

**Testimony of Madelene McDonald
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&
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Before the Senate Committee on Energy and Natural Resources
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Chairman Manchin, Ranking Member Barrasso, and distinguished members of the Committee, I am pleased to be invited to speak with you today to provide testimony regarding the Wildland Fire Mitigation and Management Commission, on which I serve.

The Wildland Fire Mitigation and Management Commission (hereafter “the Commission”) was established by statute in the 2021 Infrastructure Investment and Jobs Act (Pub.L. No. 117-58) and charged with developing recommendations to Congress to address the rising risk of wildfire in the United States. We accomplished this pressing task in the one year allotted to the Commission and I am pleased to be able to speak to you today regarding some of the many issues we addressed in the course of the Commission and in our final report.¹ Specifically, I served on topical workgroups focused on workforce, post-fire recovery, and public health and infrastructure, the last of which I was Co-Lead. I was appointed to the Commission to hold one of two seats representing the public utility industry from a state at high risk of wildfire.

My professional career has focused on wildfire and watershed management and for the past five years I have worked for Denver Water, the oldest and largest water provider in the state of Colorado, as a watershed scientist. I was pleased to be able to bring my perspective as a watershed manager, and as a representative of Denver Water, to the Commission. Denver Water is a leader in innovative approaches to watershed and forest management, including the trailblazing From Forests to Faucets initiative. This partnership between Denver Water, the U.S. Forest Service, Natural Resources Conservation Service, the Colorado State Forest Service, and the Colorado Forest Restoration Institute at Colorado State University has invested more than \$96 million since 2010 to reduce fuels and improve forest resiliency on over 120,000 acres of forested land within Denver Water’s raw water collection system.

Denver Water has been experiencing and managing the impacts of high-severity wildfire for over 25 years. Indeed, the From Forests to Faucets program was started in response to the costly impacts of the 1996 Buffalo Creek and 2002 Hayman wildfires, which together burned 150,000 acres in the South Platte River watershed. Untreatable source water originating from these burn scars highlighted the vulnerability of our water supply to high-severity wildfire.² With slow natural recovery in the South Platte watershed, we still see costly impacts to our drinking water supplies from the Buffalo Creek and Hayman burn scars today. To illustrate this point, last year Denver Water experienced sediment flows downstream of these two burn scars equivalent to \$2

¹ For a copy of the final report, see: <https://www.usda.gov/sites/default/files/documents/wfmmc-final-report-092023-508.pdf>

² https://www.denverwater.org/tap/improving-forest-health-fire?size=n_21_n

million in damages; more than 25 years later, we are still incurring costs and experiencing challenges related to these wildfires.

The 2002 Hayman Fire provides an example of exactly the type of fire the Commission was created in response to. The Hayman Fire burned close to 138,000 acres and was, at the time, Colorado's largest recorded wildfire. Over 600 structures were lost, including 133 primary residences, and amounting to more than \$42 million in housing losses alone.³

While fire suppression cost the federal government over \$42 million in 2002 dollars, that figure represented only 19% of the estimated economic impact of the fire.⁴ Other costs and losses included the loss of tax revenue, sales tax, and direct business losses, over \$30 million for lost timber revenue, close to \$40 million in erosion control costs, close to \$11 million in lost habitat, 10 recreation-based jobs, and more.⁵ This is all in addition to the tragic loss of five firefighters and one individual who died of asthma related to the smoke. The estimated 2002 cost of the Hayman Fire was over \$207 million and that is almost certainly an underestimate. The cost and loss studies referenced here did not attempt to quantify the cost of human health impacts from the fire nor did they address the loss of ecosystem services.

In terms of drinking water supplies, the Hayman Fire caused major operational challenges and presented significant costs. When landscapes burn at high severity, as seen in the Hayman Fire, soil water retention is altered. Rainfall and snowmelt run off the hillslopes of burn scars without infiltrating the ground. This ultimately results in increased sedimentation and debris flows, which causes water quality degradation, damages to collection and conveyance infrastructure, and reduces water storage capacity in reservoirs.⁶ Denver Water estimates that the Buffalo Creek and Hayman wildfires resulted in over 1 million cubic yards of sediment deposited in a critical drinking water reservoir, representing 4-times the amount of sediment accumulated in the 20 years preceding the fire.⁷ Sediment dredging from the drinking water reservoir after the Hayman Fire cost Denver Water \$18.5 million alone.⁸

The impacts from the Hayman Fire are unfortunately not unique. Countless fires in the intervening years have demonstrated that wildfire impacts to our water systems extend from the natural to the built environment. As the Commission noted in its report,

“Loss of power to treatment facilities can also affect water delivery service by limiting the treatment, and therefore the availability, of potable water for consumption. Depressurization of water distribution systems also poses a risk to water quality. In the 2017 Tubbs Fire and 2018 Camp Fire, chemical contamination was found in the water

³ <https://www.planning.org/research/postdisaster/casestudies/haymanfire.htm>

⁴ <https://headwaterseconomics.org/wp-content/uploads/full-wildfire-costs-hayman-casestudy.pdf>

⁵ <https://headwaterseconomics.org/wp-content/uploads/full-wildfire-costs-hayman-casestudy.pdf>

⁶ <https://doi.org/10.1021/acs.accounts.8b00670>

⁷ https://www.denverwater.org/tap/legacy-colorados-largest-wildfire?size=n_21_n

⁸ <https://www.planning.org/research/postdisaster/casestudies/haymanfire.htm>

distribution network, likely exacerbated by depressurization (Proctor et al., 2020). In the 2021 Marshall Fire, six public drinking water systems serving nearly 67,000 people were damaged, sustaining power loss, direct damage to infrastructure, and more (Whelton et al., 2023). In the 2018 Carr Fire, loss of power and inadequate generators resulted in a 17-day boil water notice in one community (EPA, 2022a).’’⁹

The Commission outlines a national strategy that recognizes the need for a comprehensive approach to wildfire management to address such fires. The report and recommendations acknowledge that we cannot continue to treat wildfire as a natural resource issue alone, nor can a single entity address wildfire risk alone. Rather, the Commission lays out a vision for a more comprehensive approach to wildfire management that integrates considerations of both the built and natural environment, and that more effectively spans each phase of wildfire, including mitigation, response, and recovery.

A key theme of the Commission report and recommendations is the need for proactive mitigation of wildfire risk in both the natural and built environments. Investing in pre-fire mitigation work is the only way to begin to break the expensive cycle of severe wildfire risk, damages, and loss. As noted in the recommendations of the Commission, we need Congress to invest in programs and approaches to mitigate risk before fires occur. Fortunately, we have examples of successful programs of risk reduction in the natural environment, including the Collaborative Forest Landscape Restoration Program and the Joint Chiefs Landscape Restoration Partnership. These programs should be continued and their authorizations expanded to more explicitly incentivize source water protection and post-fire preparedness (critical actions to proactively reduce risk in the post-fire period) in their scope (see Commission recommendations 35 and 77). Congress should also support federal agencies to provide financial and technical assistance to existing and emerging collaborative efforts that work towards wildfire resilience in their communities (see Commission recommendation 139). These collaborative partnerships have been successful in Colorado at applying shared stewardship and leveraging significant investments in forest restoration and wildfire mitigation. For instance, Denver Water’s \$48 million investment in the From Forests to Faucets Partnership has been leveraged with a dollar-for-dollar match from the partners entities, bringing the total Partnership investment to \$96 million since 2010.

Even with our best mitigation efforts, fire will, and indeed, should still occur. Critically, it is important to note that in many ecosystems, wildfire can contribute to healthy and functioning ecosystems and reduce the long-term risk of high severity fires.¹⁰ It is not the presence of wildfire itself on the landscape that is the core issue; it is often the impacts of wildfire when fire burns with uncharacteristically high-severity. In these cases, as the previous discussion of the Hayman Fire illustrates, the impact to water supplies is an evolving and ongoing challenge that

⁹ <https://www.usda.gov/sites/default/files/documents/wfm-mc-final-report-092023-508.pdf>, p. 86

¹⁰ Holland et al., 2022; Prichard et al., 2021; United States Forest Service [USFS], 2012; Vaillant & Reinhardt, 2017.

often only starts after a wildfire is contained. Timely and effective post-fire recovery is therefore essential.

In the natural environment, Congress should authorize and fund cross-jurisdictional assessments that consider downstream values at risk after a fire (see Commission recommendation 75). These assessments must evaluate the downslope and downstream risks related to post-fire flooding and debris flows regardless of jurisdiction. The Commission repeatedly emphasized the importance of multi-jurisdictional, collaborative approaches to our wildfire issues. Restricting assessments of post-fire risks by jurisdictional boundaries limits our ability to mitigate or eliminate downstream costs and losses. With regard to the execution of recovery projects, creating dedicated funding for the Natural Resources Conservation Service Emergency Watershed Protection Program is a key Congressional action that would enable quick preventative action after a wildfire (see Commission recommendation 76).

In the built environment, we must prepare communities and infrastructure for post-fire flooding and debris flows. Critical infrastructure must be repaired and hardened to withstand these post-fire hazards. For water providers, this involves readying critical infrastructure like water treatment plants to accommodate degraded water entering treatment facilities from a burned watershed. If water quality is degraded beyond treatment capabilities, supplemental or enhanced treatment processes may be required. Congress should expedite grant funding to enhance drinking water treatment facilities and support development of additional treatment infrastructure to maintain water delivery in the post-fire period (see Commission recommendations 34 and 35). This includes equipping state, local, Tribal and territorial public health agencies and water provider partners to provide resources and support to residents to ensure access to safe drinking water after wildfire, including support for development of access to alternative water sources in order to maintain water delivery in the event a wildfire impacts raw water supplies (Commission recommendation 37).

Yet, we do not have to wait until the post-fire period to begin to lessen its impacts. Planning for post-fire recovery represents a critical opportunity to reduce loss. Both the built and natural environments would benefit from this proactive planning. Congress should invest in research around the critical public health risks associated with wildfire contaminated water, including the causes and impacts of volatile organic compounds in water distribution systems as well as effective mitigation strategies (see Commission recommendation 38). In addition, Congress should invest in pre-fire risk assessments and modeling efforts to determine which water and wastewater utilities are most likely to be impacted by wildfires. A better understanding of vulnerable utility facilities, source water intakes, wellheads, distribution systems, collection systems, and other infrastructure components will help prioritize the critical pre-fire mitigation actions to take. Our state, local, Tribal and territorial public health agencies and water provider partners are critical to this pre-fire planning and Congress should support these entities with capacity and technical assistance investments. These investments may include training and equipment for testing water quality for contaminants and toxins, implementing interventions to

prevent and control harmful impacts, and assessing source watersheds and infrastructure. Getting in front of the impacts is ultimately how we can avert long-term, costly, consequences.

Pre-fire planning for fire recovery also allows federal, state, local, tribal and territorial partners to collaboratively identify potential recovery objectives and desired conditions. This pre-planning allows communities to move quickly in recovery and to take advantage of the recovery period to better position communities and landscapes for future resilience. The chaotic and time-critical nature of the post-fire period, in the absence of pre-planning, often results in a rush to restore to baseline (pre-fire) conditions. The opportunity to use recovery to build resilience to the next disturbance is then lost. Congress should direct agencies to review and modify existing programs that provide financial and technical assistance for planning to ensure post-fire preparedness planning is an allowable and encouraged activity (see Commission recommendation 66 and 67).

None of this critical work can be accomplished without a workforce. Both mitigation and post-fire planning and recovery require a wide swath of specialties. We must focus significant attention on expanding this workforce. Congress has a vital role to play in supporting the expansion of this workforce through funding to community colleges and vocational programs, authorizing federal agencies to use hiring and recruitment incentives, and through funding and support to job and conservation corps (see Commission recommendation 88). I have seen the expansion of job and conservation corps programs work in my home state of Colorado, where we have been successful in utilizing youth corps as an onramp to professional careers in wildfire mitigation and recovery. Recruitment is essential, but only a part of the overall need. Retaining the highly skilled workforce we have will take investment in those who work in both the built and natural environments.

The proactive work we must complete to lessen impacts, costs, and losses will require bold action before, during, and after wildfire. In closing, I encourage members of this committee and Congress to act upon the recommendations of the Commission that this very body established. We have done the work of gathering as a community of practitioners, experts, scientists, and representatives of our communities to craft consensus recommendations and chart a path forward to ready the country to be resilient in the face of increasing wildfire risk. While the full recommendations of the Commission extend beyond the scope of this committee, members of this committee have critical roles to play in advancing work to help us reduce the risk of wildfire in the natural environment, harden critical infrastructure, proactively plan for wildfire recovery, and develop the comprehensive workforce we need to meet this challenge. I thank you, Chairman Manchin, Ranking Member Barrasso, and members of the committee for this time and for your dedication to acting to lead the nation to meet the challenge of wildfire.