House Natural Resources Committee - Subcommittee on Federal Lands

Testimony of David Calkin, PhD: Principal Calkin Wildfire Consulting LLC, Courtesy Faculty Oregon State University College of Forestry

To: Subcommittee Chair Tom Tiffany and Ranking Member Joe Neguse

Chairman Tiffany, Ranking Member Neguse members of the Subcommittee I am honored to have the opportunity to share my thoughts on the critical issues facing our nation regarding wildfire management and legislative efforts to address the continued destruction of our communities and the degradation our wildlands and well-being of our wildfire responders.

I am Dr. David Calkin, principal of Calkin Wildfire Consulting and courtesy faculty in Oregon State University's College of Forestry. Last April I concluded a 23-year career as a senior research scientist with the US Forest Service's Rocky Mountain Research Station in Missoula, Montana. In that role I developed and led the Wildfire Risk Management Science Team, a small team of interdisciplinary researchers and fire managers working to improve wildfire management through the application of risk science. I, and members of my team, led the development of many of the most prominent risk based frameworks and decision support tools including the Quantitative Wildfire Risk Assessment (QWRA) process, which provides the foundation for many of the wildfire risk mapping tools used within the US and abroad, the Potential Operational Delineation (PODS) planning process, which allows local land and fire managers from multiple jurisdictions to come together to proactively plan fire suppression and fuels management strategies, and the Risk Management Assistance (RMA) program, which provides fire managers with real time analytics to more safely and effectively engage wildland fires.

Critical Issues Facing Our Nation

Four years ago, Dr Kimiko Barrett of Headwaters Economics invited me, Drs. Jack Cohen, Mark Finney, Stephen Pyne, and Stephen Quarles to a retreat to discuss the biggest challenges facing wildfire management. This group includes some of the most well-respected scientists from a diverse set of sub-disciplines working in wildfire management. Despite our diverse backgrounds, we reached consensus that the single biggest challenge facing US wildfire management is rooted in the fact that we have fundamentally mis-defined the fire problem. To be successful we will need to address **both** the problem of community destruction from fire and the issues within wildland fire management, though the key strategies to achieve these two objectives are not the same.

The Wildfire Paradox; the Root of the Problem

Our attempts to remove fire from our wildlands have both increased the risk to adjacent communities and made our landscapes less healthy. Slowing the rate of community destruction must start with a focus on the individual homes and then work its way out through community infrastructure and the developed environment and finally the condition of adjacent wildlands.

Time and time again my research showed that even the slightest perception of homes being at risk of burning formed the basis of decisions to suppress fires, no matter how unlikely the actual risk. Short-term problem solving, wired into human nature, perpetuated a suppression-first mindset and helped to create the wildfire paradox.

To better understand the fire problem, it helps to understand the concept of the wildfire paradox. The wildfire paradox describes the feedback loop that keeps us, as a nation, from reducing the negative consequences of fire. By removing wildfire from our landscapes, we eliminate the mechanism that keeps the buildup of fuel in check. This work, paradoxically grounded in the desire to remove fire, has the unintended consequence of making fires worse. Wildfires that follow the exclusion of fire are more difficult to suppress and more damaging.

Within this system, socio-political pressure to reduce immediate impacts comes at the cost of long-term well-being and creates an organizational culture that rewards reactive response at the expense of long-term mitigation. Put simply, our natural desire to avoid the negative consequences of fire in the short-term has the unintended result of increasing our risk and the negative consequences of fire in the long-term. Further, this reactive cycle distorts agency budgets; suppression funding consistently dwarfs investment in mitigating fire risk and recovering from destructive events.

This long-standing effort to eliminate the threat of wildfire supported a massive increase in the value of residential development in fire-prone landscapes further perpetuating the cycle of fire exclusion. Aggressively suppressing fire in the western United States has allowed excess flammable vegetation to accumulate, exacerbating hazard. Climate change made things worse by increasing fire activity and fire season duration. Landscapes loaded with highly combustible fuels, including ignition susceptible homes, represent a debt that has become due.

As a result of our misplaced but well-intentioned desire to reduce short term risk, firefighter mental and physical health has suffered. Our system, which incentives massive amounts of overtime in inherently unsafe conditions leads to more exposure to danger for

our firefighters; more time in hazardous smoke and more time in dangerous conditions with the degraded decision making that comes from exhaustion.

Fire Adapted Communities Start at the Individual Home

As a nation, our focus on removing fire from our wildlands has distracted us from work to make our communities more prepared for the eventuality of fire. We have started to see a significant increase in wildland fire disasters. In just the last 10 years, our nation has experienced the most devastating wildfires of the last century, including the 2017 Tubbs Fire in Santa Rosa, California, 2018 Camp Fire in Paradise, California, 2020 Almeda Drive Fire in Talent, Oregon, 2021 Marshall Fire in Louisville, Colorado, 2023 Lahaina Fire in Hawaii, and most recently the 2025 Eaton and Palisades fires in Southern California. These fires all share several important characteristics that are critical to understand if we are to reduce future destruction; 1) they were human caused, 2) ignitions (or reignition) occurred under extreme fire weather conditions, in close proximity to the community that was destroyed, 3) despite rapid detection, suppression was almost immediately overwhelmed, 4) most of the homes were destroyed within 24 hours of ignition, and 5) forest management was irrelevant to the destruction sequence. It is also critical to note that community wildfire destruction is not confined to a purely western issue; states like Tennessee, Texas, Louisiana, and New Jersey are not immune.

Fires in Los Angeles

Last February I participated in a data gathering exercise in Altadena and Pacific Palisades six weeks following the LA fire disaster with colleagues from Oregon State University. I was humbled by the scale of loss. Entire blocks of homes within a traditional sub-urban/urban environment miles away from wildlands were destroyed. This experience further cemented my understanding of the nature of this problem. Once ignition has occurred, particularly in extreme weather conditions, the only way to prevent large-scale destruction is to successfully prevent the disaster sequence from initiating in the first place. Once structures are burning in a community, they become additional sources of lofted embers, extreme radiant heat, and increased flame contact. Thus, fire growth in the built environment can accelerate quickly, resulting in an urban conflagration that is exacerbated by higher-density development. Often, these conflagrations occur under extreme conditions where firefighting can be difficult or even, in the case of some aerial resources, infeasible.

Actions to harden homes to prevent initiation of the disaster sequence remain critical. These actions include using ignition-resistant construction materials like Class A rated roofing, vent and eave screening, and removing flammable material from the area immediately adjacent to the structure. This is not to say that firefighting cannot and did not save many homes and reduce the scale of destruction. It can and it did in Southern California last year. As we travelled around Altadena, we asked homeowners whose homes were still standing if they or their neighbors stayed and defended their property. In pretty much every case the answer was yes. I'm not suggesting that staying and defending homes is our best solution. This is a complex issue that needs significant consideration. It is, however, worth noting that firefighting efforts can save homes when conditions in the built environment - in other words homes are slower to ignite - allowing those efforts to occur.

The Eaton and Palisades fires also highlight the fact that wildfire mitigation and response are inherently local. The chapparal systems of California are one of the few areas in the country that have burned more frequently over the past 50 years relative to historic levels. Fuel treatment strategies must reflect that reality by focusing the work on the existing fuel break network, within and immediately adjacent to communities, and along linear features where human caused ignitions are more likely to occur (e.g. roads and power transmission lines).

Neither municipal nor wildland fire organizations are designed or fully trained to manage the complex interplay of wildland fire and urban conflagration. The bipartisan Wildland Fire Mitigation and Management Commission recommended expanding training to the local fire departments to better cross-train for incidents that intersect with the wildland. I'm also particularly excited by the concept of volunteer community wildfire brigades highlighted in a recent documentary of the Southern California wildfires (https://www.pbs.org/video/weathered-after-the-la-firestorm-elfmgu/). These brigades have the potential to make a huge difference by focusing efforts to reduce home ignition potential, motivating fellow community members to act, and when ignitions occur, enhancing municipal and wildfire capacity through a well-trained and highly mobile strike force.

Resilient Landscapes Require Fire.

While fires like those we saw in Southern California last year highlight a worst-case scenario of wildland fires turning into urban conflagrations, most fires occur under far less severe conditions. We "catch" about 98 percent of wildfires that occur under less severe,

and generally lower risk conditions. As the wildfire paradox illustrates, by eliminating the role these fires play in reducing fuel loads, we assure that the 2 percent that do escape are far more challenging to contain and more likely to cause harm. The solution to this crisis is not the exclusion of fire. Nor is it active forest management alone, though it can play an important role in many areas. Instead, the solution is multi-faceted and includes prepared communities, a vital response infrastructure, and more fire on the landscape, not less. More of the right fire, at the right place, at the right time, and for the right reasons on the landscape can fundamentally alter the risk to the landscape and to communities.

Over my career we have developed better tools to understand not only the scale of the problem but the opportunity for wildfire management to utilize unplanned ignitions to get more fire on the ground when and where the conditions allow for it. Yet, due to fear and short-sightedness, we often fail to use fire as the tool that it is. Instead, we regressively tripled-down on an unwinnable war on fire. Too often, we justify this singular focus on suppression by referencing the tragedies associated with community destruction.

The Only Way to be Safer and More Effective in Response is to Do Less of It

We have better options than excluding fire. We can develop risk-based strategies that make smart, data-informed tradeoffs between short- and long-term risk across different landscapes. In instances where there are direct threats to the places we value, or a reasonable potential for a wildfire to expand into areas we care about, aggressive direct initial attack may be the most appropriate response. However, it doesn't mean we have to put firefighters in dangerous remote areas simply to make fires go away. Instead, we should be using our resources in a strategic way, deploying them when and where those resources can effectively and safely prevent loss of lives and property and the degradation of natural resources. Further, there may be instances where the safest and most effective strategy is to expand a fire to pre-defined control lines to reduce the duration of the fire or limit the uncertainty of the fire's extent I've seen these strategies in practice and the same conceptual framework has been used both to aggressively fight a wildfire thus saving a community from imminent destruction and to reintroduce another 50,000 acres of ecologically and culturally appropriate fire on a high-risk landscape. Furthermore, adopting a strategy that strategically balances short term risk to reduce long term peril not only reduces our overall risk, but it also helps protect firefighter health by reducing smoke exposure and exposure to risky situations.

We Must Take an All of the Above Approach

Addressing our wildland fire management challenges will help our communities, but it will not solve the problem. If we are to reduce community destruction, we must invest in community preparedness and home hardening. Federal land management agencies have historically lacked authority and responsibility for community preparation, but that does not mean there is no role for the federal government. As the recent nonpartisan Wildland Fire Mitigation and Management Commission recommended, Congress can create interagency partnerships to address risk in the built environment by supporting code and ordinance adoption, providing technical assistance, and incentivizing home hardening.

Legislative Efforts

I am encouraged by this committee's and other Legislator's efforts to address our wildland and community fire problem. I am supportive of many of the provisions within the Fix our Forest Act, including the creation of a Community Wildfire Risk Reduction Program and expansion of Community Wildfire Defense Grants to home hardening. Additionally, Congressman Huffman's proposed Community Protection and Wildfire Resilience Act's emphasis on evacuation planning, assuring the most vulnerable are protected during disasters, and creating incentives to harden community infrastructure and homes has the potential to reduce community fire tragedies. Ultimately, we must simultaneously, and at some level, independently, address both community and wildland fire risk.

However, I do have some concerns with some active legislation that I share in the hope it will help lead to the best possible outcomes. First, I am concerned about bills that require standards of wildfire response. Although I understand the intention, it is critical to recognize that most of our losses occur under extreme weather conditions, and that our fire management system frequently lacks sufficient resources to staff response needs. The duration and frequency that our National Incident Management System operates at reduced staffing availability has increased substantially over the last decade, concurrent with a substantial reduction in available incident management teams and overhead personnel. Requiring standards of response has a very high likelihood of diverting critically important resources from rapidly emerging events in high-risk areas to staff remote fires that pose little risk to life or property. Our fire managers need decision flexibility and political support for making the best risk-informed decisions that reduce long-term risk, so that we don't transfer this risk to future generations.

Lastly, I'd like to share some brief thoughts on consolidation of our federal fire management agencies. The fire management system in the US is strained to the point of breaking. The current structure lacks the agility and direction to keep pace with the increasingly complex threats we face. However, for any new agency to succeed it will need a well-defined long-range mission, achievable objectives, accountability to local decision

makers and the taxpayers, resources to enact that vision, and insulation from the political whims of the day. Getting those details right matters. And **making fire go away is not achievable**. As I previously noted, we need to utilize fire to reduce long term risks.

The objectives established under the National Cohesive Wildland Fire Strategy are solid. But the implementation lags due to our short-sighted nature. *Fire adapted communities start at the individual home, resilient landscapes require fire, and the only way to be safer and more effective in response is to do less of it*.