

## **Testimony of Dr. Michael J. Medler**

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Chairman Murkowski, ranking member Cantwell, and members of the Committee, I want to thank you for this chance to testify about our "opportunities to improve federal wildland fire management." It is a real honor to be here.

My name is Michael Medler, and I teach at Western Washington University. I am also a member of Firefighters United for Safety, Ethics and Ecology (FUSEE) and I have worked as a wildland firefighter for the U.S. Forest Service, including some very formative time fighting the massive Yellowstone fires in 1988. In the 1990s I went on to get a Ph.D. developing systems for mapping and modeling wildland fires. Since then, I have served as the president of The Association for Fire Ecology, and was the founding editor of the scientific journal *Fire Ecology*. Now, I work with students that are studying wildfire and heading back to the fire lines each summer.

This week, the people of Washington State are mourning the loss of three more wildland firefighters. My heart really goes out to their families and friends. But let me put a different personal face on all this. I have several daughters. One of them is a 19-year-old named Bodie. She is a tall collegiate rower who can lift heavy things all day long and she is comfortable sleeping in the dirt. In short, she would be great addition to any fire crew. Since she was little, I have been suggesting that she work on fire crews during the summers in college and perhaps look at it as a career. But after the last few fire seasons, as a father, I am finding it more and more difficult to keep recommending it to her or my students.

To echo many others who have testified before this committee, and to put it bluntly, the last century of fire policies have left our forests explosive, and our fire fighters are being placed in increasingly difficult situations. Climate change is combining with years of fire suppression to create larger and hotter fires, and development has left thousands of communities vulnerable to fires that used to happen miles from anyone. To make matters worse, our wildland firefighters are trained for the backcountry, but they are increasingly trying to protect communities from these hotter fires. Meanwhile, our national firefighting costs are going up, even in our moderate years. This is all the new normal. Therefore, we cannot keep using suppression policies and fire practices from the last century.

Today I am here as a constituent of Senator Cantwell and I am also here representing FUSEE, which is a nonprofit organization dedicated to uniting wildland firefighters and other fire management professionals in support of safe, ethical, and ecological management of wildland fire. One thing that unites the people who work with FUSEE is the

understanding that we don't need to sacrifice ecological or ethical standards to fight wildfire safely. In fact, I would argue that if we can find ways of living with fire in most of its natural forms, while working in concert with our communities to make them more fire resilient, we can maximize fire fighter safety and reduce the costs. However, what we need is a new paradigm and clear congressional guidance.

For example, the "Big Three" causes of large wildfires and high suppression costs are climate change, fuel accumulation, and sprawl in the Wildland Urban Interface (WUI). This trifecta will take decades to fix, but the choices that fire managers make before the fire season, and the decisions they make on each fire can have huge and immediate effects on firefighter safety, costs, and environmental impacts.

The fire landscape of the U.S. is complicated and fires burn differently in different places. Solutions for Washington State will look very different than solutions for Arizona. Nevertheless, Congress is in a position to provide the leadership to achieve real differences across private, public, national, and local interests.

I am a trained geographer. I think about things spatially. For example, in the U.S. we have about a billion burnable acres. The Forest Service estimates that we need active management to reduce the fuel loads on nearly half of that, or about 400 million of those acres. That is an area larger than the entire state of Alaska that needs fuel reductions to improve our forest health.

At this point the Forest Service has come a long way with their fuels reduction program. However, they are still only treating about 2 million acres per year with a little over a half-million acres treated mechanically and the rest with fire. Unfortunately, this is not even approaching the rate at which we are adding new lands to the backlog needing treatment. We are already suffering from an "ecological fire deficit" of over 12 million acres each year in just the 11 conterminous western states. Therefore, to really make inroads in our treatment program we need to increase the acreage treated by roughly an order of magnitude, and even at 20 million acres a year we would still need decades to address these problems. Interestingly, this 20 million acre number is very similar to the acreage of fire we were experiencing annually in the U.S. before we developed effective fire suppression techniques in the 1940s and 1950s.

To actively treat anything like 20 millions of acres per year we will have to use fire. These sorts of numbers are simply beyond the reach of mechanical thinning. As a young man, I spent some time working in the woods doing mechanical thinning. We would work in groups of five to ten, using chainsaws and then burning the piles. It could take us several days to clear and burn the brush on a few acres. Therefore, I am quite impressed that the Forest Service is currently successfully treating as much as they are. However, this problem is vastly larger than any mechanical solution we can develop. Simply put, we can't cut our way out of this. Additionally, much of the 400 million acres that need treatment are in steep, rugged terrain that is difficult to work in. Even if we could do it, cutting and thinning is

expensive to subsidize in many of these areas, it can have harsh ecological consequences, and done poorly it actually exacerbates fire hazards in the future.

Instead, we are going to need to find ways to reestablish fire's traditional ecological role on millions of acres per year, and this project is going to require a combination of prescribed fire and ecologically managed wildland fires that are much larger than we are seeing now. However, over time, in many areas, these ecological efforts will create a patchy mosaic of reduced fire hazards and reestablish historical fire regimes that will be safer and cheaper to manage.

Currently, the real problem with managing and reestablishing these sorts of large fires is that we now have about 70,000 communities, and millions of homes, at risk from wildland fire and about 200 million acres of land is now in our Wildland Urban Interface or WUI with almost 30 million of those acres in the western U.S.

But here is what is interesting. It is really the last quarter mile around our communities that is the most important. That is where you can stop a fire from burning buildings. That is where thinning, fuels management, building codes, and enhanced local firefighting capabilities can make a real difference. What is surprising is that a quarter mile buffer around every named place in the U.S. Census in the entire western U.S. makes up less than 9 million acres. That is an area more like the size of the state of Maryland. This "Community Protection Zone" is where we do have the resources to make a difference.

What we need is a "Marshal Plan" providing guidance and funding for the work that needs to be done in these areas and in the surrounding WUI. With congressional guidance, we could create good local jobs that could include fire mitigation and WUI firefighting specialists. This is the best place to work with local industry and to use biomass to offset costs. This is also the area to help organize and empower local communities.

The federal government does not hold much of the land surrounding many of these communities, and our last few big fires in Washington have been burning through a patchwork that included surprisingly little federal land. Therefore, we are going to need innovative funding and policy proposals to help improve the resilience of these communities. But the good news is that all this can be directed to a remarkably small part of our burnable landscape.

As Stephen Pyne testified before this committee several months ago, some communities need to be "hardened" to better resist wildland fire, so that we have the options of doing restoration work at the vast scale necessary in the backcountry. If people and communities are prepared and protected from fire, this expands our options and opportunities to manage wildfires in other areas of the WUI and especially deeper into the backcountry. It is around these communities that mechanical thinning combined with prescribed burning will be of the most use. Then we can really start to address the restoration of our forests and develop a new resilient system of backcountry fire management. This would include broad scale

Medler Testimony:  
U.S. Senate Committee on Energy and Natural Resources  
Seattle Washington, August 27, 2015

management with active fire use in ways that help restore ecosystems and reduce the likelihood of extreme fire behavior.

By prioritizing our fire mitigation efforts in the dense parts of the WUI, we can facilitate the use of fire on millions of other acres in the backcountry. Not only would this enhance ecological restoration and forest health, but it would also be vastly cheaper than trying to fight all of our largest fires. By reducing the use of aircraft and limiting the amount of direct attack by hand crews in the backcountry, we would both reduce the costs and provide for a safer work environment for our firefighters. Best of all, reintroducing fire into these landscapes would shift from being simply a one-time emergency expense and instead become an investment in future fire management. We would be using backcountry fire to reduce the long-term damage to forest health while actually providing a more resilient landscape to manage future fires while also reducing future expenditures.

These changes will require extensive policy and strategic changes. My written testimony includes an extensive set of recommendations along those lines. But key among them is the idea that ultimately, the ethical use of public resources and the ecological restoration of fire-adapted ecosystems will improve safety for firefighters and the citizens they serve while also bringing down the costs. These changes would also require the development of new career paths in the fire community. For example, front country mitigation work in the WUI could be year round work for professionals that could also be trained in the complicated intersection of urban and wildland firefighting that occurs in the WUI. Alternatively, other members of the community could specialize in the backcountry fire use and fire monitoring skills that would allow a few dozen professionals to manage backcountry fires that now require thousands of fire fighters and millions of dollars.

I know better than most that there is no way to eliminate all the danger in this business. We can't stop all the fires. We can't protect every home in the woods, and we can't make fire fighting a totally safe profession. However, we owe it to the people living in our forests and grasslands to do what we can to protect their communities, and we owe it to all the people we put on the fire lines to do all we can to keep them safer while still managing our landscapes in ways that allow fire to be the natural process it is.

I really want to be able to keep recommending a career in wildland fire to my students and especially to my daughters.

Thank you for time.

Below are additional key points and recommendations from FUSEE for Congressional support to help shift the paradigm of federal wildland fire management, organized by key topics.

### **Community Fire Preparation:**

- If communities and homes are prepared and protected from fire damage, this expands options and opportunities to manage wildfires in backcountry wildlands. Firefighters need a partnership with homeowners, rural residents, and private property owners to prepare for wildland fire of all kinds: prescribed fire, wildland fire use, and wildfire suppression. Some homes have been destroyed by escaped prescribed fires, and many opportunities to manage backcountry wildfires for resource and ecosystem benefits have been missed because of the risk of wildfire spreading to unprepared homes and communities. The sooner we prepare communities and homes for fire, the sooner we can restore backcountry wildlands with fire.
- We need resources and education to facilitate a program of “prepare, leave early, or stay and defend” instead of mass evacuations that empty communities of the labor force needed to protect structures. It is typically not a “tsunami” of flame that destroys structures, but tiny embers that land on rooftops, or surface fires creeping through pine needles on the ground, and trained volunteers and residents watching out over their own property could stop these. Firefighters cannot provide structure protection for every house since a single wildfire could simultaneously put hundreds of homes at risk. Homeowners and residents who have prepared their homes to be fire-resistant should be supported with technical assistance, training, and resources to help protect their own homes. This may enable wildland firefighters to better focus on what they are trained and equipped to do—wildland fire management—rather than structural fire protection.
- We should consider mobilizing more community volunteers to help prepare communities for wildfire well before fires, by reducing flammable vegetation and combustible fuels (e.g. firewood piles) within the Home Ignition Zone, a relatively narrow band around structures that is the most critical terrain in terms of preventing wildfires from igniting structures. There are also ample opportunities for small businesses to help retrofit structures with non-flammable materials, such as metal roofs, that also greatly improve the probability of structures withstanding wildfire events. Much of the work of community fire preparation is labor-intensive, and opportunity exists to tap into civic-minded community groups and volunteer organizations, especially providing opportunities for young people to do the hard physical labor of mitigating fuel hazards and fire risks on private property in rural communities.
- We must consider raising some “taboo” subjects in western communities, such as zoning laws that prohibit new home construction in indefensible locations of undeveloped wildlands, vegetation management ordinances that prevent excessive build-up of hazardous fuels on private lands, building codes to require fire-resistant designs and materials used in construction, and community fire planning needed to live sustainably in fire-prone landscapes. While respecting private property rights, policymakers should do more to encourage community responsibilities needed by developers, homeowners, and other rural residents to prevent home losses from wildfire.

## Suppression Costs versus Fuels Reduction and Forest Restoration Investments

- We should beware of using emergency accounts like FEMA disaster recovery funds to pay for wildfire suppression actions—those funds will be needed for recovery from major disasters such as earthquakes, floods, hurricanes, and tornadoes. The Pacific Northwest, for example, will experience a major earthquake disaster that may require billions of dollars for recovery, and these funds should not be siphoned off to pay for suppression actions that are separate and different from post-disaster recovery actions.
- The existing fire budget is divided into “fire preparedness” and “fire operations,” but these have been wrongly defined by agencies as fire “prevention” and “suppression” at the expense of other fire management strategies. Fire operations should also include the *use* of fire (i.e. controlled burning with prescribed fires or managed wildfires). If fire use is implemented to reduce fuels or restore ecological integrity and ecosystem resilience, then expenditures for fire operations can be seen more as *investments* yielding long-term benefits rather than pure costs. Earmarking a budget for suppression-only will likely not reduce costs, and lead agencies away from fire operations that manage wildfires for resource benefits.
- The suppression budget needs to be fixed to avoid the perverse incentives caused by Congressional “blank check” funding for suppression. While budgets for fuels reduction, fire planning, fire research, and forest restoration projects that come from normal appropriations are continually getting cut, agencies essentially get rewarded for failing to do proper fire planning, or completed fuels reduction projects with near-unlimited supplemental appropriations for emergency wildfire suppression. Adequate funds must be appropriated to plan for and manage wildfire rather than just suppress it.
- Severe fire weather conditions typically shift among regions from year to year. We need to shift the focus of “severity funding” so that we pre-position extra resources not just in the regions where fire severity is predicted to be high, but also where it is predicted will be low. In regions where climate and weather conditions are conducive to low-intensity wildfire, the extra crews and resources available can allow agencies to safely apply fire use on a landscape scale. Recently burned areas are the best protection against uncharacteristic high-intensity wildfires.
- We need to track, monitor, and analyze the effects and effectiveness of air tankers before we embark on a massive investment of taxpayer dollars in a new air fleet. Important research being conducted by the Forest Service’s Fire Lab in Missoula are raising critical questions about air tanker and retardant use. Retardant does not extinguish flames, it simply slows fire spread, but if ground crews are not positioned to take advantage of slowed fire spread, the effects of retardant quickly dissipate and wildfire continues to spread unchecked. From initial data, it appears that the majority of air tanker retardant drops occur in the times, places, and conditions where they are least effective. Aviation resources and retardant are typically one of the highest cost centers of suppression operations, and we need to ensure that these expenditures are worth their price. Significant numbers of fire crews could be hired for the same price we pay for air tankers and retardant, and these crews are far

more versatile in performing many different fire management tasks and missions than are air tankers that have only one purpose or mission.

- We need to systematically analyze the effects of large-scale burnout or “box and burn” strategies that are becoming more prevalent in wildfire suppression, especially on large fires or during severe weather conditions. Indirect attack with suppression firing operations may yield benefits in terms of enhanced firefighter safety as well as reintroducing fire to areas impacted from past fire exclusion, however, ecologically-appropriate fire effects must be the goal of firing operations, not just wildfire containment at the expense, and often sacrifice, of resource values and ecosystem integrity.
- We will be unable to “treat” fuels in a sufficient time and scale and acceptable cost to avoid large-scale, high-severity wildfires—wildfire itself can be the treatment for landscapes degraded by past fire exclusion. Agencies have fairly advanced technology for monitoring, mapping, and modeling fire spread and predicting fire effects, but this technology is under-utilized when firefighters are ordered to do aggressive initial attack to put fires out when they are small. Putting small fires out merely puts off big fires that will ignite in the future, likely during weather and in fuel conditions more severe due to unfolding climate change and accumulating hazardous fuel loads. Given that wildfire is a vital ecological process, and future climate and weather conditions more conducive to large wildfires are unavoidable, it is essential that agencies reintroduce fire to fire-adapted landscapes as much and as soon as is viable. The future direction for agencies is thus to manage wildfires as if they were prescribed fires, relying on careful pre-fire planning, advanced technology, and highly-skilled fire crews trained in fire use to maximize the social and ecological benefits of fire while mitigating potential adverse impacts or damages to human assets.

### **Firefighter and Public Safety**

- There is no such thing as safe firefighting—it has inherent health hazards and safety risks, but these risks and hazards can be mitigated with careful planning, training, communications, and adequate resources. We need to ensure that firefighters are not needlessly exposed to hazards and risks, so we must be more selective and strategic in the places and conditions we suppress wildfire, and shift from reactively suppressing nearly all wildfires in a state of emergency and crisis-management mode, to proactively managing and utilizing most wildfires to maximize the socioeconomic, natural resource, and ecosystem benefits of fire. In short, we need to stop “blindly” fighting all fires and start wisely managing every fire.
- We must shift to a more rational, rules-based system for dispatching crews based on risk assessment rather than “knee-jerk” aggressive initial attack suppression responses immediately after fire detection. We need to abandon the paradox of mandating aggressive initial attack on all fires during conditions of severe fire weather or suppression resource shortage—our firefighting efforts are largely futile and not worth the risk to firefighters.

- There are “externalized” long-term risks to firefighters and communities from continued focus on short-term suppression and fire exclusion that defers wildfires to future, when we are likely to experience even more severe fuel and weather conditions because of climate change. Risk assessments must incorporate both short-term and long-term risks, and include potential social and ecological benefits of fire.
- Ultimately, ethical use of public resources and ecological restoration of fire-adapted ecosystems will make it safer for firefighters and the citizens they serve. Simply adding more taxpayer money or resources without ensuring that they are efficiently and effectively used, or fighting fires more aggressively while ignoring the adverse environmental and ecological impacts of suppression actions, will not make it safer for firefighters or the public.

### **Fire Ecology, Management, and Treatments**

- We need to both recover from the historical ecological fire deficit, reduce fuels, restore ecosystems altered by past fire exclusion, and prepare landscapes for increased wildfire activity and large wildfires given climate change. Large wildfires pose both potential risks and benefits, and we need to consider both in strategic wildfire management that utilizes the best fire ecology science and advanced technology for monitoring, mapping, and modeling wildfires to utilize more wildfire ignitions for fuels reduction and ecosystem restoration objectives. Thus, fire managers and firefighters need training in ecological fire management and fire use.
- We need to fully implement the Federal Wildland Fire Management Policy as the foundational philosophy for fire management on federal lands. The Federal fire policy states that it is the current and expected condition of the fire, not its source or location, that should determine the management response. We should never again allow national decrees against fire use to be issued from the Washington Office of the Forest Service, nor should Regional Foresters issue similar directives that declare total suppression of all wildfires including those located in remote backcountry wildlands or designated wilderness areas.
- Prescribed burning faces numerous social, legal, and fiscal constraints that limit its scope. Therefore, wildfire management or “fire use” is the most natural, most practical, and most economical way to both reduce fuels and restore ecosystems at the scale necessary. When and where conditions permit, plans exist, and resources are available, wildfires should be managed with the same principles, goals and objectives as prescribed fires. Different from “let it burn,” wildfires should be actively managed to achieve desired fire behavior and fire effects.
- Strategically placed fuels treatments, rather than landscape-wide mechanical treatments, can have the greatest impact on fire spread and effects at a much lower cost. Fuels treatments must be oriented to safe reintroduction of fire and ecological use of wildfire, not continued fire suppression and exclusion.

Medler Testimony:  
U.S. Senate Committee on Energy and Natural Resources  
Seattle Washington, August 27, 2015

- We need to invest in spatial fire management planning so we can opportunistically manage wildfires with prescribed fire principles for community protection and ecosystem restoration objectives. Spatial fire planning should be used to identify natural “firesheds” where wildfire can burn within natural barriers or confines.