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On Behalf of The National Association of State Foresters

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For Hearing on

Air Quality Impacts of Wildfires: Mitigation and Management Strategies.

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Good morning, Chairman Shimkus, Ranking Member Tonko, and Members of the subcommittee. My name is Sonya Germann. I am the State Forester for the State of Montana, Department of Natural Resources and Conservation, Forestry Division. I appreciate the opportunity to speak with you today and submit written testimony as the Committee considers the significant impacts of wildfire smoke on citizens and communities across the country, as well as the preventive role prescribed fire and hazardous fuels reduction can have in mitigating smoke impacts from unplanned wildfires.

The National Association of State Foresters (NASF) represents the directors of the state forestry agencies in all 50 states, eight territories, and the District of Columbia. State forestry agencies, like mine, deliver technical and financial assistance; protect lives, property and natural resources from wildfire; and conserve forest health, water, and other ecosystem services on more than two-thirds of our nation's 766 million acres of forests. Through the State Fire Assistance (SFA) and Volunteer Fire Assistance (VFA) programs, state agencies equip prescribed fire managers and wildfire response resources who work on state and private lands, where over 80% of the nation's wildfires start.

In addition, state forestry agencies work closely with our federal partners in managing complex multi-jurisdictional landscapes. For example, with the authority granted by Congress in

the 2014 Farm Bill, over 30 states, including in the state of Montana, have signed Good Neighbor Authority (GNA) agreements with the federal government. Under GNA, states may use their own contracting procedures to serve as the agent of the U.S. Forest Service (Forest Service) to conduct restoration activities on federal lands and adjacent non-federal lands. By partnering together in this way, the Forest Service and states like Montana can better leverage resources to accomplish more restoration work on the ground.

While the duties of state agencies vary, each share common forest management and restoration missions and most have statutory responsibilities to provide wildland fire protection on public and private lands. As such, we are intimately aware of the increasing occurrence of wildland fire and associated smoke impacts across the country.

Summary of National and Regional Fire Activity

According to the National Interagency Fire Center, the 2018 fire year has proven challenging both in its severity and its duration. However, the severity and duration of the 2018 fire year is more consistent with the past decade than it is an anomaly. Since 2002, with very few exceptions, fire seasons have tended to be more active, with larger acreages burned and more severe conditions than any other decade since we began keeping consistent and accurate records in 1960.

Quantifying a fire season's severity and comparing one year with another can prove challenging. One can do so using a variety of measures including the number of fires, acres burned, length of season, structures lost, incident management teams mobilized, or fire-related fatalities. For those in the firefighting community, the number of fireline and fire-related fatalities may be the most critical measure of a fire season's outcome.

So far this year, almost nearing the wind-down stage of the Western fire year, there have been 14 firefighter or fire-related fatalities. This is a higher number than the 10 fatalities that occurred in 2017, the 12 fatalities that occurred in 2016, or the 13 fatalities that occurred in 2015. In 2013, when the Yarnell incident occurred in Arizona, firefighter fatalities reached an all-time high with 34 firefighters losing their lives that year.

The number of acres burned provides a metric both useful to compare years and to quantify severity of a given year. It can also be a long-term indicator of fire conditions and trends on the landscape. As of September 7th, more than seven million acres have burned in 2018. In the past 16 years, we've surpassed the seven million-acre mark eight times, and the nine million-acre mark five times. So far, the peak year for acres burned by wildfire peaked in 2015 at 10.1 million acres. In the 10 years prior to 2002 (1992- 2001), we reached 7 million acres on only one year, and had six years with less than 3 million acres burned.

2018 has been an active fire season, with more than 30,000 people assigned to fire incidents during the peak in early August. At this point, 2018 has not yet been one of the "worst." However, with several months left during which California will experience critical fire conditions and fall fire seasons approaching in the east, Lake States, and elsewhere, more acres will burn before the fire year ends. Many California residents likely feel as though this fire season was one of the worst, as more than 1.4 million acres have burned throughout the state, 2,356 homes have been lost to wildfires, and 14 lives have been lost.

According to 2018 statistics for the Northern Rockies Geographic Area alone (which includes Northern Idaho, all of Montana, and the western Dakotas), the Forest Service reported 1,851 fires that burned 99,130 acres, YTD. However, the 2018 fire year is not yet behind us.

We remain cautious and alert as there has not been substantial widespread moisture since July 3rd, fuels are still dry, and we are having new fires every day.

Our Nations Forests and Wildfire

Fire is a natural phenomenon for nearly every forest ecosystem in this country. Fire has shaped the occurrence and distribution of different ecosystems for centuries, simultaneously impacting the human and plant and animal communities in and around those forests. Over the past century, a culture of fire exclusion unfortunately removed the natural role of fire from the public consciousness. When combined with a reduced level of forest management in many areas of the country, fire exclusion led to the build-up of forest fuels to unprecedented levels. Despite our attempts to manage away wildfire, many of our forests are more fire-prone than ever.

What Federal, State and local fire managers and scientists have learned over the decades is that, by managing hazardous fuels, natural resource agencies can mitigate both the severity and impacts of wildfire. Experience has now shown us that wildfire suppression without proactive forest management is unlikely to result in the least amount of wildfire over time because forest fuels continue to build up to the point where wildfires eventually become unmanageable. Consequently, the challenge of land managers is to mitigate the risk to both human communities and ecosystem values both in the short and long-term by implementing a coordinated and science-based approach integrating fuels reduction, fire suppression, and community planning.

Hazardous fuels reduction includes two commonly applied components; prescribed fire and mechanical thinning. Both can have a beneficial impact on smoke emissions from wildfires because they reduce combustible material. We believe that prescribed fire is an essential hazardous fuels reduction tool, that hazardous fuels reduction helps maintain the "investment"

we make in working forests, and that we must manage forests and forest fuels in order to reduce the occurrence of catastrophic wildfire.

Hazardous fuels reduction does not prevent wildfire from occurring but can influence how a fire burns. Experience shows that actively managed timber stands often burn with less intensity than those stands with higher fuel loading and often produce less smoke. Active hazardous fuels reduction can create safer conditions for wildland firefighters to conduct suppression activities and may also offer crews opportunities to keep fires smaller.

Wildfire and Air Quality

There exists ample research evidence documenting the air quality and public health impacts of forest fire smoke. Of primary concern is particulate matter (PM), produced from the combustion of woody material. Specifically, particulate matter smaller than 2.5 microns (PM 2.5) is of concern for individuals exposed to wildfire smoke due to the ability of these small particles to penetrate deep into the lungs and respiratory system. PM 2.5 can cause both short-term health effects such as eye, nose, throat and lung irritation, coughing, and shortness of breath; as well as long-term effects on respiration and the worsening of medical conditions such as asthma and heart disease. Air quality impacts from wildfire smoke often hit the hardest in sensitive populations (such as children, the elderly, and those with pre-existing conditions). In addition to human health, reduced air quality from wildfire smoke can impact tourism, recreation, education, and other aspects of community and economic life.

Relatively recent research suggests that the air quality impacts generated from prescribed fire smoke differ from the smoke produced by unplanned wildfires; and those differences are important to recognize. Prescribed fires are timed to occur under conditions in which fire managers have an increased control over fire location, spread, intensity, and other parameters. In

Montana, advanced weather forecasting and state-of-the-art smoke modeling, coupled with cooperative engagement between the natural resource agencies in the state and the Montana Department of Environmental Quality's air quality program staff, allow fire managers to tailor ignition locations and times to meet specific smoke management objectives. While each state has differing laws and regulating burning, fire managers work within these parameters and laws with the intent of producing as little smoke as they can, with the intent being to produce as little smoke through prescribed burning to avoid much greater amounts of wildfire smoke in the future.

The US Environmental Protection Agency (EPA) acknowledged, in its rulemaking over the past two years, the benefits of managing smoke production during prescribed fire activity in order to reduce air quality impacts. In both the updating of the National Ambient Air Quality Standard (NAAQS) for PM 2.5 (81 CFR 164, pg. 58010) and the updating of the Exceptional Events Rule (81 CFR 191, pg. 68216), the EPA clearly documents the role of wildfire as an emissions source and the relevance of prescribed fire use and fuels management to reduce the risk of catastrophic wildfire. It is becoming increasingly evident through both research and experience that without prescribed fire and the relatively small amount of managed smoke that comes with it, we are perpetuating the conditions that generate catastrophic fires and resulting air quality issues, while simultaneously putting people and their communities at risk.

Let us not forget about the impact smoke exposure has on our wildland firefighters. Last Friday, September 7, 2018, the Joint Fire Science Program (JFSP) released a Final Report entitled "Wildland Fire Smoke Health Effects on Wildland Firefighters and the Public." The report examined smoke exposure concentration data for wildland firefighters to estimate the health risks specific to prescribed and wildland fire smoke. Findings suggest that wildland

firefighters may be at more risk for smoke exposure and health-related impacts when working on wildland fires compared to prescribed fires. However, scientists cite the need to do more research to understand the true extent of health-related impacts to firefighters who work on both prescribed and wildland fires. This need speaks to the importance of maintaining JFSP funding. Current JFSP lines of work include fuel treatment effectiveness, post-fire recovery, smoke management and air quality, fire risk, and data and software integration frameworks for decision support. These lines of work are of importance to agencies who use the results of JFSP funded research both to inform our management and to help us inform and influence our citizens.

Montana Perspective

Although the 2018 fire year in Montana has been, thankfully, relatively moderate in comparison to other years, over time, fires have been growing larger and more intense throughout the state; and our average fire season is 40 days longer than it was 30 years ago[1]. According to the Northern Rockies Coordination Center (NRCC), the 2017 fire year was our largest on record since 1910 with over 1.2 million acres burned statewide and two fire-related fatalities. Using data from NRCC, we can determine that from 1998-2007 an average of 22,828 acres burned per year in Montana. From 2008-2017 the average increased 15-fold with up to 349,598 of wildland acres burning per year. Data also shows that Montana went fifteen consecutive years without a 100,000-acre fire year, from 1997-2010, but had two 1,000,000-acre years in the 2010-2018 period.

[1] Freeborn, P. H., W. M. Jolly, and M. A.Cochrane (2016), Impacts of changing fire weather conditions on reconstructed trends in U.S. wildland fire activity from 1979 to 2014, J. Geophys.Res. Biogeosci., 121, doi:10.1002/2016JG003617.

With larger and more severe fires comes more smoke. According to Montana Department of Environmental Quality (MT DEQ), the air quality standards for particulate matter have been exceeded 579 times over the past 11 years, with 214 of those occurring in 2017. During this year, particulate matter concentration increased 17-fold from the air quality standards maximum level.

Similar to many forests within our region, forest conditions in Montana are at increased risk of wildfire. Large portions of the state's forests have succumbed to insect epidemics, historically fire-tolerant forests have been replaced by tree species less adapted to fire, and fuel loadings have increased across large portions of our forests, increasing the severity and intensity of wildfires. Due to changed conditions, a disproportionate amount of Montana's fire-adapted forests is at significant risk of wildfire. Today, over 85 percent of Montana's forests are outside of their historic vegetative condition and are therefore at elevated wildfire hazard potential.

Forest conditions and events resulting from those conditions affect all Montanans regardless of whose land they take place on. Insects outbreaks, wildfires, smoke, drought, and a changing climate do not recognize ownership boundaries. According to the Montana Wood Products Association, out of 23 million acres of forested land, Montana has 19.8 million acres of productive, non-reserved timberland. 61 percent of this land is National Forest; 25 percent is non-industrial private forest and tribal; 5 percent is industrial private forest, industry; 5 percent is state; and 4 percent is managed by the Bureau of Land Management. Although these various ownerships operate under unique missions, goals, and objectives, by working cooperatively to co-manage fire risk we can mitigate fire severity on Montana's forested landscape and reduce the smoke-related impacts to people and communities. This is especially important on federal lands which account for large areas of western states and on which fire management and fuels treatment have direct implications for adjacent state and private lands and/or communities.

In Montana, we have a long history of working together to resolve intractable land management issues facing our state. Montana has been engaging in regional and statewide efforts to renew our collective commitment on working together with other key stakeholders to reduce the risk of wildland fire and smoke-related impacts.

A. Western Governors' Association

Last summer, the Western Governors' Association (WGA), chaired by Montana Governor Steve Bullock, released the *National Forest and Rangeland Management Initiative Special Report*. This report represents a multi-state, bipartisan collaborative perspective on promoting health and resilience of forests and rangelands in the West and highlights mechanisms to bring states, federal land managers, private landowners, and stakeholders together to discuss issues and opportunities in forest and rangeland restoration and management emphasizing investments in all lands/cross-boundary management opportunities. Recognizing the impacts related to wildfire, the WGA offers specific recommendations to increase hazardous fuels reduction and support advancements in the use of prescribed fire.

Through the bipartisan spirit of the West, and by Governors working closely with Congressional members, recommendations contained in this report address critical issues to increasing restoration on acres at risk from wildfire. The Wildfire Suppression Funding and Forest Management Activities Act within the FY 2018 omnibus bill advanced many of these recommendations. The long-term "fire funding fix"; the GNA amendment to allow for road reconstruction, repair and restoration; and the establishment of categorical exclusions for wildfire resilience projects will facilitate more fuels reduction projects on and off federal lands and allow them to be started and completed more quickly.

B. Forests in Focus

In July of 2014, Governor Bullock announced the Forests in Focus Initiative: A Forest Strategy for Montana, to increase the pace and scale of restoration on Montana's forests in order to reduce the risk of wildfire, address forest health issues, and to grow and sustain forest products industry within the state. Included in the Initiative was the dedication of a fund to accommodate cost-shared forest restoration and fuel reduction projects on tribal, state, and private forested lands. Additionally, nearly five million acres of National Forest System land were nominated as "priority landscapes" because those lands were at risk of forest health threats and/or catastrophic wildfires. This designation qualified eligible lands for important Farm Bill tools to accelerate forest restoration. Since its inception, Forests in Focus investments have supported the treatment of over 300,000 acres, production of nearly 200 million board feet of timber, and retention of jobs in the forest products industry sector.

Like many other states throughout the region, Montana is investing in the use of GNA to increase the pace and scale of forest restoration across ownerships and in partnership with key forest stakeholders. This, along with increased investments in stewardship on private non-industrial forest lands, supporting policies and tools that allow agencies to get more work done on the ground, and developing capacity for local governments to accomplish work in and around their communities, we endeavor to decrease wildland fire risk on a much broader scale than we are currently, thereby having a net-positive effect on wildfire smoke-related impacts to Montanans.

C. Use of Prescribed Fire in Montana

In Montana, land managers use prescribed burning as a tool to mitigate the severity of wildland fires by reducing the build-up of flammable fuel in our forests. Prescribed burning also helps maintain biodiversity, and regenerates vegetation. According to the NRCC, thus far in

2018, the State of Montana, as well as its federal and local partners have implemented prescribed burns on 28,049 acres compared to the ten-year average of 37,352 acres. According to the *2015 National Prescribed Fire Use Survey Report* released by the Coalition of Prescribed Fire Councils, out of 17 western states, Montana burns less than average compared to nine other states within the region. Land managers within the state know we need to be doing more with prescribed fire. As the report's nationwide findings state, we find that our main challenges are weather, conditions of fuels during open burn windows, and capacity rather than air quality issues. However, we also acknowledge that, as we look for ways to increase the use of prescribed fire within the state, the public's acceptance of prescribed fire smoke will likely become an issue.

However, air quality issues have not yet presented a major impediment to the use of prescribed fire in Montana according to many land managers. This may be in part to the development of a progressive model to regulate prescribed burning in a collaborative and cooperative manner. The Montana/Idaho Airshed Group (Group) is dedicated to the preservation of air quality in Montana and Idaho and was initially formed to reduce the impacts of smoke from prescribed burning on Montana and Idaho communities. The Group is run by and for major burners to coordinate burning activities and streamline engagement with MT DEQ and County public health officials. The Group's intent is to minimize or prevent smoke impacts while using fire to accomplish land management objectives. The Group is composed of state, federal, tribal and private member organizations. The Group jointly uses an Airshed Management System database to coordinate burning through the Smoke Management Unit. The Group tracks all planned burns and communicates this on behalf of the burners to regulators through one centralized position at the Smoke Management Unit. This allows for greater coordination among burners and air quality regulators by having one person communicating with the regulating

agencies. If burning in Montana, members must have an annual air quality major outdoor burning permit issued by the MT DEQ. Additionally, members are required to comply with local air pollution control agency and/or a fire safety outdoor burning permit. In short, the Group assures coordinated compliance with regulatory agencies, and results in more prescribed burning taking place on the ground that complies with air quality standards. According to MT DEQ, over the past 11 years, there have been only 4 instances when prescribed fire exceeded air quality standards for particulate matter, compared to the 579 instances for wildfire. This success is largely due to the coordinating burning efforts of the Airshed Group. Lastly, in the Summer 2018 *Ecosystem Workforce Program Working Paper* "Prescribed Fire Policy Barriers and Opportunities", authors recommended the Montana/Idaho Airshed Group as a model for other states to follow.

Conclusion

Thank you for the opportunity to appear before the Committee today on behalf of the National Association of State Foresters and the State of Montana. As State Foresters, we believe that, to avert a forest health and wildland fire crisis, we need to be doing significantly more hazardous fuels reduction throughout the country. We are working towards this goal and prescribed fire represents a critical tool necessary to accomplish it. Hazardous fuels reduction and prescribed fire treatments decrease fuel loading in the forests so that when wildfires inevitably occur, they burn with less intensity and reduced spread, burn for shorter periods of time, and produce fewer smoke impacts on firefighters, citizens, and communities.