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Wildfire risk reduction and property protection in the United States

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Introduction

Wildfires have always been part of natural ecosystems across the United States. The risk to people and property has risen dramatically in recent decades due to more than a century of fire suppression in forests and rangelands, unchecked development of vulnerable structures into wildfire-prone landscapes, and the impacts of a changing climate influencing wildfire spread and magnitude.

Today, nearly half the nation's building stock is exposed to the threat of wildfire. Privately owned property exists in a cultural context where protection of structures is seen not as the job of the private property owner, but as the job of government - namely, firefighters. As a leading global fire safety organization, the National Fire Protection Association (NFPA) seeks to eliminate the wildfire threat to life and property via education, outreach, and advocacy. Our *Outthink Wildfire* policy initiative is rooted in two realities – first, wildfires are going to happen; and second, the fire service will not be able to extinguish these fires at a pace to save people and property in their path.

Descriptions of a variety of initiatives and programs provide a sense of how various US entities address the wildfire paradox – the need for natural fire in ecosystems vs. the threat fire poses to people and property. US physical, social and political contexts differ from those in other countries, but there are common themes and strategies that lend themselves to use across the globe.

ON FIRE: The Report of the Wildland Fire Mitigation and Management Commission

The Wildland Fire Mitigation and Management Commission, established under President Biden's Bipartisan Infrastructure Law, released a pivotal report on September 27, 2023 (Wildland Fire Mitigation and Management Commission 2023). Marking a milestone in the ongoing efforts to address the escalating wildfire crisis in the US, the report makes nearly 150 recommendations for action by Congress

and represents one of the most comprehensive examinations of the wildfire system to date. These recommendations include:

- Encourage critical risk reduction measures for private properties most at risk through tax credits for structural improvements.
- Offset costs for retrofits and new builds for economically disadvantaged residents through grants and cost-share opportunities for underserved, low-income, or otherwise disadvantaged households located in high-hazard wildfire areas.
- Expand and fund technical assistance programs and develop resources for communities at greatest risk and with limited capacity to improve wildfire resilience.
- Increase financial support and technical resources to jurisdictions to hire staff and enhance capacity to adopt, enforce, and maintain science-based building codes or standards that govern construction, design, and site development in all wildfire-prone regions.
- Provide funding to enhance local community capacity in accessing, implementing, and coordinating risk reduction strategies. This includes support for non-governmental organizations, universities, institutions, and other public and private organizations working at the local level.

National Cohesive Wildland Fire Management Strategy

The mandate of the Wildland Fire Mitigation and Management Commission also included a review and validation of the longstanding National Cohesive Wildland Fire Management Strategy, a strategic framework developed to address US wildfire issues. The Cohesive Strategy was established to improve the nation's ability to prepare for, respond to, and recover from wildland fires while enhancing the safety of firefighters and communities. Mandated by the Federal Land Assistance, Management, and Enhancement Act of 2009 (FLAME Act), and under the direction of the Western Fire Leadership Council (WFLC), the Cohesive Strategy focuses on three main goals:

1. Resilient landscapes: Landscapes, regardless of jurisdictional boundaries, are resilient to fire, insect, disease, invasive species, and climate change disturbances, in accordance with management objectives (U.S. Fire Administration 2024).
2. Fire-adapted communities: Human populations and infrastructure are as prepared as possible to receive, respond to, and recover from wildland fire (that impacts communities) (U.S. Fire Administration 2024).
3. Safe and effective, risk-based wildfire response: All jurisdictions, responding in all land types, participate in making and implementing safe, effective and efficient risk-based wildfire management decisions (U.S. Fire Administration 2024).

Firewise USA®

Starting in 1998, NFPA collaborated with the federal land management agency USDA Forest Service to develop wildfire safety education programming to address the need for risk reduction on private property. The national Firewise USA® recognition program was born from these efforts and formally launched in 2002. Today, there are more than 2,500 participating sites across 35 states, representing more than 1.7 million people voluntarily taking part in wildfire safety work.

The program relies on research-backed recommendations to prepare homes to withstand embers and prevent flames or surface fires from igniting structures and their surroundings within the home ignition

zone (HIZ), which extends 100 feet (30 meters) from the home. As the HIZ often extends onto adjacent parcels, it is crucial for neighbors to collaborate in reducing their shared wildfire risk, acknowledging that wildfire threats are not confined to individual properties.

Administered through the NFPA, Firewise USA operates through a network of partnerships, primarily at the state and local levels. Each state typically designates a state liaison, often an employee of the agency hosting the official state forester, to steer the implementation of Firewise USA within the state. This individual plays a pivotal role in setting the program's direction, reviewing and approving site applications, and managing annual renewal applications.

Communities apply for recognition from NFPA by meeting the following criteria:

- Organize a board or committee of residents and experts and identify a resident leader.
- Collaborate with local wildfire experts to complete a community wildfire risk assessment and use the findings to create a three-year action plan.
- Complete educational and risk reduction activities annually, based on the action plan.
- Document the above actions, including hours and funding expended, in an initial application to NFPA.
- To remain in good standing in following years, communities must document their annual activities through a renewal application, and must update their action plan every three years, and their risk assessment every five years.

Fire Safe Councils

Regional approaches in the Western US have also met with success in community engagement and risk reduction. Fire Safe Councils (FSCs) are community-driven organizations dedicated to wildfire prevention, preparedness, and mitigation (California Fire Safe Councils). Emerging as a successful model for empowering communities to enhance wildfire resilience, FSCs serve as a bridge between government agencies, local residents, businesses, and other stakeholders. While these councils may adapt to local conditions, they share a common purpose and set of activities aimed at reducing the risk of wildfires, and are guided by key objectives:

- Education and awareness: Conduct educational programs and outreach to raise awareness about wildfire risks and safety measures within local communities.
- Mitigation planning: Collaboration with local authorities to develop comprehensive wildfire mitigation plans that include strategies for reducing fuel loads, creating defensible spaces, and improving infrastructure.
- Coordination: Facilitate coordination and collaboration among various entities involved in wildfire management, including fire departments, emergency services, and local governments.
- Community engagement: Encourage residents to take an active role in wildfire preparedness and response, fostering a sense of shared responsibility.

Community Wildfire Protection Plans

Community wildfire protection plans (CWPPs) are collaborative, community-driven frameworks for wildfire risk mitigation, developed at the municipal or county level (Communities Committee, National Association of Counties, National Association of State Foresters, Society of American Foresters, Western Governors' Association 2004). CWPPs offer a comprehensive approach, engaging communities in

identifying and prioritizing wildfire risks. Entities have considerable flexibility to develop plans that are tailored to their individual needs, resulting in a wide range of scope, scale, and goals for CWPPs across the country. They also promote coordinated planning and mitigation efforts, and in many cases, are considered a prerequisite for grant access to state and federal resources.

CWPPs were initiated by the federal government through statutory authority of the Healthy Forests Restoration Act of 2003 (federal legislation). The Act directed federal land management agencies to address hazardous fuels on public lands, and to prioritize work near high-risk residential communities. While federal agencies have no real authority to compel municipal government to act, recent specific funding tied to the development of a CWPP has reinvigorated these planning documents as an effective mechanism to enhance coordination between local, state, and federal government agencies. The Community Wildfire Defense Grant Program, initiated by the US Forest Service in 2023, now provides a specific funding source for local governments to develop CWPPs and funds priority mitigation projects that have been identified in a CWPP.

Wildland-Urban Interface (WUI) and Building Codes

A WUI code is specifically designed to mitigate the risks from wildfire to life and property in areas where properties interface or intermix with wildlands, grasslands, or rural open spaces with vegetation. The standards within a WUI code will vary according to the scope that a community is willing to adopt and enforce. Typically, however, a WUI code includes the following topics:

- Structure density and location: number of structures allowed in areas at risk from wildfire, plus setbacks (distance between structures and distance between other features such as slopes).
- Building materials and construction: roof assembly and covering, eaves, vents, gutters, exterior walls, windows, non-combustible building materials, and non-combustible surface.
- Vegetation management: tree thinning, spacing, limbing, and trimming; removal of any vegetation growing under tree canopies (typically referred to as ladder fuels), surface vegetation removal, and brush clearance; vegetation conversion, fuel modifications, and landscaping.
- Emergency vehicle access: driveways, turnarounds, emergency access roads, marking of roads, and property address markers.
- Water supply: approved water sources and adequate water supply.
- Fire protection: automatic sprinkler system, spark arresters, and propane tank.

Examples of model codes for protection of property from wildfire include NFPA 1140, 2022 edition (NFPA 2022); Chapter 17 of NFPA 1, 2024 edition (NFPA 2024); NIST's Hazard Mitigation Methodology (NFPA 2024; Maranghides et al. 2022) and the International Wildland-Urban Interface Code, 2021 edition (ICC 2021). While these codes have great potential for institutionalizing safety in the built environment, very few local jurisdictions and only two state governments use and enforce these helpful regulatory tools (Insurance Institute for Business & Home Safety, National Fire Protection Association® (NFPA®) Wildfire and Research Divisions, Verisk Analytics, Inc. 2023).

Conclusion

The US approach to managing the threat of wildfire to people and property is necessarily diverse and collaborative, operating at all levels of government, as well as the private and nonprofit sectors. The nation continues to grapple with balancing prevention and preparedness with response and suppression,

and with challenges in finding consensus around solutions. As a complex problem, wildfire disasters resist simple solutions. While there are obvious differences in managing wildfire threat globally, fires themselves know no borders. Hence through knowledge transfer we can learn from each other how to approach and deliver successful wildfire mitigation practices.

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