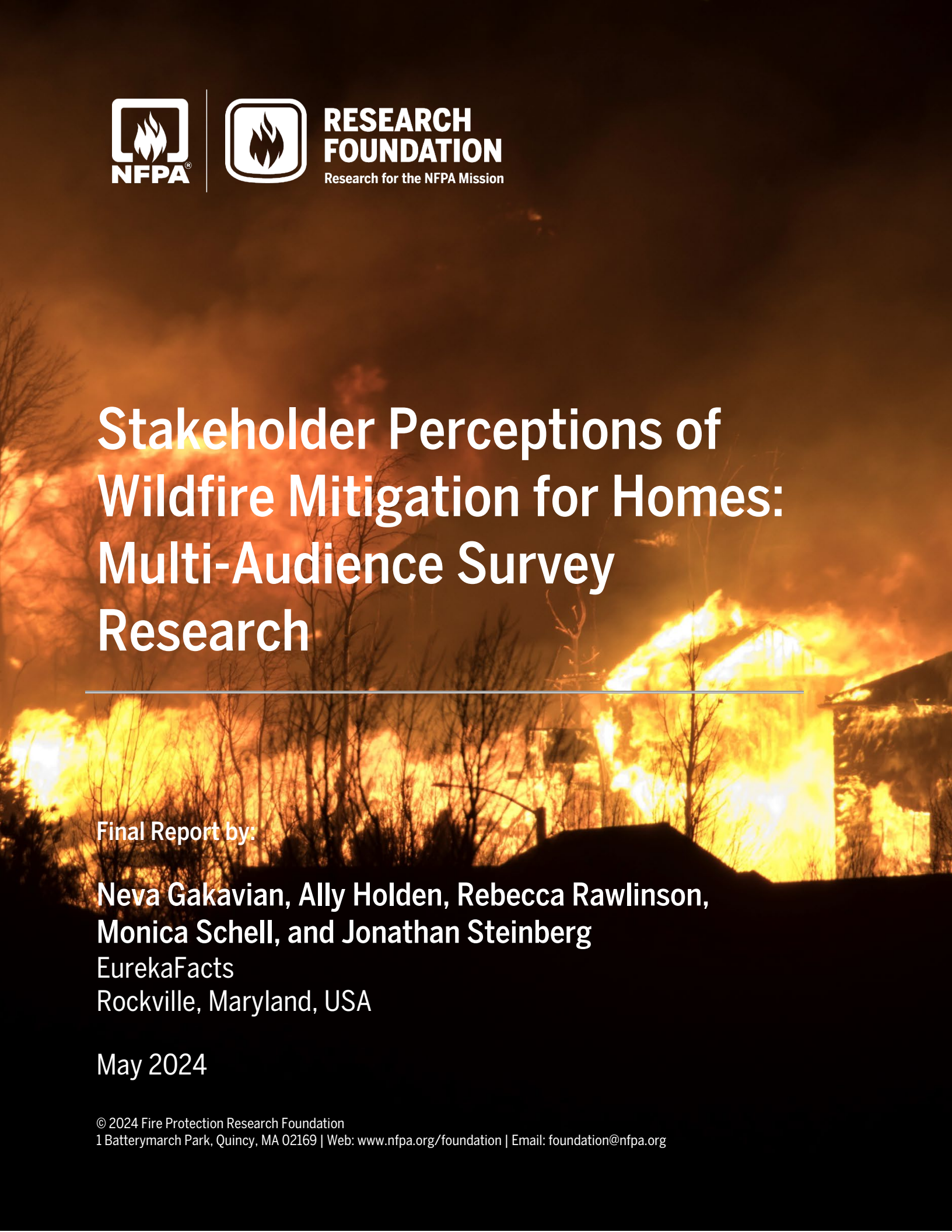

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# Stakeholder Perceptions of Wildfire Mitigation for Homes: Multi-Audience Survey Research

Final Report by:

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May 2024


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# Foreword

According to NFPA, today there are some 45 million homes at risk to wildfire in the United States. To reduce the loss from wildfires, these structures must be retrofitted to reduce the risk of ignition. However, we largely rely on voluntary initiatives to make these changes. This only goes so far and action is needed from government, insurers, and other stakeholders to aid in these initiatives.

Both Oregon and California are implementing regulations that require parcel-level wildfire mitigation action by property owners living in identified wildfire risk areas. These actions include removing or modifying vegetation and other combustible elements on private property, and upgrading home exteriors for ignition resistance.

In order to better message about these regulations and effective mitigation actions, more information is needed about stakeholder perceptions about mitigations for existing structures and motivations for taking action. Stakeholders include homeowners, local government officials, and fire departments. This project gathered information about these topics through surveys implemented in both California and Oregon. The information will help stakeholders develop effective messaging strategies about wildfire mitigations.

The Fire Protection Research Foundation expresses gratitude to the report authors Neva Gakavian, Ally Holden, Rebecca Rawlinson, Monica Schell, and Jonathan Steinberg, who are with EurekaFacts located in Rockville, Maryland, USA. The Research Foundation appreciates the guidance provided by the Project Technical Panelists and all others that contributed to this research effort. Thanks are also expressed to the National Fire Protection Association (NFPA) for providing the project funding.

As this report was being finalized, we learned of the untimely passing of one of the Project Technical Panelists, Ryan Tompkins. Mr. Tompkins worked for the University of California as a Cooperative Extension forestry and natural resources advisor for three northern California counties. He was a champion of community wildfire mitigation, serving with the Plumas County Fire Safe Council, educating neighbors, and helping his own town of Quincy, California, become a recognized Firewise USA® site. We wish to acknowledge his contributions not only to this project, but also to the safety and health of thousands of people through his advocacy and education efforts.



## About the Fire Protection Research Foundation

The Fire Protection Research Foundation plans, manages, and communicates research on a broad range of fire safety issues in collaboration with scientists and laboratories around the world. The Foundation is an affiliate of NFPA.

## About the National Fire Protection Association (NFPA)

Founded in 1896, NFPA is a global, nonprofit organization devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards. The association delivers information and knowledge through more than 300 consensus codes and standards, research, training, education, outreach and advocacy; and by partnering with others who share an interest in furthering the NFPA mission.


All NFPA codes and standards can be viewed online for free.

NFPA's membership totals more than 65,000 individuals around the world.

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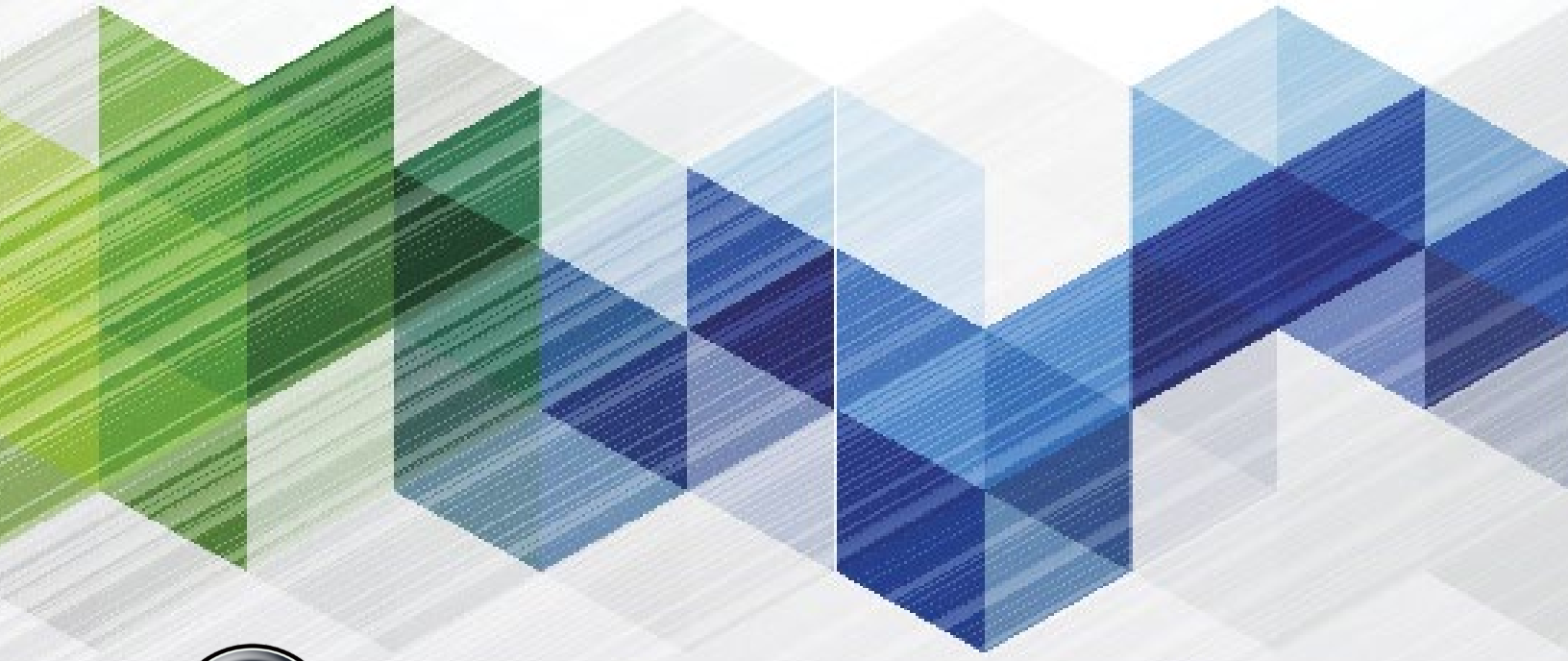
Fire Protection Research Foundation

# Stakeholder Perceptions of Wildfire Mitigation for Homes: Multi-Audience Survey Research

Final Report

May 14, 2024



Smart Research Solutions

# Contents

# 1. Introduction

The National Fire Protection Association (NFPA) launched an Outthink Wildfire policy initiative, which explicitly states NFPA's support for the use of regulation and finding ways to retrofit and mitigate wildfires on existing property. As part of the comprehensive Outthink Wildfire™ initiative of the NFPA[1], NFPA is reaching out directly to state-level policymakers and elected officials to support their communication and education campaigns around wildfire mitigation and regulation. To do so, NFPA is engaging stakeholders to better understand perceptions and, as a result, to craft evidence-based messaging that is likely to spur action by property owners to retrofit structures to reduce the risk of ignition. The study examines the perspectives of homeowners, local government officials, and fire departments in wildfire risk zones in Oregon and California, with a focus on two main areas: stakeholder perceptions about mitigation measures for existing structures, and stakeholder motivators for action.

There are different areas of focus according to the specific constituencies under study. For homeowners, these consisted of (a) what mitigation measures homeowners have implemented, (b) reasons and prompting factors for acting, deciding against implementing mitigation retrofitting, the incidence of inaction and the underlying factors that might explain them, (c) what people value about where they live, (d) perception of risk related to wildfire, (e) willingness to incur costs or labor to act, and (f) relevant incentives.

The most relevant areas to eliciting opinions from government officials included: (a) presence of relevant policies, (b) impact on fire departments, (c) impact on life and safety, (d) impact on home values, (e) changes in zoning and or land use, and (f) incentive programs. Those most pertinent to fire departments included: (a) the impact of mitigation on fire department operations, (b) actions taken to motivate action, (c) mitigation measures implemented in jurisdictions, and (d) the role of fire departments.

EurekaFacts, LLC was engaged to partner with the NFPA to design, conduct, and analyze and report on the data from this study with feedback from an external review panel commissioned by the NFPA consisting of members representing both federal and state agencies, as well as academia. This report will begin with an outline of the background literature supporting the development of the study and an executive summary of the results. From there, greater detail will be provided about the methods and results from each of the constituent

[1] https://www.nfpa.org/education-and-research/policy-and-action/outthink-wildfire

surveys and key takeaways, as well as limitations and future directions. The report will also consist of ways there is alignment, or lack thereof, in findings across constituencies on common topics.

## 2. Literature Review

In recent years, the threat of wildfires has only been escalating in the wildland-urban interface (WUI), an area where properties surround flammable wildland vegetation (Radeloff et al., 2018). According to the National Institute of Standards and Technology (NIST), many interdependent factors influence the spread of wildfires. A single ember ignition can start a catastrophic chain of events; for example, a single home catching fire can result in neighborhood destruction. For this reason, residents must meticulously protect every potential part of the home and parcel that could become a point of entry for embers (Maranghides et al., 2022). Furthermore, wildfire ignitions in WUI communities are becoming more frequent due to human-caused ignitions, housing growth, and climate change (Schoennagel et al., 2017; McCaffrey et al., 2011; Schug et al., 2023). Not to mention, the WUI is only growing over time, along with the annual area burned (Schoennagel et al., 2017; Abatzoglou & Williams, 2016; Hawbaker et al., 2017), and associated fire suppression costs (National Interagency Fire Center, 2017). Augmenting this issue, stakeholders have historically struggled to motivate residents to implement the necessary mitigation measures on their property.

This section presents a literature review of wildfire prevention mitigation; resident beliefs, motivators, and barriers towards mitigating; government provisions; and the role of fire departments.

### *2.1 Wildfire Prevention Mitigation*

To ensure property wildfire preparedness, homeowners must complete vegetation and structural wildfire mitigation actions that protect their property from ignition. According to CAL FIRE's "Ready for Fire" website, vegetation wildfire mitigation, or a "defensible space", creates a buffer between a home and the surrounding wildland area, protecting the home from embers, flames, and heat (2024a). Additionally, according to the NFPA, creating a defensible space requires the following actions: removing needles and leaves from roofs, gutters, decks, and porches, removing excess vegetation around shrubs and trees, thinning and pruning trees so they do not touch each other, relocating firewood/lumber at least 30 feet from the house, and removing vegetation and flammable materials within 5 feet of the house (CAL FIRE, 2024a;

Brenkert-Smith et al., 2012; CAL FIRE, 2024b; McCaffrey et al., 2011; Sommer, 2023). On the other hand, structural wildfire mitigation, or home hardening, entails utilizing fire-resistant materials on and around one's home (CAL FIRE, 2024c). Examples of home hardening actions include: installing a fire-resistant roof assembly (roof materials such as metal or tile along with other installation components like metal flashing), installing dual pane/tempered glass windows, removing or replacing wooden fences within 5 feet of the house with a noncombustible option (e.g., metal), screening house vents (i.e., a 1/8-inch noncorrosive metal mesh screen), installing metal gutters with metal gutter guards, soffiting or enclosing the underside of eaves with noncombustible materials, installing fire-resistant siding (e.g., tile, slate, stucco, cement fiberboard, heavy lumber, brick, or stone), and landscaping with fire-smart materials and vegetation (e.g., rocks; aspen, maple, or poplar trees) (Brenkert-Smith et al., 2012; CAL FIRE, 2024d; Detweiler et al., 2024).

While the majority of surveyed WUI residents have mitigated before, stakeholders struggle to convince residents to complete all of the necessary measures to protect their homes (Brenkert-Smith et al., 2012). For example, a study surveying 677 WUI residents found that the average number of completed actions was 6 out of 12, with only about 16% of respondents completing 10 actions or more (Brenkert-Smith et al., 2012). Further, research reveals that even fewer residents completed structural actions compared to vegetation actions. For example, the same study by Brenkert-Smith et al. (2012) found that while less than one-quarter of residents either installed screening over roof vents (24%) or installed fire-resistant siding (19%), the majority of residents mowed long grasses around their homes (70%) or removed dead or overhanging branches within a 30-ft perimeter of their home (71%).

While the completion rates of vegetation actions appear promising, ensuring the optimal creation of a defensible space requires continuous implementation rather than a singular action. Unfortunately, while most property owners living in surveyed WUI communities have mitigated before, homeowners do not continue these actions over time given the high level of effort and little positive feedback (McCaffrey et al., 2011).

## *2.2 Resident Reasons for and Against Mitigation*

### *2.2.1 Mitigation Motivators*

Past research on wildfire mitigation discovered the following mitigation motivators: protection of family/property, awareness of risk/common sense, personal experience with

wildfire, common sense, aesthetics, law, and financial incentives, among residents of the following regions: Arizona, California, Colorado, Texas, Oregon, Utah, or Idaho (Madsen, 2017; McCaffrey et al., 2011). The first two, protection of family/property and awareness of risk/common sense, were selected by most respondents in each respective study. Further, when asked about an "ah-ha moment" or trigger that propelled them to mitigate, over half of respondents cited a close call with a wildfire (Madsen, 2017). Finally, other motivators for mitigation are a shared sense of responsibility to do so, with each party primarily being responsible for their land, and maintaining property aesthetics, which is also a barrier in some cases (McCaffrey et al., 2011). To conclude, protection of family/property, awareness of risk/common sense, personal experience with wildfires, and shared sense of responsibility are top motivators for the participating residents of Oregon, Utah, or Idaho.

### *2.2.2 Mitigation Barriers*

Understanding the obstacles for residents to complete wildfire mitigation is crucial in promoting their completion. According to a study by the NFPA and the United Services Automobile Association (USAA), examples of prevalent barriers include cost, site-specific problems (e.g., density, vegetation, terrain), labor/professional guidance needed (mitigation measures too difficult to complete), and physical limitations (e.g., elderly populations) (Madsen, 2017). The barrier of cost also inherently includes insurance conflicts; nationally renowned insurance companies have stopped selling new home insurance in California, and some have limited new home insurance sales in Florida and California, due to increased wildfire risks (Lukpat, 2023; Eaglesham, 2023).

An additional barrier stems from the lack of understanding of mitigation actions– either from a lack of knowledge, from finding mitigation information to be confusing, or from finding contradictory information from other sources. A discrepancy between interview and survey responses in a mixed-method study revealed that residents were partaking in mitigation actions that they did not know were mitigation actions; while vegetation actions such as thinning and pruning trees are more commonly known, actions such as moving woodpiles were less frequently mentioned in the interviews than they were selected in the survey (McCaffrey et al., 2011). Further, in a qualitative study on the decision to mitigate, 6 out of 198 residents did not mitigate for various reasons, including a lack of knowledge on what to do, a lack of time, and a low-risk perception (McCaffrey et al., 2011). A recent study by Sanchez et al. (2022) solidified low-risk perception as a prominent barrier. Only 7% of homeowners in the survey subjectively

perceived that they lived in a high-risk area, even though more than 80% of the sample was drawn from areas objectively assessed as being at high or very high risk of wildfires (Sanchez et al., 2021). Finally, examples of contradicting sources include energy companies, which advise residents to keep trees for shade, and wildlife organizations, which advise residents to maintain bush piles for habitats (Monroe et al., 2003).

### *2.2.3 Vulnerable Populations*

Over the past two decades, the number of people in the western United States who live within fire-prone areas increased by 185%. In addition, among those exposed to wildfire who live in California, Oregon, or Washington, a disproportionate number were socially vulnerable: specifically, low-income, a racial minority, disabled, or over the age of 65 as documented by Modaresi Rad et al. (2023). Similarly, the number of highly vulnerable people exposed to fire increased by nearly 250% in these states in the past two decades. However, in California, only a small proportion of the exposed people were highly vulnerable, whereas a considerable proportion of the exposed people in Oregon and Washington were highly vulnerable. Overall, the study concluded that to ensure effective mitigation campaigns, there is a need for an increased understanding of socially vulnerable populations, as well as community-level fire mitigation, planning, response, and recovery programs that account for population differences. Other dimensions of social vulnerability recommended to account for include those living in group quarters and those with limited English-speaking skills. All in all, cost, lack of understanding, low-risk perception, and social vulnerability are all obstacles to mitigating and overall wildfire preparedness.

## *2.3 Assessing Government Program Effectiveness*

Upon asking wildfire mitigation program managers to describe their most effective program for creating defensible space, the majority of interviewees identified four major components: education and public outreach (specifically about wildfire risk and mitigating), the need for state and local risk assessments, direct assistance to homeowners (include home inspections, free prescriptions, and cost-share or free labor assistance) either for free or on a cost-sharing basis, and finally a regulatory component (i.e., mandatory defensible space standards or wildfire hazard review processes for new developments) (Reams et al., 2005).

In this same study, program managers labeled a list of potential obstacles on a scale of 0 to 5, with 0 being not an obstacle. Based on the average score, the potential obstacles with

the highest ratings were budget limitations, public apathy, shortage of technical staff, and resistance to vegetation management by property owners (Reams et al., 2005). A survey of government officials echoed these obstacles along with a need for technical help with risk modeling, inadequate knowledge amongst residents (i.e., risk perception), and inadequate cooperation from residents not only regarding the implementation of wildfire measures on their own property, but also regarding the implementation of wildfire measures throughout the municipality and by the municipality (Harris et al., 2011).

### *2.4 Role of Fire Departments*

Before World War II, federal land management agencies were primarily responsible for wildland firefighting. Historically, local fire departments have been responsible for structural fire suppression, while the state and federal governments have been responsible for wildfire suppression. However, the combination of residential development and human activity necessitated assistance from a greater array of emergency responders, specifically local fire departments, both in responding to wildfires or in prevention and mitigation efforts (Madsen et al., 2018).

A study by Madsen et al. (2018) examined local fire department leadership staff's perception of the roles and responsibilities of their departments in wildfire protection. Specifically, this study recruited "Fire Chiefs and senior line officers in 46 local fire departments with an active history of responding and mitigating wildfire in their jurisdictions and that had experienced a major wildfire event within the last five years" (Madsen et al., 2018). Results indicated that fire professionals perceive their departments' role to align with the Healthy Forests Restoration Act (HFRA), which "encourages the creation of Community Wildfire Protection Plans (CWPP), which need to be developed collaboratively between local fire departments, local government and area residents" (Madsen et al., 2018). Within a CWPP, fire departments and land management agencies collaboratively provide technical advice and information about their area's vegetation while working in collaboration with local residents.

Due to the ever-increasing demand for their resources, many fire departments have faced certain challenges. Fire Chiefs and senior line officers, the interviewees of this study, identified the need for increased involvement and political support. Another challenge was departmental culture; several interviewees mentioned fire departments, especially urban departments, not assuming wildfire risk reduction efforts to be important in their role, and instead focusing most of their attention on structural firefighting and suppression tactics. Finally,

financial constraints were the most frequently mentioned barrier. While fire departments typically seek state and federal grants when funding becomes an issue, interviewees encouraged local fire departments to continue to pursue funding to employ dedicated technical staff, including "public information officers, wildfire risk assessors, and mitigation crews" (Madsen et al., 2018).

# 3. Executive Summary

The following executive summary details overall takeaways of from three surveys for residents (homeowners and renters), fire departments, and local government officials. These surveys aim to understand stakeholder perceptions about wildfire mitigation for existing structures and motivations for action. From the information gathered, recommendations for effective messaging strategies will be developed.

### 1. Resident Survey

A 15-minute online survey was designed and administered to N=981 WUI residents of California (n=514) and Oregon (n=467) living in medium-to-high wildfire hazard areas. Additional screening questions were focused on ensuring that panelists lived in applicable areas (i.e., not in the middle of a city) by asking if they have a yard and the type of home they have. Data collection was conducted from September 27 – October 6, 2023.

The final survey focused primarily on understanding the reasons and prompting factors for mitigating, deciding against implementing mitigation retrofitting, and the incidence of inaction and reasons why. Additional topics included asking residents what mitigation measures have been implemented, their perception of risk related to wildfire, what they value about where they live, their willingness to incur costs or labor to act, and asking about incentive programs.

### 2. Fire Department Survey

A 10-minute online survey was designed and administered to fire department workers with a leadership position and within medium-to-high WUI wildfire hazard areas in California and Oregon. Respondents were screened to ensure they work for a fire department in the correct state and in a county with a high likelihood of wildfires affecting homes. Additional screening questions were focused on familiarity with wildfire mitigation measures. Data collection was conducted from October 30 – December 4, 2023.

The final survey focused primarily on understanding the impact of mitigation measures on fire department operations, steps taken to motivate action by homeowners and communities,

mitigation measures implemented in their jurisdictions, and the role of the fire departments. Additional topics included departments' utilization of wildfire mitigation programs, outreach to residents, and mitigation obstacles.

**3. Government Officials Survey**

A 10-minute online survey was designed and administered to N=30 government officials whose areas of jurisdiction are WUI medium-to-high wildfire hazard areas in California (N=22) and Oregon (N=8). Respondents were screened to ensure they work as government employees in the correct state and in counties with a high likelihood of wildfires affecting homes. Additional screening questions were focused on ensuring that participants were familiar with wildfire mitigation measures. Data collection was conducted from November 2 – December 7, 2023.

The final survey focused primarily on gaining knowledge of relevant policies, incentive programs, changes in zoning or land use, and the impact wildfires have on fire departments, home values, and life safety. Additional topics included asking what measures are implemented in their jurisdictions, what types of communication/education their jurisdictions provide regarding wildfire mitigation and requirements for mitigation measures in their jurisdictions.

Key takeaways from each sub-section are supported with selective percentages from the surveys. More details are provided within the detailed findings section for each survey, as well as the overall conclusions based on the research.

## 3.1 Key Findings & Takeaways of Resident Survey

Key findings from the resident survey reflect mitigation behaviors, perceived risk, sources for wildfire information, mitigation motivators and barriers, and other factors theorized to impact residents' decisions to mitigate.

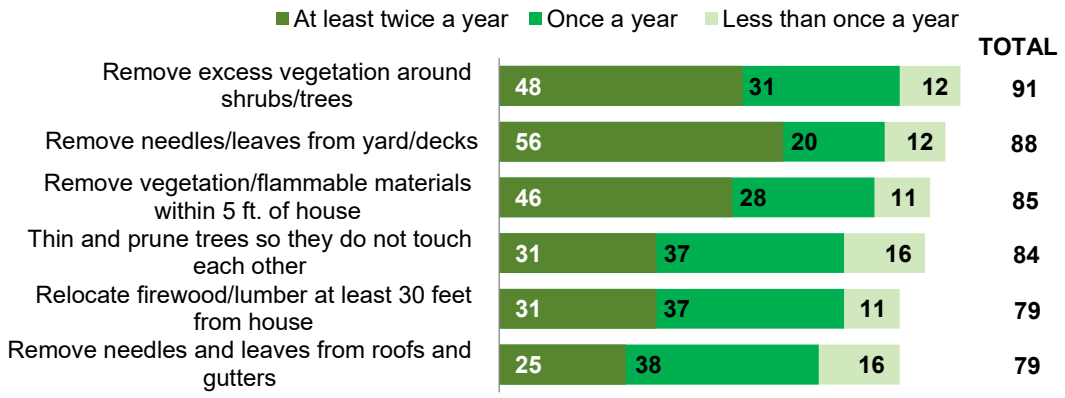
### *Mitigation Actions*

#### Vegetation Mitigation Actions (i.e., Defensible Space)

**Figure 3.1-1**

**Vegetation Maintenance Mitigation Actions (i.e., Defensible Space) Performed by Homeowners by Time Frame**

*% who have performed the following actions at _ frequency...*




Source: Q13. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. N=981. Note: Percentages read across and may not sum to 100% due to rounding.

**Very few residents perform vegetation mitigation frequently enough to protect their property from wildfires.**

- Among the vegetation measures presented in our survey, while most residents have performed some form of vegetation maintenance mitigation measure at any point in time (79 – 91%) or at least once a year (63 - 79%), only 25 – 56% perform a vegetation measure at least twice a year.
  - **Two *most* performed vegetation mitigation measures:** "remove excess vegetation around shrubs/trees" (91% total, 48% at least twice a year) and "remove needles & leaves from yard/deck" (88% total, 56% at least twice a year).
  - **Two *least* performed vegetation mitigation measures:** "relocate firewood/lumber at least 30 ft. from house" (79% total, 31% at least twice a year) and "remove needles & leaves from roofs/gutters" (79% total, 25% at least twice a year).

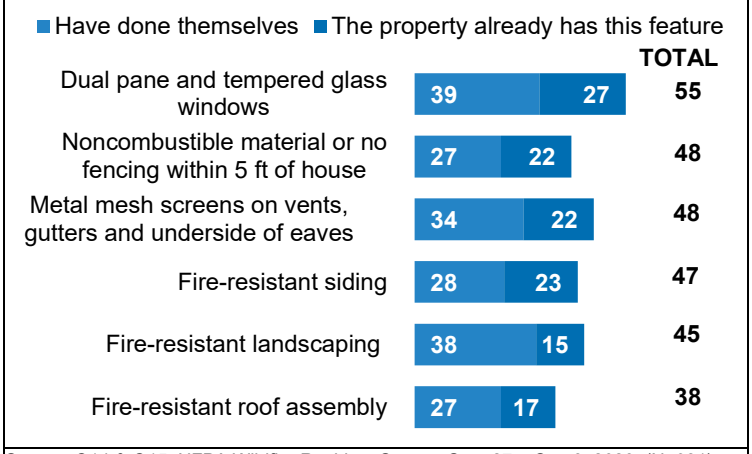
### Structural Mitigation Actions (i.e., Home Hardening)

**Less residents have structural mitigation on their property than vegetation mitigation.**

- While 79 – 91% of residents performed vegetation maintenance at any point in time, 38 – 55% of residents currently have each individual structural mitigation measure in place (whether they had done it themselves or if their property already had it), while even less (27 – 39%) had implemented the structural measure themselves.
- Among the six structural mitigation measures asked, the greatest number of residents have "dual pane and tempered glass windows (55%), while the least amount have a "fire resistant roof assembly" (38%) on their properties.
- Prior research also found that fewer residents completed structural actions compared to vegetation actions (Brenkert-Smith et al., 2012).

**Figure 3.1-2**

**Prevalence of Structural Mitigation Actions (i.e., Home Hardening) among Homeowners & Renters**




Source: Q14 & Q15. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=981).
Note: Percentages read down and may not add up to 100% due to rounding.

**Direct financial indicators, such as annual income, and indirect financial indicators, such as age of home, align with structural mitigation completion.**

- ***Income:*** Residents with an annual income of less than $50,000 were *less likely* to have most (four to six) structural mitigation measures than residents making $100,000 or more. Accordingly, residents making less than $50,000 were *more likely* to have completed no structural measures (25%) than those making $50,000 to $100,000 or less (12%), or $100,000 or more (9%).
- ***Age of Home:*** Residents with older homes were *less likely* to have most structural mitigation measures: 28% of residents of homes built any year up to 1989, 41% of residents of homes built between 1990 and 2009, and 62% of residents of homes built in 2010 or later.
- Affordability ("I can't afford to make changes") was selected by the highest percentage of residents as a mitigation obstacle (35%).

**Residents with physical disabilities were less likely to have structural mitigation on their homes.**

- Residents with a physical disability (29%) were *less likely* to have performed most structural mitigation measures than those without a physical disability (38%).

**While most residents have some wildfire mitigation on their property, very few residents have all the mitigation measures required to protect their property.**

- Among the six structural and vegetation mitigation measures asked about in our survey…
  - Only a quarter (26%) have performed all vegetation measures, at any frequency.
  - Even fewer (14%) have homes with all structural mitigation measures.

### *Sources for Wildfire Risk Information*

**Residents rely on multiple sources for wildfire information.**

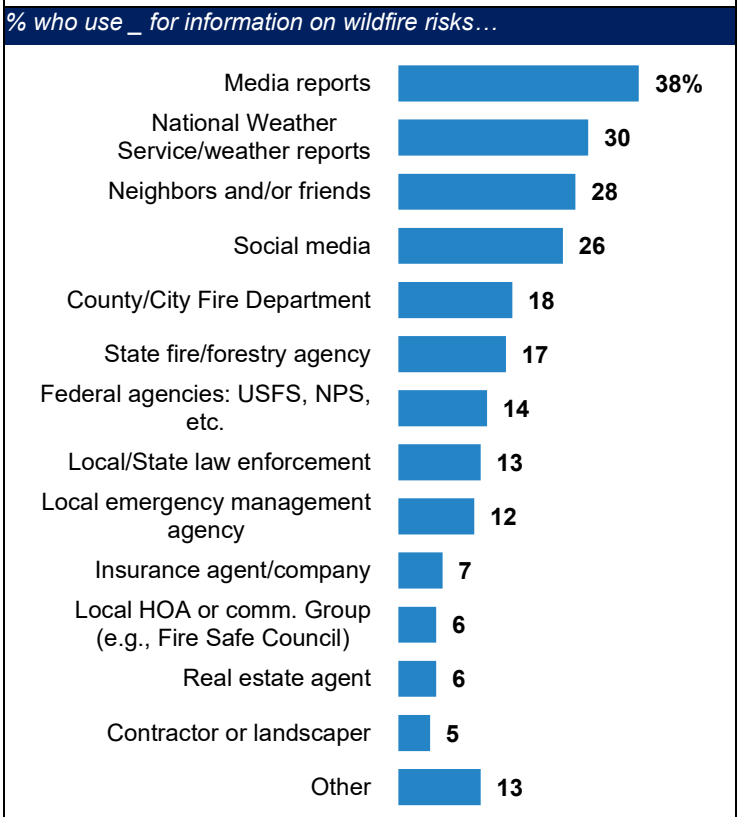
- Only 1% of residents rely on only one source for information on wildfire risk. Most (82%) access two among a vast array of sources.

**While traditional media sources were selected the most, almost half of residents utilize social sources for wildfire safety.**

- 53% of residents accessed one or more ***traditional media sources***: media reports and/or weather reports.
  - Individually, these were selected by 38% and 30% of residents, respectively.
- 45% of residents accessed one or more ***social sources***: neighbors and/or friends; and/or social media.
  - Individually, these were selected by 28% and 26% of residents, respectively.

**Figure 3.1-3**

**Sources Used to Learn About Wildfire Reports and Risk**




Source: Q53. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages are from a select all that apply list and do not sum to 100%.

**Residents were most likely to access either a traditional or a social source (73%).**

**Less than a quarter of residents access a local or state source.**

- 22% accessed at least one type of ***local or state source*** among their county or city fire department, local or state law enforcement, and/or their local emergency management agency.
  - Individually, these were selected by 18%, 13%, and 12% of residents, respectively.

### *Wildfire Knowledge*

**Increasing education on wildfire mitigation is critical not only to encourage residents to mitigate, but to encourage residents to learn more.**


**Residents who are knowledgeable about wildfire mitigation are more likely to mitigate and are more motivated to learn more.**

- The residents who have received education on wildfire risk and mitigation were *more likely* to have completed most structural (51%) or vegetation (89%) mitigation measures than residents who have not received this education (32% and 71%, respectively).
- Compared to residents who were not motivated to learn more, residents who were motivated were *more likely* to be knowledgeable on the following wildfire topics:
  - Wildfire risk in their area
  - Recommended mitigation measures to take.
  - How to complete mitigation measures on their property
  - Where to find resources (financial, materials, etc.) to complete mitigation measures
  - Where to go to get answers to questions about improving wildfire safety.

**The majority of residents (79%) were either somewhat (55%) or very motivated (24%) to learn more about how to implement wildfire measures on their property.**

### *Effect of Perceptions or Past Experiences on Mitigation Behaviors*

**A general concern for wildfires and the proximity of recent wildfires encourage vegetation mitigation.**

- **Residents who were at least somewhat concerned about wildfires were more likely to perform vegetation measures (82%) than those who were not (69%).**
- **The closer a wildfire had occurred, the more likely residents were to perform vegetation measures.**
    - Residents who had experienced a wildfire less than 1 to 10 miles were more likely to have completed the majority of our vegetation measures (89%) than those who had experienced a wildfire 10 to 50 miles away (77%), who in turn were more likely to do so than those who had experienced one more than 50 miles away (67%).

**Figure 3.1-4**

**Concern by Vegetation Mitigation Actions**

| *% who have completed _ # of measures among concerned or not concerned residents* | # of Performed Vegetation Mitigation Measures | | | |
|---|---|---|---|---|
| | None | 1-3 | 4-6 | Total |
| Concerned | 2 | 16 | 82 | =100% |
| Not concerned | 9 | 23 | 69 | =100% |
| Total (General Residents) | 5 | 20 | 75 | =100% |

Source: Q1xQ13. NFPA Wildfire Resident Survey. Sept. 27 – Oct. 6, 2023. N=981.
Note: Percentages read across. White boxes may not add up to 100% due to rounding.

**A general concern for wildfires, the proximity of recent wildfires, and the perceived effectiveness of mitigation measures do not affect structural mitigation.**

- **Residents' perceived effectiveness of a structural measure did not align with whether or not they had it on their property.**
    - Across all structural measures, the majority believe these are at least moderately effective at mitigating wildfires (75 – 89%), while significantly fewer actually have them on their homes (38 – 55%). The gap is widest with respect to "removing vegetation and flammable materials".

### *Other Factors Impacting Motivation*

#### Perceived Wildfire Risk and Awareness

**Residents perceive wildfire threat to be lower in their immediate environment compared to ones further away.**

- ***Time:*** Residents perceive wildfire threat to be lower in the short term compared to the long term.
- ***Distance:*** Residents perceive wildfire threat to be lower in locations closer to them (e.g., their own property), rather than broader (e.g., their community).

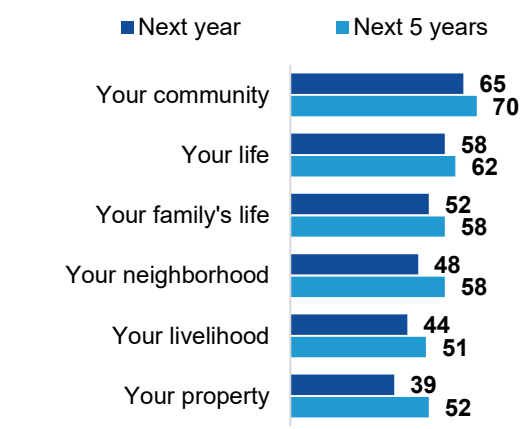
**California, non-White, and female residents are less educated on wildfire risk than Oregon, White, and male residents, respectively.**

- **California residents are slightly less concerned and less risk aware than Oregon residents** *[Please see Section 5.1.1 for more details].*
    - **On average, Oregon residents' concern aligns with the actual risk in their counties.**
        - About half (46%) of Oregon residents lived in counties with high risk to homes. Oregon residents located in counties with *high-risk* to homes had significantly higher concern scores on average than those in *low-risk* counties.
    - **On the other hand, California residents' concern over wildfire risk *does not* align with the actual risk of wildfires in their counties.**
        - California residents predominantly lived in counties with high risk to homes (86%). Although insignificant, those in *high-risk* California counties had lower concern scores on average than those in *low-risk* counties *[Please see Section 5.1.2 for more details]*.

**Figure 3.1-5**

**Perceived risk of wildfire threat over time**

*% of mitigation policies...*




Source: Q2 & Q3. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. N=981. Note: Percentages reported are from one side of the question – 'somewhat', 'very', or 'extremely' likely. Percentages may not add up to 100% due to rounding.

## Perceived Responsibility for Protecting Private Property from Wildfires

**Residents agree there is more responsibility on property owners (52%) than firefighters (26%).**

- While agreeing responsibility is shared to some extent (65%), more residents agree there is more responsibility on property owners (**52%**: 28% property owners only, 24% shared but mostly property owners) than on firefighters (**26%**: 7% firefighters only, 20% shared but mostly firefighters)

**Figure 3.1-6**

**Resident Perception of Fire Department Role**

*% who believe _ is responsible for protecting private property from wildfires…*


Source: Q61. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. N=981. Note: Percentages read across and may not sum to 100% due to rounding.

## What Residents Value about Where They Live

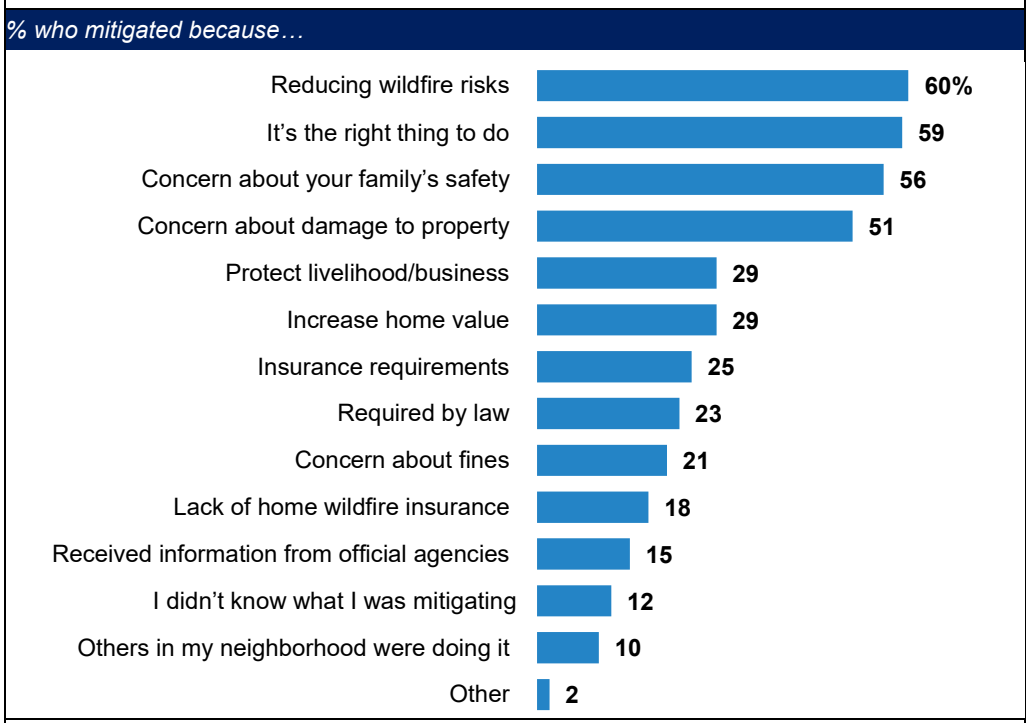
**Valuing "aesthetics", "naturalness", or "privacy" on one's property does not discourage vegetation maintenance.**

- In conflict with other research findings, in our survey, valuing certain property qualities such as "aesthetics" "naturalness", or "privacy" did not deter vegetation maintenance; in fact, those who selected the latter two were more likely to mitigate, and there were no significant differences in vegetation mitigation behavior among those who did or did not value "aesthetics" (Brenkert Smith et al., 2006; Nelson et al., 2004).

### *Mitigation Motivators*

**Figure 3.1-7**

**Resident Reasons for Wildfire Mitigation**




Source: Q28. NFPA Wildfire Resident Survey. Sept. 27 – Oct. 6, 2023. N=981. Note: Percentages are from a select all that apply list and do not sum to 100%.

**Residents' risk perception aligns with their mitigation behaviors.**

- In our survey, awareness of risk is a top reason people mitigate (60%).
- Past studies have also found that risk perception can be a reason residents choose to mitigate (Sanchez et al., 2021) or lack of risk awareness can be a prominent barrier to residents' mitigation efforts if there is low-risk perception. (Madsen, 2017; McCaffrey et al., 2011).

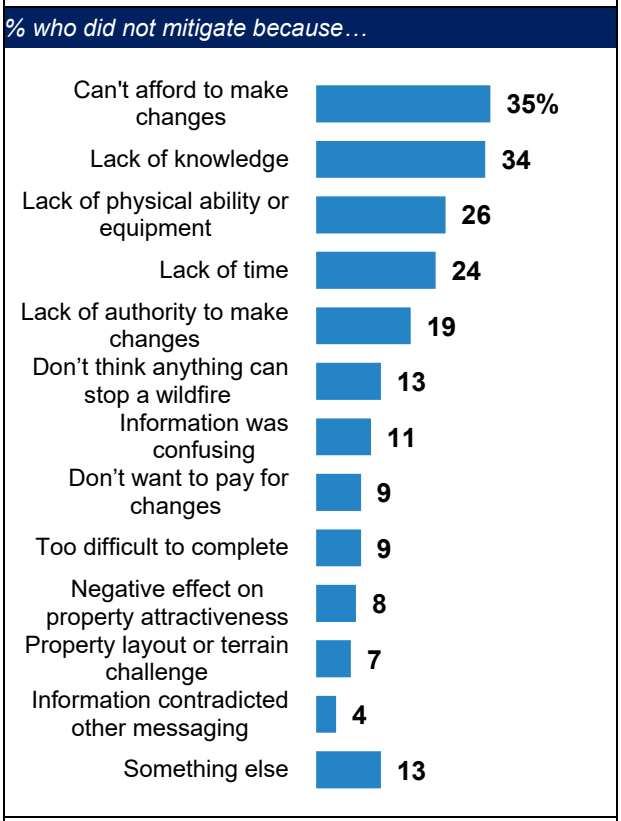
**Residents are more motivated to mitigate by emotional factors rather than financial penalties.**

- Along with general wildfire risk reduction (60%), residents are motivated by a sense of social responsibility (59%), protecting their family (56%) or property (51%). Prior research supports these claims (Madsen, 2017; McCaffrey et al., 2011)
- Residents are less motivated by wanting to increase their home value (29%), adhering to insurance requirements (25%) or the law (23%), or concern over fines (21%).

### *Mitigation Barriers*

**Figure 3.1-8**

**Resident Obstacles to Wildfire Mitigation**




Source: Q46. NFPA Wildfire Resident Survey. Sept. 27 – Oct. 6, 2023. N=981. Note: Percentages are from a select all that apply list and do not sum to 100%.

**Not knowing how to and not being able to afford wildfire mitigation were the most prominent obstacles among residents, especially those whose homes had no structural mitigation.**

- Affordability and knowledge ("I can't afford to make changes" or "lack of knowledge") were selected by the highest percentage of residents as mitigation obstacles (35% and 34%, respectively). Previous research aligns with these findings that the cost of mitigation (Madsen, 2017) and a lack of knowledge from residents (Harris et al., 2011) are barriers to mitigating.
- These obstacles were significantly more selected by residents whose homes did not have structural measures compared to residents who had most measures.

**Other common barriers included:**

- ***Knowledge*** ("lack of knowledge" by 34%, and "information was confusing" by 11%)
- ***Finances*** ("I can't afford to make certain changes" by 35%, and "I don't want to pay for certain changes" at 9%).
- ***Resources*** ("lack of physical ability or equipment" by 26%)
- ***Time*** ("lack of time" by 24%)
- ***Authority*** ("lack authority to make changes" by 19% of renters, or 6% of general residents. *Note: only renters had access to this response option)*.

**Residents lack consensus on any individual obstacle, indicating the need for stakeholders to address a variety of obstacles.**

- Nearly all residents encountered at least one obstacle to mitigating wildfires.

- Only up to 35% of residents selected any individual obstacle (the most selected was "I can't afford to make certain changes" by 35%). This differs from mitigation motivators, where more than half of residents selected several individual motivators.

**Unlike prior research, in our survey, layout/terrain challenges were not a mitigation barrier.**

- According to a study by the NFPA and the USAA, site-specific problems (e.g., density, vegetation, terrain) were a prominent mitigation barrier (Madsen, 2017).
- In our survey, only 7% of residents found layout/terrain challenges to be a mitigation barrier.

### Mitigation Barriers by Demographics

**Residents across states access the same types of sources about wildfire safety and mitigation. However, Oregon and California residents differ regarding knowledge of where to search for information/resources and in philosophies on making changes.**

- **Oregon residents lack information on where to get answers to questions about wildfire safety (47%) or where to find resources (financial, materials, etc.) (34%)** when compared to California residents (58% and 51%, respectively).
- More Oregonians (59%) felt as though they cannot afford to make certain changes than Californians (41%), and more Oregonians felt as though they lack time (57%) than Californians (43%).

**Female residents are less knowledgeable on wildfire risk and preparedness than male residents.**

- Male residents were significantly more likely than female residents to be knowledgeable across wildfire mitigation topics, with the most significant differences regarding where to get answers to questions about improving wildfire safety (65% of males, 42% of females) and on how to complete mitigation measures on their property (64% of males, 43% of females).

### Incentive Programs

**Incentives encourage structural mitigation.**

- Most (83%) of those who have received ***at least one incentive*** have completed two or more structural measures.
- Nearly half (42%) of those who have ***not received any incentive*** have completed no home structural measures.

**Only 3% of residents reported being aware of wildfire mitigation incentive programs.**

- Most residents have not received mitigation incentives (78%), and nearly all of them are unaware they exist (97%).

### *Renters*

**Renters live on properties without structural mitigation.**

- While two-thirds (65%) of general residents have taken at least one structural mitigation action, the majority (76%) of renters either live on properties with no structural mitigation measures or are not sure whether they have any implemented.

**Although most renters have not been in contact with their property owners regarding mitigation measures, the vast majority are willing to do so.**

- Among the 32% of our sample who are renters, two-thirds (66%) have not been in contact with their property owner regarding mitigation measures. Regardless of their past communication, the vast majority (70%) of renters are at least somewhat willing to have these conversations with their property owners.

**One in five renters (19%) lack authority to mitigate on their property.**

## 3.2 Key Findings & Takeaways of Fire Department Survey

The 71 completed survey responses from fire department leadership (39 California, 32 Oregon) were captured through structured survey questions. Key findings from the fire department survey reflect mitigation measures implemented in the jurisdictions, homeowner mitigation and public outreach programs, and the impact of mitigation on fire department operations.

### *Internal Obstacles to Meeting Goals/Objectives of Wildfire Mitigation Programs*

**Figure 3.2.-1**

**Internal obstacles to meeting wildfire mitigation program goals within the department**

| Internal Obstacles | | | |
|---|---|---|---|
| *counts of respondents who said __ is…* | **NET an obstacle** | **A major obstacle** | **A minor obstacle** |
| | *n count* | | |
| Inadequate program budget | **60** | 43 | 17 |
| Not enough firefighters/staff for wildfire inspections | **58** | 42 | 16 |
| Not enough resources and/or funding for wildfire mitigation outreach (e.g., communication, education) | **57** | 38 | 19 |
| Not enough resources and/or funding for wildfire inspections | **57** | 38 | 19 |
| Not enough technical help to conduct proper risk modeling | **47** | 25 | 22 |
| Unclear program goals | **38** | 8 | 30 |
| Lack of preparation within my fire department | **37** | 9 | 28 |
| Inadequate firefighter training for fighting Wildland - Urban Interface fire | **30** | 10 | 20 |

Source: Q66. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71. Responses sum to 71, although some subitems were left unanswered by respondents.

**Lack of <u>funding and resources</u> are the biggest obstacles faced both internally and externally (from residents).**

- The largest major internal obstacles to achieving wildfire mitigation goals are "inadequate program budget" (61%, n=43 and "not enough resources and/or funding for outreach and inspections" (54%, n=38).
- The largest major external obstacle to achieving wildfire mitigation goals is that "residents are unable physically or financially to implement mitigation measures" (51%, n=36) (See Figure 7.3.2 for more details).

**Originating from a lack of funding, departments face <u>staffing limitations</u> for wildfire mitigation management, especially for outreach on wildfire risk/mitigation.**

- While most respondents' departments (69%, n=49) have hired dedicated personnel to handle wildland fire matters, and over half of the respondents' departments (n=38) allocate dedicated personnel to conduct wildfire hazard assessments, still over half of

the respondents claimed “not [having] enough staff for inspections” as a major internal obstacle (59%, n=42).

- Two respondents elaborated on their resource limitations: "*We are understaffed and underfunded which has limited our ability in wildfire mitigation*." This was further emphasized by the quote below, from a volunteer fire chief in Oregon:

> *“Being an all-volunteer department, we do not receive the funding that some of these projects would need to get going. We have some crew that could be hired to take these projects on, but the funding is not there for this.”*
>
> - Oregon fire chief, volunteer FD

- **Among the 68 respondents (out of 71) who have or are currently conducting outreach/educational program(s) for wildfire risk/mitigation, over half (n=35) indicated there is no dedicated staff assigned to any of these programs,** and only 20 have full-time staff dedicated to outreach/education.

### *Mitigation measures Implemented in the Jurisdictions*

#### Wildfire Hazard Assessments

**Most of the respondents’ fire departments provide wildfire hazard risk assessments on private property *on request* (82%, n=58) or *voluntarily* (69%, n=49).**

- This includes most of the Oregon respondents (88%, n=30) and three-quarters of California respondents (77%, n=28) that provide these assessments on request.
- 70% (n=50) of respondents’ departments offer wildfire hazard or risk assessments on private property voluntarily.

**Only one in three fire respondents’ departments provide *regulatory-based* wildfire hazard or risk assessments (35%, n=25).**

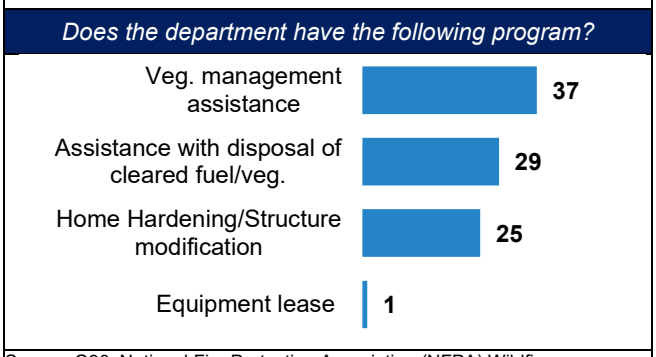
### *Homeowner Mitigation Programs*

**Although most respondents' departments (82%, n=58) perform vegetation and structural management, less than half assist residents with these same activities.**

- **Only one in two respondents' departments (52%, n=37) assist with vegetation management,**
- There was a near-equal split between jurisdictions that have vegetation management programs (n=37) versus those that do not (n=34).
- **Even fewer (35%, n=25) assist with structural management, while 45 do not.**

**Figure 3.2.-2**

**Fire department programs to assist residents with wildfire mitigation**

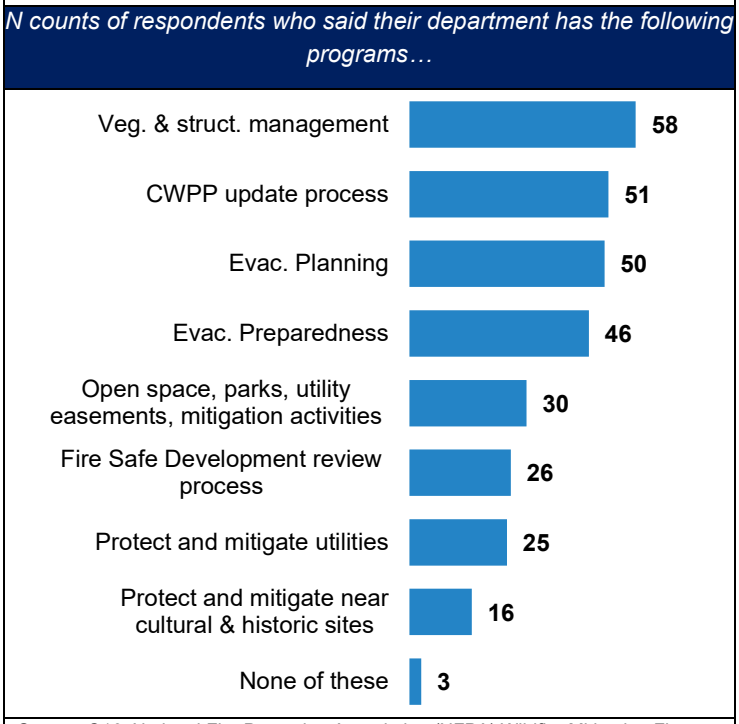



Source: Q30. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71

**There are programs in place to assist residents with implementing wildfire mitigation.**

**Figure 3.2-3**

**Wildfire Risk Reduction (Mitigation) Programs**




Source: Q16. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71. Note: Counts are from a "select all that apply" list and does not add to 71.

- **Most utilized programs:** "Community Wildfire Protection (CWPP) update process" programs (72%, n=51), and "evacuation planning" (70%, n=50)

- **Least utilized program:** to "protect and mitigate around cultural and historical sites" (22%, n=16).

### *Public Outreach/Education Programs*

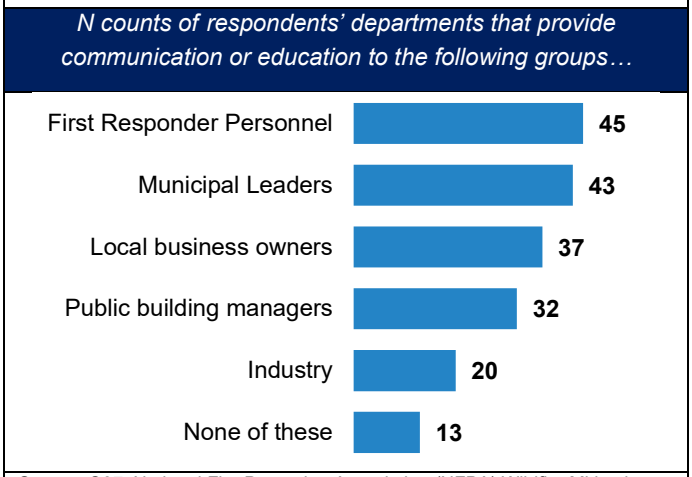
***Who:***

**Apart from residents, a good number of respondents' departments provide communications on wildfire risk/mitigation to first responders (63%, n=45) and/or municipal leaders (61%, n=43).**

- **Public building managers, including those overseeing schools and community centers, were reached by less than half (45%, n=32) of respondents.**
- Notably, 18% (n=13) of respondents' departments do not provide communication for any of these audiences regarding wildfire risk/mitigation.

**Figure 3.2-4**

**Departmental communication and education on wildfire risk and mitigation for different audiences**




Source: Q37. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71. Note: Counts are from a "select all that apply" list and does not add to 71.

***What*:**

**Although most respondents' departments provide communication or education regarding wildfire risk to properties and to communities, fewer are providing information on wildfire mitigation policies, regulations, and ordinances.**

- Most respondents' departments are currently providing information on the risk of wildfires to properties (n=57), communities (n=54), and to safety, health, and life (n=49).
- Many respondents' departments also provide wildfire mitigation measure implementation guidance (69%, n=49).
- Fewer respondents' departments provide information on wildfire mitigation policies and regulations/ordinances (48%, n=34)

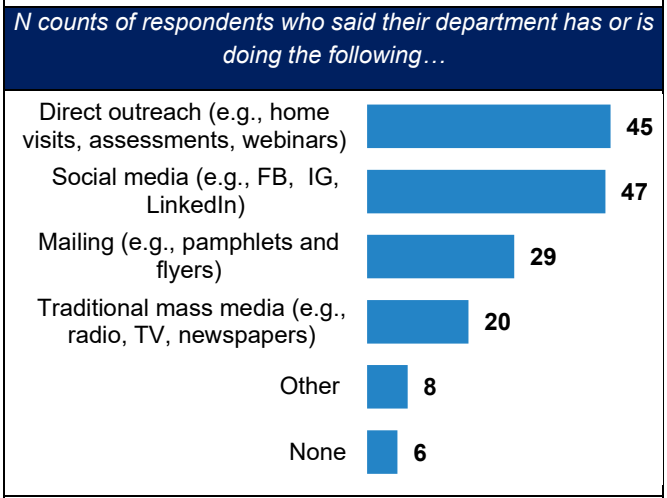
***Where*:**

**Direct outreach and social media are by far the most used methods for outreach on wildfire risk and mitigation.**

- 68% (n=48) of respondents' departments reported having used or currently using direct outreach, while a similar proportion (66%, n=47) have used or are currently using social media.
- Two-thirds (65%, n=46) provide more than one community outreach method.

**Figure 3.2-5**

**Community outreach efforts related to wildfire risk and mitigation**




Source: Q38. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71. Note: Counts are from a "select all that apply" list and does not add to 71.

***How:***

**While most respondents' fire departments provide general publications on wildfire risk and mitigation (70%, n=50), one in two (49%, n=35) provide this information specific to their communities.**

- Even fewer (31%, n=22) have provided publications to planners, developers, or contractors, specifically.
- Of the 44 respondents questioned, the most effective program to engage residents in wildfire risk reduction actions was providing "general publications on wildfire risk and mitigation" (48%, n=21).

**Less than a third of the respondents' departments have provided workshops or demonstrations.**

- Less than half of respondents' departments provide "hands on" defensible space and fire safety workshops/meetings (30%, n=21), demonstration projects (27%, n=19), or demonstrations in homes/gardens (25%, n=18).

## External Obstacles Faced by Fire Departments

**Residents lack the ability (physically or financially) or the understanding of wildfire codes/regulations/ordinances.**

- **63 respondents' departments (89%) believe residents' lack of physical or financial ability is an obstacle to meeting their program goals, including half of respondents' departments (51%, n=36) who see this as a major obstacle.**

- Following suit, 59 respondents' departments (83%) believe a lack of understanding of wildfire codes/regulations/ordinances is an obstacle and 52 respondents' departments (73%) believe a lack of understanding of wildfire risk is an obstacle. Previous research also found inadequate knowledge among residents to be an obstacle (Harris et al., 2011).
  - Notably, a somewhat large number of respondents' departments (n=49) attribute this misunderstanding to a lack of information; however, only 12 noted this as a major obstacle.

**Figure 3.2.-6**

**External, resident-caused obstacles to meeting wildfire mitigation program goals within the department**

| External Obstacles | | | |
|---|---|---|---|
| *counts of respondents who said __ is…* | **NET obstacle** | A major obstacle | A minor obstacle |
| | *n count* | | |
| Residents are unable physically or financially to implement mitigation measures | **63** | 36 | 27 |
| Lack of understanding of code/regulation/ordinance from property owners | **59** | 21 | 38 |
| Lack of perception or understanding of existing risk among residents | **52** | 20 | 32 |
| Lack of information at all or clear explanations for residents on how to complete mitigation measures | **49** | 12 | 37 |

Source: Q67. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71.

**According to respondents' fire departments, residents are resistant and/or apathetic to implementing wildfire mitigation, and some are even against regulations being passed**.

**Figure 3.2-7**

**External, resident-caused obstacles to meeting wildfire mitigation program goals within the department**

| External Obstacles | | | |
|---|---|---|---|
| *counts of respondents who said __ is…* | **NET obstacle** | A major obstacle | A minor obstacle |
| | *n count* | | |
| Resistance to implementing structural management measures | **57** | 27 | 30 |
| Resistance to implementing fuel and vegetation management measures | **55** | 23 | 32 |
| Aversion to regulations being passed | **52** | 27 | 25 |
| Public apathy | **46** | 14 | 39 |

Source: Q67. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71.

- Near equal amounts of respondents recount residents resisting implementing structural measures (n=57) and vegetation measures (n=55).

- More than half of respondents (n=46) see public apathy as an obstacle.
- 52 respondents believe residents being averse to wildfire regulations being passed is an obstacle to meeting the goals of their departments' programs.

### *Perceived Role of the Fire Department*

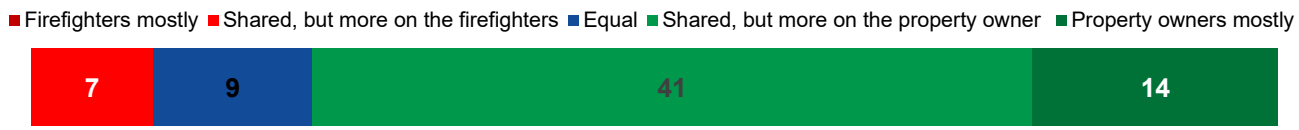
**Most respondents (58%, n=41) believe it should be a shared responsibility between property owners and firefighters to safeguard private property from wildfires with more responsibility on property owners.**

- Previous research aligns with this finding that firefighters believe wildfire protection should be a collaborative effort (Madsen et al., 2018).
- Only 10% of respondents (n=7) believe that it is a shared responsibility between homeowners and firefighters that leans more on the firefighters.
- *Please reference Figure 5.5.3-1 for how residents answered this question.*

**Figure 3.2-8**

**Summary of perceived responsibility for private property protection from wildfires**

*% who believe _ is responsible for protecting private property from wildfires…*




Source: Q61. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71.

### *Impact on Fire Department Operations*

**Fire Departments in WUI are taking action in response to wildfire mitigation efforts. Slightly more respondents' departments have hired or allocated personnel to wildfire suppression efforts rather than for wildfire prevention mitigation efforts.**

- Most respondents (72%, n=51) now have an internal division specific to wildland fire issues, and a similar amount (69%, n=49) has hired personnel to help with these issues. Comparatively, slightly fewer respondents have allocated personnel specifically for wildfire mitigation (58%, n=41), and even fewer (54%, n=38) have allocated personnel for wildfire hazard assessments.
- Notably, a considerable number of respondents' departments (76%; n=54) have also managed the efforts of volunteer fire departments and 65% of respondents (n=46) provided funding for wildfire mitigation endeavors.
- When offered the opportunity to elaborate, several respondents highlighted resource constraints or the importance of building relationships with government agencies and homeowners to foster community-wide efforts in wildfire prevention and mitigation.

- A past study that interviewed fire chiefs and senior line officers supported these findings of desired increased involvement and political support (Madsen et al., 2018).

**Figure 3.2-9**

**Impact on the Internal Structure of Departments**

| *N counts of respondents whose department has done __ in response to wildfire mitigation efforts…* | **Selected** *n count* |
|---|---|
| Managed efforts of volunteer fire departments (e.g., scouts, young fire explorers, etc.) | **54** |
| Created a separate internal division tasked with wildland fire issues | **51** |
| Hired dedicated personnel tasked with wildland fire issues | **49** |
| Invested in mitigation work equipment | **46** |
| Provided funding for wildfire mitigation efforts. | **46** |
| Allocated dedicated personnel tasked with wildfire mitigation efforts | **41** |
| Allocated dedicated personnel to conduct wildfire hazard or risk assessments | **38** |

Source: Q57. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71.

## *3.3 Key Findings & Takeaways of Government Officials Survey*

The completed survey responses from 30 government officials (22 California, 8 Oregon) were captured through structured survey questions. Key findings from the government officials survey reflect obstacles to mitigating, mitigation policies, hazard and risk assessments, incentive programs, outreach to under-resourced populations, land use, impact on fire departments, and impact on property values and life safety.

### *Obstacles*

**Lack of funding is the main obstacle for government officials to reach the goals of wildfire mitigation programs.**

- "Inadequate program budget or funding" and "not enough resources and/or funding to help property owners" were both **major internal obstacles** to wildfire mitigation program success in most jurisdictions (76%, n=23). These findings support previous research that budget limitations are an obstacle for mitigation program managers (Reams et al., 2005).
- "Lack of funding and resources" was a **major external obstacle** in 83% of jurisdictions (n=25).

**Figure 3.3-1**

**Internal and External Obstacles Interfering with the Goals and Objectives of Wildfire Mitigation Programs in Government Officials' Areas of Jurisdiction**

| *n counts who report _ as an internal obstacle…* | NET an obstacle | A major obstacle | A minor obstacle | Not an obstacle |
|---|---|---|---|---|
| Not enough resources and/or funding to help property owners | **26** | 23 | 3 | 4 |
| Inadequate program budget or funding | **25** | 23 | 2 | 4 |
| Lack of qualified government program staff | **22** | 11 | 11 | 8 |
| Inadequate technical help | **20** | 8 | 12 | 10 |
| *n counts who report _ as an external obstacle...* | NET an obstacle | A major obstacle | A minor obstacle | Not an obstacle |
| Lack of funding and resources | **27** | 25 | 2 | 3 |
| Residents resist structural management measures | **28** | 10 | 18 | 2 |
| Lack of understanding from property owners | **27** | 11 | 16 | 3 |
| Residents resist fuel and vegetation management measures | **27** | 6 | 21 | 3 |

Source: Q43, Q44. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

*[See section 9.3.1 and 9.3.2 for full graphs]*

**Other prominent obstacles involve inadequate program staffing and residents resisting or not understanding mitigation measures.**

- Respondents reported a "lack of qualified government program staff" was an **internal obstacle** (major or minor) in 73% of jurisdictions (n=22). On a similar note, "inadequate technical help" was an **internal obstacle** in 67% of jurisdictions (n=20).
- Residents resisting structural management or vegetation management were **external obstacles** in almost all jurisdictions (28 and 27, respectively). A "lack of understanding from property owners" was an **external obstacle** in 90% of jurisdictions (n=27).
- Studies have shown similar findings that a lack of technical staff, resistance to vegetation management (Reams et al., 2005), and inadequate knowledge among residents (Harris et al., 2011) are obstacles to mitigating.

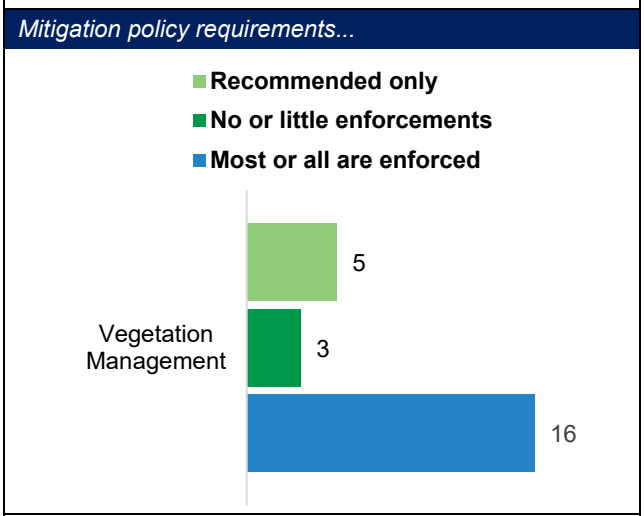
### *Mitigation Policies/Programs*

## Vegetation Mitigation Policies

**Vegetation management is a point of emphasis for government officials.**

**Figure 3.3-2**

**Enforcement of Vegetation Mitigation Measures on Private Property in Government Officials' Areas of Jurisdiction**




Source: Q28. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. Structural management respondents (n=19), vegetation management respondents (n=24).

- 80% of jurisdictions (n=24) have vegetation management policies in place. Of these, 21 (88%) have at least some mandatory requirements in place and **16 (67%) mostly or completely enforce vegetation mitigation measures**.
- In 77% of jurisdictions (n=23), government officials reported performing outreach with targeted communications to residents regarding the implementation of vegetation management.
- Many officials (70%, n=21) indicated that their jurisdictions have prioritized fuel reduction (vegetation management) programs in place.
- Of the 21 jurisdictions that have at least some requirements in place for vegetation management, 10 (47%) reported having nearly all mandatory requirements for vegetation management policies.

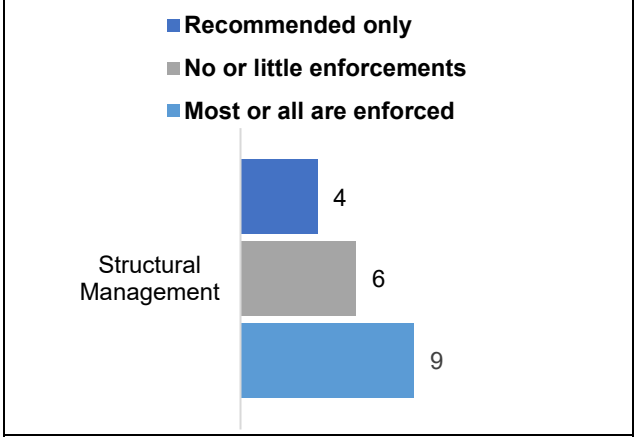
## Structural Mitigation Policies

**By comparison, structural management is less emphasized to residents than vegetation management.**

**Figure 3.3-3**

**Enforcement of Structural Mitigation Measures on Private Property in Government Officials' Areas of Jurisdiction**

*Mitigation policy requirements are...*




Source: Q28. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. Structural management respondents (n=19), vegetation management respondents (n=19).

- 63% of jurisdictions (n=19) have structural management policies in place. Of these, 17 (89%) have at least some mandatory requirements in place and **9 (47%) mostly or completely enforce structural mitigation measures**.
- Targeted outreach to residents regarding the implementation of structural management measures was done in 40% of jurisdictions (n=12).
- 53% of government officials (n=16) reported having structure ignition hazard reduction (structural management) programs in place.
- Of the 17 jurisdictions that have at least some structural management requirements in place, 41% (n=7) reported nearly all mandatory requirements for structural management policies.

**Although most government officials' jurisdictions have at least one wildfire mitigation policy in place, few have all policies asked about in place.**

**Figure 3.3-4**

**Number of Mitigation Policies in Government Officials' Areas of Jurisdiction**

*% of* jurisdiction's *that have _ # of mitigation policies generally …*

| Number of Policies | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Total | 13% | 7% | 3% | 30% | 10% | 7% | 3% | 13% | 13% | =100% |

Source: Q19. NFPA Wildfire Government Officials Survey, Nov. 2 – Dec. 7, 2023. (N=30). Note: Percentages read across and may not add up to 100% due to rounding.

- Of the mitigation policies officials were questioned about, most (30%, n=9) reported there were 3 of these policies in place in their jurisdictions.
- An equal proportion were as likely to have all policies implemented as not have any implemented (13%).

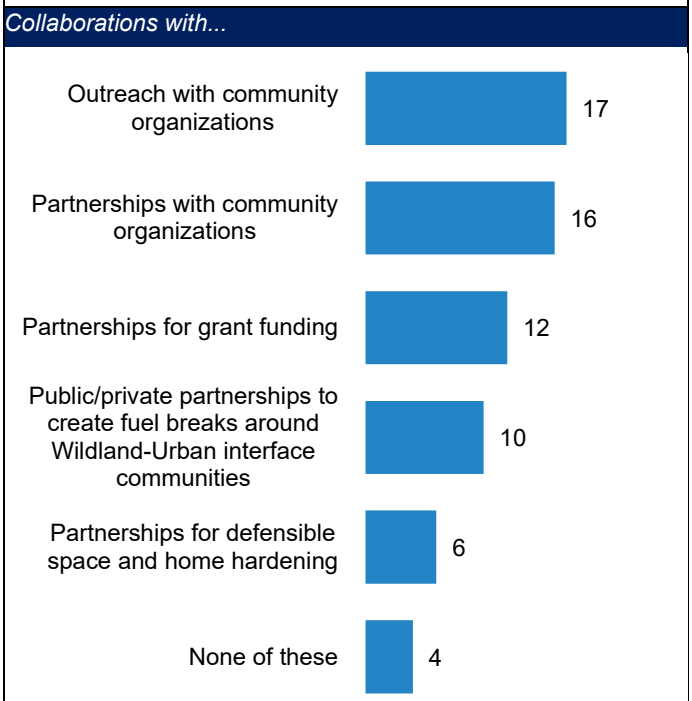
### *Prevalence of Hazard/Risk Assessments and Communication of Wildfire Risk*

**Jurisdictions are performing and communicating about hazard/risk assessments.**

- 70% of government officials (n=21) indicated their areas of jurisdiction have identified wildfire hazard areas and/or conducted wildfire risk assessments.
- 33% of jurisdictions (n=10) provide voluntary wildfire hazard or risk assessment on private property for free and 30% of jurisdictions (n=9) provide regulatory-based wildfire hazard or risk assessment for private property for free.
- Most jurisdictions provide communication/education about wildfire risk to safety, health, and life (67%, n=20) and to communities (63%; n=19).

**Figure 3.3-5**

**Collaborations Regarding Wildfire Risk and Mitigation in Government Officials' Areas of Jurisdiction**




Source: Q53. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

**Partnerships and collaborations are another way government officials are attempting to help with wildfire risk and mitigation.**

- Many government officials (57%, n=17) reported having outreach with community organizations regarding wildfire risk and mitigation in their areas of jurisdiction.
- 53% of respondents (n=16) indicated their jurisdictions have partnered with community organizations regarding wildfire risk and mitigation.
- Only 4 jurisdiction officials reported not being in a partnership regarding wildfire risk and mitigation.

### *Incentive Programs*

**Most jurisdictions do not provide financial assistance or volunteer labor assistance for wildfire mitigation measures on private property or to communities.**

- The mitigation measure that received the most amount of financial assistance on private property is disposal of cleared fuel and vegetation debris (37% of jurisdictions; n=11).

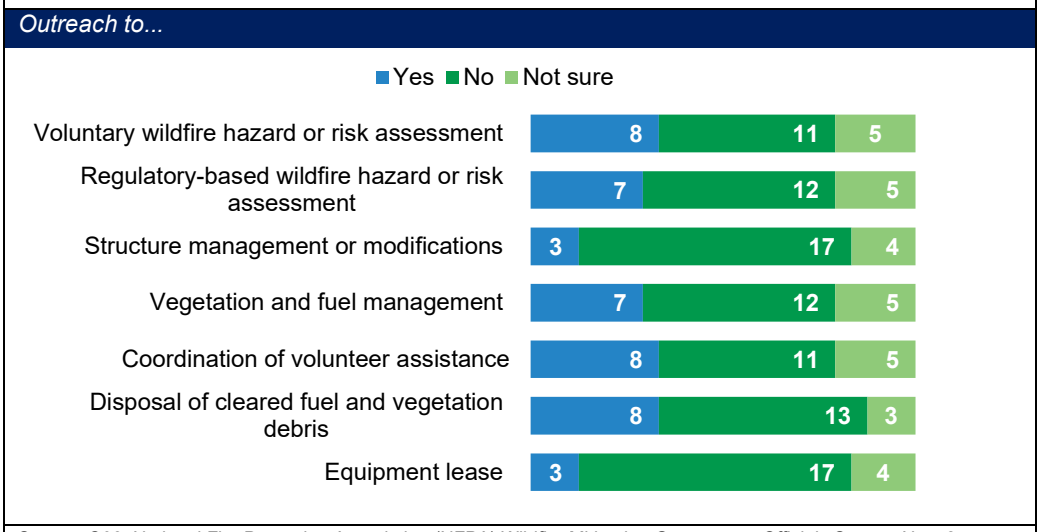
- Financial assistance is provided to structure management or modification measures on private property in only one jurisdiction.
- Disposal of cleared fuel and vegetation debris is the mitigation measure for which most jurisdictions provide voluntary labor assistance for private property (10% of jurisdictions; n=3).
- When respondents were asked about other incentive programs (financial or labor) to assist communities with wildfire mitigation, government officials overwhelmingly reported (93%, n=28) not providing additional incentive programs.

### *Outreach to Under-Resourced and Marginalized Populations*

**Outreach is low to under-resourced and marginalized populations.**

**Figure 3.3-6**

**Outreach to Under-Resourced and Marginalized Populations in Government Officials' Areas of Jurisdiction**




Source: Q38. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=24

- In 33% of jurisdictions (n=8), government officials reported participating in outreach to under-resourced and marginalized populations regarding voluntary wildfire hazard or risk assessment, coordination of volunteer assistance, and disposal of cleared fuel and vegetation debris programs.
- Outreach is done in 29% of jurisdictions (n=7) regarding regulatory-based wildfire hazard or risk assessment and vegetation debris mitigation. Only 13% of jurisdictions (n=3) participate in outreach regarding structure management or modification and equipment lease measures.

### *Change in Zoning or Land Use*

**Most jurisdictions did not change zoning or land use due to high wildfire risk.**

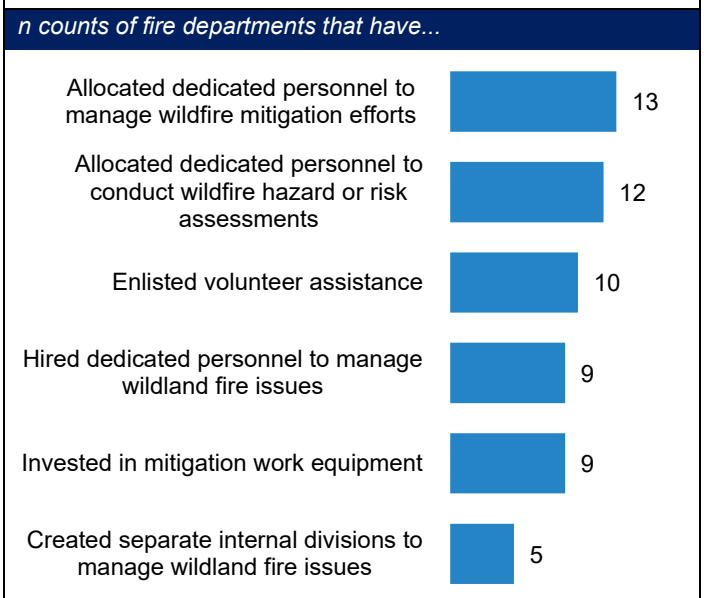
- 67% of respondents (n=20) indicated that their area of jurisdiction has had more residential zoning and homes built in high wildfire-risk areas.
- 90% of respondents (n=27) have not had land in their jurisdictions rezoned to prohibit building due to high wildfire hazard or risk.
- Less than half of respondents' jurisdictions (41%, n=12) provide communication/education regarding land zoning and use to planners, contractors, and developers with 2 additional jurisdictions planning to add these in the future.
- One respondent reported that for their jurisdiction, where wildfire mitigation measures have been implemented, the properties are less valuable.

### *Impact on Fire Departments*

**Fire departments have taken on efforts to contribute to the implementation and education of wildfire mitigation.**

**Figure 3.3-7**

**How Wildfire Mitigation Efforts Affect the Internal Operations of Fire Departments in Government Officials' Areas of Jurisdiction**




Source: Q57. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

- These efforts include the allocation of dedicated personnel to manage wildfire mitigation efforts and personnel to conduct wildfire risk assessments, these additions taking place in 13 and 12 jurisdictions respectively.
- Officials in 60% of jurisdictions (n=17) reported implementing education and outreach to the public/residents and those in 57% of jurisdictions (n=16) reported implementing partnerships among local fire departments.

### *Impact on Life Safety*

**Wildfires have no known impact on life safety in the last fire season.**

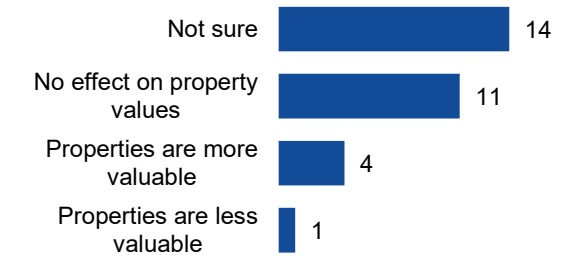
- 87% of respondents (n=26) reported there were no fatalities in their jurisdictions due to wildfires in the last fire season. The remaining 4 respondents were not sure.

### *Impact on Property Values*

**In most jurisdictions, property values were not impacted by wildfire mitigation measures.**

**Figure 3.3-8**

**How Wildfire Mitigation Measures Impact Property Values in Government Officials' Areas of Jurisdiction**




Source: Q56. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

- 37% of respondents (n=11) reported implemented wildfire mitigation measures to have no effect on property values.
- 13% of respondents (n=4) indicated that where wildfire mitigation measures have been implemented, the properties are more valuable.

# 4. Resident Survey Methodology

## 4.1 Sampling and Data Collection

A 15-minute online survey was designed and administered to California and Oregon WUI residents living in California and Oregon of medium to high wildfire hazard areas. This was determined by using scoring criteria from the Community Wildfire Defense Grant Program (CWDG) to determine "at-risk communities" eligibility based on available wildfire data. If the “risk to homes” in a county had a 50% or higher national ranking, that area qualified to be in the study; this eliminated a few counties in each state. For further information on CWDG sampling, please see Appendix E. Additional screening questions were focused on ensuring that panelists lived in applicable areas (i.e., not in the middle of a city) by asking if they have a yard and the type of home they have.

Data collection was conducted from September 27 – October 6, 2023, using a web-based survey platform (Qualtrics). The survey was accessible 24 hours a day, seven days a week, and was designed to save partial survey responses so that participants could return later to complete. Multiple reminder notifications were sent to residents over the ten-day field period. At the end of the field period (n=1,107 completes), survey data was reviewed and cleaned for data quality. The final sample size for the resident survey includes N=981 cases and a retention rate of 88.6%. At a 95% level of confidence, the margin of error for the final sample is plus or minus 3.1 percentage points. There was a roughly even distribution of residents between California (n=514) and Oregon (n=467).

## 4.2 Analytical Strategy and Data Analysis

Beyond the screening questions, the questionnaire aimed to understand the perceptions and experiences of residents living in high-risk wildfire areas of specific states. Throughout instrument development, EurekaFacts held listening sessions with an external review panel representing both state and federal agencies, as well as academia to solidify the questions that needed to be addressed in the research. This feedback was used to refine the survey instrument topics and constructs.

The final survey focused primarily on understanding the reasons and prompting factors for mitigating, deciding against implementing mitigation retrofitting, and the incidence of inaction and the underlying factors that might explain them. Additional topics included asking residents what measures have been implemented, their perception of risk related to wildfire, what they

value about where they live, their willingness to incur costs or labor to act, and asking about incentive programs.

Quantitative analysis of the resident survey mainly relies on descriptive statistics – frequencies of marginal results and crosstabulations of pairs of survey questions. Survey questions are crossed by other related survey questions to provide a deeper understanding of overlapping resident opinions and experiences. Response options were often collapsed, especially scales, for concise reporting of common assessments and perceptions (e.g., “very” and “somewhat” important may be collapsed into “net importance”). Additionally, analysis may focus on the most intense opinion in a scale to provide clear ranking of sub-items (e.g., “very important” vs. other response options). Furthermore, analysis of “select all” list items often include distribution of the number of items participants selected from the list (e.g., number of cultural experiences shared with host family). There are also instances where data reduction techniques, e.g., exploratory factor analysis, were implemented to better represent a series of questions on a common theme.

Qualitative analysis was done to identify common themes and experiences among residents for an open-ended question asking to explain why their only/top selection on a previous question was a motivation to take wildfire mitigation measures, along with coding specified responses provided when selecting “other” on a question. A qualitative coding software, NVivo, was utilized to produce preliminary analysis from quick auto coded outputs; themes or number of responses to each theme is subject to change when delved into deeper.

To account for different sample rates among the target audience, a weighting procedure was used to correct the sample balance yielding a representative cross-section of California and Oregon residents. The final sample is weighted using an iterative technique that matches gender, age, race/ethnicity, and state to parameters from the 2022 Census Bureau’s American Community Survey five-year estimates.

### *4.3 Resident Survey Demographic Composition*

When selecting households to contact for survey participation, a non-probability web-based panel was employed with screening criteria including geography (state, county) and confirmation of residence in applicable areas through confirmation of house type and presence of a yard. As a result, a design effect of 1.0 was presumed for the study. No quotas were placed on participation by residents by individual counties due to lack of available data at that level on

household type as related to eligibility. While there was interest in individual demographic characteristics (gender, income, etc.), care was also taken to control for household characteristics (location of home, age composition, etc.).

Figure 4.3-1 shows the unweighted sample sizes and the error attributable to sampling at the 95% level of confidence for different demographic sub-groups in the survey:

**Figure 4.3-1:**

**Demographic sample composition of resident survey**

| | Margin of error (% pts.) | Sample size (n size) |
|---|---|---|
| **TOTAL** | **±3.1** | **981** |
| ***Age*** | | |
| 18 to 34 | ±6.5 | 225 |
| 35 to 54 | ±5.2 | 351 |
| 55+ | ±6.8 | 392 |
| ***Race/Ethnicity*** | | |
| White (non-Hispanic) | ±3.7 | 700 |
| Non-white (TOTAL) | ±5.8 | 281 |
| Hispanic/Latino | ±7.9 | 156 |
| Black non-Hispanic | -- | 24 |
| Other and multi-racial | ±9.8 | 101 |
| ***Income*** | | |
| Less than $50,000 | ±5.5 | 323 |
| $50,000 to less than $100,000 | ±5.2 | 349 |
| More than $100,000 | ±5.6 | 309 |
| ***Gender*** | | |
| Male | ±5.1 | 375 |
| Female | ±4.0 | 600 |
| ***Education*** | | |
| Less than 4-year degree | ±4.1 | 565 |
| 4-year degree or higher | ±4.8 | 416 |

Source: NFPA Resident Survey, Sept. 27 – Oct. 6, 2023. N=981. Note: Sub-group sample sizes may not add to total sample size as it is based on who answered the question. Margin of error calculations are based on a design effect of 1.0.

# 5. Resident Survey: Detailed Findings

The 981 completed survey responses from California and Oregon WUI residents were captured through structured survey questions. The questionnaire gathered information on wildfire risk perception and mitigation awareness, what mitigation measures homeowners implemented, motivators or barriers to mitigating, relevant incentives and relevant communications. These data are analyzed using frequency tables, crosstabulations and other statistical techniques to distill findings from survey participant responses.

The results of this analysis are presented in this section and structured thematically:

- 5.1 Wildfire Risk Perception & Mitigation Awareness
- 5.2 Mitigation Knowledge and Awareness
- 5.3 Mitigation Actions Taken by Homeowners and Perceived Effectiveness
- 5.4 Mitigation Motivators, Barriers, and Perception
- 5.5 Communications, Assistance Received, and Fire Department Role

## 5.1 Wildfire Risk Perception & Mitigation Awareness

### 5.1.1 Level of Concerned, Perceived Threat of Wildfire, and Perceived Likelihood of Evacuation

**Figure 5.1.1-1**

**Perceived Concern of Wildfire Effects**

| | NET Not concerned | Somewhat concerned | Very Concerned | Extremely concerned | NET Concerned |
|---|---|---|---|---|---|
| **Total** | 17 | 36 | 32 | 16 | **84** |
| **Race/Ethnicity (%)** | | | | | |
| White (non-Hispanic) | 12 | 33 | 39 | 16 | **88** |
| Non-White | 18 | 38 | 29 | 15 | **82** |
| **Age (%)** | | | | | |
| 18-34 | 15 | 41 | 33 | 11 | **85** |
| 35-54 | 14 | 39 | 30 | 17 | **86** |
| 55+ | 20 | 28 | 35 | 18 | **81** |
| **Income (%)** | | | | | |
| Less than 50K | 14 | 38 | 33 | 15 | **86** |
| 50K to less than 100K | 17 | 36 | 30 | 18 | **84** |
| 100K or more | 19 | 35 | 34 | 14 | **83** |
| **Gender (%)** | | | | | |
| Male | 19 | 31 | 34 | 16 | **81** |
| Female | 14 | 40 | 30 | 15 | **85** |
| **State (%)** | | | | | |
| California | 20 | 39 | 27 | 14 | **80** |
| Oregon | 12 | 33 | 38 | 18 | **88** |

Source: Q1. NFPA Wildfire Resident Survey. Sept. 27 – Oct. 6, 2023. N=981. Note: Percentages read across and may not add up to 100% due to rounding.

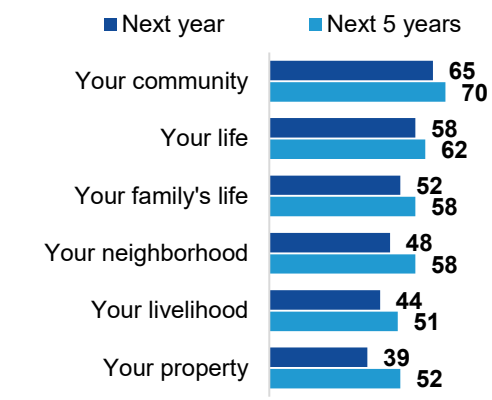
As displayed in Figure 5.1.1-1, most (84%) of residents were either somewhat, very, or extremely concerned about the effects of wildfires. This includes 36% who were somewhat concerned and 32% who were very concerned. Residents were either extremely concerned or not concerned (not at all and not too concerned) in nearly equal numbers (16% and 17%, respectively).

By race/ethnicity, White residents (88%) were slightly more likely to be concerned about the risks related to wildfires than non-White residents (82%). Additionally, Oregon residents (56%) were also more likely to be at least very concerned than California residents (41%). By age groups, residents 35-54 and 55+ were more likely to be extremely concerned than those 18-34 (17%, 18% and 11%, respectively). In contrast, there were no significant differences by

income group or gender, apart from Female residents being slightly more likely than Male residents to be somewhat concerned (40% and 31%, respectively).

**Figure 5.1.1-2**

**Perceived risk of wildfire threat over time**




Source: Q2 & Q3. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. N=981. Note: Percentages reported are from one side of the question – 'somewhat', 'very', or 'extremely' likely. Percentages may not add up to 100% due to rounding.

According to Figure 5.1.1-2, residents were concerned about both the short-term risks (in the next year) and long-term risks (in the next five years) that wildfires may pose to individuals and different facets of their lives. Overall, residents perceived risks to be significantly greater in the long-term than the short-term for the following subjects: their neighborhood, their livelihood, and their property; notably, risks to their livelihood or their property in the next 5 years were significantly lower than all other risk factors.

The perceived risk of wildfires threatening their community was of the highest risk, higher than their own life or their family's life. Within the next year, significantly more residents perceived risk to their community compared to their neighborhood or property. This trend demonstrates how residents perceived higher wildfire risk to locations more broadly, and perhaps beyond themselves (e.g., their community), rather than closer to them (e.g., their own property). Still, the majority of residents believed it is likely wildfires could risk their own lives, both in the next year (58%), and in the next 5 years (62%).

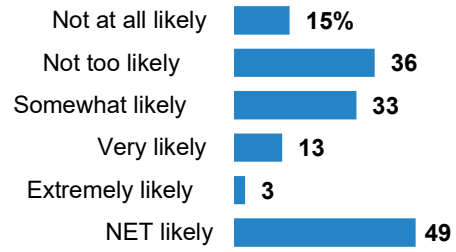
In reference to Figure 5.1.1-3, residents were split between believing they were not at all or not too (51%) or at least somewhat likely (49%) to be told to evacuate due to wildfires in the next 5 years; notably, only 3% reported evacuation to be extremely likely.

To conclude, regardless of demographic group, residents possessed an overarching concern about wildfire risk. Moreover, most residents perceived the highest likelihood of wildfires risking their community or their own life, and to a similar extent in the present and future, meanwhile perceiving a greater risk in the future than in the present to all other facets of their lives. Finally, residents were split between perceiving and not perceiving evacuation as likely.

**Figure 5.1.1-3**

**Perceived Likelihood of Evacuation**

*% who believe it is _ they will be told to evacuate their property due to the threat of wildfire in the next 5 years ...*




Source: Q4. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages read down and may not add up to 100% due to rounding.

### *5.1.2 Overarching Resident Concerns*

Wildfires can be a sensitive subject to many residents, whether by being directly or indirectly affected. It is reasonable to expect that any kind of risk of exposure could generate feelings of concern. Through our survey, we explored a way to characterize concern by incorporating general concern about the effect of wildfires, likelihood of wildfire threat in the next year and the next five years to residents' livelihoods, property, neighborhoods, and communities, likelihood of evacuation due to wildfires in the next five years, and degree of property protection. We explored the development of a composite measure across these 15 questions that is robust in structure, can be easily reported on an interpretable scale, and is helpful for identifying relationships with other survey measures.

Given the use of Likert scales for all of these questions and the presumption responses would be correlated, we employed maximum likelihood exploratory factor analysis. For consistency, the question about degree of property protection was reverse-coded and the "Not Sure" option was treated as if the respondent had no knowledge. Per thresholds established by Tabachnick and Fidell (2007), the results showed strongly adequate internal properties (Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .92) and that 63% of the variance in responses to these questions could be explained by the presence of a single scale. While the analysis suggested a possible secondary scale, the threshold for consideration (eigenvalue > 1; Kaiser, 1960) was only barely met and was therefore not pursued further in the interests of simplicity. As factor scores were generated on a more standardized z-score type scale, these were converted to percentiles according to the cumulative normal distribution based on the raw factor score distribution mean and standard deviation for ease of reporting. This conversion produced four distinct peaks, one each at the bottom, middle, and top of the scale, respectively, and then

another around the 20th percentile, but the inherent skewness in scores was still sufficiently minimal.

Furthermore, for the purpose of establishing external validity of the concern scale, it was worth exploring average scores according to the different focal states in the study. The reason for this is that each state has its own unique circumstances and population base with respect to the general wildfire situation so it was hypothesized that there may be differences in resident perceptions as a result. This was partially confirmed by the fact that on average, Oregon residents had slightly higher scores (N = 421; mean = 51.9; SD = 27.6) compared to California residents (N = 462; mean = 46.7; SD = 29.9) but this difference can be considered negligible (effect size = 0.18).

Exploring further, while the national rank of individual counties on wildfire risk to homes in both states was used for participation[2], it was considered worthwhile to determine whether any differences in concern were present among residents within the individual states based on the state rank not just on wildfire risk to homes but based on general hazard potential. Based on wildfire risk to homes, while California residents predominantly were located in counties with high risk to homes (86%), concern scores on average were slightly lower (N = 396; mean = 46.1; SD = 30.1) compared to those in low-risk counties (N = 66; mean = 50.4; SD = 28.1), but the difference was negligible (effect size = 0.14). Among Oregon residents, a more predictable pattern was observed as those located in counties with high risk to homes (46%) had practically significant higher concern scores on average (N = 194; mean = 59.1; SD = 27.7) than those in low-risk counties (N = 226; mean = 45.7; SD = 26.0; effect size = 0.50).

Based on general hazard potential, the results were more consistent across states. California residents were equally likely to be in low-risk or high-risk hazard counties and concern scores on average were slightly higher (N = 235; mean = 50.6; SD = 30.3) compared to those in low-risk counties (N = 227; mean = 42.7; SD = 28.9; effect size = 0.27). Among Oregon residents, while fewer people lived in high-risk counties (39%), average concern scores were practically significantly higher (N = 165; mean = 62.3; SD = 26.5) than those in low-risk counties (N = 256; mean = 45.2; SD = 26.3; effect size = 0.65).

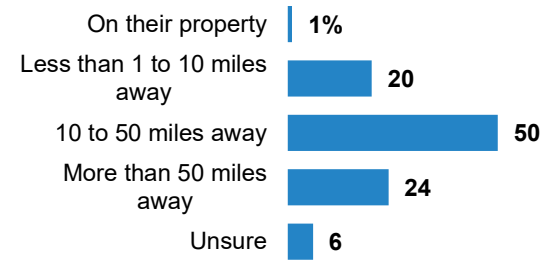
[2] Community Wildfire Defense Grant Risk Dataset: Methods and Intended Uses

### 5.1.3 Prior Experience with Wildfires

**Figure 5.1.3-1**

**Proximity to Wildfires**

*% who have experienced a wildfire…*




2023 Source: Q37. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages read down may not add up to 100% due to rounding.

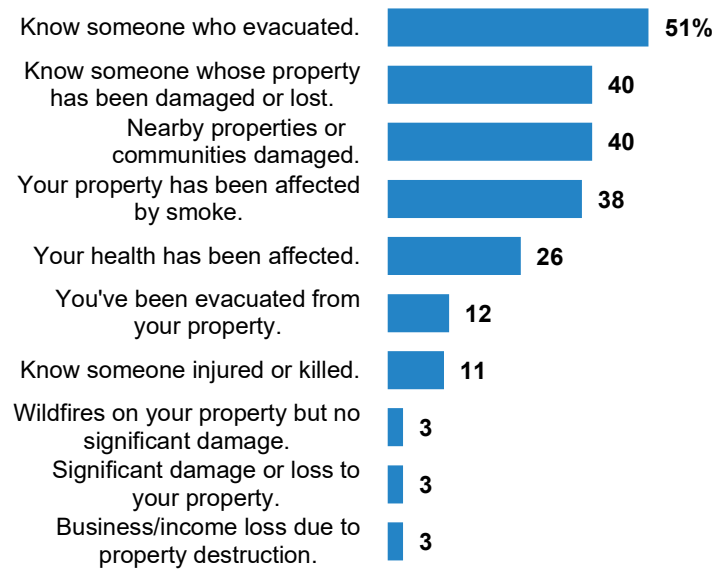
When referencing Figure 5.1.3-1, most residents (70%) have experienced a wildfire within 50 miles of their property; among them, 20% have experienced one less than 1 to 10 miles away, and only 1% have experienced one on their property. A quarter, or 24%, have experienced a wildfire farther than 50 miles away, and only 6% were unsure of either the distance or whether a wildfire has happened near their property (Figure 5.1.3-1).

According to Figure 5.1.3-2, residents were more likely to know someone who has experienced the effects of wildfires and wildfire protocol than to have experienced it themselves. 82% of residents have had at least one prior experience with a wildfire. In summary, nearly all residents have experienced wildfires and were aware of their presence in their area, and the more severe the consequence, the less likely it happened to residents.

**Figure 5.1.3-2**

**Prior experience with wildfires**

*% who have had the following experiences related to wildfires...*




2023 Source: Q36. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages are from a check all that apply list and do not add to 100%.

### 5.1.4 Perceived Concern by Exposure

Survey participants were asked to indicate whether they have had certain direct or indirect experiences with wildfires within a prescribed list. Ten statements were presented, each

as a Yes or No question with an additional statement to choose Yes or No to “None of these”. A review of the description of these experiences in conjunction with reported incidences led to a categorization in terms of intensity: low, medium or high. Three events were each endorsed by only 3% of the sample and thus considered to be low intensity and included wildfires on one’s property but no significant damage, significant damage or loss due to wildfires, and suffering of business or other income loss due to property destruction. Three events were endorsed most by the sample but were considered medium intensity because they were not explicitly personally affected, including knowing someone who evacuated due to wildfires or threat of wildfires (51%), knowing someone whose property was damaged due to wildfires (40%), and that nearby properties or communities were damaged due to wildfires (40%). The remaining events, though not as highly endorsed, were considered high intensity due to more explicit impact including having to evacuate due to wildfires or threat of wildfires (11%), property being affected by wildfire smoke (38%), health being affected by wildfires (26%), and knowing someone injured or killed in a wildfire (11%). Subsequent analyses only focused on medium and high intensity events.

Respondent profiles were constructed based on the pattern of Yes or No responses to individual questions within each intensity category. These profiles were then consolidated according to those with two or more events in each intensity category or less than two events in each intensity category. About one-in-four participants (23%) reported experiencing two or more high intensity events and almost twice as many (41%) reported experiencing two or more medium intensity events. Cross-tabulation analysis revealed that about two-thirds of those experiencing two or more high intensity events also experienced two or more medium intensity events (69%). It was then hypothesized that intensity of event experience would be reflected in perceptions of concern about wildfires. This was shown to be the case as those experiencing two or more high intensity events had moderately higher concern scores (N = 213; mean = 58.4; SD = 27.5) than those not experiencing such events (N = 670; mean = 46.3; SD = 28.8; effect size = 0.43). Additionally, for those experiencing both two or more medium and two or more high intensity events, concern scores were the highest (N = 146; mean = 60.8; SD = 28.4).

With respect to specific circumstances, there generally was a relationship to experiencing a particular event and concern. As shown in Figure 5.1.4-1, there were two more prominent experiences that resulted in higher concern scores. One was evacuation from one’s current property (N = 104; mean = 62.9; SD = 29.5) compared to those reporting having not experienced this event (N = 779; mean = 47.3; SD = 28.4; effect size = 0.55). Another was

knowing someone whose property was damaged or lost (N = 361; mean = 57.3; SD = 29.8) compared to those reporting having not experienced this event (N = 522; mean = 43.6; SD = 26.9; effect size = 0.49). Most other experiences revealed at least a small, but not practically large difference (range = 0.21 – 0.38) in average concerns based on reporting status. For those reporting not having experienced any of the events, their average concern scores were substantively lower (N = 143; mean = 31.9; SD = 26.2) compared to those reporting that they had not experienced none of the events (N = 740; mean = 52.5; SD = 28.2; effect size = 0.74).

**Figure 5.1.4-1**

**Average Concern Scores by Specific Experiences with Wildfires**

| | Yes | | | No | | | |
|---|---|---|---|---|---|---|---|
| **Circumstance** | **N** | **Mean** | **SD** | **N** | **Mean** | **SD** | ***Effect Size*** |
| Know someone evacuated due to wildfires/threat of wildfires | 460 | 50.8 | 28.7 | 423 | 47.4 | 29.1 | *0.12* |
| Know someone whose property damaged/lost due to wildfires | 361 | 57.3 | 29.8 | 522 | 43.6 | 26.9 | *0.49* |
| Nearby properties or communities damaged by wildfires | 367 | 55.5 | 26.0 | 516 | 44.7 | 30.1 | *0.38* |
| Evacuated from current property due to wildfires/threat of wildfires | 104 | 62.9 | 29.5 | 779 | 47.3 | 28.4 | *0.55* |
| Wildfires on your property, no significant damage | 31 | 58.0 | 29.1 | 852 | 48.9 | 28.9 | *0.32* |
| Property affected by smoke from wildfires | 343 | 52.9 | 26.7 | 540 | 46.8 | 30.0 | *0.21* |
| Property significantly damaged/lost due to wildfires | 26 | 59.3 | 29.6 | 857 | 48.9 | 28.9 | *0.36* |
| Business/other income loss due to property destruction | 26 | 58.5 | 27.3 | 857 | 48.9 | 28.9 | *0.33* |
| Health affected by wildfires | 233 | 55.2 | 27.0 | 650 | 47.0 | 29.3 | *0.28* |
| Know someone injured/killed in a wildfire | 100 | 57.4 | 30.3 | 783 | 48.1 | 28.6 | *0.32* |
| No experiences | 143 | 31.9 | 26.2 | 740 | 52.5 | 28.2 | *0.74* |

2023 Source: Q36. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=883).

Overall, while residents perceive higher risk to wildfires in the future than in the present, the perceived risk to their community is consistently high.

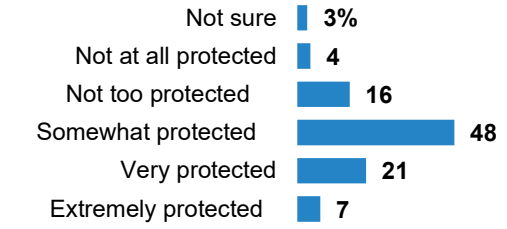
## *5.2 Mitigation Knowledge and Awareness*

This section details resident perceptions, knowledge, and awareness of property wildfire mitigation and the legality of such measures.

**Figure 5.2.1-1**

**Perception of Property's Wildfire Preparedness**

*% who believe their property is _…*




Source: Q6. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages read down and may not add up to 100% due to rounding.

### *5.2.1 Perception of Property's Wildfire Preparedness*

According to Figure 5.2.1-1, solidly three-quarters (77%) of residents believe their property is at least somewhat protected, and nearly 3-in-10 residents (29%) believe their property was either very (21%) or extremely (7%) protected. Notably, only 20% of these residents believe their property is not at all (4%) or not too (16%) protected.

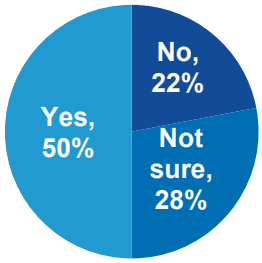
By income level, those making less than $50,000 are more likely to feel less protected than those making $100,000 or more. Specifically, 24% of those making less than $50,000 feel not too protected while only 8% of those making $100,000 or more per year feel not too protected. Also, for those who felt their property was at least somewhat protected, there was no significant difference between single-family detached homeowners versus all other types of homeowners (i.e., single-family attached homeowners, multi-family homeowners, trailer/RV owners, or mobile or manufactured homeowners).

### *5.2.2 Awareness & Knowledge of Mitigation Measures*

**Figure 5.2.2-1**

**Awareness of Mitigation Measures**

*% who are aware of mitigation measures…*




Source: Q7. NFPA Wildfire Resident Survey, Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages read across and may not add up to 100% due to rounding.

As displayed in Figure 5.2.1-1, one in two residents (50%) say they were what specific actions to undertake to protect their property against wildfires, while 22% say they were not aware, and nearly 3-in-10 (28%) are not sure whether or not they were aware.

Based on demographic characteristics, more male residents (58%) were aware what specific actions to undertake to protect their property against wildfires than female residents (43%), and more White residents (62%) were aware than non-White residents (44%). Additionally, younger residents (18-34, 30%) were over twice as likely to not be aware than older residents (55+, 13%). Finally, more Oregonians (59%) were aware of what specific actions to undertake to protect their property against wildfires, than Californians (41%).

In reference to Figure 5.2.2-2, while only half of residents were aware of mitigation measures, 62% report being either somewhat (51%) or very (12%) knowledgeable.

**Figure 5.2.2-2**

**Knowledge of Wildfire Mitigation Topics**

| *% who feel _ knowledgeable on the following wildfire mitigation-related topics …* | Not at all | Not too | Somewhat | Very | **NET** |
|---|---|---|---|---|---|
| | % | % | % | % | **%** |
| Wildfire risk in your area | 8 | 24 | 55 | 13 | **68** |
| Recommended mitigation measures you can take | 12 | 26 | 51 | 12 | **62** |
| Where you can go to get answers to questions about improving wildfire safety | 17 | 30 | 40 | 13 | **53** |
| How to complete mitigation measures on your property | 18 | 30 | 42 | 10 | **52** |
| Where to find resources (financial, materials, etc.) to complete mitigation measures | 24 | 34 | 33 | 10 | **43** |

Source: Q52. NFPA Wildfire Resident Survey, Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages read across and may not add up to 100% due to rounding.

Notably, only 13% or less of residents felt very knowledgeable about topics related to mitigation measures, wildfire risk, who to consult with questions, and where to find resources (financial or material) to help complete mitigation. Residents were most knowledgeable (at least somewhat) about general wildfire risk (68%) and what mitigation measures are (62%), and the least knowledgeable about where to find resources to help complete mitigation measures (43%).

Similar in trend to awareness of mitigation actions, male residents were significantly more likely than female residents to be knowledgeable on all five of the presented topics in Figure 5.2.2-2, the most significant differences being where to get answers to questions about improving wildfire safety (65% of males, 42% of females) and on how to complete mitigation on property (64% of males, 43% of females). White residents were substantially more likely than non-White residents to be aware of wildfire risk in their area – specifically, while 68% of overall residents were aware, 80% of White and 62% of non-White residents were aware of wildfire risk. While not as stark a difference, White residents were also more likely to be aware of how to complete mitigation measures on their property than non-White residents (58% vs. 50%, respectively).

While there were no significant differences between age groups across most statements, slightly more residents 55+ were knowledgeable on the recommended mitigation measures that can be taken than residents 35-54. On the other hand, there were no significant differences

between income groups across all five knowledge statements.

By state, Oregon residents were more knowledgeable about "wildfire risk in your area" (77%) than California residents (60%). California residents were more knowledgeable about where to find resources (financial, materials, etc.) to complete mitigation measures (51%), and where to go to get answers to questions about improving wildfire safety (58%) compared to residents in Oregon (34% and 47%, respectively). Finally, residents were equally knowledgeable about the recommended mitigation measures to take and how to complete them.

### *5.2.3 Impact of Awareness of Mitigation Measures on Knowledge of Wildfire Mitigation Topics*

According to Figure 5.2.3-1, when compared to those who were not aware of property mitigation measures, those who were aware of how to undertake mitigation measures on their property were in fact more likely to be knowledgeable of specific wildfire mitigation topics. 56% of those who were aware of mitigation measures were at least somewhat knowledgeable of 3 to 5 topics, including 29% of mitigation-aware residents at least somewhat knowledgeable of all five topics.

Naturally, 83% of residents aware of specific mitigation actions to protect their property are knowledgeable of wildfire risk; however, still, a significant proportion (61%) of those who are unaware of specific mitigation actions are knowledgeable of wildfire risk. Among those who were unaware of

**Figure 5.2.3-1**

**Impact of Awareness of Mitigation Measures on Knowledge of Wildfire Mitigation Topics**

*Among those who responded "Yes" or "No/Not sure" to being aware of specific mitigation actions to protect their property against wildfires…*

*_% report being at least somewhat knowledgeable about…*

| | |
|---|---|
| | **Wildfire risk in your area** |
| Yes | 83 |
| No/Not sure | 61 |
| | **Recommended mitigation measures you can take** |
| Yes | 81 |
| No/Not sure | 42 |
| | **How to complete mitigation measures on your property** |
| Yes | 73 |
| No/Not sure | 35 |
| | **Where you can go to get answers to questions about improving wildfire safety** |
| Yes | 66 |
| No/Not sure | 37 |
| | **Where to find resources (financial, materials, etc.) to complete mitigation measures** |
| Yes | 52 |
| No/Not sure | 30 |

Source: Q7xQ52a-e. NFPA Wildfire Resident Survey. Sept. 27 – Oct. 6, 2023. N=981. Note: Percentages read across and do not add up to 100% because not all answer choices are displayed.

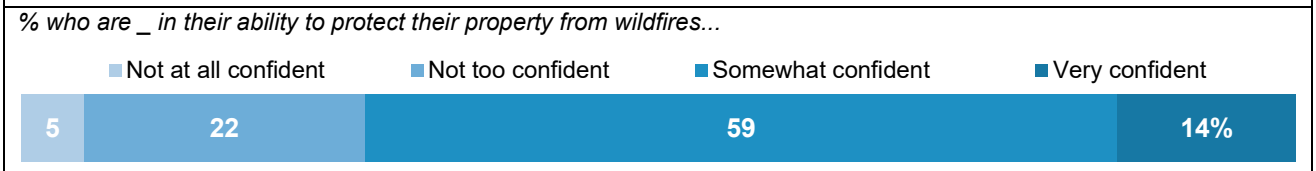
the specific mitigation actions to take on their property, 42% still reported being knowledgeable on the recommended mitigation measures to take on their property, and 35% still reported being knowledgeable on how to complete mitigation measures on their property. Although interpretable in multiple ways, this data discrepancy assumes residents may be confused on their own awareness or knowledge levels.

Meanwhile, among residents who are unaware or not sure of the specific mitigation actions to take on their property, the majority did not know where to get answers to questions about improving wildfire safety (63%) or where to find resources to complete mitigation measures (70%), thus alluding to the importance of these two knowledge items to promote awareness of mitigation actions.

### *5.2.4 Confidence Scale and Impact of Knowledge on Confidence*

**Figure 5.2.4-1**

**Resident Self-Efficacy in Property Wildfire Protection**




Source: Q54. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages read across and may not add up to 100% due to rounding.

Residents were asked to what extent they felt confident in protecting their property from the risk of wildfires. As detailed in Figure 5.2.4-1, about three in four (74%) residents feel at least somewhat confident in protecting their property, including over half who feel somewhat confident (59%), and only 14% who feel very confident.

Moreover, when assessing confidence in the ability to protect property from wildfires among those who are aware, unaware, or not sure of their awareness of mitigation measures, aware residents are significantly more likely to be at least somewhat confident in their ability to protect their property from wildfires (85%) than unaware residents (50%). Concerningly, 72% of residents who are not sure if they know what specific actions to undertake to protect their property from wildfires still believe they are at least somewhat (61%) or very (12%) confident in their ability to protect their property.

### *5.2.5 Awareness of Wildfire Mitigation Legality and Homeowner's Associations*

According to Figure 5.2.3-1, residents were more likely to be aware of wildfire mitigation

measures suggested by their community (41%), and less likely to know if measures were required by law or by their community (17%). Notably, 1-in-2 residents (50%) were unsure whether or not wildfire risk reduction measures were required by law.

**Figure 5.2.3-1**

**Awareness of Wildfire Mitigation Legality**

| *% who selected that the following wildfire risk reduction measures are…* | **Yes** | **No** | **Unsure** | Total |
|---|---|---|---|---|
| Suggested by your community/ neighborhood | 41 | 29 | 29 | =100% |
| Required by law | 17 | 34 | 50 | =100% |
| Required by your community/ neighborhood | 17 | 49 | 35 | =100% |

Source: Q18. NFPA Wildfire Resident Survey, Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages read across and may not add up to 100% due to rounding.

As shown in Figure 5.2.3-2, the large majority of California and Oregon residents said their communities do not have an HOA, and only about 3-in-10 residents (28%) said their community has one with a substantive difference by state (California = 38%, Oregon = 18%).

Of the 28% of total residents who say they do have an HOA, 29% said their HOA requires specific wildfire mitigation actions, accounting for only 8% of total residents. Further, 38% of residents who have an HOA, or 11% of total residents, are not sure whether their HOA requires specific wildfire mitigation actions.

**Figure 5.2.3-2**

**Awareness of Homeowner's Association (HOA) and Requirements**

| *% who say their community has a HOA…* | **Yes** | **No** | | Total |
|---|---|---|---|---|
| | 28 | 72 | | =100% |
| **Among the 28% who have a HOA...** | | | | |
| *% who say their HOA requires specific wildfire mitigation actions…* | **Yes** | **No** | **Not sure** | Total |
| | 29 | 33 | 38 | =100% |

Source: Q26 & Q27. NFPA Wildfire Resident Survey, Sep. 27 – Oct. 6, 2023. (Q26 N=981, Q27 N=255). Note: Percentages read across and may not add up to 100% due to rounding.

To conclude, most residents believe their property is protected. While only 50% of residents are aware of specific actions to undertake to protect their property against wildfires, significant proportions of those who are unaware report being knowledgeable of wildfire topics. Finally, male, White, and Oregon residents are more likely to be aware of mitigation measures than their female, non-White, and California resident counterparts

## *5.3 Mitigation Actions Taken by Homeowners and Perceived Effectiveness*

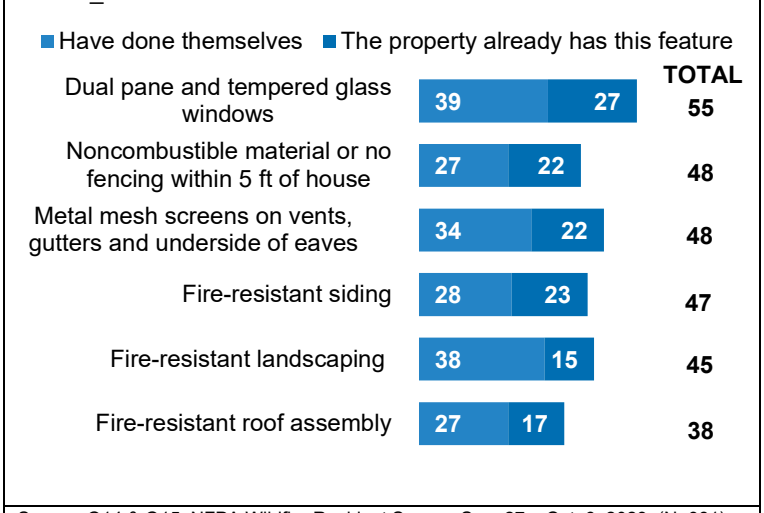
This section discusses implemented mitigation measures by homeowners, along with

key crosstabs to understand why homeowners do or do not mitigate.

### *5.3.1 Prevalence of Structural Mitigation (i.e., Home Hardening)*

**Figure 5.3.1-1**

**Prevalence of Structural Mitigation Actions (i.e., Home Hardening) among Homeowners & Renters**




Source: Q14 & Q15. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=981).
Note: Percentages read down and may not add up to 100% due to rounding.

In reference to Figure 5.3.1-1, when residents were asked if their house has the listed features (either implemented by themselves or was already implemented), most residents (55%) claimed to have dual pane and tempered glass windows. Less than half of residents have every other structural mitigation measure on their home, including 48% with noncombustible material or no fencing within 5 ft of house, 48% with metal mesh screens on vents, gutters, and underside of eaves, 47% with fire-resistant siding, and 45% with fire-resistant landscaping. Notably, significantly fewer residents have a fire-resistant roof assembly (38%).

By demographics, male residents (42%) were significantly more likely than female residents (31%) to have the majority (four to six) of these structural measures. Older residents (aged 55 or older, 44%) were more likely to have the majority of these structural measures than younger residents (aged 18 to 34, 32%).

Unsurprisingly, lower-income residents were less likely to have structural mitigation on their properties. Residents making an annual income of less than $50,000 (30%) were significantly less likely to have the majority of the structural measures on their homes than residents making $100,000 or more (42%). Accordingly, residents making less than $50,000 were more likely to have no structural measures on their homes (25%) than those making $50,000 to less than $100,000 (12%), or $100,000 or more (9%). On a similar note, residents with newer homes were more likely to have the majority of the structural measures; specifically, 62% of residents of homes built in 2010 or later, 41% of residents of homes built between 1990 and 2009, and 28% of residents of homes built between before 1960 and 1989 had most (four

to six) structural measures. In totality, direct financial indicators, such as annual income, and indirect financial indicators, such as the age of the home, align with the presence of structural mitigation. Regarding vulnerable populations, unsurprisingly, residents without a physical disability (38%) were more likely to have most structural measures than those with a physical disability (29%).

**Figure 5.3.1-2**

**Number of Structural Mitigation (i.e., Home Hardening) Features on Homes**

*% of* residents *(homeowners OR renters) whose property has _ # of struct.* measures *generally...*

| **Number of Mitigation Measures** | **0** | 1 | 2 | 3 | 4 | 5 | 6 | **4-6** | Total |
|---|---|---|---|---|---|---|---|---|---|
| | **16%** | 17% | 17% | 15% | 11% | 11% | 14% | **36%** | =100% |

*% of* homeowners *who have themselves performed _ # of struct. measures...*

| **Number of Mitigation Measures** | **0** | 1 | 2 | 3 | 4 | 5 | 6 | **4-6** | Total |
|---|---|---|---|---|---|---|---|---|---|
| | **35%** | 19% | 13% | 9% | 9% | 8% | 7% | **24%** | =100% |

Source: Q14 & Q15. NFPA Wildfire Resident Survey, Sep. 27 – Oct. 6, 2023. (N=981 total residents, 700 homeowners). Note: Percentages read across and may not add up to 100% due to rounding.

As displayed in Figure 5.3.1-2, when assessing the number of structural mitigation features selected from the list, while most homes (85%), had at least one structural measure, only one-third of homes (36%) had most structural measures (four to six).

Residents who have at least one mitigation on their home were significantly more likely to generally have that feature (84%) than have done it themselves (65%). Still, according to Figure 5.3.1-2, two-thirds (65%) of general residents have taken at least one structural mitigation action, including nearly half (46%) who have implemented at least two.

**Figure 5.3.1-3**

**Number of Structural Mitigation (i.e., Home Hardening) Features on Renter Properties**

*% of* renters *whose property has _ # of struct. measures generally …*

| **Number of Mitigation Measures** | **0** | 1 | 2 | 3 | 4 | 5 | 6 | **4-6** | Total |
|---|---|---|---|---|---|---|---|---|---|
| | **76%** | 6% | 6% | 6% | 3% | 1% | 2% | **5%** | =100% |

Source: Q15. NFPA Wildfire Resident Survey, Sep. 27 – Oct. 6, 2023. (N=281). Note: Percentages read across and may not add up to 100% due to rounding.

According to Figure 5.3.1-3, only one in four (24%) renters either live on properties with at least one structural measure or are not sure whether there are any implemented; this heavily contrasts with the 84% of general residents (homeowners and renters) with at least one structural measure on their homes.

All in all, although most residents have not completed any of the six structural mitigation actions individually (62 – 74%), still, the majority of residents (68%) have performed at least one of the six structural mitigation actions on their home. Renters were significantly more likely to not have structural mitigation (76%) than general residents (16%).

In conjunction with overall structural mitigation measures on residents' homes, survey results differentiate which features were implemented by homeowners themselves and when they were implemented, if their property already had this feature, or if this feature has not been done at all.

**Figure 5.3.1-4**

**Structural Mitigation Actions (i.e., Home Hardening) Implemented by Homeowner by Time Frame**

| *% of* homeowners *who have completed or not completed a struct. measure within __ timeframe ...* | Within the past 2 years | More than 2 years ago | **NET Implemented by homeowner** | No, the property already has this feature | No, this has not been done | **Total** |
|---|---|---|---|---|---|---|
| Dual pane and tempered glass windows | 10 | 29 | **=39** | 27 | 34 | **=100%** |
| Fire-resistant landscaping | 15 | 23 | **=38** | 15 | 47 | **=100%** |
| Metal mesh screens on vents, gutters, eaves | 13 | 21 | **=34** | 22 | 44 | **=100%** |
| Fire-resistant siding | 12 | 16 | **=28** | 23 | 50 | **=100%** |
| Non-combustible or no fencing 5 ft. of house | 11 | 16 | **=27** | 22 | 51 | **=100%** |
| Fire-resistant roof assembly | 9 | 18 | **=27** | 17 | 57 | **=100%** |

Source: Q14. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. N=700. Note: Percentages may not exactly sum to 100% due to rounding.

Referencing Figure 5.3.1-4, in the last two years, 39% or less of homeowners have implemented any of the individual structure measures by themselves. Among the six mitigation measures, "dual pane and tempered glass windows" (39%) was implemented by the greatest number of residents, while the least number (27%) implemented either "non-combustible or no fencing within 5 ft. of their house" or "fire-resistant roof assembly". Naturally, while "dual pane and tempered glass windows" was the most common mitigation feature for a home to have generally (55%), it was also the most common structural mitigation for residents to have implemented themselves (39%), and it was the most common mitigation feature to have among those who only had one feature on their property (32%).

Additionally, residents of newer homes were significantly more likely to already have various structural mitigation measures on their homes. To explain, significantly more homes built recently (built later than 2010) already had several features compared to older homes (built before 2010). This includes fire-resistant landscaping (30% vs. 15%, respectively), "dual pane and tempered glass windows (39% vs. 25%, respectively), metal mesh screens on vents,

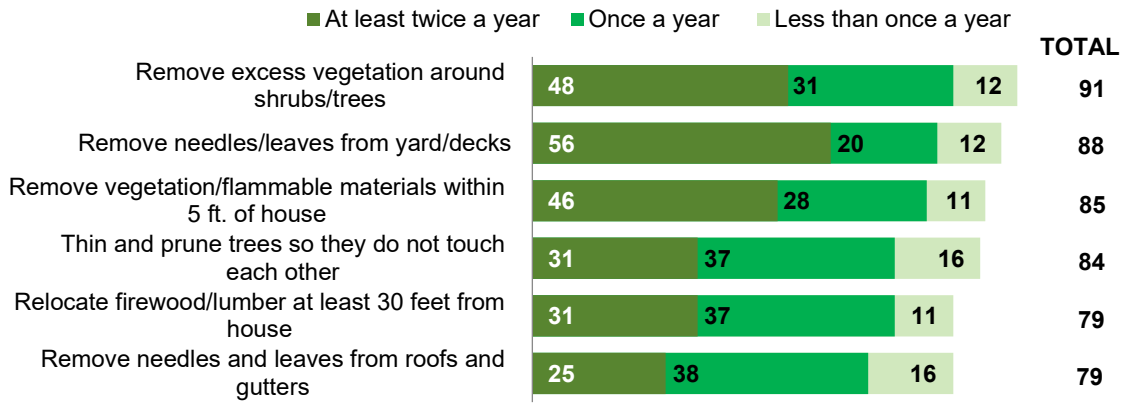
gutters, eaves (33% vs. 20%, respectively), and fire-resistant siding (33% vs. 21%, respectively). The only two not completed on newer homes were fire-resistant landscaping and installing non-combustible or no fencing 5 ft. of the house. Seemingly, new homes are being built with structural mitigation.

### *5.3.2 Prevalence of Vegetation Maintenance Mitigation (i.e., Defensible Space)*

**Figure 5.3.2-1**

**Vegetation Maintenance Mitigation Actions (i.e., Defensible Space) Performed by Homeowners by Time Frame**

*% who have performed the following actions at _ frequency...*




Source: Q13. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. N=981. Note: Percentages read across and may not sum to 100% due to rounding.

When analyzing Figure 5.3.2-1, among the vegetation measures presented in our survey, most residents have performed individual vegetation maintenance mitigation measures at any point in time (79 – 91%) or at least once a year (63 - 79%). In some cases, the rate of vegetation maintenance completion is roughly double the rate at which residents either moved into a home that already had a structural mitigation measure in place (38 – 55%) or at which homeowners had implemented one themselves (27 – 39%). Further, the two most performed vegetation maintenance measures include “remove excess vegetation around shrubs/ trees” (91%) and "remove needles & leaves from yard/deck” (88%), while the least performed are “relocate firewood/ lumber at least 30 ft. from house” (79%) and “remove needles & leaves from roofs/gutters” (79%). By and large, very few residents perform vegetation mitigation frequently enough to protect their property from wildfires, with only 25 – 56% performing each individual vegetation measure at least twice a year.

**Figure 5.3.2-2**

**Number of Vegetation Maintenance Mitigation Actions (i.e., Defensible Space) Performed on Homes At Least Yearly**

*% of* residents *who performed _ vegetation measures on their property at least yearly …*

| **Number of Mitigation Measures** | **0** | 1 | 2 | 3 | 4 | 5 | 6 | **4-6** | Total |
|---|---|---|---|---|---|---|---|---|---|
| Percent (%) | **9%** | 10% | 8% | 13% | 14% | 20% | 26% | **60%** | =100% |

Source: Q13. NFPA Wildfire Resident Survey, Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages read across and may not add up to 100% due to rounding.

About Figure 5.3.2-2, nearly all households (91%) performed at least one of the vegetation measures at a yearly rate. Notably, a quarter of residents (26%) performed all six of the necessary wildfire measures, and more than half (60%) performed the majority of them (four to six).

### *5.3.3 Key Subgroups by Number of Completed Mitigation Measures*

#### Perceived Property Protection

Residents who had fewer structural measures on their homes felt their homes were less protected, on average. Specifically, fewer residents whose homes had no structural measures felt their property was (at least somewhat) protected (64%) than the residents whose homes had at least one (79%) structural measure. However, for vegetation mitigation actions, there was no significant difference between those who did or did not complete vegetation mitigation in how protected they perceived their property to be from wildfires.

#### Proximity to Wildfires

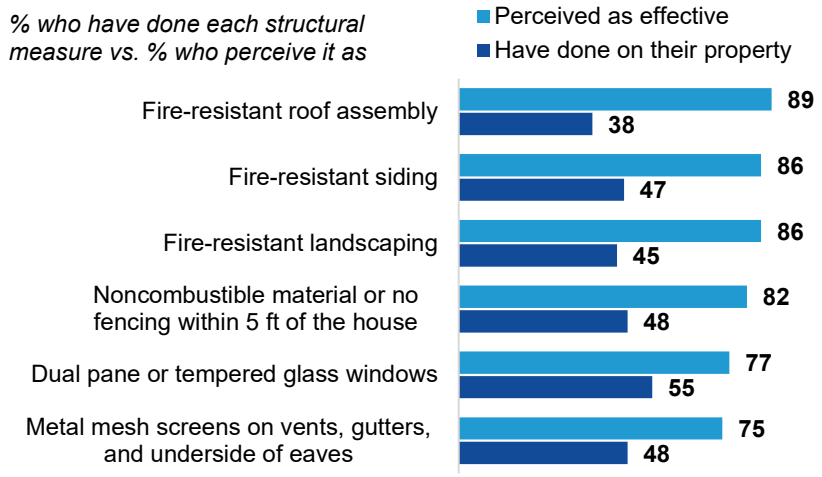
Proximity to wildfires was not related to structural mitigation behaviors. For structural management, residents who experienced a wildfire less than 1 to 10 miles away (34%), 10 to 50 miles away (37%), or more than 50 miles away (37%) were all equally likely to have the majority of home hardening measures. In contrast, those who had experienced a wildfire less than 1 to 10 miles were more likely to have completed the majority of vegetation measures (89%) than those who had experienced a wildfire 10 to 50 miles away (77%), and those who had experienced a wildfire 10 to 50 miles away were more likely to complete the majority of vegetation measures than those who had experienced one more than 50 miles away (67%). To sum up, proximity to wildfires had an impact on vegetation mitigation, but not structural mitigation.

### *5.3.4 Perceived Effectiveness of Mitigation*

According to Figure 5.3.4-1, while the most residents (89%) believe that "fire-resistant roof assembly" is at least moderately effective at mitigating wildfires, only about 4-in-10 (38%) actually have this feature on their home; moreover, among the other structural mitigation measures residents were asked about, this was the least implemented measure. Similarly, as for the other structural measures, while most residents believe that these measures are at least moderately effective at mitigating wildfires (75 – 86%), only about half have them on their homes (45 – 55%).

**Figure 5.3.4-1**

**Perceived Effectiveness of Structural Mitigation Actions**

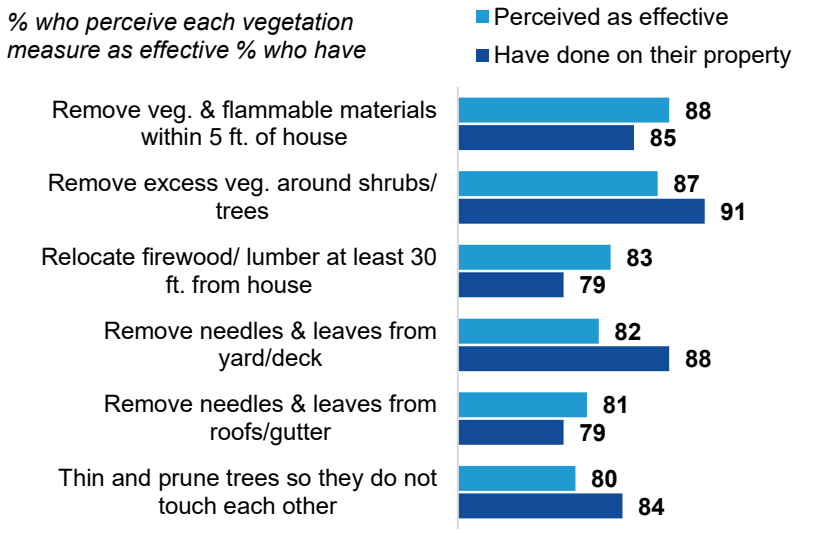



Source: Q14, Q15, Q17. NFPA Wildfire Resident Survey. Sept. 27 – Oct. 6, 2023. N=981. Note: Only select responses are shown and therefore do not sum to 100%.

As shown in Figure 5.3.4-2, apart from the slight difference for "remove needles & leaves from yard/deck" by 6%-points, residents are just as likely to perceive a vegetation mitigation action as at least moderately effective as they are to have performed it on their property. Curiously, although residents believe structural

**Figure 5.3.4-2**

**Perceived Effectiveness of Vegetation Mitigation Actions**




Source: Q13, Q16. NFPA Wildfire Resident Survey. Sept. 27 – Oct. 6, 2023. N=981. Note: Percentages read across. White boxes may not add up to 100% due to rounding.

measures are at least moderately effective at similar rates to vegetation measures, still a substantively lower proportion of residents have performed any structural measures compared to vegetation measures. This indicates that the perceived effectiveness of mitigation actions may not be a strong enough motivator for residents to perform structural measures. The next section will explain reasons why this may be the case.

## 5.4 Mitigation Motivators, Barriers, and Perception

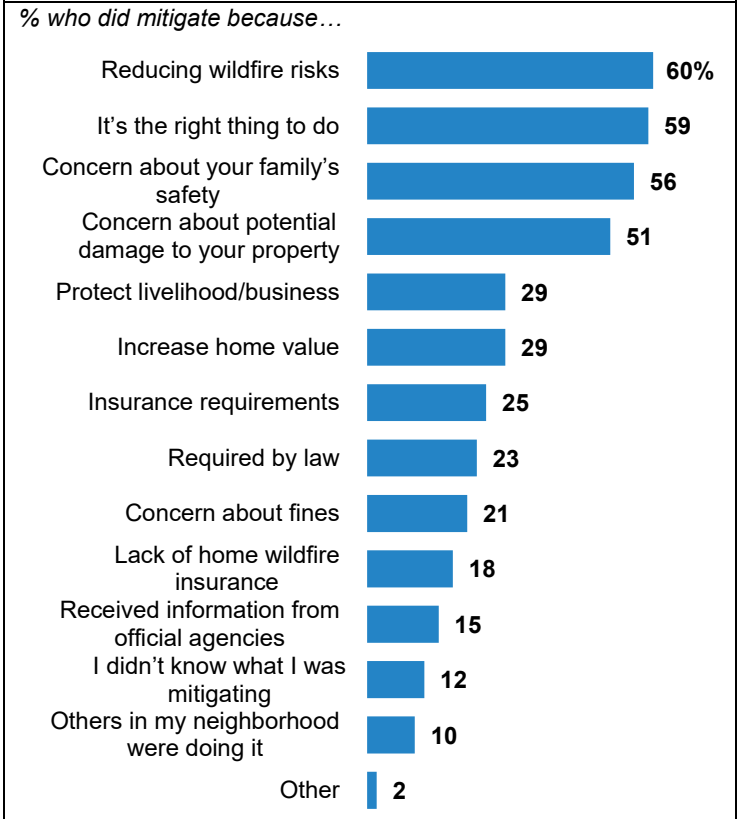
### 5.4.1 Reasons for Mitigating

Residents were asked to indicate the reasons for implementing wildfire mitigation actions on their property. Figure 5.4.1-1 depicts the percentage of participants who have selected one or more of the options.

The top reasons included reducing wildfire risks (60%) or considering it the right thing to do (59%). Concerns about family safety or potential property damage were also significant motivators, with 56% and 51% of residents citing them, respectively. Additionally, 29% mentioned protecting livelihood or business, 25% cited insurance requirements, while 23% mentioned legal requirements. The data therefore reveals a diverse range of motivators driving residents to engage in wildfire mitigation efforts.

**Figure 5.4.1-1**

**Resident Reasons for Wildfire Mitigation**




Source: Q28. NFPA Wildfire Resident Survey. Sept. 27 – Oct. 6, 2023. N=981. Note: Percentages are from a select all that apply list and do not sum to 100%.

Regarding Figure 5.4.1-1, three-quarters (75%) of residents nearly equally selected one, two, three, four, or five motivators from this list, including almost a quarter (23%) who selected one or two motivators, and 12% who only selected one main motivator.

### Number of Structural or Vegetation Mitigation Actions by Mitigation Motivators

When comparing residents who had zero, one to three, or four to six structural measures, those who had four to six structural or vegetation mitigation actions were significantly more likely to select "it's the right thing to do". For "it's the right thing to do", 66% of those who had four to six structural measures selected this motivator, versus only 41% of those who performed no structural measures. On the same note, 60% of those who had performed four to six vegetation measures and 48% of those who performed no vegetation measures selected this motivator.

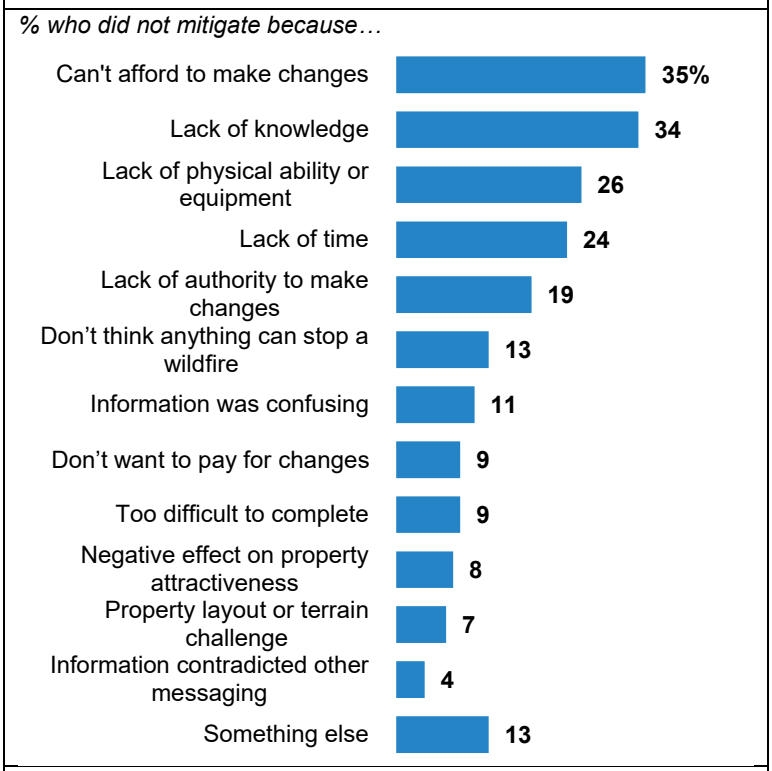
"Concern about your family's safety" was a common motivator for residents performing some but not the majority of the six mitigation measures required to ensure property preparedness. The one to three structural or vegetation mitigation actions cohort were significantly more likely to select "concern about your family's safety" (62%) than those who completed four to six measures (53% and 55%, respectively) or no mitigation measures (48% and 49%, respectively).

## *5.4.2 Mitigation Obstacles*

Residents were asked to select any obstacles that made it harder for them to undertake wildfire mitigation on their property. Referencing Figure 5.4.2-1, about one-third of residents selected the top two obstacles: "I can't afford to make certain changes" (35%), and "lack of knowledge" (34%). The obstacle "lack of authority to make changes" was popularly selected by one in five residents (19%); note, only renters had access to this response option. On the whole, most (87%) chose one to three obstacles, 48% chose only one main obstacle and only 1% of

**Figure 5.4.2-1**

**Resident Obstacles to Wildfire Mitigation**




Source: Q46. NFPA Wildfire Resident Survey. Sept. 27 – Oct. 6, 2023. N=981. Note: Percentages are from a select all that apply list and do not sum to 100%.

residents did not choose any obstacle from this list.

In total, popular barriers related to time/resources ("lack of physical ability or equipment" by 26%, and "lack of time" by 24%), knowledge ("lack of knowledge" by 35%, and "information was confusing" by 11%), and finances ("I can't afford to make certain changes" by 35%, and "I don't want to pay for certain changes" at 9%). While 35% claimed they cannot afford mitigation, only 9% selected that they do not want to pay for certain changes; to paraphrase, only 9% of residents are unwilling to pay for mitigation regardless of their financial ability.

When comparing barrier selections by state, more Oregonians (59%) felt as though they cannot afford to make certain changes than Californians (41%), and more Oregonians felt as though they lack time (57%) than Californians (43%). Finally, it's important to note that a solid quarter (26%) lack the physical ability or equipment to enact mitigation activities.

When assessing obstacle selection among vulnerable populations, residents with a physical disability (36%) were significantly more likely to have selected "lack of physical ability or equipment" as an obstacle than other residents (24%).

### *5.4.3 Renter Obstacles*

Among the 32% of our sample who are renters, two-thirds (66%) have not been in contact with their property owner regarding mitigation measures. While 28% have been in contact with their property owner once or twice, only 6% have been in contact many times regarding these measures. Regardless of their past communication, the vast majority (70%) of renters are at least somewhat willing to have these conversations with their property owner, including 34% who are very willing.

**Figure 5.4.3-1**

**Renter Obstacles**

| *% of renters whose property owner has been in contact about mitigation measures ...* | |
|---|---|
| Many times | 6 |
| Once or twice | 28 |
| Never | 66 |
| Total | =100% |
| *% of renters who are willing to communicate with owners about potential mitigation measures to be taken on their property…* | |
| Not at all willing | 5 |
| Not too willing | 25 |
| Somewhat willing | 36 |
| Very willing | 34 |
| Total | =100% |

Source: Q47-Q48. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=281). Note: Percentages are from a select all that apply list and do not sum to 100%.

### *5.4.4 Reasons for Inaction*

There were slight yet significant differences between those who selected "lack of knowledge" or "I can't afford to make certain changes". For one, residents who did not have any structural mitigation (42%) were more likely to select "lack of knowledge" than residents who had completed the majority (30%). Similarly, residents who did not have any structural

mitigation were more likely to select "I can't afford to make certain changes" (35%) than residents who had completed the majority (23%). These data imply that "lack of knowledge" and "I can't afford to make certain changes" are pertinent obstacles among the subgroup of residents who have not performed any structural mitigation. When comparing residents who completed zero to three or four to six vegetation mitigation activities, there were no significant differences in their selection of any of the obstacles provided in Figure 5.4.1-1.

### *5.4.5 Mitigation Obstacles by Concern Scale*

Given previous results, it may be worth considering that perceived concern may influence decisions around whether to mitigate, and how. With regard to questions concerning obstacles making it harder for residents to undertake mitigation on their property among the entire sample, some trends emerged as shown in Figure 5.4.6-1. Concern scores were slightly higher ($0.20 \leq$ effect size $< 0.50$) on average for those citing: lack of physical ability or equipment, affordability concerns for making changes, lack of knowledge, lack of time, negative effect on property attractiveness, confusing information, information contradicted other messaging, or property layout or terrain challenge.

**Figure 5.4.6-1**

**Average Concern Scores by Obstacle Cited for Undertaking Mitigation on Property**

| | Yes | | | No | | | |
|---|---|---|---|---|---|---|---|
| Obstacles | N | Mean | SD | N | Mean | SD | Effect Size |
| Don't want to pay | 83 | 49.0 | 30.6 | 794 | 49.2 | 28.7 | -0.01 |
| Can't afford to make changes | 310 | 53.9 | 26.7 | 567 | 46.7 | 29.7 | 0.25 |
| Too difficult to complete | 81 | 48.6 | 31.7 | 796 | 49.3 | 28.6 | -0.02 |
| Lack of time | 203 | 56.7 | 29.2 | 674 | 47.0 | 28.5 | 0.34 |
| Negative effect on property attractiveness | 72 | 58.7 | 26.3 | 805 | 48.4 | 29.0 | 0.36 |
| Lack of knowledge | 285 | 55.4 | 28.4 | 592 | 46.2 | 28.7 | 0.32 |
| Information was confusing | 82 | 56.3 | 31.2 | 795 | 48.5 | 28.6 | 0.27 |
| Information contradicted other messaging | 31 | 54.7 | 30.2 | 846 | 49.0 | 28.8 | 0.20 |
| Lack of physical ability or equipment | 226 | 55.4 | 30.9 | 651 | 47.1 | 27.9 | 0.29 |
| Property layout or terrain challenge | 65 | 57.8 | 27.9 | 812 | 48.5 | 28.9 | 0.32 |
| Lack of authority to make changes | 52 | 45.0 | 24.2 | 224 | 48.7 | 28.5 | -0.13 |

Source: Q46 x Q1. NFPA Wildfire Resident Survey. Sept. 27 – Oct. 6, 2023. N=877 (homeowners), 276 (renters). Note: Percentages read across. White boxes may not add up to 100% due to rounding.

### *5.4.7 Relevant Incentives*

Figure 5.4.7-1 illustrates the distribution of resident receipt of mitigation incentives, as well as the percentage of those who are aware of incentives among those who have not received them. The majority of respondents, constituting 78%, reported that none of the listed incentives were perceived as applicable to their property.

**Figure 5.4.7-1**

**Resident Receival of Mitigation Incentives**

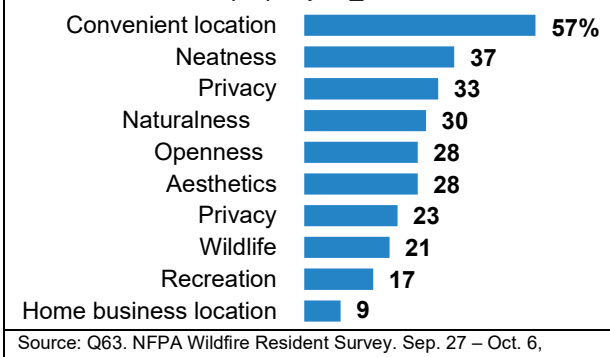
| *% who have received the following incentives...* | |
|---|---|
| Home insurance incentive (e.g., discount, premium reduction) | 12 |
| Prevention of financial consequences from gov't or community association (e.g., fines, property use restrictions) | 6 |
| Prevention of financial consequences from insurance co. (e.g., cancellations, surcharges, new policy restrictions) | 6 |
| Community financial incentives (e.g., tax rate reduction) | 4 |
| Government grant | 2 |
| None of the above | 78 |
| Total | 100% |
| *% who are aware or unaware of wildfire mitigation incentive programs…* | |
| Aware | 3 |
| Unaware | 97 |
| Total | 100% |

Source: Q30, Q31. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (Q30 N=981, Q31 N=789). Note: Percentages are from a select all that apply list and do not sum to 100%.

Residents who had received at least once incentive were significantly more likely to have performed four to six structural mitigation measures (57%) than residents who received no incentives (31%). On a similar note, residents who had received at least incentive were significantly more likely to have completed four to six vegetation mitigation actions (94%) than those who had not received any incentives (69%).

**Figure 5.4.8-1**

**What Residents Value About Their Property**




Source: Q63. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages are from a select all that apply list and do not sum to 100%.

Notably, only 3% of residents reported being aware of wildfire mitigation incentive programs. To sum up, most residents have not received mitigation incentives (78%), and nearly all of them are unaware they exist (97%).

### *5.4.8 What Residents Value About Their Property*

Despite the evident threat of wildfires, residents of Wildfire Urban Interface (WUI) still choose to either move to or continue to live in these areas. As displayed in Figure 5.4.8-1, over half of residents (57%) value the convenient location of where they live, and about one third or less selected each other property feature. Other features on this list may or may not indicate a preference or reluctance to

vegetation maintenance. For example, qualities such as “neatness” or “openness” may motivate vegetation maintenance, while others such as “naturalness”, “aesthetics”, or “privacy”, may jeopardize the very reasons they bought the property (Brenkert Smith et al., 2006; Nelson et al., 2004).

However, in contradiction with this, residents who selected “naturalness” were more likely to had performed the majority of vegetation measures than those who had not selected it (84% vs. 71%, respectively). A similar pattern presented for and “privacy” (83% and 71%, respectively), but with no significant difference regarding “aesthetics.” As for property qualities that should theoretically encourage vegetation maintenance, there was only a slight significant difference for “neatness”; those who had selected it were slightly more likely to had performed four to six vegetation measures (80%) than those who had not selected it (72%). In interpreting these differences, while “neatness” is selected more often by residents who mitigate, this same dynamic occurs for “naturalness” and “privacy”, which theoretically should deter vegetation maintenance.

**Figure 5.4.8-2**

**Property Features and Vegetation Maintenance**

| *Those who value _ property feature were _ likely to perform veg maintenance...* | |
|---|---|
| **Features that Encourage Veg. Maintenance** | |
| Neatness | **More likely** |
| Openness | **Equally Likely** |
| **Features that Discourage Veg. Maintenance** | |
| Naturalness | **More likely** |
| Aesthetics | **Equally Likely** |
| Privacy | **More likely** |

Source: Q13xQ63. NFPA Wildfire Resident Survey. Sept. 27 – Oct. 6, 2023. N=981.

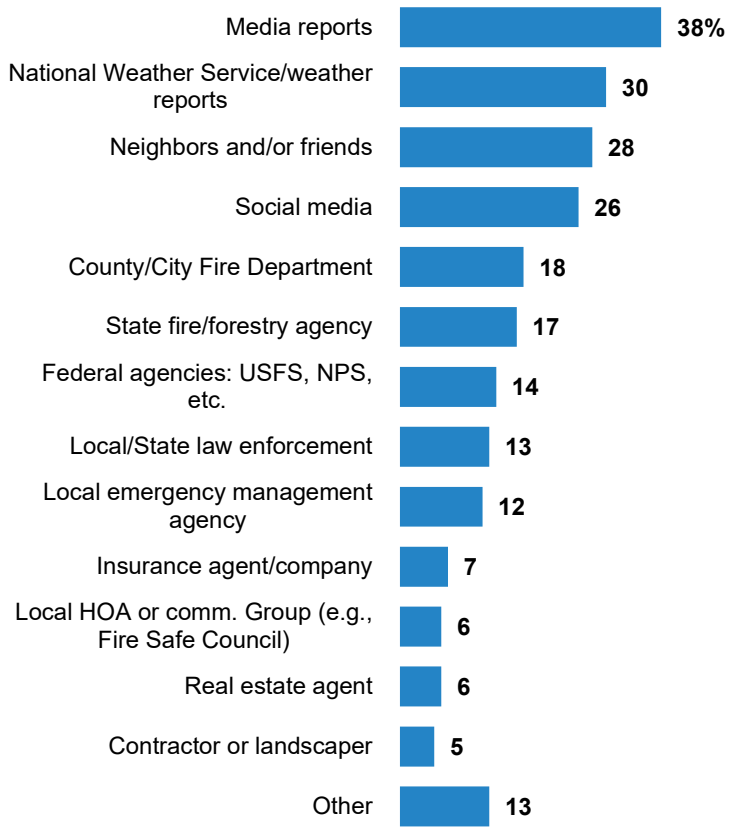
## 5.5 Communications, Assistance Received, and Fire Department Role

### 5.5.1 Safety Information Sources & Interest in Learning More

Among the safety information sources presented in Figure 5.5.1-1, 38% of residents accessed traditional media sources, either media reports (38%) or, 30% weather reports), while 37% of residents accessed social sources, either neighbors and/or friends (28%), or social media (26%). Finally, 43% accessed at least one type of local or state source, including 18% who accessed this information through their county or city fire department, 13% who accessed their local or state law enforcement, and 12% who accessed a local emergency management agency. While traditional media sources were selected the most, still over half of residents (54%) utilize social sources for wildfire safety information. Correspondingly, most (82%) residents selected two sources, while 16% selected three and only 1% selected just one.

**Figure 5.5.1-1**

**Sources Used to Learn about Wildfire Reports and Risk**




Source: Q53. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages are from a select all that apply list and do not sum to 100%.

Among the 13% of respondents who selected “other” and specified what that would be, forty-six (n=46) respondents to this open-ended question. More than half of the respondents (n=27) stated that they have noticed any information or not do recall. Included in this count is one respondent that stated, “Not required. We are surrounded by other housing developments, and we have not had any fires near us.” Six (n=6) respondents noted that they received information from a utility company, for example an electric company. Four (n=4) respondents replied that they received information through physical communication material (e.g., NPR reports or pamphlets) or media communication (e.g., local television or an unspecified television show). A different set of four (n=4) respondents received their information directly from an expert, which includes a fire marshal or insurance company. Three (n=3) respondents stated that their information was from a trusted source with an expert association (e.g., Linn County Chapter of the Oregon Small Woodlands Association) or referral (e.g., gardener). The remaining two (n=2) respondents did their own research or spoke in regard to an experience they encountered to take precaution.

**Figure 5.5.1-2**

**Motivation to learn more about mitigation**

| *% who are _ motivated to learn more about wildfire mitigation measures for their property…* | |
|---|---|
| Not at all motivated | 5 |
| Not too motivated | 16 |
| Somewhat motivated | 55 |
| Very motivated | 24 |
| **Total** | =100% |

2023 Source: Q55. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (N=981). Note: Percentages read down may not add up to 100% due to rounding.

In reference to Figure 5.5.1-2, the majority of residents (79%) were at least somewhat motivated to learn more about how to implement wildfire measures on their property. Fortunately, residents who selected “lack of knowledge” for question 46, “have you faced any of the following obstacles that made it harder for you to undertake wildfire mitigation on your property?”), were significantly more likely to be very motivated to learn more (37%) than residents who did not (18%).

Residents who were somewhat or very motivated to learn more versus those who were not too or not at all were more likely to be knowledgeable on the following wildfire topics: “wildfire risk in your area” (70% and 58%, respectively), “recommended mitigation measures you can take” (65% and 50%, respectively), “how to complete mitigation measures on your property” (56% and 41%, respectively), “where to find resources (financial, materials, etc.) to complete mitigation measures” (45% and 35%, respectively), and “where you can go to get answers to questions about improving wildfire safety” (55% and 46%, respectively). In other words, motivation to take action is more likely to be instilled in residents who are already knowledgeable about wildfire mitigation.

On another note, residents who were somewhat or very motivated to learn more were slightly yet significantly more likely to have experienced a wildfire closer than 50 miles away (72%) than those who were not too or not at all motivated (64%). Additionally, those who were somewhat or very motivated to learn more were more likely to have selected at least one of the experiences with wildfires presented in question 36, “which of the following experiences have you had with wildfires?”, (85%) than those who were not too or not at all motivated (71%). At a high level, there were no significant differences in motivation to learn more among residents who perceived their property to be not too or not at all versus at least somewhat protected from wildfires. Comparatively, among residents living in areas which require wildfire mitigation by law, the majority were significantly more likely to be somewhat or very motivated (84%) than to be not too or not at all (16%), with a similar pattern among residents living in communities who merely suggest implementation of wildfire mitigation (84% and 17%, respectively).

### *5.5.2 Assistance Received*

In reference to Figure 5.5.2-1, while very few residents have received physical assistance with defensible space or home hardening, one in four (24%) have received education on these measures.

Moreover, residents who have received education on mitigation measures were more likely to have completed the majority (four to six) of our structural or vegetation mitigation measures (51% and 89%, respectively) than residents who have not received this education (32% and 71%, respectively). The respective benefit of education is also comparable between structural and vegetation mitigation. In summary, informed residents are more likely to complete wildfire mitigation activities.

Among the 17% of residents who have received a wildfire-related risk or hazard assessment on their property, while uncommon, property wildfire risk assessments conducted

**Figure 5.5.2-1**

**Assistance Received for Wildfire Mitigation**

| *% who have received _...* | |
|---|---|
| Education about vegetation or structural wildfire mitigation actions. | 24 |
| Wildfire-related risk or hazard assessment of your property. | 17 |
| Physical assistance with vegetation removal or management. | 15 |
| Volunteer assistance with structural changes to the home. | 12 |
| Citation or fine for violation of wildfire-related codes or regulations. | 11 |
| *Among the 17% who have received a wildfire risk/hazard assessment, % who have received it _...* | |
| As a part of voluntary program from a fire department (e.g., local, Fire Safe Council, Firewise USA®, etc.) | 45 |
| On their request | 36 |
| Because of a requirement or regulation | 19 |
| Total | =100% |

Source: Q32, Q33. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. (Q32 N=981, Q33 N=167). Note: Q32 percentages only show select responses and do not sum to 100%. Q33 percentages read down and may not sum to 100% due to rounding.

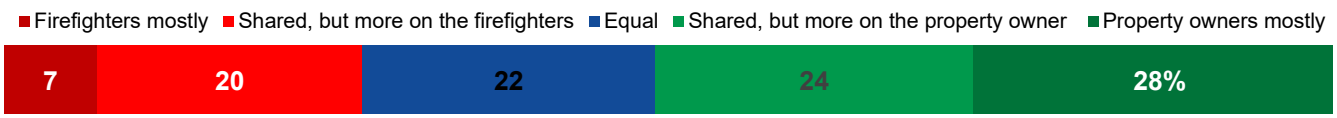
have mostly been done through voluntary programs (45%) or even resident requests (36%). Very few (19%), or 3% of the total sample, received a wildfire risk/hazard assessment because of a requirement or regulation.

### *5.5.3 Perception of Fire Department Role*

**Figure 5.5.3-1**

**Resident Perception of Fire Department Role**

*% who believe _ is responsible for protecting private property from wildfires…*




Source: Q61. NFPA Wildfire Resident Survey. Sep. 27 – Oct. 6, 2023. N=981. Note: Percentages read across and may not sum to 100% due to rounding.

According to Figure 5.5.3-1, while only 7% of residents believe that they do not hold at least minor responsibility in protecting their property from wildfires, 20% believe property owners have a shared responsibility that falls mostly to firefighters. Overall, while agreeing responsibility is shared to some extent (65%), residents agree there is more responsibility on property owners (52%) than firefighters (26%) or that responsibility is equal (22%).

In summary of the resident survey's detailed findings, perceived risk is consistently high among residents, but higher in the long term (in the next 5 years, rather than the next year). While significantly more residents perform vegetation maintenance mitigation actions than structural mitigation projects, still the minority of residents perform each vegetation mitigation at the necessary frequency for all but one mitigation. In terms of motivators, the most to least common motivators include general risk reduction (60%), social responsibility (59%), protection of family (56%) and property (51%), finances (29%), and laws (23%).

In contrast, residents lack concession on any individual mitigation obstacle, as about one-third or less selected each; however, the vast majority of residents (99%) selected at least one obstacle, indicating a diverse array of obstacles which stakeholders need to address. Finally, while "media reports" were selected by the most residents, when combining source types, residents popularly accessed three types of sources: a local or state source, traditional media sources, or social sources. Most residents selected two sources from the list, rarely selecting just one.

# 6. Fire Department Survey Methodology

## *6.1 Sampling and Data Collection*

A 10-minute online survey was designed and administered to fire department workers with a leadership position and within an area of medium to high wildfire hazard in WUI California and Oregon areas. Respondents were screened to ensure they work for a fire department in the correct state and in a county with a high likelihood of wildfires affecting homes. This was determined by using scoring criteria from the Community Wildfire Defense Grant Program (CWDG) For further information on CWDG sampling, please see Appendix E. Additional screening questions were focused on ensuring that participants held leadership positions within their fire departments and were familiar with wildfire mitigation.

Data collection was conducted from October 30 – December 4, 2023, using a web-based survey platform (Qualtrics). The survey was accessible 24 hours a day, seven days a week, and was designed to save partial survey responses so that participants could return later to complete. Multiple email reminder notifications were sent to respondents over the thirty-six-day field period. At the end of the field period, 112 survey cases were received, reviewed and cleaned for data quality. The final sample size for the fire department survey includes n=71 cases. There was a roughly even distribution of between California respondents (n=39) and Oregon respondents (n=32).

## *6.2 Analytical Strategy and Data Analysis*

Beyond the screening questions, the questionnaire aimed to understand the perceptions and experiences of fire department leadership located in high-risk wildfire of states. Throughout instrument development, EurekaFacts held listening sessions with an external review panel representing both state and federal agencies, as well as academia to solidify the questions that needed to be addressed in the research. This feedback was used to refine the survey instrument topics and constructs.

The final survey focused primarily on understanding the impact of mitigation measures on fire department operations, actions taken to motivate action by homeowners and communities, mitigation measures implemented in their jurisdictions, and the role of the fire departments. Additional topics included asking about departments' utilization of wildfire mitigation programs, outreach to residents, and mitigation obstacles.

Qualitative analysis was done to identify common themes and experiences among fire department leadership for open-ended questions asking about the last time a wildfire threatened their department's area and how taking on wildfire mitigation activities has affected operations within their department.

# 7. Fire Department Survey: Detailed Findings

The 71 completed survey responses from California and Oregon WUI fire department workers with a leadership position were captured through structured survey questions. The questionnaire gathered information on fire department operations, actions taken to motivate action by homeowners and communities, mitigation measures implemented in their jurisdictions, and the role of the fire departments.

The results of this analysis are presented in this section and structured thematically:

- 7.1. Implemented Mitigation Measures
- 7.2. Homeowner Mitigation & Public Outreach Programs
- 7.3. Mitigation Obstacles
- 7.4. Impact of Wildfire Mitigation Measures on Fire Department Operations

## 7.1 Implemented Mitigation Measures

The following section presents the measures fire departments are undertaking inspection and enforcement of wildfire mitigation codes and ordinances pertaining to structures and vegetation/fuel, as well as other wildfire mitigation measures activities conducted by the departments.

### 7.1.1 Prevalence of Inspections, Enforcement, and Assessment of Wildfire-Related Regulations and Ordinances

Respondents were asked to indicate if their departments offered any of the following assessments: request wildfire hazard or risk assessment, voluntary wildfire hazard or risk assessment, or regulatory-based wildfire hazard or risk assessment. Most (82%, n=58) of respondents' departments provide wildfire hazard (or risk) assessments on private property on request, while 11 (16%) of respondents' departments do not. Additionally, 69% (n=49) of respondents' departments provide hazard or risk assessment on private property voluntarily, while 30% (n=21) of respondents' departments do not. Finally, 35% (n=25) of respondents' departments provide hazard or risk assessment on a regular basis, while a larger portion (61%, n=43) of respondents' departments do not.

Most (88%) of respondents from Oregon (n=30) and three-quarters (77%) of respondents from California (n=28) indicated that their fire department provides wildfire hazard (or risk) assessments on private property on request. Twenty-seven respondents in California (69%) and twenty-two respondents in Oregon (69%) reported their fire department provides wildfire hazard assessments voluntarily. Half of California respondents (51%, n=20) reported their department conducts more hazard assessments on a regular basis compared to a fewer proportion of Oregon respondents who said the same (16%, n=5).

**Figure 7.1.1-1**

**Type of Wildfire Hazard or Risk Assessments Conducted by Fire Departments for Private Property**

| *counts of 'yes' who conducts __ on private property…* | **Overall** | **California** | **Oregon** |
|---|---|---|---|
| | *n (out of 71)* | *n (out of 39)* | *n (out of 31)* |
| Wildfire hazard/risk assessment on request | 58 | 30 | 28 |
| Voluntary wildfire hazard/risk assessment | 49 | 27 | 22 |
| Regulatory-based wildfire hazard/risk assessment | 25 | 20 | 5 |

Source: Q26. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71 (overall).

Respondents were asked if their department has conducted either of the following activities: inspections for compliance with the wildfire-related safety regulations and ordinance and enforcement of wildfire-related regulations and ordinances. About half (49%, n=35) of respondents indicated that their department is currently conducting inspections to ensure compliance with wildfire-related safety regulations and ordinances. A smaller subset, (18%) of respondents (n=13) reported that inspections are not currently being performed but are planned for the future. Additionally, 31% (n=22) of respondents stated that neither current inspections nor future plans for them exist within their department. Finally, one respondent reported that they were 'unsure' if their department has conducted inspections to ensure compliance with wildfire-related safety and regulations.

Regarding the enforcement of wildfire regulations and ordinances, 47% (n=33) of respondents indicated that their department is presently enforcing these regulations. Only 11% (n=8) of respondents indicated that their department is not currently enforcing regulations and ordinances but intends to do so in the future. Fully 39% of (n=28) respondents stated that their department neither currently enforces regulations and ordinances nor plans to do so in the future. Lastly, two respondents reported that they are unsure if their department has conducted enforcement of wildfire regulations and ordinances.

### *7.1.2 Inspections and Enforcement of Structural Ignition Hazard for Groups of Interest*

For respondents whose departments are currently conducting inspections and/or enforcement of wildfire-related regulations and ordinances, they were also queried about inspections and enforcements of wildfire building codes (such as *Structure Ignition Hazard*). This question was answered by thirty-three respondents. These results are displayed in Figure 7.1.2-1.

**Figure 7.1.2-1**

**Compliance Inspections and Enforcements for Wildfire Building Codes in the Department's Jurisdiction**

| *counts of 'yes' who conducts …* | **Inspection** | **Enforcement** |
|---|---|---|
| | *n count (out of 71)* | |
| Residents' property | 24 | 19 |
| Public land/holdings | 22 | 19 |
| County/municipal land/holdings | 21 | 15 |
| Commercial/business properties | 20 | 17 |
| Public Buildings (schools, hospitals, etc.) | 20 | 17 |
| Utilities and other public infrastructure | 17 | 14 |

Source: Q20-21. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71

A majority (68%) of these respondents' departments (n=24) conduct inspections for compliance with wildfire building codes on the property of residents. Similarly, 60% (n=21) conduct inspections for compliance on county, municipal land,

and/or holdings. A smaller number (49%; n=17) of respondents' departments conduct inspections for utilities and other public infrastructure. More than half (57%, n=20) of respondents' departments conduct inspections in public buildings and at commercial and business properties. Finally, 63% (n=22) of respondents' departments conduct inspections on public land and/or holdings.

The majority (58%) of these respondents' departments (n=19) conduct enforcement for wildfire building codes on the property of residents and public land and/or holdings. Almost half (46%, n=15) of respondents' departments conduct enforcement on county, municipal, and/or holdings. A larger amount (52%, n=17) of respondents' departments conduct enforcement in public buildings such as schools and hospitals and at commercial/business properties. Finally, only 42% (n=14) of respondents' departments conduct enforcement for utilities and other public infrastructure.

A few respondents (21%, n=15) reported that their fire department conducts inspections for compliance with wildfire building codes in all six areas. Two departments (3%) conduct these inspections in only one area, while nine departments (13%) conduct these inspections in two to five areas. Many respondents (63%, n=45) reported their fire department does not conduct inspections in any of the six listed areas. 16% of respondents (n=11) indicated that their fire department conducts enforcement for wildfire building codes in all six areas and 69% of respondents (n=49) reported that their department does not conduct enforcement in any of these areas. Nine departments (13%) reported conducting enforcement in one to five areas. Finally, twenty departments (28%) conducted inspections for vegetation and fuel management in all six of the listed areas.

### *7.1.3 Inspections and Enforcement of Hazardous Fuel Risk*

As noted on the survey, "Hazardous Fuel Risk is the likelihood that excess vegetation (trees, brush, and grasses) in and on property will ignite during a wildfire."

For respondents whose departments are currently conducting inspections and/or enforcement of wildfire-related regulations and ordinances, they were also queried about inspections and enforcements for vegetation and fuel management in the following areas of jurisdiction. This question was displayed to thirty-five respondents. Figure 7.1.3-1 displays these results.

Many respondents' (n=30, 86%) departments conduct inspections for vegetation and fuel management in the property of residents. Twenty-four (69%) respondents' departments conduct inspections on county, municipal land, and/or holdings. Twenty-six (74%) respondents' departments conduct inspections in public buildings such as schools and hospitals, commercial and business properties, and on public land and/or holdings.

**Figure 7.1.3-1**

**Compliance Inspections and Enforcements for Vegetation and Fuel Management in Department's Jurisdiction**

| *counts of 'yes' who conducts …* | **Inspection** | **Enforcement** |
|---|---|---|
| | *n count (out of 71)* | |
| Residents' property | 30 | 24 |
| County/municipal land/holdings | 24 | 23 |
| Public Buildings (schools, hospitals, etc.) | 26 | 24 |
| Commercial/business properties | 26 | 24 |
| Public land/holdings | 26 | 24 |
| Utilities and other public infrastructure | 23 | 18 |

Source: Q22-23. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71

Twenty departments (28%) reported conducting inspections for vegetation and fuel management in all six areas listed. Three departments (4%) conduct these inspections in only one area, while an additional ten departments (14%) conduct inspections in two to five areas. Over half of respondents (55%, n=39) reported their fire department does not conduct inspections for vegetation and fuel management in any of the areas listed. Seventeen respondents (24%) reported that their fire department conducts enforcement for vegetation and fuel management in all six areas. About two-thirds of departments (62%, n=44) do not conduct enforcement in any of the listed areas. Six additional respondents (8%) conduct enforcement of vegetation management in four to five areas.

### *7.1.4 Implementation and Perceived Completeness of Wildfire Fuel Reduction Measures*

Respondents were asked to evaluate the extent to which their department implements the following wildfire fuel reduction within their area of jurisdiction: identifying and prioritizing areas for hazardous fuel reduction treatments, conducting treatment for hazardous fuel reduction in prioritized areas, and creating fuel-breaks around Wildland-Urban interface communities. They were provided with response options including 'Not at all,' 'Partially,' and 'Completely.'

About one-third of respondents (34%, n=24) believe that their department completely identifies and priorities areas for hazardous fuel reduction treatments. Almost half (52%, n=37) of respondents believe that their department partially identifies and prioritizes areas for

hazardous fuel reduction treatments. Moreover, a minority of respondents (14%, n=10) indicate that their department does not undertake this task at all.

Only one-quarter (23%, n=16) of respondents believe their department completely conducts treatment for hazardous fuel reduction in prioritized areas. A larger percentage, 42% (n=30) of respondents, believe their department partially does this. This is followed by 35% (n=25) of respondents who believe their department does not do this at all.

While 45% (n=32) of respondents believe their department only partially created fuel-breaks around these communities and similarly, 42% of respondents (n=30) think their department does not at all.

Respondents were queried regarding their tracking of performance measures for programs associated with wildfire mitigation efforts. This may encompass various metrics such as the count of properties inspected for defensible space compliance, citations issued for non-compliance, funding, and equipment contributions, as well as the organization of meetings and demonstrations, among other assessments.

The responses selected remained consistent across all three response options. 35% of respondents (n=25) stated that they do not keep track of performance measures for programs related to wildfire mitigation efforts. While the remaining 64% of respondents were split equally between keeping track of performance measures for one or two measures (32%, n=23) and keeping track of performance measures for multiple reasons (32%, n=23).

## *7.2 Homeowner Mitigation & Public Outreach Programs*

The following section describes the frequency of different types of department programs and education outreach used to promote wildfire mitigation within their community. This includes utilizing national programs and labor and materials assistance alongside education and media outreach efforts.

### *7.2.1 Homeowner Mitigation Programs*

Respondents were asked if their department has been providing any programs to assist residents with wildfire mitigation. These programs include home hardening/structure modification, vegetation management (defensible space) assistance (i.e., thinning and clearing), assistance with disposal of cleared fuel and vegetation debris, and equipment lease. Figure 7.2.1-1 displays these results.

**Figure 7.2.1-1**

**Fire Department Programs to Assist Residents with Wildfire Mitigation**

| *Does the department have the following program?* | Yes | No | Not sure | **Total** |
|---|---|---|---|---|
| | *n count* | | | |
| Vegetation management (defensible space) assistance (i.e., thinning and clearing | 37 | 34 | 1 | =71 |
| Assistance with disposal of cleared fuel and vegetation debris. | 29 | 42 | 1 | =71 |
| Home Hardening/Structure modification | 25 | 45 | 1 | =71 |
| Equipment lease | 1 | 70 | 0 | =71 |

Source: Q30. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71

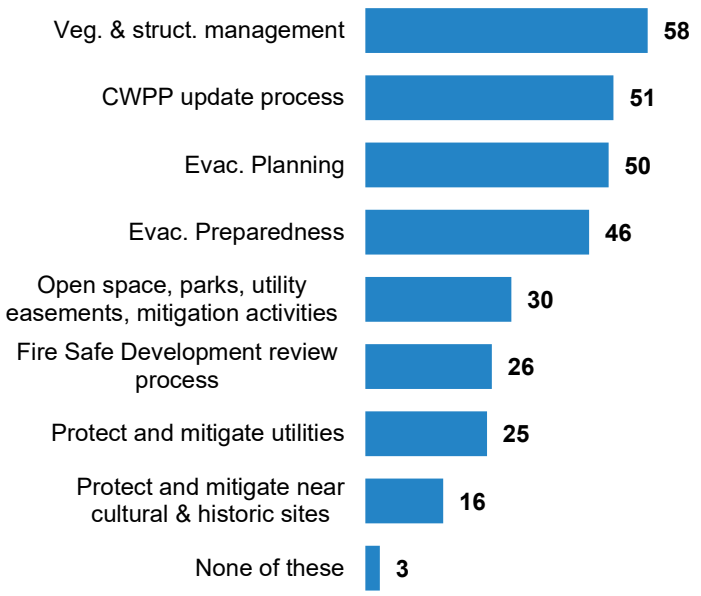
The majority (63%, n=45) of the respondents' department do not provide home hardening/structure modification programs while 35% of respondents (n=25) do. Only one respondent answered, 'not sure'. Many respondents (58%, n=41) reported that their department does not provide programs that assist with disposal of cleared fuel and vegetation debris. However, 41% of respondents (n=29) reported that their department does provide these programs for residents. Apart from "equipment lease" one respondent selected "not sure" for each program. However, around half (52%) of respondents (n=37) department provide vegetation management assistance programs to assist residents, while 47% of respondents (n=33) do not. Again, only respondent answered, 'not sure'. Finally, almost every respondent (99%, n=70) reported that their department does not provide equipment lease programs to assist residents with wildfire mitigation, while only one respondent reported their department does.

Respondents were asked about their departments' wildfire risk reduction programs. Respondents were prompted to select all programs their department has. Figure 7.2.1-2 displays the results. The program most selected was vegetation and structural management activity programs (82%; n=58). Closely following were community wildfire protection programs (72%; n=51), evacuation planning programs (70%; n=50), and evacuation preparedness programs (65%; n=46). Beyond those, 42% of respondents' department (n=30) provide open space, parks, utility easements, and mitigation activities programs, closely followed by fire safe development review process programs (35%, n=26) and protect and mitigate utilities programs (35%, n=25). Finally, only 22% of respondents' departments have programs that involve protecting and mitigating cultural and historic sites (n=16).

**Figure 7.2.1-2**

**Wildfire Risk Reduction Programs Within Departments**

*N counts of respondents who said their department has the following programs…*




Source: Q16. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71. Note: Counts are from a "select all that apply" list and does not add to 71.

Respondents were then asked a follow-up question about if there are dedicated staff to these programs. About 31% of respondents (n=22) reported that there are full time staff dedicated to these programs, 20% (n=14) of respondents reported that their dedicated part time staff, and finally 48% (n=34) of respondents reported that there are no dedicated staff to any programs.

Respondents were presented with a question regarding the utilization of different programs within their department. The two most selected programs by respondents were the 'Ready, Set, Go' program (65%; n=46) and The Firewise USA® Recognition Program (58%; n=41). The Fire Safe Councils were reported to be utilized by 46% of respondents' (n=32) departments.

The programs with lesser usage are: Living with Fire (24%; n=17), Fire Adapted Community Coalition (20%; n=14), and Fire Adapted Community Learning Network (17%; n=12). Finally, 13% of respondents' (n=9) reported their department uses either a different program not listed, and nine additional respondents reported their department does not use any of the programs listed. Figure 7.2.1-3 displays these results.

Of the forty-six respondents that

**Table 7.2.1-3**

**Utilization of Specific Programs**

| *counts of respondents who said department has utilized the following program…* | **Selected** *n count* |
|---|---|
| Ready, Set, Go | 46 |
| Firewise USA® | 41 |
| Fire Safe Councils | 32 |
| Living with Fire | 17 |
| Fire Adapted Community Coalition | 14 |
| Fire Adapted Community Learning Network | 12 |
| Other | 9 |

Source: Q31. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71. Note: Counts are from a "select all that apply" list and does not add to 71.

reported their fire department utilizes the Ready, Set, Go program, twenty-two are California respondents (48%) and twenty-four are Oregon respondents (52%). The Firewise USA® Recognition Program was almost even split between California departments (49%, n=20) that reported using the program and Oregon departments (51%, n=21) that use the program. Many departments in California (88%, n=28) reported utilizing the Fire Safe Councils program, while only five departments in Oregon (16%) reported using the Fire Safe Councils program. The Fire Adapted Community Coalition program and the Fire Adapted Community Learning Network both have respondents from Oregon reporting having two more departments use these programs than in California. Two departments from California (22%) and seven departments from Oregon (78%) reported utilizing other programs. Finally, seven departments in California (78%) and two departments in Oregon (22%) reported not utilizing any of these programs.

### *7.2.2 Public Outreach: Topics, General Programs, Modes, Audiences, & Perceived Effectiveness*

#### General Programs

Respondents were asked to indicate any educational materials or programs related to wildfire risk and mitigation that their department provides. Figure 7.2.2-1 displays these results.

**Figure 7.2.2-1**

**Educational Materials or Programs Related to Wildfire Risk and Mitigation**

| *N counts of respondents who said department has the following education materials and/or programs…* | **Selected** *n count* |
|---|---|
| General publications on wildfire risk and mitigation | 50 |
| Publications on wildfire mitigation measures specific to communities | 35 |
| Publications on wildfire mitigation measures specific for planners, and developers, and contractors | 22 |
| “Hands on” defensible space and fire safety workshops and meetings | 21 |
| Demonstration projects (e.g., with examples of fuels treatments for homes) | 19 |
| Demonstration homes/gardens (e.g., with examples of firesafe landscape designs) | 18 |
| Classroom demonstrations at schools | 14 |
| None of these | 14 |

Source: Q39. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71. Note: Counts are from a “select all that apply” list and does not add to 71.

Most respondents, (n=50, 70%) reported their department provides general publications on wildfire risk and mitigation, while publications on wildfire mitigation measures specific to communities are provided by almost half (50%) of respondents’ (n=35) departments. The following are publications specific for planners, and developers, and contractors are provided by 31% of respondents’ (n=22) departments and “Hands-on” defensible space and fire safety workshops and meetings

(30%; n=21) departments. Regarding different types of demonstrations provided by departments, 27% of respondents (n=19) departments provide demonstration projects and 25% of respondents (n=18) provide demonstration homes/gardens. The least provided programs among respondents' departments are classroom demonstrations at schools (20%; n=14).

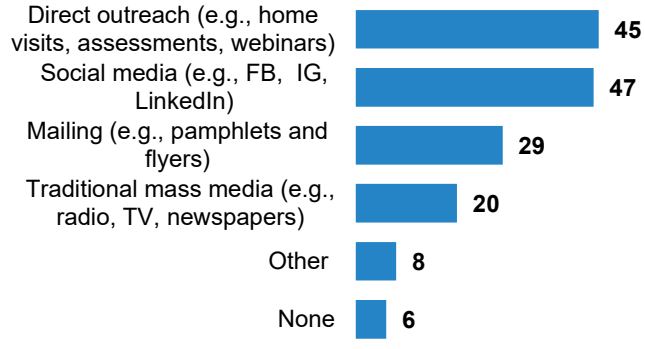
Fourteen fire departments in total, 26% of departments from California (n=10) and 13% of departments from Oregon (n=4) reported they do not provide any of the seven listed educational materials or programs related to wildfire risk and mitigation. Almost half of departments from California (46%, n=18) and over half of departments from Oregon (59%, n=19) indicated their department provides one to three educational materials regarding wildfire risk and mitigation. 28% of departments from California (n=11) and 22% of departments from Oregon (n=7) reported their department provides four to six educational resources. Two departments from Oregon (6%) offer all seven educational materials or programs related to wildfire risk and mitigation and no department from California offers all seven educational resources.

## Topics, Modes & Audiences

**Figure 7.2.2-2**

**Community Outreach Efforts Related to Wildfire Risk and Mitigation**

*N counts of respondents who said their department has or is doing the following…*




Source: Q38. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71. Note: Counts are from a "select all that apply" list and do not add to 71.

Respondents were asked whether their department has been providing communications or education to residents and community organizations on certain topics. A larger number of respondents (80%, n=57) indicated their department provides communication or education about wildfire risk to properties and communication or education about wildfire risk to communities (76%, n=54). Communication or education surrounding wildfire risk to safety, health, and life, as well as wildfire mitigation measure implementation guidance, is given in 69% of departments (n=49). Lastly, communication or education regarding wildfire mitigation policies and regulations/ordinances is provided in almost half of the departments (48%, n=34).

Twelve respondents, seven from California (18%) and five from Oregon (16%) indicated

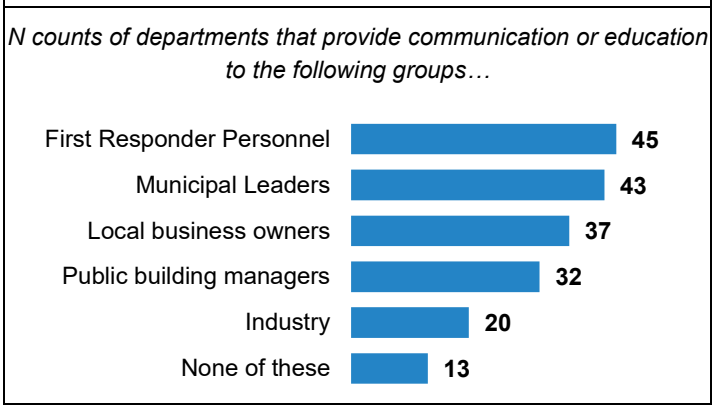
that their fire department has not been conducting any of the five types of outreach efforts listed regarding wildfire risk and mitigation. Few respondents (7%, n=5) reported that their department conducts one to two types of outreach efforts. Three to four types of outreach efforts are being conducted by twenty-four departments (34%), this number is almost evenly split between California and Oregon departments. Many departments (42%, n=30) are conducting all five types of outreach efforts, with seventeen of these departments being in California and the remaining thirteen departments being in Oregon.

Respondents were questioned about the wildfire risk and mitigation outreach efforts undertaken or currently conducted by their departments. These results are displayed in Figure 7.2.2-2. Direct outreach emerged as the most popular method, with 68% (n=48) of respondents' departments reporting that they have undertaken or are currently using it. Similarly, social media ranked as the second most favored outreach avenue, with 66% (n=47) of departments indicating that they have undertaken or are currently using social media. Mailing showed lower usage with 41% (n=29) of respondents' departments reporting that they have undertaken or are currently using this method. Traditional mass media followed suit, with 28% (n=20) of respondents' departments indicating that they have undertaken or are currently using it. Additionally, 11% (n=8) of respondents reported their department is utilizing another method of outreach, while 9% (n=6) reported their department is not using any of the methods mentioned.

Transitioning to the exploration of communication and education efforts related to wildfire risk and mitigation, respondents were prompted to specify if their department had been engaging with various target audiences. 63% (n=45) of respondents reported providing communication or education related to wildfire risk and mitigation to first responder personnel, including police, dispatch, and EMS. Similarly, 61% (n=43) of respondents stated that they provide communication or education to municipal leaders, such as major municipal government department heads. Approximately 52% (n=37) of respondents reported providing communication to local business

**Figure 7.2.2-3**

**Departmental Communication and Education on Wildfire Risk and Mitigation for Different Audiences**




Source: Q37. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71. Note: Counts are from a "select all that apply" list and do not add to 71.

owners, particularly accommodation providers like hotels. Public building managers, including those overseeing schools and community centers, were reached by 45% (n=32) of respondents. In contrast, only 28% (n=20) of respondents reported providing communication to industries such as oil and gas, forestry, and agriculture. Notably, 18% (n=13) of respondents indicated that they do not provide communication for any of the target audiences regarding wildfire risk and mitigation.

### *7.2.3 Dedicated Staff, Collaborations & Perceived Effectiveness*

If respondents selected at least one outreach program that their department has undertaken or is currently conducting, or one educational material or program related to wildfire risk and mitigation, they were subsequently asked whether there is dedicated staff assigned to these communication efforts or educational programs. Nearly half, amounting to 49% (n=35) of respondents, indicated that there are no dedicated staff assigned to any of these programs compared with 28% (n=20) reporting having full-time staff, and 18% (n=13) reported having part-time staff.

**Figure 7.2.3-1**

**Most Effective Program in Engaging Residents**

| *counts of respondents who say __ is most effective in engaging residents in wildfire risk reduction actions, among those who have the program…* | **Selected** *n count* |
|---|---|
| General publications on wildfire risk and mitigation | 21 |
| Publications on wildfire mitigation measures specific to communities | 9 |
| "Hands on" defensible space and fire safety workshops and meetings | 8 |
| Demonstration projects (e.g., with examples of fuels treatments for homes) | 5 |
| Demonstration homes/gardens (e.g., with examples of firesafe landscape designs) | 1 |

Source: Q37. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=44 (n size for each topic based on those who initially selected it).

Respondents were then asked to report on whether their county/municipality has engaged in collaborations regarding wildfire mitigation. The most popular collaboration is outreach with community organizations which is implemented in 64% of respondents' counties (n=45). Respondents reported that partnerships with community organizations are implemented in over half of their counties (55%, n=39) and partnerships to create field breaks around Wildland-Urban interface communities are implemented in just under half of their counties (48%, n=34). The counties are engaged in the coordination of volunteer assistance for 24% of departments (n=17). A few departments (17%, n=12) are not engaged in any of the listed collaborations.

One-quarter of respondents (23%, n=16) reported their department only has one of the

listed collaborations in place. Another quarter of respondents (27%, n=19) indicated their department has two collaborations currently implemented. Three collaborations are in place in 21% of departments (n=15) and 12% of respondents reported having all four listed collaborations in place.

These respondents were also subsequently asked which outreach program has been the most effective in engaging residents in wildfire risk reduction actions. Figure 7.2.3-1 displays these results.

Out of the 44 respondents, nearly half (48%, n=21) reported that general publications on wildfire risk and mitigation were the most effective in engaging residents. Following this, only 20% of respondents (n=9) reported that publications focusing on wildfire mitigation measures specific to communities were the most effective. Similarly, 18% of respondents (n=8) stated that "Hands on" defensible space and fire safety workshops and meetings were their most effective program. Additionally, only 11% of respondents (n=5) reported that demonstration projects were their most effective program. Finally, only one respondent reported that demonstration home/garden programs were their most effective program.

### *7.2.4 Planned Future Outreach*

Respondents were asked whether their department is planning any public outreach efforts for the future. Almost two-thirds (76%, n=54) reported that their department is, while the remaining almost one-fourth (24%, n=17) of respondents reported their department is not.

Most of the respondents from California (82%, n=32) and 69% of respondents from Oregon (n=22) reported their fire department is planning public outreach efforts for the future.

Of the fifty-four departments that are planning public outreach efforts for the future, six of them (11%) currently offer no public outreach efforts. About 50% of these departments (n=28) that are planning public outreach efforts already have one to three types of outreach methods in place. Eighteen more departments (33%) that are planning public outreach efforts already have four to six outreach efforts implemented. Two departments (4%) have all seven listed outreach efforts in place and are planning to implement more in the future. Out of the seventeen departments that are not planning to implement public outreach efforts, 47% of departments (n=8) currently have no outreach efforts in place. Six respondents (11%) indicated their department has one outreach effort in place, but they do not have any more planned. Three respondents (6%) reported their department has two to three outreach efforts in place, but they

do not have any more planned. No department that does not have public outreach efforts planned has over three efforts currently in place.

## *7.3 Mitigation Obstacles*

### Internal Obstacles

**Figure 7.3-1**

**Internal Obstacles to Meeting Wildfire Mitigation Program Goals within the Department**

| Internal Obstacles | | | |
|---|---|---|---|
| *counts of respondents who said __ is…* | **NET an obstacle** | A major obstacle | A minor obstacle |
| | *n count* | | |
| Inadequate program budget | **60** | 43 | 17 |
| Not enough firefighters/staff for wildfire inspections | **58** | 42 | 16 |
| Not enough resources and/or funding for wildfire mitigation outreach (e.g., communication, education) | **57** | 38 | 19 |
| Not enough resources and/or funding for wildfire inspections | **57** | 38 | 19 |
| Not enough technical help to conduct proper risk modeling | **47** | 25 | 22 |
| Unclear program goals | **38** | 8 | 30 |
| Lack of preparation within my fire department | **37** | 9 | 28 |
| Inadequate firefighter training for fighting Wildland - Urban Interface fire | **30** | 10 | 20 |

Source: Q66. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71. Responses sum to 71, although some subitems were left unanswered by respondents.

The respondents provided insights into internal obstacles to meeting goals and objectives of wildfire mitigation programs in their fire departments. Only 11% of respondents (n=8) considered unclear program goals as a major internal obstacle, while a larger majority of respondents, 43% (n=30) reported this as a minor obstacle. Similarly, 46% of respondents (n=32) reported this as not an obstacle. Moreover, the shortage of resources and funding for wildfire mitigation outreach and inspections emerged as substantial hurdles, with 54% (n=38) of respondents considering it a major obstacle, 27% (n=19) as a minor obstacle, and 19% (n=13) as not an obstacle for both categories. The insufficiency in technical help for proper risk modeling was acknowledged by 36% (n=25) as a major obstacle, while 31% (n=22) and 33% (n=23) considered it a minor obstacle and not an obstacle, respectively. Similarly, the shortage of firefighters/staff for wildfire inspections was seen as a major obstacle by 59% (n=42) of respondents, with 22% (n=16) considering it a minor obstacle and 18% (n=13) as not an obstacle. Inadequate firefighter training for WUI fires was recognized as a concern, with 14% (n=10) as a major obstacle, 29% (n=20) perceiving it as a minor obstacle, and 57% (n=40) as not an obstacle. Lastly, a noteworthy proportion acknowledged a lack of preparation within their

fire departments, with 13% (n=9) as a major obstacle, 40% (n=28) viewing it as a minor obstacle, and 47% (n=33) as not an obstacle.

### External Obstacles

The respondents provided insights into the extent of external, resident-caused obstacles within wildfire mitigation efforts in their county/municipality. See Figure 7.3-2 for results.

**Figure 7.3-2**

**External, Resident-Caused Obstacles to Meeting Wildfire Mitigation Program Goals within the Department**

| External Obstacles | | | |
|---|---|---|---|
| *counts of respondents who said __ is…* | **NET an obstacle** | A major obstacle | A minor obstacle |
| | *n count* | | |
| Residents are unable physically or financially to implement mitigation measures | 63 | 36 | 27 |
| Lack of code/regulation/ordinance understanding from property owners | 59 | 21 | 38 |
| Resistance to implementing structural management measures | 57 | 27 | 30 |
| Resistance to implementing fuel and vegetation management measures | 55 | 23 | 32 |
| Public apathy | 53 | 14 | 39 |
| Aversion to regulations being passed | 52 | 27 | 25 |
| Lack of perception or understanding of existing risk among residents | 52 | 20 | 32 |
| Lack of information at all or clear explanations for residents on how to complete mitigation measures | 49 | 12 | 37 |

Source: Q67. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71.

Public apathy emerged as a notable concern, with 14 (21%) viewing it as a major obstacle, 39 respondents (57%) perceiving it as a minor obstacle, and 15 (22%) indicated it was not an obstacle. Aversion to regulations being passed was widely recognized as a major obstacle, with 27 respondents (39%) indicating so, while 25 (36%) viewed it as a minor obstacle and 17 (25%) as not an obstacle. Resistance to implementing fuel and vegetation management measures emerged as a prominent concern, with 23 respondents (33%) perceiving it as a major obstacle, 32 respondents (46%) viewing it as a minor obstacle, and 15 respondents (21%) considering it not an obstacle. Similarly, resistance to implementing structural management measures was evident, with 27 respondents (39%) perceiving it as a major obstacle, 30 respondents (43%) viewing it as a minor obstacle, and 13 respondents (19%) considering it not an obstacle. Additionally, lack of perception or understanding of existing risk among residents was noted by 20 respondents (29%) as a major obstacle, 32 respondents (46%) as a minor obstacle, and 18 respondents (26%) consider it not an obstacle. Likewise, a lack of clear

explanations for residents on how to complete mitigation measures was identified, with 12 respondents (17%) viewing it as a major obstacle, 37 respondents (54%) considering it a minor obstacle, and 20 respondents (29%) viewing it as not an obstacle. Moreover, a lack of code/regulation/ordinance understanding from property owners was acknowledged, with 21 respondents (30%) as a major obstacle, 38 respondents (54%) perceiving it as a minor obstacle, and 11 respondents (16%) as not an obstacle. Additionally, the physical or financial inability of residents to implement mitigation measures posed challenges, with 12 respondents (17%) as a major obstacle, 37 respondents (54%) viewing it as a minor obstacle, and 7 respondents (10%) viewing it as not an obstacle. Moreover, a lack of code/regulation/ordinance understanding from property owners was acknowledged, with 21 respondents (30%) as a major obstacle, 38 respondents (54%) perceiving it as a minor obstacle, and 11 respondents (16%) as not an obstacle. Additionally, the physical or financial inability of residents to implement mitigation measures posed challenges, with 12 respondents (17%) as a major obstacle, 37 respondents (54%) viewing it as a minor obstacle, and 7 respondents (10%) viewing it as not an obstacle.

Respondents were asked to evaluate the extent to which various external obstacles hindered the achievement of goals and objectives in wildfire mitigation programs within their county/municipality. Through their responses, a comprehensive understanding of the challenges facing these programs emerged. Figure 7.3-3 displays these results.

**Figure 7.3-3**

**Other External Obstacles to Meeting Wildfire Mitigation Program Goals Within the Department**

| *n counts of respondents who said __ is…* | **Not an obstacle** | **A minor obstacle** | **A major obstacle** |
|---|---|---|---|
| Lack or insufficient funding | 5 | 24 | 41 |
| Insufficient political support | 26 | 29 | 14 |
| Inadequate community wildfire hazard or risk assessments | 29 | 28 | 13 |
| Little cooperation among government stakeholders | 29 | 28 | 12 |
| Lack of partnerships with non-profit organizations | 32 | 29 | 8 |
| Inconsistent collaboration and messaging on wildfire prevention | 35 | 24 | 10 |
| Issues coordinating between fire departments | 37 | 26 | 7 |

Source: Q67. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71.

Lack or insufficient funding was the most significant concern, with 41 respondents (59%) perceiving it as a major obstacle, 24 respondents (34%) viewing it as a minor obstacle, and 5 respondents (7%) indicating it was not an obstacle. The pattern of responses was generally consistent across other external obstacles rated by respondents. Issues coordinating between fire departments were noted, with 26 respondents (37%) considering it a minor obstacle, 7 respondents (10%) perceiving it as a major obstacle, and 37 respondents (53%) indicating it was not an obstacle. Little cooperation among government stakeholders was highlighted, with 28 respondents (41%) viewing it as a minor obstacle, 12 respondents (17%) perceiving it as a major obstacle, and 29 respondents (42%) indicating it was not an obstacle. Inconsistent collaboration and messaging on wildfire prevention were identified, with 24 respondents (35%) considering it a minor obstacle, 10 respondents (15%) perceiving it as a major obstacle, and 35 respondents (51%) indicating it was not an obstacle. Lack of partnerships with non-profit organizations was recognized, with 29 respondents (42%) viewing it as a minor obstacle, 8 respondents (12%) perceiving it as a major obstacle, and 32 respondents (46%) indicating it was not an obstacle. Inadequate community wildfire hazard or risk assessments were acknowledged, with 28 respondents (40%) considering it a minor obstacle, 13 respondents (19%) perceiving it as a major obstacle, and 29 respondents (41%) indicating it was not an obstacle. Finally, 29 respondents (42%) considered insufficient political support a minor obstacle, while 14 respondents (20%) perceived it as a major obstacle; additionally, 26 respondents (38%) indicated that insufficient political support posed no obstacle at all.

## 7.4 Impact of Wildfire Mitigation Measures on Fire Department Operations

**Figure 7.4-1**

**Impact on Internal Structure of Departments**

| *counts of respondents who say in response to wildfire mitigation efforts, their department has …* | **Selected** *n count* |
|---|---|
| Managed efforts of volunteer fire departments (e.g., scouts, young fire explorers, etc.) | 54 |
| Created a separate internal division tasked with wildland fire issues | 51 |
| Hired dedicated personnel tasked with wildland fire issues | 49 |
| Invested in mitigation work equipment | 46 |
| Provided funding for wildfire mitigation efforts. | 46 |
| Allocated dedicated personnel tasked with wildfire mitigation efforts | 41 |
| Allocated dedicated personnel to conduct wildfire hazard or risk assessments | 38 |

Source: Q57. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71.

Respondents were queried about the impact of the necessity to engage in wildfire mitigation efforts on the internal structures of their fire department. See Figure 7.4-1 for results.

Most of the respondents (72%; n=51) have created separate internal divisions tasked with wildland fire issues. A similar number of respondents (69%; n=49) have hired dedicated personnel specifically assigned to handle wildland fire matters. Furthermore, a significant proportion of respondents have allocated resources towards wildfire mitigation efforts. This includes investing in mitigation work equipment (65%; n=46), allocating dedicated personnel for such tasks (58%; n=41), and allocating dedicated personnel to conduct wildfire hazard or risk assessments (54%; n=38). Notably, a considerable number of respondents (76%; n=54) have also managed the efforts of volunteer fire departments and 65% of respondents (n=46) provided funding for wildfire mitigation endeavors.

Respondents were given a chance to provide open-ended responses, sharing their insights into how the imperative to undertake wildfire mitigation efforts has affected the operations of their fire department.

Resource limitations pose significant challenges for fire departments, hampering their ability to effectively engage in wildfire mitigation efforts, as one respondent said. Another

> *"Being an all-volunteer department we do not receive the funding that some of these projects would need to get going."*
> - Oregon fire chief, volunteer FD

respondent stated, "We are understaffed and underfunded that has limited our ability in wildfire mitigation." The struggle is further emphasized by all-volunteer departments, with one respondent indicating, "Being an all-volunteer department we do not receive the funding that some of these projects would need to get going." Another two respondents echoed this by one stating, “Could use more funding and personnel. We have to manage emergency response with pre-fire and fire prevention efforts” and the other stating, “Minimally. We do not have the funds or personnel to invest beyond minimally”. Additionally, the need for specialized roles like "grant writer and grant administrator" highlights the importance of securing external funding sources.

Despite resource constraints, several respondents highlighted the importance of building relationships with government agencies and homeowners to foster community-wide efforts in wildfire prevention and mitigation. Additionally, initiatives like "chipper/vegetation removal events" and "HOA meetings, outreach" demonstrate proactive efforts to involve the community in wildfire prevention. Despite financial limitations, the impact of increasing wildfire risk on residents' ability to maintain affordable home insurance is acknowledged, prompting a call for collaboration on national wildfire strategies.

> *“We are focusing on mitigation from a regional perspective. Most of our risk comes from our neighbors open space and wildland areas. Being on the same page collectively helps make all of us strong and more resilient.”*
> *- California fire chief, career FD*

Amidst significant challenges, many fire departments exhibit resilience by implementing adaptive measures aimed at enhancing their capacity to mitigate wildfires. Initiatives such as "creating an entire support roster dedicated to outreach, education, and fuel reduction projects" demonstrate a proactive approach to engaging communities and reducing wildfire risks. The acknowledgment of increased workload and the need for additional staff reflects the department's commitment to addressing growing demands effectively. Furthermore, the recognition of the necessity to manage emergency response alongside pre-fire and fire prevention efforts underscores the holistic approach adopted by departments in mitigating wildfire risks.

Respondents were queried regarding the current and desired responsibilities of their fire department. See Figure 7.4-2 for results. Findings revealed that 51% (n=36) indicated their fire department is tasked with informing the public about daily fire danger and general wildfire risk.

Meanwhile, 70% (n=50) stated that their department provides information on fire risk, prevention, and mitigation. Additionally, 48% (n=34) reported that voluntary home assessments are conducted, while 35% (n=25) mentioned regulatory-based assessments. Furthermore, 38% (n=27) noted involvement in developing wildfire-related codes, regulations, and ordinances. Another significant finding was that 56% (n=40) stated their fire department facilitates community involvement and the adoption of risk reduction programs. Additionally, 35% (n=25) mentioned collaboration with utility companies and public infrastructure in risk management programs. Moreover, 51% (n=43) reported collaborating with homeowners in fuel management projects on private land. However, only 15% (n=11) mentioned collaboration with tribal agencies in risk management projects on tribal land.

**Figure 7.4-2**

**Fire Department Responsibilities, Current and Believed Should do if Not Already Doing**

| *count of respondents who say…* | *Among all (71)* **Yes, responsible for** *n count* | *Among those without* **Yes, should be responsible** *n count* |
|---|---|---|
| Providing the public with information on fire risk, fire prevention, and mitigation | 50 | 17 |
| Collaborating with homeowners in fuel management projects on private land | 43 | 14 |
| Facilitating community involvement and adoption of risk reduction programs | 40 | 18 |
| Informing the public about daily fire danger and wildfire risk in general (e.g., red flag warnings) | 36 | 21 |
| Collaborating with land management agencies in fuel management projects on public land | 36 | 14 |
| Conducting voluntary home assessments | 34 | 18 |
| Developing wildfire-related codes, regulations and ordinance | 27 | 11 |
| Conducting regulatory-based assessments | 25 | 11 |
| Collaborating with utility companies and public infrastructure in risk management programs | 25 | 20 |
| Collaborating with tribal agencies in risk management projects on tribal land | 11 | 5 |

Source: Q59-60. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71.

Respondents were then asked about additional responsibilities they believe their fire department should undertake. One-third of respondents (30%, n=21) believed their fire department should inform the public about daily fire danger and general wildfire risk. Similarly, 24% (n=17) suggested that their department should provide the public with information on fire

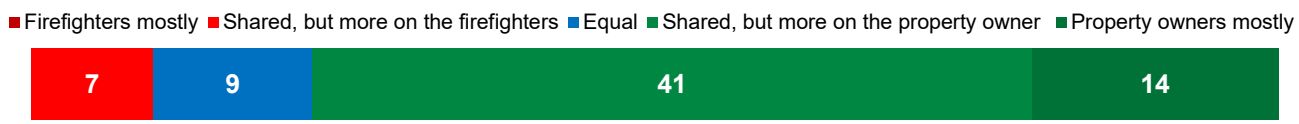
risk, prevention, and mitigation. Additionally, 25% (n=18) stated that their fire department should conduct voluntary home assessments, while 16% (n=11) believed it should conduct regulatory-based assessments. Furthermore, 16% (n=11) of respondents indicated that their fire department should be responsible for developing wildfire-related codes, regulations, and ordinances. Moreover, 25% (n=18) expressed the view that their fire department should facilitate community involvement and the adoption of risk reduction programs. Additionally, 20% (n=14) believed that their fire department should collaborate with utility companies and public infrastructure in risk management programs, while the same percentage (20%, n=14) suggested collaboration with homeowners in fuel management projects on private land. Finally, only 7% (n=5) of respondents suggested collaborating with tribal agencies in risk management projects on tribal land.

**Figure 7.4-3**

**Summary of Perceived Responsibility for Private Property Protection from Wildfires**

*Firefighters believe property owners have most of the responsibility*

*% who believe _ is responsible for protecting private property from wildfires…*




Source: Q61. National Fire Protection Association (NFPA) Wildfire Mitigation Fire Department Survey, Oct. 30 – Dec. 4, 2023. N=71.

In the survey, respondents were questioned regarding the primary responsibility for safeguarding private property from wildfires, with a specific focus on the roles of homeowners and firefighters. Most respondents (58%; n=41) believe that it is a shared responsibility between homeowners and firefighters, but more of a responsibility on the homeowner. Following, 20% of respondents (n=14) believe that it is mostly the individual homeowners responsibility. 13% of respondents (n=9) believe that it is an equal responsibility between homeowners and firefighters. Finally, 10% of respondents (n=7) believe that it is a shared responsibility between homeowners and firefighters, however it is more of a responsibility on the firefighters.

# 8. Government Officials Survey Methodology

## 8.1 Sampling and Data Collection

A 10-minute online survey was designed and administered to government officials whose area of jurisdiction is in California and Oregon WUI medium to high wildfire hazard areas. Respondents were screened to ensure they work as a government employee in the correct state and in a county with a high likelihood of wildfires affecting homes. This was determined by using scoring criteria from the Community Wildfire Defense Grant (CWDG) Program. For further information on CWDG sampling, please see Appendix E. Additional screening questions were focused on ensuring that participants were familiar with wildfire mitigation measures.

Data collection was conducted from November 2 – December 7, 2023, using a web-based survey platform (Qualtrics). The survey was accessible 24 hours a day, seven days a week, and was designed to save partial survey responses so that participants could return later to complete. Multiple email reminder notifications were sent to government officials over the thirty-six-day field period. At the end of the field period, 86 survey cases were received, reviewed and cleaned for data quality. The final sample size for the fire department survey includes data from n=30 government officials, 22 from California and 8 from Oregon.

## 8.2 Analytical Strategy and Data Analysis

Beyond the screening questions, the questionnaire aimed to understand the perceptions and experiences of government officials serving in high-risk wildfire states. Throughout instrument development, EurekaFacts held listening sessions with an external review panel representing both state and federal agencies, as well as academia to solidify the questions that needed to be addressed in the research. This feedback was used to refine the survey instrument topics and constructs.

The final survey focused primarily on gaining knowledge of relevant policies, incentive programs, changes in zoning or land use, and the impact wildfires have on fire departments, home values, and life safety. Additional topics included asking government officials about what mitigation measures are implemented in their jurisdiction, what types of communication/education their jurisdiction provides regarding wildfire mitigation, and requirements for mitigation measures in their jurisdiction.

Qualitative analysis was done to identify common themes and experiences among

government officials for open-ended questions asking about experiences during the last fire season, wildfire risk/hazard assessments, updates made to wildfire mitigation policies, and more.

# 9. Government Officials Survey: Detailed Findings

The 30 completed survey responses from California and Oregon state government officials were captured through structured survey questions for qualitative reporting. The questionnaire gathered information on relevant policies, incentive programs, changes in zoning or land use, and the impact wildfires have on fire departments, home values, and life safety. These data are analyzed using frequency tables, crosstabulations, and other statistical techniques to distill findings from survey participant responses.

The results of this analysis are presented in this section and structured thematically:

9.1. Implemented Policies & Regulations

9.2. Wildfire Mitigation & Public Outreach Programs

9.3. Mitigation Obstacles

9.4. Impact of Wildfires & Mitigation Measures on Fire Departments, Land Use, Home Values, & Life Safety

## 9.1 Implemented Policies & Regulations

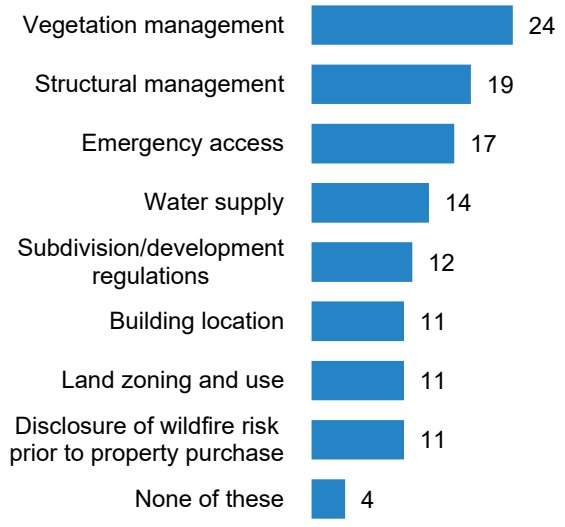
The section begins with an overall analysis of implemented wildfire mitigation policies and regulations, followed by detailed findings organized by topic from the survey questions. Graphics and tables are used throughout to rank, illustrate, and organize the data.

### 9.1.1 Prevalence of Wildfire Mitigation Policies

Government officials responded to questions regarding the prevalence of wildfire mitigation policies in their jurisdiction. If none of the listed policies or regulations were currently in place, respondents selected "None of these." If the respondent did not select an item, the policy or regulation is reported as not being in place. These results are displayed in Figure 9.1.1-1.

**Figure 9.1.1-1**

**Wildfire Mitigation Policies in Government Officials' Areas of Jurisdiction**




Source: Q19. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

80% of respondents (n=24) reported that their jurisdiction has vegetation management policies in place to address wildfire mitigation. Structural management regulations are present in 19 jurisdictions. Over half of respondents (57%, n=17) indicated that emergency access regulations are currently implemented. 14 government officials (46%) reported their jurisdiction has a water supply policy in place. 12 respondents (40%) reported having subdivision/development policies to. 37% of respondents (n=11) reported having building location regulations, land zoning and use regulations, and disclosure of wildfire risk prior to property purchase regulations present in their jurisdiction.

13% of government officials (n=4) indicated that they had none of the eight listed policies or regulations regarding wildfire mitigation addressed in their jurisdiction. 6 respondents reported only having one of the eight mitigation policies in place. The majority of respondents (n=9) reported having three mitigation policies in their jurisdiction. 4 respondents reported

having seven policies in place and 4 more respondents reported having all eight policies in their jurisdiction. These results are displayed in Figure 9.1.1-2.

**Figure 9.1.1-2**

**Number of Mitigation Policies in Government Officials' Areas of Jurisdiction**

*% jurisdictions that have _ # of mitigation policies generally …*

| **Number of Policies** | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Total | 13% | 7% | 3% | 30% | 10% | 7% | 3% | 13% | 13% | =100% |

Source: Q19. NFPA Wildfire Government Officials Survey, Nov. 2 – Dec. 7, 2023. (N=30). Note: Percentages read across and may not add up to 100% due to rounding.

2023 was the most recent year many of the respondents' (n=6) areas of jurisdiction updated local wildfire mitigation policies or regulations regarding structural management. Two respondents reported that 2022 was the most recent year for structural management policy updates. Just over half of respondents (53%, n=16) indicated they were not sure the last time these policies or regulations were updated.

For vegetation management, 2023 was the most recent year these policies were updated for 8 respondents. 4 respondents indicated that 2021 was the most recent year these updates were made. 37% of respondents (n=11) were not sure when the last updates regarding wildfire mitigation policies or regulations for vegetation management were. The additional responses regarding updates to both structural and vegetation management, with 6 and 7 additional responses respectively, had one vote each, ranging from 1900-2022 as the most recent year these policies were updated.

### *9.1.2. Evaluation of Implementation of Wildfire Mitigation Policy*

Respondents were asked to evaluate to what extent their jurisdiction has implemented state regulations regarding structural management/ignition-resistant structures and vegetation management/defensible space. 23% of government officials (n=7) responded that their jurisdiction has partially implemented structural management/ignition-resistant structures and another 23%, (n=7) selected that their jurisdiction is not responsible for these regulations. A slightly smaller subset of respondents (n=6) reported their structural management regulations were mostly in place. 5 respondents reported that these regulations were completely implemented, and another 5 respondents reported that their justification had no relevant regulations available. 23% of government officials (n=7) reported their jurisdiction's regulations for vegetation management/defensible space were completely implemented and another 23% (n=7) reported these regulations were mostly implemented. 5 respondents indicated their

jurisdiction had these policies only partially in place. 7 more respondents claimed their jurisdiction is not responsible for vegetation management/defensible space policies. The remaining respondents (n=4) reported having no relevant regulations available regarding vegetation management/defensible space.

The respondents were then prompted to evaluate to what extent wildfire mitigation policies are required in their jurisdiction. Respondents did not answer the question if the corresponding policy was not in place in their jurisdiction. These results are displayed in Figure 9.1.2-1.

**Figure 9.1.2-1**

**Wildfire Mitigation Policy Requirements in Government Officials' Areas of Jurisdiction**

| *Mitigation policy requirements...* | Recommended only | Mix of requirements and recommendations | Nearly all mandatory requirements | **NET had at least some requirements** |
|---|---|---|---|---|
| Structural management | 2 | 10 | 7 | **17** |
| Vegetation management | 3 | 11 | 10 | **21** |
| Emergency access | 0 | 7 | 10 | **17** |
| Water supply | 1 | 5 | 8 | **13** |
| Building location | 2 | 4 | 5 | **9** |
| Subdivision/development regulations | 1 | 6 | 5 | **11** |
| Land zoning and use | 1 | 6 | 4 | **10** |
| Disclosure of wildfire risk prior to property purchase | 1 | 2 | 8 | **10** |

Source: Q22. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

Of the 19 respondents who have structural management policies in place, 89% (n=17) indicated that their jurisdiction has at least some requirements when it comes to these policies. Of the 24 respondents who have vegetation management policies in place, 88% (n=21) indicated that their jurisdiction has at least some requirements in place for vegetation management policies. Regarding emergency access as a mitigation policy, most jurisdictions have nearly all requirements as mandatory (n=10), and some have a mix of requirements and recommendations (n=7). 93% of respondents (n=13) indicated that their jurisdiction has at least some requirements for water supply regulations. Respondents reported that 82% of jurisdictions (n=9) have at least some requirements regarding building location policies. 42% of respondents (n=5) indicated that their jurisdiction has almost all mandatory requirements for subdivision/development regulations. Land zoning and use regulations have at least some requirements for policy implementation in 91% of respondent's jurisdictions (n=10). Finally,

disclosure of wildfire risk prior to purchase is a mitigation policy that is recommended only in 9% of jurisdictions (n=1), has a mix of requirements and recommendations in 18% of jurisdictions (n=2), and has nearly all mandatory requirements in 73% of jurisdictions (n=8).

Respondents were also asked about the level of completeness of wildfire mitigation measures and codes/policies in their jurisdiction. Respondents did not answer the questions if the corresponding policy was not in place in their jurisdiction. These results are displayed in Figure 9.1.2-2.

**Figure 9.1.2-2**

**Evaluation of Completeness of Wildfire Mitigation Policies/Codes Implemented in Government Officials' Areas of Jurisdiction**

| *Completeness of mitigation policies...* | Not at all | Partially | Mostly | Completely |
|---|---|---|---|---|
| Structural management | 1 | 7 | 8 | 3 |
| Vegetation management | 1 | 9 | 11 | 3 |
| Emergency access | 0 | 2 | 9 | 6 |
| Water supply | 0 | 3 | 6 | 5 |
| Building location | 0 | 2 | 5 | 4 |
| Subdivision/development regulations | 0 | 2 | 6 | 4 |
| Land zoning and use | 0 | 2 | 5 | 4 |
| Disclosure of wildfire risk prior to property purchase | 0 | 1 | 5 | 5 |

Source: Q23. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

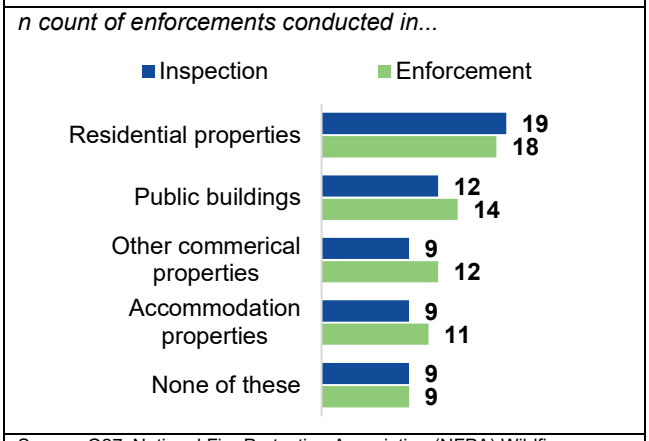
Structural and vegetation management are the only areas where government officials reported the regulation as "not at all" complete, with n=1 for both policies. Additionally, only 3 government officials reported complete implementation of structural and vegetation management regulations within their respective jurisdictions. Vegetation management policies are mostly complete in their implementation in 46% of jurisdictions (n=11). Emergency access policy implementation is mostly complete in 53% of jurisdictions (n=9) and complete in 35% of jurisdictions (n=6). Respondents indicated that water supply policies are fully complete in 35% of jurisdictions (n=5). Building location policies, subdivision/development regulations, and land zoning and use regulations all had 4 respondents report that their jurisdiction is fully complete in this area. Lastly, 45% of respondents (n=5) indicated that disclosure of wildfire risk prior to property purchase regulations was mostly complete in their jurisdiction, and another 45% of respondents (n=5) reported this regulation was fully complete in their jurisdiction.

### *9.1.3. Prevalence of Inspections & Enforcement of Wildfire-Related Regulations and Ordinances*

Government officials were questioned about conducting inspections and enforcing properties, as mandated by wildfire safety regulations and ordinances for compliance. The results are displayed in Figure 9.1.3-1 below.

**Figure 9.1.3-1**

**Inspections and Enforcement of Wildfire-Related Regulations and Ordinances for Compliance in Government Officials' Areas of Jurisdiction**

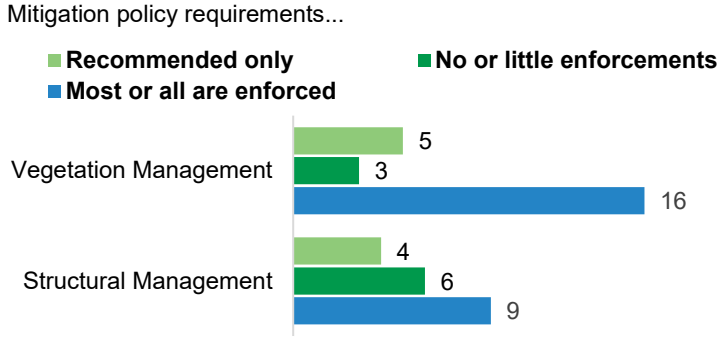



Source: Q27. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

Most (63%, n=19) of government officials reported that their jurisdiction generally conducts inspections of wildfire-related regulations on residential properties and 18 government officials reported generally conducting enforcement in residential properties. 40% of jurisdictions (n=12) conducted inspections for regulations in public buildings and 47% of jurisdictions (n=14) conducted enforcement for public buildings. One in three (n=9) respondents selected "none of these" indicating that their jurisdiction does not conduct inspections or enforcements for any of the listed property types.

**Figure 9.1.3-3**

**Enforcement of Wildfire Mitigation Measures on Private Property in Government Officials' Areas of Jurisdiction**




Source: Q28. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. Structural management respondents (n=19), vegetation management respondents (n=30).

Respondents were then asked about the extent to which their jurisdiction generally enforces wildfire mitigation measures on private property regarding structural and vegetation management. This question was only asked if respondents reported they have structural or vegetation management policies in place. The results are presented in Figure 9.1.3-3.

Among respondents who did have either vegetation or structural mitigation policies (n=18), half (n=9) indicated that most or all structural mitigation regulation is enforced on private property, 31% (n=6) reported there was no or little enforcement of structural mitigation regulation, and a small number of respondents (n=4) indicated that structural mitigation regulation was only recommended in their jurisdiction. In contrast, almost all applicable respondents (89%, n=16) indicated that most or all vegetation mitigation measures are enforced on private property. 17% (n=3) reported there was no or little enforcement of vegetation mitigation regulation, and finally, 5 jurisdictions only recommended vegetation management on private property.

## *9.2 Wildfire Mitigation & Public Outreach Programs*

### *9.2.1. Wildfire Hazard Assessments*

Government officials were inquired about if their jurisdictions have identified wildfire hazard areas and/or conducted wildfire risk assessments. 70% of officials (n=21) indicated that their jurisdictions have done so, with a small number (n=3) indicating not doing so and the remaining 20% of respondents (n=6) indicating they were not sure.

The last wildfire risk/hazard assessment completed for the majority of jurisdictions (23%, n=7) was in 2023, while just as many completed these in either 2022 or 2021. A slightly smaller subset of respondents (n=3) indicated that 2020 was the last year a wildfire risk/hazard assessment took place in their jurisdiction, with single responses for 2019, 2017, and 2007. 9 government officials were not sure when the last time a wildfire risk assessment was conducted for their jurisdiction.

Respondents were asked to respond to a question about whether their jurisdiction provides voluntary wildfire hazard or risk assessment for private property in their jurisdiction. There was a relative balance between those providing voluntary wildfire hazard or risk assessments for free (33%, n=10) and those not providing these services at all (37%, n=11). One respondent indicated their jurisdiction does not currently provide these services, but they plan to in the future. 8 respondents indicated that they were not sure if their jurisdiction provides voluntary wildfire hazard or risk assessment services for private property.

Respondents were also questioned about the prevalence of regulatory-based wildfire hazard or risk assessment for private property in their jurisdiction. Many respondents (n=9) reported having free regulatory-based wildfire hazard or risk assessments for private property in

their jurisdiction while a slightly smaller subset (n=8) indicated that they do not. 4 respondents indicated that they do not currently provide these risk assessments, but they are planned. 9 respondents were not sure if their jurisdiction provides regulatory-based wildfire hazard or risk assessment for private property.

### *9.2.2 Wildfire Mitigation Programs*

Government officials reported on the prevalence of prioritized fuel reduction as a wildfire mitigation program in their jurisdiction. Many officials (70%, n=21) indicated that their jurisdiction has prioritized fuel reduction policies in place. 27% of respondents (n=8) reported having no prioritized fuel reduction regulations. One government official was not sure if their jurisdiction had a prioritized fuel reduction policy in place.

53% of government officials (n=16) reported their jurisdiction has treatment to reduce structure ignition hazard in place. 30% of jurisdictions (n=9) do not have any treatments to reduce structure ignition hazard currently implemented. 5 respondents reported they were unsure about the prevalence of treatment to reduce structure ignition hazard regulations in their jurisdiction.

Respondents were then asked to indicate what wildfire mitigation plans are in place for their jurisdiction. The results are displayed below in Figure 9.2.2-1.

**Figure 9.2.2-1**

**Wildfire Mitigation Plans in Place in Government Officials' Areas of Jurisdiction**

| *Mitigation plans in place...* | Yes, in place | No, not in place | Not sure |
|---|---|---|---|
| Official Wildfire Mitigation Plan | 10 | 16 | 4 |
| Community Wildfire Protection Plan (CWPP) | 16 | 9 | 5 |
| Another plan | 12 | 7 | 11 |

Source: Q11. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

Of the three options presented, a Community Wildfire Protection Plan (CWPP) is the most popular wildfire mitigation plan with 53% of respondents (n=16) indicating a CWPP is present in their jurisdiction. An Official Wildfire Mitigation Plan is present in 33% of jurisdictions

(n=10) and 40% of officials (n=12) reported having another plan implemented in their jurisdiction.

Respondents were asked if their Community Wildfire Protection Plan (CWPP) includes plans for Prioritized Fuel Reduction, Treatment to Reduce Structural Ignition Hazard, and Protection of Infrastructure. A large number of government officials (82%, n=14) reported their CWPP includes plans for Prioritized Fuel Reduction. Many respondents (63%, n=10) indicated there is a Treatment to Reduce Structural Ignition Hazard plan in their jurisdiction's CWPP. There is a Protection of Infrastructure plan in the CWPP for 47% of jurisdictions (n=9).

Government officials then reported if their jurisdiction requires certain groups to reduce structure ignition hazard. The results are displayed in Figure 9.2.2-2 below.

**Figure 9.2.2-2**

**Groups Required to Reduce Structure Ignition Hazard in Government Officials' Areas of Jurisdiction**

| *Requirement of groups...* | Yes, required | No, not required | Not sure |
|---|---|---|---|
| Residents/Homeowners | 17 | 12 | 1 |
| Public buildings | 12 | 12 | 6 |
| Accommodation providers | 12 | 14 | 4 |
| Road/transportation maintenance crews | 10 | 15 | 5 |
| Utility companies | 10 | 13 | 7 |
| Other businesses and industries | 8 | 14 | 8 |

Source: Q14. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

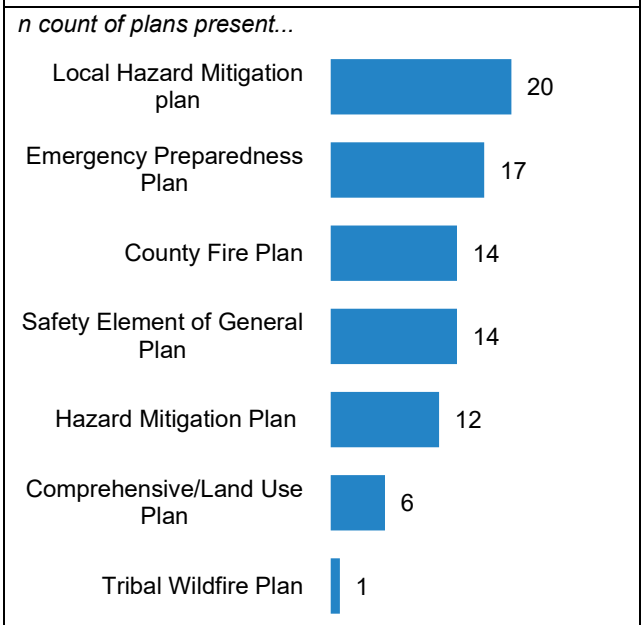
The group required to reduce structure ignition hazard in the highest percentage of jurisdictions is the residents/homeowners group (57%, n=17). 40% of jurisdictions (n=12) require the reduction of structure ignition hazard from public buildings and from accommodation providers. Closely following, road/transportation maintenance crews and utility companies are both required to reduce structure ignition hazard in 10 jurisdictions. Road/transportation maintenance crews also had the highest number of respondents (n=15) reporting their jurisdictions do not require their group to reduce structure ignition hazard. Additionally, respondents reported that in 8 jurisdictions, other businesses and industries are required to reduce structure ignition hazard.

Next, respondents were asked to report more about the wildfire mitigation policies and plans in their jurisdictions. They were asked to select all that apply from a list of wildfire

mitigation policies and plans, indicating which mitigation measures are implemented in their jurisdictions. If the respondent did not select an item, the policy or plan is reported as not being in place. The results are presented in Figure 9.2.2-3 below.

**Figure 9.2.2-3**

**Wildfire Mitigation Policies and Plans Present in Government Officials' Areas of Jurisdiction**



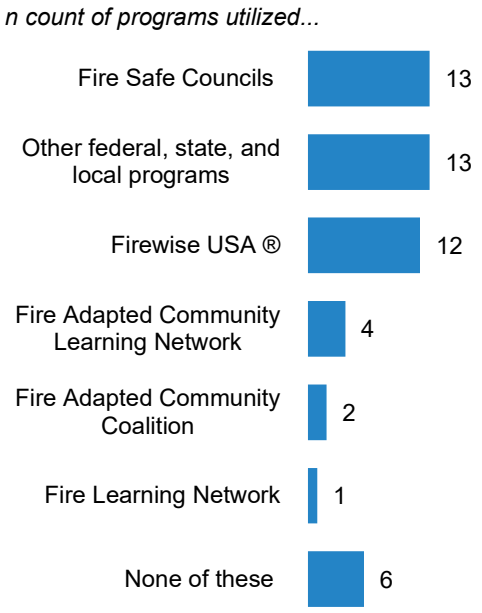

Source: Q15. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

The plan in place in most jurisdictions (67%, n=20) is a Local Hazard Mitigation Plan. Closely following, an Emergency Preparedness Plan is in place in 57% of jurisdictions (n=17). A County Fire Plan and a Safety Element of General Plan are both present in 47% of respondents' jurisdictions (n=14) with the Hazard Mitigation Plan currently implemented in 40% of jurisdictions (n=12). The Comprehensive/Land Use Plan is only in place in 6 jurisdictions. Lastly, only 1 government official reported having a Tribal Wildfire Plan in their jurisdiction.

Respondents were then asked to indicate if their jurisdictions have utilized certain wildfire mitigation programs. They were asked to select all that apply from a list of six programs. If their jurisdictions never used any of the programs they selected "None of these". If the respondent did not select an item, the program is reported as not being in place. The results are displayed in Figure 9.2.2-4 below.

**Figure 9.2.2-4**

**Utilization of Wildfire Mitigation Programs in Government Officials' Areas of Jurisdiction**




Source: Q41. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

The program that has been utilized by the largest number of jurisdictions (43%, n=13) is the Fire Safe Councils program. Other federal, state, and local programs have also been utilized in 43% of jurisdictions (n=13). Similarly, The Firewise USA® Recognition Program (Firewise USA®) has been used in 12 jurisdictions. The remaining three programs have a much smaller percentage of utilization: the Fire Adapted Community Learning Network (13% of jurisdictions, n=4), the Fire Adaptive Community Coalition (7% of jurisdictions, n=2), and the Fire Learning Network program (n=1). 6 respondents reported none of these programs have ever been utilized in their jurisdiction. Nearly half of respondents (n=16) reported having one of the six programs in place, and almost a third (n=9) reported having two programs in their jurisdiction. No respondents reported having either five or all six programs.

### *9.2.3 Incentive Programs*

Government officials were asked if their jurisdictions provide financial assistance for measures that mitigate wildfires on private property. The results are displayed in Figure 9.2.3-1 below.

**Figure 9.2.3-1**

**Financial Assistance Provided to Wildfire Mitigation Measures on Private Property in Government Officials' Areas of Jurisdiction**

| *Financial assistance provided...* | Yes, subsidized or as cost-share | Yes, for free | **NET yes** | No, we do not provide this service | No, but we connect residents to partner organizations | No, but planned for the future | **NET no** | Not sure |
|---|---|---|---|---|---|---|---|---|
| Structure management or modification | 1 | 0 | **1** | 19 | 2 | 4 | **25** | 4 |
| Vegetation and fuel management | 5 | 2 | **7** | 11 | 5 | 5 | **21** | 2 |
| Coordination of volunteer assistance | 1 | 7 | **8** | 12 | 6 | 2 | **20** | 2 |
| Disposal of cleared fuel and vegetation debris | 5 | 6 | **11** | 9 | 7 | 1 | **17** | 2 |
| Equipment lease | 1 | 1 | **2** | 22 | 2 | 1 | **25** | 3 |

Source: Q36. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

The highest number of jurisdictions (n=11) that provide financial assistance is for disposal of cleared fuel and vegetation debris measures. Financial assistance is given for coordination of volunteer assistance programs in 8 jurisdictions, 7 of which provide these programs for free. When inquired about vegetation and fuel management, government officials reported that 30% (n=7) of jurisdictions offered at least some financial assistance. For 2 jurisdictions, the financial assistance given made these mitigation measures free. Equipment lease measures have only 2 jurisdictions (7%) providing financial assistance and 25 (83%) jurisdictions not providing this service. Of the 25 jurisdictions that do not give financial assistance for equipment leasing, 22 jurisdictions do not provide this service and they do not connect residents to partner organizations or have any plans to provide financial assistance in the future. Financial assistance is provided in only 1 jurisdiction for structure management or modification mitigation. Many officials (63%, n=19) responded that their jurisdiction does not provide financial assistance services for structure management or modification mitigation, and they do not connect residents to partner organizations or have any plans to provide financial assistance in the future.

Next, respondents were inquired about if their jurisdiction provides any volunteer labor assistance for wildfire mitigation measures on private property. The results are displayed in Figure 9.2.3-2.

While very few government officials indicated volunteer labor assistance was provided, at least in the respective cases of vegetation and fuel management and disposal of cleared fuel and vegetation debris, there was some presence of connecting residents to partner organizations (n=9).

**Figure 9.2.3-2**

**Volunteer Labor Assistance Provided to Wildfire Mitigation Measures on Private Property in Government Officials' Areas of Jurisdiction**

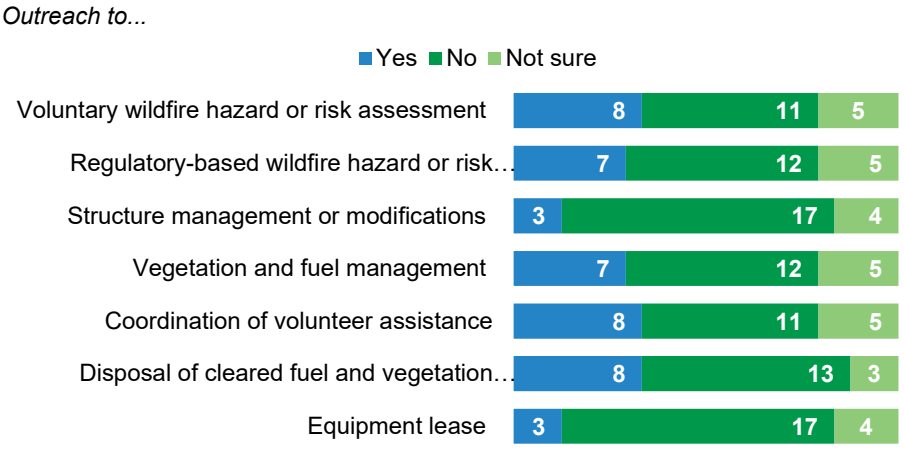
| *Volunteer labor assistance provided...* | Yes, we provide this service | No, we do not provide this service | No, but connects residents to partner organization | No, but planned for the future | Not sure | **NET no** |
|---|---|---|---|---|---|---|
| Structure management or modification | 1 | 19 | 6 | 1 | 3 | **26** |
| Vegetation and fuel management | 1 | 15 | 9 | 2 | 3 | **26** |
| Disposal of cleared fuel and vegetation debris | 3 | 13 | 9 | 2 | 3 | **24** |
| Equipment lease | 2 | 19 | 4 | 1 | 4 | **24** |

Source: Q37. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

The following question asked if outreach to under-resourced and marginalized populations is done in government officials' jurisdictions regarding seven different wildfire assistance programs. Officials were shown this question if their jurisdiction provides financial or volunteer labor assistance or connects residents to partner organizations regarding any program. The results are displayed in Figure 9.2.3-3 below.

**Figure 9.2.3-3**

**Outreach to Under-Resourced and Marginalized Populations in Government Officials' Areas of Jurisdiction**




Source: Q38. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=24

Government officials reported that 33% of jurisdictions (n=8) participate in outreach to under-resourced and marginalized populations regarding voluntary wildfire hazard or risk assessment, coordination of volunteer assistance, and disposal of cleared fuel and vegetation debris programs. Outreach is done in 29% of jurisdictions (n=7) regarding regulatory-based wildfire hazard or risk assessment and vegetation debris mitigation. Only 13% of jurisdictions participate in outreach regarding structure management or modification and equipment lease measures.

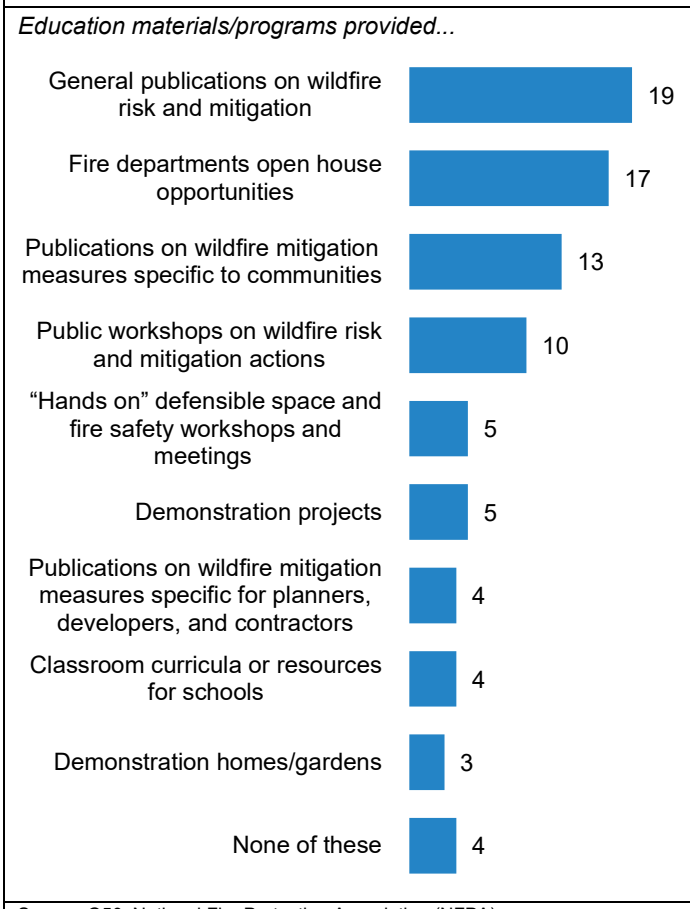
When asked about other incentive programs (financial or labor) to assist communities with wildfire mitigation, government officials overwhelmingly reported (93%, n=28) not providing additional incentive programs. Only 2 respondents indicated their jurisdictions provide other incentive programs to assist communities with wildfire mitigation. When asked to describe these other incentive programs, one described matching fund grants for home hardening and vegetation management as well as complete grants with no match for access and functional needs. The other reported small grants were offered from local soil and water conservation districts and watershed council for private property owners to implement projects on their property.

### *9.2.4 Outreach Programs: Topics, Modes & Audiences*

Government officials reported about if their jurisdictions have been providing educational materials or programs related to wildfire risk and mitigation. They were asked to select all that apply from a list of nine materials and programs. If none of the materials or programs are provided in their jurisdiction, respondents selected “None of these.” If the respondent did not select an item, the material or program is reported as not being in place. The results are displayed in Figure 9.2.4-1 below.

**Figure 9.2.4-1**

**Prevalence of Educational Materials or Programs related to Wildfire Risk and Mitigation in Government Officials' Areas of Jurisdiction**




Source: Q50. National Fire Protection Association (NFPA)
Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

General publications on wildfire risk and mitigation are provided in the largest percentage of jurisdictions (63%, n=19), closely followed by fire department open house opportunities in 57% of jurisdictions (n=17). Respondents reported that publications on wildfire mitigation measures specific to communities are provided in 13 jurisdictions. 33% of respondents (n=10) reported having public workshops on wildfire risk and mitigation actions offered in their jurisdiction. The remaining programs: "Hands-on" defensible space and fire safety workshops and meetings, demonstration projects, publications on wildfire mitigation measures specific for planners, developers, and contractors, classroom curricula or resources for schools, and demonstration homes/gardens related to wildfire risk and mitigation are in a few to a handful of jurisdictions, with none of these provided in 4 jurisdictions.

Many respondents (n=11) reported their jurisdiction provides one educational material or program related to wildfire risk and mitigation, and around half (47%, n=14) reported providing 2 to 4 of these materials or programs, with 1 reporting their jurisdiction provides all nine.

Respondents were asked to respond to questions about whether their jurisdictions perform outreach with targeted communications to groups to implement vegetation management measures. The results are presented in Figure 9.2.4-2 below.

**Figure 9.2.4-2**

**Targeted Communications to Groups to Implement Vegetation Management Measures on Their Properties**

| *Outreach to...* | Yes | No | Not sure |
|---|---|---|---|
| Residents | 23 | 6 | 1 |
| Accommodation providers | 10 | 17 | 3 |
| Businesses | 13 | 13 | 4 |
| Utility companies | 20 | 7 | 3 |
| Industry | 13 | 11 | 6 |

Source: Q45. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

Government officials reported reaching out with targeted communication to residents to implement vegetation management measures on their properties in 77% of jurisdictions (n=23), followed by utility companies (67%, n=20). 43% of jurisdictions (n=13) reported doing outreach to each of businesses and industries about implementing vegetation management measures on their properties. Accommodation providers have the smallest number of jurisdictions (n=10) performing outreach about the addition of vegetation management mitigation measures on their properties.

The next question asked about government officials' outreach efforts with targeted communications to groups to implement structural management measures on their properties. The results are presented in Figure 9.2.4-3.

**Figure 9.2.4-3**

**Outreach with Targeted Communications to Groups to Implement Structural Management Measures on Their Properties in Government Officials' Areas of Jurisdiction**

| *Outreach to...* | Yes | No | Not sure |
|---|---|---|---|
| Residents | 12 | 14 | 4 |
| Accommodation providers | 3 | 20 | 7 |
| Public building managers | 4 | 19 | 7 |
| Businesses | 6 | 17 | 7 |
| Utility companies | 9 | 15 | 6 |
| Industry | 7 | 16 | 7 |

Source: Q46. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

With regard to adding structural management mitigation modifications to their properties, as with vegetation management measures, residents (40% of jurisdictions, n=12) and utility companies (30%, n=9) were contacted the most. 23% of jurisdictions (n=7) are involved in outreach to industries followed closely by businesses (20%, n=6). 13% of jurisdictions (n=4) reported performing outreach regarding structural management mitigation measures to public building managers. Finally, government officials indicated that accommodation providers were reached out to in only 10% of jurisdictions (n=3) regarding structural management measures.

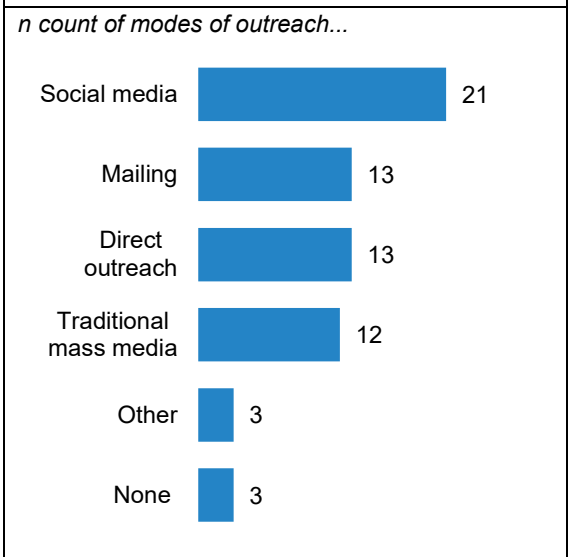
Government officials then reported on jurisdiction-specific wildfire hazard or risk information that is provided. A large number of respondents (57%, n=17) indicated that they provide wildfire hazard or risk information specific to their jurisdiction, but they link the information from other sources compared with 20% (n=6) reporting the information comes

directly from the jurisdiction. 13% of jurisdictions (n=3) do not provide these communications. 1 respondent indicated that their jurisdiction does not provide these communications but plans to do so in the future. 2 government officials reported that they are not sure whether their jurisdiction provides wildfire hazard or risk information specific to their jurisdiction or plans to in the future.

Respondents were also asked about the type of outreach regarding wildfire mitigation their jurisdictions have undertaken or are currently conducting. They were asked to select all that apply from a list of five modes of outreach. If their jurisdiction has no modes of outreach in place they selected “None”. The results are displayed in Figure 9.2.4-4.

**Figure 9.2.4-4**

**Modes of Outreach Regarding Wildfire Mitigation in Government Officials’ Areas of Jurisdiction**




Source: Q52. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

Social media is used in many jurisdictions (70%, n=21) to reach people about wildfire mitigation. A relatively equal number use mailing (43% of jurisdictions; n=13), direct outreach (43%, n=13), or traditional mass media (40%; n=12). A few respondents (n=3) reported that their jurisdictions use other types of outreaches regarding wildfire mitigation and a similar number indicated their jurisdictions do not participate in outreach regarding wildfire mitigation.

Next, respondents reported if their jurisdiction provides communications or education relating to wildfire risk and mitigation to residents and community organizations. The results are presented in Figure 9.2.4-5.

**Figure 9.2.4-5**

**Communications or Education Regarding Wildfire Risk and Mitigation Provided to Residents and Community Organizations in Government Officials' Areas of Jurisdiction**

| *Communications/Education to...* | Yes, currently doing | No, but planned for future | No, neither doing nor planning to do | Not sure | **NET no** |
|---|---|---|---|---|---|
| Wildfire risk to communities | 19 | 4 | 5 | 2 | **9** |
| Wildfire risk to safety, health, and life | 20 | 3 | 4 | 3 | **7** |
| Estimated impact on property values | 7 | 8 | 9 | 6 | **17** |
| Wildfire mitigation measure implementation guidance | 10 | 10 | 4 | 6 | **14** |
| Wildfire mitigation policies and regulations/ordinances | 13 | 6 | 5 | 6 | **11** |

Source: Q48. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

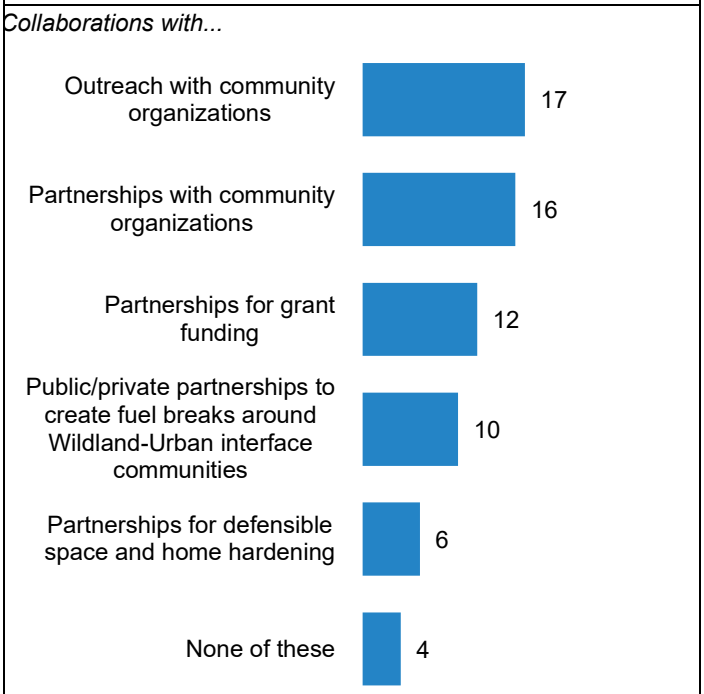
The most jurisdictions provide communication/education about wildfire risk to safety, health, and life (67%, n=20) and to communities (63%; n=19). Lower incidence rates were reported with respect to wildfire mitigation policies and regulations/ordinances (43% of jurisdictions; n=13, wildfire mitigation measure implementation guidance information (33%; n=10), with the smallest being the estimated impact on property values (23%, n=7).

Respondents also reported if their jurisdiction provides communications or education regarding wildfire risk and mitigation to planners, contractors, and developers. One respondent chose not to answer this question. Less than half of respondents' jurisdictions (41%, n=12) provide communication/education regarding land zoning and use to planners, contractors, and developers with 2 additional jurisdictions planning to add land zoning and use communication/education in the future. 38% of respondents (n=11) reported providing information to planners, contractors, and developers about building codes related to wildfire mitigation with also 2 additional jurisdictions planning to do so in the future. Both wildfire mitigation policies and regulations information and wildfire risk to communities' information are provided to planners, contractors, and developers in 24% of jurisdictions (n=7). Respondents reported that communication/education about wildfire risk to safety, health, and life is provided in 8 jurisdictions. Finally, only 14% of jurisdictions (n=4) provide information about the estimated impact on property, property values, and businesses to planners, contractors, and developers. 3 additional jurisdictions plan to add these communications in the future.

Respondents were then asked to report on collaborations their jurisdiction has done regarding wildfire mitigation. They were asked to select all that apply from a list of five collaboration options. If none of the collaborations are implemented in their jurisdiction, respondents selected “None of these.” The results are presented in Figure 9.2.4-7 below.

**Figure 9.2.4-7**

**Collaborations Regarding Wildfire Risk and Mitigation in Government Officials’ Areas of Jurisdiction**



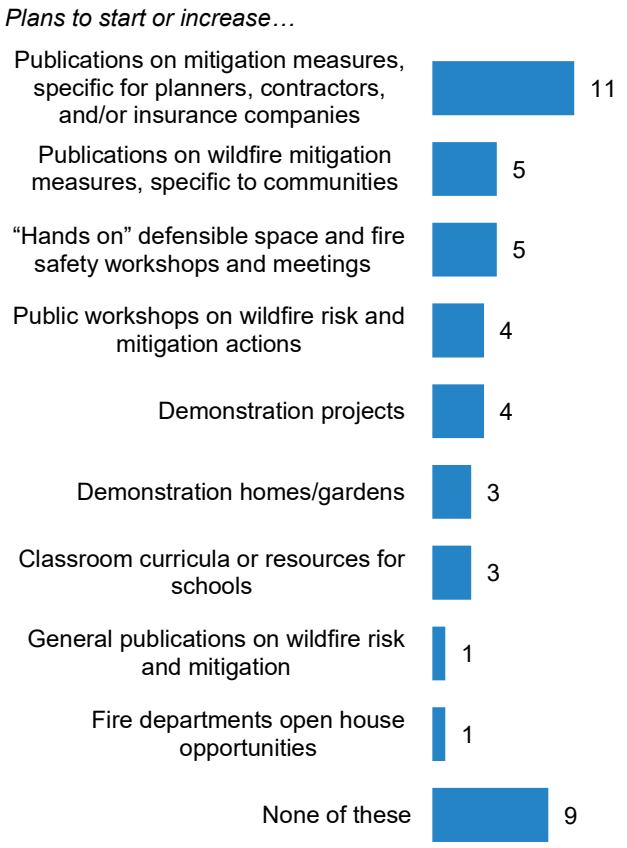

Source: Q53. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

Many government officials (57%, n=17) reported having outreach with community organizations regarding wildfire risk and mitigation in jurisdiction. Closely following, 53% of respondents (n=16) indicated their jurisdiction has had partnerships with community organizations. Respondents indicated that partnerships for grant funding are implemented in 40% of jurisdictions (n=12). Public/private partnerships to create fuel breaks around Wildland-Urban interface communities are implemented in 33% of jurisdictions (n=10). Only 6 jurisdictions have implemented partnerships for defensible space and home hardening. 4 jurisdictions reported having done none of these collaborative activities.

Government officials were also asked about their jurisdictions' plans to increase or start doing certain wildfire mitigation programs in the near future. Officials were only prompted to respond if they did not currently have a specific mitigation plan in place. If their jurisdiction was not planning to increase or start doing any of the mitigation measures, they selected “None of the above.” The results are presented in Figure 9.2.4-8 below.

**Figure 9.2.4-8**

**Government Officials' Areas of Jurisdiction Plans to Increase or Start Wildfire Mitigation Measures**




Source: Q51. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

Publications on mitigation measures, specific for planners, contractors, and/or insurance companies had the highest number of respondents (n=11) indicate their jurisdiction intends to start or increase this program in the near future. No more than 5 responses were received for any other planned increase or inception of wildfire mitigation activities including: publications on wildfire mitigation measures, specific to communities, "hands on" defensible space and fire safety workshops and meetings programs, public workshops on wildfire risk and mitigation actions, demonstration projects, demonstration homes/gardens, classroom curricula or resources for schools, general publications on wildfire risk and mitigation, and fire department open house opportunities. 9 respondents indicated their jurisdiction has no plans to increase or start any of these programs soon.

All respondents were then asked to report if their jurisdiction does any other communication, education, or outreach efforts about wildfire mitigation. Only 5 respondents reported their jurisdictions have these other efforts regarding wildfire mitigation in place. Out of the 5, 3 respondents described these other wildfire mitigation efforts implemented in their jurisdiction. One official reported their jurisdiction has community wildfire preparedness workshops, another described a firesafe council that is in place and an ember stomp wildfire

festival their jurisdiction puts on, and a third reported their jurisdiction has wildfire mitigation workshops in Spanish.

Respondents also provided insights about whether they track performance measures for programs related to wildfire mitigation efforts. Only 5 reported tracking performance for multiple measures for programs related to wildfire mitigation efforts, with three indicating their jurisdiction tracks performance for one or two measures. Most respondents (n=21) reported not keeping track of these performance measures.

## 9.3 Mitigation Obstacles

### 9.3.1. Internal Obstacles

Government officials were asked to report about internal obstacles that interfere with meeting the goals and objectives of wildfire mitigation programs in their jurisdictions. Not all respondents answered every question. The results are displayed in Figure 9.3.1-1 below.

**Figure 9.3.1-1**

**Internal Obstacles Interfering with the Goals and Objectives of Wildfire Mitigation Programs in Government Officials' Areas of Jurisdiction**

| *n counts who report _ as an internal obstacle...* | **NET an obstacle** | A major obstacle | A minor obstacle | Not an obstacle |
|---|---|---|---|---|
| Not enough resources and/or funding to help property owners | **26** | 23 | 3 | 4 |
| Inadequate program budget or funding | **25** | 23 | 2 | 4 |
| Lack of qualified government program staff | **22** | 11 | 11 | 8 |
| Inadequate technical help | **20** | 8 | 12 | 10 |
| Low enforcement of regulations | **19** | 6 | 13 | 11 |
| Inadequate community risk assessments | **17** | 10 | 7 | 13 |
| Scientific uncertainty of risk | **17** | 5 | 12 | 13 |
| Unclear program goals | **17** | 4 | 13 | 13 |
| Lack of firefighter training or fighting WUI fire | **13** | 3 | 10 | 16 |

Source: Q43. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

23 jurisdictions reported both inadequate program budget or funding and not enough resources and/or funding to help property owners as major obstacles. Respondents reported that a lack of qualified government program staff was a minor obstacle in 11 jurisdictions and a major obstacle in 11 jurisdictions. Closely following, inadequate technical help was a minor obstacle in 12 jurisdictions and a major obstacle in 8 jurisdictions. Low enforcement of regulations is at least a minor obstacle in 19 jurisdictions (63%) followed by Inadequate community risk assessments, scientific uncertainty of risk, and unclear program goals which are

at least a minor obstacle in 17 jurisdictions (57%). Lack of firefighter training or fighting WUI fire is not an obstacle in many jurisdictions (55%, n=16).

20% of respondents (n=6) indicated one to three issues were minor or major internal obstacles to meeting objectives of wildfire mitigation programs in their jurisdiction. The majority of respondents (n=8) reported that eight of these issues were minor or major obstacles in their jurisdiction. 3 respondents reported all nine issues were minor or major obstacles in their jurisdiction.

All Oregon officials (n=8) reported having more than six obstacles. However, out of the 22 total Californian respondents, near equal jurisdictions less than (n=10) or more than (n=11) six obstacles. Three respondents face all nine obstacles in their jurisdiction; two are respondents from California jurisdictions and one is a respondent from an Oregon jurisdiction.

### *9.3.2 External Obstacles*

The following question asked respondents about external obstacles that interfere with meeting the goals and objectives of wildfire mitigation programs in their jurisdiction. The results are presented in Figure 9.3.2-1 below.

**Figure 9.3.2-1**

**External Obstacles Interfering with the Goals and Objectives of Wildfire Mitigation Programs in Government Officials' Areas of Jurisdiction**

| *n counts who report that _ is...* | **NET an obstacle** | A major obstacle | A minor obstacle | Not an obstacle |
|---|---|---|---|---|
| Lack of funding and resources | **27** | 25 | 2 | 3 |
| Residents resist structural management measures | **28** | 10 | 18 | 2 |
| Lack of understanding from property owners | **27** | 11 | 16 | 3 |
| Residents resist fuel and vegetation management measures | **27** | 6 | 21 | 3 |
| Public apathy | **24** | 8 | 16 | 6 |
| Little cooperation among government stakeholders | **18** | 5 | 13 | 12 |
| Lack of partnerships with non-profit organizations | **17** | 7 | 10 | 13 |
| Inadequate public input into fire policy | **17** | 2 | 15 | 13 |

Source: Q44. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

Two primary themes emerged from the responses to this question. The first concerns resident attitudes, whether because of general resistance to management measures, lack of understanding by property owners, and/or general public apathy, all of which are viewed more

as a minor obstacle. The second theme is financial, as all but 3 respondents characterized lack of funding and resources as at least a minor obstacle, with all but 2 of this subset saying it is a major obstacle. In addition, over half of respondents (60%, n=18) reported that little cooperation among government stakeholders is an obstacle. Inadequate public input into fire policy and a lack of partnerships with non-profit organizations were obstacles in 17 jurisdictions.

All jurisdictions reported having more than one issue as an obstacle to meeting the objectives of wildfire mitigation programs. 9 respondents from California (41%) and 4 respondents from Oregon (50%) reported four to six issues as minor or major obstacles. Of the respondents who reported having seven to eight issues as minor or major obstacles, 12 of them were California government officials (55%) while 4 were Oregon government officials (50%).

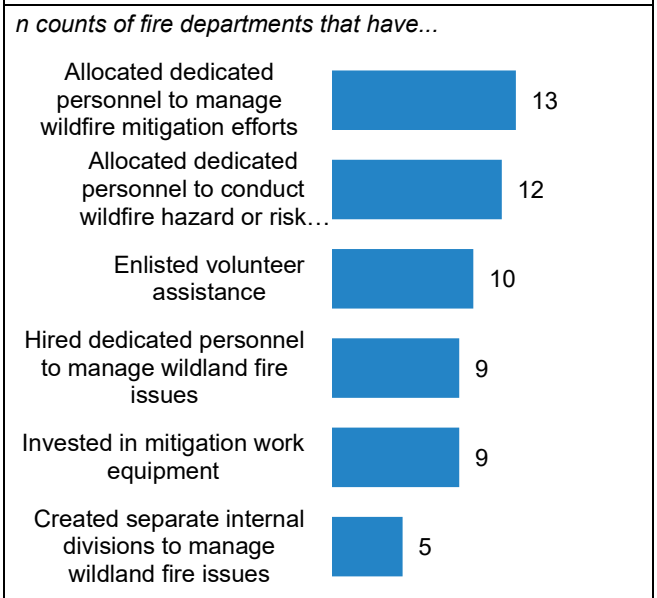
## *9.4* Impact of Wildfires & Mitigation Measures on Fire Departments, Land Use, Home Values & Life Safety

### *9.4.1 Fire Departments*

Government officials provided insight into how wildfire mitigation efforts affect the internal operations of fire departments in their jurisdictions. Figure 9.4.1-1 displays the results below.

**Figure 9.4.1-1**

**How Wildfire Mitigation Efforts Affect the Internal Operations of Fire Departments in Government Officials' Areas of Jurisdiction**




Source: Q57. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

Fire departments have allocated dedicated personnel to manage wildfire mitigation efforts in under half of respondents' jurisdictions (47%, n=13). Similarly, respondents indicated that fire departments have allocated dedicated personnel to conduct wildfire hazard or risk assessments in 43% of jurisdictions (n=12). 37% of jurisdictions (n=10) reported their fire departments have enlisted volunteer assistance to assist wildfire mitigation efforts. Fire departments in 32% of jurisdictions (n=9) have both hired dedicated personnel to manage wildland fire issues and invested in mitigation work equipment. Lastly, only

18% of jurisdictions (n=5) indicated that their fire departments have created separate internal divisions to manage wildland fire issues.

Next, respondents were questioned about if fire departments in their jurisdictions have taken on efforts as a part of educating and implementing mitigation efforts. 2 respondents did not answer this question. The results are displayed in Figure 9.4.1-2.

**Figure 9.4.1-2**

**Fire Departments' Efforts to Educate and Implement Mitigation Measures in Government Officials' Areas of Jurisdiction**

| *Fire departments' implementation of...* | Yes | No, but plan to | No | Not sure |
|---|---|---|---|---|
| Education of and outreach to public/residents | 17 | 3 | 1 | 7 |
| Partnerships among local fire departments | 16 | 1 | 5 | 6 |
| Partnerships with developers and construction industry | 3 | 2 | 7 | 16 |
| Partnerships with land managers | 9 | 2 | 6 | 11 |
| Partnerships with utility companies and other local businesses | 7 | 2 | 6 | 13 |
| Partnership with tribe's authorities | 8 | 0 | 9 | 11 |

Source: Q58. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=28

Fire departments in 61% of jurisdictions (n=17) have taken on the education of and outreach to the public/residents as a part of educating and implementing mitigation efforts. 3 additional jurisdictions plan to have their fire departments implement education and outreach to the public/residents in the future. More than half of the respondents (57%, n=16) indicated that the fire departments in their areas of jurisdiction have taken on partnerships among local fire departments to help with the education and implementation of mitigation efforts with 1 planning to implement this partnership. 30% of jurisdictions (n=9) have fire departments partnering with land managers, 8 jurisdictions (27%) have their fire department partnered with tribes' authorities, and fire departments in 25% of jurisdictions (n=7) have partnerships with utility companies and other local businesses with 2 additional jurisdictions planning to implement this partnership in the future.

### *9.4.2 Land Use*

Respondents were then asked about land use in areas with high wildfire hazard or risk in their jurisdictions. 67% of respondents (n=20) indicated that their jurisdiction has had more residential zoning and homes built in high wildfire-risk areas. 90% of jurisdictions (n=27%) have not had land rezoned to prohibit building due to high wildfire hazard or risk and 10% of

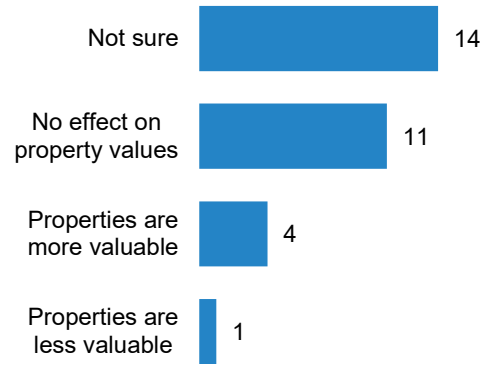
respondents indicated they were unsure if their jurisdiction has ever had land rezoned for this reason.

### *9.4.3 Property Values*

Respondents were also asked about the impact of wildfire mitigation measures on property values. The results are presented in Figure 9.4.3-1.

**Figure 9.4.3-1**

**How Wildfire Mitigation Measures Impact Property Values in Government Officials' Areas of Jurisdiction**




Source: Q56. National Fire Protection Association (NFPA) Wildfire Mitigation Government Officials Survey, Nov. 2 – Dec. 7, 2023. N=30

37% of respondents (n=11) reported wildfire mitigation had no effect on property values. Only 1 respondent reported that for their jurisdiction, where wildfire mitigation measures are implemented, the properties are less valuable, and 13% of respondents (n=4) indicated that where wildfire mitigation measures are implemented, the properties are more valuable. Almost half of the respondents (47%, n=14) were unsure about how wildfire mitigation has affected property values in their jurisdiction.

### *9.4.4 Damage of Wildfires*

Respondents provided insight on the yearly estimated cost of damages from wildfires in their jurisdiction. 11 respondents did not answer this question. The median and modal yearly cost of damages from wildfires in respondents' areas of jurisdiction is $500,000. The range of this dataset is $99,999,500, with one respondent reporting having the lowest amount of damage from wildfires costing just $500 in damages yearly and 2 respondents reporting having the highest amount of damage from wildfires in $100,000,000 damages yearly.

The following question asked respondents to report how many structures were damaged or destroyed in their jurisdiction because of wildfires in the last fire season. The median and modal number of structures that were damaged or destroyed by wildfires in the last fire season is zero. The range of this dataset is 200, with one respondent reported 200 structures were damaged in their jurisdiction. 8 respondents were not sure how many structures were damaged or destroyed in their jurisdiction because of wildfires during the last fire season.

Respondents also reported on life safety and fatality rates due to wildfires during the last fire season. 87% of respondents (n=26) reported there were no fatalities, and the remaining 4 were not sure of the number of fatalities due to wildfires during the last fire season.

# 10. Conclusions and Future Directions

## *10.1 Synthesis of Report Findings*

### *10.1.1 Agreement*

1. **Affordability:**

It is clear affordability is a main obstacle for residents to undertake wildfire mitigation. Referencing Figure 5.4.2-1, about one-third of residents selected the obstacle: “I can’t afford to make certain changes” (35%); this obstacle was tied with “lack of knowledge” as the most selected obstacle. Further, only 9% of respondents selected “I don’t want to pay for certain changes” as an obstacle, therefore portraying financial obstacles more as an incapability, rather than a mere choice to not pay.

As for fire departments, a large cohort of respondents selected obstacles related to funding, specifically lacking funding for wildfire mitigation efforts (n=46), lacking funding for wildfire mitigation outreach (n=38), or just lacking funding generally (n=41). Further, when asked to elaborate on obstacles, one respondent replied with the following "being an all-volunteer department, we do not receive the funding that some of these projects would need to get going. We have some crew that could be hired to take these projects on, but the funding is not there for this." The other open-ended responses communicated similar sentiments about monetary constraints.

Finally, according to the local government official respondents, affordability was a main obstacle to meeting wildfire mitigation objectives for government officials. Referencing Figure 9.3.1-1, “inadequate program budget or funding” was reported to be a major internal obstacle in 76% of jurisdictions (n=23), as was “not enough resources and/or funding to help property owners.” Affordability was also an external obstacle, referencing Figure 9.3.2-1, 83% of jurisdictions (n=25) reported a “lack of funding and resources” to be a major obstacle.

Upon aligning these concepts across surveys, in summary, government officials and fire departments lack the funds to infuse wildfire mitigation measures into their communities, and therefore residents are not necessarily able, or in fewer cases, willing, to pay to compensate.

2. **Knowledge/Insufficient Education:**

Only one in two (50%) total residents were aware of what specific actions they can take on their property to reduce wildfire risk, with 22% admitting to not being aware and almost a third (28%) not even knowing whether or not they were aware. When presented with five wildfire mitigation topics, residents were most knowledgeable (at least somewhat) about general wildfire risk (68%) and what mitigation measures are (62%), and, alarmingly, the least knowledgeable about where to find resources to help complete mitigation efforts (43%).

Regarding fire departments, there was a lack of educational materials or programs respondents' departments provide regarding "hands-on" defensible space and fire safety, demonstrations, and publications on wildfire mitigation measures specific for planners, developers, and contractors. As for what was provided, communication/education was mainly provided about wildfire risk to properties (80%, n=57) and risk to communities (76%, n=54). In contrast, communication/education regarding wildfire mitigation policies and regulations/ordinances was provided in almost half of respondents' departments (n=34).

Similar to fire departments, there was a lack of educational materials or programs available in government officials' jurisdictions regarding "hands-on" defensible space and fire safety, demonstrations, classroom curricula or resources for schools, and publications on wildfire mitigation measures specific for planners, developers, and contractors. Respondents claimed their jurisdictions provided the most amount communication/education about wildfire risk to communities (n=20) and risk to safety and life (n=19), and the least amount for the impact of mitigation efforts on property values (n=7) and mitigation implementation guidance (n=10). Communication/education to planners, contractors, and developers was implemented less often than communication/education to residents and community organizations. There is not a lot of specific communication regarding risk to property.

3. **Public apathy:**

According to the fire department survey's results, public apathy was reported to be a minor external obstacle in 39 of respondents' departments and a major obstacle in 14 of respondents' departments. Equally important, public apathy was reported to be a minor external obstacle to reaching the goals of wildfire programs in over half of the jurisdictions (n=16) and a major obstacle in eight jurisdictions. Finally, although a smaller frequency, 13% of residents selected "don't think anything can stop a wildfire," an obstacle which implies a degree of apathy.

In like manner, it is theorized that prior experience with wildfires may reduce it, therefore

prompting action. Results indicated that those who had experienced a wildfire less than 1 to 10 miles were more likely to have completed four to six vegetation measures (89%) than those who had experienced a wildfire 10 to 50 miles away (77%), and those who had experienced a wildfire 10 to 50 miles away were more likely to complete four to six vegetation measure than those who had experienced one more than 50 miles away (67%). In other words, prior experience with wildfires had a clear impact on vegetation maintenance completion, however, this same pattern was not observed for structural maintenance completion.

While the majority of residents (79%) were at least somewhat motivated to learn more about wildfire mitigation measures for their property, including a solid quarter (24%) who were very motivated, those who were at least somewhat motivated versus those who were not too or not at all were more likely to be knowledgeable on all five of the presented wildfire topics: "wildfire risk in your area" (70% and 58%, respectively), "recommended mitigation measures you can take" (65% and 50%, respectively), "how to complete mitigation measures on your property" (56% and 41%, respectively), "where to find resources (financial, materials, etc.) to complete mitigation measures" (45% and 35%, respectively), and "where you can go to get answers to questions about improving wildfire safety" (55% and 46%, respectively). In other words, motivation to take action was more likely to be instilled in residents who were already knowledgeable about wildfire mitigation, thus perpetuating a stronger need for education among those who are less knowledgeable compared to other residents.

4. **Resident Completion and Stakeholder Outreach Focused more so on Vegetation than Structural Management:**

Residents overall were less likely to perform structural mitigation than vegetation mitigation measures. Among the vegetation modification measures presented in our survey, most residents have performed some form of vegetation maintenance mitigation measure at any point in time (79 – 91%) or at least once a year (63 - 79%). In some cases, the rate of vegetation maintenance completion is roughly double the rate at which residents either moved into a home that already had a structural mitigation measure in place (38 – 55%) or at which homeowners had implemented one themselves (27 – 39%).

Further enhancing this issue, more respondents' departments reported having programs to assist residents in implementing vegetation management (52%, n=37) and the disposal of cleared fuel and vegetation debris (41%, n=29) than home hardening/structure modification (35%, n=25).

Government officials reported outreach with targeted communications to residents regarding the implementation of vegetation management was done in 77% of jurisdictions (n=23) while targeted outreach to residents regarding the implementation of structural management measures was done in 40% of jurisdictions (n=12).

5. **Not many mandatory requirements:**
   Although a quarter of residents (23%) mentioned legal requirements as a mitigation motivator, only 17% selected that wildfire risk reduction measures were required by law. Additionally, 34% claimed that wildfire mitigation was not required by law, and the largest proportion, or 50%, were unsure whether or not these laws exist.

Among fire department respondents, 49% (n=35) indicated their department conducted inspections to ensure compliance with wildfire safety regulations and 47% of respondents indicated their department conducted enforcement (n=33) of these regulations.

Likewise, among government official respondents and regarding inspections and/or enforcement of wildfire-related regulations, the data showed that every type of property apart from residential properties (n=19 and 18, respectively) had inspections and enforcement of wildfire-related regulations for compliance in under half of their jurisdictions. Apart from the type of property receiving inspections or enforcement, government officials also reported a lack of enforcement of requirements of structural management mitigation measures (n=9) as opposed to vegetation management mitigation measures (n=16).

### *10.1.2 Mismatch*

1. **Communications Mismatch:**
   One in two residents (50%) say they were aware of mitigation measures, while 22% say they were not aware, and nearly 3-in-10 (28%) are not sure whether or not they were aware. 43% of residents accessed at least one type of local or state source, including 18% who accessed this information through their county or city fire department, 13% who accessed their local or state law enforcement, and 12% who accessed a local emergency management agency.

Lack of perception or understanding of existing risk from property owners was reported to be a major obstacle to meeting wildfire mitigation program goals in 28% of respondents' departments (n=20) and a minor obstacle in 45% of respondents' departments (n=32). The fire departments' outreach about wildfire mitigation was provided mainly through direct outreach (n=48) and social media (n=47). Mailing (n=29) and traditional mass media (n=20) were also

utilized.

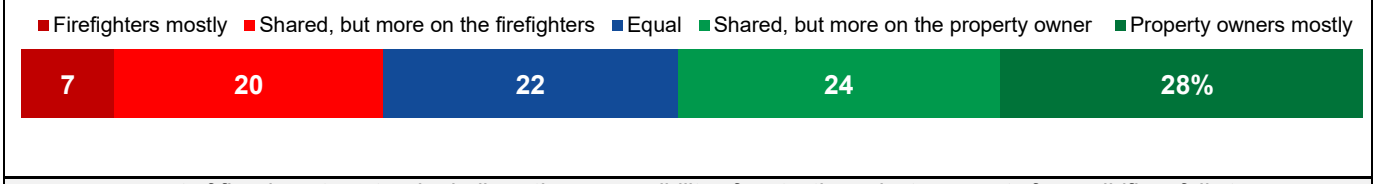
Lack of understanding from property owners was reported to be a major obstacle in 37% of jurisdictions (n=11) and a minor obstacle in 53% of jurisdictions (n=16). Government official's outreach regarding wildfire mitigation was done mostly through social media (n=21). Mailing (n=13), direct outreach (n=13), and traditional mass media (n=12) were also utilized.

2. **Responsibility for Private Property Protection from Wildfire Mismatch:**
The issue of responsibility for protecting private property from wildfire is one that was posed to both residents and firefighters in their respective surveys. The objective was to understand the degree to which respondents felt that between property owners and firefighters, who was most responsible for protecting private property from wildfire. The question was asked on a 5-point Likert scale with the following options: firefighters mostly, shared responsibility between property owners and firefighters (more on the firefighters), equal responsibility between property owners and firefighters, shared responsibility between property owners and firefighters (more on the property owners), and individual property owners mostly.

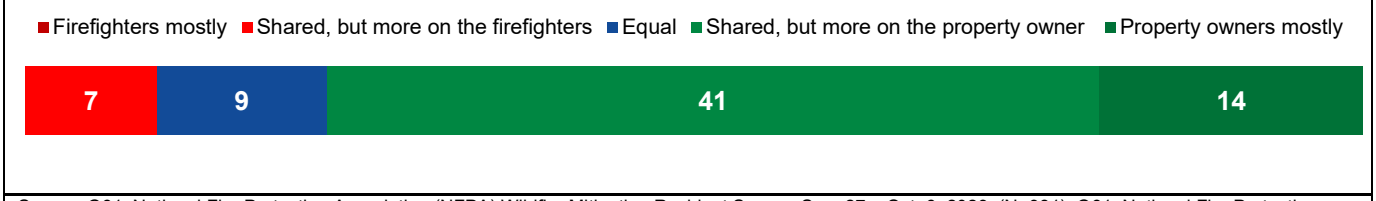
As shown in Figure 10.1.2-1, the relative perceptions of each group are quite different. Among residents, the most endorsed category was individual property owners (28%), followed by relatively similar proportions in all other categories (20-24%), with only 7% stating the responsibility is on firefighters mostly. Among firefighters, the most endorsed category was a shared responsibility with more on the property owners (58%), followed by individual property owners mostly (20%), and then relatively similar proportions in other categories (10-13%), except for firefighters mostly where there was no endorsement at all.

**Figure 10.1.2-1: Summary of Responsibility for Private Property Protection from Wildfire**

*% of residents who believe the responsibility of protecting private property from wildfires falls to…*




*n count of fire departments who believe the responsibility of protecting private property from wildfires falls to…*




Source: Q61. National Fire Protection Association (NFPA) Wildfire Mitigation Resident Survey. Sep. 27 – Oct. 6, 2023. (N=981). Q61. National Fire Protection Association (NFPA) Fire Department Survey. Oct. 30 – Dec. 4, 2023. (N=71). *Note:* Proportions for residents are based on weighted counts. Proportions for firefighters are based on unweighted counts.

It should also be noted that the response profile of residents on this question was not related to their overall wildfire concern as confirmed by an ANOVA (p = .07). It also produced a somewhat counterintuitive pattern in average concern scores such that the average concern was highest among those saying the responsibility was on firefighters mostly (n=62; mean = 54.8; SD = 29.1) and lowest among those saying the responsibility was on individual property owners mostly (n=253; mean = 45.2; SD = 30.6).

3. **Risk Perception Mismatch:**

Across time frames, perceived risk to one's community remained the highest (65% in the next year and 70% in the next five years), while perceived risk to one's neighborhood property (48% in the next year and 58% in the next five years) and especially perceived risk to one's property (39% in the next year and 52% in the next five years) remained lower comparatively. In addition, Oregon residents were more knowledgeable about wildfire risk in their area (77%) than California residents (60%).

When asked about the five types of outreach regarding wildfire risk and mitigation fire departments provide, respondents reported that 42% of departments (n=30) conducted all five types, with seventeen of these departments being in California and the remaining thirteen departments being in Oregon. However, only 21 out of 71 respondents selected that "general publications on wildfire risk and mitigation" were the most effective in engaging residents with wildfire risk reduction actions. When looking at differences by state, outreach provided regarding wildfire risk and mitigation was mostly even between Oregon and California. Similarly, government officials reported generally having high levels of communication risk to communities (n=20) and risk to safety and life (n=19) but not much communication regarding the risk to own

property.

## 10.2 Synthesis of Literature Findings

### 10.2.1 Agreement

1. **Completion of Vegetation and Structural Mitigation:**

- Fewer residents completed structural actions compared to vegetation actions (Brenkert-Smith et al., 2012)
    - Among the vegetation measures presented in our survey, most residents have performed some form of vegetation maintenance mitigation measure at any point in time (79 – 91%) or at least once a year (63 - 79%). In some cases, the rate of vegetation maintenance completion by residents far surpasses that at which residents either moved into a home that already had a structural mitigation measure in place (38 – 55%) or at which homeowners had implemented one themselves (27 – 39%).

2. **Motivation to Mitigate:**

- Among residents in Texas and several western states, including California and Oregon, a top motivation to mitigate was to protect family/property. (Madsen, 2017; McCaffrey et al., 2011)
    - Our survey showed similar results with 56% of residents selecting “concern about your family’s safety” and 51% of residents reporting “concern about potential damage to your property” as reasons for choosing to mitigate.
- Past research shows that when residents were asked about an “ah-ha moment” or trigger that propelled them to mitigate, over half cited a close call with a wildfire (Madsen, 2017).
    - In our survey, an open-ended question revealed that past experiences or proximal occurrences were another main reason for mitigating. Out of 599 responses, 166 respondents reported they had an experience in their past with fire or wildfire or knew of someone who dealt with a fire experience that motivated them to mitigate.
- Our literature review found certain property qualities such as “neatness” or “openness” may motivate vegetation maintenance, while other qualities such as “naturalness”, “aesthetics”, or “privacy”, may deter it, in some cases jeopardizing the very reasons they bought the property (Brenkert Smith et al., 2006; Nelson et al., 2004).

- **Encouraging Vegetation Maintenance:** For property qualities that should theoretically encourage vegetation maintenance, there was only a slight significant difference for “neatness” among those who had selected it as they were slightly more likely to perform the majority of vegetation mitigation measures (80%) than those who had not selected it (72%).

**3. Obstacles:**

- Cost of mitigation (Madsen, 2017) is an obstacle for residents to mitigate.
  - In our resident survey, “I can’t afford to make certain changes” (35%) was the top obstacle to meeting the goals of mitigation programs.
- Wildfire mitigation program managers reported that the most concerning potential obstacles to wildfire mitigation were budget limitations, public apathy, shortage of technical staff, and resistance to vegetation management by property owners (Reams et al., 2005).
  - In our government official survey, “not enough resources and/or funding to help property owners” and “inadequate program budget or funding” were reported to be internal obstacles in 87% (n=26) and 83% (n=25) of jurisdictions, respectively.
  - Also, “lack of qualified government program staff” and “inadequate technical help” were internal issues in 73% (n=22) and 67% (n=20) of jurisdictions respectively.
  - “Residents resist fuel and vegetation management measures” was reported to be an external obstacle in 90% of jurisdictions (n=27) and “public apathy” was reported to be an external obstacle in 80% of jurisdictions (n=24).
- A survey of government officials indicated a need for addressing inadequate knowledge amongst residents (i.e., risk perception) (Harris et al., 2011).
  - Government officials in our survey indicated that another top external obstacle to completing the goals of mitigation programs was a “lack of understanding from property owners”. This was reported to be an external obstacle (major or minor) in 90% of jurisdictions (n=27).
  - “Lack of knowledge” (34%) was reported to be a top obstacle for residents to complete the goals of wildfire mitigation programs.
  - 59 respondents’ departments (83%) believe a lack of understanding of wildfire codes/regulations/ordinances is an obstacle and 52 respondents’ departments (73%) believe a lack of understanding of wildfire risk is an obstacle.

4. **Mitigation Responsibility Breakdown:**

- Fire professionals perceive their departments' role to align with the Healthy Forests Restoration Act (HFRA), which "encourages the creation of Community Wildfire Protection Plans (CWPP), which need to be developed collaboratively between local fire departments, local government, and area residents" (Madsen et al., 2018). Within a CWPP, fire departments and land management agencies collaboratively provide technical advice and information about their area's vegetation while working in collaboration with local residents (Madsen et al., 2018).
    - In our survey, over half of firefighters (58%) reported that they think there should be a shared responsibility between property owners and firefighters (more on the property owners) for private property protection from wildfire.

5. **Mitigation Effects on Fire Departments:**

- Fire Chiefs and senior line officers, the interviewees of a study by Madsen et al. (2018), identified the need for increased involvement and political support, while also addressing the lack of funding.
    - An open-ended response question allowed fire department respondents we surveyed to share how undertaking wildfire mitigation has affected the operations of their department. Multiple responses pointed to the need for increased funding and personnel.
    - Several respondents highlighted the importance of building relationships with government agencies and homeowners to foster community-wide efforts in wildfire prevention and mitigation and to increase involvement.

### *10.2.2 Mismatch*

1. **Motivations To Mitigate (What Residents Value about Where They Live):**

- Our literature review found certain property qualities such as "neatness" or "openness" may motivate vegetation maintenance, while other qualities such as "naturalness", "aesthetics", or "privacy", may deter it, in some cases jeopardizing the very reasons they bought the property (Brenkert Smith et al., 2006; Nelson et al., 2004).
    - **Detering Vegetation Maintenance:** In our survey, "aesthetics" "naturalness", or "privacy" did not deter vegetation maintenance; in fact, those who selected the latter two were more likely to mitigate. Specifically, those who value "naturalness" were more likely to perform the majority of vegetation mitigation (84%) than those who did not (71%), and similarly with "privacy" (83% performing the majority,

71% who did not). There were no significant differences in vegetation mitigation behavior among those who did or did not value "aesthetics."

2. **Obstacles:**

- According to a study by the NFPA and the United Services Automobile Association (USAA), an example of a prevalent barrier to mitigating is site-specific problems (e.g., density, vegetation, terrain).
    - Only 7% of residents in our survey indicated "property layout or terrain challenge" to be an obstacle in undertaking wildfire mitigation on their property.

3. **Risk Perception Inconsistency:**

- Not all WUI residents are wildfire risk aware. A recent California-based study found that only 7% of homeowners subjectively perceived that they lived in a high-risk area, even though more than 80% of the sample was drawn from areas objectively assessed as being at high or very high risk of wildfires (Sanchez et al., 2021).
    - When residents participating in our survey were asked about their perceived risk of wildfire threat over time, 65% of respondents indicated they believed their community was at risk in the coming year and 70% of respondents reported they believed their community was at risk within the next five years.
- Among residents in Texas and several western states, including California and Oregon, a top motivation to mitigate was awareness of risk/common sense (Madsen, 2017; McCaffrey et al., 2011). Similarly, a California-based study (Sanchez et al., 2021) found that risk awareness can be a motivator, while other studies found that a lack of risk awareness can be a prominent barrier to residents' mitigation efforts in the case of low-risk perception (Madsen, 2017; McCaffrey et al., 2011), thus confirming that residents' risk perception aligns with their mitigation behaviors.
    - "Awareness of risk" was also a top reason residents chose to mitigate in our survey, with 60% of respondents reporting they chose to mitigate to reduce wildfire risks.

### *10.3 Limitations*

While this report is intended to be comprehensive in nature and capture viewpoints from all relevant constituencies in the selected states as much as possible on this very important issue, there are some notable limitations. First, these findings are not representative of perceptions of all residents, fire departments, or governments in the selected states. Notably, given the desire to collect as much data as possible and reliance on a specific set of criteria for

inclusion, adequate representation from all selected counties in these states and the ability to more deeply explore patterns in the data could not be achieved. This is substantiated by the non-probability sampling design for the resident survey though adjusted through weighting and the convenience sampling design for both the fire department and government surveys. Second, because of the sampling designs employed, opinions may have been submitted by residents in a certain set of counties in these states without corroborating evidence from the associated fire departments or government officials, or vice versa. Third, this report relies on information solely and voluntarily provided by participants to the questions asked. Finally, although affordability was a major barrier across stakeholders, we could not directly price the cost of mitigation relative to residents' discretionary spending and both fire department and government spending ability.

Therefore, this report is not meant to be a substitute for a comprehensive review of local and state guidelines with respect to wildfire mitigation and building codes and both financial and infrastructural profiles among fire departments and government agencies to demonstrate readiness in dealing with wildfires and wildfire mitigation.

### *10.4 Future Directions*

Concern over the impact of wildfires and other natural disasters is expected to increase given changes in climate and human behavior. At the resident level, these influences on social vulnerability should certainly be studied in more detail (Modaresi Rad, 2023). Achieving a better understanding of how funds are allocated to fire departments and local governments for general wildfire readiness should be examined. Additionally, the evolution of higher education programs to train future leaders in the field to make a difference on this issue in communities and technological approaches to wildfire prevention are important to explore.

It is hoped that the findings contained in this report will inspire interest holders across industry, government, and academia in other states to engage in similar studies in the future. To ensure appropriate levels of representation and comprehensiveness, we encourage the broader community to seek funding to allow these types of studies to be conducted.

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# 12. Appendices

## *Appendix A. Data Source Inventory: CWDG Data Set*

The Community Wildfire Defense Grant Program (CWDG) is a program authorized through federal legislation to help local communities plan for and reduce the risk of wildfire. Priority for grant funding is given to communities defined by county with elevated general hazard risk and/or risk specific to homes beyond certain thresholds according to vegetation and wildland fuels data provided under the auspices of the USDA Forest Service3. The threshold for eligibility for grant funding based on wildfire risk to homes is the 40th percentile whether based on state or national analysis and the corresponding threshold for general hazard risk is the 67th percentile.

The risk to homes indicator incorporates wildfire likelihood and intensity with generalized consequences to a hypothetical home anywhere within a general landscape. The general hazard risk indicator reflects the relative potential for wildfires that may be difficult to control4. The program provides a data set profiling all U.S. counties on these risk indicators (Scott et al., 2020). In the interest of employing a standardized methodology across states, we selected counties with medium-to-high wildfire risk to homes and/or general hazard risk (minimum 50th percentile). As a result, two counties of 58 were not considered in California and ten counties of 36 were not considered in Oregon. The full data set appears below.

[3] Community Wildfire Defense Grant Program | US Forest Service (usda.gov)

[4] Community Wildfire Defense Grant Risk Dataset: Methods and Intended Uses

| County | State | Risk to Homes: State Rank | Risk to Homes: National Rank | Hazard Potential: State Rank | Hazard Potential: National Rank |
|---|---|---|---|---|---|
| Alameda | California | 59% | 94% | 45% | 92% |
| Alpine | California | 39% | 88% | 36% | 89% |
| Amador | California | 61% | 95% | 68% | 96% |
| Butte | California | 60% | 95% | 67% | 96% |
| Calaveras | California | 72% | 97% | 83% | 98% |
| Colusa | California | 40% | 88% | 29% | 85% |
| Contra Costa | California | 41% | 88% | 33% | 88% |
| Del Norte | California | 53% | 92% | 65% | 95% |
| El Dorado | California | 57% | 93% | 67% | 96% |
| Fresno | California | 39% | 88% | 41% | 91% |
| Glenn | California | 52% | 92% | 36% | 89% |
| Humboldt | California | 36% | 87% | 52% | 93% |
| Imperial | California | 4% | 41% | 2% | 22% |
| Inyo | California | 18% | 73% | 12% | 65% |
| Kern | California | 54% | 92% | 45% | 92% |
| Kings | California | 16% | 72% | 9% | 58% |
| Lake | California | 75% | 97% | 78% | 97% |
| Lassen | California | 78% | 98% | 88% | 99% |
| Los Angeles | California | 76% | 98% | 72% | 96% |
| Madera | California | 63% | 95% | 69% | 96% |
| Marin | California | 29% | 84% | 34% | 89% |
| Mariposa | California | 81% | 99% | 90% | 99% |
| Mendocino | California | 45% | 91% | 53% | 93% |
| Merced | California | 35% | 87% | 42% | 91% |
| Modoc | California | 43% | 89% | 49% | 93% |
| Mono | California | 38% | 88% | 39% | 90% |
| Monterey | California | 61% | 95% | 48% | 92% |
| Napa | California | 53% | 92% | 52% | 93% |
| Nevada | California | 64% | 96% | 70% | 96% |
| Orange | California | 82% | 99% | 75% | 97% |
| Placer | California | 46% | 91% | 62% | 94% |
| Plumas | California | 76% | 98% | 75% | 97% |
| Riverside | California | 88% | 99% | 89% | 99% |
| Sacramento | California | 24% | 80% | 26% | 81% |
| San Benito | California | 75% | 97% | 60% | 94% |
| San Bernardino | California | 59% | 95% | 56% | 94% |
| San Diego | California | 88% | 99% | 87% | 99% |
| San Francisco | California | 2% | 30% | 10% | 61% |
| San Joaquin | California | 25% | 81% | 22% | 78% |
| San Luis Obispo | California | 62% | 95% | 41% | 91% |
| San Mateo | California | 38% | 88% | 42% | 91% |
| Santa Barbara | California | 67% | 96% | 59% | 94% |
| Santa Clara | California | 71% | 97% | 66% | 96% |
| Santa Cruz | California | 47% | 91% | 53% | 93% |
| Shasta | California | 65% | 96% | 63% | 95% |

| | | | | | |
|---|---|---|---|---|---|
| Sierra | California | 85% | 99% | 92% | 99% |
| Siskiyou | California | 70% | 97% | 73% | 97% |
| Solano | California | 21% | 76% | 14% | 68% |
| Sonoma | California | 45% | 91% | 57% | 94% |
| Stanislaus | California | 55% | 92% | 44% | 91% |
| Sutter | California | 15% | 71% | 12% | 64% |
| Tehama | California | 67% | 96% | 58% | 94% |
| Trinity | California | 84% | 99% | 86% | 98% |
| Tulare | California | 48% | 91% | 55% | 93% |
| Tuolumne | California | 72% | 97% | 82% | 98% |
| Ventura | California | 81% | 98% | 74% | 97% |
| Yolo | California | 27% | 82% | 21% | 75% |
| Yuba | California | 56% | 93% | 64% | 95% |
| Baker | Oregon | 76% | 94% | 83% | 90% |
| Benton | Oregon | 20% | 18% | 20% | 42% |
| Clackamas | Oregon | 39% | 64% | 43% | 70% |
| Clatsop | Oregon | 11% | 11% | 17% | 41% |
| Columbia | Oregon | 13% | 12% | 24% | 54% |
| Coos | Oregon | 28% | 49% | 26% | 60% |
| Crook | Oregon | 63% | 91% | 67% | 82% |
| Curry | Oregon | 43% | 76% | 65% | 82% |
| Deschutes | Oregon | 57% | 85% | 70% | 83% |
| Douglas | Oregon | 50% | 77% | 74% | 84% |
| Gilliam | Oregon | 93% | 96% | 61% | 81% |
| Grant | Oregon | 87% | 96% | 85% | 91% |
| Harney | Oregon | 67% | 93% | 48% | 75% |
| Hood River | Oregon | 80% | 95% | 98% | 96% |
| Jackson | Oregon | 78% | 95% | 93% | 94% |
| Jefferson | Oregon | 74% | 94% | 76% | 85% |
| Josephine | Oregon | 91% | 96% | 100% | 96% |
| Klamath | Oregon | 46% | 77% | 63% | 82% |
| Lake | Oregon | 48% | 77% | 39% | 64% |
| Lane | Oregon | 26% | 43% | 28% | 61% |
| Lincoln | Oregon | 24% | 23% | 11% | 40% |
| Linn | Oregon | 37% | 58% | 35% | 63% |
| Malheur | Oregon | 72% | 94% | 59% | 81% |
| Marion | Oregon | 35% | 56% | 33% | 63% |
| Morrow | Oregon | 65% | 92% | 50% | 76% |
| Multnomah | Oregon | 30% | 54% | 37% | 63% |
| Polk | Oregon | 2% | 9% | 2% | 34% |
| Sherman | Oregon | 96% | 97% | 72% | 83% |
| Tillamook | Oregon | 15% | 15% | 15% | 41% |
| Umatilla | Oregon | 61% | 87% | 54% | 78% |
| Union | Oregon | 70% | 94% | 87% | 91% |
| Wallowa | Oregon | 85% | 95% | 91% | 93% |
| Wasco | Oregon | 100% | 98% | 96% | 95% |
| Washington | Oregon | 4% | 10% | 13% | 41% |
| Wheeler | Oregon | 89% | 96% | 78% | 87% |

| | | | | | |
|---|---|---|---|---|---|
| Yamhill | Oregon | 7% | 11% | 4% | 37% |