



Event Approved for
Phius CEUs

Mar. Webinar: Passive Buildings and Wildfires – Living Though, Living With and Living Well

Earn 1.0 CEU



Self Report Code
Coming Later

Self Report @

[www.phius.org/certifications/
professionals/maintain-credentials](http://www.phius.org/certifications/professionals/maintain-credentials)



OPTIMIZING FOR WILDFIRE RESILIENCE



**Identify opportunities for “stacked” benefits.
Leverage what’s required to achieve what’s optimal.**



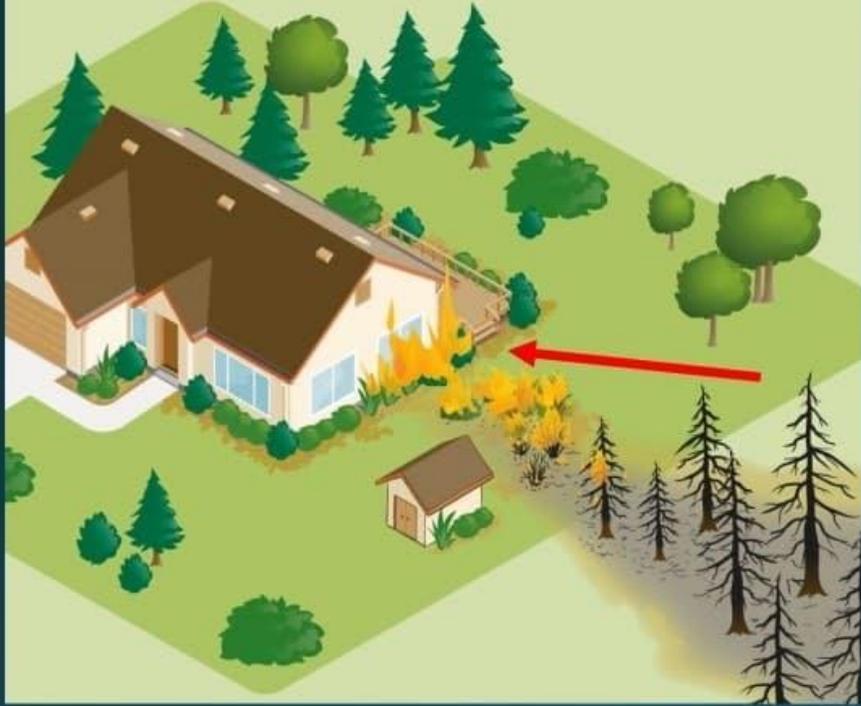
Living Through Wildfire

WILDFIRE HARDENING

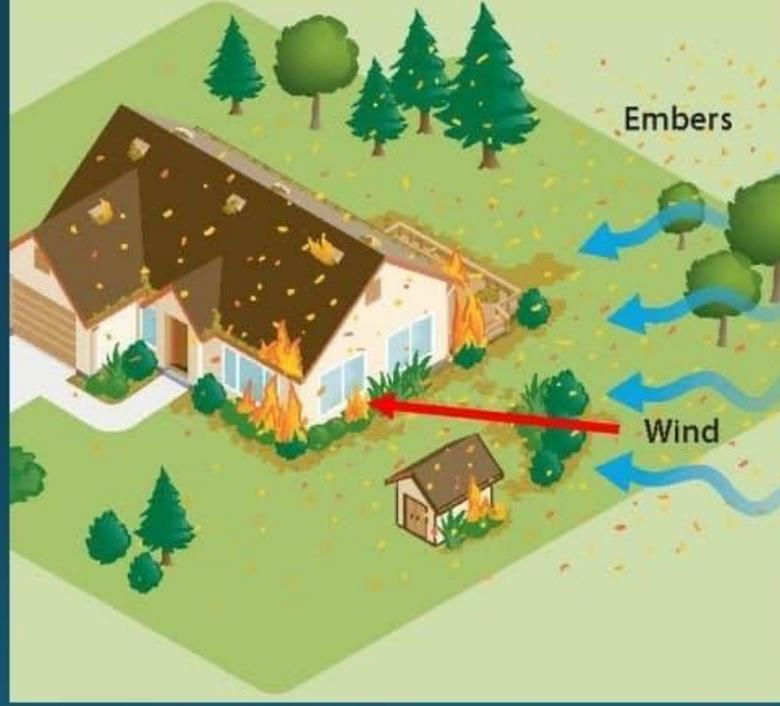
- Life Safety - Critical & Mandatory
- Rare Occasion, Worst Case Scenario
- Delivers Less Worry, Not More Joy!
- “Highly Fire Resistant,” not “Fire Proof”

Three types of fire exposures

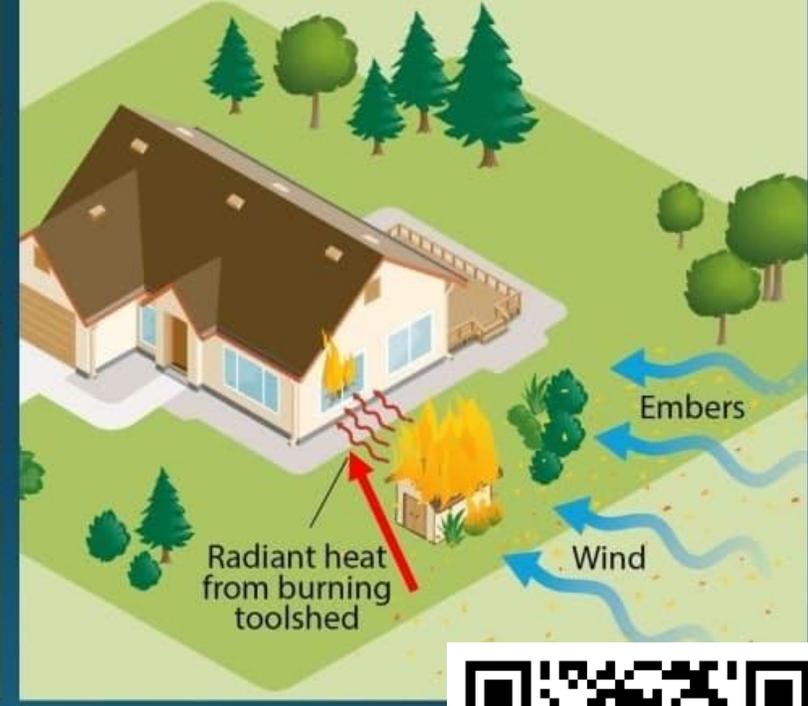
Direct flame contact



Embers



Radiant heat





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CA CODE

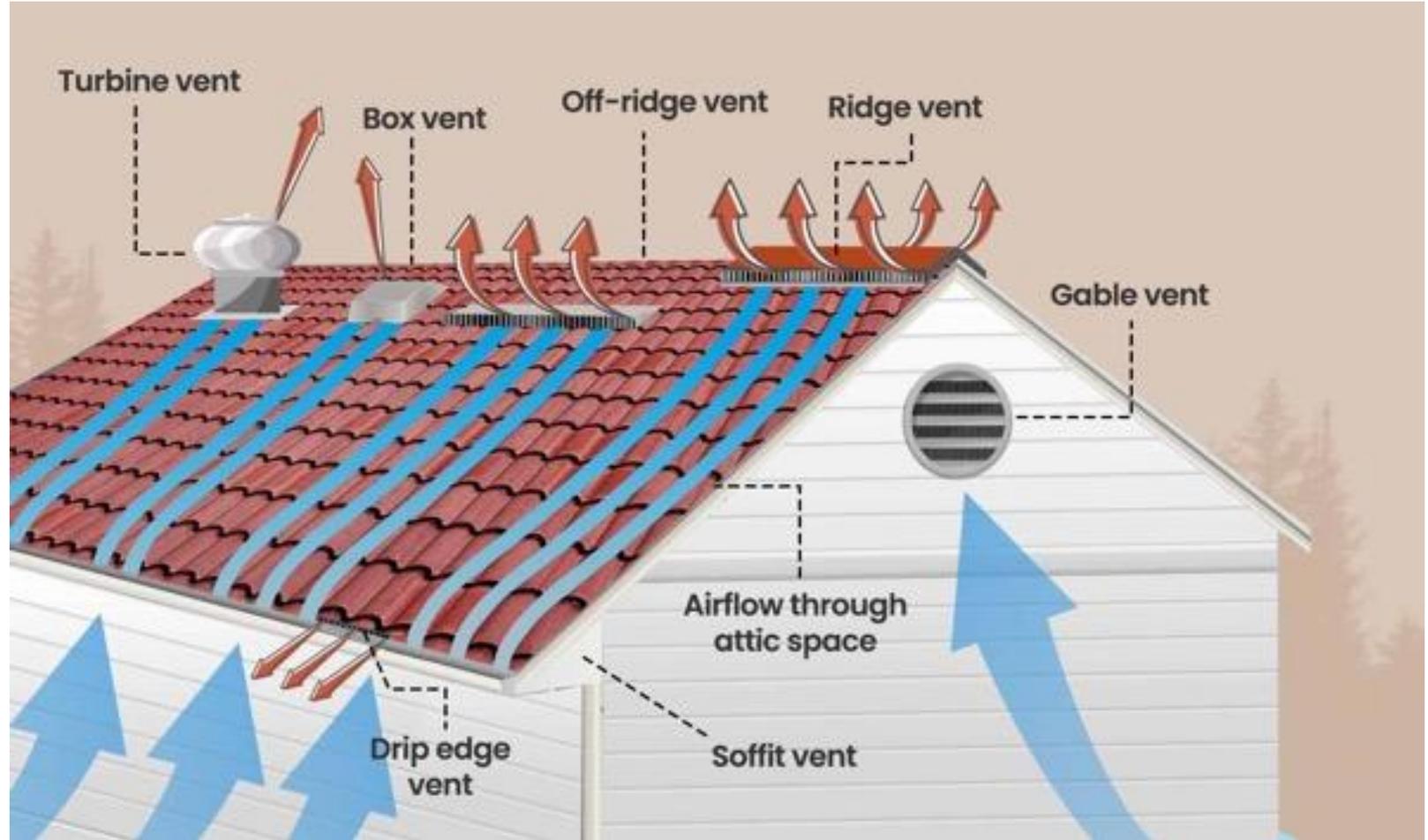
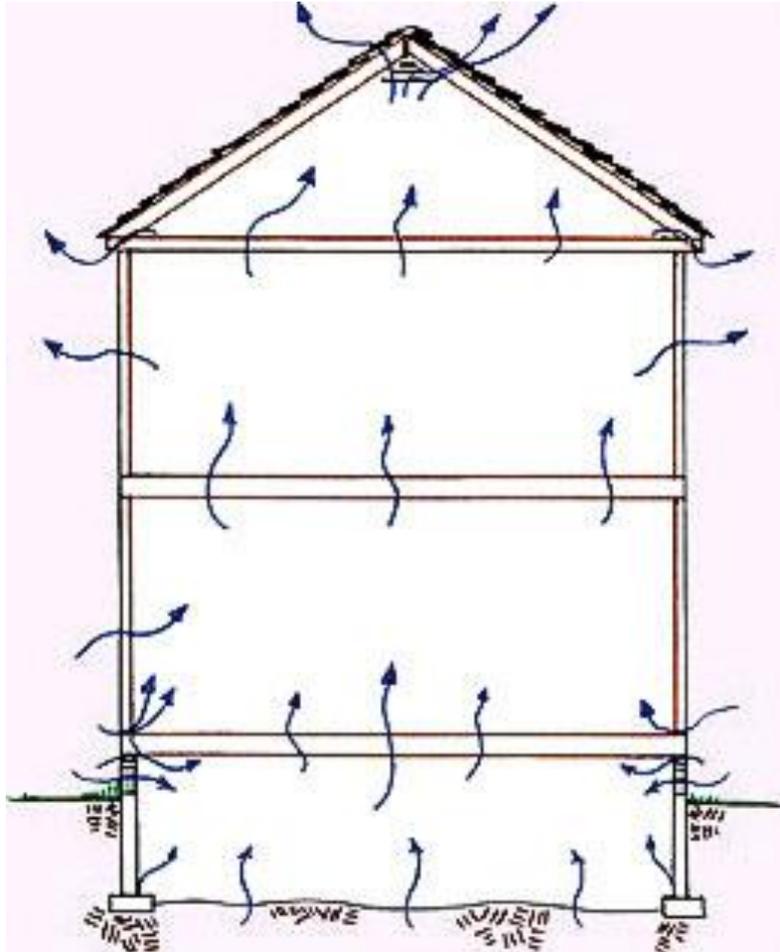
- 1. California Residential Code, Section R337,
Materials & Construction Methods for Exterior
Wildfire Exposure**
- 2. California Building Code, Chapter 7A, Materials &
Construction Methods for Exterior Wildfire
Exposure**
- 3. SFM Standard 12-7A**





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VENTS



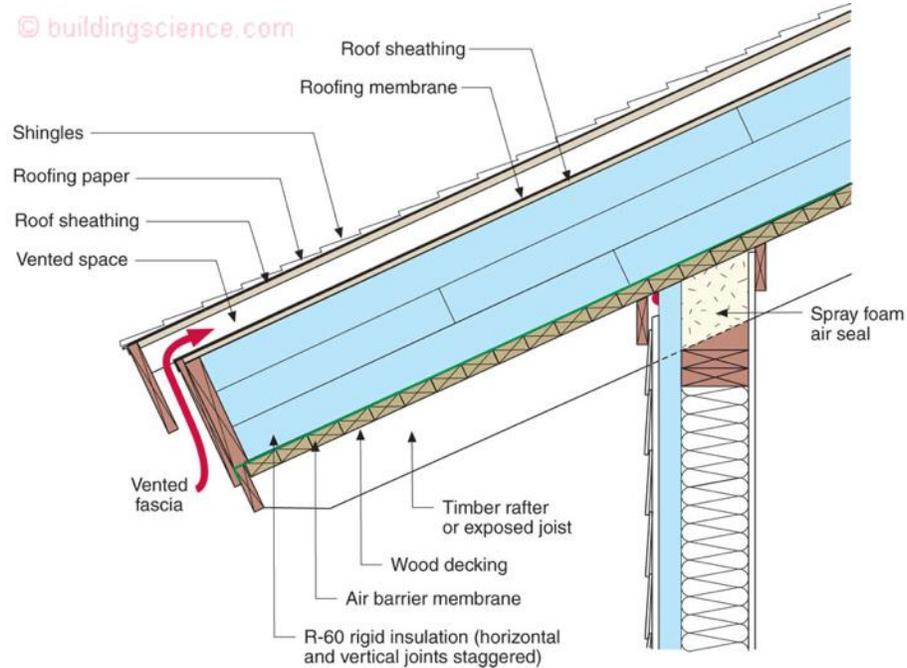


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VENTS



Intumescent Vents



BSI-046: “Dam Ice Dam”

BSI-141: “Shakespeare Does Roofs”



CRC Section R337.5 (Roofing)

Spaces between roofing & decking constructed to resist the intrusion of flames and embers, fire stopped with approved materials, or one layer of 72-pound cap sheet.



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PLUMBING

Plastic Vent Pipes? Rubber Pipe Boots?



Dektite Silicone Roof Boot





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VENTILATION



Premium Wall Vent



Fresh Vent



DryerJack



ERV "Snow Snorkels," Lake Tahoe, CA



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WINDOWS

CA CODE REQUIREMENTS

- Multi-pane glazing (one tempered pane minimum)

OR

- Glass block units

OR

- 20-minute fire-resistance rating (NFPA 257)

OR

- SFM Standard 12-7A-2 (3x5 ft maximum test size)



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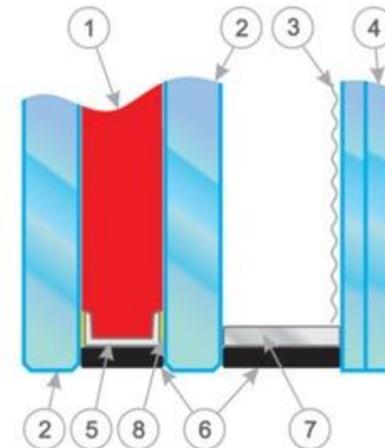
WINDOWS

Pivot Windows (Thanks Andy!)

- Frame resilience (PVC, uPVC?)
- Tempered glass 4x resistant to thermal stress
- Interior pane most important
- Double pane may not protect interiors
- European fire-rated glazing



1. Fire-resistant gel (6 - 28mm)
2. Tempered safety glass (5 - 6 mm)
3. Metal coating
4. Laminated safety glass
5. Spacer
6. Polyurethane
7. Aluminium, stainless steel or plastic spacer
8. Sealant





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WINDOWS



Zola Firewall Window

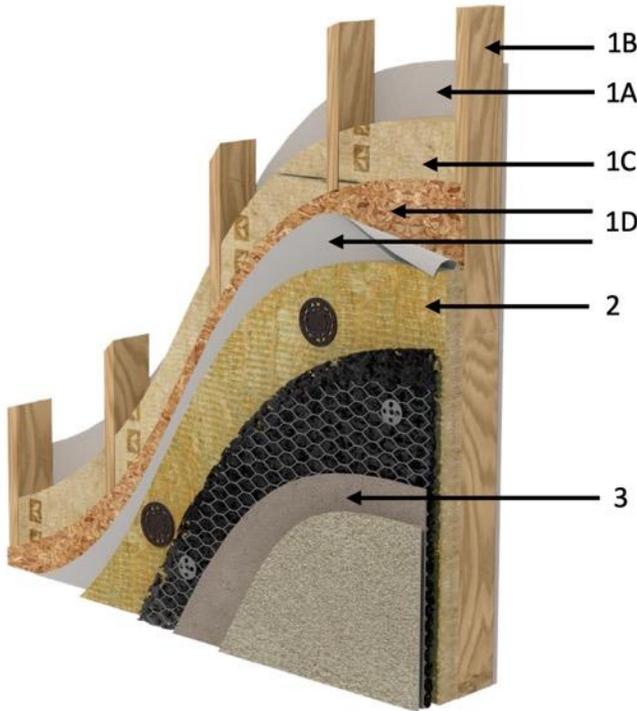
- Australian BAL40 “Bushfire Standard”



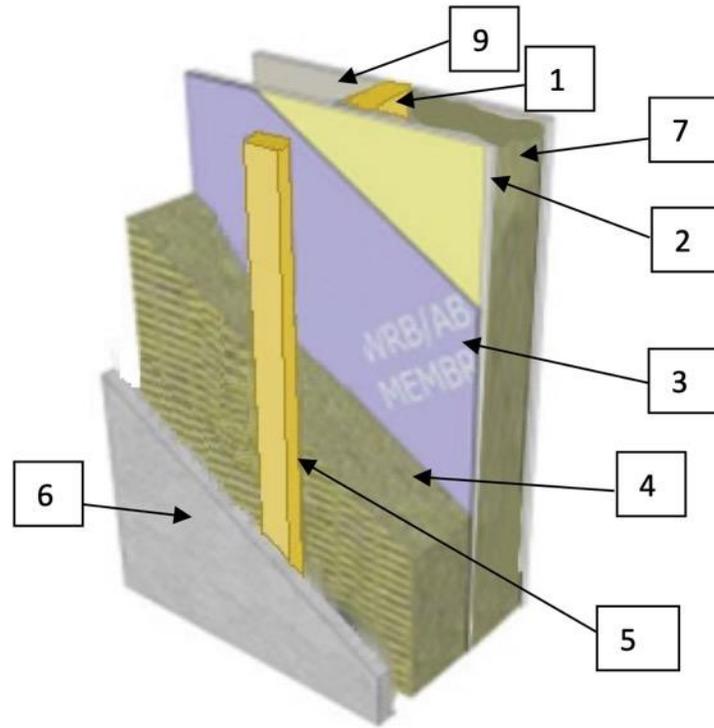
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WALLS

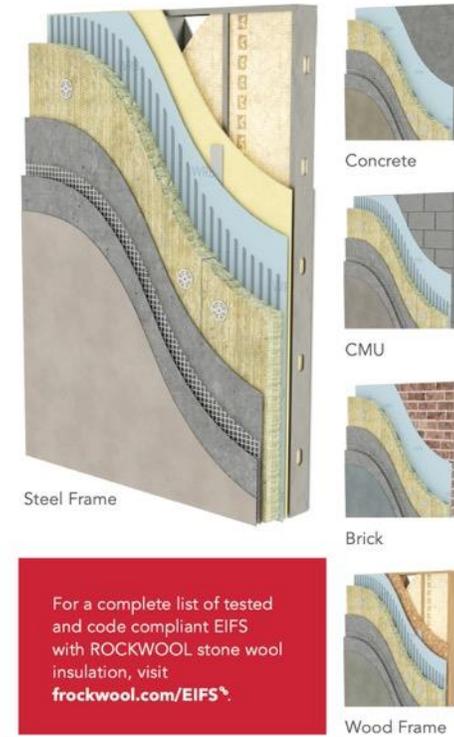
EXTERIOR STONE WOOL INSULATION



1 HR - Stucco



1 HR – Fiber Cement



Class A - EIFS





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WALLS

Alternatives to Stone Wool?



Wood Fiber (ASTM E84 Class B Flame / Smoke)

Hempcrete Passes 1-Hour ASTM Fire Test

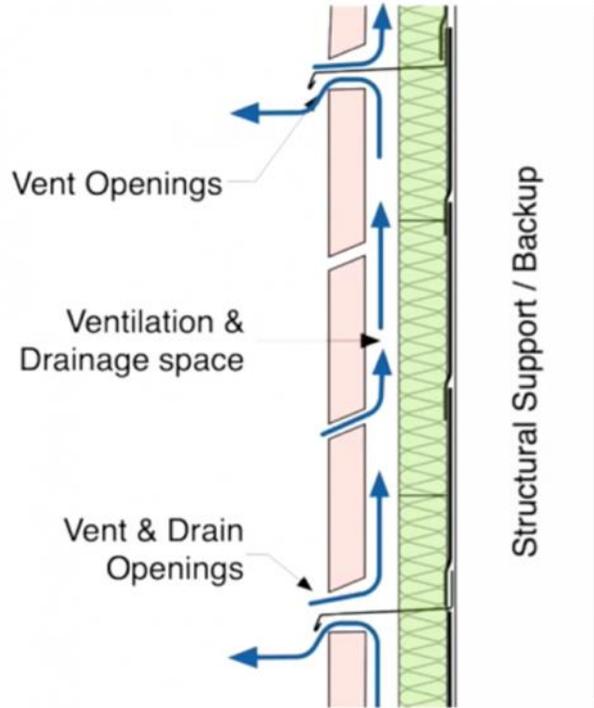




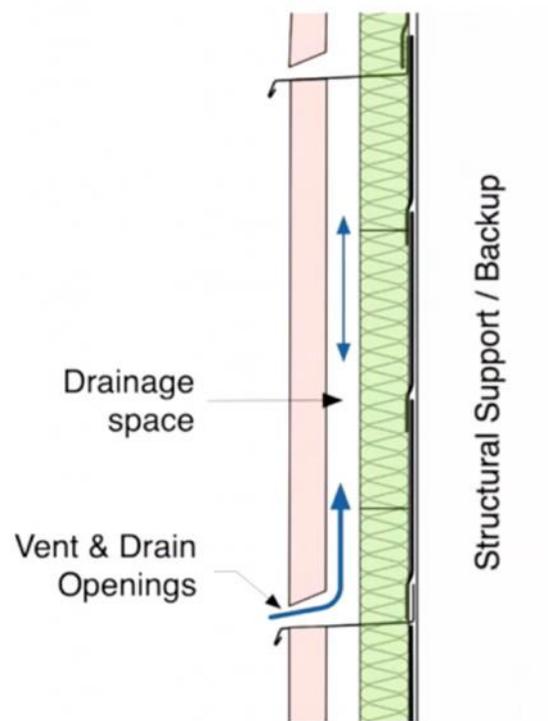
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RAIN SCREEN

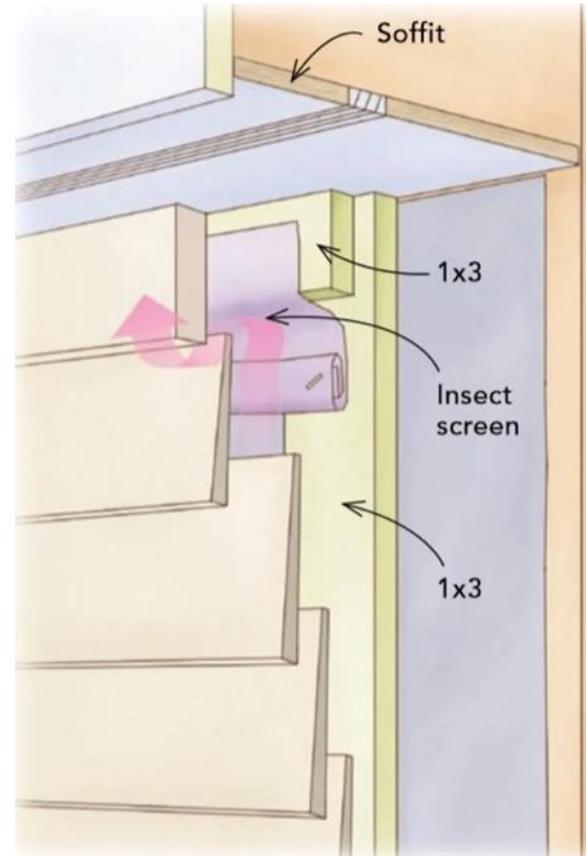
Ventilated or Vented?



Drained & Ventilated



Drained & Vented





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LANDSCAPE





Living Through Wildfire

LANDSCAPE

Defensible Space with Graywater?

'Zone zero' rule could be California's wildfire savior — or its environmental undoing



The Saroyan Stairs in L.A.'s Beachwood Canyon are in an area where the proposed "zone zero" rules would require all plant materials to be removed within five feet of a home or other structure. (Myung J. Chun / Los Angeles Times)

Subscribers are Reading

The Eaton Fire: How the system failed

Prep talk: Unbeaten Marshall turns
quarterback Nathaniel Cadet

Voices

Contributor: 'Have you considered h
boys?' The other gender gap

He killed his girlfriend's ex while on
SoCal sheriff's deputy. His sentence

FOR SUBSCRIBERS

What social media got wrong about
raids of the Santa Fe Springs Swap

ADVERTISEMENT





**Living Through
Wildfire**

INSURANCE

The image shows the cover of a document titled 'WILDFIRE PREPARED' by IBHS. The cover has a white background with a dark red vertical bar on the left side. The main title 'WILDFIRE PREPARED' is centered, with 'WILDFIRE' in grey and 'PREPARED' in red. Below it, 'A PROGRAM OF IBHS' is written in grey. The subtitle 'TECHNICAL STANDARD' is also centered in grey. At the bottom, there are two logos: 'WILDFIRE PREPARED HOME' and 'WILDFIRE PREPARED HOME PLUS', both in grey and red. The 'HOME PLUS' logo has a small plus sign above the house icon.





Living Through Wildfire

AIR SEALING

DONATE

Audience-funded
nonprofit news



HOUSING & HOMELESSNESS

Homes near Eaton Fire burn zone still test positive for lead and asbestos — even after cleaning



David Wagner covers housing in Southern California, a place where the lack of affordable housing contributes to homelessness.

Published Nov 6, 2025 5:00 AM





Living With Wildfire

WILDFIRE EFFECTS (SMOKE & GRID INTERRUPTION)

- **Widespread Impact**
- **Increasingly Frequent**
- **Mitigation Improves Quality of Life During Events**



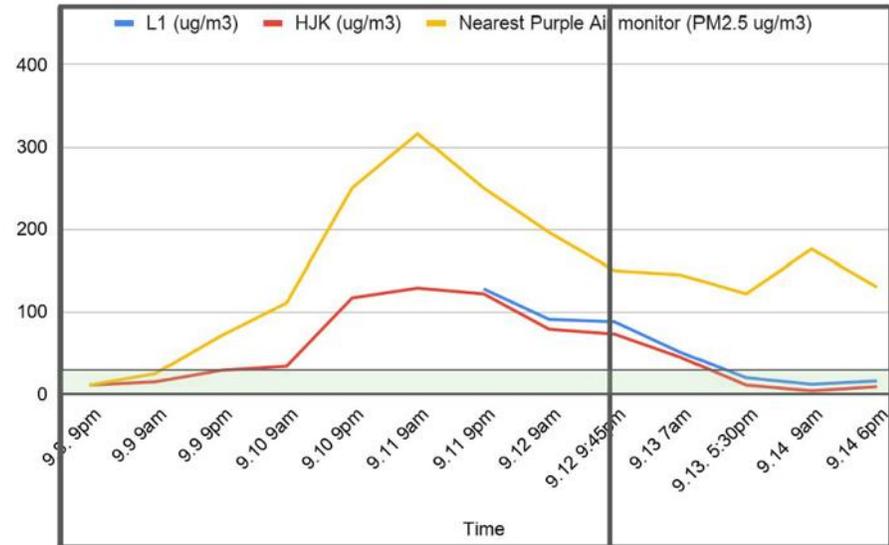
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AIR QUALITY

AIR SEALING + CENTRALIZED VENTILATION W/ HEPA



MERV 13 vs HEPA during period of high PM2.5 pollution levels



MERV 13

HEPA





**Living With
Wildfire**

GRID OUTAGE

PASSIVE HOME = “THERMAL BATTERY”

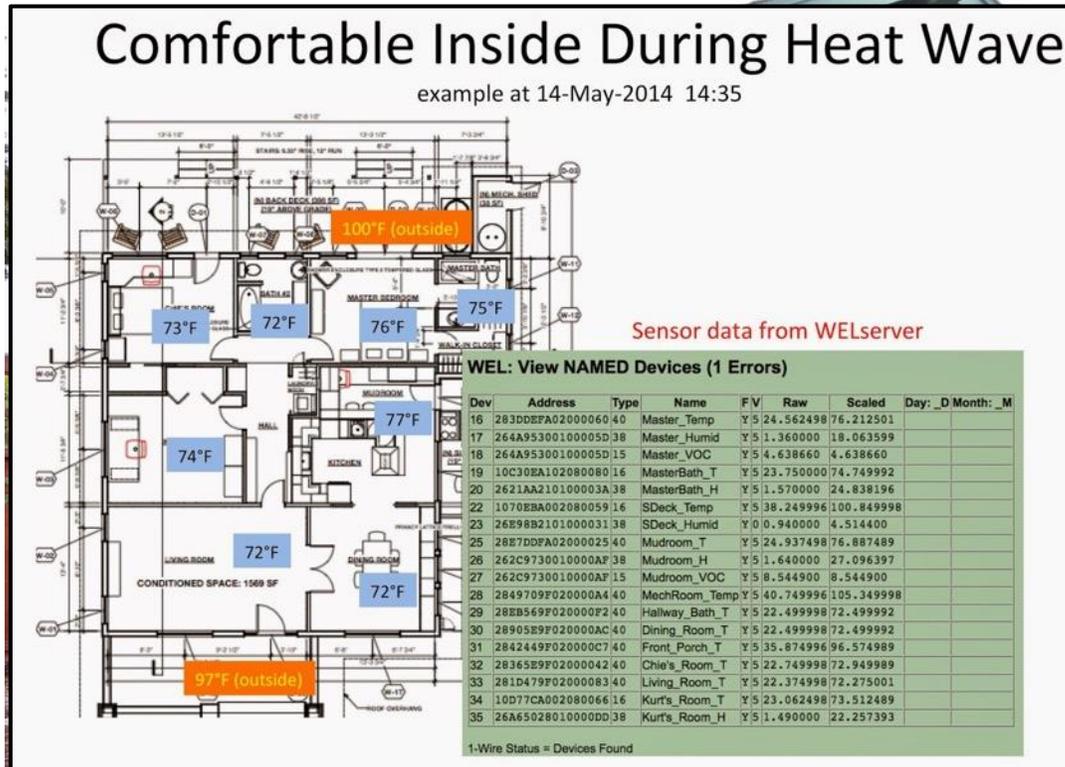




Living With Wildfire

GRID OUTAGE

PASSIVE HOME = "THERMAL BATTERY"





Living Well

- Leverage Benefits from 1st Two Categories AND...
- Maximize Fire Hardening, IAQ, & Resilience in Grid Outages
- Optimize for Health, Comfort, Quiet, & Efficiency (Phius/passive)





Living Well

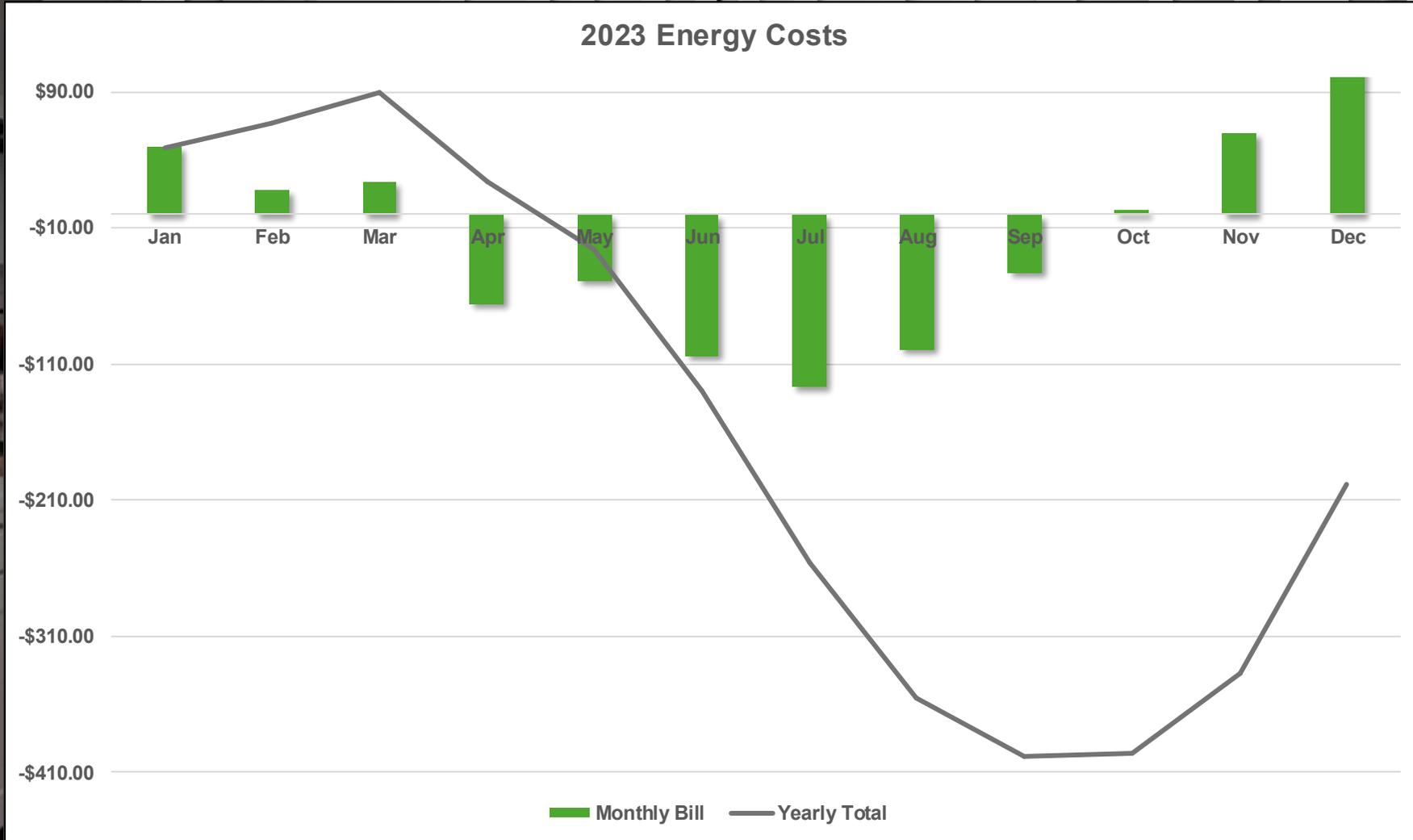
QUALITY OF LIFE



“The design really encapsulates everything we were hoping to enjoy, and the Passive House benefits have really been as great as you said they would be.” - John & Adrienne



Living Well QUALITY OF LIFE



“The design really encapsulates everything we were hoping to enjoy, and the Passive House benefits have really been as great as you said they would be.” - John & Adrienne



Living Well

QUALITY OF LIFE



7-Month-Old HRV Filters vs. New

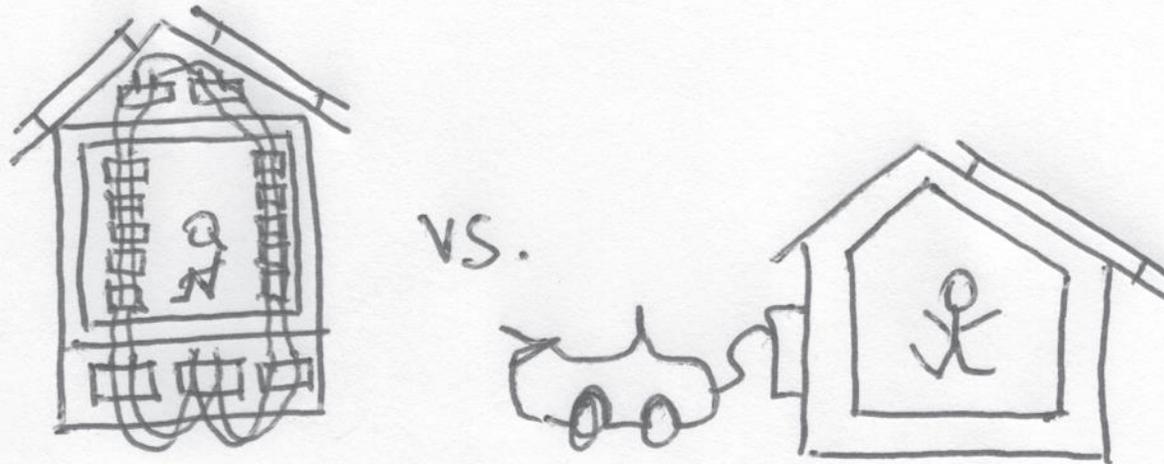
“The design really encapsulates everything we were hoping to enjoy, and the Passive House benefits have really been as great as you said they would be.” - John & Adrienne



Living Well

RESILIENCE

House of batteries or house as a battery?

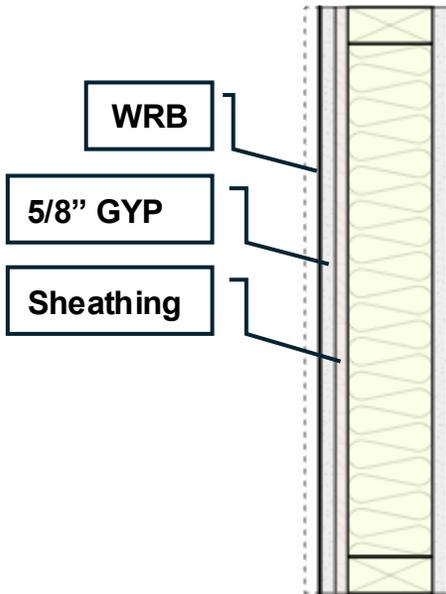


Passive House = Thermal Battery

©2015 Essential Habitat

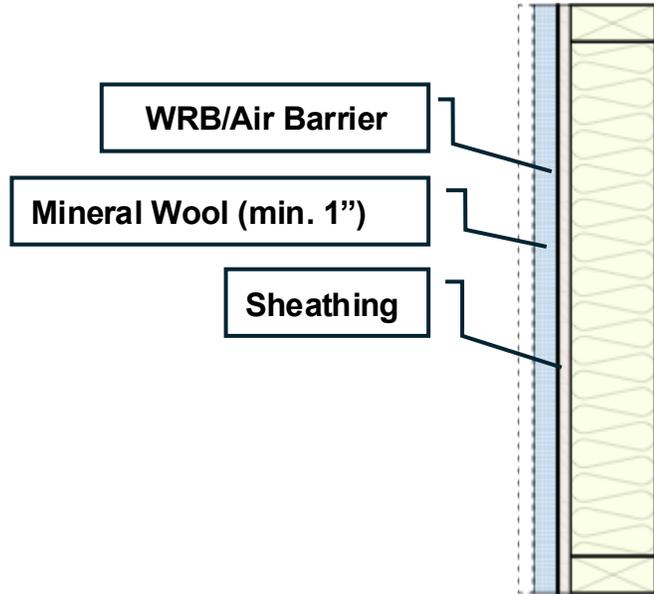
OPTIMIZED WALL

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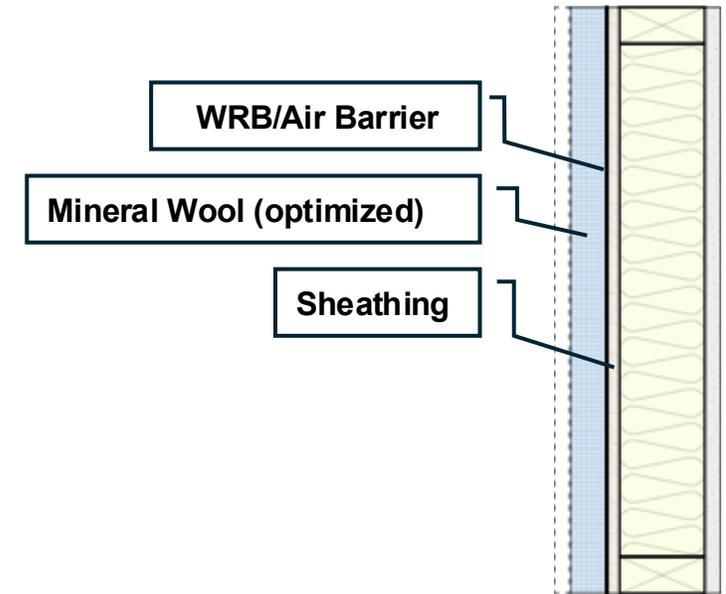
CA Building Code, Chapter 7a
(Sections 707A.3 & 707A.4 for Walls)

Living With wildfire



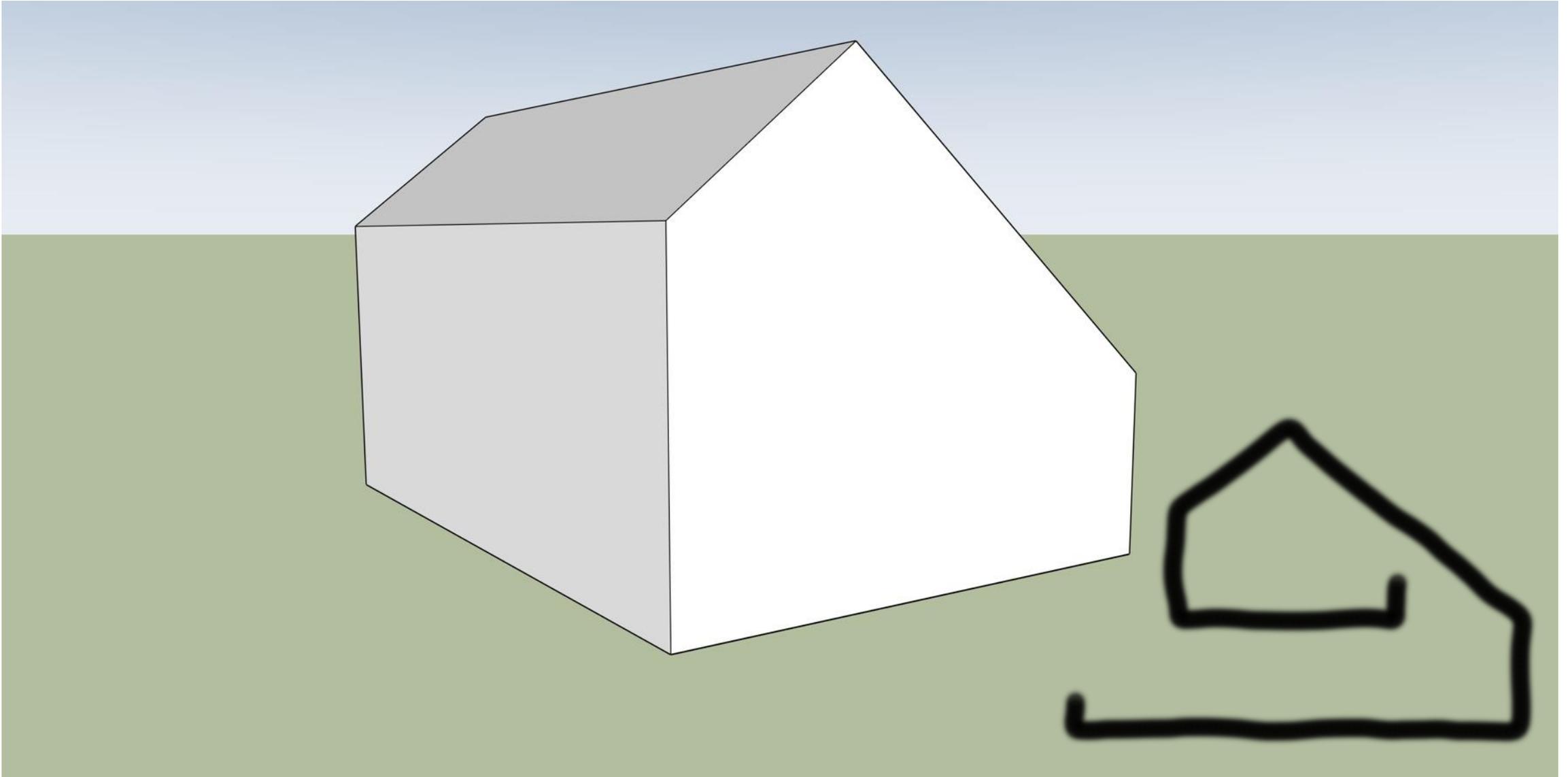
Air Tightness = "Smoke Tightness"
(w/ Ventilation & Supplemental Filtration)
Better Performance in Grid Outages

Living Well

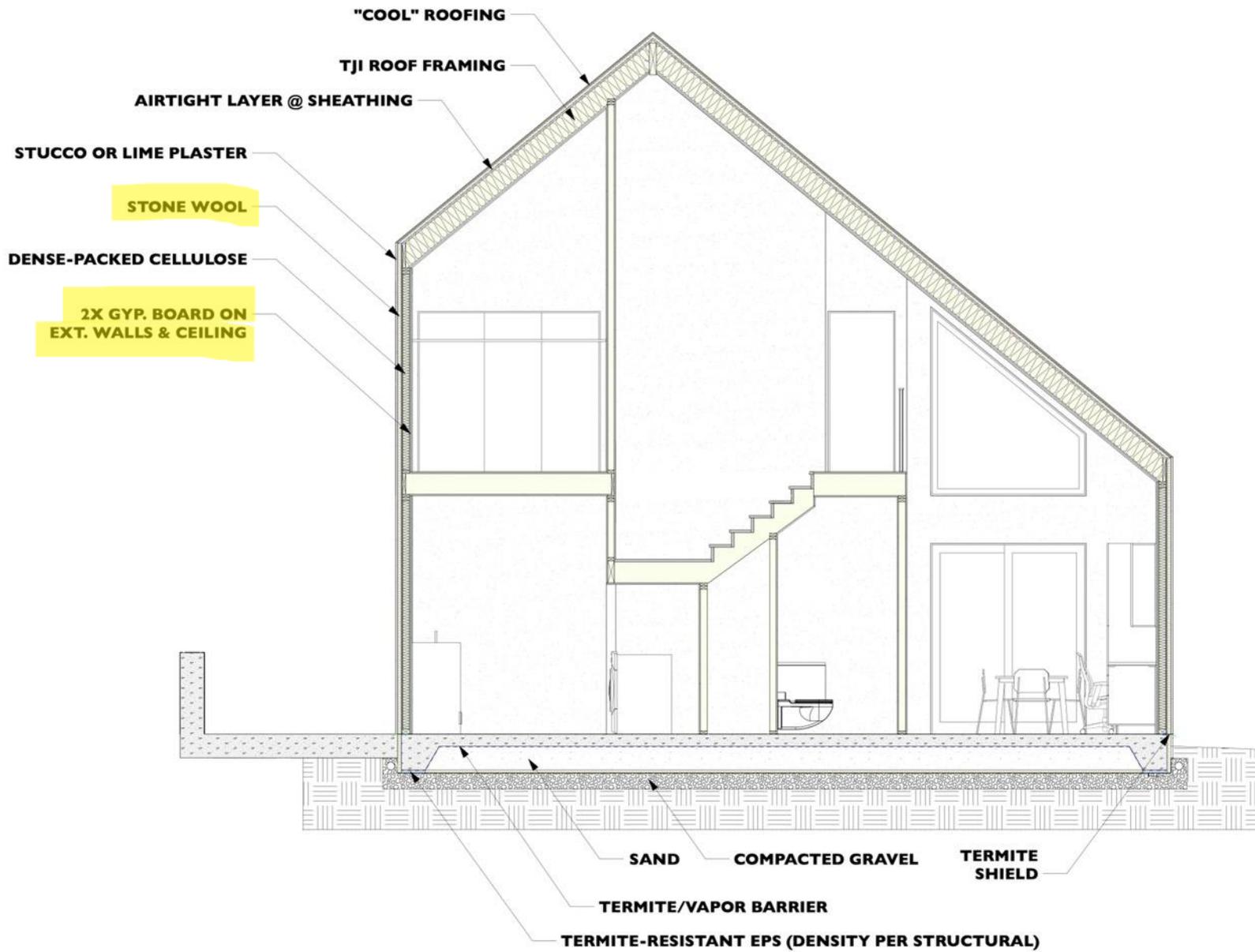


Comfortable, Healthy, Quiet, Durable
Resilient in Grid Outages

Fire Rebuild Design: “The Altadena”









Defensible
Space

Outside Thermal
Envelope



Thank you! Questions?



Graham Irwin, AIA

Principal, Essential Habitat Architecture





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