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OPPORTUNITITES TO IMPROVE THE ORGANIZATIONAL RESPONSE OF THE FEDERAL AGENCIES IN THE MANAGEMENT OF WILDLAND FIRES

FIELD HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED FOURTEENTH CONGRESS

FIRST SESSION

ON

OPPORTUNITITES TO IMPROVE THE ORGANIZATIONAL RESPONSE OF THE FEDERAL AGENCIES IN THE MANAGEMENT OF WILDLAND FIRES

AUGUST 27, 2015

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OPPORTUNITIES TO IMPROVE THE ORGANIZATIONAL RESPONSE OF THE FEDERAL AGENCIES IN THE MANAGEMENT OF WILDLAND FIRES

THURSDAY, AUGUST 27, 2015

U.S. SENATE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
Seattle, WA

The Committee met, pursuant to notice, at 11:30 a.m. PDT at the Pigott Auditorium of Seattle University (Su Campus Walk, Seattle, Washington), Hon. John Barrasso, presiding.

OPENING STATEMENT OF HON. JOHN BARRASSO, U.S. SENATOR FROM WYOMING

Senator BARRASSO. We will call this meeting to order. Welcome everyone.

First, thanks to the wonderful hospitality by our friends at Seattle University for allowing us to be here today. This is an incredible Jesuit institution founded in 1891 with a remarkable reputation.

My daughter is at Loyola Marymount University in L.A., another Jesuit institution. If you go into the chapel, they have these wonderful stained-glass windows representing each of the Jesuit institutions from around the country, and they have a magnificent one for Seattle University.

I am John Barrasso, a Republican Senator from Wyoming. I am joined by Senator Maria Cantwell from Washington State, who you all know and I know appreciate the fine job that she is doing in this area.

I am calling this hearing today on wild land fire to order, and I am, as I do so, mindful of the recent tragic loss of life and property right here in Washington State.

I want to acknowledge the many sacrifices that were made by firefighters and their families to protect, to serve and to keep our communities safe. Sadly, we all too often have seen the ultimate sacrifice made by brave men and women, including the recent deaths of Thomas Zbyszewski, Andrew Zajac and Richard Wheeler. I have read the stories, looked at each of their pictures and, you know, you think about this.

There is Thomas, 20 years old. His parents, 20 years, have been firefighters. Andrew, 26, played college football at Case Western, loved the outdoors and had a degree in Biology. Richard is a fourth generation firefighter in his family.

So the people of Wyoming share in the grief and the loss and send their prayers and their best wishes.

Senator Cantwell, just please know that in Wyoming our thoughts and prayers are with all the people of Washington State and the families of these firefighters at this time. I would like to ask you to proceed with your opening statement.

STATEMENT OF HON. MARIA CANTWELL, U.S. SENATOR FROM WASHINGTON

Senator CANTWELL. Well thank you, Senator Barrasso.

I want to thank you for flying here from Wyoming and being part of this field hearing, an official Committee on the Energy and Natural Resources hearing. I want to note that you are the Chair of the Public Lands Subcommittee and are very familiar with these issues. I so appreciate you taking the time to be here and for your remarks right now, particularly to the families of the lost firefighters.

We are here today, we thought we would be here many months ago, having a discussion about last year's fire season and specific response to the Carlton Complex and the many fires that we have seen across America that my colleagues, Senator Murkowski and Senator Barrasso, myself and Senator Wyden, had been working on as far as legislation. Now this fire season came upon us, and we saw 7.7 million acres of U.S. land burnt, which is double last year's fire season.

Before I get into my remarks, I too want to say something about the 3,000 men and women throughout our state who have been fighting these fires tirelessly, working around the clock, giving it everything that they can. Specifically our prayers go out to the families of Andrew Zajac, Richard Wheeler and Tom Zbyszewski. They made the ultimate sacrifice, and they lost their lives trying to protect the very communities they lived in. Our hearts go out to these families and to their friends and to their communities.

Our hearts and prayers are still with those firefighters who are recovering. These men and women are doing everything that they can to help make us safe. We wish them speedy recovery.

Unfortunately, it is becoming all too real for the people of Washington that this year's fire season is breaking records. This is Day 77 of continuous fire operations, a record by more than 15 days, and we have many more days yet to come.

As of yesterday the perimeters of our wildfires in the Pacific Northwest totaled 1,658 miles, essentially a distance stretching from Seattle to Milwaukee, all in need of fire lines. In total, more than 1,100 square miles of Washington State have burned this year, an area larger than the entire State of Rhode Island. The Okanogan Complex has now surpassed last year's Carlton Complex as the single largest wildfire in state history. Clearly this is the worst fire season in our state's history.

Despite all that people can be assured that our firefighters, local officials, some of who are with us today, at the State and Federal and even international level, are answering this call. Their diligent work has managed to save thousands of houses threatened across the state. The President did grant Federal emergency aid and operations are now being operated in mobilization centers, even out of

Fairchild Air Force Base. At the same time we know it is only August, and we could see fires burning for the next month or two.

We know that this seems like it has become the new normal. In fact as I was traveling the state I ran into a friend in a diner in Wilbur who told me about how she and her husband were planning their evacuation, only to realize when they were going through their various steps that they had not unpacked a lot of things from last year's evacuation. So is this the new normal?

We are definitely going to hear from our witnesses today in their testimony about what we face, what these new challenges are and how we deploy new strategies to best help our communities.

I have been to Central and Eastern Washington, to many parts of our state, talking to individuals, seeing our response. As I said, our legislation, which is really in response to last year's fire season, is about upgrading our national fire management strategy and leveraging the hard learned lessons and issues that we have learned about in the last year.

We have heard the struggles of communities and first responders trying to maintain challenging communications infrastructure last year in the Carlton Complex fire when much of the broadband communication throughout Twisp had burned up. How do these individuals communicate to the many towns and individuals through that process?

We have heard from our firefighters and experts on the front lines about the challenges of new fire behavior, and I am sure our witnesses are going to talk about that today.

We have also had a number of roundtables, and we heard from people about the advanced fire season and what we can do in preparation. Several communities like Yakima County and Kittitas County are implementing community wildfire plans, and I know the Commissioner is here today to talk about some of that.

These plans work because people come together ahead of time. They determine the risks the community faces from wild land fires, and they reduce those risks.

I also heard repeatedly that when the time is right and the fire season is behind us, our communities are looking for Federal leadership on hazardous fuel reduction treatments and other preventative measures that would help us better manage this landscape in the future.

So our focus right now in Washington State should be first and foremost to make sure that we are helping to protect our communities, get the current situation under control, and to continue to provide safety. When the time is right my colleagues and I want to work with the others on a bipartisan basis to take the ideas that we learned, that we have put into legislation and get that legislation passed before next fire season so that we are better prepared next year.

Our key steps are bolstering community preparedness, prevention and resilience, updating our emergency response capabilities so communities can better communicate and taking action to reduce hazardous fuels so that we are managing our risks.

One issue I just want to highlight, because there are many of the eight recommendations that we have in a White Paper, is the need to solve what is called the fire borrowing problem. We provide ade-

quate funding for fighting fires at the beginning of the year, but we need to make sure that money is not taken from those accounts and spent, literally, on the fires themselves.

According to the Forest Service every dollar spent on prevention saves a $1.70 on fighting fires. Since 2002 we took a total of $13.2 billion and that money was borrowed from other Forest Service programs to cover emergency firefighting costs. For the same amount of money we could have a 50 percent increase in the number of air tankers. We could have 2,000 more firefighters. We could have treated hazardous fuels on more than a million acres of the Wildland Urban Interface where many of the homes are at risk. And according to the Forest Service these actions could save $420,000,000 in firefighting costs each year. In other words, they could save taxpayers a total of $5.4 billion.

So we need a more strategic approach to investing in prevention. It will help pay for itself in the long run.

Along those lines our legislation does encourage Federal and State agencies to do landscape treatment when fire risks are low and enhance mapping so we can reduce risk and upgrade our communications and technology so our firefighters have the best and most effective tools when fighting the fires. Our legislation would also ask FEMA to work to make sure that we are addressing the needs of our rural communities and that density requirements do not preclude them from getting emergency assistance.

I guarantee you that both my colleague and I, who come from very beautiful states, understand that our rural, recreational economies are key values to our state. We want to see them protected.

So we have been working on this bipartisan effort. I am sure that this fire season and today's hearing will add additional thought to our efforts. But let me repeat again, it is our hope that we will take these lessons, because the need is urgent, to make these changes and get better prepared for next fire season.

Again I thank the witnesses for being here today, and I look forward to their testimony.

Senator BARRASSO. Well, thank you very much, Senator Cantwell. I know people all around the country are reaching out to assist in any way that they can. Wyoming has deployed two UH60 helicopters, their crews, and a maintenance crew to assist with aerial firefighting here in Washington.

We are seeing firsthand how extremely detrimental wild land fires are to families and communities, as you say, all across the West.

In addition to the loss of life and property, we have seen a loss of wildlife and a loss of wildlife habitat. We have seen increased soil erosion. We have seen large carbon and smoke release. We have seen the loss of jobs, the loss of businesses, and degradation of watersheds.

We must recognize there are many contributing factors for why wildfire size and intensity and the costs of fighting these fires are increasing. Increasing fire cost and severity are the result of a number of things including excessive fuel loads, overcrowding and drought, decades of fire suppression, declining forest health due to insects and disease, the spread of invasive species such as cheat

grass and an ever expanding Wildland Urban Interface. These conditions underscore the importance of preparing for and mitigating their impacts.

Congress must act. Act for the safety of our firefighters and communities and also for the health of our forests. Congressional action must include a combination of actions. Congress needs to end the practice, as you say, of fire borrowing and we must do it in a financially responsible way. There is bipartisan support for that.

The Senate Interior Appropriations Committee bill provides one fiscally responsible approach that ends fire borrowing. We can end fire borrowing by budgeting for 100 percent of the ten-year average for fire suppression as well as providing a limited emergency reserve or contingency fund for firefighting in those areas where the fires are above average. This will guarantee firefighters have the tools and resources they need to safely and effectively fight fires.

I want to commend Lisa Murkowski, the Senator from Alaska and Chairman of the Committee, for advancing a reasonable solution on these difficult issues. I know, Senator Cantwell, you and Senator Murkowski and I are going to continue to work closely together on this very topic.

Congress can not simply stop with budgetary measures, however, and providing emergency funding. That is not going to solve all the problems. They can not do that and say the problem is solved.

Congress needs to take additional steps to encourage greater community preparedness, especially in Wildland Urban Interface. They need to take steps to allow for adoption of proven technologies, to prioritize funding for vital active management treatment activities to protect lives and property, to provide policy reforms to combat excessive fuel loads and extensive time lags for projects and also to ensure that the Forest Service is spending the funds in the best and most efficient manner. Wildfires are not simply a fire budgeting or money problem. They are a landscape management problem as well.

Long term I see no higher priority for the U.S. Forest Service than treating our forests to make them healthy again. Healthy, resilient forests are fire resistant forests. We know in many forest areas what agencies and communities can do to reduce the risk and prepare for the fires we know are coming, so today we are going to hear testimony on what communities need in order to reduce the threat of wildfire.

As a doctor I will tell you I appreciate the adage that says, "An ounce of prevention is worth a pound of cure." To reduce the risk to life and property posed by wildfires and to decrease the cost and severity of fires, we need to get more work done in our National Forests.

According to the U.S. Forest Service between 62 and 82 million acres, these are their numbers, between 62 and 82 million acres, right now, today, are in need of treatment and at risk of catastrophic wildfire. That is over 40 percent of the entire National Forest system, and the number is growing.

Congress needs to help the Forest Service manage the land to address the unhealthy state of our nation's forests. We simply cannot allow the status quo to continue.

It is now a necessity to conduct more prescribed fires, perform more fuel reduction treatments, and undertake more vegetation management projects to thin our unnaturally, overcrowded forests. We must get treatments implemented at the same pace and scale the fire and other disturbances are occurring. We need to expedite the coordination and approval of these management activities which reduce our fire threat.

Treating our forests and preparing our communities is the best medicine that we have to reduce fire risk bringing down the costs of fighting fires over time and continue to provide recreation, clean water and quality habitat for wildlife. It is also a sustainable way to provide the jobs and the economic activity our rural and forested communities desperately need. We see that certainly in Wyoming and certainly here in Washington State.

We continue to see how fires impact jobs and economic activity in the same communities. I have introduced legislation, the National Forest Ecosystem Improvement Act, to make treating our forests the priority it needs to be. The bill includes innovative ideas like arbitration to get the Forest Service out of the courtroom and back into the woods treating our forests.

Senator Cantwell, you are working on your White Paper, and you have a fire bill that you are planning to introduce soon. I know it is going to address some of these things, not others. But these items are still going to be addressed under your leadership and the leadership of Senator Murkowski. I know that you appreciate how we must be actively managing our forests. It is an obvious part of the equation.

As with fire policy, I know the Committee is going to work together in a bipartisan way to advance legislation with ideas for getting the Forest Service back to treating our forests so we can restore more acres and prevent additional loss of life and property.

In addition to budgeting and treatment activities, cost containment and operational factors are areas we need to closely consider. The cost of fires continues to go in only one direction, and that is up. While the number of fires, it is interesting, and the number of acres burned varies from year to year, the costs continue to go up.

I think Dr. Medler's organization, you have done a report on that very fact, and last year highlighted the problem with that trend. I am sure you are going to talk about it.

The Forest Service spent $200 million more on suppression than it had spent on an average over the last 10 years, yet, that is despite the fact that there are less than half the number of fires and less than half the number of acres burned last year. But the costs continued to go up.

So I think Congress needs to provide greater clarity and direction for the Forest Service. Operational factors associated with wildfire management such as objective strategies and tactics, they all have significant efficiency and cost implications. We need to consider a paradigm shift from one that is focused primarily on fire suppression to one that also focuses on fire preparedness and landscape management's best practices.

So it is my goal to work with you, Senator Cantwell, as well as Chairman Murkowski and other members of the Committee to incorporate what we learn here today to develop a Federal wildfire

policy that responsibly funds wildfire suppression needs, that ends the unsustainable practice of fire borrowing, that improves operational efficiencies and firefighting safety, that helps get our communities to be fire wise and makes the necessary investments in a full array of fuel treatments.

Now it is time to hear from these wonderful witnesses who have been gathered today.

We are going to start with Mr. Gary Berndt, who is the County Commissioner from Kittitas County in Washington State. Then we have Dr. Michael Medler, the spokesman for the Firefighters United for Safety, Ethics and Ecology. We have Mr. Tom Zimmerman, President of the Board of Directors of the International Association of Wildland Fire. We have Mr. Nick Goulette, the Executive Director of the Fire-Adapted Communities Learning Network, and Dr. Peter Goldmark, Commissioner, Washington State Department of Public Lands.

Senator CANTWELL. If I could just before...

Senator BARRASSO. Yes, please.

Senator CANTWELL. I meant to thank Senator Murkowski, first of all, for allowing us to have a field hearing here in Seattle. I know she wanted to be here, but obviously Alaska has had their own firefighting challenges this season. We are working with her on this legislation, and so much appreciate her attention to this. We wish she could have been here today, but we certainly understand.

And as I said to Senator Barrasso, who is the Chair of the Public Lands Committee, certainly we are all working together on this. So, thank you.

Senator BARRASSO. No problem, thank you, Senator Cantwell.

As always, your full testimony will be made part of the official hearing record. We have received it from all of you and we have reviewed it, so please try to keep your statements to 5 minutes so that we may have time for questions. I look forward to hearing the testimony beginning with Commissioner Berndt.

Mr. Berndt, please begin.

STATEMENT OF GARY BERNDT, COUNTY COMMISSIONER, KITTITAS COUNTY, WASHINGTON

Mr. BERNDT. Good morning, Chairman Barrasso and Ranking Member Cantwell, distinguished guests. I thank you for the opportunity to address this Committee today, and I am very appreciative of your concerns for local communities that are impacted more and more by huge fires and to develop the vision for implementing a long term solution.

I'm currently a County Commissioner in Kittitas County which lies on the dry side of the Cascades from the Cascades to the Columbia, but I also worked for the Department of Natural Resources, a state agency, for my career and as a Fire Manager for much of Eastern Washington State and private lands. I was also an Interagency Incident Commander on a team that traveled across the West for over 15 years. I've also been involved in training locally and nationally on incident management.

Our county is basically 75 percent publicly owned, half of that would be in U.S. Forest Service lands. In Kittitas County the pri-

vate investor lands have been sold off. Significantly those lands are now in the hands of developers. They are intermingled lands with Federal and State lands and develop and destined for a residential development; therefore, the single largest threat to our county is catastrophic fire which would be followed by catastrophic flood.

I would like to share some of the local efforts that our county has undertaken motivated by threat in the beginning, but recent fires have really solidified what we do.

We adopted the Community Wildfire Protection Planning Process and have accomplished seven fire-wise communities; however, there are preexisting developments from many years ago that are intermingled. They have substandard roads, substandard water systems and covenants often that will preclude removing vegetation unless the Homeowners Association approves. Our county has adopted a 200 foot setback from the forest lands for new development.

We also adopted the Wildland Urban Interface code in 2006 and recently updated it. Our WUI, as we call it, has a hazard map that broadly categorizes lands into low, medium and high risk and each one of those zones has separate requirements for construction and defensible space.

Defensible space, our fire marshal told me last week, is the single, biggest accomplishment that happens when a home is built in the woods today. And some of the WUI requirements in the high zone require basically 250 feet of clearing and maintained. The problem is enforcement. We have one fire marshal and we have one deputy. It's a one point in time at this point because we don't have the ability in a growing county to go back and ensure that those spaces are maintained. It would be very helpful if we could do that.

We've also adopted road standards that require dual ingress and egress for developments of more than 40 lots, and new roads are required to meet standards that allow for emergency response to safely enter and exit.

We utilized our County Conservation District in the fire wise program to maintain and do fire wise. They're providing protection for nearly 270 properties a year since 2013. One of the main projects that they do is sponsor a roving chipper from a local fire department that will go on call, and landowners have removed their vegetation and they will chip that for you. Federal funding is key to this through the FEMA Hazard Mitigation. We really appreciate that.

The next key for us is response, and emergency response rapidly, that's done through local fire districts in cooperation and coordination with Federal and State agencies. Our county is basically 100 percent volunteer. We have almost no paid firefighters.

They donate their time for training. They donate their time. They're involved in the community, and I would hope that there is some way that Federal and State agencies can support them with equipment and the things they need to be those rapid responders in their district.

Information and communication, key. I'm currently the Chair of the 911 Committee, and we work to do communication. We've actually talked about things like reverse 911, but we haven't gotten there.

I think I'm going to run out of time.

Kittitas County is a strong supporter of the Yakima Basin Integrated Plan which is a watershed plan to provide irrigation to the economies of the local communities. We need to deal with that. We can't have the Upper Yakima Basin devastated by fire and still maintain our economies.

If I'm out of time——

Senator BARRASSO. Well please, if you could summarize, go right ahead.

Mr. BERNDT. OK.

What I would like to finish with is I believe that the status quo cannot be acceptable. We need solutions. There are the immediate solutions to support prevention, preparedness, response and suppression, but a long term and durable solution to make the inevitability of fire on the east slopes are more manageable. The fuel buildups and forest ownerships continue to accumulate until there's a major fire event that alters the landscape. I've told people for years, if we don't manage the forest three things can happen: it will get bugs, it will burn or it will get bugs and then burn. That's, kind of, how this goes.

Local economies then tend to suffer the loss and then bear the costs. We need to deal with the debts and the weakened forests in the National Forests somehow. The best thing I can think of, early on, is to ask the collaboratives of Tapash and North Central Washington to work toward solutions that can buffer communities in those lower elevations and increase the ability for the WUI and defensible space to be more successful on those Federal lands.

I think that single thing would allow the land owners to go on the Federal land and makes some difference because 200 feet as a former Incident Commander is often not enough.

The Nature Conservancy recently purchased 50,000 acres on Snoqualmie Pass, and they have said forest management will be their key to making a healthy, residual forest. And they should have a plan out shortly.

I appreciate what you've done. I'm asking you, who have chose to make a difference, let's see what we can do.

I thank you for this opportunity, and I offer my appreciation for my county and other National Forest Counties as you move forward.

Thank you very much.

[The prepared statement of Mr. Berndt follows:]

Statement by Gary Berndt Kittitas County Washington Commissioner

August 27, 2015

Good Morning Chairman Barrasso, Ranking Member Cantwell, and distinguished guests.

Thank You for the opportunity to address this committee today and I am very appreciative of your concerns for local communities devastated by ever increasing impacts of fire, and a vision of opportunities for a long term solution.

I am currently a County Commissioner in Kittitas County Washington which lies along Interstate 90 just east of the Seattle metropolitan area. I have recently retired from the Washington State Department of Natural Resources where I was a Regional Fire Manager responsible for state and private forest lands across many counties of Eastern Washington. I was also involved in wildland incident management leading an interagency management team for fifteen years across several states of the intermountain west. I have also participated in the development and delivery of local and national training courses on incident management.

Kittitas County is approximately 75% publically owned lands with nearly half of that in U.S. Forest Service ownership and the remainder are state owned lands. The private industrial lands were basically dismantled several years ago and a significant amount of those lands are now in developer ownership and destined for residential subdivision. The single largest threat to our county is the potential for catastrophic wildfire followed by burned lands washing away before restoration can begin. Our County is very much a fire adapted environment as are all the counties of Eastern Washington. When fire returns, almost as a predictable cycle, to these areas there is now the complication of significant residential development in these fire prone areas. As an instance the fire "cycle" in the higher precipitation area of Snoqualmie Pass may be around 200 years, near Cle Elum where there is less precipitation the interval is closer to 100 years and near the Columbia River the fire return interval is less than 10 years historically.

All the counties along the east slopes of the Cascade Mountains are similar in this fire return cycle.

As the population swells in the western portion of the state, there is a strong outward migration of people who seek a quieter and less crowded lifestyle. They are willing to either work at home or accept a longer commute for that improved lifestyle and sense of place. This has placed a significant number of new homes on lands previously considered industrial forest. These lands are commonly directly adjacent to federal USFS lands. This migration and lifestyle has made our county the fifth fastest growing county in Washington State.

Issues of Past Development Patterns

All of the counties on the east slopes of the Cascades are prone to significant fire events that have no respect for ownership boundaries. Our county as well as many other fire adapted communities have adopted Community Wildfire Protection Plans. Kittitas County has actively supported and accomplished seven federally recognized Firewise Communities as well. These have been an educational and awareness campaign by local volunteer fire districts, the local Conservation District, and the County Fire Marshal. The impact of five major fire incidents in the last four years has been a motivator for landowners to participate. There are many pre-existing developments from many years ago within the forested areas of western Kittitas County that are very vulnerable to a catastrophic fire. The access is often substandard for emergency responder's water supplies minimal at best. There are overhead power lines, and many development Covenants Codes and Restrictions that do not allow vegetation to be removed without Homeowners Association approval. When these are combined onto steep slopes and exposed to prevailing winds there is serious concern for threat of fire.

Current County Actions

Kittitas County has adopted the Wildland Urban Interface Code for construction and development in the rural areas. The code was adopted in 2006 and recently updated with only some local modifications. The code within the County has a "risk" map that broadly categorizes areas into low, moderate and high risk for wildfire and the requirements of construction and defensible space are zone specific. All construction in rural areas is subject to the WUI codes for that particular zone. Defensible space must also be factored in. The County Fire Marshal believes that the defensible space is the most critical element to assisting a home to be prepared for the passage of a wildfire if no other suppression equipment is available. Depending on the hazard rating of the area involved, defensible space must be created and maintained from 30' to 250' beyond the new structure. Defensible space includes limbing trees up 10' from the ground, removing deadfall, removing ladder fuels and working with the landscape to provide as many natural barriers as possible. There is encouragement to utilize landscaping vegetation that is fire resistant. The challenge for success with the WUI code is ensuring maintenance of the defensible space with a severely limited Staff. Kittitas County has a Fire Marshal and a Deputy. There may be as many as 400 homes constructed under this code with now over 100 being added annually. Funding would be beneficial to ensure that the intent of code is met. Without the ability to re-visit homes many owners will not continue to maintain defensible space.

Kittitas County Roads standards also require dual ingress and egress for developments of forty lots or more. New roads are required to meet standards that will allow emergency response to safely enter and exit.

The County Conservation District continues to be very active with the Firewise program and is the subcontractor for the Hazard Mitigation Preparedness Grants through FEMA. The District

has provided protection to nearly 270 properties per year since 2013 and has conducted multiple workshops for owners annually. The Conservation District currently averages 10 assessments weekly. One project coordinated by the Conservation District is a "roving" chipper that is provided by a local Fire District that responds to landowners who are working to "Firewise" and are in need of assistance to eliminate the residue. One opportunity for improvement to this program would be a consistent and reliable approach to grants that generate through all federal entities. Grants are difficult to manage when there are differing procedures.

The current extreme fire danger and lack of resources has generated very close partnerships and cooperation across all responders in the county including USFS, State, County Fire Marshal, and several fire protection district personnel. There is a routine conference call with discussion of staffing, response to new starts, and a strong prevention component that is agreed to unanimously. These relationships are a foundation to ensuring a rapid response while working to prevent any new fires.

Opportunities for Improvement

There is a great opportunity for federal agency professionals to coordinate with state agencies and assist local responders and county fire marshals to have the tools to plan and to have needed equipment. In our county there are 11 fire districts or small municipal departments that are almost exclusively volunteers who work from minimal budgets and commit untold hours of time away from family for the greater good of the community. Having fire professionals that provide facilitation and guidance can be a template for success in preparedness. Local fire districts are a key to rapid response.

There is a growing divide between local fire agencies and the federal and state systems with regard to fire leadership qualifications. Local volunteer districts have a very limited ability to advance into the qualifications of mid-level or top level incident management not because they lack the basic skills, but because there is a lack of funds and a challenge of time available for volunteers who have day jobs. A commitment from the federal agencies to accept "detail" assignments specifically for fire management similar to the Redmond IHC crew will begin to generate a reservoir of fire leadership at the local level of nearly every county in the west. This would be an investment for a long term successional plan that is currently lacking. Training and certification in the performance based environment is a key element in any fire program.

The need for public information throughout the fire season and especially during an incident is a challenge for all agencies at all levels. It is imperative that local agencies be involved in this process. Emergency managers, evacuation orders, updates on status, maps etc. are crucial to not only those impacted, but to extended families. Post fire communications on recovery and funding are key to providing information to allow 911 centers, public works, and law enforcement to accomplish daily duties without constant interruptions. Coordinating and training from agencies will be needed to standardize any approach.

Kittitas County is verging on becoming an area of non-attainment for days of impaired air quality. The Health Department monitors and reports daily to the public on the level of impairment. There has been a lot of concern about adding to this situation beyond wildland fires that are unavoidable. There is an opportunity to engage the community if prescribed burning is contemplated.

Following an incident there is a very short time for counties to prepare for the start of the potential flooding and earth and debris movement. This is a critical time for local government that is difficult to manage. There needs to be a similar system for post fire actions as there is for suppression. The BAER process that occurs on federal lands would be even more important on private ownerships that are at risk or public infrastructure that may also be at risk.

A Concern

Kittitas County is home to the upper watersheds of the Yakima River which supplies the needs of cities but also is critical to the economies of Kittitas, Yakima, and Benton Counties. A catastrophic fire that affects this basin for decades into the future is a worst case scenario. It is imperative to take actions that ensure the watershed protection role for communities, fish, and farms is accomplished.

Kittitas County is a strong supporter of the Yakima Basin Integrated Plan which relies on a healthy and resilient forest to ensure a consistent and clean water supply that will mitigate conditions of declining snowpack and drought unless there is a major fire. Ensuring the protection of the Upper Yakima River Basin is key to water issues that affect the future of Kittitas County.

Management Actions

I believe that status quo is unacceptable. The federal lands in my county and counties across Washington need solutions. There are immediate needs to support prevention, preparedness, response, and suppression. We need to treat burned area restoration as importantly as suppression. There is also a need for a long term and durable solution to make the inevitability of fire more manageable. My concern is that many of the actions I have discussed are reactive to symptoms of the current crisis and do not address the growing problem of fuel buildups across forest ownerships that continue to accumulate until there is the major fire event that alters the landscape for generations. There is an immediate need to better protect homes, watersheds and community infrastructure from these catastrophes. Local economies tend to suffer the loss and also bear the costs.

National Forests have become too dense and the weakened trees are susceptible to insect and disease such as the current Spruce Budworm outbreak of the last 10 or so years in the Yakima River basin. The long term solution to reducing the threat of escalating fire must involve treatment of these weakened forests. Over my career the changes in fire severity and occurrence

were dramatic and local communities are now involved as never before. Currently there are entire towns threatened by fire for the second year in a row.

The solution may be a combination of large scale prescribed burning, maintaining a strategic forest road system, utilizing new technology to designate rapid response areas, or adding additional air tankers; but the solution for the long term will also have to involve strategic timber harvest and stand thinning. Recently Nature Conservancy purchased nearly 50,000 acres of timberland in our county and they acknowledge that forest management will be critical to achieving their goals including reducing the threat from fire.

Incident management teams are much more successful and cost effective when there are options to guide fire into managed areas with access and reduced fuels.

I believe that there is a once in a lifetime opportunity to create solutions which will help prevent and drastically lessen the impact and numbers of fires we are enduring. A first step must be to establish a funding mechanism that does not "raid" funds for management activities to pay for suppression costs. Senator Cantwell has discussed this and without the funds to carry on routine management activities nothing will change.

Forest collaborative such as North Central Washington and "Tapash" hold great promise for coordinating management activities across many ownership on a large scale. This coordination should be required as it will prioritize critical treatment areas.

In sum, I am asking that you as our leaders who have chosen to make a difference across the west, to continue to work together. I see communities across the west continue to be at peril from catastrophic fire impacts. I have managed fires where families have lost everything; I have worked my entire career to minimize the damage to forests watersheds and local economies. The solution is to better improve immediate response and management, but the real solution is to develop a plan of action that will create a fire resistant healthy forest environment.

Thank You for this opportunity to share my views and I offer my appreciation from my County, but also other National Forest Counties as you move forward with this critical work. I had the privilege of instructing fire management in Australia and worked with a psychologist who would remind me that "every complex problem has a simple solution.... And it is always wrong". This a complex problem.

Senator CANTWELL. Thank you.

Senator BARRASSO. Thank you so much, Commissioner Berndt. I think your point about a durable solution is the key one to take away from here today.

Thank you. Thank you so much.

Dr. Medler, thank you.

STATEMENT OF DR. MICHAEL MEDLER, SPOKESMAN, FIREFIGHTERS UNITED FOR SAFETY, ETHICS AND ECOLOGY

Dr. MEDLER. Well, Senator Barrasso, Senator Cantwell, thank you for your work on this. It's an honor to be here.

I teach at Western Washington University. I'm also a member of Firefighters United for Safety, Ethics and Ecology (FUSEE), and I also have worked as a firefighter. Now I work with students who are studying wildfire and then heading back to the fire lines each summer.

This week as we mourn three more firefighters, my heart pours out to their families and friends. But let me put a different personal face on this. I have a 19-year old daughter named Bodie. She's a tall, collegiate rower. She can lift heavy things all day. She likes to sleep in the dirt. In short, she'd be a great firefighter. Since she was a kid I suggested she worked on fire crews during college. But after the last few seasons, as a father, I'm finding it more difficult to recommend that to her or to my students.

To echo others who testified and to put it very bluntly, climate change and the last century of fire policies have combined to leave our forests explosive while our wildland firefighters are trained for back country but increasingly expected to protect the communities. Meanwhile, as you said, our costs are going up, even in moderate years. We simply can't afford to keep using fire policies and practices from the last century.

I'm a geographer. I think spatially. For example, in the U.S. beyond just Forest Service lands we have about a billion acres of burnable land. The Forest Service estimates that we need to reduce the fuel loads on almost half of that, on 400 million acres, and that's one of those incomprehensible numbers, but that's larger than Alaska.

Right now the Forest Service is treating with fire and other mechanical means, about two million acres a year, very roughly. Unfortunately that doesn't even approach the rate that we're adding new lands to the backlog. Therefore, I would say we really need to be treating more like 20 million acres a year, so, of that 400 million.

These sorts of numbers are simply beyond mechanical thinning. We can't cut our way out of this. Additionally, much of those 400 million acres are in steep, rugged terrain. Mechanical thinning in these areas is expensive, has harsh ecological consequences and can make fire hazards worse.

Instead, we need to reestablish fire's ecological role on millions of acres a year. Not only would this enhance forest health, but also by reducing the use of aircraft and limiting direct attack by hand crews, we would both reduce the cost and provide for a safer work environment by working with fire in many areas, not all, we can also create a mosaic of reduced fire hazards that will be safer and

cheaper to manage. We're already seeing that. In fires this summer Washington firefighters are able to use scars from last summer to create wide safe areas and to hook in with their lines.

But as we all know, the problem with actively managing these sorts of large fires is that we now have 70,000 communities at risk for wildland fire and about 200 million acres have been defined as part of the WUI that we're discussing. But here's what's interesting. That last quarter mile, not 200 feet but about the last quarter mile around our communities, is where we can really stop fire from burning buildings. That's our thing. That's where prescribed fire, building codes, the local capability we're talking about here can make a real difference.

But what's surprising is that a quarter mile buffer around every named place in the Western United States, I'll include Alaska again, adds up to a little less than nine million acres. That's a very small area. And I'm including lots of things that we wouldn't need to work on there. So that's an area more like the size of Maryland than Alaska.

In this community protection zone this is where we do have the resources to make a difference. This is the best place to work with local industry to use biomass to offset costs. This is also the area to help organize and empower all the local communities we're discussing here.

We need a marshal plan, a response, providing guidance and funding for the work that needs to be done both around our communities and in the back country. With congressional guidance and the stuff you're discussing now we could create good local jobs.

For example, front country mitigation work in the WUI could be year round work for professionals. They could also be trained in the complicated intersection of urban and wildland firefighting which is a very difficult and unique situation. Alternatively, other members of the community could specialize in back country fire use and fire monitoring. These are the sorts of activities that would allow a few dozen professionals to manage back country fires that now require, literally, thousands of firefighters and millions of dollars.

Stephen Pyne testified before you several months ago, and he argued that some communities need to be hardened and made more resilient to better resist and recover from wildland fire so that we have the options of doing restoration work at the vast scales necessary in the back country. By prioritizing our fire mitigation efforts into dense parts of the WUI we can facilitate the use of fire on millions of other acres in the back country. We would be using back country fire to reduce the long term damage to forest health while actually providing a more resilient landscape to manage future fires while also reducing further expenditures.

My written testimony includes a bunch of specific recommendations from FUSEE, but key among them is that ultimately the ethical use of public resources and the ecological restoration of fire adapted ecosystems will and can improve firefighter safety and serve the citizens while also bringing down costs.

I know better than most that we can't eliminate all the danger in this business. We can't stop all the fires, we can't protect every home, and we can't make firefighting totally safe; however, we owe it to all the people that we put on the fire lines to do what we can

and to keep them safe while managing our landscapes in ways that will 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 my daughters.

Thank you for your time.

[The prepared statement of Dr. Medler follows:]

Testimony of Dr. Michael J. Medler
Member, Firefighters United for Safety, Ethics, and Ecology (FUSEE)
Past President of The Association for Fire Ecology, founding editor of the journal *Fire Ecology*
Associate Professor, Department of Environmental Studies, Western Washington University
Before a Hearing on "Opportunities to Improve Federal Wildland Fire Management"
U.S. Senate Committee on Energy and Natural Resources
Seattle Washington, August 27, 2015

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 maters 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

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 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.

- 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.

Senator BARRASSO. Thank you very much, Dr. Medler. You are right, it is the volume itself that is massive.

Thank you.

Dr. Zimmerman, thanks for being with us.

STATEMENT OF DR. THOMAS ZIMMERMAN, PRESIDENT, INTERNATIONAL ASSOCIATION OF WILDLAND FIRE

Dr. ZIMMERMAN. Thank you.

Good morning. I'd like to thank both Senators Cantwell and Barrasso for the work you're doing and for the opportunity to be here today to testify at this hearing. I'm here in the capacity of President and Chairman of the Board of the International Association of Wildland Fire. During my career, my career has spanned over 40 years, I've served in a variety of wildland fire management positions for three Federal agencies, worked as a natural resource consultant and also earned a Ph.D. in forest fire science.

To talk to you at today's hearing it is perfectly aligned with the vision and purpose of the International Association of Wildland Fire and very important and relevant to the Association. But unfortunately events are unfolding this fire season are truly lamentable and tragic and it is with great sadness that we proceed through this fire season knowing that all the firefighters that started this season will not be with us to finish the season. And the heartbreaking loss of life, we recently witnessed it, just stirs emotions that are beyond description and our thoughts and prayers go out to all the families and the friends of our fallen colleagues.

With that said, we need to realize that the wildland fire is probably the single most important factor shaping and influencing our vegetation communities today. Managing this is something that's going to encounter some of the highest risk, highest complexity and potential for the most serious consequences of any natural resource program. Things are changing, conditions are changing, the environment is changing and we are entering into a transformative time which is clearly evidenced by the severity and extent of the 2015 fire season.

There are three areas I'd like to touch on today briefly in wildland fire management that are supporting programmatic growth and that can be expanded to facilitate organizational performance.

The first would be what I'd call the guided framework for wildland fire management. This would consist of that information associated with policy, strategic plans and program reviews, and that the foundation for this is the Federal Wildland Fire Management Policy.

And this is something that's evolved considerably over the last several decades. It's at the point now where the current fire policy is adequate. It does not need to change. It provides us the most flexible, comprehensive, supportive, applicable fire management policy we've ever had. What we need to be doing is realizing the full potential within this policy, working within all the options it provides for us.

In terms of national strategic planning, the National Cohesive Wildland Fire Management Strategy recently completed represents the single best strategic assessment for wildland fire. This provides

us with a national vision which states the vision is to, "safely and effectively extinguish fire when needed, to use fire where allowable and to manage our natural resources and as a nation live with fire." This is an incredibly progressive, comprehensive statement and provides us significant opportunities and a wide range of opportunities that we can realize if we pursue that. This provides us with a great deal of information.

The second area I wanted to touch on was just risk management. This is becoming a very prominent factor in wildland fire management programs today. It's mentioned both in the Federal fire policy and in cohesive strategy as our program should be based on sound risk management.

This is an area where growth is occurring, but more growth and more expansion should occur and risk management should be embedded as a core component to fire management. If we utilize risk-based decisionmaking and risk-based actions we will reduce firefighter exposure, equipment exposure, strengthen our response activities and serve the greater good over the long term.

The third area I wanted to talk about was the budget processes, and your work has really supported this. We've heard that the current budget process that results in fire borrowing is undesirable and is having long term, negative impacts to under land management program.

The IAWF would really enthusiastically support your work on this and support working across party lines to come up with a new process in how this nation budgets for wildfire management. They would really support that.

Every year we continue to see complexity increasing. The cost of businesses are increasing for a variety of reasons, and we need to be able to support that rather than restrict that.

We have long term needs to reduce fuels, to reintroduce fire into ecosystems, to harden communities, to strengthen our response capabilities and in order to do this we need to realize the full spectrum of opportunities that are afforded by this guiding framework of policy and strategic plans and using these lines in a risk management approach and having a complementary rather than restrictive budget process.

We must be proactive with this as we move into the future and not reactive. One of the unfortunate things is in our nature a short term fix is really unlikely for this and long term patience and long term commitment is going to be necessary from society to affect the changes.

So with that, thank you again for the opportunity today, and thank you for your work on this.

[The prepared statement of Dr. Zimmerman follows:]

Testimony:

Dr. Thomas Zimmerman
President, International Association of Wildland Fire
Kuna, Idaho

U.S. Senate Committee on Energy and Natural Resources
Hearing: Opportunities to Improve the Organizational Response of the Federal Agencies in the Management of Wildland Fires
Seattle, Washington
August 27, 2015

Good Morning, I would like to thank Senators Cantwell and Barrasso and the Committee for the opportunity to appear here today and provide input to its Hearing on *Opportunities to Improve the Organizational Response of the Federal Agencies in the Management of Wildland Fires.*

My name is Thomas Zimmerman and I am here in the capacity of President and Chairman of the Board of the International Association of Wildland Fire (IAWF). I am also a member of the Association for Fire Ecology and the Society of American Foresters. I served in a variety of wildland fire management positions with the Bureau of Land Management, National Park Service, and most recently, the U.S Forest Service until 2012. Since retirement, I have been involved in natural resource consulting. My career has spanned 40 years and included management, research, and leadership positions throughout the agencies at the field, state, regional, and national levels. I have also earned a Ph.D. in Fire Science.

The topic of today's hearing is perfectly aligned with the vision and purpose of the IAWF and very important to both myself, and our membership. We are a non-profit, professional association representing members of the global wildland fire community. We were established 25 years ago and strive to:

- Facilitate communication and provide leadership for the wildland fire community.
- Promote a better understanding of wildland fire,
- Facilitate wildland fire management knowledge and education,
- Advance science and technology,
- *And build on the belief that an understanding of his dynamic force is vital for natural resource management, for firefighter safety, and for harmonious interaction between people and their environment.*

The unfolding of events during this year's fire season has been truly unfortunate and tragic. It is with great sadness that we proceed knowing that all the firefighters that started this season will not be able to finish it. The heartbreaking loss of life we have recently witnessed brings emotions that are beyond description. Our hearts and prayers go out to all the families and friends of our fallen colleagues.

As the field of wildland fire management moves forward, it seems that the interrelated factors influencing it continue to add complexity. Fire occurrence and response now constitute a year-round activity; fire numbers are increasing; seasonal burning periods are extending; and response capabilities are heavily taxed. Whether it is fire environment properties or social, political, and ecological elements, the challenges of the fire management program continue to mount.

But on a number of fronts, we should consider ourselves well positioned to move into the future. Wildland fire management as a professional land management program has progressed greatly over the last century. Our knowledge of certain fire management areas such as the natural role of fire; fire behavior and fire effects; science, technology, and operational capabilities; policy dynamics; and management strategies and tactics has never been greater. We know that:

- Fire influences and initiates ecological and social processes,
- Fires will occur with differential fire behavior and differential patterns and cause differential effects,
- Vegetation and fuel complexes are changing,
- Human management of fire, regardless of objectives, has both intended and unintended influences on ecosystems,
- Climate change is and will continue to affect fire and ecosystem dynamics,
- Wildland–urban interface areas are expanding,
- Social dynamics are having an increasing influence on fire management activities,
- Smoke management has become an important decision consideration,
- Managing resource values and sustaining fire dependent ecosystems is a critical goal, and
- Collaboration and communication are vital to planning and implementation.

Even so, the future of wildland fire management cannot be predicted with a high degree of reliability and there is little doubt that we have entered a very transformative time. The 2015 wildfire season is one of the most severe in recent years and serves as a case in point. To date, wildfires have burned more than 7.5 million acres -- more than double the number of acres burned last fire season -- destroying lives, homes and precious natural and cultural resources. In the face of this natural disaster, the Federal Government, working with states and local communities, and with international assistance, is mounting a full-force response. Unfortunately, wildfires continue to burn in the West, with little to no relief in sight for the immediate future, and the season far from over.

The National Preparedness level remains at its highest state, and the National Multi-Agency Coordinating (NMAC) group is deploying a record number of Federal firefighting resources. In addition, two hundred soldiers from Fort Lewis, Washington, and international air and ground resources from Australia, Canada and New Zealand are bolstering our wildland firefighting resources.

It is easy for managers to highlight program elements where needs seem logical. Frequently identified areas include strategic thinking, budget levels, staffing and equipment levels, technology, information management, research, training, decision-making, management focus, and predicting the future. However, determining innovative solutions is difficult; resistance to change is hard to overcome, and precedence tends to push us to familiar ways of doing business. To meet future challenges, problems must be clearly defined, understood, and parceled into achievable divisions.

Today, I would like to identify three important areas in wildland fire management that are supporting programmatic efforts or should be improved to facilitate organizational performance:

1. **Guiding Framework for Wildland Fire Management:** The framework of information, representing policy, strategic plans, and program reviews provides in-depth information and guidance to the wildland fire management program. This information frames program planning and implementation and carries far greater value than ever before. It allows for greater

flexibility, keeps pace with a dynamic situation, and embodies the state of the knowledge, the state of the art, and latest science and technology.

- ***Wildland fire management policy.*** Fire policy has been quite responsive to changing situational dynamics. It has progressed to a point where decision-makers have more flexibility than at any previous time. Accepted strategies are more sophisticated and comprehensive and tactical spectrums fully support a wider range and multiple objectives. The current policy is adequate and remains consistent with the growing awareness that future program needs cannot be accomplished solely by a passive approach that places an over-reliance on past practices, processes, and applications.

  Two source documents describe the federal wildland fire management policy. These are:

  - 1995 Federal Wildland Fire Management Policy and Program Review: http://www.forestsandrangelands.gov/strategy/documents/foundational/1995_fed_wildland_fire_policy_program_report.pdf, and

  - 2009 Guidance for Implementation of Federal Wildland Fire Management Policy: https://www.nifc.gov/policies/policies_documents/GIFWFMP.pdf

  The 1995 policy document created a foundation still valid today and presents nine guiding principles, which include:

  - Firefighter and public safety is the first priority in every fire management activity.
  - The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process. Federal agency land and resource management plans set the objectives for the use and desired future condition of the various public lands.
  - Fire management plans; programs, and activities support land and resource management plans and their implementation.
  - Sound risk management is a foundation for all fire management activities. Risks and uncertainties relating to fire management activities must be understood, analyzed, communicated, and managed as they relate to the cost of either doing or not doing an activity. Net gains to the public benefit will be an important component of decisions.
  - Fire management program and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives. Federal agency administrators are adjusting and reorganizing programs to reduce costs and increase efficiencies. As part of this process, investments in fire management activities must be evaluated against other agency programs in order to effectively accomplish the overall mission, set short- and long-term priorities, and clarify management accountability.
  - Fire management plans and activities-are based upon the best available science. Knowledge and experience are developed among all wildland fire management agencies. An active fire research program combined with interagency collaboration provides the means to make this available to all fire managers.
  - Fire management plans and activities incorporate public health and environmental quality considerations.
  - Federal, State, Tribal, and local interagency coordination and cooperation are essential. Increasing costs and smaller work forces require that public agencies pool their human resources to successfully deal with the ever-increasing and more complex fire management tasks. Full collaboration among Federal agencies and between the Federal

agencies and State, local, and private entities results in a mobile fire management work force available to the full range of public needs.
- Standardization of policies and procedures among Federal agencies is an ongoing objective. Consistency of plans and operations provides the fundamental platform upon which Federal agencies can cooperate and integrate fire activities across agency boundaries and provide leadership for cooperation with State and local fire management organizations.
- Good data and statistics are needed to support fire management decisions. Agencies must jointly establish an accurate, compatible, and accessible database of fire- and ecosystem-related data.

The 2009 fire policy document continued, expanded, and clarified the 1995 guiding principles.

- ***National Strategic Planning:*** National level strategic planning for wildland fire management has been intensively pursued over recent years. The 2014 National Cohesive Wildland Fire Management Strategy, (http://www.forestsandrangelands.gov/strategy/), accomplishes several important tasks. It establishes a national vision for wildland fire management, defines three national goals, describes the wildland fire challenges, identifies opportunities to reduce wildfire risks, and establishes national priorities focused on achieving the national goals.

  The Cohesive Strategy recognizes and accepts fire as a natural process necessary for the maintenance of many ecosystems, and endeavors to reduce conflicts between fire-prone landscapes and people. By considering the role of fire in the landscape, the ability of humans to plan for and adapt to living with fire, and the need to be prepared to respond to fire when it occurs, the Cohesive Strategy takes a holistic approach to the future of wildland fire management.

  The Cohesive Strategy presents a vision adopted by the Wildland Fire Leadership Council (WFLC) for the next century:

  > ***To safely and effectively extinguish fire, when needed; use fire where allowable; manage our natural resources; and as a Nation, live with wildland fire.***

  To achieve this vision, the Cohesive Strategy identifies the following necessary goals:

  - Restore and maintain landscapes:
  - Landscapes across all jurisdictions are resilient to fire related disturbances in accordance with management objectives.
  - Fire-adapted communities: Human populations and infrastructure can withstand a wildfire without loss of life and property.
  - Wildfire response: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

  Early in the planning process, stakeholders collaboratively established the following guiding principles and core values for wildland fire management to guide fire and land management activities:

- Reducing risk to firefighters and the public is the first priority in every fire management activity.
- Sound risk management is the foundation for all management activities.
- Actively manage the land to make it more resilient to disturbance, in accordance with management objectives.
- Improve and sustain both community and individual responsibilities to prepare for, respond to, and recover from wildfire through capacity-building activities.
- Rigorous wildfire prevention programs are supported across all jurisdictions.
- Wildland fire, as an essential ecological process and natural change agent, may be incorporated into the planning process and wildfire response.
- Fire management decisions are based on the best available science, knowledge, and experience, and used to evaluate risk versus gain.
- Local, state, tribal, and Federal agencies support one another with wildfire response, including engagement in collaborative planning and the decision-making processes that take into account all lands and recognize the interdependence and statutory responsibilities among jurisdictions.
- Where land and resource management objectives differ, prudent and safe actions must be taken through collaborative fire planning and suppression response to keep unwanted wildfires from spreading to adjacent jurisdictions.
- Safe aggressive initial attack is often the best suppression strategy to keep unwanted wildfires small and costs down.
- Fire management programs and activities are economically viable and commensurate with values to be protected, land and resource management objectives, and social and environmental quality considerations.

- ***National Wildland Fire Management Program Review and Strategic Risk Assessment:*** The 2014 Quadrennial Fire Review (QFR) (http://forestsandrangelands.gov/QFR/reports.shtml) is the third iteration of a strategic risk assessment process initiated by the United States Department of Agriculture (USDA) and the Department of the Interior (DOI). It is a joint effort of the USDA Forest Service Fire & Aviation Management (FS-FAM) and the DOI Office of Wildland Fire (OWF), which coordinates the wildland fire management efforts of four DOI bureaus: the Bureau of Land Management (BLM), the National Park Service (NPS), the US Fish and Wildlife Service (FWS), and the Bureau of Indian Affairs (BIA).

  The 2014 QFR identified and explored key wildland fire management issues in the United States; assessed the efficacy of current policy, strategy, and programs in expected future environments; and presented a set of related actions for consideration by federal wildland fire leaders at the FS and the DOI. Taking a future-oriented mindset was integral to the process; the QFR offers wildland fire leaders the opportunity to analyze a set of alternative futures that could emerge over the next 10 to 20 years. The QFR links closely with the National Cohesive Wildland Fire Management Strategy Cohesive Strategy process. Whereas the Cohesive Strategy assesses the current situation and outlines actions to improve near-term effectiveness, the QFR looks 10 to 20 years forward to explore a range of plausible alternative futures, offers an analytical underpinning for the next Cohesive Strategy, and encourages present-day preparation for emerging change. The 2014 QFR process included a "baseline assessment" focused on four key issue areas (changing climatic conditions, risk management, workforce, and operational capabilities), development of four plausible

alternative futures set in 2034 and related insights, and distillation of eight strategic-level conclusions and actions for consideration by fire leaders.

The guiding framework for wildland fire management provides a sound foundation for program implementation. The current fire policy is far and away the most comprehensive and applicable policy fire management has ever had. The National Cohesive Strategy represents the single best strategic assessment completed for fire management, corresponds closely with the federal fire policy, and frames program needs perfectly described for this transformative time in program the fire environment evolution. The QFR provides a strategic look at program trajectory and offers a longer-term viewpoint framed in several different options. Several key commonalities are found in these framework documents. The importance of these areas is reflected in their continued presence in guiding documents. They all speak to safety of firefighters and the public; sound risk management, the importance of science, a need to restore and maintain landscapes, and improving wildfire response.

2. **Risk Management:** Risk management is emerging as a prominent wildland fire management subject. The Federal Fire Policy and the National Cohesive Wildland Fire Management Strategy emphasize the value of risk management, and the US Forest Service has made clear its goal to become a risk management organization. Land and fire managers are increasingly asked to adopt risk management principles, to analyze and communicate risks, and to make risk-informed decisions. In addition, an improved understanding of human behavior - at individual, group and organizational levels – is vital to making fire management safer, more active, progressive, and adaptable. These are far-reaching topical areas that include, but are not limited to, firefighter and public safety, best practices in safety training and operations, safety related research, new approaches to safety, fire response, safety issues in wildland urban interfaces, training, equipment and technology, risk assessment, risk informed decision-making, high reliability organizations, sense-making, shared responsibility, preparedness, organizational discipline, organizational performance, organizational breakdown, decision making, communications, resilience, risk, decision support, community and homeowner fire protection and hazard mitigation, fire education, and social, economic, and political effects of fires.

   The United States Forest Service, the largest wildland fire management organization in the United States, is progressively expanding its perspective that development and implementation of strategies to manage wildland fire that avoid ecosystem degradation and better account for firefighter and public safety over both the short- and long-term are critically important. Wildland fire management has expanded from a limited tactical and physical perspective to a more all-inclusive approach that includes attention to risk management, human dimensions, and decision-making that support and improve organizational performance, safety, and accomplishment of social, political, and ecological objectives.

   Risk is not only associated with the human factors but also with ecological concerns. Many wildland ecosystems are at risk of damaging wildfire, invasive species, habitat fragmentation, and other disturbance agents. The long-term risk of short-term inaction is high and mitigation is necessary in the form of fuel treatment, vegetation management, prescribed fire, and the use of wildland fire.

   Risk assessment tools useful for decision support are increasing. Science and technology products are emerging at much faster rates than ever before and incorporation of new tools

is rapidly expanding management capabilities. The 2009 federal fire policy implementation guidance recommended the incorporation of science and technology and specifically advocated for advanced decision support products. One such product, the Wildland Fire Decision Support System, has been adopted and used for decision support and documentation on thousands of fires (see attached briefing paper at the end of this document).

3. **Budget:** The IAWF enthusiastically urges the Committee to work across party lines to reform how this nation budgets for wildfires. Each year continues to bear out that complexity of the social, political and ecological factors influencing the fire environment, fire planning, and operational activities is increasing. To meet the requirements and needs of these elements, it is bluntly obvious that the cost of business is increasing. As fire managers in the field face the complexities of managing wildland fire, the Department of the Interior and U.S. Forest Service continue to struggle with the existing budget process used by Congress to fund fire suppression activities. Currently, the budget for wildland fire uses a ten-year average of fire suppression costs. In a peak fire season with catastrophic fires, if the available suppression funding falls short, the agencies are forced to move funds from other programs ("fire borrowing") to meet the increased wildfire suppression costs. This undermines other important programs, including critically important forest and rangeland management and fire risk reduction activities.

   This budget process that results in fire borrowing is not adequate. We support a budget process that will solve this problem and provide additional capacity for the agencies to invest in forest and rangeland restoration making landscapes less vulnerable and more resilient to fire. We have actively supported earlier efforts for wildfire disaster funding and believe that such funding should initiate before 100 percent of the 10-year average suppression costs are spent with the difference coming from a disaster cap. This will permit more flexibility and minimize adverse impacts of fire transfers on the budgets of other fire and non-fire programs.

   To summarize, the current fire season's significant negative events would seem cause for a call to action to increase fire funding and resources. While we believe that much time could be devoted to advocating for budget increases, we appreciate the reality of budgetary increases. So, other ways to capitalize on opportunities to improve the organizational response of the federal agencies to the management of wildland fires must be pursued. As stated above, policy and guiding documentation is at its best level and affords the agencies strong opportunities. Agencies must be supported and allowed to implement the program within the full extent of the federal fire policy, and consistent with the goals of the Cohesive Strategy. Opportunities to enhance fuels management and restoration work make lands more resilient to fire, reduce the risks to the public and firefighters, and support long-term reductions in suppression costs. It was recently stated that what is perceived as the current fire problem is, in reality, a land management problem. Fire resilient lands and communities mean that both can withstand the effects of the fire without significant loss of life, property or ecosystems. Fuel treatment, vegetation management, and restoration activities remain a significant need and accomplishments must be increased. Risk management, as identified in the fire policy, National Cohesive Strategy, and QFR, should be adopted as a principal component of base fire management. Risk-based decision-making can reduce firefighter and equipment exposure, support response activities, and serve the greater good over the long-term.

   We have long-term needs to reduce fuels, re-introduce fire into ecosystems, harden communities, strengthen response capabilities, and realize the full spectrum of opportunities afforded by the guiding framework, a risk management approach, and complementary rather

than restrictive budget processes. A new budget neutral process is needed that would allow natural resource management agencies to budget for wildfires in the same manner as other natural disasters. A well-planned course can make substantial and well-needed differences in the fire situation. Short-term fixes are unlikely and long-term patience and commitment is necessary from society in order to effect needed changes. We must be proactive into the future and not just reactive!

Thank you again for this opportunity, for all your efforts, and for your time today.

August 25, 2015

Wildland Fire Decision Support System (WFDSS)

Background: The Wildland Fire Decision Support System (WFDSS) system was developed to assist line officers, fire managers and analysts in managing wildland fire incidents. It is intended to streamline and improve wildland fire decision-making.

WFDSS supports risk-informed decision-making by providing access to data and incorporating improvements in technology, fire modeling capability, and geospatial analysis into a web based scalable system. This system provides a location to document decisions, supports analysis, and facilitates completion of operational plans. It utilizes fire behavior modeling, fire weather information, economic principles, and information technology to support effective wildland fire decisions consistent with Land and Resource Management Plans and Fire Management Plans.

Advantages of WFDSS over previous systems include:

- Use of fire management strategic objectives from land, resource, and fire management plans and intelligence such as fuel conditions, fire danger and weather analysis, fire history, fire behavior projections, probability of fire reaching a point of interest, inventory of values to be protected, stratified cost index, relative risk and organization assessment.
- It is linear, scalable, progressive, and responsive to fire complexity.
- It is spatially oriented, graphically displayed, with no reliance on large text input requirements.

Characteristics of WFDSS:

- Managers begin the decision process at fire discovery.
- Managers can view land management objectives tied to geospatial references and utilize risk assessment outputs accessible to all interested parties through a web-based system.
- Risk assessment information includes weather data and forecasts, fire danger information, fire behavior predictive and smoke modeling tools, economic assessments, relative risk rating, and landscape value inventories.
- A wide variety of spatial information products and models have been integrated into WFDSS with a map based user interface, and include:
  - LANDFIRE spatial fuels data,
  - National Weather Service forecasts and outlooks, along with climate and fire danger from the Weather Information Management System,
  - USGS and Google Map products,
  - Fire Spread Probability (FSPro) spread simulation probability and fire behavior products
  - Basic, Short Term, and Near Term fire behavior models
  - Stratified Cost Index (SCI)
  - Values Information & Values at Risk products,
  - Natural resource management spatial themes,
  - Local unit spatial fire planning spatial data,
  - Estimated ground evacuation spatial data.

Development for FY2015 incorporated input from a user centered design review that resulted in an intuitive simple decision editor. There was also security maintenance, hardware migrations and continued focus on system reliability relating to spatial and data aspects which made the application more robust.

Although future improvements to the system are uncertain, routine maintenance and system reliability fixes will take place over time. Potential development includes increased information for use in risk assessment and firefighter exposure determinations, updates to the fire behavior models, and automation of reporting requirements. These improvements are not all-inclusive or approved but are being considered at this time.

Use of WFDSS: Since WFDSS delivery in April of 2009 there have been 90,763 wildland fire incidents entered into the system while calendar year 2015 has seen 14,792 incidents entered as of August 25, 2015. All five Federal wildland fire management agencies, State organizations, Tribes, and Alaska Native Corporations are represented in these figures. WFDSS is now integrated with iRWIn (Integrated Reporting of Wildland-Fire Information). WFDSS sends and receives data through iRWIn, reducing duplicative data entry for field users. Sharing data amongst fire applications is improving the accuracy and quality of the data.

Management Implications: This decision support system increases access to information which leads to improved science based and risk informed decision-making. It presents a consistent decision documentation and analysis system that allows managers of all agencies to work through an identical process, it is useful across jurisdictional boundaries, and is supportive of individual agency objectives and needs. Its scalability and flexibility allows decision documentation, planning, and analysis activities to match incident complexity and duration. These features may improve natural and community resource protection, management response effectiveness, use of firefighting resources, and potentially reduce firefighter exposure and suppression costs.

Websites for Additional Information
WFM RD&A Website – www.wfmrda.nwcg.gov
WFDSS Website – https://wfdss.usgs.gov
WFDSS Overview - http://wfdss.usgs.gov/wfdss/pdfs/wfdss_overview%2002_02_15.pdf

Senator BARRASSO. Thank you so much, Dr. Zimmerman. You are absolutely right, proactive not reactive is what we are trying to get to today.

Next we are hearing testimony from Mr. Nick Goulette. Thank you very much for being with us today.

STATEMENT OF NICK GOULETTE, PROJECT DIRECTOR, FIRE ADAPTED COMMUNITIES LEARNING NETWORK, AND EXECUTIVE DIRECTOR, WATERSHED RESEARCH & TRAINING CENTER

Mr. GOULETTE. Thanks for the opportunity to be here, and I appreciate both of your remarks and the remarks from my fellow panelists here.

I'm the Director of a non-profit organization in Northern California called the Watershed Research and Training Center, and we work directly on building a fire adapted community in Trinity County where I live and work. I also am presenting here today in my capacity as the leader of the Fire Adapted Communities Learning Network which is a network of community leaders from around the country. I work with 17 communities from around the country who are innovators and are really demonstrating the best practices of the fire adaptation, taking ownership of their wildfire risk and taking the full suite of actions necessary to minimize losses.

Commissioner Berndt and Senator Cantwell both highlighted, sort of, the full range of options for reducing risk in communities fire wise and defensible space, codes and ordinances, chipper programs, sort of community-wide fuel reduction. Together that requires a community effort. It is not just the responsibility of firefighters and the fire adapted communities' concept is really built around that premise that it takes a community and it requires insurance companies. It requires local government, fire departments, local non-profit organizations, conservation districts, all working together. The community wildfire protection planning process provides this organizing place for people to work together. But from there it requires collective action.

I'd like to provide some examples. I think what we're talking about here is building community capacity and resilience and getting away from this old reliance on fire management and suppression. Community capacity, I think, there's a great example of what that looks like actually.

I'm going to provide an example from my home in Trinity County in Northern California. We've had over 200,000 acres of fire this year, and the steps we've taken to become fire adapted have made a real difference. They've involved cooperative partnerships, and they've involved a wide range of Federal, State and local investments. I think that any legislation really needs to deal with those two pieces.

We built a great Community Wildfire Protection Plan. We developed a wide range of data that feeds into fire management and supports good decisionmaking, safe decisionmaking. And we implemented community-wide fuel reduction projects that helped to actually manage the fire, reduce firefighter risk, reduce private losses and so all those investments paid off.

What did it take? It took partnerships, unique partnerships, the kind that build a work force, that build jobs in communities. We leveraged a wide range of grant programs including state fire assistance, rural fire assistance, Secure Rural Schools money. Bringing all of that funding together and NRCS EQIP funding, working across public and private boundaries is what allowed us to actually implement the types of treatments that make a difference to protect the community.

We're seeing exactly that same kind of confluence of partnership and funding around the country. What we know is that there's not near enough money pouring into that kind of work. What I described is really exceptional effort in bringing together a lot of resources in very complicated ways.

Communities are learning how to do it. There's a role for the Federal Government, the Forest Service, the Department of Interior, NRCS in sort of pulling all that together and making it easier for communities to build their capacity to be a real asset and be responsive.

Again, you're seeing communities really take ownership of their fire problem where there is that confluence of community capacity. The city of Flagstaff, city of Ashland, Santa Fe, New Mexico, you have those communities agreeing to actually tax themselves to protect their watersheds. That is a huge leap and it is Federal investment, basically, over a long period of time starting to trigger local investment in community protection.

I think I want to leave off with a concept that feeds into the Federal fire management policy in managing fire on the landscape over time because it is going to be an inevitability that we need to essentially use fire as a tool.

As we invest in building fire-adapted communities, as we put people to work around our communities, as we build the strength of our local fire departments to both invest in mitigation and response to wildland fire, we start to build that culture of living with fire. I think that culture of living with fire is going to be the key to reducing costs and risks in wildland fire response.

It's only when communities are not calling you two to say get that fire put out when it's a fire that's not directly threatening their community that we're going to start to invest less resources in those back country fires and take less risks on those back country fires and focus our energy where it's going to make that biggest difference.

So I want to encourage us to, sort of, keep in mind that that fire-adapted community investment is the key to both getting to resilient landscapes and safe, effective and efficient wildland fire response.

Thanks.

[The prepared statement of Mr. Goulette follows:]

Nick Goulette, Project Director, Fire Adapted Communities Learning Network, Executive Director, Watershed Research & Training Center

Subject: Improving Wildland Fire Management – Senate Energy and Natural Resources Field Hearing Testimony

Date: Thursday, August 27, 2015 at 11:30 a.m. PDT

Location: Campion Hall - Seattle University in Seattle, Washington

I'm honored by the invitation to testify today. My name is Nick Goulette and I've spent over a decade working locally, regionally and nationally grappling with the wicked challenges of building more fire adapted communities, resilient landscapes, and aligning safe, efficient and effective fire response and management.

I provide my testimony today serving in several capacities. First, as Project Director for the national Fire Adapted Communities Learning Network (FAC Network). The FAC Network is a cooperative project with The Nature Conservancy that is supported primarily through a national agreement with the US Forest Service with assistance from the Department of Interior Agencies. The FAC Network engages community leaders and innovators from around the country to accelerate and diffuse the adoption of best practices for growing community fire resilience before, during and after wildfires. Our team works directly with 17 communities and organizations from across the country representing the full spectrum of parties involved in fire management ranging from local fire departments, to Conservation Districts and local NGOs, to state forestry agencies. The FAC Net members, in-turn, work with other partners in their communities, regions and states to grow the movement towards fire adapted communities. I also serve as Executive Director of the Watershed Research and Training Center, a non-profit organization in Northern CA where I get to practice FAC concepts on the ground through participation in our local Trinity County Fire Safe Council, running fuels reduction and restoration crews, leading spatial fire planning, and coordinating prescribed fire training and implementation. Along with these two primary roles, I am a founding member and current Steering Committee Chair for the Northern CA Prescribed Fire Council, am a Leadership Team Member for the Rural Voices for Conservation Coalition, and serve as an Advisory Group Member for the UC Berkeley Center for Fire Research and Outreach. I'm deeply committed to helping our communities and the federal land management agencies learn to live with wildland fire.

Given this combination of national and local perspective, I'd like to share the following ideas about how best to grow and integrate fire adapted communities into the broader context of improving wildland fire management safety, efficiencies and effectiveness. I'll speak to three areas of investment: cooperative planning, direct investments in mitigation and restoration, and building local community capacity for fire management.

First off, **cooperative planning** is the cornerstone to not only building fire adapted communities, but also to achieving better outcomes before, during and after wildfires. This includes both community wildfire protection planning (CWPP) and landscape restoration planning. This premise is a cornerstone

of disaster resilience theory, and one we must incorporate into our wildfire planning framework going forward. Local communities and supporting organizations need a combination of funding and incentives to develop and implement both high quality CWPPs and landscape restoration/resilience strategies.

In regards to CWPPs, we know that everyone has a role in building fire adapted communities, from fire departments, to business owners, local government and utilities, to local landowners. Supporting the development and regular updating of CWPPs provides the forum for their collectively assessing risks and prioritizing comprehensive mitigation actions. When done cooperatively with all the right stakeholders and leaders at the table, integration and synergy are inevitable outcomes.

We're observing evidence of the benefit of these synergies across the country where, for instance, community planners and leaders are working to integrate CWPPs and Hazard Mitigation Planning. FEMA Region 10 and the state of Idaho both offer tools and assistance to local communities on how to best achieve integration. This is helping to leverage funding from FEMA, State Fire Assistance, local investments, and state grant programs to achieve better pre-fire mitigation work to prepare and protect communities.

Regarding landscape restoration/resilience strategies, programs like the Collaborative Forest Landscape Restoration Program, Two Chiefs Joint Landscape Restoration Initiative, and the many regional initiatives across the country, coupled with the proliferation of landscape collaborations across the country, speak to the merit of this model for making landscapes more resilient to wildfire.

While the success of these landscape initiatives varies, several key lessons are emerging across the spectrum. First, facilitation and coordination are essential to supporting the development of durable agreements that parlay into successful NEPA planning, contract development, implementation and adaptive management. Second, and this is evidenced across the Pacific Northwest Region where they are implementing an ambitious "Accelerated Restoration" strategy, new models of coordination, engagement and facilitation will be needed to reach across multiple communities and stakeholder groups including the incorporation of information technology and continued support for in-person convening, where participants can build the personal relationships upon which successful implementation depends.

Along with the demonstrable benefits of cooperative CWPP and landscape planning to community and landscape fire resilience, these processes also feed into and integrate with critical fire response needs. One example is that data generated during both CWPP and landscape assessments, plans and updates can and should be integrated into the Wildland Fire Decision Support System (WFDSS) to support more informed and effective fire management response and decision-making. Second, CWPP and landscape planning also sets the stage, both socially and in terms of data, for spatial fire management planning.

All said cooperative planning clearly builds the relationships necessary to get to cooperative implementation and leveraging of resources before, during and after fires. There are models of where this is working from across the country. It is incumbent upon us to draw from these successes and institutionalize their best practices through a combination of funding, incentives and direction.

Second, **direct investments in mitigation and restoration** are making a real difference for fire management safety and effectiveness, and for community and landscape outcomes. We need to invest far more through a range of existing programs.

The Firewise USA recognition program and similar programs that invest in defensible space work to reduce citizen and firefighter risks and home losses clearly work. Cost share programs, free chipper days, home inspection programs, and technical assistance to homeowners and residents all help support increased defensible space. Codes and ordinances that regulate Wildland Urban Interface (WUI) development provide essential tools for communities, residents and the fire services. Limiting further development in the WUI, combined with ensuring that future and past development incorporates the best available building materials, landscaping, and community design will help to reduce risk and losses.

Beyond the home ignition zone and the neighborhood, fuels treatments both adjacent to communities and strategically placed on the landscape to facilitate fire management have proven effective time and again. While treatments and treatment effectiveness vary across vegetation types, we know that fuels treatments are especially effective where surface fuels are treated with prescribed fire. We need to dramatically increase the pace and scale of effective fuels treatments both adjacent to communities and other assets at risk, and strategically on the landscape to restore resilience and fire management options.

Just this year where I live and work in Trinity County, CA, we've seen multiple examples where strategically placed shaded fuel breaks, coupled with larger thinning and prescribed fire treatments, facilitated successful fire management and suppression, limiting the need for high severity burnouts and other aggressive suppression tactics. These treatments limited firefighter risks and exposure while also protecting lives and property. These treatments were prioritized in our CWPP, cooperatively implemented by Watershed Center crews, property owners and contractors, and leveraged multiple funding sources including NRCS EQIP, Secure Rural Schools Title II, State Fire Assistance Grants through the CA Fire Safe Council, and appropriated WFHF funds from the USFS. I see this as a testament to the "all hand, all lands" approach.

The final mitigation and restoration investment approach that I would like to highlight is cooperative prescribed burning. Cooperative burning builds skills and reduces hazards, feeding directly into safer, more efficient, and more effective wildfire response. Scientists and managers broadly agree that it is among our best hopes of creating and maintain more resilient landscapes and fire adapted communities. Yet we lag in our application of the tool for a range of reasons including risk aversion, air quality regulation, lack of capacity, and lack of will. At the same time, successful models exist. Across the southeast, prescribed fire is used to great effect and at scales that eclipse what is happening in the west. In the west, The Nature Conservancy is hosting prescribed fire training exchanges (TREXs) that are building capacity for more and better cooperative prescribed fire. Across the FAC Network, communities are embracing prescribed fire as a critical tool. They are using cooperative agreements, working with NGOs, fire suppression contractors, tribes and fire departments to bring more capacity to implementation, bolstering that of the federal and state agencies in improving wildfire response capacity at the same time.

All said, there are many models of successful mitigation and restoration across the country that are having meaningful impacts on minimizing wildfire impacts and facilitating fire response. They are woefully underfunded given the magnitude of the problems. More and smarter federal investment with pay back many times over in resident, local and state match, and in reducing the costs and risks of wildfire response.

Finally, investment in the capacity of local institutions, what my colleagues and I call **"community capacity",** is the cornerstone of building fire adapted communities. We need programmatic funding to support community capacity to engage in FAC. This investment takes two forms. The first focuses on supporting local capacity for coordination. The second focuses on building local workforce and contracting capacity for land and fire management.

Building fire adapted communities requires sustained engagement from the relevant leaders and stakeholders in communities. The ability of community leaders and institutions to engage is predicated on effective coordination. A standing coordinating group ("Fire Safe Council", "Wildfire Coalition", committees, coordinating groups, collaboratives, choose you c-word) has emerged as the ideal model. While coordination is not sexy... it involves putting together agendas, taking notes, following up on action items, holding the group's vision, fundraising for collective priorities, etc., it is the essence of leveraged and collective action. No one wants to fund coordination, at the same time, it is a fundamental investment to building community capacity for fire resilience before, during and after wildfire. Both US Forest Service Region 5 and 6 have launched successful capacity building programs in partnership with the National Forest Foundation. Known as the "Community Capacity and Land Stewardship Program", CCLS support small grants to help keep local institutions growing and operating in support of federal fire management objectives. We need to see more programmatic investment like this at the national level.

Local workforce and contracting capacity represents another type of community capacity that is invaluable to land management, hazard mitigation and fire management. Whether housed in non-profit work crews, fire departments, or private contractors, there is no substitute for having capacity housed at the local level. Coupling local landscape and community knowledge with the ability to be responsive to land and fire management needs provides federal land and fire managers with ready workforce to implement fuels reduction, restoration, cooperative burning, and fire response. There are models emerging around the country. The City of Santa Fe and the North Lake Tahoe Fire Protection District, partners in the Ashland Forest Resiliency Project, in eastern Oregon, and many others are bridging NGO, fire department and contractor capacity through a combination of participating agreement, stewardship agreements, and contracts to implement comprehensive mitigation and restoration, all while building capacity to respond to wildfires. These models and tools need to be explored and expanded.

In closing, a modest federal investment in community capacity building, coupled with increasing investments in cooperative planning and active mitigation and restoration, will yield outcomes that not only build more fire adapted communities and landscape resilience, but also facilitate safer, more efficient and more effective wildfire response. I encourage the committee to draw on myself and my colleagues in the Fire Adapted Communities Learning Network, the Fire Learning Network, the Rural Voices for Conservation Coalition, and from the many other local leaders who are leading the way in improving fire management outcomes through local innovation and sheer determination.

Learn More:

http://facnetwork.org/

https://www.conservationgateway.org/ConservationPractices/FireLandscapes/FireLearningNetwork/Pages/fire-learning-network.aspx

http://www.fireadapted.org/meet-the-coalition.aspx

http://ewp.uoregon.edu/

http://www.firescience.gov/JFSP_exchanges.cfm

Senator BARRASSO. Thank you so much and for your highlight of the areas of community of capacity as well as the resilience of each of the communities.

Finally we will hear from Dr. Peter Goldmark, thanks for being with us.

STATEMENT OF DR. PETER GOLDMARK, COMMISSIONER OF PUBLIC LANDS, WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

Dr. GOLDMARK. Thank you, Senator Barrasso, for joining us to see the extreme fire season here in person and for listening to these witnesses that have, I think, reasonable input for you and Senator Cantwell to consider going forward. I also want to thank you for the aerial resources that have come from your state. Those were desperately needed and very much appreciated.

My thanks also to Senator Cantwell for your leadership and dedication to improving response and resources for wildfires. There is no more crucial time than now to have this discussion, right here in the State of Washington in the worst fire season to date.

I'm Peter Goldmark, Commissioner of Public Lands for the State of Washington serving my second term as Commissioner. I'm trained both as a scientist and a wildland firefighter. Today I lead the state's largest on-call fire department of about 1,100 personnel, who are all heavily engaged in the wildfire effort here in the State of Washington as we speak.

We convene this discussion today against a backdrop of a hellish fire storm that has become, as I said, the worst fire season in the state's history. As we speak people in communities are being evacuated in front of the advancing flames. More than 200 structures have been lost and over 755,000 acres have currently burned, and these fires are largely uncontained.

The human impact of these fires is beyond description. Homes have been lost, businesses destroyed, people made homeless. The emotional and fiscal impact on not only the people but the communities themselves is devastating.

I just returned from Okanogan County a couple of days ago and the pervasive nature of smoke in those communities is preventing aerial resources from flying, and overarching, sort of, depressing scene of this smoke which indeed is also a huge health hazard for humans and other animals as well. It's a pretty grim picture over there today.

Currently we have 12 large wildfires on the landscape with more fire weather on the horizon, and our brave firefighting professionals are doing heroic work now as we speak. Approximately 6,300 firefighters are currently in Washington State, and we are very grateful for the support we have received from other states, indeed other nations.

The situation confronts us as leaders with a stark reality. The wildland fire environment is unlike anything we have ever faced, and we must adapt. Wildfire seasons are longer, climatic and weather conditions are more extreme and wildfire behavior is explosive and unpredictable. Mega fires are no longer the exception, but unfortunately, they are becoming the rule.

A Federal wildfire funding structure that acknowledges the need to treat mega fires as what they are and that is disasters, not routine agency business, is an imperative. We must fix the structural funding problems that stand in the way of our success.

Our first priority must be to add capacity for fire response, hazard reduction and community protection. Disaster type funding for the largest, most difficult fires is essential. Moreover, we must seize upon this opportunity to turn the existing perverse set of budget incentives on its head and harness it in the service of life, property and money saving prevention and hazard mitigation investments.

We must turn this around so we make these investments up front before the fires come so that we can keep down the cost and the horrific damage to our communities. We must end the destructive practice of fire borrowing. Forest Service initiated a $250 million borrowing order just yesterday. These rob from prevention programs and make the problem even worse. We must redesign and reinvest in the components of a comprehensive wildfire prevention and suppression strategy. We must start with forest health treatments and fuel reductions for resilient forests for all manner of issues that our forests have to deal with. We must provide community protection plans, provide for rapid detection and response of wildfire using best available technology. We must respond with sufficient force in a very short period of time to get this accomplishment done. We must preposition all available resources and reduce response time. We must improve weather forecasting and the availability of real time information on the fire lines with best available communications. We need to complete the long stalled modernization of the air tanker fleet at capacity for keeping fires small. The tanker fleet is instrumental in that regard. We must increase our investments in forest health, thinning and fuel reduction. Washington State has made a $10 million investment in this work over the next 2 years, and we hope the Federal Government can match that dedication. This fire season is a call for action from leaders in providing protection for our citizens and restoring resilient forest landscapes for all the many benefits they provide.

I would end with a message around safety. These efforts are all around public safety and around safety for our firefighters. We must have the resources available to protect the communities, and we must have the technology and sufficient numbers to protect our wildland firefighters at the same time.

Thank you both for your attention to these important issues and for being here today.

[The prepared statement of Dr. Goldmark follows:]

Statement of Dr. Peter Goldmark
Commissioner of Public Lands
Washington State Department of Natural Resources

Field Hearing on Wildland Fire Response
Submitted to the Committee on Energy and Natural Resources, United States Senate
August 27, 2015

Madam Chairwoman and members of the Committee, thank you for the opportunity to provide testimony as part of this important conversation about leading our nation's wildland fire response toward meeting the challenges we face during this, the worst fire season in Washington State history. I especially appreciate Senator Cantwell's leadership as ranking member of the Committee on such a critical and timely subject.

My name is Peter Goldmark, Washington State Commissioner of Public Lands. I am the elected leader of the Washington State Department of Natural Resources (DNR), an agency charged with wildland fire protection across more than 12 million acres of forest and rangeland in our state. DNR's perspective on wildfire response is not only one of a wildland fire agency, but as an interagency partner with local, state and federal entities, and as a land manager of 3 million acres of forest and agricultural land, among our many other duties.

I am a scientist by training and a Washington native, raised on my family's ranch in the Okanogan Highlands. As a volunteer wildland firefighter, I fought fires as a member of Okanogan County's Fire District No. 8 for more than 30 years. My primary education was in a one-room schoolhouse. After receiving a Ph.D. in molecular biology from the University of California at Berkeley, I traveled to Harvard University for a postdoctoral fellowship in neurobiology.

Leaders Must Rise to the Challenge of Today's Wildland Fire Environment
As we speak, the grave wildfire situation we are facing in eastern Washington confronts us as leaders with a stark reality: The wildland fire environment is unlike any we have ever faced before, and we must adapt. Wildfire seasons are longer; climatic and weather conditions are more extreme; wildfire behavior is explosive and unpredictable; megafires are no longer the exception, but increasingly becoming the norm. The human and community toll of these fires is heart wrenching. The demands on local, state and federal governments for wildfire response and disaster relief are ever-increasing and we must rise to the challenge. We can only do this together, in the same way our local, state and federal firefighters are standing beside one another on the fire lines right now.

A Federal Disaster Funding Structure for Wildfires is Imperative
A federal wildfire funding structure that acknowledges the need to treat megafires as what they really are – disasters, not routine agency business – has been under discussion for a number of years. DNR, state forestry agencies across the country, and a 236-member coalition of

organizations have advocated for Congress to enact a funding system that no longer pits investments in land management, community protection and preventive fire hazard reduction against essential emergency response functions. As detailed in a recent report, *The Rising Cost of Wildfire Operations: Effects on the Forest Service's Non-fire Work*[1], the Forest Service projects that in just 10 years, two out of every three dollars appropriated from Congress as part of its discretionary budget will be spent on fire programs.

Just yesterday, the Forest Service issued direction to its field units beginning the transfer of $250 million from non-fire accounts to cover the suppression over-spending incurred from this year's extreme firestorm. A second transfer of an additional $200 million is also planned as expenditures accrue. Among the sources of funding are State & Private Forestry in the amount of $30 million. One of our most important wildfire prevention measures are State & Private Forestry-funded grants to communities for conducting hazard reduction, FireWise and preparedness planning activities. The current system not only cripples the Forest Service's capacity to achieve sufficient hazard reduction and prevention actions, but adds insult to injury by directly cannibalizing programs that promote healthy forests and wildfire prevention.

If nothing more is accomplished by wildfire response legislation in Congress, we must fix the structural funding problems that stand in the way of our success. Moreover, we must seize upon this opportunity to turn the existing perverse set of budget incentives on its head and harness it in the service of life-, property-, and money-saving prevention and hazard mitigation investments. If we can set the trigger point for initiating disaster-sourced funding back from the standard budget mechanism – the 10-year average of suppression costs – and reinvest the savings in fire prevention and fuels reduction we will begin to see meaningful change.

Prevention and Mitigation Investments Must Create Lasting Change

Washington and many other states are showing leadership to make increasing investments in wildfire hazard reduction. In January I requested $20 million over two years from the state legislature to address forest health and fire hazards. Although they appropriated only $10 million, this still represents the single largest investment the state has ever made. DNR is committed, as are our federal counterparts, to approaching wildfire hazards at a landscape-scale. None of this year's destructive wildfires have affected or threatened exclusively one jurisdiction, and therefore our efforts to reduce hazards to communities and forests must be aligned across boundaries.

There are an estimated 2.7 million acres[2] of high-risk forest conditions in eastern Washington alone, which is about one-third of the total forest landscape. Washington State has 158 identified communities at risk of wildfire, most within a stone's throw of these overstressed, overgrown forests. This is made more poignant because we are seeing wildfires that move dozens of miles in a single burning period. The 2014 Carlton Complex wildfire, for example, grew by 123,000 acres as it made a near 30-mile run in 9 hours' time. Wind-driven embers from the 2015 Sleepy Hollow Fire ignited and burned down fruit processing warehouses, otherwise surrounded by pavement, along the banks of the Columbia River in downtown Wenatchee. These fires tell us as

[1] http://www.fs.fed.us/about-agency/budget-performance/cost-fire-operations
[2] http://authors.elsevier.com/sd/article/S0378112714005519

leaders that we must think bigger, and this will require investments that are strategically sound, but also larger in magnitude than those of the past.

In Washington State we have seen firsthand the successes of fuels reduction work around communities and in the forest landscape. Again drawing upon the 2014 Carlton Complex, we experienced the terrible losses of more than 300 homes. However, within the fire's footprint there had been hazard reduction work performed around 67 structures, 59 of which were saved. So another way of saying that is, the structure losses in Carlton would have been 20 percent worse without these investments. We cannot solve this problem overnight. Whether today's megafires continue to pose such grave risks to people and firefighters, however, is an outcome we must change.

One critical point of discussion in Washington State and nationally about hazard reduction has been: How much is enough? I submit that this is entirely the wrong question. The right question is: How do we build the infrastructure, community leadership and public-private investment to sustain a long-term effort? In situations like these, I believe the public sector must lead-off with a pulse of investment in our forests, landscapes and communities. This brings capital to the table and demonstrates to citizens and prospective business partners that our commitment is not simply a flash in the pan. We may always need to use public funds in some proportion to support activities like community planning, fuels reduction and FireWise, but I think we are underestimating the ethic of self-determination and ingenuity of people in communities that are under threat.

Fortunately for us, this has been underway full-force in Washington State. We are second in the nation in the number of FireWise communities. We are the site of some exemplary and leading edge work in Fire Adapted Communities and the Fire Learning Network. We have strong and growing collaborative groups – several recognized under the national Collaborative Forest Landscape Restoration program – working on National Forest management in eastern Washington. These are the kinds of investments by people and community leaders that can carry the day. However, it has been elusive to achieve the pace and scale of outcomes that collaborators and agency managers have identified as needed. This is primarily a function of funding resource scarcity that is caused by not only the current dynamic in the national funding structure, but the corrosive cumulative impacts it has had on agency capacity over the many years it has been in place.

We can, and must, align forest restoration and community protection objectives with economic benefits. We can, and must, make significantly greater investments alongside the people who are leading the charge on-the-ground for broader, faster outcomes. We can, and must, engage and lead people toward rallying around a new way of looking at life in a fire-prone landscape. These are the actions that will create lasting change.

Wildfire Response Infrastructure to Meet Today's Challenges

One of the most basic functions of government is to provide for public safety, health and security. There are diverse roles and missions for the array of agencies involved in wildfire response, but this basic public safety function unites us all. In the face of Washington's

megafires I have found this tenet of safety etched on the soot-stained faces of our heroic firefighters and written in the tears of people who have lost so much. For this reason, we must continue strengthening the bonds between respective local, state and national entities within the wildland fire community. Together, we must extend those bonds to achieve better partnerships with the people we serve. We must adapt our response framework, equipment, training and technology to today's fire environment – most importantly, to enable quicker, better-informed responses to wildfire starts in pre-identified high risk areas that threaten communities. Finally, we must redouble our commitment to safety.

No entity can afford to work alone in today's fire environment. In Washington State, our wildland firefighting response infrastructure is as integrated as anywhere else I have seen. This enables us, for example, to marshal structure protection resources, National Guard and active military resources, state resources, federal resources, tribal resources, private contractors, and virtually any other resource that is trained and capable onto a single incident. We need, however, to continue strengthening our early detection, fast response, and preparation for responding to fast-growing and unpredictable wildfires that call all hands into service over extremely short time periods.

The current capacity to achieve this outcome is resource limited from a number of perspectives. First, there are few dedicated resources to grow the capacity of local fire districts and emergency managers, including staffing, equipment and training. Often districts are first on-scene since they have the closest available resources, which is critical for successful initial attack. Second, while we have engaged large deployments of National Guard and military assets in Washington State this season, there is a significant opportunity to grow the wildfire knowledge base on an ongoing basis so that the call-up process is both rapid and effective. Finally, we have seen an outpouring of both commercial and volunteer support to engage in the wildfire effort. People want to help. Currently these efforts must be stood-up in place, amid the critical business of managing the fire. A greater commitment to safe and effective on-demand resource utilization mechanisms would help create in situ operational surge capacity, as well as strengthening bonds with affected communities. In keeping with a focus on fire prevention, however, capacity for rapid response while fires are still small must be the priority.

Technological advances have sometimes had difficulty penetrating the wildland fire environment, often due simply to their expense. Modern communications, personal GPS transponders, reliable field internet access, smartphone-based technologies, real-time weather data availability in the field, accurate fire weather forecasting and fire behavior models, forward-looking infrared (FLIR) imaging to penetrate smoke, and continuing to improve fire shelters are only a few examples.

Modernizing the large airtanker fleet is another example of the need to adapt our equipment to today's conditions. This year, the Forest Service planned to have up to 21 airtankers available for operations including: six legacy airtankers, 14 next generation tankers, and one agency owned/contractor operated HC-130H. The fleet size and capacity is still only one-half what it was a decade ago. Expediting the completion of a modernized the fleet is long overdue.

Finally, all elements of improved response and coordination must be done in the service of firefighter and public safety. Many of the foregoing priorities can help ensure fire conditions are communicated in real-time, that firefighter locations are tracked, and that fire supervisors have good situational awareness of what is happening.

Conclusion

I appreciate the opportunity to appear before the Committee today on behalf of DNR and the State of Washington. Wildland fire response is one of the most challenging facets of our jobs. DNR stands ready to assist the Committee in finding ways to address the challenges we all face in confronting today's extreme wildfire environment. Finally, I thank the Committee for its continued leadership and support on these critical issues.

Senator BARRASSO. Thank you very much, Dr. Goldmark, and thank you for your focus on the end on safety. It is not just for firefighters, but for communities as well, safety across the board. Thank you.

We do have a number of questions. I would like to start with you, Senator Cantwell.

Senator CANTWELL. Thank you, and I thank all the witnesses for your detailed input. Many of you have put a lot of work into these efforts before today's hearing. In some cases it is your lifelong work, so thank you for that.

Clearly you have put on the table some new ideas and points of direction that we should go in. I would like to start with you, Dr. Goldmark, about this issue of fire borrowing because you particularly, well Mr. Goulette as well, basically talked about reducing risk and reducing costs. What do you see as the fundamental challenge in fire borrowing that prevents us from reducing risks and reducing costs and how would you implement some of those response efforts? I heard in one county,I think it was Kittitas County, talk about hasty mobilization. How would you increase response and community protection that you mentioned?

Dr. GOLDMARK. So around the fire borrowing this is a crucial issue because if we hear from our Forest Service partners when they have to expand their maintenance budgets that they would otherwise use on forest health treatments around fire suppression, that means that it just prolongs the problem for that agency.

We at DNR look across the fence, so to speak, and we understand that the Federal Government and the Forest Service are largely hamstrung in their ability to carry out the appropriate management activities on those lands in a thoughtful, ecological manner to reduce the fuel loading. So that inevitably when fires arrive those forests are at resilient posture and can keep the fire on the ground where it can be actually beneficial and keep it out of the crown of the trees.

It's particularly important in Eastern Washington where the fuel loading is high and where the tree spacing is too dense, and so fire gets into the crown of the trees. The tree spacing needs to be increased and the fuels reduced there. That will help the Forest Service meet their obligation, and it will help all of the landowners in the vicinity of the forest keep the fire danger and the damage done by fires to a minimum.

Also I agree with Commissioner Berndt that the response times that we need across the landscape both at the county, State and Federal level need to be brought down considerably. As you may know I've made consistent appeals to the State legislature for additional capacity in terms of crews and equipment so that we can be more present on the landscape, so when fires do erupt we can enter into suppression efforts within a matter of moments. That's my goal so we can keep our fires small.

Senator CANTWELL. So you are saying both stop the fire borrowing so that we have more money in advance to actually do fuel reduction preparedness, but then, in addition, be ready for more rapid response with a different kind of network. Is that what you are saying because——

Dr. GOLDMARK. Absolutely, you've summarized it perfectly.

Senator CANTWELL. And on that network which we are seeing in some counties, we heard some really great testimony here for fire wise programs, for chipper distribution, for a variety of things.

But what is this faster response? What is that? What do you think? Is that tankers? Is that a network of people with a communication system that can just react faster?

It is very helpful to understand what you are saying about keeping the fire on the ground as opposed to in the crown of the trees, but what does the network look like for a rapid, quicker response?

Dr. GOLDMARK. So the network begins with early and rapid detection. Whether that's through satellite, over flights, drones, whatever, we need to be able to know when a fire starts immediately. And then that information needs to flow to the network, as you've described it, of local, State, tribal, Federal responders, who are closest to the incident and can respond, as I said, in a matter of moments so that we can really realize the goal that we've all talked about, and that is to keep these fires small. By keeping them small, we can protect our communities, protect our firefighter's safety and protect the habitat and watershed qualities that we all want to achieve.

Senator CANTWELL. Is that what you mean by surge capacity or is surge capacity the network to get resources more quickly? Obviously with these resources across the country we have had to bring a lot of resources here to Washington State, and sometimes that has taken days. So is that what you are saying?

Dr. GOLDMARK. Actually, it's two things.

The emergency response itself with the goal of getting the fire out as rapidly as possible. If that's not achievable, shortening the time of the search response would also be helpful to keep the fire from growing over large, the way they are in the Okanogan Complex or in the Northstar Fire today. We need to be able to get additional resources rapidly, if needed.

Senator CANTWELL. All of the witnesses mentioned these community preparedness plans. In some cases, I think, we are talking about everything from building codes to boundaries to communications about best practices. I have heard this is hard to implement without some help or at least without some focus.

Mr. Goulette, what you have done in California, and Commissioner Berndt, what you have done in Kittitas County, to get more communities prepared for next season?

Mr. GOULETTE. Yes, I think increasing the funding availability for community wildfire protection planning, providing increased assistance through the State forestry agencies and Department of Natural Resources to provide technical advice and guidance on preparing and developing CWPPs.

Then not just developing the documents themselves, but knowing that you have to sustain the partnerships that actually implement them. In California we have Fire Safe Councils around the country. They are standing, sort of, wildfire coordinating groups in communities that then, sort of, hold that plan and implement it over time. And they need a coordinator. They need a little bit of money every year to just sustain and stay working in the same direction.

I think those investments will pay dividends. I know there's recognition that it's going to take more money than we're spending

right now both money going to local level and money, I think, going to the states to be those technical assistance providers to help communities build their capacity.

Senator CANTWELL. But this is the ounce of prevention, is it not, that Senator Barrasso was mentioning?

Mr. GOULETTE. Yes.

Senator CANTWELL. Commissioner Berndt, do we actually have Kittitas County results from some of these fire wise programs of where areas have been treated verses areas that have not been treated?

Mr. BERNDT. Fortunately ours have not really been tested but it could happen at any moment.

I do have a history of one that we prepared that was impacted by fire down in the Blue Mountains a week or two ago. It was a shaded fuel break that we put on when I was doing my old job that we put to protect the city of Walla Walla's watershed because it is an untreated, unfiltered water. We built a shaded fuel break that was not totally successful, I was told, by my agency. I called and asked. And they said, no, it really needed to be wider. It needed to be thinned out more, but it was easy to refresh, and we prepared that to utilize as a portion of the fire line.

So they do work, but unfortunately we do very narrow bands of 200 or 250 feet when we need to and I agree with, I think somebody said, a quarter mile. As an Incident Commander what a difference that would make to have that on the landscape to know that you could buffer and alter the fire behavior as it comes in.

Senator BARRASSO. We will go back and forth with questions.

Dr. Medler, you started with a comparison of how do we, kind of, wrap our heads around how big of an area this is involved? The U.S. Forest Service had a report a couple years ago. They are talking about over 65 million acres of National Forest system lands that are high or very high risk of catastrophic wildfires. That is an area larger than the State of Washington. It is an area larger than the State of Wyoming.

The Forest Service also states specifically there are over 12 million acres in need of mechanical treatment, such as thinning. So at our current pace of mechanically treating roughly about 200,000 acres a year, they say up to 12 and a half million acres, it is going to take over 60 years just to treat the acres needing treatment now.

So with these numbers in mind, do each of you agree that we must increase the pace of treatment using both prescribed fire, mechanical methods and other things to reduce the severity and the size of wildfires?

Dr. MEDLER. Well, you're absolutely right. The scale of the problem and the scales of some of the solutions that are proposed are misaligned. I don't, in any way, question the validity of many of the solutions, mechanical thinning, prescribed fire, enhanced regions around our communities are all the kinds of things that can make the biggest difference.

I think the key point I was trying to make is a lot of these Forest Service lands and other Federal and private lands that have fuel issues make up such a huge area that, as I said, we're not going to cut our way out of it. It's just too darn big. So what we really need to address those huge areas is a little more freedom to use

fire in those larger areas, and these folks who are talking about the community protection zone, I think, are key to how we're going to have that freedom.

That doesn't mean we don't need regional and local decision-making processes. I think one of the key things to always recognize here is our fire landscape is very complicated. A solution for Flagstaff, Arizona is not the same solution for Wenatchee. So we need local input on the kinds of things that are the main goals both in the back country and the front country.

I could followup here with another quick comment about a recent example about the city of Boulder verses Colorado Springs. Several summers ago they experienced nearly simultaneous wildland fire. The fires were burning down essentially at the same topography, down into major metropolitan areas.

The city of Boulder for decades has had an open space park system more than a quarter mile wide, basically providing a buffer between the city and these foothills, and they experienced very little damage to resources, to homes, to the community, and for years they've been able to put prescribed fire in those buffer zones. It gave them the kind of resource that Gary here thinks is so critical. They had prescribed fire. They actually have a Christmas tree harvest in that zone. And they use that, what is essentially a park space, as a wildland fire buffer.

At least while Colorado Springs had dozens and dozens, literally hundreds, of very expensive homes built up into that area, and they've sustained huge losses in those communities.

If the communities like Boulder, Flagstaff, Colorado Springs, are a little bit more or perhaps quite a bit more resistant to fire, then we have opportunities on those vast scales that you're talking about.

Senator BARRASSO. Would anyone else like to weigh in on that?

Dr. GOLDMARK. Well I would just make a comment about fire wise. In the aftermath of the Carlton Complex fire from last year we did an analysis about homes that had a fire wise protection plan and had been treated. 80 percent of those homes survived the wildfire, so we think it's a very helpful treatment to utilize.

We've also looked at other areas of the landscape that were impacted during the Carlton Complex fire or the Tripod fire which was nearby, and we see that management activities in terms of thinning or harvest cut down the severity of the fire and in some cases fire proof those given areas.

Senator BARRASSO. Thanks.

Mr. Goulette as well as Mr. Berndt, I think, it is the USDA Inspector General who has reported over half of all of the money the Forest Service spends on fire suppression costs are incurred protecting houses, as he talked about on private property. Most of that private property is within the WUI, the Wildland Urban Interface.

Mr. Berndt, you talked about some of the ways and actions your county has taken to prepare for wildfire. I think you also mentioned you have standards but without enforcement. I am just looking to see if there are some additional things that we ought to be looking at legislatively that may be helpful.

Mr. GOULETTE. I think that codes and standards can prove very effective. California has a statewide code that then local counties can modify and improve on. And some have and do.

In the State of Washington we have several places that have adopted codes and standards. It seems to me, a difficult thing to legislate. At the same time a lot of the voluntary actions that we can take around home inspection and encouraging defensible space are things we can do now very effectively and we know they make a difference.

I tend to lean in that direction from the standpoint of prioritizing funding today. At the same time, I think, sort of trying to tackle and figure out how to enforce and implement codes and standards has great potential to, sort of, cut down that WUI development that's happening and potentially improve all these renovations that are going to happen over time to all these homes that are already built in the Wildland Urban Interface. Commissioner Berndt probably knows better than I.

Senator BARRASSO. Commissioner, do you want to add anything?

Mr. BERNDT. Defensible space maintained is the key. We sell the concept on the incentive basis that when the wildfire strikes you probably may not get a fire engine parked in your driveway. It's your responsibility to create that space that will make your home survivable in the passage of a wildfire without other protection. It's a very difficult sell and it doesn't go well at homeowner associations, but we try to put a pretty strong spin on what the responsibilities are for building in that Wildland Urban Interface. The people come for a sense of place, and I can take them to so many places where that sense of place has been permanently reduced for the next 50 years. And so we try to work hard.

One, during the construction and we even put a fire wise around three sides of an entire community and convinced them that you are very much at peril of your entire community being erased on an afternoon. That was kind of our approach.

Senator BARRASSO. Thank you.

Dr. Zimmerman, I wanted to ask you about these large scale wildfires. Dr. Goldmark mentioned, I think, it is no longer the exception but the rule. Is what you are seeing over a century of aggressive fire suppression and where we are now in terms of the load? Do you have thoughts about how we could prevent these really large wildfires at this point?

Dr. ZIMMERMAN. Yes, I've had many, many thoughts about that. And you know, it's the Federal agencies and the State agencies that go through an aggressive initial attack program with a goal suppressing 98 percent of all wildland fire during initial attack. So these large fires we deal with are 2 percent of all the fires, roughly. There are more one year than another year because the total number of fires is greater and we have more large fires this year. That's still a very small percentage of all the fires. And we need to do things that, you know, once those get to be large fires we can't suppress them through initial attack techniques. They can only corral them. We have to wait for moderating weather.

We have to try to find many, many resource bids that we put at risk of exposure to firefighter's equipment depending on the conditions. And the risk can vary. Now we have to look at the invest-

ments that we're making there in terms of firefighter risk, equipment risk verses return.

But there's preparation that can be done ahead of time. I know a lot of people have talked so far today about fire watch treatments, community wildfire protection plans, field treatments, mitigation rangers, fuel reductions or even the Wildland Urban Interface codes. We have code enforcements and inflammable material, construction of new houses and things like that. All those things together are very important to us and will help us to prevent the occurrence of large numbers of large fires in the future.

Treating the fuels and changing this environment, we have a history of 100 years of living with fire in this nation where living with fire has been to exclude fire. We haven't been able to do that. I mean, we still have fire very present but we've allowed fuels to buildup.

We've altered the fuel complexes, the vegetation complexes, and we're seeing the results of that during this century. We ought to go back and mollify those fuels and get things back to a more manageable situation.

So it's a combination of factors that are needed because there's a variety of preplanning tools needed. There's a lot of mitigation tactics needed, and then even some of the ways we fight fires are needed, all simultaneously.

Senator BARRASSO. Thank you.

Senator Cantwell?

Senator CANTWELL. I want to followup on this notion of preparedness in general for communities.

One thing that we have not talked a lot about is this issue of communication, but obviously we have a pretty good network with the firefighters. I visited the communication command center in Colville and saw how that operates, but obviously we are seeing communities all across the state have to deal with this challenge of communication as the broadband networks have burnt up.

Is this just because we have seen so much more development in the Wildland Urban Interface or has this always been our problem and now we know more about it ? And what do we need to do to develop the communication response system? Is it about redundancy up front or is it about just making sure that we have the ability to get mobile units into communities who are planning responses?

Mr. BERNDT. So I chair the local 911 board and our constant communication amongst ourselves is trying to figure out the interoperability amongst fire agencies and responders. When we talk about a surge there will be people arriving from all over the entire United States that need to be able to communicate. We really struggle with how do we get an interoperability that is understandable, implementable and widespread when we need it quickly. It's a very expensive thing.

The same is true with communicating with our citizens when the power goes down. We're a little bit fortunate in that we have I–90, Interstate 90, that has quite an expansive cellular network that's mostly run by propane as are the repeaters. But the interoperability is huge and I don't pretend to know it. I listen to it, and I haven't heard where somebody said we know how to solve it.

Senator CANTWELL. I do not know if anybody else or Commissioner Goldmark has a comment on that, but one thing we did hear as we were going around the state is we should have a number, just like on I–90, that you can call.

Mr. BERNDT. Yes.

Senator CANTWELL. That gives you the latest information.

Mr. BERNDT. Yes.

Senator CANTWELL. When other capacity is down.

Mr. BERNDT. Yes, I agree.

Dr. GOLDMARK. So, I would just comment I agree that, particularly at the community level, I mean when evacuation notices are going out and there is no way for the citizens to actually interface with that information. There are a lot of anxious people out there, so having a really robust and durable communications system within the community so it can understand the fire condition and their own safety aspects, I think, is a really good point.

Mr. GOULETTE. Yes, I want to add I think there's more we can do on evacuation planning ahead of time that could really help even in the absence of communication infrastructure people make better decisions when a fire does get out of hand, and they're either faced with the decision to evacuate or stay in some instances where it helps them to make the safest decisions possible because they've talked with their neighbors. They've talked with their family. They understand the intent of the local emergency responders and the fire department. I think that can become a bigger component of Community Wildfire Protection Planning and was maybe lacking in the very first round of CWPPs.

So I think we have an opportunity as we're updating and increasing the number of plans to really do a better job of evacuation planning.

Senator CANTWELL. We just see it in some of these communities because they have very narrow in and outs. [Cell phone ringing.]

Senator CANTWELL. I think this is to say how important communication is. [Laughter.]

Senator CANTWELL. It's a reminder. It's a moment.

The Republic or Twisp, Winthrop Valley or even now as we look at what has happened in Pateros, we have very few routes in and out of these communities. Here we are trying to plan for some of the evacuations from Omak. You know, how are we going to get people even out of there given what the whole surrounding area was undertaking?

So it seems to me like in that moment it is really critical to have these communication networks that say this is where we can go, this is how we can get there.

I saw a woman, who just happened to be in Pullman on Saturday. She said, "Yes, I just went and got my mother from Omak." And I said, 'Well how did you get there?" And you know, she told me a very elaborate route she had to use just so that she could go and get her mother.

We have other Washingtonians who do want to help their families and help their neighbors and want to know what the best way to do that is. It just seems to me that this is probably not unique necessarily to firefighting in the context of natural disasters. I loved what you said, Commissioner Goldmark, about this is not

just another agency managing a problem. It becomes a disaster, and our response has to be a robust response to that natural disaster.

To me, a more robust communication system that helps both in the communication about the fire, and in the response is something that we need to look at. Obviously part of the question is what is that delivery system that is less vulnerable to the fire itself so that you can count on it, so that you know that it will be there?

I don't know what the number is. Somebody told me $2 million worth of wire owned by the Douglas County PUD burned up. So it makes it very, very challenging but we are going to have to figure out how to have this communication system if we want to have a good response for our citizens. I do not know if anybody has any responses? I guess we will look at this from a technology perspective. I don't know, Dr. Medler and Dr. Zimmerman, if your organizations have looked at that?

Dr. ZIMMERMAN. No, we haven't. We're aware of it, but we haven't looked at it.

Senator CANTWELL. OK.

Dr. MEDLER. One thing I will say is that community protection and community resilience have a few other subtleties and the kinds of questions you're asking about communication and infrastructure and information flow are probably best viewed not just or probably best viewed not just in an emergency response context but in a resilience context.

One way to think about resilience is how long will it take and how much will it cost to get us back to something like normal? I think that's one of the things that some of these communities are facing when we prepare for these fires. And we decide which sort of investments to make to get them to the point where we'll all be able to breathe a sigh of relief and say, whew, that the fire is over. OK everybody, go back to what you were doing.

That's when a lot of these communities realize their infrastructure, their water systems, particularly, but many of these communication infrastructures are damaged. To think about resilience rather than resistance in those communication structures, I think, is not only critical and wise, but also it's worth considering the model of Washington.

These things don't come one at a time, once and then stop. We have a fire again the very next year nearby and so infrastructure that we could have put money into for communication around these fires needs to be resilient to be able to be used again, probably the very next season and in Twisp again, 2 years in a row.

Senator CANTWELL. Well, that is why I definitely do not want to see what we saw last year which was hesitancy because we had to wait for the FEMA declaration. No community should have to wait for that declaration to get the emergency communication system deployed. We need to get something that is there and useable so that the local governments and law enforcement and others can communicate to the citizens about these evacuation levels. Obviously they ramped up very quickly this time, but all the more reason why we need to have the communication.

Thank you, Senator Barrasso.

Senator BARRASSO. I have a couple more questions.

Mr. Berndt, in your testimony you spoke about burned lands washing away and the fire impacts on watersheds. I was wondering in your view what additional steps need to be taken to protect watersheds to create group resilient forests?

Mr. BERNDT. So speaking somewhat from history, the Federal lands that are burning now will undergo a process known as the Burned Area Emergency Rehab Process. But a lot of the private lands are often left to their own devices to work with either local conservation districts or the NRCS because the State of Washington doesn't allow for any repair. I hope I'm still right, can assure that is not suppression related.

So the damage to the land is the landowner's responsibility. It's a rare event for the landowner and they need the resources to be able to do the things they need to do very quickly, like in the next 90 days, before winter sets in to make their lands stable so we don't ruin our watersheds and water supplies for lack of action.

Senator BARRASSO. Dr. Medler, there have been a number of reports that the Forest Service spends an incredible amount of taxpayer dollars, risks the lives of employees by conducting fire operations that it knows are actually not going to have much impact. I think you eluded to that a bit. The LA Times won a Pulitzer Prize, because they had a whole series of articles a number of years back about, kind of, the blank check approach to suppression spending.

I want to ask you about what kind of spending controls Congress ought to consider putting in place to get a handle on fire suppression costs or to ensure that we are not exposing our firefighters to unnecessary risks?

Dr. MEDLER. Well, that's a great question and a very big one, and I think there are a couple other folks here that have some expertise on that.

I have great respect for how the Forest Service is going about trying to provide for the safety of the folks working on the fire lines. I would be remiss if I were to stand here and say we're not doing enough to protect the lives there. And some of us not sitting still.

However, I do think I will reiterate that there is this bifurcation problem that we have large, catastrophic fires burning big areas in back country, some wilderness and lots and private and state and county lands as well. Perhaps to go back to the fire borrowing problem, one way I think about it is perhaps more of a separation not in suppression verses preparation but as more of a front country, back country process in the planning and to make sure that we have the resources necessary to do what we need to do in the front country which is where it's expensive.

I would argue that one of the big problems we're having with expenditures is we're using essentially a WUI model even in the back country. A fire is 22 miles from a community. We'll hit it hard. We'll hit it with tankers. We'll hit it with hand crews as if it's a mile away from a community, and we have to because essentially it is. It can make that run in two more days and get to that community. I know of prescribed fires around Los Alamos that made exactly that kind of run in a day. They were trying to burn about

1,000 acres, and it made it many, many miles in a short time right into the city.

So as long as all of our communities, as long as there is some very vulnerable, we're going to be spending huge amounts of money in the back country on fires that before those communities were built we would have simply allowed those fires to run their course in a much, much less expensive and, I will argue, much safer way.

Senator BARRASSO. I have one other question I wanted to ask Dr. Goldmark. The Forest Service put out a report a couple of years ago recognizing the need for a strong forest industry to help accomplish forest restoration work. I want to ask you why do you think a vibrant forest products industry makes restoration projects more cost efficient? I know mill owners say a primary, they have some barriers in trying to get to do some work in forests in terms of regulations. But is there a need, in your opinion, to have a healthy industry to help with some of this work?

Dr. GOLDMARK. There is, and it's a critical issue in Eastern Washington today, particularly in Central Washington. The infrastructure is basically gone. Remaining is the Yakima Nation which has a mill there and then there are mills located in Colville.

But in the intervening space in Kittitas County, as Commissioner Berndt knows very well, there's no infrastructure there. If you want to do your forest health treatments and you want to pay for those through the removal of small diameter material that needs to come out and reduce the fuel loading, there's no economic manner of doing that. That's why many of these forest health treatments cost money, and it's also why some of us have been working around renewable fuels that can be generated from biomass.

So there are a number of different approaches we're using, but mill infrastructure is a vital part of forest restoration and resilience.

Senator BARRASSO. Commissioner Berndt, is there anything you want to add?

Mr. BERNDT. Absolutely. When the private timber companies decided at some point many years ago that the forests of Eastern Washington were not providing the return that they would expect, they began to dispose of their lands and that made operating mills basically no longer viable.

I've talked many times to the Forest Service folks, is there any way we can work something for our economy to rebuild and re-get, reestablish, some infrastructures in our community. But there's no ability for the Forest Service to make long term commitments that those who would be interested in developing the infrastructure, particularly a mill, would say we can't invest our money on short term, very expensive in these days, to open a mill or to do the biomass.

We've made several failing attempts, and it's critical that the working circle for these operations needs to be probably less than 50, 75 miles. But if you harvest timber in Kittitas County now it either goes to the coast or it goes into Central Oregon or it goes to the Yakima mill. It's just not profitable for that to happen on any kind of scale.

Senator BARRASSO. Thank you very much.

Senator Cantwell, additional questions?

Senator CANTWELL. I just want to ask the witnesses. Obviously this is a big priority for the State of Washington, getting a new approach here, making sure we do preparation and preparedness, improving our system.

It is a priority for my colleague from Wyoming. I don't think he would be here today if it wasn't. We have panelists from other parts of the country. Why is getting a new fire response plan a national priority?

Dr. GOLDMARK. If I might, I would offer that from a 50,000 foot level, if you will, if we are experiencing drought conditions here in the State of Washington. Higher temperatures, I think we've set record high temperatures for the past two or three months. We've had very low precipitation, and the result of this, in part, are these mega fires that are occurring today. It's drawing resources in terms of staff and equipment from all across the nation. It's drawing financial resources of a major dimension here into the state to fight these fires.

I would point out that the Okanogan Complex fire in 2015 as well as the Carlton Complex fire in 2014 were not only the state's worst wildfires for those years, but indeed the top priority at the national level.

So perhaps Washington State is most impacted by a warming and drier climate. In doing so we're bearing the brunt of a very vicious wildfire season. It is a national issue.

Mr. GOULETTE. I would add, the American taxpayer has clear interest in public lands across the country. The vast majority of them are in the West. The vast majority of those are at risk.

Climate change is pushing those forest's ecosystems and woodlands and grasslands to new conditions given the current fire context. If we don't take action it will only cost the American taxpayer more, and we will only have worse climate outcomes in terms of carbon and we will lose those species that we're trying to protect. It's clearly a national problem and a national priority.

Dr. ZIMMERMAN. Yes, I would also say that I believe this is a national issue. While the magnitude of it may be greater and more recognized in the Western United States, we now have a year round fire season within the United States.

We have fires in the Southeastern part of the country throughout most of the year, starting early in the year. Texas, Oklahoma and some other South Central areas are having fires on Christmas Day and New Year's Eve and New Year's Day. It's a year round problem. It's only continuing to grow. The North Central part of the country also is having larger fires. And you might look at the Western United States, that's where we hear about during the summertime through the media. You'll see that since the year 2000 that many of the Western States have experienced their largest fire or second or third largest fire ever on record in the last 15 years.

So look, fires are getting larger. The seasons are getting longer. The extent of the area burning is extending across the country.

Dr. MEDLER. I'd like to chime in also that these fires are burning on all types of landscapes and jurisdictions. But fires in our Federal lands, going back to Yellowstone and even decades before that, are of tremendous interest to the public. A critical media opportunity occurs at a lot of these fires to try to educate the people as

to the needs to do what I would concur with Senator Barrasso, get that ounce of prevention out there.

I don't mean to be glum about this, but frankly I don't think we've seen a bad fire season yet. My reading of the cards is we've dodged a couple bullets over the last eight, ten years, and it could get quite a bit worse. And so, prevention is key at this point before we do have a large fire with tens of thousands of homes in San Diego or someplace like that. I quite honestly think this should a key priority at the Federal level.

And Tom's absolutely right, it's not just the Western United States. We have problems in Florida and the Southeast and in many parts of the country where we could have fires behaving in new and unexpected ways which is what we are seeing now.

If that happens at a broader scale near some of our larger communities we have some serious problems, and I think we're at a point where as you have both alluded to, we need a new paradigm. We need a new way to think about fires, and we need a way to effectively do that for, not just our small communities in the back country, but for our Los Angeles and our San Diegos just as much.

Mr. BERNDT. The national forests in this country are a treasure. They're being eroded at a fairly rapid rate through catastrophic fire.

To me, that's a national priority, to protect those forests because I have to tell you I grew up with my father working at the United States Forest Service. I treasure the national forests of our country. And to say we see a trend, that Dr. Medler talks about, we may not have seen a bad season.

We have a chance to interrupt that cycle and do some things that continue to keep the national forests, the treasure that I've always seen them to be and the economic engine that drives, certainly, my county, certainly Washington State. I can't speak for the entire West. It would go totally against me to say this is not a national priority.

Thank you.

Senator BARRASSO. Anything else, Senator Cantwell?

I just want to thank all of you for being here today, for your very, very helpful testimony.

Other members of the Committee may actually submit questions to you. Those who were not able to be with us today, and we would ask that you answer in writing.

The hearing record will remain open for 2 weeks. I want to thank all of you for your time and your testimony. I especially want to thank our hosts here at this incredible institute of higher education. I also want to thank Senator Cantwell for her dedication, her work and her willingness to address these difficult issues in challenging times.

Thank you.

This hearing is adjourned.

[Whereupon, at 1:32 p.m. the hearing was adjourned.]

APPENDIX MATERIAL SUBMITTED

Kevin Bannon
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Greetings Senators and honored guests. Thank you for taking your time to listen and to discuss the important issue at hand—wildfire funding. Let me say this—may our current fire season crisis end quickly and happily. There's already been too much suffering.

I am here today to offer my perspective that Forest Service fire funding needs reform and the Wildfire Disaster Funding Act is a step in the right direction. The focus of my testimony stems from the following statement from the August 2015 US Forest Service document, *The Rising Cost of Wildfire Operations & Effect on Non-Fire Forest Service Operations*. "The dramatic underlying shift of funding and human capacity from non-fire programs to support fire programs has real implications on the ground."

I will share with you what I see, on the ground level of our local national forest, the Mt. Baker-Snoqualmie and the White River section by Mt. Rainier of the Snoqualmie Ranger District. Generations of Bannon's have been pleased to enjoy our great public lands by virtue of an occupancy permit with a historic rustic cabin. We have in small measure paid back for our honor by doing our best to promote wise use of the forest and pitching in to help in various ways.

Over the years we have seen important staff positions left unfilled after retirements and transfers. In one incident we observed some neighbors wait close to 10 years for a routine well approval because there was no qualified staff to complete the environmental review. By the way this family also paid the Forest Service to ease the funds issue in order to help expedite the review.

We have seen popular roads shut down. This summer the 6 mile long Corral Pass Road, with its highly regarded day trip and wilderness access trailhead, as well as its scenic free use campground is shut down because of lack of maintenance money. Corral Pass is a Northwest Forest Recreation Pass facility. So while many recreating citizens are disappointed, the Forest Service is also losing funding for recreation maintenance.

Forest crime has increased. Not so many years ago through a program called cooperative law enforcement, the Forest Service paid for a Pierce County Sherriff deputy to patrol the White River portion of the Snoqualmie Ranger District. Not only that, this deputy voluntarily lived in the Greenwater area enabling him to respond more efficiently and to be better connected with his patrol area. This was in addition to a Forest Service Law Enforcement Officer also assigned to the White River Area. People look wistfully over those years because they were peaceful and safe.

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The cooperative program was eliminated and the Sherriff deputy moved on. Next the Forest Service Law Officer accepted an interagency transfer and his position was left unfilled. The only available assistance is stationed in North Bend and he must serve both the I-90 corridor as well as White River. A call to investigate a situation after the fact can take days. Other Forest Service employees have shared with me they are concerned because they do not have the guarantee of a protective escort, even when they know ahead of time they have a contact with a problematic party. If that is not enough the law enforcement officer detailed the Stevens Pass corridor is scheduled to retire soon and the word is he may not be replaced.

Early this month the district ranger held a packed community meeting in Enumclaw regarding reckless target shooting which unsurprisingly turned up a long list of other examples of crime running wild. One comment summed things up well. "We didn't have this problem when we had law enforcement."

While not all of these things are solvable, particularly when financial resources are limited, it seems reasonable to me the Forest Service needs predictability so that even its modest efforts to manage non fire operations and projects can move forward without being deferred canceled or postponed because of emergency redirection of money. Clearly as things are now, it is not just the like-to-do and the should-do things that are being deferred. Even safety essentials are being left unaddressed. That can't end well. Let's fix it please. Thank you for your time.

OUTDOOR ALLIANCE

September 11, 2015

Senator Maria Cantwell
511 Hart Senate Office Building
Washington, DC 20510

Senator John Barrasso
307 Dirksen Senate Office Building
Washington, DC 20510

Dear Senators Cantwell and Barrasso,

On behalf of the outdoor recreation community in the Pacific Northwest, Outdoor Alliance would like to express our sincere gratitude for your continued efforts to address wildfire issues and for holding the recent field hearing at Seattle University. As you know, wildfires routinely have serious negative impacts on funding for outdoor recreation and maintenance of our public lands

The outdoor recreation community has a significant interest in the funding that land management agencies have available, both for wildfire suppression and for programs that benefit outdoor recreation. Our activities are both affected by wildfires and require investments, including trail maintenance and active land management, and each year our public lands are increasingly affected by "megafires," which have all of the destructive qualities of other natural disasters like tornadoes and hurricanes.

For years, both the Forest Service and the Bureau of Land Management have had to transfer money from other programs to fight fires. The worst result might be the vicious cycle created by depleting funds for work to mitigate the risk of fires in order to pay for fire suppression.

But recreation programs in particular are also negatively affected. Agency programs that benefit recreation often happen in the summer season, putting recreation budgets on a collision course with fire suppression costs. Every summer, many of the resources set aside for program delivery benefitting recreation get diverted to fight fires.

While the funds transferred are significant, the effect of staff transfers is perhaps even greater. During fire season, seasonal and yearly staff are often diverted to fight fires, leaving trail and other projects postponed or scrapped altogether. Similarly, valuable collaboration and planning efforts can be set back a full year or more when staff time is transferred.

Finally, the impacts on recreation go beyond funding and staffing transfers, and can last for years after a fire. Many times burnt areas remain closed to recreation access because there is no funding available for crews to reopen them. All of these on-the-ground impacts of this budgeting issue, including reduced program delivery, diverted staff time and shortchanged restoration, are costly and avoidable.

OUTDOOR ALLIANCE

The 2015 wildfire season in Washington has been the worst on record, with almost 1 million acres currently burning. The impact this is having on our land managers shows – Okanagan Wenatchee National Forest closed a large section of the Forest north of Highway 2 not because of eminent fire danger, but simply because they didn't have the resources to keep areas open. A specific example of this impact from one of our member organizations is that The Mountaineers, after much work as an organization to come under permit in the Wenatchee River District of OWNF, has yet to actually receive a permit for course activity in Leavenworth. The Wenatchee River District never has the resources to issue the permit that the organization is operating under and paying for.

In order to protect other critical agency programs, including those that benefit recreation, extreme wildfires should be declared natural disasters, and excess fire suppression costs should be treated differently. Agencies should not have to dig a hole in vital program budgets to fill a hole in fire suppression funds.

Thank you for your attention to this critical matter for westerners, outdoor recreationists, and all Americans who care about their public lands.

Best regards,

Adam Cramer
Executive Director
Outdoor Alliance

cc:

Brady Robinson, Executive Director, Access Fund
Wade Blackwood, Executive Director, American Canoe Association
Mark Singleton, Executive Director, American Whitewater
Michael Van Abel, Executive Director, International Mountain Bicycling Association
Mark Menlove, Executive Director, Winter Wildlands Alliance
Martinique Grigg, Executive Director, The Mountaineers
Phil Powers, Executive Director, American Alpine Club
Katherine Hollis, Conservation and Recreation Manager, The Mountaineers
Thomas O'Keefe, Pacific Northwest Stewardship Director, American Whitewater
Louis Geltman, Policy Counsel, Outdoor Alliance

USDA

AUG 26 2015

The Honorable Lisa Murkowski
Chairman, Committee on Natural Resources
United States Senate
Washington, DC 20510

Dear Madam Chairman:

We appreciate the Senate Energy and Natural Resources Committee holding a hearing on opportunities to improve the organizational response of Federal agencies in the management of wildland fires.

The 2015 wildfire season is one of the most severe in recent years. To date, wildfires burned more than 7.5 million acres -- more than double the number of acres burned last fire season – destroying lives, homes, and precious natural and cultural resources. In the face of this natural disaster, the Federal Government, alongside states and local communities and with international assistance, is mounting a full-force response.

The National Preparedness level remains at its highest state, and the National Multi-Agency Coordinating (NMAC) group is deploying a record number of Federal firefighting resources. In addition, two hundred soldiers from Fort Lewis, Washington, and international air and ground resources from Australia, Canada, and New Zealand are bolstering our wildland firefighting resources.

As fire managers in the field face the complexities of managing wildland fire, the U.S. Forest Service (USFS) and the Department of the Interior (DOI) continue to struggle with the existing budget process to fund wildfire suppression activities. Currently, Congress uses a ten-year average of wildfire suppression costs to fund these activities. In a peak fire season with catastrophic fires and a shortage of suppression funding, USFS and DOI must move funds from other programs to meet the increased costs of wildfire suppression. While budget constraints will not keep us from responding to fires or keeping communities safe, they undermine critically important forest and rangeland management and fire risk reduction activities that could reduce suppression costs.

The President's FY 2016 budget request, which aligns with the bipartisan Wildfire Disaster Funding Act of 2015, would solve a critical budget problem and provide additional capacity for the agencies to invest in forest and rangeland restoration making landscapes less vulnerable and more resilient to fire. Establishing this new framework and providing stable funding for fire suppression will minimize the adverse impacts of fire transfers on the budgets of other fire and

non-fire programs. Under this new framework, the budget request for suppression would cover 70 percent of the 10-year suppression average within the domestic discretionary cap. This makes sense when you consider that one percent of fires cause approximately 30 percent of the cost, meaning this base-level funding ensures that the proposed wildfire cap adjustment would be used for only the most severe fire activity. Furthermore, both the President's proposal and the Wildfire Disaster Funding Act are budget neutral and would allow the Federal Government to budget for wildfires in the same manner as other natural disasters.

Opportunities to enhance fuels management and restoration work make lands more resilient to wildfire and, thereby, reduce the risks to the public and our firefighters. Fire resilient lands and communities mean that both can withstand the effects of the fire without significant loss of life, property, or ecosystems. Thank you for considering these solutions for this critical issue.

Sincerely,

Robert Bonnie
for Under Secretary for Natural Resources
and Environment
Department of Agriculture

Kris Sarri
Principal Deputy Assistant Secretary
Policy, Management and Budget
Department of the Interior

AUG 26 2015

The Honorable Maria Cantwell
Ranking Member, Committee on Natural Resources
United States Senate
Washington, DC 20510

Dear Senator Cantwell:

We appreciate the Senate Energy and Natural Resources Committee holding a hearing on opportunities to improve the organizational response of Federal agencies in the management of wildland fires.

The 2015 wildfire season is one of the most severe in recent years. To date, wildfires burned more than 7.5 million acres -- more than double the number of acres burned last fire season – destroying lives, homes, and precious natural and cultural resources. In the face of this natural disaster, the Federal Government, alongside states and local communities and with international assistance, is mounting a full-force response.

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Sincerely,

for Robert Bonnie
Under Secretary for Natural Resources
and Environment
Department of Agriculture

Kris Sarri
Principal Deputy Assistant Secretary
Policy, Management and Budget
Department of the Interior