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U.S. House Committee on Natural Resources, Subcommittee on Federal Lands

Hearing on: Examining the Challenges Facing Forest Management, Wildfire Suppression, and Wildland Firefighters Ahead of the 2023 Wildfire Year

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Chairman Tiffany, Ranking Member Neguse, and Members of the Subcommittee:

Thank you for the opportunity to speak to you today about the current challenges facing forest management, wildfire suppression, and firefighters as we move into the most active period of the fire year. I am a professor in the Department of Forest and Rangeland Stewardship at Colorado State University, specializing in forest and fire policy. I direct the Public Lands Policy Group, which researches the policy impacts, challenges, and opportunities on federal public lands.

Over the last 18 years, I have led national policy analyses of many of the primary forest restoration policies, including the Collaborative Forest Landscape Restoration Program, the Joint Chiefs Landscape Restoration Partnership, Implementation of the Shared Stewardship Strategy, and now post-fire policies, in partnership with the US Forest Service across administrations and with funding from the Joint Fire Science Program, National Science Foundation, and USDA. I have also led research on barriers to prescribed fire, land management planning, National Environmental Policy Act processes, climate change vulnerability assessment, and risk-management approaches for improving fire response. Prior to coming to Colorado State University, I worked for the U.S. Forest Service on the Four Forests Restoration Initiative in Arizona. I work closely with the Colorado Forest Restoration Institute, networks of scientists, and thought leaders working on forest management issues from rural and community-based forestry organizations. My research involves listening to people from around the country about how policies are working for them on the ground. I have surveyed and interviewed thousands of federal and state agency staff members, partners, NGO and industry representatives, and individuals working for Native American Tribes.

The most significant finding I can share with you from my research is that there are no silver bullets—no simple policy solutions that will define whether we can overcome the tremendous challenges we face ahead. Instead, collaboration, leadership, and sufficient capacity, both internal and external to the agency, are what undergird successful national forest management. Policies that facilitate communication among stakeholders and collaboration across jurisdictions, and strategies that increase capacity to do the necessary work, lead to success.¹ If we want to get to the scale needed to make a difference in fire behavior and forest conditions, we have to work across jurisdictional boundaries, engage in partnerships to do the work and communicate its value with the public, and engage industry to remove and process the low-to-no-value wood products that often result today from restoration and fuel removal. Today, about 85% of projects are done through categorical exclusions, and this is good for smaller projects and jumpstarting larger efforts. But to really work at the landscape level, we need collaboration, and that means we must do the hard work of strategizing, planning, and building partnerships, and do this through the NEPA process and through collaboration.

¹ Schultz CA, Moseley C. 2019. Collaborations and capacities to transform fire management. *Science, USA* 366(6461):38-40.

The challenges we face are complex, centuries in the making, and involve major biophysical processes and natural hazards. Scientists predict longer and more intense fire seasons because of the warming and drought associated with climate change.² The wildland-urban interface is the fastest growing land-use type in the nation and across the West.³ Forest management can both reduce and exacerbate fire hazard, depending on how, where, and when it is done.^{4,5} Lands managed for timber production, including industrially managed lands, can often be subject to and propagate higher-severity fire than other lands, requiring cross-boundary cooperation and science-based assessment of fire hazard and management options.⁶

In our frequent-fire forests, past forest management, including both fire suppression and past approaches to timber harvest, has led to an accumulation of small trees and fine fuels that contribute to increased fire hazard. Almost everyone in the scientific and management community agrees we need active management of our national forests, including fuel removal through thinning and the increased use of beneficial fire as a strategy to reduce future fire risk.^{7,8} Restoring fire to our fire-prone ecosystems through controlled burning, cultural burning by tribes based on their traditional ecological knowledge, and during wildfire ignitions when conditions are favorable for good fire all can reduce the risk of more extreme fire in the future. Timber harvest and tree thinning can be part of the solution. In some areas, merchantable timber can offset some of the cost of this work, but in many areas, especially those with high fire hazard, the small-diameter wood on our forests is of low-to-no value. We will have to pay to get it out of the woods and create new markets, for example for biomass, to derive some value from restoration by-products.

Considering the recent updates made by the Wildland Fire Leadership Council, comprised of leading state, federal, tribal, and NGO forest and land managers, I want to reference back today to the Wildland Fire Cohesive Strategy and its primary tenets. First, the Cohesive Strategy says we must manage for resilient forests by reducing unnaturally high fuel loads that have resulted from past management and now lead to uncharacteristically severe fires, particularly under conditions driven by climate change. Work in our national forests is primarily about restoring ecological integrity so that forests are resilient in the face of climate change and climate-driven disturbances. We must reduce fuels especially in our low-to-mid-elevation forests and restore fire as a critical ecological process in all fire-prone forests. Doing this can improve forest ecosystem conditions by reducing extreme fire behavior and can create conditions that support safe and effective fire response. This work requires mechanical thinning and the use of beneficial fire. Desired conditions, achieved through hard work or wildfire events, must be maintained with maintenance burning.

We now have the benefit of unprecedented federal investment in our forests, with billions of dollars allocated to fuel reduction near and in the wildland-urban interface and in high-priority municipal

² Abatzoglou JT, Williams AP. 2016. Impact of anthropogenic climate change on wildfire across western US forests. *Proceedings of the National Academy of Sciences, USA* 113:11770-11775.

³ Radeloff VC, et al. 2018. Rapid growth of the US wildland-urban interface raises wildfire risk. *Proceedings of the National Academy of Sciences, USA* 114:2946-2951.

⁴ Zald HSJ, Dunn CJ. 2018. Severe fire weather and intensive forest management increase fire severity in a multi-ownership landscape. *Ecological Applications* 28: 1068–80.

⁵ Kalies EL, Kent LL. 2016. Tamm Review: Are fuel treatments effective at achieving ecological and social objectives? A systematic review. *Forest Ecology and Management* 375:84-95.

⁶ Levine JL, et al. 2022. Higher incidence of high-severity fire in and near industrially managed forests. *Frontiers in Ecology and the Environment*. Doi:10.1002/fee.2499

⁷ Stephens S, et al. 2020. Fire and climate change: Conserving seasonally dry forests is still possible. *Frontiers in Ecology and the Environment* 18(6), 354-360.

⁸ Prichard, SJ, et al. 2021. Adapting western North American forests to climate change and wildfires: 10 common questions. *Ecological Applications* 31(8), e02433.

watersheds under the Infrastructure Investment and Jobs Act and Inflation Reduction Act. Now we must put in place the capacity throughout the system to make the best use of these funds. In my research, the primary barriers to accomplishing work in the woods are lack of both internal agency capacity to plan and administer projects and contracts, and lack of external capacity, including industry partners who can cut, remove, and process wood products, and access to viable markets for those products. Other research has found, like mine, that the primary barriers are not due to litigation and NEPA.⁹ The problems are more nuanced, related to hiring, recruitment, and retention of a workforce to do this work, both inside and outside of the federal agencies, expediting hiring and grants and agreements capacity to facilitate that work, engagement of state, tribal, industry and NGO partners who can add capacity, and undertaking fire management planning. I have seen numerous creative approaches to large-scale planning, NEPA analysis, and monitoring the implementation and effects of treatments under programs like the Collaborative Forest Landscape Restoration Program, and to working with private landowners through the Joint Chiefs Landscape Restoration Partnership. I have seen forests use their NEPA processes as key opportunities to build partnerships with other fire agencies, homeowners, and air quality regulators to implement fuel reduction and prescribed fire projects at a meaningful scale. Many projects have benefitted from improved partnerships with states to accomplish work, sometimes through the Good Neighbor Authority and Shared Stewardship, and an increased recognition of the need for tribal co-stewardship and integration of traditional ecological knowledge into land management. These factors create the potential for promoting the first Cohesive Strategy tenet of managing for resilience forests.

Another tenet of the Cohesive Strategy is to promote fire-adapted communities, where “human populations and infrastructure are as prepared as possible to receive, respond to, and recover from wildland fire.” I want to emphasize that the Cohesive Strategy focuses on community resilience to fire, not community protection. What we do on public lands will not stop fires, nor will it be the primary factor in protecting communities. The most destructive fire for homeowners in my home state was an urban fire where grasses, shrubs, and homes propagated the flames of the Marshall Fire in December of 2021, leading to the loss of over a thousand homes. Home loss is most related to the presence of fuels within 150 feet of the home, and other factors that make home more or less likely to ignite. Most fire starts are not on public lands and are human-caused.¹⁰ Under extreme weather conditions, fires can burn through treated, industrial, and even clear-cut stands. Communities around the West must take on fuel reduction in the home ignition zone, communication and evacuation planning, community-based fire response, and equitably including all community members in fire-adapted communities. Home hardening and fuel reduction in the home ignition and community protection zones are imperative.¹¹ Work on national forests therefore must be coupled with community-based fuel reduction and preparedness if the goal is to contribute to community resilience. Because most land in the wildland-urban interface is not federal land, this will mean more work on private, municipal, and state lands to reduce fire hazard. This means getting federal funding to state and local resources to do this work and making sure that where the federal government is investing in work to reduce fire hazard near communities, the nearby communities are doing their part to promote resilience for the fires that will inevitably come.

The final tenant of the Cohesive Strategy is to promote safe and effective fire response grounded in risk management principles. The Wildland Fire Leadership Council recognizes that it is untenable to continue suppressing almost all fires. When conditions are favorable fire should be allowed to play its key role as the primary ecological process that shapes healthy forests in the West and reduces future fire risk. And in

⁹ Ruple JC, Pleune J, Heiny E. 2022. Evidence-based recommendations for improving National Environmental Policy Act implementation. *Columbia Journal of Environmental Law* 46: 273-350.

¹⁰ Balch JK, *et al.* 2017. Human-started wildfires expand the fire niche across the United States. *Proceedings of the National Academy of Sciences, USA* 114:2946-2951.

¹¹ Schoennagel T, *et al.* 2017. Implementation of National Fire Plan treatments near the wildland–urban interface in the western United States. *Proceedings of the National Academy of Sciences, USA* 106:1076-10711.

some cases, indirect attack of fires, where firefighters utilize natural features and fire breaks to stop fires, is the best and safest strategy for incident response. Here too there is a major challenge of recruiting and retaining the workforce for safe and effective response.¹² And, defining and measuring effectiveness is a challenge that is as-of-yet unmet and deserves greater attention given the vast amount of public dollars spent, and the people who risk their lives, responding to wildfire. I also want to draw attention to the growing use of PODs, or potential operational delineations, which are a pre-fire season strategy to promote coordinated action and planning for wildfires in order to delineate response strategies and priorities and potential locations for holding fire, and by extension for fuels treatment to support safe and effective fire response.¹³ Shaded fuel breaks at key boundaries, for instance, have value for reducing and managing extreme fires.¹⁴ Many BLM and national forest units will be implementing PODs in the next few years. In our research, people said these activities hold promise for getting more “good” fire on the ground but also to build agreement about fire management approaches in partnership with state and local fire responders outside of the emergency management context.¹⁵ Here, again, collaboration has great value, this time in the context of planning for fire response.

The recent update to the Cohesive Strategy identifies four factors that need increased attention: climate change; workforce capacity, health, and well-being; community resilience; and diversity, equity, inclusion, and environmental justice (DEISJ). Related to climate change, scientific research and innovative, forward-thinking planning grounded in science and traditional ecological knowledge will be needed to respond effectively in the face of climate change. More work will be needed to prepare for the cascading effects of multiple disturbance events, like reburns or post-fire floods, and improving policy to attend to the multi-jurisdictional effects of fire. For the fire workforce, more attention is needed to the mental and physical health of firefighters, interagency and multi-partner training opportunities to augment the fire workforce, and making sure the pay and benefits of firefighters are adequate. We also need innovative strategies to recruit and train a next-generation forest and fire workforce. Sharing equipment and resources among agencies and partners, and moving money through agreements needs to be easier. For community resilience, community readiness can be improved and requires changing building codes, reducing human-caused ignitions, creating incentives and support for removing fuels in the home ignition zone, inclusive planning for during- and post-fire response, and smoke readiness, done in partnership with public health agencies. Finally, DEISJ can be promoted through inclusive planning, budgeting, contracting, and training, with intentional engagement of local communities and incorporating equity considerations into fuels reduction strategies. These are all new emphasis areas within the Cohesive Strategy where state and federal fire managers say we need to pay increased attention.

Before I close, I want to elaborate on some of my key research findings—primarily the important role of partnerships in fire management and evidence-based assessment of the barriers to improving forest and fire management. I have researched the Collaborative Forest Landscape Restoration Program (CFLRP) and the Joint Chiefs Landscape Restoration Partnership, interviewing and surveying hundreds of partners and agency staff members across all CFLRP projects and most Joint Chiefs projects.¹⁶ These approaches support: larger-scale planning and implementation; monitoring and planning innovations; leveraging of non-federal capacity; and agreement-building. According to Forest Service reporting, the CFLRP had

¹² U.S. Government Accountability Office. *Wildland Fire: Barrier to Recruitment and Retention of Federal Wildland Firefighters*. GAO-23-105517, Nov. 17, 2022.

¹³ Thompson MP, *et al.* 2018. Rethinking the wildland fire management system. *Journal of Forestry* 116:382-390.

¹⁴ Low KE, *et al.* 2023. Shaded fuel breaks create wildfire-resilient forest stands: lessons from a long-term study in the Sierra Nevada. *Fire Ecology* 19: 29.

¹⁵ Greiner SM, *et al.* 2021. Pre-season fire management planning: the use of Potential Operational Delineations to prepare for wildland fire events. *International Journal of Wildland Fire* 30:170-178.

¹⁶ Schultz, CA, *et al.* 2018. Policy design to support forest restoration: the value of focused investment and collaboration. *Forests* 9(9):512. All reports and publications for this project are available at: <https://sites.warnercnr.colostate.edu/courtneyschultz/forest-restoration-governance/>

economic benefits that included keeping mills open, supporting jobs, local labor income, and a greater proportion of accomplishments in timber volume sold and acres treated compared to the proportion of agency spending.¹⁷ The biggest barrier to success inside the agencies were inadequate agency capacity for planning and implementation. The biggest challenge external to the agencies for the CFLRP was insufficient forest products industry capacity and limited markets for wood products that could offset high treatment costs. These factors persist and need to be addressed to promote success.

With colleagues, I also conducted a multi-year study across the West, interviewing federal and state land managers and air quality regulators to understand barriers to and facilitators of prescribed fire.¹⁸ Aside from weather conditions constraining burn windows, we found that the biggest barriers to progress are lack of funding and capacity, particularly because qualified fire personnel are increasingly pulled onto wildfires, but also due to seasonal employment and a general decrease in staff capacity. We need a year-round dedicated prescribed fire workforce. It cannot all be federal, and it will require addressing the liability issues that are attendant to building this workforce. Resource sharing to leverage capacity across agencies and partners is essential for success. People also said incentives to plan and implement prescribed fire are weak. Where prescribed fire occurs, it is because individual leaders are committed to making it happen and find creative strategies to overcome these hurdles. Congress can play an essential role in promoting the value of beneficial fire and overseeing how prescribed fire is being utilized with plans and incentives to increase the application of good fire on priority landscapes.

On this last note, I want to emphasize that the current EPA proposals to tighten regulatory standards for PM 2.5 would impede efforts to reintroduce beneficial fire, which is our most powerful tool for mitigating against the intense particulate matter exposure that occurs during wildfires. While efforts to protect human health and air quality are critical, the EPA must do this in a way that allows the continued use of beneficial fire. Comment letters on this topic offer potential paths forward, like easing exceptional events requirements and considering smoke from beneficial fire as part of background conditions. I also suggest greater attention to the needs for access to insurance and indemnification for burners, large-scale fire management planning to support the effective application of good fire on our forests, building a workforce with access to training and qualifications for a variety of partners, and supporting cultural burning by tribes.

Effective use of IIA and IRA funds will require addressing these challenges, and working in places where communities are also working on their own resilience to fire if community protection is a goal. The last time I testified before this committee was before the historic investments of 2022. I noted that augmenting investments could be beneficial but would require a transparent and science-based process for identifying priority work at the national level. Investments would need to be targeted towards places with effective partnerships and social agreement and attention should be paid to the effects of budget structures and performance measures to incentivize and account for priority work. For instance, timber targets drive work to places where there is valuable product and existing processing infrastructure, which often do not overlap with fire hazard reduction priorities, and acreage targets can incentivize staff to pursue so-called “cheap acres” and fail to convey whether fire hazard has been reduced or whether treatments yield positive benefits when fires burn. I also noted that leveraging external capacity would require more efficient resource sharing and a strong external workforce to support restoration and fuels reduction work. Regarding the forest products industry, the lack of businesses able to work on restoration projects and

¹⁷ U.S. Forest Service. 2020. Collaborative Forest Landscape Restoration Program: 10-year report to Congress. Available at: https://www.fs.fed.us/restoration/documents/cflrp/REF_Report-CollaborativeForestLandscapeRestoration-508.pdf

¹⁸ Schultz CA, *et al.* 2018. Prescribed fire policy barriers and opportunities: A diversity of challenges and strategies across the west. Public Lands Policy Group Practitioner Paper #2/Ecosystem Workforce Program Working Paper #86; Schultz CA, *et al.* 2019. Available at: <https://sites.warnercnr.colostate.edu/courtneyschultz/prescribed-fire/>

with low-value products, limited markets, and problems with workforce availability all are barriers to progress. More work is needed to investigate specific challenges and policy options that would support forest products industry and other restoration businesses so that the creation of forest restoration by-products can continue to be a co-benefit of restoration work where possible. To develop the science on the changing nature of fire management, I also suggested supporting full funding for the Joint Fire Science Program.

At this important time, I reiterate these recommendations. Addressing workforce limitations and supporting increased capacity both internal to the agencies and through partnerships will be critical to success. And, now especially, we need effective measurement and transparency. A recent report by Taxpayer's for Common Sense noted that it is difficult to know what is being planned and prioritized under the 10-Year Wildfire Crisis Strategy, how much money is going to specific programs, or what is being accomplished. The same is true for wildfire expenditures. I would recommend the development of a robust system for tracking investments, which are supposed to be going to work in the WUI, priority watersheds, and in part specifically to prescribed fire. A plan for increasing the use of beneficial fire is needed, along with new metrics to track acres where fire hazard is mitigated and forest conditions are restored. The current metrics of acres treated will not effectively convey the amount or efficacy of work done on the ground with these funds. I would recommend a transparent process involving partners in tracking investments over time, with details on spending, accomplishments, and prioritization and implementation strategies. Improving measurement of safe and effective fire response is also needed. Finally, we need to have honest and transparent conversations about the future of fire, which will only become more intense. Work on national forests can make a difference for forest conditions, and likely provide some benefits for communities. However, for community resilience in the face of the fires that are certainly coming, work within communities on and around homes is the most important factor. Now that major federal investments are in place, we collectively need to put into place strategies to create the enabling conditions, oversight, and transparency to facilitate effective partnerships and work on the ground.