HOME HARDENING FOR WILDFIRE RESILIENCE: LESSONS FROM EXISTING PROGRAMS AND IMPLICATIONS FOR REPLICATION

By Megan Falkner
Climate & Wildfire Institute Intern
Graduate Program of Environmental Policy and Management
University of California, Davis



TABLE OF CONTENTS

Executive Summary	3
Introduction	4
Understanding Homeowner Motivations and Barriers • Key Drivers of Action • Common Barriers to Adoption • Section Summary	6
Policies, Programs, and Incentives Driving Home Hardening • Financial- and Insurance-Based Incentives • Grants and Public Assistance Programs • Innovative Financing Mechanisms • Regulatory Approaches • Community-Based Programs • Which Incentives Drive Action?	9
What Works in Practice? • Effective Home Hardening Measures • Cost and Implementation Considerations • Gaps Between Research and Adoption	13
Lessons From Existing Home Hardening Case Studies • Incline Fire Smart Community Pilot • Cross-Cutting Success Factors • Implications for Future Home Hardening Programs	15
Conclusion	22
Endnotes	24

EXECUTIVE SUMMARY

Wildfire risk to communities in the western United States has increased significantly in recent years due to the expansion of development, changing climatic conditions, and greater exposures to wildfires. Researchers analyzed datasets spanning over two decades and concluded that extreme fire events have increased substantially in frequency, intensity, and geographic scale.[1] Wildfire management and suppression remain significant components of emergency management planning; however, preventing and building resilience against future wildfires are equally critical. The concept of home hardening, which involves improving structural resilience and creating defensible space around homes, is an increasingly recognized practice that helps prevent structure loss and fire spread during wildfire events. Nevertheless, its adoption has been slow due to high financial costs, lack of standardized guidelines, a constrained insurance sector, and difficulty translating scientific wildfire projections into practice, all of which create barriers to adoption for homeowners and communities.

This report analyzes academic literature, existing building codes, regulations, community resources focused on homeowners motivators, wildfire mitigation programs, insurance incentives, home hardening measures, and case studies across the western U.S. to develop an understanding of ways to promote adoption of wildfire resilience practices at the parcel and community level. Specifically, the following research questions are addressed:

- What motivates homeowners to implement — or refrain from implementing — wildfire mitigation practices;
- What policies and programs motivate adoption of wildfire resilience practices;
- What mitigation measures offer the highest benefits; and
- Lessons learned from successful pilots.

The synthesis indicates that homeowners are particularly motivated to pursue wildfire mitigation when it is tied to insurance availability and affordability, while programs with clear, standardized guidelines and checklists are more effective at translating homeowner motivation into completed mitigation efforts.

Key Findings Include:
What motivates homeowners to act?

- Insurance availability, affordability, and protection of property value are increasingly important drivers of mitigation decisions.
- Homeowners are more likely to adopt mitigation measures when insurance and risk reduction benefits are clear, immediate, and connected to everyday priorities.
- Clear standards, trusted messengers, community champions, and neighborhood-based programs are likely to increase participation.

What programs work?

- Programs combining financial incentives, technical guidance, and clear mitigation standards show the strongest potential for adoption.
- Insurance programs are highly effective when mitigation actions are recognized through transparent discounts or improved coverage options.
- Community-scale programs create greater resilience than individual household actions alone.

What lessons are transferable?

- Successful programs establish clear mitigation expectations, provide financial pathways, and create partnerships between residents, governments, insurers, utilities, and community organizations.
- Verification systems and checklists are necessary to translate mitigation actions into measurable reductions in wildfire risk.
- Equitable programs must address the ability of all households to participate, including communities facing financial and social barriers.

Future wildfire resilience efforts should concentrate on implementation at the neighborhood and community level, available financing, results measurement, and cross-sector collaboration. The goal should not be to simply replicate individual mitigation measures, but to replicate the systems that make sustained mitigation possible.

INTRODUCTION

Wildfire risk across the globe has increased substantially in recent decades due to expanding development in the wildland-urban interface (WUI), changing climate conditions, and increased exposure of communities and infrastructure to extreme fire events. As wildfire losses grow, traditional approaches that are focused primarily on emergency response and suppression are insufficient for reducing long-term community vulnerability. Addressing wildfire resilience requires investment in prevention strategies that reduce the likelihood of structure ignition and community-scale losses before a disaster occurs. Home hardening — the process of modifying structures and surrounding areas to improve resistance to wildfire exposure — has emerged as a critical component of wildfire resilience, paired with landscape mitigation techniques. Despite increasing awareness of wildfire risk, adoption of home hardening measures remains inconsistent across communities.

The need for effective home hardening strategies is evident in the challenges facing the insurance market. Rising wildfire losses, difficulty in catastrophe modeling due to changing climatic conditions, and increasing costs associated with construction and rebuilding have all contributed to the decline of insurance availability and affordability in high-risk areas. As insurers become more cautious in wildfire-prone regions, non-admitted insurance markets and residual programs such as the California FAIR plan have expanded to provide coverage to homeowners in high-risk areas. Unfortunately, mitigation actions

taken by homeowners are not always incorporated quickly or consistently into insurance pricing, creating a disconnect between investments in risk reduction and financial benefits for residents. This disconnect can discourage homeowners from taking action, as risk reductions do not immediately translate into lower premiums or improved insurance access.

Despite research demonstrating that specific mitigation actions can reduce wildfire risk, adoption is limited by financial, informational, and institutional barriers. Many homeowners face challenges such as the upfront cost of retrofits, limited access to funding, competing household priorities, and uncertainty about which actions provide the greatest benefit. Conflicting defensible space guidance and complex insurance requirements further complicate decision-making. Homeowners are more likely to adopt home hardening strategies when actions are clearly communicated, connected to immediate benefits, and supported by trusted programs or community networks. The literature suggests that programs combining clear standards, financial incentives, and accessible guidance may be particularly effective at translating homeowner awareness into mitigation actions.

While individual action and parcel-level mitigations are a place to start — and where individual property owners have the greatest agency — individual household actions alone are not sufficient to prepare communities for wildfires. Wildfire impacts occur at the community level, which means neighborhoods must work together to improve community-wide risk reduction. Collective action through coordinated vegetation management, neighborhood programs, and community partnerships increases the effectiveness of individual mitigation efforts. However, participation varies across communities due to differences in the social fabric, financial capacity, social vulnerability, and access to technical assistance. Communities facing greater social vulnerability encounter additional barriers to participation in wildfire mitigation programs, including limited access to funding and reduced capacity to engage with agencies and resilience initiatives.

While programs and policies exist to encourage home hardening, questions remain regarding which approaches are most effective, how successful programs can be replicated, and how mitigation investments can be sustained over time. Existing research demonstrates that successful programs rely on partnerships among homeowners, local governments, insurers, utilities, nonprofits, and community organizations.[2] Building codes, financial assistance programs, insurance incentives, and community engagement strategies work together to create stronger wildfire resilience systems. However, implementation challenges remain. Data limitations, fragmented decision-making, and insufficient long-term evaluation continue to limit understanding of which strategies produce the greatest benefits across different community contexts.

By examining the relationship between individual action, community-scale resilience, and institutional support, this synthesis aims to identify possible pathways for developing more effective, equitable, and scalable wildfire adaptation strategies.

UNDERSTANDING HOMEOWNER MOTIVATIONS AND BARRIERS

To enhance homeowner participation in wildfire mitigation programs, it is important to understand the factors that influence whether and how homeowners choose to invest in home hardening and other wildfire mitigation measures. Awareness of wildfire risk is increasing, but awareness alone has not been sufficient to motivate widespread action. Homeowners' decisions are influenced by a range of factors, including economic capacity, perception of risk, information availability, trust in mitigation guidance, insurance, and whether wildfire preparation activities can be incorporated into their existing priorities. These factors all stem from the homeowner's individual perception of wildfire risk, availability of insurance incentives, immediate and practical benefits of home hardening, influence of community members, and availability of clear and accessible guidance.

Key Drivers of Action

Insurance, Financial Security, and Immediate Practical Benefits

One motivator for homeowner mitigation is the link between wildfire risk and insurance availability. Wildfire claims, uncertainty in catastrophe modeling, and rising rebuilding costs have contributed to instability in the insurance market in wildfire-prone areas. In California, growing wildfire activity has led to insurer withdrawal from high-risk areas, increases in non-admitted insurance markets, and growth in the use of residual insurance schemes like the FAIR plan. In 2024, approximately 13% of California realtors reported a canceled sales transaction due to a lack of accessible or affordable insurance — a figure that has nearly doubled from the 6.9% recorded just one year prior.[3] These developments have raised concerns among homeowners about the availability and affordability of insurance.

Insurance can act as an effective motivator for fire mitigation if homeowners trust that the risk-reduction actions will improve their insurance coverage possibilities or lower their premiums. However, catastrophe modeling and underwriting frameworks frequently fail to incorporate household- or community-level risk reduction with sufficient speed or precision. Insurance programs that do not account for homeowner and community mitigation efforts can inadvertently discourage additional mitigation action.

For insurance-based incentives to be effective, a direct link must be established between wildfire resilience actions and insurance outcomes. As indicated by recent research conducted by the OSU Extension Fire Program,[4] when mitigation actions are tied to clear standards, measurable results, and tangible rewards, participation rates increase. Homeowners are more likely to engage in fire preparedness when they can integrate it with their existing household priorities and daily commitments.

The importance of practical and immediate benefits reinforces the role of insurance and financial security as drivers of action. Mitigation strategies that provide clear, immediate advantages and minimize ambiguity about risk reduction are most likely to be adopted.[5] Research indicates that concrete

incentives, particularly when paired with accessible information and neighborhood-level programs, can increase participation within communities.[6] Together, these findings suggest that successful home hardening programs should emphasize not only protection from future wildfire, but also immediate benefits such as financial security, property protection, and household safety. Linking specific mitigation actions to factors that influence whether and how homeowners choose to invest in home hardening and other wildfire mitigation measures. Awareness of wildfire risk is increasing, but awareness alone has not been sufficient to motivate widespread action. Homeowners' decisions are influenced by a range of factors, including economic capacity, perception of risk, information availability, trust in mitigation guidance, insurance, and whether wildfire preparation activities can be incorporated into their existing priorities. These factors all stem from the homeowner's individual perception of wildfire risk, availability of insurance incentives, immediate and practical benefits of home hardening, influence of community members, and availability of clear and accessible guidance.

Key Drivers of Action

Insurance, Financial Security, and Immediate Practical Benefits

One motivator for homeowner mitigation is the link between wildfire risk and insurance availability. Wildfire claims, uncertainty in catastrophe modeling, and rising rebuilding costs have contributed to instability in the insurance market in wildfire-prone areas. In California, growing wildfire activity has led to insurer withdrawal from high-risk areas, increases in non-admitted insurance markets, and growth in the use of residual insurance schemes like the FAIR plan. In 2024, approximately 13% of California realtors reported a canceled sales transaction due to a lack of accessible or affordable insurance — a figure that has nearly doubled from the 6.9% recorded just one year prior. These developments have raised concerns among homeowners about the availability and affordability of insurance.

Insurance can act as an effective motivator for fire mitigation if homeowners trust that the risk-reduction actions will improve their insurance coverage possibilities or lower their premiums. However, catastrophe modeling and underwriting frameworks frequently fail to incorporate household- or community-level risk reduction with sufficient speed or precision. Insurance programs that do not account for homeowner and community mitigation efforts can inadvertently discourage additional mitigation action.

For insurance-based incentives to be effective, a direct link must be established between wildfire resilience actions and insurance outcomes. As indicated by recent research conducted by the OSU Extension Fire Program, when mitigation actions are tied to clear standards, measurable results, and tangible rewards, participation rates increase. Homeowners are more likely to engage in fire preparedness when they can integrate it with their existing household priorities and daily commitments.[5]

The importance of practical and immediate benefits reinforces the role of insurance and financial security as drivers of action. Mitigation strategies that provide clear, immediate advantages and minimize

ambiguity about risk reduction are most likely to be adopted. Research indicates that concrete incentives, particularly when paired with accessible information and neighborhood-level programs, can increase participation within communities. Together, these findings suggest that successful home hardening programs should emphasize not only protection from future wildfire, but also immediate benefits such as financial security, property protection, and household safety. Linking specific mitigation actions to measurable insurance or financial outcomes can provide homeowners with a stronger reason to act.

Clear Information and Accessible Guidance

Access to clear and consistent information is another factor influencing homeowner action. Inconsistent advice about defensible space and conflicting guidance on mitigation measures make it difficult for homeowners to know what actions to take. Programs that translate complex requirements into plain language help homeowners understand their options and make informed investments. Examples include certification programs and mitigation frameworks that offer specific, concrete actions rather than general recommendations. Trusted programs available to the public — such as Firewise Communities, which promote collaboration between residents and fire departments to improve wildfire resilience,[7] and the California Fire Safe Council, which supports communities in wildfire preparedness through grant funding and technical assistance[8] — offer clear guidelines and accessible checklists.

Community Influence and Social Motivation

Homeowners' mitigation decisions can be influenced by social factors and community participation. Given the nature of wildfire spread, the most effective homeowner actions should be implemented alongside community-scale mitigation strategies. Research emphasizes that neighborhoods must function as fuel breaks rather than fuel sources,[9] which requires coordinated approaches to defensible space, vegetation management, and structural protections. Community-level mitigation strategies and partnerships can enhance participation by creating collective responsibility and providing trusted information sources for residents. Engagement strategies that account for local contexts and involve community members in decision-making result in more sustained participation and greater overall wildfire resilience.

Hardening one property in a neighborhood does not ensure resilience, as nearby homes can still serve as ignition sources in a wildfire. However, this does not mean that individual homeowners' efforts are unnecessary. Rather, individual action creates momentum within a community. Through community champions and local leadership, one homeowner can positively influence neighbors to act, improving the community's resilience as a whole.

Common Barriers to Adoption

Financial Constraints, Upfront Costs, and Social Vulnerability

Cost is another significant barrier to home hardening adoption. Although many mitigation actions have proven effective, larger projects such as roof replacement, new siding, window improvement, or whole home wildfire retrofits involve considerable financial investment. This creates unequal opportunities for homeowners when it comes to wildfire protection. Without financing assistance, mitigation efforts risk widening the gap between communities of different economic means. The majority of American households lack the financial resources necessary to absorb increased expenses or potential income loss following a disaster, underscoring the need for programs such as the FEMA Individuals and Households Program,[9] to supplement households after a wildfire. This raises important questions of equity and highlights the need for financial incentives, public funding, and prioritization of wildfire resilience grants for low-income households in wildfire-prone areas. With dedicated funding, low-income households can retrofit their existing homes to be more wildfire resistant or rebuild to stronger standards after a fire.

Financial challenges are closely linked with social vulnerability and capacity, which shape communities' ability to access resources and participate in mitigation programs. Communities differ widely in their financial means, technical capacity, organizational capacity, and ability to engage with government programs. Incorporating social vulnerability into wildfire risk assessment is critical for identifying communities that may require increased public funding and support. These challenges are a consequence of historic and ongoing marginalization, which can create barriers to participation in risk reduction efforts and to working cooperatively with state and federal agencies.[10] Integrating hazard exposure, structural vulnerability, and social vulnerability provides a more equitable framework for prioritizing wildfire resilience investments and ensuring that limited resources reach communities with both high wildfire risk and limited capacity to address it.

Section Summary

Homeowners are more likely to adopt wildfire mitigation actions when those actions are clearly defined and easy to understand, provide tangible and immediate benefits, are financially accessible, are recognized by insurance markets, and are reinforced through community engagement. However, widespread adoption remains constrained by financial barriers, inconsistent or unclear guidance, uncertainty around insurance benefits, and unequal access to resources. Effective wildfire resilience strategies must therefore address not only individual homeowner actions, but also the broader systems, incentives, and community conditions that enable and support those actions.

POLICIES, PROGRAMS, AND INCENTIVES DRIVING HOME HARDENING

Understanding homeowner motivations and barriers is only one part of the equation. Policies, programs, and incentives also play an important role in shaping homeowners' ability and willingness to invest in wildfire mitigation. Research[12] shows that multiple approaches are needed to ensure widespread home hardening adoption. Managing the built environment through home hardening and enforcing standards

through mandatory statewide building codes are among the most effective tools for reducing wildfire risk. The most effective programs combine financial incentives, regulatory standards, technical assistance, and community engagement to reduce the financial, informational, and practical barriers that prevent homeowners from adopting wildfire mitigation measures.

Financial Incentives, Insurance-Based Incentives, and Insurance Regulation

Financial considerations consistently emerge as one of the decisive factors influencing homeowner decisions to implement wildfire mitigation efforts. Though many hardening techniques are highly effective, the upfront cost of structural modification often exceeds what many homeowners can afford. For this reason, initiatives aimed at reducing costs or increasing economic benefits have become central components of wildfire resilience strategies.

As insurers increasingly incorporate wildfire risk into underwriting, verified mitigation efforts could improve insurance availability, affordability, and market stability. However, catastrophe models and underwriting frameworks often fail to recognize household- and community-level mitigation quickly or consistently, creating a disconnect between investments in wildfire resilience and tangible insurance benefits. Mitigation measures are frequently omitted from these models or incorporated too slowly to influence premiums or coverage decisions.

California has begun requiring insurers to incorporate wildfire mitigation when setting rates and underwriting policies. Regulators are encouraging greater transparency in catastrophe modeling and the application of mitigation credits to better reflect actual wildfire risk. Similar approaches have been adopted in several Gulf Coast states, where insurers are required to recognize certified mitigation measures, such as the Insurance Institute for Business & Home Safety (IBHS) fortified roof program, through premium reductions.[13] California has also expanded insurance-based incentives for homeowners through the Safer from Wildfires program run by the Department of Insurance.[14] This program creates a ten-step mitigation checklist linked to insurance discounts, giving homeowners a clear connection between their mitigation actions and their insurance costs.

While California has the most developed insurance incentive programs for home hardening, Colorado and Oregon also are making progress. Colorado State's Housing Recovery Program (HRP)[15] provides resources for rebuilding in the wake of natural disasters, with a focus on households with limited means. Colorado recently passed legislation requiring insurers to consider mitigation efforts in risk assessments. Oregon offers insurance reductions for home hardening actions such as noncombustible decks or ember-resistant vents and has established building codes and standards for residents in designated wildfire zones.

Insurance regulation serves as a mechanism for encouraging mitigation by requiring insurers to recognize wildfire risk reduction efforts. California's recent regulatory reforms encourage insurers to incorporate

catastrophe modeling and verified mitigation into underwriting decisions while improving transparency around wildfire risk.[16] Regulators have also proposed standardized minimum coverage requirements, simplified insurance language, and improved claims processes to reduce barriers for policyholders recovering from wildfire disasters. These reforms aim to improve both market stability and homeowner confidence while creating stronger incentives for proactive mitigation.

Grants and Public Assistance Programs

Since insurance incentives alone are insufficient to address the high cost of home hardening, a number of states have added state grants and financial assistance to their suite of incentives. For example, California's Safe Homes Grant Program (AB 888[17]) provides funding to assist low- and moderate-income households with wildfire mitigation improvements. Similar programs have been implemented in Colorado (2021 Marshall Fire Assistance program[18]) and Alabama (Strengthen Alabama's Homes program[19]). These programs have helped increase participation among homeowners who would otherwise be unable to afford structural retrofits.

Research consistently shows that grant programs are most effective when targeted at households facing the greatest economic barriers. Additional financial mechanisms have been proposed to further reduce barriers, including no-cost endorsements that fund home hardening following substantial losses, premium assistance for wildfire insurance coverage, and expanded grant funding tied to verified mitigation activities. Together, these mechanisms reflect an understanding that reducing wildfire losses requires investing in prevention rather than relying solely on post-disaster recovery.

Innovative Financing Mechanisms

Beyond grants and insurance incentives, a growing body of literature explores financing models in which costs are shared by various beneficiaries based on the value they receive. Blended financing approaches, such as resilience bonds and revolving mitigation fund programs, provide upfront capital for wildfire prevention while allowing governments, insurers, utilities, and other beneficiaries to repay investments over time. An example of this approach is the REDD+ framework[20] under the Paris Agreement, which allows developing countries to receive payments for emissions reductions achieved through reduced deforestation. These financing mechanisms recognize that the benefits of wildfire mitigation extend beyond individual homeowners to include reduced insurance losses, improved ecosystem health, enhanced public safety, and protection of critical infrastructure.

New insurance solutions such as parametric insurance and resilience insurance models also aim to reward risk reduction efforts through pricing or coverage improvements. These solutions rely on a well-functioning measurement, reporting, and verification (MRV) system that demonstrates risk reduction and instills confidence among insurers and investors. When mitigation outcomes are verified, financial savings can be reinvested into future resilience projects, creating a continuous cycle of prevention and investment.

Regulatory Approaches

Building Codes and Construction Standards

Building codes represent one of the most promising tools for reducing community vulnerability to wildfires, as they require new construction to incorporate wildfire-resistant elements from the outset. Researchers with the National Bureau of Economic Research found 43% fewer homes were destroyed when built to wildfire-resistant standards in a large sample of California wildfires. Other economic studies estimate that 60% of wildfire-resistant homes survive wildfire events.[21] California's Chapter 7A building code has substantially improved wildfire-resistant construction within designated High Fire Hazard Severity Zones by requiring ignition-resistant construction techniques and materials. However, the geographic scope of Chapter 7A is limited, leaving much of the existing housing stock vulnerable. Notably, 40% of the burned area in the 2025 Los Angeles Fires was not subject to the stronger code, which means many homeowners in those areas will face difficulty rebuilding to a more resilient standard.[22] California's Safe Homes Grant Program (AB 888) aims to address this gap by providing funding for wildfire mitigation improvements. In addition to strengthening and expanding existing building codes, there is a need for sustained investment in retrofitting older homes to meet current resilience standards.

Land Use Planning and Infrastructure

Wildfire-resilient policies that promote proper land use planning, hardening of utilities, and vegetation management reduce vulnerability at the community level rather than placing the burden solely on individual homeowners. Research recommends expanding incentives for local governments to improve land use planning, increase fuel management around WUI communities, and require wildfire mitigation planning for electric utilities.[23] Investments in utility partnerships have demonstrated that collaborative approaches produce better outcomes than traditional infrastructure mitigation while also reducing overall costs.[24]

Community-Based Programs

Community engagement consistently proves to be among the strongest predictors of success in wildfire prevention efforts. Because wildfires spread across communities, the most effective resilience strategies require cooperation among community members rather than improvements to isolated homes. Fire Safe Councils, local authorities, non-profit organizations, utility companies, and communities themselves have developed fire prevention programs designed to translate wildfire knowledge into actionable steps for residents. These organizations deliver education, technical support, workforce development, and peer-to-peer learning that foster trust between residents and agencies. Studies show that community engagement is most effective when it involves collaboration rather than one-way communication[25] and when it is tailored to local social and cultural conditions. Local leadership also plays an important role in sustaining wildfire resilience over time. Community champions build participation, encourage collective

action, and ensure that mitigation efforts continue beyond individual grant cycles or pilot projects. By integrating Indigenous knowledge, community monitoring, and locally grounded risk reduction practices, communities can further strengthen long-term wildfire resilience.

Which Incentives Drive Action?

No single incentive is sufficient to drive widespread home hardening adoption. The most effective programs combine multiple approaches rather than relying on one mechanism.

- Homeowners respond positively when mitigation actions are linked to financial rewards, particularly insurance benefits.
- Standardized guidance and verification systems help build community trust that scientific wildfire knowledge will be translated into understandable actions.
- Community-scale implementation is essential, as wildfire risk cannot be reduced through isolated household action alone.
- Equitable participation requires financial assistance, technical support, and partnerships that can understand and address differences in community capacity.

Together, these findings suggest that effective wildfire resilience depends on aligning incentives across homeowners, insurers, governments, utilities, and community organizations. Rather than treating home hardening as a series of standalone retrofit projects, the best outcomes are achieved when the process is approached as a whole system that benefits from complementary incentives and community engagement.

WHAT WORKS IN PRACTICE?

Although an increasing number of studies have shown that home hardening and defensible space reduce the risk of structure loss during wildfires, not all mitigation strategies contribute equally to reducing wildfire risk.[26] The effectiveness of home hardening depends on both the specific actions implemented and the extent to which those actions are integrated within a broader community-scale strategy. Recent post-fire research, including an IBHS report following the 2025 Palisades and Eaton Fires, indicates that structure survival depends on a combination of factors, including parcel-level mitigation, building characteristics, and neighborhood conditions rather than any single intervention alone.[27] Understanding what works in practice requires evaluating not only the effectiveness of individual mitigation measures, but also their cost, implementation feasibility, and scalability.

Effective Home Hardening Measures

The literature identifies certain mitigation strategies that yield disproportionately high benefits relative to their cost. These measures are well-supported by scientific data, relatively inexpensive, and increasingly recognized within insurance underwriting frameworks. A study by Headwater Economics also identifies additional benefits associated with retrofitting homes for wildfire resilience.[28]

The table below evaluates multiple home hardening measures by effectiveness, relative cost, and implementation considerations. "High" effectiveness ratings are those supported by the greatest body of research and evidence of structural survival during a wildfire. "Moderate" effectiveness indicates a smaller but still meaningful evidence base, particularly when considered as part of a comprehensive home hardening approach.

Home Hardening Measure	Effectiveness	Relative Cost	Implementation Considerations
Zone 0	High - reduces combustible materials adjacent to the structure and limits ember ignition and fire spread.	Low-Moderate	Requires regular maintenance and removal of vegetation and other combustible materials.
Ember Resistant Vents	High - addresses a major pathway for embers to enter attics and crawlspaces.	Low-Moderate	Straightforward retrofit that can often be incorporated during home renovations.
Class A Roofing	High - provides strong resistance to ember exposure and fire ignition.	Moderate -High	Most practical when a roof is already due for a replacement. Attention to roof-edge details are important for effectiveness.
Enclosed Eaves	Moderate-High - reduces areas where embers can accumulate.	Moderate	Most practical when combined with roof or other exterior renovations. Existing homes may require more extensive work to retrofit.
Noncombustible Siding/Exterior	Moderate-High - reduces vulnerability to embers, radiant heat, and direct flame contact.	Moderate -High	Can be expensive to retrofit existing homes. Most practical during planned exterior replacement or renovation.
Windows and Doors	Moderate - can improve resistance to radiant heat and ember exposure.	Moderate -High	Effectiveness depends on window construction, glazing, framing, and exposure.
Decks and Fences	Moderate-High - can reduce pathways for fire to spread directly to structures from nearby vegetation or neighboring properties.	Low-High	Costs vary depending on age of home. Prioritizing combustible features adjacent to home can provide the greatest risk reduction.
Gutter Maintenance	Moderate - reduces accumulation of combustible debris that can ignite.	Low	Relatively simple to implement but requires ongoing maintenance.
Vegetation Management Beyond zone 0	High - reduces fuel connectivity and fire intensity around structures.	Low-High	Requires ongoing maintenance and coordination across property boundaries. Effectiveness increases when treatments are implemented across multiple homes.
Structure Separation	High - greater separation between structures can reduce fire spread.	High	Must be addressed through land-use planning and development standards rather than changing existing neighborhoods.

Gaps Between Research and Adoption

Despite a growing body of evidence on effective mitigation strategies, implementation has been inconsistent across wildfire-prone communities. Part of the problem is an ongoing disconnect between what works to mitigate wildfires and what homeowners are willing to do. Wildfire mitigation budgets continue to be allocated primarily toward fire suppression and disaster recovery rather than prevention and resilience, which means that most communities lack the resources to undertake mitigation actions at the scale needed to meaningfully reduce wildfire risk. Other challenges, such as fragmented data management, inconsistent standards, lack of trained personnel, and difficulty retrofitting old buildings to meet current standards, pose additional obstacles.

Social vulnerability compounds these challenges, as households with limited financial resources often face the greatest barriers to implementing mitigation measures despite experiencing higher wildfire risk. Research increasingly argues that wildfire resilience strategies must integrate risk of hazard exposure, infrastructure vulnerability, and social vulnerability to ensure that home hardening investments are both effective and equitable. The challenge for policymakers is no longer identifying which mitigation measures work the best, but rather creating systems that enable widespread adoption and sustained investment across diverse communities.

LESSONS FROM EXISTING HOME HARDENING CASE STUDIES

Home hardening programs across the western United States differ widely in scale, financial models, implementation methods, and goals. Some programs concentrate on parcel-level mitigation and homeowner education, while others emphasize neighborhood-scale fuel reduction, insurance incentives, or integrated community resilience planning. Despite these differences, analysis of available programs reveals a number of common factors associated with success as well as persistent challenges.

The synthesis below draws on experience from community wildfire resilience programs, Fire Safe Councils, insurance-based protection programs, and the Incline Fire Smart Community Pilot Program to identify transferable practices that can inform future wildfire adaptation programs.

Home Hardening Program	Scale (Parcel, Community, Regional)	Actors Involved	Financing
IBHS Fortified Roof Program	Parcel	Homeowners and insurers	Offers premium insurance discounts for following IBHS standards
California Safer from Wildfires Program	Regional	Homeowners, insurers, and communities	Offers insurance discounts for following a 10-step mitigation checklist
State of Colorado Housing Recovery Program (HRP)	Community	Homeowners, communities, and insurers	Offers financing for rebuilding after a disaster
California's Safe Homes Grant Program (AB 888)	Parcel	Homeowners	Provides funding to assist low- and moderate-income households with wildfire mitigation improvements
2021 Marshall Fire Assistance - Colorado	Community	Homeowners and communities	Provides resources for rebuilding post-disaster
Strengthen Alabama's Homes (SAH) program	Parcel	Homeowners	Establishes building codes and standards to help homes withstand wildfires
REDD+ framework	Regional	Corporations	Provides results-based payments for emissions reductions achieved through reduced deforestation
California Chapter 7A building code	Parcel	Homeowners	Establishes wildfire-resistant building codes and standards for homeowners

Case Study: Incline Fire Smart Community Pilot

The Incline Fire Smart Community Pilot Project in Incline Village, Nevada[29] was designed to demonstrate how wildfire risk analysis, vegetation management, home hardening, and community engagement can be integrated into a unified approach to identify priority mitigations with limited resources. Rather than focusing solely on individual homeowners and fuel treatment projects, the pilot project took an innovative community and landscape-scale approach informed by advanced data analytics, to assess wildfire risk at parcel neighborhood, public land, and critical infrastructure levels. The project involved local agencies, researchers, non-profit organizations, private-sector partners, and community members. Rather than tracking only whether individual homeowners had completed mitigation actions, the pilot sought to understand where mitigation would have the greatest impact and how actions at different scales could work together to reduce community risk.

What Did the Pilot Demonstrate?

- Wildfire mitigation is most effective when assessed across multiple scales: The pilot linked parcel-level home hardening with neighborhood vegetation conditions, landscape fuels, utility corridors, and potential structure-to-structure fire spread, demonstrating the importance of considering individual properties within their broader wildfire environment.
- Risk data can be used to prioritize mitigation techniques in high-risk areas: Rather than treating all properties and treatment areas equally, the pilot used wildfire risk assessments and modeling to identify locations where mitigation could provide the greatest potential reduction in risk, allowing resources to be directed where they are needed most.
- Local partnerships are needed for successful implementation: The pilot brought together local organizations, technical experts, researchers, and community stakeholders around a shared goal of improving wildfire resilience. This demonstrated that technical assessments are only one component of successful implementation — organizations capable of communicating with homeowners, coordinating treatments, and maintaining mitigation activities after the pilot ends are equally important.
- Homeowner engagement needs to be connected to specific actions: Information about parcel-level assessments and outreach done to homeowners must contain information about specific vulnerabilities and actionable mitigation steps. The pilot demonstrated the importance of translating complex wildfire risk information into recommendations that homeowners can understand and act upon.
- Continued mitigation and outcome measurement are necessary after the pilot ends: The pilot incorporated before-and-after assessments to evaluate how completed mitigation activities influenced wildfire risk, allowing for homeowners to see the value of investments and informing future mitigation priorities.

What Is Actually Replicable?

One of the most valuable lessons from the pilot is not about the specific technologies or modeling platforms used, but rather the broader program structure and how its components worked together to improve wildfire resilience for the community. The pilot provides a replicable framework while acknowledging that Tahoe's socioeconomic profile is distinct from communities that are more socially and economically vulnerable. Several elements of the pilot can be adapted to other wildfire-prone communities with varying levels of funding, technical capacity, and governance structures.

- An integrated assessment across the homeowner, neighborhood, and landscape scales is needed to understand which actions will have the greatest benefit. The pilot demonstrated the value of evaluating wildfire risk across varying spatial scales rather than treating individual homes as isolated units. Future programs should similarly combine assessments of individual structures with surrounding vegetation, neighboring properties, infrastructure, and broader landscape conditions.
- The pilot demonstrated the importance of local implementation partnerships. Collaboration among local organizations, technical experts, researchers, and community stakeholders allowed the pilot to move from risk assessment to implementation at the community level.
- Homeowner engagement is another critical component. Providing homeowners with information about the specific vulnerabilities of their properties can make mitigation feel more attainable and help translate general awareness into action. Future programs can build on this by translating parcel-level assessments into personalized recommendations.
- Using risk data to prioritize high-risk areas allowed the pilot to direct resources where mitigation could provide the greatest community benefit. When capacity or funding is limited, prioritizing high-risk properties and landscapes can produce the most meaningful reductions in community risk.
- The pilot emphasized the importance of reassessing risk after mitigation, allowing community members to evaluate whether investments are producing measurable outcomes. Future programs should conduct follow-up assessments after home hardening or vegetation treatments to track changes in risk and identify which treatments are most effective.
- Long-term maintenance is essential. Wildfire risk evolves over time, and incorporating maintenance planning into the initial program design helps ensure that mitigation benefits persist after the pilot period ends.

Why This Case Study Matters

These elements together suggest that a framework for moving from risk assessment to prioritized action and long-term maintenance is needed to motivate homeowners. Communities can adapt the specific tools while retaining the underlying process: assessing risk across scale, prioritizing investments using risk data, engaging homeowners through local partners, measuring and assessing outcomes, and planning for long-term maintenance. The most valuable aspect of the pilot may be its demonstration that wildfire adaptation is most effective when mitigation actions are coordinated across parcels, neighborhoods, and landscapes, while remaining grounded in local partnerships and measurable outcomes.

Cross-Cutting Success Factors Across Multiple Home Hardening Initiatives

While the Incline Fire Smart Community Pilot is a great example of a replicable home hardening framework, other initiatives are also advancing community wildfire resilience. Rangeland fire protection organizations in Idaho that serve as first responders for rangeland wildfires, and Firewise Communities, which promote partnership among residents and local fire departments, are examples of communities coming together to reduce wildfire impacts. Across these initiatives, several key components consistently improve resident participation and mitigation outcomes.

Strong Local Leadership and Community Champions

Local leadership has been identified as a critical element of home hardening programs across the case studies reviewed. In Idaho, Rangeland Fire Protection Associations (RFPAs) are a nonprofit volunteer firefighting organizations made up of local farmers, ranchers, and landowners[30] who use local knowledge to be first on scene in rangeland fires. Effective home hardening programs depend not only on state government, insurance companies, and technical professionals, but also on local organizations and leaders who can translate wildfire risk into local action. Local champions facilitate communication between residents and project partners, increase participation in mitigation activities, and help maintain momentum after initial funding cycles end. Fire Safe Councils, homeowners' associations, local government agencies, and nonprofit organizations often serve as a key intermediaries between technical experts and residents, helping communities navigate complex mitigation requirements while building trust and participation. Programs that develop local leadership capacity consistently see increased levels of participation, as residents are more likely to respond to familiar and trusted sources of information than to outside organizations alone.

This was demonstrated through the Incline Fire Smart Community Pilot, which emphasized the importance of having clearly identified residents responsible for communicating with community members, facilitating meetings, answering questions, and supporting implementation. Firewise Communities, led by the National Fire Protection Association (NFPA), similarly promote collaborative efforts among residents, local fire departments, and other key stakeholders to improve the fire resistance of homes and surrounding areas.[31]

Dedicated and Flexible Funding Sources

Another recurring success factor is the availability of dedicated funding that supports both implementation and long-term maintenance. Many wildfire resilience programs can secure funding for initial fuel reduction projects or pilots but struggle to sustain mitigation efforts once grant funding expires. The literature consistently suggests that wildfire resilience should be treated as a long-term investment rather than a one-time project. The Marin Wildfire Prevention Authority[32] exemplifies this approach by creating an ongoing regional structure for coordinating wildfire mitigation. Programs with the highest success rates combine multiple funding sources, including federal and state grants, local assessments, utility

investments, philanthropic support, and private-sector partnerships. Diversifying funding streams allows for flexibility, as programs are not dependent on a single funding source. The pilot specifically emphasized the need to develop maintenance programs, contractor networks, funding pathways, and resource directories to sustain mitigation efforts after the completion of pilot projects, recognizing that both fuel reduction and home hardening require ongoing investment rather than periodic intervention.

Clear Standards and Verification Methods

Programs that establish clear expectations and measurable outcomes tend to see better participation and stronger relationships with insurers and decision-makers. Homeowners are more willing to engage in mitigation when they understand what is expected from them, why their actions matter, and how their efforts will be evaluated. Several programs reviewed in this synthesis emphasize the value of standardized mitigation systems, such as defensible space inspections, home hardening assessments, and certification processes. The Firewise "How to Prepare Your Home for Wildfires" guide, for example, provides concrete risk reduction actions that homeowners can take to protect their properties.[33] These tools simplify complex wildfire science for homeowners and provide a common framework for homeowners, insurers, contractors, and government agencies. The pilot expanded on this concept by incorporating before-and-after wildfire modeling in order to quantify changes in community risk, demonstrating how verification systems can improve accountability, strengthen funding applications, and potentially support future insurance recognition of mitigation efforts.

Community-Scale Implementation

The most important lesson emerging from recent wildfire resilience initiatives is that mitigation efforts are most effective when implemented at the neighborhood or community scale. While parcel-level actions remain critical, wildfire behavior is determined by landscape conditions, structure spacing, fuel continuity, and infrastructure vulnerabilities that extend beyond individual properties. Coordinated efforts that address fuels across public lands, utility corridors, neighborhoods, and parcels produce greater risk reductions than individual homeowner action alone. The pilot demonstrated this by combining parcel-level home hardening with vegetation management, public land treatments, utility corridor projects, and neighborhood-scale planning. These findings support a growing body of research suggesting that wildfire resilience should be approached as a collective action challenge rather than a matter of individual homeowner responsibility.

Implications for Future Home Hardening Programs

Successful wildfire mitigation depends not only on identifying effective measures for reducing risk, but also on creating conditions that allow these measures to be adopted and maintained. Five priorities emerged across case studies for designing future home hardening initiatives.

1. Design Programs at the Community Scale: Home hardening can be implemented as part of a broader community wildfire resilience strategy rather than as a collection of individual property improvements. Wildfire risk is influenced by surrounding vegetation, neighboring structures, infrastructure, and landscape conditions; parcel-level risk reduction reduces the vulnerability of individual structures but does not take into account the landscape as whole. Programs that coordinate mitigation across multiple scales address pathways of fire spread that are beyond the control of individual homeowners. IBHS and Global Emergency Relief, following the Eaton Fire, have implemented post-fire retrofits with the goal of helping communities build back more resiliently.[34] The Incline Fire Smart Community Pilot also provides another example of this approach by integrating parcel-level assessments with landscape-scale vegetation management and wildfire risk analysis. Designing programs at the neighborhood scale also helps prioritize areas where coordinated action is likely to produce the greatest risk reductions.

2. Pair Mitigation with Financial and Insurance Incentives: Future programs should connect mitigation with financial mechanisms that reduce upfront costs and provide homeowners with tangible benefits for taking action. Programs should strive to strengthen the connections between risk assessment, verification, and underwriting so that homeowners can establish a clear link between risk reduction and financial benefit. Without targeted assistance, home hardening programs risk benefiting primarily those with greater financial capacity. Targeted assistance can help ensure that investments towards wildfire resilience reach vulnerable populations rather than concentrating benefits among higher-income homeowners.

3. Use Clear Standards and Verification: Homeowners benefit from clear and consistent information about what actions to take, which actions matter most, and how completion will be evaluated. Effective programs offer straightforward mitigation standards, checklists, and assessment processes — like the Incline Fire Smart Community Pilot replicability guide — that translate wildfire science into practical guidance. Standardized approaches improve coordination among homeowners, contractors, local governments, and insurers. When mitigation actions are consistently documented and verified, they can be incorporated into grant programs, insurance decisions, and community risk assessments.

4. Build Local Capacity and Partnerships: Along with funding and technical guidance communities need the capacity to communicate with homeowners, coordinate projects, connect residents with contractors and resources, and sustain mitigation efforts over time. Local groups and community leaders play a key role in establishing trust and translating scientific information into actions, particularly in communities where residents may have limited familiarity with programs or where institutional trust is limited. Building local capacity makes it more likely that mitigation will continue after an initial pilot or grant period ends.

5. Measure Outcomes and Plan for Long-Term Maintenance: Future programs are most effective when they incorporate evaluation and maintenance into their design from the outset, rather than treating these as afterthoughts. Establishing baseline conditions before mitigation and conducting follow-up assessments after implementation allows homeowners and programs to demonstrate tangible improvements in wildfire resilience. Programs should identify long-term funding sources and monitoring mechanisms to support ongoing maintenance of vegetation and homes before the initial pilot ends.

Implications for Replication

These five priorities provide a framework for designing future home hardening programs that are community-scaled, financially accessible, standardized, locally supported, and measurable over time. One lesson from existing case studies is that communities need not replicate a specific program or technology, but rather adapt a combination of programs to local conditions. This combined approach shifts home hardening from a collection of individual homeowner actions towards long-term community resilience.

CONCLUSION

Addressing wildfire resilience requires a shift in emphasis from solely managing emergencies and suppressing wildfires to creating solutions that reduce the likelihood of ignition. Home hardening, as discussed throughout this report, is one critical component needed to make this shift. However, it is impossible to achieve widespread implementation of these mitigation strategies based solely on technical guidance. Homeowners' behavior regarding fire mitigation is influenced by their financial capacity, awareness of wildfire risk, insurance options, access to information, and capacity for community mobilization. At the same time, the effectiveness of individual mitigation measures depends on how consistently they are implemented across neighborhoods and how well they are integrated with broader landscape and community-scale risk reduction strategies.

It is important to begin with an analysis of homeowner motivations and constraints as a first step to increasing homeowner participation. It is critical to ensure that the measures are beneficial to the homeowners and that there is a clear connection between cost and risk reduction. The findings in this report suggest that successful programs must make mitigation understandable, financially accessible, and relevant to homeowners' immediate concerns. No single policy or incentive is sufficient to drive widespread home hardening. The most effective programs use complementary tools together rather than relying on one mechanism in isolation.

Case studies show that the most transferable programs are those that operate at the community level, are sustainable, and build long-term capacity. Successful programs require local leadership, adequate and sustainable funding, clear mitigation standards, technical assistance, community engagement, and

mechanisms for evaluating outcomes. These features are especially important because wildfire resilience cannot be built within a single grant cycle or through one retrofitting program alone.

A key lesson from the literature is that home hardening cannot be treated as the sole responsibility of the homeowner. Achieving future wildfire resilience requires coordination among homeowners, insurers, local and state governments, utility companies, community groups, and technical advisors. Financial incentives can motivate action; regulatory standards can ensure minimum levels of protection; community programs can increase participation; and risk modeling can help allocate resources where they will have the greatest impact. When these components are coordinated, home hardening becomes part of a larger system of wildfire risk reduction rather than a collection of disconnected projects.

For future community-scale efforts, the opportunity is to not simply replicate individual mitigation measures or community pilots, but to replicate the systems that make mitigation possible. The most successful system will be one that involves setting priorities, securing funding, building community engagement, measuring progress, and sustaining effort after the pilot period ends. The ultimate goal should be to establish wildfire resilience programs that are not only effective at physically reducing risk, but are also affordable, measurable, equitable, and sustainable over time.

ENDNOTES

[1] Kalina Velev. "Wildfires and Climate Change." NASA Science, 30 Jan. 2025, https://science.nasa.gov/earth/explore/wildfires-and-climate-change/. Accessed 12 Aug. 2026.

[2] Knobloch, Jenna. "How to Reduce Community Wildfire Risk for a More Resilient California." Preventionweb.Net, 7 Aug. 2026, https://www.preventionweb.net/news/how-reduce-community-wildfire-risk-more-resilient-california. Accessed 12 Aug. 2026.

[3] Watkins, Nancy, et al. State of Insurance for Wildfires Issue Brief on Behalf of Alliance for Wildfire Resilience August 2025. https://alliancewr.org/wp-content/uploads/2025/09/9-2-25_State-of-Insurance-for-Wildfires.pdf. Accessed 12 Aug. 2026.

[4] Davis, Emily Jane. "Community Engagement in Fire Preparedness: It's How That Matters." OSU Extension Service, 7 Mar. 2025, https://extension.oregonstate.edu/catalog/em-9467-community-engagement-fire-preparedness-its-how-matters. Accessed 12 Aug. 2026.

[5] Davis, Emily Jane. "Community Engagement in Fire Preparedness: It's How That Matters." OSU Extension Service, 7 Mar. 2025, https://extension.oregonstate.edu/catalog/em-9467-community-engagement-fire-preparedness-its-how-matters. Accessed 12 Aug. 2026.

[6] Bloemers, Ralph "Motivating People to Prepare Before Fire Comes" Memo to Invested Parties, 1 Jan. 2026, Memorandum, Go Alliance

[7] "Firewise Communities | Ready for Wildfire." Readyforwildfire.Org, 2026, https://www.readyforwildfire.org/prepare-for-wildfire/firewise-communities. Accessed 12 Aug. 2026.

[8] "California - California Fire Safe Council (CFSC) - About Us." California Fire Safe Council, https://cafiresafecouncil.org/about-us/about/. Accessed 12 Aug. 2026.

[9] Watkins, Nancy, et al. State of Insurance for Wildfires Issue Brief on Behalf of Alliance for Wildfire Resilience August 2025. https://alliancewr.org/wp-content/uploads/2025/09/9-2-25_State-of-Insurance-for-Wildfires.pdf. Accessed 12 Aug. 2026

[10] "Individuals and Households Program | FEMA.Gov." Www.Fema.Gov, https://www.fema.gov/assistance/individual/program. Accessed 12 Aug. 2026.

[11] McEvoy, Andy, et al. "Integrating Social Vulnerability with Structure Density and Hazard to Improve Community Wildfire Risk Assessments." Environmental Research Letters, vol. 21, no. 7, Apr. 2026, p. 074016, https://doi.org/10.1088/1748-9326/ae5993.

[12]Missing the Mark: Effectiveness and Funding in Community Wildfire Risk Reduction. 2023, https://headwaterseconomics.org/wp-content/uploads/HE_2023_Missing-the-Mark-Wildfire.pdf. Accessed 12 Aug. 2026.

[13]Kousky, Carolyn. "Suggested Insurance Reforms in California to Create Resilient Communities and Inclusive Markets." Insurance for Good, 12 May 2025, https://www.insuranceforgood.org/blog/suggested-insurance-reforms-for-resilient-communities-and-inclusive-markets. Accessed 12 Aug. 2026.

[14]"Safer from Wildfires." Www.Insurance.Ca.Gov, https://www.insurance.ca.gov/01-consumers/200-wrr/Safer-from-Wildfires.cfm. Accessed 12 Aug. 2026.

[15]"2021 Marshall Fire Assistance | Division of Local Government." Colorado.Gov, 2021, https://dlg.colorado.gov/2021-marshall-fire-assistance#mitigation. Accessed 12 Aug. 2026.

[16]"Reform Made Real — California Department of Insurance Completes Final Evaluation of Innovative Forward-Looking Model to Address California's Coverage Crisis." Ca.Gov, 2025, https://www.insurance.ca.gov/0400-news/0100-press-releases/2025/release052-2025.cfm. Accessed 13 Aug. 2026.

[17]"Bill Text - AB-888 California Safe Homes Grant Program.." Ca.Gov, 2025, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202520260AB888. Accessed 12 Aug. 2026.

[18]"2021 Marshall Fire Assistance | Division of Local Government." Colorado.Gov, 2021, https://dlg.colorado.gov/2021-marshall-fire-assistance. Accessed 12 Aug. 2026.

[19]"Strengthen Alabama Homes." Strengthenalabamahomes.Com, 2020, https://www.strengthenalabamahomes.com/. Accessed 12 Aug. 2026.

[20]UNFCCC. "What Is REDD+?" United Nations Climate Change, https://unfccc.int/topics/land-use/workstreams/redd/what-is-redd. Accessed 13 Aug. 2026.

[21]Hernandez, Patricia. "Building Wildfire-Resistant Homes after Disasters Will Save Billions - Headwaters Economics." Headwaters Economics, 19 May 2025, https://headwaterseconomics.org/natural-hazards/wildfire/building-wildfire-resistant-homes-after-disasters-will-save-billions/. Accessed 13 Aug. 2026.

[22]Kousky, Carolyn. "Suggested Insurance Reforms in California to Create Resilient Communities and Inclusive Markets." Insurance for Good, 12 May 2025,

https://www.insuranceforgood.org/blog/suggested-insurance-reforms-for-resilient-communities-and-inclusive-markets. Accessed 13 Aug. 2026.

[23]Watkins, Nancy, et al. "State of Insurance for Wildfires Issue Brief on Behalf of Alliance for Wildfire Resilience." August 2025. https://alliancewr.org/wp-content/uploads/2025/09/9-2-25_State-of-Insurance-for-Wildfires.pdf. Accessed 13 Aug. 2026.

[24]Monroy, Carlos, et al. "Wildfire Structure Losses Are Reduced by Defensible Space and Home Hardening." Nature Communications, vol. 16, 2025, article 63386, https://doi.org/10.1038/s41467-025-63386-2.

[25]McEvoy, Andy, et al. "Integrating Social Vulnerability with Structure Density and Hazard to Improve Community Wildfire Risk Assessments." Environmental Research Letters, vol. 21, no. 7, Apr. 2026, p. 074016, https://doi.org/10.1088/1748-9326/ae5993.

[26]Zamanialaei, Maryam, et al. "Fire Risk to Structures in California's Wildland-Urban Interface." Nature Communications, vol. 16, no. 1, Nature Portfolio, Aug. 2025, https://doi.org/10.1038/s41467-025-63386-2. Accessed 13 Aug. 2026.

[27]Monroy, Xareni, et al. The 2025 LA Conflagrations. Insurance Institute for Business & Home Safety, Dec. 2025. Google Drive, https://doi.org/10.82346/kyxn-ns13.

[28]Daigle, Bill. "Additional Benefits of Wildfire-Resistant Homes." Headwaters Economics, 12 Aug. 2026, https://headwaterseconomics.org/natural-hazards/additional-benefits-of-wildfire-resistant-homes/. Accessed 19 Aug. 2026.

[29]"Fire Smart Community Pilot - Tahoe Fund." Tahoe Fund, 6 May 2026, https://www.tahoefund.org/projects/active-projects/incline-fire-smart-community-pilot/. Accessed 19 Aug. 2026.

[30]"Rangeland Fire Protection Associations." Department of Lands, https://www.idl.idaho.gov/fire-management/rangeland-fire-protection-associations/. Accessed 19 Aug. 2026.

[31]"Firewise Communities | Ready for Wildfire." Readyforwildfire.Org, 2026, https://www.readyforwildfire.org/prepare-for-wildfire/firewise-communities. Accessed 19 Aug. 2026.

[32]"Projects by Location." Marinwildfire.Org, 2026, https://www.marinwildfire.org/projects-by-location?tab=allzone. Accessed 3 Sept. 2026.

[33]"Download the How to Prepare Your Home for Wildfires PDF." Nfpa.Org, 2024,

https://www.nfpa.org/downloadable-resources/safety-tip-sheets/how-to-prepare-your-home-for-wildfires. Accessed 19 Aug. 2026.

[34]Stich, Brian. "IBHS and GER3 Bring First Wildfire Prepared Home Designations to Altadena Families Following the Eaton Fire." Insurance Institute for Business & Home Safety, 17 Dec. 2025, https://ibhs.org/ibhs-news-releases/ibhs-and-ger3-bring-first-wildfire-prepared-home-designations-to-altadena-families-following-the-eaton-fire/. Accessed 17 Aug. 2026.



www.climateandwildfire.org
info@climateandwildfire.org