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Introduction

The world was gripped by the wildfires that raged through Southern California in January 2025 when a series of blazes erupted simultaneously and burned down nearly 15,000 homes and businesses across more than 40,000 acres, killing at least 30 people. What was particularly striking about this disaster was its proximity to such dense and urban areas, places that are highly developed. This disaster has had unimaginable consequences on several communities in the area, with insurmountable losses of livelihoods and loved ones in addition to environmental and economic damage. But this is not a newly developed issue, nor is it exclusively a Californian issue. Over the last few decades, wildfire disasters have been occurring increasingly often and growing more destructive as we face a changing global climate and ramped up development in wildfire-prone areas known as the wildland urban interface (WUI). It is past time to further our efforts in preventing and preparing for such crises with intensive and broad strategies across all bureaucratic levels. This paper seeks to provide understanding on what these efforts should entail and what steps communities can take to reduce their own risk of experiencing wildfire disasters. It will particularly highlight recommendations from an expert presentation given to our class this semester, which was especially comprehensive.

The Issue at Hand

To understand which direction we should be going in, it is important to recognize our current circumstances with regards to the environment and our place in it as a society. Many elements must be considered, including the causes of wildfires and what factors have been worsening the problem.

¹ <u>https://content-drupal.climate.gov/news-features/event-tracker/weather-and-climate-influences-january-2025-fires-around-los-angeles</u>

² "Confronting the Wildfire Crisis: A Strategy for Protecting Communities and Improving Resilience in America's Forests." *U.S. Department of Agriculture Forest Service*, Jan. 2022, www.fs.usda.gov/sites/default/files/fs-media/fs-document/Confronting-the-Wildfire-Crisis.pdf.

While we might often think of wildfires as being acts of nature, it is important to note that a majority of wildfires are ignited by human activity. The National Park Service reports that 85 percent of wildland fires are started by humans, whether it be embers from campfires, negligently discarded cigarettes, or downed power lines.³ These are often the sources of ignition of fires that spread extremely quickly and extensively in areas of dry and flammable vegetation. A combination of multiple factors has exacerbated and gradually worsened the issue over time. The accumulation of excess fuels, a warming global climate, expanded development in wildfire-prone areas, and our past fire suppression habits have all contributed to the current crisis.⁴ Each of these factors alone would increase our risk of wildfire, but what we presently face is all of these factors occurring simultaneously, layering on top of each other.

Buildup of excess vegetative fuel is a direct result of our country's history of fire suppression. More than a century ago in 1911, federal policy ended the use of ground fires to keep landscapes clear. As a result of this "fire exclusion," fuels have been building up for decades, and even after the Forest Service abandoned this policy in the late 1970s, we are still facing its consequences today. The accumulation of fuels as a result of fire exclusion resulted in many dangerous wildfires that were put out and suppressed, but this only contributed to the buildup. What came about was a cycle of wildfire and increasingly heavy fuel accumulation, which has led us to our current crisis.⁵

Climate change is also a key factor. As temperatures rise and natural processes are interrupted, we are experiencing more extreme weather in an imbalanced climate. The wildfires and excess fuel issue is becoming worse as less snow and rain fall and the frequency and scale of high winds and hot dry weather rises.⁶ These conditions make forests much more flammable and exacerbate the issue of excessive fuel, making our ecosystems more susceptible to wildfires of greater size and severity.

Greater risk to homes and communities also stems from increased development and population in the wildland-urban interface, the WUI. This refers to the area where "homes and communities

³ "Wildfire Causes and Evaluations." *National Park Service*, https://www.nps.gov/articles/wildfire-causes-and-evaluation.htm.

⁴ "Confronting the Wildfire Crisis."

⁵ "Confronting the Wildfire Crisis."

⁶ "Confronting the Wildfire Crisis."

encroach wildfire hazard-prone landscapes." As of 2022, one in three homes in the United States exist in the WUI, meaning many communities across the county are at risk. This significant growth of development in the WUI coupled with the other factors that have made wildfires more frequent and severe has resulted in much economic and environmental damage in addition to tragic losses of lives and homes. With so many communities now facing increased risk of wildfires, it is imperative that we take action to build up community resilience and prevent such incidents from occurring.

Government Initiatives and Expert Recommendations

Having recognized the scope and severity of this issue, we turn now to what needs to be done. Government agencies and experts across the field have offered updated strategies and visions for reshaping the country's management of wildfire disasters. This section of the paper will report on what a few key entities are doing and pushing for, including the expert presentation given to our class this semester.

Class Presentation from the National Fire Protection Association (NFPA)

Two experts from the National Fire Protection Association, Michele Steinberg and Christina Rust, visited our class this semester and presented on the topic of reducing community risk of wildfire. The NFPA is a global nonprofit organization founded in 1896 with the mission of "eliminating death, injury, property and economic loss due to fire, electrical, and related hazards," and is a leading advocate in the field of fire safety, providing knowledge and information to industries, businesses, and families across the planet. Steinberg, the Wildfire Division Director at NFPA, emphasized our country's past and present attitudes towards wildfire, which has been that wildfire as a whole are to be suppressed and feared, and how this has contributed to our current crisis. What we must do now is accept that wildfires are not only inevitable but also necessary in many ecosystems, and that instead of suppressing all fires everywhere, our priority should be ensuring that wildland fires, which are natural, do not transition into urban fires, which burn down homes and structures. How we accomplish this is our present issue. Rust is the NFPA's Wildfire Policy Specialist as well as a firefighter, and she

⁷ "Wildfire Action Policy #1." *National Fire Protection Association*, https://www.nfpa.org/education-and-research/policy-and-action/outthink-wildfire/five-action-policies.

⁸ "Confronting the Wildfire Crisis."

⁹ Steinberg, Michele and Christina Rust. "Community Risk Reduction for Wildfire – problems and solutions." EE538, 14 April 2025, Boston University. Microsoft Powerpoint Presentation.

spoke about the organization's new policy approach that has prevention and risk reduction at the forefront. She introduced NFPA's Outthink Wildfire Initiative, which is a call to end the destruction of communities by wildfire in three decades. This initiative encompasses five overarching action policies that require collaboration from many jurisdictions and governmental bodies.¹⁰

The first action policy is retrofitting homes and communities to be more resistant to ignition from wildfire embers and flames. Adapting our planning and development habits in wildfireprone areas is crucial, but millions of homes already exist in the WUI. To protect these homes and communities from being destroyed by wildfires, they must be retrofitted with fire-resistant materials. 11 According to NFPA, there are a few factors that must come into play in order to transform the landscape of communities in the WUI to become more resistant. Continued research and development of performance-based test standards for materials will help make sourcing fire-resistant materials easier for architects, builders, and homeowners. More research to develop the most cost-effective retrofit methods as well as general codes and standards for retrofitting is also needed to streamline the process. Public outreach to individuals and their communities is crucial in keeping them informed on how they can protect their own homes, along with financial incentives to take the actions necessary to do so. Such incentives can be created through regulations, tax incentives, or grants and low-cost loans by local and state government, and insurers have an important role to play too. As insurers face increasing losses from wildfires as well, they can motivate insured homeowners to reduce their homes' risk of ignition. To ensure the millions of homes existing within the WUI take action to improve their ability to exist with fire, this kind of broad action must occur simultaneously and collaboratively.

Next, updated codes and standards must be used and enforced for new development and rebuilding, particularly in wildfire-prone areas. Millions of homes currently exist in the WUI, and development in this interface continues to grow. ¹² Local leaders and planners must incorporate wildfire safety into their development requirements through building and zoning codes as well as hazard and risk assessments. Such assessments, in particular, will guide the

¹⁰ Steinberg and Rust

^{11 &}quot;Wildfire Action Policy #1."

¹² "Wildfire Action Policy #2." *National Fire Protection Association*, https://www.nfpa.org/education-and-research/policy-and-action/outthink-wildfire/five-action-policies.

community from developing in areas with the highest risk while providing information on what actions are most effective to reduce risk. States should require such development plans, and the federal government should incentivize building with wildfire safety at the forefront through its funding channels. To protect lives, property, homes and businesses, communities must pay attention to where and how they are building, especially in wildfire-prone areas.

NFPA's third action policy in Outthink Wildfire is ensuring fire departments for communities in the WUI are properly prepared and equipped to respond to wildfires. The organization reports that as of 2019, only 37 percent of fire departments that provide wildland or WUI firefighting services reported that all their firefighters had received wildland firefighting training, while only 32 percent reported that they had enough wildland fire personal protective equipment (PPE) for every member of their department. Less than 30 percent have any of the necessary PPE at all or a health and fitness program that provides standards for personal protection. Not only does this mean our tireless fire service members are at greater risk of injury or death, but this also means they are less prepared to protect communities in the case of wildfires. Such is the state of our fire services while more than half of them reported they could respond to wildfire events of 1 to 10 acres, at maximum. As the threat of wildfires grows in communities nationwide, equipping fire departments with the necessary resources must be a priority, particularly local fire departments that are significantly more focused on protecting homes and businesses than state and federal agencies.

The fourth action policy is that there must be increased resources for vegetative fuel management, practices such as prescribed burning and thinning. To do so, the federal government must invest more funding in these fuel management projects as well as a skilled workforce that can carry them out. Due to the country's history of fire suppression, there is now a vast range of federal land—over 150 million acres—with excess vegetative fuel that is primed to burn. Policymakers at the state and federal level must draw up plans for allocating more funds to quicken our pace of fuel treatment across federal lands. As of 2019, the federal land management agencies have acknowledged that diminished staff availability has hindered their ability to move forward with fuel treatment projects, so it is crucial that the federal government

¹³ "Wildfire Action Policy #3." *National Fire Protection Association*, https://www.nfpa.org/education-and-research/policy-and-action/outthink-wildfire/five-action-policies.

¹⁴ Steinberg and Rust

create plans to fill needed positions such as foresters, engineers, ecologists, and project coordinators. This could not be realized without increased investments. NFPA also views the U.S. Forest Service as having a crucial coordinating role to play with directing funding and staff support across the levels of our bureaucracy to ensure collaboration and efficiency.

NFPA's last action policy is a crucial piece of the puzzle, which is educating the public and encouraging community action to reduce wildfire risk. With millions of homes currently in the WUI and more people moving into these areas every year, it is essential that the public is informed on the steps it can take to protect homes and businesses. To do so, leaders from all levels of government must take action. A key part of this is moving the focus away from fire suppression and creating shared understanding that every individual and homeowner has a role to play. With consistent messaging and community outreach from trusted government leaders, residents will be more informed on the need for ignition-resistant home improvements, the development of a skilled workforce, advocacy for wildfire prevention policies, and knowing what steps to take in the case of a wildfire. States should also invest in and develop training and certification programs for home retrofitters, planners, and other involved entities who could then serve as trusted professionals for homeowners to turn to. Ensuring the public understands its role in addressing the wildfire crisis is essential to creating resilient communities and preventing disaster and destruction.

Beyond these specific policies, Steinberg and Rust emphasized the need for aligned policy, collaboration, and coordination across jurisdictional boundaries. They argued that the focus fundamentally should rest on prevention of wildfire disasters and preparedness of communities, which requires a shift in how we have been addressing the issue. The next section of this paper will discuss what state governments and the federal government have been doing in this pursuit.

State Initiatives

Following the presentation from Steinberg and Rust, I began looking into whether their policy ideas were being implemented at the state and federal levels. The states are not uniform or at equal stages of development when it comes to wildfire prevention programs and initiatives,

¹⁵ "Wildfire Action Policy #5." *National Fire Protection Association*, <u>www.nfpa.org/education-and-research/policy-and-action/outthink-wildfire/five-action-policies</u>.

particularly in states that are not considered the most at-risk. However, wildfires have occurred all over the country so far this year, not solely in the West. States in the Eastern United States such as Pennsylvania, New Jersey, and North Carolina have been experiencing wildfires that have burned thousands of acres, demonstrating that this is a nationwide problem and every state must take action to prevent such threats.

Some of the most at-risk areas have begun implementing policies and measures that align with the NFPA's recommendations. California, in particular, is attempting to go in the right direction. Following the tragic 2018 Camp Fire that razed Paradise, California, Governor Gavin Newsom issued an emergency proclamation that led to the creation of the California Wildfire Mitigation Program (CWMP). This program was officially launched in 2022 and allocates funds to communities across the state through a grant program, supporting home retrofits as well as homeowner education on wildfire home hardening. As of May 2025, the retrofitting of 21 homes has been completed while 30 homes are in progress. The goal of the CWMP is certainly on the right track, but with such high levels of risk in the state of California, this kind of action must be expanded to reach more communities and more homes.

In 2021, Governor Newsom also created the California Wildfire & Forest Resilience Task Force, which laid out its action plan in January of that year. The Task Force brings together experts, scientists, and many others across federal, state, public, private and tribal organizations with the goal of greatly increasing the pace and scale of forest management as well as improving community resilience across California. As of 2025, much progress has been made. Several plans have been developed for implementation, such as a prescribed fire strategy and a wildfire resilience and forest assistant program strategy. Projects to treat hundreds of thousands of acres of federal lands in the state are also currently in progress with goals of finishing this year. These are among many other key actions that the Task Force has either achieved or are in the midst of executing. While the disasters in Southern California earlier this year leave no doubt that much more work needs to be done, the state government is taking steps in the right direction. These

¹⁶ "California Wildfire Mitigation Program." *CAL OES*, <u>www.caloes.ca.gov/office-of-the-director/operations/recovery-directorate/hazard-mitigation/california-wildfire-mitigation-program/.</u>

¹⁷ "Progress on Key Actions." *California Wildfire & Forest Resilience Task Force*. https://wildfiretaskforce.org/about/progress-on-key-actions/.

efforts must be scaled up and implemented at a quicker pace to meet the severity of the current crisis, which is particularly affecting California.

Hawaii is another state that has taken extensive action to prepare communities and involve them in risk reduction initiatives. The town of Lahaina on the island of Maui experienced the deadliest U.S. wildfire in more than a century in 2023, with more than 100 lives lost and 2,000 structures destroyed. ¹⁸ In response to the tragedy, communities have become increasingly involved in risk reduction programs such as NFPA's Firewise program, which provides information and assistance on how to protect homes. Beyond this voluntary action by homeowners, the state's government is also heavily engaged with partners across jurisdictional boundaries, including nonprofit organizations like NFPA and the Hawaii Wildfire Management Organization (HWMO) in addition to several federal agencies and groups. 19 Hawaii's Department of Land & Natural Resources Division of Forestry & Wildfire provides funding through the HWMO to support hazardous fuels reduction, wildfire prevention planning, and wildfire prevention education, which are all crucial to addressing the issue and aligned with NFPA's recommendations.²⁰ HWMO also engages in extensive community outreach, coordination and action groups to facilitate collaboration, and provides home assessments to incentivize ignition-resisting improvements. This organization is an extremely valuable player in the state, and the state government should continue to invest in and expand its partnership.

Other states, however, are not as far along with wildfire prevention programs. Massachusetts is one such state. Comprehensive and broad plans of action are not currently being implemented at the state level, though some counties and communities are beginning to pay attention to the issue of wildfires as the crisis grows increasingly severe every year. In the town of Plymouth, Massachusetts, residents convened for a town hall meeting in March 2025 to discuss the issue and the measures being taken by localities and the state to mitigate the risk of wildfires.²¹ This

¹⁸ "Preliminary After-Action Report: 2023 Maui Wildfire." *U.S. Fire Administration*, 8 Feb. 2024, https://www.usfa.fema.gov/blog/preliminary-after-action-report-2023-maui-wildfire/#:~:text=The%20disaster,than%20100%20lives%20were%20lost.

¹⁹ "Wildfire Management." *Hawaii Department of Land and Natural Resources*, https://dlnr.hawaii.gov/forestry/fire/.

²⁰ "Hawai'i Wildfire Community Risk Reduction Grant Program." *HWMO*, https://www.hwmo.org/grantprograms. Shepard, Cody. "Plymouth Fire Department, Town of Plymouth, DCR to Host Wildfire Discussion on March 12." *Plymouth Fire*, 26 Feb. 2025, https://plymouthfire.org/2025/02/26/plymouth-fire-department-town-of-plymouth-dcrto-host-wildfire-discussion-on-march-12/.

follows the town's Fire Chief beginning the process of developing a CWPP in August 2024.²² Having CWPPs in place is crucial to laying a framework for resilience and preparedness, and communities across the country have had implemented CWPPs for decades since the passage of the Healthy Forest Restoration Act in 2003.²³ That being said, the U.S. Forest Service reports that less than 10 percent of communities at risk of wildfire have developed a CWPP, so Plymouth is certainly moving in the right direction.

U.S. Forest Service

In response to the growing risk and destructivity of wildfires, the U.S. Department of Agriculture's Forest Service began a new management paradigm in early 2022 aimed at confronting the wildfire crisis. The agency released a comprehensive report called "Confronting the Wildfire Crisis" detailing its plans for a 10-year strategy, which includes creating a Wildfire Risk Reduction Infrastructure Team and working with partners to treat the country's most at-risk areas. ²⁴ These initiatives are being funded by the 2021 Bipartisan Infrastructure Bill passed by the Biden administration, which allocated \$5.5 billion to lands, resources, and programs managed by the Forest Service. ²⁵ While the agency commits itself to protecting and treating all of America's forests, it pinpoints the West as the center of the crisis and thus places its focus on this region of the nation. Its primary efforts are related to fuel management to restore health to our forests, using prescribed burns and thinning to clear away excess vegetation and reduce risk of larger, incontrollable fires.

As of January 2025, the Forest Service reports that significant progress has been made in many of the most at-risk landscapes in the nation, which are predominantly in the West. Since the inception of this strategy in 2022, the agency has treated more than 1.8 million acres of land within these specific high-risk areas, including 800,000 acres in 2024.²⁶ Researchers estimate

²³ "How to Create a Community Wildfire Protection Plan." *U.S. Fire Administration*, 3 Dec. 2024, https://www.usfa.fema.gov/blog/how-to-create-a-community-wildfire-protection-plan/#:~:text=CWPP% %0B20history,as%20create%20healthier%20natural%20ecosystems.

²⁴ "Confronting the Wildfire Crisis."

²⁵ "Bipartisan Infrastructure Law: Research Projects." *U.S. Department of Agriculture Forest Service*, research.fs.usda.gov/projects/bil#:~:text=The%20Bipartisan%20Infrastructure%20Law%20(BIL,of%20the%20Wildfire%20Crisis%20Strategy.

²⁶ "Confronting the Wildfire Crisis: Making a Difference." *U.S. Department of Agriculture Forest Service*, Jan. 2025, www.fs.usda.gov/managing-land/wildfire-crisis.

that between 2021 and 2023, the Forest Service's practices reduced wildfire risk to \$700 billion worth of housing and critical infrastructure using a \$1.2 billion investment, which also led to a 7.8 percent average reduction in risk to residential housing and an 8.2 percent average reduction to critical infrastructure. These results are very promising and indicate we are headed in the right direction, but there is still much to be done. Luckily, the Forest Service is continuing to be ambitious with their goals and seeking to expand their work to reach more landscapes and communities.

In 2024, the agency established a new program called the Collaborative Wildfire Risk Reduction Program, which mobilizes the National Forests system—in partnership with Tribes, communities, and other collaborators—to reduce wildfire risk to communities, infrastructure, and surrounding ecosystems.²⁷ This initiative is a one-time investment of the 2022 Inflation Reduction Act and powers projects on National Forest System lands that are outside of the current scope of land treatment. Through the program, 21 projects across 14 states, including several states in the Eastern part of the country, are being funded and implemented. Surveying, public education, and workforce development in addition to land management practices such as thinning and prescribed burns are all supported by the program. The agency carried out this initiative due to recognition that wildfire risk exists in places beyond the Western United States, funding work in Minnesota, North Carolina, and Tennessee, but it is crucial that these kinds of preventative measures continue to take place all around the country. In 2025, we have witnessed the disastrous wildfires in Southern California, but communities in Oklahoma and the Carolinas have been affected by wildfires this year as well. These are not areas traditionally associated with such threats, but the wildfires in Oklahoma burned over 150,000 acres and claimed four lives while thousands of people had to evacuate their homes and businesses in South Carolina. ²⁸ The growing frequency and severity of wildfires throughout the country calls for investment and concerted efforts to meet the threat. Furthermore, initiatives such as the Collaborative Wildfire Risk Reduction Program should be funded and carried out beyond the financial restrictions of its

²⁷ "Making a Difference."

²⁸ Gomez, Julia and Josh Kelly. "Oklahoma wildfires kill 4, injure hundreds more." *USA Today*, 18 Mar. 2025, www.usatoday.com/story/news/nation/2025/03/18/oklahoma-wildfires-map/82510897007/; Collins, Jeffrey. "South Carolina wildfire keeps growing as firefighters protect homes." *AP News*, 28 Mar. 2025, apnews.com/article/wildfires-south-carolina-north-carolina-b0bcec7ff4dd854f0a3219146db36cb0.

one-time endowment. Continued, widespread, and aggressive action is not a choice but necessary as we face this present challenge.

Conclusion

The wildfire crisis we currently face is daunting, but there are actions we can and must take to protect our communities and prevent future disasters from occurring. With collaboration and a concerted effort to adjust our policies and strategies, we can restore the health of our forests and ecosystems as well as reduce our risk of experiencing wildfire tragedies. It will take all of us across every jurisdiction and every landscape to safeguard our communities and preserve our natural ecosystems, to which we owe this responsibility.

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