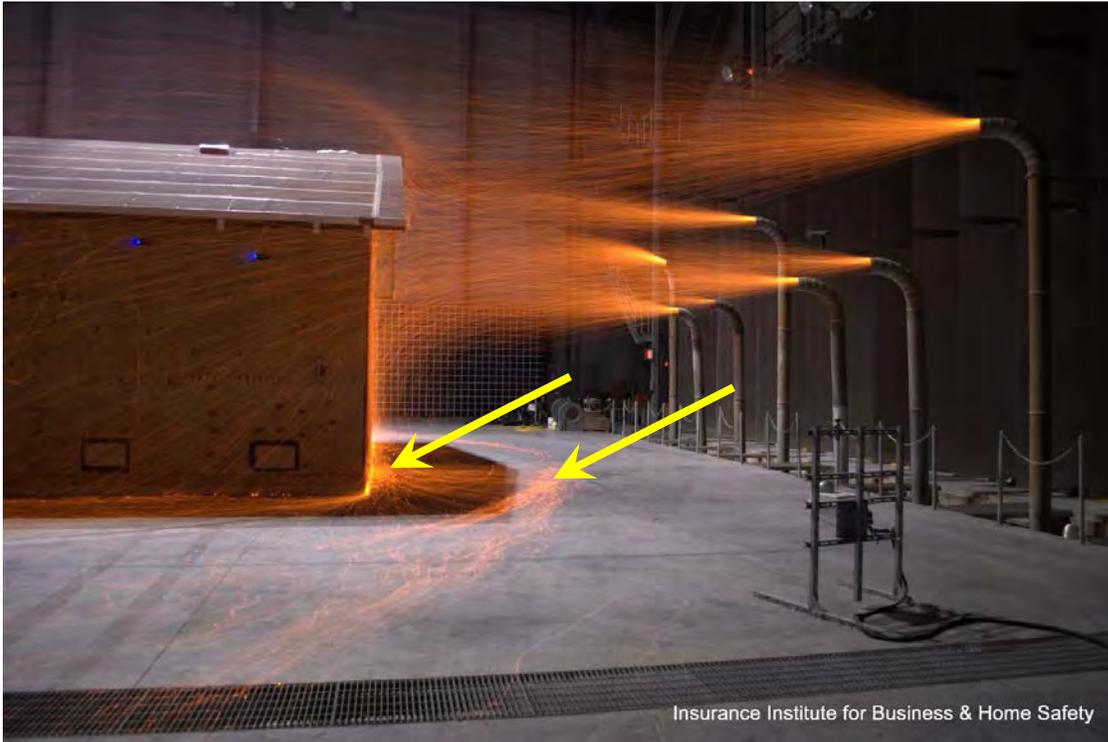
# Window Screens



# Attached Decks

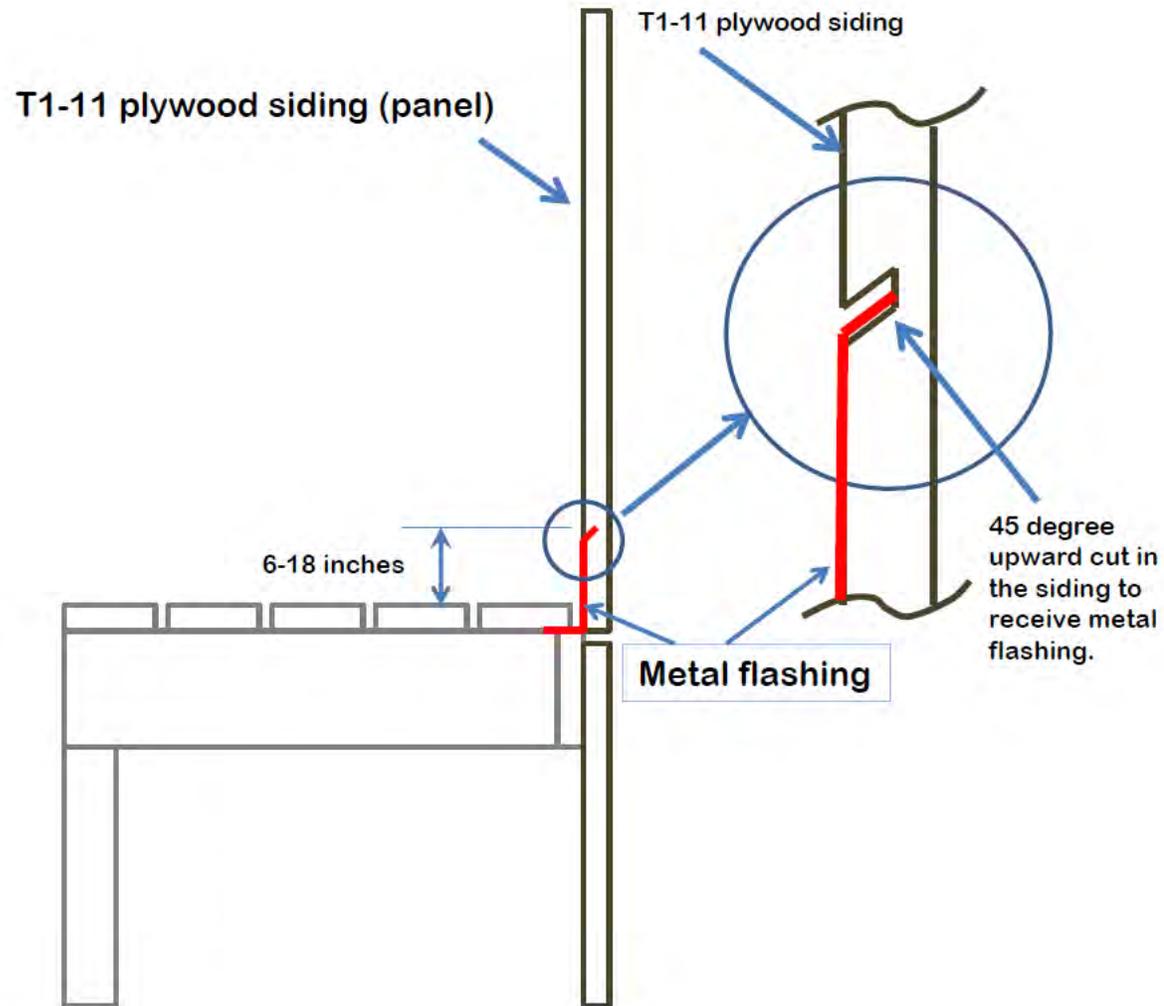


# Accumulation Locations



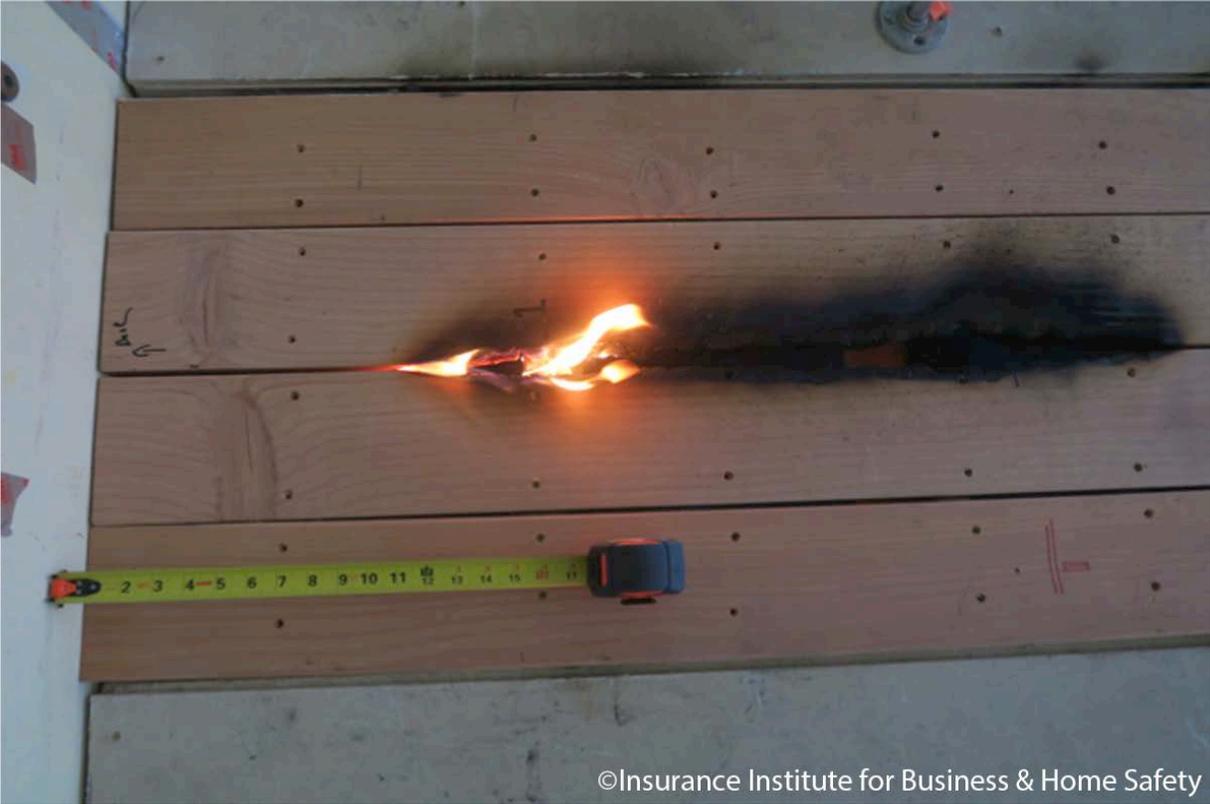
# Attachment Detail





An example of a flashing detail

# Fire Spread & Growth

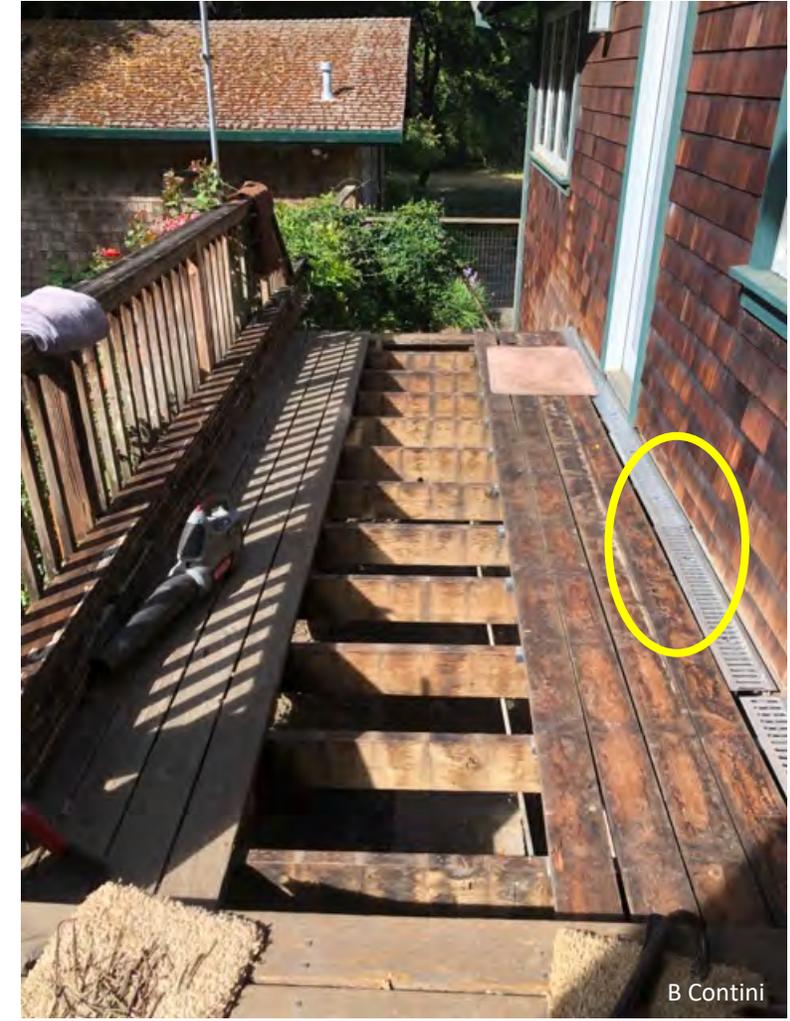
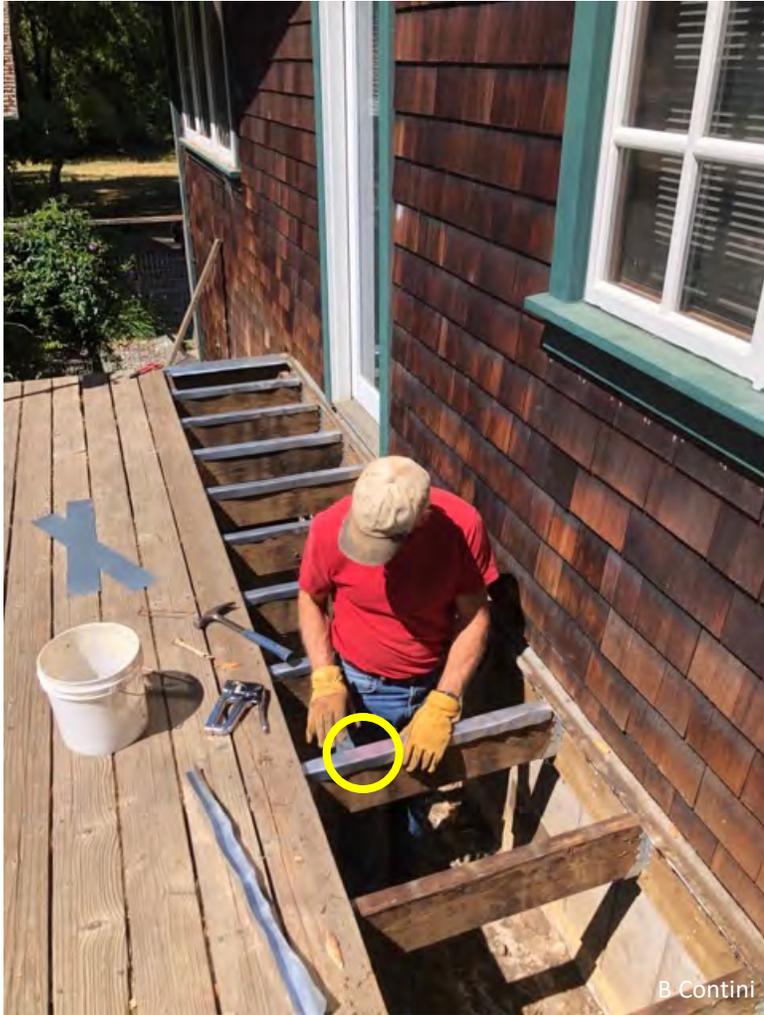


©Insurance Institute for Business & Home Safety

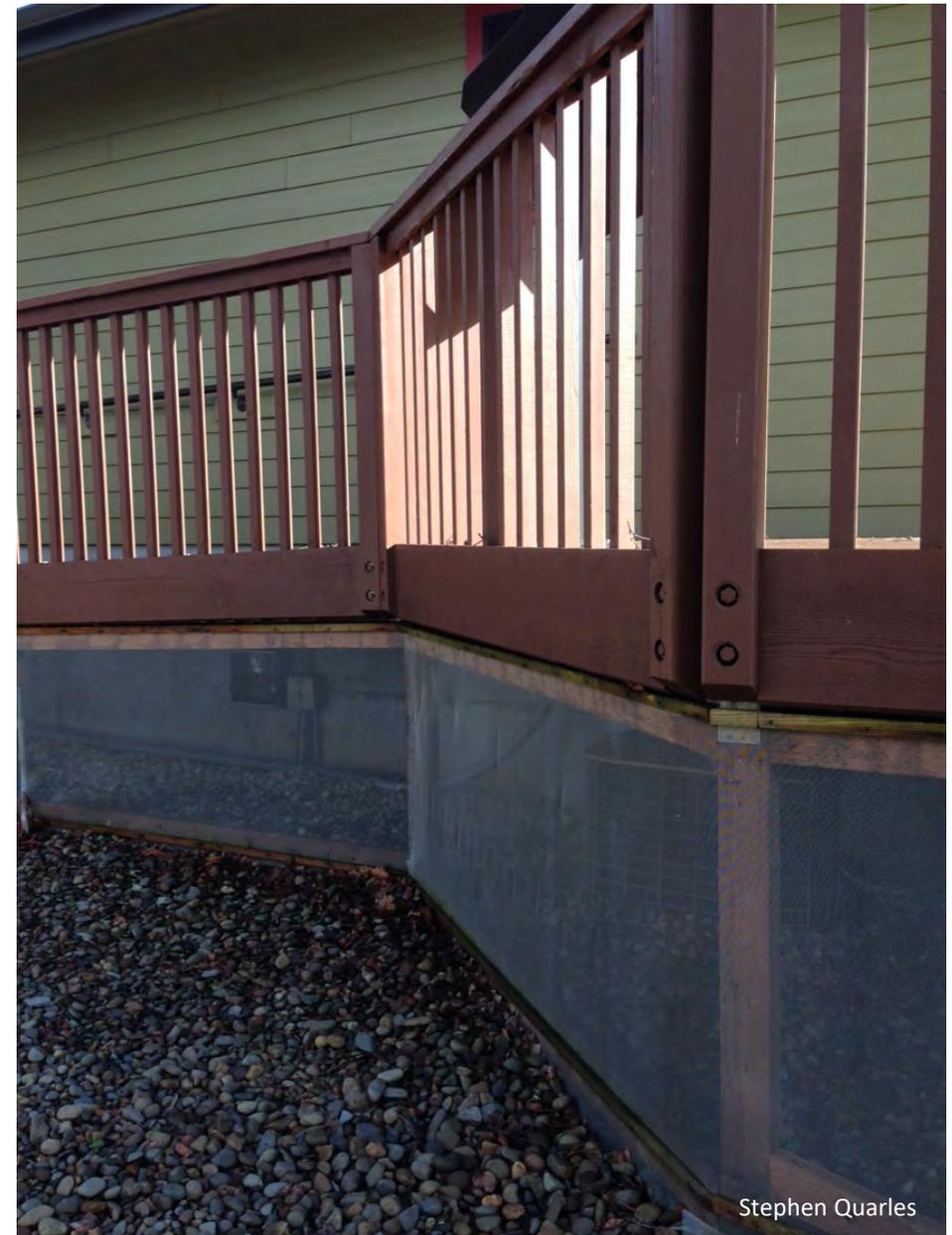


©Insurance Institute for Business & Home Safety

# Protecting joists and exterior wall



# Deck Enclosure



# Decks Overhanging a Slope



Insurance Institute for Business & Home Safety

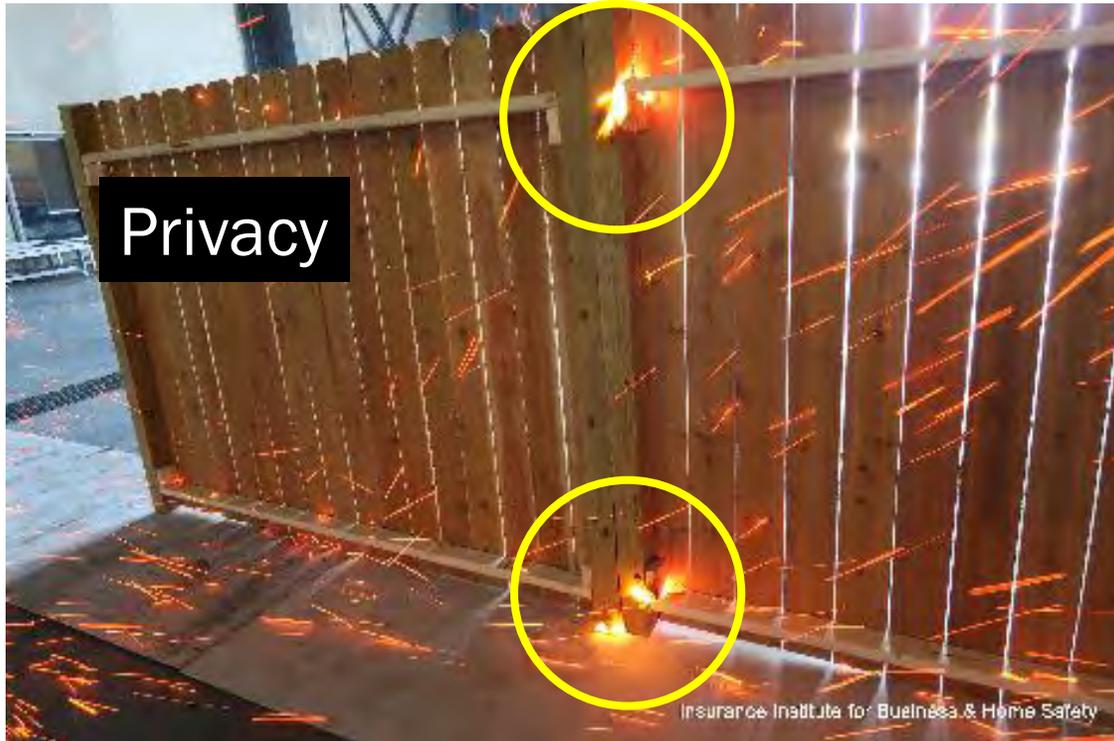


Insurance Institute for Business & Home Safety

# Fences



# Fencing Experiments



No Mulch



Mulch

# Noncombustible Fence Section



## Large Parcel Lots



Focus on:

- Creating and maintaining an effective defensible space to minimize the chance that the wildfire / spot fire can burn to your home, or close enough to your home such that radiant heat or flames can result in ignition or damage
- Creating and maintaining the Noncombustible Zone (around your home and under the foot print of your deck), including the vertical noncombustible zone between the ground and the start of your siding. Regardless of what you do with your defensible space in Zones 1 and 2, during a wildfire, embers will still threaten your home
- Engaging in home-hardening efforts that reduce the vulnerability of your home to embers, including:
  - Removal of vegetative debris from roof and gutters on a regular basis
  - Replace wood shake or shingle roof covering with a Class A fire rated option
  - Removal of vegetative debris in gaps between deck boards
  - Check screening on attic and crawl space vents. Repair damaged areas. Where ¼-inch mesh exists, cover with 1/8-inch mesh. If you store boxes, etc., in your attic or crawl space, move these items away from the vents
  - If you have combustible siding, install metal flashing at any roof-to-wall intersections (e.g., at a dormer or chimney chase)
  - Installing a noncombustible gutter cover device and, where you have a gutter, a metal drip edge at the roof edge
  - In situations where combustible siding and redwood or cedar deck boards are used, either:
    - ✓ Install metal flashing at the deck-to-wall intersection, or
    - ✓ Replace the deck board closest to your home with a noncombustible option

### Large parcel lots resulting in neighboring homes being far apart:

Neighboring homes are far apart. Individual efforts to create and maintain an effective defensible space to minimize potential for flame contact and radiant heat exposures and to create the near-home and prepare home to resist an ember exposure is critical.



### Homes on steeper slopes:

Vegetation and other combustible materials can be down slope of the home. Attached decks commonly overhang the slope. Flame impingement to the underside of the deck possible without careful attention to downslope vegetation and other combustible materials.

Focus on:

- Engaging in home-hardening efforts that reduce the vulnerability of your home to embers
- Creating and maintaining an effective defensible space to minimize the chance that flames from burning vegetation will touch the underside of your deck. The area downslope of your home is a critical area, particularly if your home has a deck overhanging the slope
  - If downslope vegetation is largely shrub and brush, a noncombustible retaining wall located downslope of the deck and home, parallel to the home, would help deflect any fire burning upslope
- Replacing your wood shake or shingle roof covering with a Class A fire rated option
- Replacing non-tempered glass windows, particularly on the down-slope face of your home, with tempered glass windows. If your home was built after the mid-1970's, glass in your doors likely already tempered
- Your deck. If replacing select a noncombustible option, including the structural support system (e.g., use steel joists and columns)
- Replace under-eave open-eave construction with a soffited-eave (i.e., enclose the under-eave area)



### Close home-to-home separation:

Neighboring homes are close to each other resulting in the potential for a flame contact or extended radiant heat exposure should one of the neighboring homes ignite during a wildfire. Individual and neighborhood-wide efforts are critical. Individual efforts to create near-home and prepare home to resist ember exposure is critical.

Focus on:

- Engaging in home-hardening efforts that reduce the vulnerability of your home to embers
- Creating and maintaining your defensible space, including the Noncombustible Zero next to your home
- Replace wood shake or shingle roof covering with a Class A fire rated option
- Replacing siding and windows on neighbor-facing exposures with a noncombustible siding option and multi-pane tempered glass windows.
  - Your windows: If replacement of windows / doors is not feasible, noncombustible shutter(s) would provide protection against radiant heat exposures.
- Replacing attic and crawl space vents that currently consist of screening with a California Office of the State Fire Marshal complying flame and ember resistant vents
- Replacing under-eave open-eave construction with a soffited-eave (i.e., enclose the under-eave area)
- Where between-home fencing exists, replacing combustible fencing with a noncombustible option (e.g., a metal fence)



©Insurance Institute for Business & Home Safety

# Thank you for your attention!

Steve Quarles  
[steve.quarles@berkeley.edu](mailto:steve.quarles@berkeley.edu)



**UNIVERSITY OF CALIFORNIA**  
Agriculture and Natural Resources

■ Cooperative Extension

# financing

over 100 improvements made affordable

Including Energy efficiency, Wildfire safety  
and Seismic strengthening.



[SONOMACOUNTYENERGY.ORG/FINANCING](https://sonomacountyenergy.org/financing)



- Financing for Wildfire Safety – Hardscaping 0-5' from Structure, Class A Roofing, Eaves and Vents, Windows, Siding, Solar Energy Systems, Battery Backup and More
- Property-based Financing – No Income or Credit Qualifying
- Terms (10 or 20 years); 5.99% fixed interest rate; Low fees
- Paid back through the County Tax Bill system

**Contact the Energy and Sustainability Division at (707) 565-6470 to learn more**

# Question and Answer

# Thank you

