



# Fire-Resilient Design Lab Insight Brief

Reimagine Buildings Collective–SUMMER 2025

## Fire-Resilient Design Lab

**Lab Members:** *Jim Bischoff, Carl Eklund, Edwin Fang, Rayan Ghazal, Graham Irwin, Lauren Shadid, Ken Levenson, and James Kupferschmid*

### Passive House For Fire Resiliency

Two fire-resilient design teams merged midway through the summer. Several team members are involved in fire-rebuild projects or are building in WUI zones.

Team one focused on fire resilient design features, materials systems and best practices that are supported by Passive House design. We discussed the integration of building codes and policy to help support the effort. We shared design resources and links (included below).

Team two focused a bit more on the insurability of homes in WUI areas and beyond, and how Passive House and Building codes might reduce the risk perceived by insurers.

### Top Takeaways:

#### 1. Passive House Offers Inherent Fire-Resilience Features

- Elements such as airtightness, multi-glazed/tempered windows, reduced wall penetrations, and form factor contribute to natural fire resilience.
- These design choices can help withstand fires – from both burning and smoke damage, as evidenced by real-world Passive House examples surviving wildfires.

## **2. Insurance Industry Is Not Yet Aligned with Fire-Resilient Design**

- There is a knowledge gap among insurance underwriters regarding Passive House features and their potential for risk reduction.
- Current underwriting tools like AI and geospatial analysis are used mostly for profit-driven risk assessment, not homeowner guidance.
- Some insurers like “Stand Insurance Co” provide mitigation strategies, but these are limited and primarily benefit wealthier clients.

## **3. Need for Integration of Building Codes, Insurance, and Design Standards**

- There’s potential to bridge Passive House standards with building codes to create fire-resilient structures, particularly in wildfire-prone areas (e.g., WUI zones).
- A certification system that merges PH principles with fire-resilient design could help streamline insurance approval and policy pricing.
- Legislation (e.g., Colorado HB 1182) is emerging that pushes insurers to consider mitigation efforts in risk assessments.

## **4. Opportunity for Purpose-Driven Insurance Innovation**

- If traditional insurance markets fail to recognize the resilience of Passive Houses, there may be space for a mutual insurance company owned by PH homeowners.
- This could mirror firms like Stand Insurance, but with a focus on equitable access, policyholder support, and purposeful profit.
- A pre-emptive AI/geospatial tool for homeowners to assess and optimize their design for future insurability could also be part of this solution.

## **Resources**

WUI Compliance Checklist: <https://nevadacountyca.gov/DocumentCenter/View/25877/WUI-Homeowner-Checklist-PDF>

Designing Homes for Fire Resilience: <https://www.passivehousecanada.com/when-wildfire-risk-becomes-routine-designing-homes-for-climate-resilience/>

<https://passivehousenetwork.org/wp-content/uploads/2025/01/5-Ways-Passive-House-Supports-Fire-Resilience.pdf>

<https://passivehousenetwork.org/wp-content/uploads/2025/08/5-Takeaways-Climate-Action-and-Fire-Safe-Recovery.pdf>

The Blue Ribbon Commission vouching for Passive House Training and Design:

[https://passivehousenetwork.org/wp-content/uploads/2025/07/BRC\\_FinalReport\\_Digital\\_FullResolution\\_061825\\_compressed.pdf](https://passivehousenetwork.org/wp-content/uploads/2025/07/BRC_FinalReport_Digital_FullResolution_061825_compressed.pdf)

Blog post from PHN that references NYT article on wildfire smoke infiltration and PH benefits:

<https://passivehousenetwork.org/featured/wildfire-smoke-infiltration-a-new-love-canal/>

<https://arcfirestop.com/about-us> Fire Stop at joints of walls and floors

<https://www.firefree.com/resources>

<https://zs2technologies.com> Magnesium - improving cement <https://www.zolawindows.com/> firewall