

COLORADO WILDFIRES

HEARING
BEFORE THE
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
ONE HUNDRED TWELFTH CONGRESS
SECOND SESSION

TO

DISCUSS THE RECENT COLORADO WILDFIRES, FOCUSING ON LESSONS
LEARNED THAT CAN BE APPLIED TO FUTURE SUPPRESSION, RECOV-
ERY AND MITIGATION EFFORTS

COLORADO SPRINGS, CO, AUGUST 15, 2012



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COLORADO WILDFIRES

WEDNESDAY, AUGUST 15, 2012

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES
Colorado Springs, CO

The committee met, pursuant to notice, at 10:10 a.m. in Centennial Hall, Room 203, University of Colorado, Hon. Mark Udall presiding.

OPENING STATEMENT OF HON. MARK UDALL, U.S. SENATOR FROM COLORADO

Senator UDALL. Thank you, Pam. Before I officially call the hearing to order, let me just acknowledge the leadership that the Chancellor has long provided for this community and for the State of Colorado. This is one of the 4 institutions that represent the University of Colorado, and I am so proud and honored to have been a partner with the great work that you do here in Colorado Springs.

So thank you, Chancellor.

Let me officially call this hearing to order. This is the Energy and Natural Resources Committee of the U.S. Senate. It is chaired by Senator Jeff Bingaman from New Mexico. The ranking member is Senator Lisa Murkowski from Alaska. Both are very effective and engaged senators who understand public lands issues. I want to thank, in particular, Senator Bingaman, for anointing me, if you will, today to chair this hearing.

There will be a similar hearing in Santa Fe, New Mexico, I think, in just the next couple of days dealing with this same very important topic.

I have a statement I'd like to provide for the record, and then we're going to turn to the real stars of this hearing, which is this great panel that we've assembled here today. They will provide testimony, and then we will engage in a conversation over the next couple of hours.

Again, I want to welcome all of you. I would also second the Chancellor's comments that this is not a town meeting. There are, however, cards available that my staff have, Chancellor, on which you all can direct questions and comments. You can be assured your concerns will be considered as a part of the record as we move forward in this important quest to return our forests to health, prevent catastrophic wildfires like the ones we've seen in Colorado and, frankly, all over the country this year, and, I hope, also find ways in which we can turn the excessive biomass in certain forms

that's the reason these fires have been so catastrophic to economic uses as well.

So, again, good morning. It's, as I said, a particular privilege to chair this field hearing here in my home State of Colorado. I want to thank the witnesses that have joined us at the University of Colorado at Colorado Springs for their work and all the time, energy, and resources that went into making this hearing happen. There is a lot of work that goes on behind the scenes.

As I mentioned, all the statements today will go into the congressional record because this is a Senate committee hearing. I'd also like to recognize that we are here in Colorado Springs, a city and community that experienced the Waldo Canyon fire which is the most destructive fire in Colorado history. I was here when the fire was still burning to meet firefighters and displaced residents, and I know how much this community has suffered.

The fire took two lives, destroyed 350 homes, and displaced 32,000 people. It also has affected the entire city as businesses temporarily closed and some tourists canceled longstanding plans to visit the area.

As everyone here is aware, the Waldo Canyon fire was just one of many fires burning across Colorado in this historic wildfire year. Twice within 3 weeks, we broke the previous record for the most destructive wildfires in our State's history. While big destructive fires like High Park and Waldo Canyon dominated the national news, there were fires burning in almost every area of the State, including the 14,000-acre Pine Ridge fire in Mesa County, the 10,000-acre Weber fire in Montezuma County, and the 45,000-acre Last Chance fire in Washington County. That pretty well covers the State, incidentally.

My heart goes out to everyone affected by these fires, and my thanks goes out to all the firefighters, first responders, law enforcement, and National Guard and military units who worked tirelessly to protect us. In fact, how about a round of applause for all those fantastic public service personnel.

[Applause.]

I have no question—because I have direct experience with this—that Coloradoans are driven, determined, and innovative. Today, in that spirit, I am focused on moving toward solutions we can implement to improve the health of Colorado's forests and reduce the threat of catastrophic wildfires.

Today, we will have an informative discussion on the wildfire challenges the West faces, as well as finding lessons that we can apply to future suppression, recovery, and mitigation efforts. Our forests are the backdrop and backbone to many rural and urban communities. They provide a wide range of benefits, including clean drinking water for millions of people across the U.S., vital wildlife habitat, jobs in the forest products industry, and a variety of recreation opportunities.

But it's also well understood that our forests, regardless of their stewards, face significant threats to their overall health. More people in fire prone landscapes, larger and more frequent wild land fires, long-term drought, the bark beetle outbreak, and unhealthy landscapes have created a perfect storm: wild land fires that continue to burn larger and require more resources to fight every year.

Fire suppression now consumes nearly half of the U.S. Forest Service's annual budget. That's an astounding figure that should be an eye-opener to all of us. For a different outcome, we need a different approach, and we all do have a role to play. In this case, the best offense, in my opinion, is a good defense. The same principle applies to wildfires.

Wildfires are a natural phenomenon, but we can reduce their effects so that we can avoid catastrophic wildfires that damage property and take lives. It is catastrophic wildfires in the wildland-urban interface, not wilderness or roadless areas, that cost tens of millions of dollars to put out and hundreds of millions of dollars to recover from. I hope to use today's hearing to discuss what this best defense looks like, including both fire suppression and pre-fire mitigation.

Last week, as the Chancellor mentioned, I led an after-action review with the top leaders of the U.S. Forest Service, the State Forest Service, and the military to discuss the total Federal response to the Waldo Canyon fire. We concluded that these Federal agencies largely worked well together. This was the first time a dual-status commander was activated. A dual-status commander allows National Guard personnel to command active duty personnel. If there are any military personnel in the room, you know how revolutionary that concept is, but how useful it is as well.

All participants agreed at this after-action review that having a single point of contact on the ground helped to streamline communication and to speed the delivery of DOD assets. Another of my takeaways from the review last week is I'm going to take a close look at the Economy Act of 1932—what is that, 80 years ago—to explore whether it should be modified for those extreme situations in which human health and safety are at imminent risk. I would welcome any and all input as I explore these policy issues. We are truly all in this together.

Let me pose a couple of questions. As to pre-fire mitigation, where should we prioritize limited resources? What can we do to better partner with and support forest-related businesses? What can home owners and property owners do to protect themselves?

There are great examples out there where communities, businesses, and agencies are coming together to make positive things happen. Let me give you a couple of examples.

Several home builders in the metro Denver area are using local beetle kill wood to frame new homes. The Coalition for the Upper South Platte, just up the road outside of Woodland Park, is leading a strong effort with the U.S. Forest Service, the National Forest Foundation, Denver Water or Rural Water, Coca-Cola, and many others to restore the landscapes destroyed in the Hayman fire some 10 years ago. A business called West Range Reclamation, based in Hotchkiss and a contractor for the State's first long-term stewardship contract, has partnered with the U.S. Forest Service to complete over 70,000 acres of forest improvement projects in 5 western States since 2001, creating 55 full time jobs and subcontracting over 50 more.

Colorado's second long-term stewardship contract was recently approved and will restore more than 1,000 acres a year around the town of Pagosa Springs. This project was led by a local business-

man in cooperation and conjunction with the U.S. Forest Service and the local collaborative force group. It will use the complete chain of forest products by developing a small sawmill and a biomass energy facility, reducing wildfire risks while also producing local jobs and clean energy.

Right here in Colorado Springs, our very own Colorado Springs Utilities collaborates with the U.S. Forest Service to improve forest health conditions for critical water supplies and has a cooperative agreement with the Colorado State Forest Service to manage nearly 16,000 of city owned watershed lands.

These examples show that proactive force management done in the right way can have a whole constellation of benefits. You provide jobs to rural communities. You produce timber for homes and businesses and biomass for renewable energy. In the process, you protect homes and other infrastructure. You can improve habitat for endangered species and other wildlife. You increase forage production for livestock. You preserve watersheds that deliver much needed water to our irrigated fields, municipalities, and waterways.

The point I'm making is that there is a lot of opportunity here. We've long known the Chinese have a symbol for crisis. That symbol is actually made up of two symbols. One symbol represents danger. The other represents opportunity. I think there's enormous opportunity in the danger that we face and the tragedies that we've experienced.

So, again, I want to thank everybody for attending today.

Let's move to the experts. I know you came to hear them, not solely the senior senator from Colorado. As long as you don't call me the senior citizen, Pam, I'm going to be all right with that. But it's great to have everybody here.

I think we'll start from left to right. Why don't I, in turn, introduce each witness as you begin to testify. So we'll start with Mike King, who is the Director of the Colorado Department of Natural Resources, who grew up on the West Slope and is a wonderful asset in the Hickenlooper administration.

Mike, welcome. We look forward to your comments.

I would remind all of you that you each have 5 minutes. If you can stay within that timeframe, I'd appreciate it. I won't bring the gavel down too heavily if you exceed it by a little bit of time. But we look forward to your comments.

Director King.

STATEMENT OF MIKE KING, EXECUTIVE DIRECTOR, COLORADO DEPARTMENT OF NATURAL RESOURCES, DENVER, CO

Mr. KING. Senator Udall, I appreciate the opportunity to come speak with you about this issue that is so critical to the future of the State of Colorado. Within the purview of natural resources, I can't think of an issue that is more complicated, more of a Gordian knot than forest health at this point.

I agree with you that there are opportunities. But as of right now, to say that forest health management is challenging is really a gross understatement. We are facing 4 million acres of dead and dying bark beetle trees. We are wrestling with a drought that we haven't seen since 2002 and prior to that. That was considered the drought of the century. We have a weak forest product market, and

we can't afford to treat even a fraction of the trees in the areas that need attention right now.

So that puts us in a situation where prioritization is absolutely critical. The year 2012 has been one of the worst fire years in Colorado's history. We had 3 notable fires along the Front Range, and they occurred during the spring and summer. We lost over 100,000 acres of trees. Over 600 homes were lost. Tragically, we lost 6 lives.

So the question becomes: What can we do to minimize the risk of these types of fires in the future, and how can we pay for those efforts? We look at forest management in 3 areas, much the same way you do. The pre-fire mitigation is probably where our efforts return the most from a cost benefit analysis. The most efficient way to treat the fires is not to have them in the first place, or if we have them, to have them in healthy forests where the magnitude and scope is dramatically smaller.

We appreciate your leadership in 2010, bringing \$40 million to this area for our bark beetle efforts. It was very important, and the money went to some of the critical areas that we're talking about. But we have over a billion dollars in bark beetle needs alone in Colorado, just to put that into some sort of scope.

The Four Mile assessment that we continue to review, the after-action report that you were so critical in bringing about, showed that there are some lessons to be learned. We had defensible space work that was done, but we learned that the slash piles that remained in place posed a significant threat, so that removing or knocking the trees down is important. But if you don't remove the fuel, you don't get the full benefit. Those who didn't remove the fuel from the forest floor found that their homes were far more likely to burn than those who had defensible space and were in areas where the fuel was removed. That's critical.

That brings us to, of course, the question: What do we do with that fuel when we cut it? Because we need to have a market for it. Fire suppression is, obviously, critical. The early response is the key, and with the number of lightening strikes and other causes, it's always a question of prioritization and trying to do as much as we can.

The funding is absolutely paramount. What we've seen—and you referenced it—with a greater and greater portion of the United States Forest Service funding going to fire suppression each year, what we're seeing is that oftentimes those funds are depleted early in the season, and the Forest Service is left with no choice other than to look at other areas and take those funds from forest management, paradoxically taking them from the pre-fire treatment that would reduce the risk in future years. So it becomes a very difficult cycle.

Then, finally, the post-fire recovery—FEMA provides good support for the post-fire recovery through the Fire Management Assistance Program. But we know that treating forests ahead of time is far more cost effective, and we urge FEMA to expand the use of those disaster mitigation funds to include prevention treatments.

The prioritization that we discussed really leads us directly to the wildland-urban interface. In Colorado, in 2007, it was estimated that we had 715,000 acres in the wildland-urban interface. That's predicted to go by 300 percent by 2030. These are the areas

that should be prioritized for the treatment that we do. Frankly, we don't even have the resources to treat the WUI, much less the broader country, the roadless and the wilderness that you referred to.

So we do support an idea that was in draft legislation to identify critical areas and streamline the review and implementation processes in those critical areas. Those would, of course, be the wildland-urban interfaces where the communities and homes are most in jeopardy. We also strongly urge Congress to reauthorize stewardship contracting and the Good Neighbor Authority permanently. We think that those allow us the tools to get the most for our limited resources at the State level.

In Colorado, like many other western States, we continue to work to bolster our traditional forest products industry. You'll hear more from Nancy Fishering later. But we also began to explore innovative approaches, including the use of woody biomass for thermal heat. Last year, we formed the Biomass Working Group and tasked it with identifying barriers to the development of this industry, and they are making recommendations to overcome those barriers. In Pagosa Springs, we have the first example of a biomass energy plant. We hope to see this effort replicated.

Finally, Senator, I appreciate your efforts to keep this front and center in our public discourse. It is one of, if not the most critical issue, because forest health impacts every other aspect of our natural resources, to the very essence of our water and our ability to keep communities alive and healthy and thriving.

If we are to succeed, it will require leadership at the Federal level, the full efforts of the State, our local governments, and the citizens who live in these areas, all of us working together making the resources that we have available to this effort. We are committed at the State level to making sure that we live up to our obligation. I want to thank you again for your leadership on this.

[The prepared statement of Mr. King follows:]

PREPARED STATEMENT OF MIKE KING, EXECUTIVE DIRECTOR, COLORADO
DEPARTMENT OF NATURAL RESOURCES, DENVER, CO

Mr. Chairman and members of the committee, I appreciate the opportunity to speak to you about a critically important issue in Colorado, the health of our forests. My testimony today will address the statewide impact of recent wildfires, funding for wildfire prevention, suppression, and recovery, challenges presented by Colorado's vast wildland/urban interface, and ways in which our forests might be managed to improve their resiliency and reduce the risk of catastrophic wildfire in the future. I will address the role and importance of federal authorities, market-based incentives, state land management, and place-based forest collaboratives in helping us improve the health of our state's forest resources.

The problem of forest health is compounded by the bark beetle epidemic across Colorado, one that has left us with millions of acres of dead and dying trees. Markets for these trees are weak or non-existent, making it prohibitively expensive to treat all the areas that need attention. Drought has intensified the fire-prone condition of our forests. These challenges facing Colorado and many western states are being addressed with active forest management. Our state has a range of efforts underway designed to help restore forest health while simultaneously revitalizing our forest products industry.

2012 WILDFIRE SEASON

As the Committee is likely aware, Colorado has already had an intense fire season. Toward the end of March, the Lower North Fork Fire burned for a week in a populated area near Conifer, south of Denver. That fire resulted in the tragic

deaths of three people, the loss of 27 structures, and the scorching of 4,140 acres. At the peak of the fire, over 900 homes were evacuated. Just two months later, the High Park Fire erupted north of Fort Collins. That fire burned 87,284 acres, destroyed 259 homes and 112 outbuildings, and resulted in one fatality. Before that fire was fully extinguished, the Waldo Canyon Fire outside of Colorado Springs erupted, eventually scorching 18,947 acres, destroying 346 homes, and leading to two fatalities.

The fire season isn't over yet, but our work is now divided between recovery from these destructive blazes and continuing to reduce the risk of having additional fires. Impacts from the fires have touched an array of individuals and agencies. Costs associated with wildfires include suppression actions during the fire, structure and property loss. Additional direct impacts include those to water facilities and water quality. Longer term, revegetation and erosion prevention activities can continue for decades.

For example, following the Buffalo Peaks Fire (1995) and Hayman Fire (2002), erosion continued to cause problems for downstream Strontia Springs Reservoir. Finally, in 2011, Denver Water had no choice but to dredge it in order to remove the accumulated sedimentation. The dredging project cost the utility an estimated \$30 million.

FUNDING FOR WILDFIRES

We tend to think of funding for wildfire in three categories: pre-fire mitigation efforts, fire suppression once the fire is underway, and then post-fire recovery.

Pre-Fire Mitigation and Forest Health

Before a fire, maintaining forest health and protecting homes and communities can reduce the eventual costs of wildfire. With approximately 4 million acres of bark-beetle infested dead and dying trees around the state, the scale of the challenge is daunting. Paying for treatments that might mitigate this forest health challenge has been exacerbated by a weak market for forest products in the state. Since we know we cannot afford to treat every acre that deserves attention, prioritizing treatment areas is essential.

We appreciate the efforts of Senator Udall and his colleague Senators from Wyoming and South Dakota in securing \$40 million in fiscal year 2010 to this region of the U.S. Forest Service to help mitigate the effects of falling dead bark beetle-killed trees as well as additional treatment work in this infested area of our state and region. That funding has indeed helped, but we have much more work to do. It is estimated that the cost to treat the dead trees in the nearly 4 million areas hit hard by this current bark beetle epidemic could cost upwards of one billion dollars alone.

After the devastating 2010 Fourmile Canyon Fire, where 168 homes were destroyed north of Boulder, Sen. Udall requested a thorough assessment of the incident from the Rocky Mountain Research Station. We appreciate the Senator's leadership, and the report was released last month (Gen. Tech. Rep. RMRS-GTR-289; July 2012). One of the most interesting findings was that while several fuels treatment projects had been conducted within the area that eventually burned, many of those treatments failed to protect homes. Those projects had been focused on improving the health of the forest, developing safe travel corridors, and creating wildfire defensible zones using a shaded fuel break near homes and communities. However, surface debris from the treatments had not been removed in many instances either physically or by prescribed fire. Thus, the efficacy of the fuel treatments was very limited. This finding underscores the challenges associated with funding shortages; while clearing timber is important, removing the material is an expensive—and critical—piece of the strategy. Incentivizing the removal of woody biomass could shift this pattern so that forest treatments include that pivotal step. However, the results did show that if property owners both removed excess trees and surface vegetation, their chances of protecting their homes was improved, which suggests that we need to do better about encouraging defensible space around homes and communities.

Fire Suppression

Early response to wildfires is essential to ensure public safety, reduce costs, and minimize damage to natural resources. Along with three other western Governors, Governor Hickenlooper in July wrote a letter to leadership in Washington, DC, urging Congress to provide adequate funding through FEMA for states and local jurisdictions pursuing fire recovery. The Fire Management Assistance Program is particularly important for these efforts. Additionally, the Governors noted their concern with the ongoing pattern whereby land management agencies exhaust the funds

available for firefighting and are forced to redirect monies from other programs, including, ironically, fire mitigation work. Raiding the budgets for recreation in order to pay for fire suppression presents a significant problem in Colorado, where our outdoor recreation opportunities on public land are unparalleled. We support minimizing fire transfer within the federal land management agencies, and more fully funding existing suppression accounts.

Post-Fire Recovery

Colorado appreciates the range of federal support available to assist with post-fire recovery, primarily through the BAER teams and FEMA.

While FEMA has provided invaluable support for post-fire recovery, the research is clear: treating forests ahead of time and preventing fire from occurring is more cost effective. For this reason, we urge Congress to work with FEMA to expand the use of their disaster mitigation funds to include disaster prevention treatments.

THE WILDLAND-URBAN INTERFACE

A recent Colorado State University study (D. Theobald and W. Romme, 2007) estimated the size of the WUI in our state as encompassing 715,000 acres; that same study predicts a 300% increase to over 2 million acres of WUI by 2030. Homes in the WUI are particularly vulnerable to wildfire. They also present an unusual public policy challenge, as individual homeowners need to be brought into a landscape-scale approach that is based on the best available science.

The Fourmile Canyon Fire Report (referenced above) noted that home destruction in the fire was due to direct firebrand ignitions and/or surface fire spreading to contact the home. Therefore, significantly reducing the potential for WUI fire disasters during extreme burning conditions depends on a homeowner creating and maintaining a safe home ignition zone or HIZ—the design, materials, and the maintenance of the home including the area 100 feet around it. The Colorado State Forest Service works with homeowners to help them assess and then treat forested land to reduce the threat from fire. That agency is funded largely through the State and Private Forestry program in the USFS budget, and their work is limited by the funds available to support their efforts. Again, these limitations point to the need for prioritization.

We support the concept of identifying “critical areas” on our national forests that are at high risk of catastrophic wildfire, and then applying streamlined review and implementation processes for thinning projects. These areas are in urgent need of expedited treatment to reduce fuel loads to help reduce the threat to communities from wildfires. Because our most urgent need is around communities, we suggest defining the concept so that it refers exclusively to areas within the WUI. This would allow for a focus of scarce resources to the areas that are most critical: near homes, communities, and water facilities. The Governor recently sent a letter on July 6, 2012 to the Senate and House Agriculture Committees urging that this concept—as well as many others—that appear in the Forestry section of the 2012 Farm Bill be adopted and passed so that we can employ these provisions as soon as possible.

FEDERAL AUTHORITIES

In addition to the “critical area” designations identified in his letter regarding the Farm Bill, the Governor identified two other federal authorities have played a key role in Colorado as we work to find a private market for forest products, enhance the health of our forests, and reduce the risk from wildfire. Those provisions are Stewardship Contracting and Good Neighbor Authority.

Stewardship Contracting allows the USFS to focus on goods (trees and other woody biomass) for services (removal of this material), and helps the agency make forest treatment projects more economical. Individuals who seek to build a business that requires a reliable supply of timber have consistently reported that long term Stewardship Contracts provide them with the security they need to secure investments. We support permanent authorization for stewardship contracting.

Good Neighbor Authority allows states, including our own Colorado State Forest Service, to perform forest treatments on national forest land when they are treating neighboring non-federal land. This landscape-scale approach is essential for achieving landscape-scale forest health. Fires don't respect ownership boundaries. We support permanent authorization for Good Neighbor Authority.

MARKET-BASED INCENTIVES

Another way to encourage the removal of woody biomass is to provide incentives for the private sector. Using the wood to create traditional forest products is one

avenue. More recently, Colorado (and several other states) has begun to explore the viability of using the wood as an energy source. Colorado's 2011 Forest Health Act (SB11-267) created a Biomass Task Force, tasked with researching the barriers to the development of such an industry and making recommendations for overcoming those barriers. The report noted that

Colorado should use more forest biomass to reduce the fuels available to catastrophic wildfires. Biomass could be used in wood-to-energy efforts, which work more effectively where the full-value product chain, (i.e., the full range of possible wood products is produced), is generated through forest management activities. Higher-value uses of wood, such as lumber and wood paneling, provide the financial support to remove and utilize lower-value woody material, such as biomass for energy, allowing this material to be used efficiently, rather than being left behind to fuel a wildfire.

STATE LANDS

So far, this testimony has focused on the challenges facing federal and private lands. We do, however, want to mention state lands. As with federal public lands, the cost of removing trees when the vegetation removed is of low economic value makes their removal costly. Of the 4,483,638 million acres of land that the state manages (State Trust Lands, State Parks, and State Wildlife Areas), about 845,000 acres is forested, and of that about 297,000 acres has been impacted by the bark beetle, and of this about 8,000 acres is within the wildland/urban interface. That means that of the 3.5 million acres of forest lands affected by the bark beetle, state lands represent 0.2 percent of the immediate threat to homes and communities. Still, we have been actively treating these lands—when we can secure the funding to do so. To date, the state has treated—that is, removed excess vegetation that constitutes the fuel for intense wildfires—about 48,000 acres. Much of this work was done with federal assistance (about \$2.5 million between 2006 and 2010), and this federal funding required state matching dollars. The state is actively pursuing additional federal funding (again requiring state matching dollars) for this year and beyond.

COLLABORATIVE GROUPS

Colorado has a rich environment of grassroots initiative and cooperation that fosters gatherings of people from differing backgrounds and interests coming together to address forest issues in specific geographic locations through collaborative approaches. Although there is a current national trend of citizens organizing collaborative groups to work together to address complex issues facing forests on public and private lands at the local and regional levels, Colorado has a long tradition of successful collaborative problem solving spanning nearly thirty years. There are twenty identified place-based forest collaboratives of all sizes, organizational structures, missions and operational philosophies active in Colorado and at least three new collaboratives are being formed. Because of this rich environment of collaboration, Colorado became the only state to receive multiple awards when it got two highly competitive USDA Collaborative Forest Landscape Restoration Program grants in 2010.

CONCLUSION

Colorado is facing a host of challenges when it comes to managing our forest resources and reducing the risk of wildfire to homes and communities. The strength of our place-based collaborative groups allows them to partner with land management agencies to leverage scarce resources. Innovative small businesses have begun to emerge in the state, seeking to make creative use of woody biomass. But Colorado needs help. As described here, permanently authorizing provisions that help our efforts is an essential step. We look forward to working with this committee in whatever way is useful.

Thank you for your ongoing interest in and passion for these issues.

Senator UDALL. Thank you, Director King. I would also like to acknowledge that the Department of Public Safety at the State level has an important role to play. I know you work closely with them. I see Jim Davis here. Perhaps Paul Cooke is here as well, representing the Department of Public Safety. So thank you for bringing the wealth of knowledge and experience here to Colorado Springs.

Dr. Kaufman will testify next. He's the Scientist Emeritus, U.S. Forest Service, Rocky Mountain Research Station, and he's a contract scientist for the Nature Conservancy. I have to tell all of you that Dr. Kaufman played a key role in the evolution I underwent in the late 1990s when it came to forest health. I, at some level, still believe every tree is a good tree. But I had to understand that not every tree should be where we now have those trees. Dr. Kaufman can put it more articulately than I just did.

But I also wanted to acknowledge that Congressman Hefley—who represented this area well and was a class act—and I joined forces in 1999 to begin to address some of the forest health concerns that were beginning to emerge, in large part because Dr. Kaufman, along with Dr. Covington down in Flagstaff, and this very focused group of forest scientists began to put the clarion call out that we were facing a threat like one we had never seen before.

So, Dr. Kaufman, it's terrific to see you. Thank you for taking your time, and thank you for being so engaged in this. The floor is yours.

**STATEMENT OF MERRILL R. KAUFMAN, EMERITUS SCIENTIST,
FOREST SERVICE ROCKY MOUNTAIN RESEARCH STATION,
AND CONTRACT SCIENTIST, THE NATURE CONSERVANCY**

Mr. KAUFMAN. Thank you. It's good to see you. I really appreciate your continued interest in these forest health issues, and thanks for including me in these discussions. It's where we all need to be.

I'm going to jump right to some numbers that I've pulled together for Front Range ponderosa pine and Doug fir forests. That's where all the big fires are occurring and where we're losing houses and lives. The numbers I want to share with you are based in large part on our understanding of historical ecological conditions and processes and also information that was assembled for the 2006 Front Range Roundtable report, and those pieces of information are still very relevant.

Our research showed that, historically, significant fires occurred in these forests about one to 3 times a century, every 40, 50, 60 years or so. These fires were mixed in severity. The numerous openings that were created by these fires were generally between, say, one and a couple of hundred acres in size or occasionally a little bit larger. In my studies, we haven't seen any evidence of openings that were 1,000 acres or larger from these standard placing components of this mix of area fires. The forests remained irregular, patchy, and that assured that subsequent ground fires couldn't be very large, because few areas could develop that had really dense forests over large areas.

We have about 800,000 acres of ponderosa pine and Doug fir forest in the Front Range. If historical fire behavior had been allowed to continue over the last century, we could have expected probably about 180,000 acres converted into temporary openings by these natural stand replacing fires. That would have been somewhere between a thousand and two and a half thousand openings of various sizes across the Front Range in that vegetation zone. Most other areas would have been significantly thinned and kept thinned by fire, and the forest would have remained ecologically sustainable.

They would not have been vulnerable to these uncharacteristically large crown fires that we've been having in the last two decades.

In just 3 recent fire years alone, 1996, 2000, and 2002—not even including this year—there were 6 extreme crown fires in these Front Range ponderosa pine and Doug fir forests that created 6 openings that ranged in size from 3,000 to 60,000 acres, 60,000 being the Hayman fire. So roughly 85,000 to 90,000 acres of crown fire in just 6 openings represents about half of the total expected amount of crown fire, but it should have been distributed across hundreds to thousands of small patches spread throughout the vegetation zone. Furthermore, the natural thinning of forests by wildfire has been largely eliminated.

So with that kind of backdrop, we've got new research needs that always unfold from our observation of how treatments are going and now from looming climate effects. But the scientific basis exists for extensive improvement in fuel and forest health conditions over the next few years. We're not lacking in enough information to make headway.

Despite hard work by dedicated managers and agencies and so forth, far too little has been done to provide adequate protection from wildland fires in these Front Range forests, and the ecological condition remains poor at best. Effective treatment requires massive removal of biomass, and it doesn't matter whether it's mechanical or prescribed burning. Somehow or another, we've got too much biomass.

The costs are enormous. Thus far, it's been difficult to find adequate value in the removed biomass to significantly offset the cost of treating a forest and bringing them into a better fuel and ecological condition, especially at the scale we're talking about. I think it's safe to say that neither agency nor industry capacity seems adequate for the scale of work needed. We've got a huge problem and a pretty darned limited capacity to address it, in spite of the hard work of people.

I'll conclude just by suggesting that, obviously, I think we must pay far more attention to fuel treatment and forest restoration in these lower elevation ponderosa pine and Doug fir forests. That's where the big fires are occurring, the houses lost, and, tragically, the lives are lost.

I think we also need to be aware that we've got emerging research issues that are not well funded. So somehow or another we're going to have to address the research component of this so we do stay ahead of the curve here, especially as we're talking about a scale of treatment and a series of potential climate impacts that we don't understand very well.

The effort needed to address these problems is far bigger than we're accustomed to. Yet somehow or another we need to find the will, we need to find the way that government, politics, the public can all come together to try to solve this problem.

I'll be glad to answer any questions you have after a few minutes. But I think I'll conclude with that.

Thank you.

[The prepared statement of Mr. Kaufman follows:]

PREPARED STATEMENT OF MERRILL R. KAUFMAN, EMERITUS SCIENTIST, FOREST SERVICE ROCKY MOUNTAIN RESEARCH STATION, AND CONTRACT SCIENTIST, THE NATURE CONSERVANCY

Current conditions of forests in Colorado threaten public safety, property, and health of important natural resources. Beginning in the mid-1990s and extending into 2012, a series of major fires in ponderosa pine/Douglas-fir forests of the Colorado Front Range damaged watersheds, and a thousand or more houses and a dozen or more human lives have been lost. During the last decade, mountain pine beetle damage to lodgepole pine forests has added serious public safety dangers and new forest health issues in higher elevation forests.

Severe watershed damage and the loss of two lives caused by the 1996 Buffalo Creek fire prompted the beginning of a series of agency, political, and public responses to forest health and wildfire issues in the Front Range. Subsequent major Front Range fires included Hi Meadows and Bobcat Gulch in 2000, and Schoonover, Big Elk, and Hayman in 2002. Long before the 2012 fire season, a series of efforts culminated in the 2006 Front Range Roundtable report that described the nature and magnitude of Front Range forest and wildfire issues, and outlined a series of steps needed to mitigate wildfire threats and restore forests to a healthier condition.

My testimony is based in large part upon research conducted in my lab on fire history and ecology of historical Front Range forests prior to Euro-American settlement, in concert with research conducted by colleagues. My testimony is also based upon my extensive participation in the Front Range Roundtable deliberations and implementation of recommendations. I was one of two presenters of the Roundtable report at its rollout in 2006 for Gov. Bill Owens, The Nature Conservancy, and other participants.

Lodgepole pine and beetle kill issues are important, and threats posed by falling trees and wildfire loom as a concern across much of the state. Nonetheless, people have died, astonishing numbers of houses have burned, and watersheds are at risk not in lodgepole pine forests, but rather in lower montane ponderosa pine/Douglas-fir forests in the Front Range and beyond. We cannot help but note that all the major Colorado fires in the last two decades and thus far this year have occurred not in beetle-killed lodgepole pine, but in these lower elevation, heavily populated forests. Having led a recent review of fuel treatment efforts across the country for the national Joint Fire Science Program, it became clear to me that Front Range ponderosa pine/Douglas-fir forests have perhaps the worst forest and fuel conditions in the country, especially given the extensive urban interface throughout this vegetation zone. Adding in drought, the current destructive fire patterns strongly reinforce this assessment.

As you might recall from our over-flight and discussions following the Hayman fire 10 years ago, and from extensive analyses conducted by the Front Range Roundtable, these ponderosa pine/Douglas-fir forests are in extremely poor condition as a result of past human impacts, namely logging, grazing, and fire suppression. And now, climate patterns are not working in our favor and appear to support a true shift in climatic conditions that will affect many of our forests adversely.

BACKGROUND INFORMATION.

I've pulled together some numbers for Front Range ponderosa pine/Douglas-fir forests, based in large part on our understanding of historical conditions and processes studied at Cheesman Lake in the South Platte watershed before that historical forest was destroyed by the Hayman fire. And I have included information from the Roundtable report that addressed the Front Range more broadly. I presented this summary at the 10th anniversary meeting of the Hayman Fire June 21-22.

- Historically, significant fires occurred in ponderosa pine/Douglas-fir forests one to three times per century. These fires were mixed in severity across the burned area. In some places the fires were relatively cool and burned mostly on the ground. In other areas trees were thinned by fire, and some places burned intensely as crown fires killing all trees. Collectively, patches of crown fires created openings amounting to slightly over 20% of the ponderosa pine/Douglas-fir forest area during each century. The numerous openings created by these fires were generally between 1 and 200 acres in size and occasionally somewhat larger, but there was no evidence of openings 1000 acres or larger. Most of the newly created openings became reforested within several decades, though in some instances they persisted for well over 100 years. As a result of these fires, forests remained irregular and patchy, assuring that subsequent crown fires were not large because few areas of dense forest were very large.

- About 800,000 acres of ponderosa pine/Douglas-fir forests exist in the Front Range. Except for the recent major fires, wildfire has been largely eliminated as a factor shaping forest structure. Most forests have become uniformly dense over large areas, with very few open areas or areas of low forest density. If historical fire behavior had been allowed to continue, we could have expected about 180,000 acres converted into temporary openings by natural stand-replacing crown fires over the last 100 years. Somewhere between 1,000 and 2,500 openings of various sizes might have resulted. Most other areas would have been thinned by fire. Forests would have remained ecologically sustainable and would not have been vulnerable to uncharacteristically large crown fires as we've experienced in the last two decades.
- In three recent fire years alone (1996, 2000, and 2002), six extreme crown fires in Front Range ponderosa pine/Douglas-fir forests created six openings ranging from 3,000 to 60,000 acres. Roughly 85-90,000 acres of crown fire in just six openings represents about half of the expected amount of crown fire that should have been distributed across hundreds to thousands of small patches spread throughout the ponderosa pine/Douglas-fir zone over 100 years. Furthermore, natural thinning of forests by wildfire has been largely eliminated. Short of conversion to shopping centers or covered by volcanic ash, it is hard to imagine a forest system in more difficulty.

These numbers and analyses leave little doubt that fuel conditions in ponderosa pine/Douglas-fir forests pose unrelenting threats not only to an important ecosystem, but especially to human life, property, and watersheds. And we are all aware of the dramatic new evidence of current fire behavior illustrating the stunning magnitude of this problem.

WORSENER BY CLIMATE.

Changes in climatic patterns appear increasingly real. I've often noted that some of our ecosystems are 'out of whack' as a result of past management activities. It now appears that all of our vegetation life zones are out of whack to some degree. A massive mountain pine beetle epidemic from Colorado to British Columbia, more frequent severe drought, and extensive fires in forests and shrublands—evidence is mounting that climate is triggering extensive changes in our natural resource systems. Calamitous ecological trajectories punctuated by abrupt disturbances are displacing normal ecological change and may well be forerunners of shifting life zones, with important ecosystems experiencing highly uncharacteristic and intense agents of change.

CURRENT SITUATION.

Based upon existing research and extensive public and private land experience, we have a sound understanding of what needs to be done to mitigate fuel hazards to protect watersheds, lives, and properties. Most of this information has been summarized in the 2006 Front Range Roundtable report, and continuing work by Roundtable member agencies and organizations such as The Nature Conservancy is both adding scientific understanding and increasing the size of treated areas having less fuel and better ecological condition. While new research needs are becoming clear based upon assessing initial treatment responses and looming climate effects, the scientific basis exists for extensive improvement in fuel and forest health conditions over the next few years.

Nonetheless, despite hard work by dedicated managers, far too little has been done to provide adequate protection from wildland fires in Front Range ponderosa pine/Douglas-fir forests, and forest ecological condition remains poor. Consider the sheer magnitude of the work needed. Effective treatment requires massive removal of forest biomass, whether mechanically or using prescribed burning. Costs of treating forests range from a few hundred dollars per acre in areas suitable for prescribed burning, to two thousand or more per acre where biomass has to be removed by logging, chipping, or other procedures. Often a combination of treatments is needed. Furthermore, many areas are hard to treat because of topography or proximity to urban development. This both increases treatment expense and requires widespread public acceptance of treatment activities and outcomes. Thus far it has been difficult to find adequate value in the removed biomass to significantly offset the cost of treating forests and bringing them into better fuel and ecological condition.

Historical forests looked far different from current forests. While public reaction to treatment outcomes mimicking historical forests has been positive, public reaction has not been tested for the scale of treatment work needed to resolve the fuel and ecological problem of Front Range ponderosa pine/Douglas-fir forests, particularly

where work is needed in the wildland/urban interface. Furthermore, neither agency nor industry capacity seems adequate for the scale of work needed.

PLEASE CONSIDER TWO RECOMMENDATIONS.

First, we must place far more attention on fuel treatment in the lower-elevation ponderosa pine/Douglas-fir forests of the Front Range. Our professional managers know what to do (with a caveat below), but they lack resources to do the work. We must find the public, political, and agency will to address this problem at a meaningful scale. Thus far that will is lacking.

Second, at a time of growing concerns, we have a research funding shortfall. We are facing considerable uncertainty regarding how climate shifts mesh with our existing fuel and vegetation management guidelines. The Rocky Mountain Research Station, US Geological Survey, and universities have limited capacity to do the needed research work.

The forest health problems we face clearly affect our human lives and sense of safety and well-being. The effort needed to address these problems is bigger than we are accustomed to, yet somehow we must find a way to bring people, government, and politics into play to solve these problems.

This concludes my testimony.

Senator UDALL. Thank you, Dr. Kaufman. Sobering statistics. I've known you, though, never to pull your punch or punches, and I think you, again, have been such a mentor to me. Thinking back on what you've taught me, if any of you in the auditorium here want to get a better sense of what we face, just look at the photographs of 100 years of the ponderosa and Doug fir forests. They were relatively healthy, and there's a lot of open canopy. One ponderosa per acre—as I remember it—right, Dr. Kaufman—was generally the average.

Mr. KAUFMAN. More than one.

Senator UDALL. More than one, but not many more than one. Much of the biomass was in grasses and shrubs, not in trees. But we'll further explore some of your conclusions.

Next on the panel is Jimbo Buickerood, who is the Public Lands Organizer, San Juan Citizens Alliance, and he is a member of the Upper San Juan Mixed-Conifer Work Group. In the interest of a full confession, I've known Jimbo for 40 years, although he doesn't even look quite 40 years of age.

But we've known each other for a long time. He's a consummate outdoorsman. There's nobody that knows the back country better than Jimbo, and I'm glad he's here.

I look forward to your testimony.

STATEMENT OF JIMBO BUICKEROOD, PUBLIC LANDS COORDINATOR, SAN JUAN CITIZENS ALLIANCE, DURANGO, CO

Mr. BUICKEROOD. Thank you, Senator. I think I look younger because I'm not in the Senate.

[Laughter.]

Thank you for the opportunity to speak today on this important issue and welcome to everyone here today. I live in the Mancos River Valley, right next to Mesa Verde National Park between Durango and Cortez.

First of all, I want to express my sympathy and condolences to the Colorado Springs residents who suffered losses in the Waldo Canyon fire as well as other Colorado residents who suffered losses in other fires this year. Our Mancos Valley community was also impacted by a fire earlier this year that, I believe—after listening to

the Chancellor, who noted this started—the Waldo Canyon fire—was started, I think, 2 days before that.

We are very lucky in that the fire did not result in any loss of human life and only minimal property damage. I must say that homes and lives were saved, due to the incredibly fast response of emergency services and also the preventive efforts of home owners who safeguarded their homes and neighborhoods by effectively removing hazardous fuels. As well, in my exhibits and my testimony, there is a fine article that speaks very specifically to what was done in that community that really paid off in results. It is eye-opening and very good evidence of what can be done.

As the senator noted today, I represent both the San Juan Citizens Alliance and also the Upper San Juan Mixed-Conifer Working Group, which is a collaborative community group working in the Pagosa area on mixed-conifer issues. Pagosa Springs is entirely surrounded by a national forest, and there are approximately 144,000 acres of mixed-conifer forest, which includes a ponderosa forest there.

From my work in forest issues over the past few years in Colorado, including my involvement in the Mixed-Conifer Working Group, I just want to share 3 fundamental points to start with here having to do with reduction of wildfire hazards in the wildland-urban interface or, as I hope everyone knows the term, WUI. These are all things that should become our common language, actually, living in Colorado.

First, we know that the existing structure of Federal environmental regulations, including the National Environmental Protection Act and the Healthy Forest Restoration Act, provide both the broad authority and sufficient flexibility to support Coloradoans in addressing the challenges we have with our Colorado forests. There is no need to pass additional legislation, such as some now being examined in the House of Representatives, to create new logging authorities, or to transfer the jurisdiction of our public lands from the Federal to State government in the name of wildfire hazard reduction.

Indeed, we have a regulatory structure through both NEPA and HFRA that effectively supports us and allows us to address the challenges at hand. Both of these processes include one of the most important pieces of the solution, that of public engagement. It is public engagement that brings us public dialog and full disclosure, and that leads to good projects and good outcomes. I think the example of the work we've done in the Pagosa area is very specific to that. So when it comes to the statutory and regulatory environment, the solution is: It works. There is no need to change any of that structure.

Second, we need to continue to have greater funding and continued funding to deal with these challenges. There is no way around that. You know, the reasons for where we're at now are multiple. Both of the gentleman who spoke before me spoke of some of those, including disease and insect outbreaks, climate change, forest management practices, settlement patterns, and others.

Because we know funds are limited and they need to be used wisely, the primary question really is: How do we best use the resources available to us? I'd like to look at that, and we've looked

at it in our working group, really from a business point of view, which is: What is the best return on our investment? That's what we need to drill down to.

Fortunately, we have sound research and findings from recent reports, though, as Dr. Kaufman noted, we need to keep on that one. There's lots to learn. But, you know, findings such as the Four Mile Canyon fire study really have given us information about what we need to work on. I would say that supporting initiatives such as the Community Wildfire Protection Plan work and the Firewise program, are very important pieces to the solution puzzle.

We also know that when we invest in fuel reduction projects, the best use of funds is dealing with the hazards that are close to homes, businesses, and infrastructure. There is no need, and it is a poor use of resources and even brings false hopes to suggest that extensive logging of dead or dying trees will necessarily save homes and lives. The hazard is closer to home than that.

As Senator Udall noted, when reviewing findings of the Four Mile Canyon fire study, the fire taught us that the most important yard tool you can have in a wildlife prone area is not a chain saw. It's a—

Senator UDALL. Weed whacker.

Mr. BUICKEROOD. A rake.

Senator UDALL. A rake. I thought Dr. Kaufman was going to give me the quiz today.

[Laughter.]

Mr. BUICKEROOD. I just wanted to be sure you remembered your previous remarks.

The other piece I want to speak to is, I think, a worthy piece of funding that has been mentioned here previously, which is the long-term stewardship contracts. It's important that those efforts be supported. These can't be one or 2-year, you know, shotgun approaches, but multiyear approaches in communities.

Third, I just want to note that an important piece of that is community involvement. When wildfires burn close to homes or in communities, they affect everyone in the community, as the Chancellor pointed out. As we've seen, an effective response to wildfire necessitates community-wide response. Similarly, effective prevention necessitates community-wide decisions.

I would just say that although the efforts and the work that we're doing at the Mixed-Conifer Working Group in Pagosa Springs may not necessarily be a template for all Colorado communities, if you look at the report that's with one of my exhibits—and we can talk further about this—that type of community model where all the stakeholders are involved in decisionmaking and priority setting is extremely important if we're going to move forward on this. We don't have all the money we want, so we need to make some choices, and they will best be made by the community with extensive involvement.

Just a couple of other little pieces here on—I want to talk a little bit about the Mixed-Conifer Working Group, because I do think it's a good model. It's a working group that was developed, actually, out of an outgrowth of a tour, I believe, sponsored by the Colorado Forest Restoration Initiative quite a few years ago. That group has been operating since July 2010. It is an incredibly diverse group,

with more than 60 members. I can't say it's always a cum-bah-yah moment of hand-holding and singing and we're all going in the same direction. But, of course, we know that's one of the great things about collaborative work groups, is that dialog and so forth.

So we've had many informational presentations, a lot of good dialog. We've had tours on the ground, and now we're at the point of looking at what projects might be available, how we outreach the community and move forward with the projects, and with those, monitoring work as well to really know what the outcome of our work is going to be.

In conclusion here, I just want to share a quote from Kevin Khung, who is the district ranger of the Pagosa district of the San Juan National Forest, which is the Pagosa area, that really sums up the spirit of the group. "The Upper San Juan Mixed-Conifer Working Group is a diverse cross-section of people interested in public lands. The group's desire to openly share and learn from one another, as well as to support possible solutions, is extraordinary. The fact that they want to be problem solvers rather than problem identifiers is encouraging for all public land managers."

We know, realistically, that it's not true that all public land managers and Forest Service personnel are willing to engage the public in such an open fashion dialog for solutions. But I think, as Director King pointed out, that is the way forward. It's that engagement of communities in really honest dialog and looking at the choices if we're really going to make any headway on the challenges that Dr. Kaufman outlined.

So thanks once again for the opportunity to speak as we move forward on some problem solving here. Later on, if you're up for it, I'd love to ask you a couple of questions about the work that you're doing on some kind of ancillary issues that might relate to this, including such things as the insurance industry and how that either supports residents or is problematic for them.

So thank you very much.

[The prepared statement of Mr. Buickerood follows:]

PREPARED STATEMENT OF JIMBO BUICKEROOD, PUBLIC LANDS COORDINATOR, SAN JUAN CITIZENS ALLIANCE, DURANGO, CO

Good Morning Senator Udall, Members of the Panel, and fellow Coloradoans.

I'm Jimbo Buickerood and I reside with my family in the Mancos River Valley lying just to the east of Mesa Verde National Park. I appreciate and am honored by the invitation to come here today to share my perspectives on the topic of Forest Health and Wildfire, and most importantly to identify solutions to the challenges we collectively face.

First of all, I want to express my sympathy and condolences for those in the Colorado Springs area who suffered losses in the Waldo Canyon Fire, as well as those other Colorado residents who endured loss in the other wildfires this year in the state.

Our Mancos Valley community was also impacted by a wildfire earlier this summer when the 10,000 acre Weber Fire burned Bureau of Land Management and private lands immediately east of the Town of Mancos. Fortunately the fire resulted in no loss of human life and only minimal property loss. Homes and lives were saved due to incredibly fast and effective response by firefighters and the preventive efforts of homeowners who safeguarded their homes and neighborhood by effectively removing hazardous fuels.

Today I represent both the Upper San Juan Mixed-Conifer Working Group, whose collaborative work is focused on the forest lands in the Pagosa Springs area, and the San Juan Citizens Alliance at which I am the Public Lands Coordinator.

The San Juan Citizens Alliance is a 26 year-old membership organization that organizes people to protect our water and air, our lands, and the character of our rural communities in southwest Colorado and northwest New Mexico.

Our nine staff focus on four program areas, 1) the Wild San Juans, working to preserve the San Juan National Forest and Bureau of Land Management lands and adjacent areas; 2) the Dolores River Campaign, protecting the Dolores River watershed; 3) a River Protection program safeguarding river flows and water quality in the San Juan basin; and 4) the San Juan Basin Energy Reform Campaign, ensuring proper regulation and enforcement of the oil, gas and coal industry and transitioning to a renewable energy economy.

From my work on forest issues in southwest Colorado over the past few years, including involvement in the Upper San Juan Mixed-Conifer Working Group I would like to share three fundamental points related to the goal of reducing wildfire hazards in the Wildland Urban Interface, the so-called “WUI.”

First, we know that the existing structure of federal environmental regulations including the National Environmental Protection Act (NEPA) and the Healthy Forest Restoration Act (HFRA) of 2003 provide both the broad authority and sufficient flexibility to support Coloradoans in addressing the challenges we have in some of our Colorado forests. Simply said, there is no need to pass additional legislation, such as some now being examined in the House of Representatives, to create new logging authorities, or for transference of jurisdiction of our public lands from the federal government to the state government in the name of wildfire hazard reduction.

Indeed, we have a regulatory structure in place that both effectively supports us, and allows us, to address the challenges at hand. Both NEPA and HFRA include one of the most important pieces to the solution, that of public engagement which fosters public dialogue and full disclosure, elements that lead to good projects with good outcomes. It is a relief to know that when it comes to the regulatory structure to address wildfire hazard reduction in Colorado, the solution is simple: “don’t change it—it’s not broken.”

Secondly, we need continued and greater funding to address the challenges presented by a substantial increase in wildfire hazard throughout the state. While the reasons behind the increased challenges are many and include insect epidemics, climate change, settlement patterns, past forest management practices, and others—there is no doubt that funds are needed to address the current challenge. Because we know funds are always limited and must be used wisely, the primary funding question to resolve is, “How can we most effectively use the funds and resources available?” or with a business mindset it can be framed as “What is the best return on investment?” The solution therefore relates directly to where and how we prioritize the resources available to us.

Fortunately we have sound research and findings from recent reports, such as the Four Mile Canyon Fire Study, that point the way towards the best use of funds. We know that increasing public fire awareness is important, especially for those that live and work in the Wildland Urban Interface, the WUI. Support for initiatives such as designing and implementing Community Wildfire Protection Plans (CWPP’s) for all Colorado communities potentially in harm’s way of wildfires is a very effective use of funds, as is support for the Firewise program that educates and supports homeowners to minimize wildfire hazards surrounding their homes. Coloradoans living and working in the WUI should become familiar with such terms as HIZ, the Home Ignition Zone, and how to “firewise” our communities.

We also know that when we invest in fuel reduction projects, the best use of funds is reducing hazardous fuels close to structures. The solution lies in fuels reduction projects close to homes, businesses and public infrastructure rather than deep incursions into the forest hoping that extensive logging of dead or dying trees might save homes and lives. As Senator Udall noted when reviewing the findings of the Four Mile Canyon Fire, “This fire taught us that the most important yard tool you can have if you live in a wildfire-prone area is not a chainsaw; it’s a rake and a weed-whacker.”

One other particularly worthy use of funds is the support for long term stewardship contracts that allow communities to make a multi-year and prioritized effort towards reducing wildfire hazard in forest lands adjacent to them. The long term aspect of these contracts is particularly important because of the considerable effort and investment necessary to prepare and initiate these contract projects, therefore funding and policy to support the contracts should be focused on 5 to 10 year stewardship contracts.

Thirdly, I have come to recognize that a central piece of the solution to address wildfire hazard reduction in Colorado is the element of involving a wide spectrum of people and interests in every community to address this challenge. When

wildfires burn close to, or in our communities, they affect everyone in the community and as we have seen, an effective response to a wildfire emergency necessitates a community-wide response. Similarly, effective prevention necessitates community-wide decisions and actions in anticipation of the catastrophes that can take place.

I suggest that we need to shift more of our focus and funds towards the engagement of communities in defining and preparing for their future as “Firewise community.” Though the effort of Mixed Conifer Working Group in Pagosa Springs may not necessarily be a template for all Colorado communities who reside in the Wildland Urban Interface, it does effectively model the approach that the a community desiring to deal with the wildfire challenge can move forward by bringing together as many constituencies as possible to understand, plan and implement prevention actions. Whether these actions are implementing Community Wildfire Protection Plans, initiating an active Firewise outreach program, providing recommendations to federal or state forest managers, or others; it is likely that a collaborative community effort will bring the most effective wildfire prevention to a community most quickly.

To provide more detail as to the possible substance and process of a community-wide effort working to address these issues I would like to share the story of the Upper San Juan Mixed-Conifer Working Group, a collaborative community group focused on forest and wildfire issues on both public and private lands in the Pagosa Springs area.

The Mixed-Conifer Working Group was established to provide a venue to share stakeholder perspectives and to develop science-based collaborative priorities for management and monitoring of mixed-conifer forests on the Pagosa Ranger District (RD) of the San Juan National Forest in southwestern Colorado. The group has been active since July 2010.

The groups mission statement reads, “The Upper San Juan Mixed-Conifer Working Group is committed to collaborative approaches to improving the health and long-term resilience of mixed-conifer forests and the communities located near them in southwest Colorado. The workgroup will focus on strengthening understanding, sharing knowledge and lessons learned, developing management approaches, initiating high priority projects, and monitoring results using an adaptive framework.”

The spirit of the group is summarized nicely with this quote from Kevin Khung, the District Ranger for the Pagosa District of the San Juan National Forest: “The Upper San Juan Mixed-Conifer Working Group is a diverse cross section of people interested in public lands. This group’s desire to openly share and learn from one another as well as support possible solutions is extraordinary. The fact that they want to be problem solvers rather than just problem identifiers is encouraging for all public land managers.”

The Working Group members are a varied set of people and groups representing business interests, conservation organizations, local governments, Colorado State Forest Service, U.S. Forest Service, recreation, ranching, home owner associations, fire protection district officials, scientists, utility companies, as well as many interested citizens. The diverse nature of the group insures that all interests have a place at the table, which increases the reliability that the recommendations of the groups will reflect and be supported by the community as a whole.

The Working Group meetings consist of a blend of informational presentations, field tours, forest management and policy dialog, wildfire hazard and protection discussions, and other sessions in which the group examined both the overall status of forest health and wildfire hazards, as well as the specific examination of the status of eight polygons representing about 144,000 acres of forest surrounding Pagosa Springs.

The Working Group is cognizant of the many ecological, social, and economic trade-offs within forest and community landscapes. Using this reality as guidance, the workgroup has made recommendations as a means of planning and implementing a range of high quality projects that will contribute to improvement in forest conditions on the San Juan National Forest. The themes and parameters of the recommendations are offered as a set of directions and guidelines that will serve as a framework for long-term project work. They are also intended as goal and objective statements that can guide implementation and monitoring, rather than mandates that must be achieved at every step throughout the process.

The following set of general principles and values were decided upon by the Working Group and to the extent possible, the following guidance will be utilized:

- A watershed perspective will be emphasized as a management framework, wherever possible.

- In some vegetation areas, particularly cool-moist mixed-conifer, additional field monitoring and evaluation are needed as part of an adaptive management approach.
- Management activities will emphasize forest resilience and diversity.
- Environmental assessments for proposed projects will address water quality, wildlife habitat, insect and disease trends, wildfire mitigation objectives, invasive weeds, and recreation activities, among other ecological and community needs and concerns.
- To the degree possible, management activities that mimic natural disturbances will be utilized.
- In the long-term, management actions will seek to create conditions for manageable, planned and unplanned ignitions to meet multiple objectives, such as wildland fire for resource benefit to safely occur in mid to higher elevations.
- Forest management should encourage a sustainable and appropriately scaled forest product industry, for both community and ecological benefits.
- Sustainable and healthy community life is intrinsically connected to the well being of diverse, resilient, and naturally functioning forest landscapes.
- Management activities will be designed to meet multiple objectives, coordinate with supportive and/or participative landowners or parties, and foster economic efficiency.

Thank you once again Senator Udall for the opportunity to engage in this hearing today, and I look forward to further discussion on this issue as Coloradoans work together to meet the challenges of wildfire hazard reduction in our state.

With my testimony I am submitting four exhibits* that specifically relate to the focus of hearing. All of the exhibits contain information that will be helpful as we move forward with solutions to these issues.

Senator UDALL. Thanks, Mr. Buickerood.

In that spirit, we've been joined by Nancy Fishering, who represents the Colorado Timber Industry Association.

Nancy, thank you for taking the time to be here. We had a lot of battles back in the 20th century about what products and how we would harvest the resource in our forests. I've increasingly come to see the forest products and the timber industry as an important partner in maintaining and increasing forest health, and I think that's the spirit in which Mr. Buickerood commented. I look forward to your comments, and, again, thank you for being here. The floor is yours.

**STATEMENT OF NANCY FISHERING, VICE PRESIDENT,
COLORADO TIMBER INDUSTRY ASSOCIATION, MONTROSE, CO**

Ms. FISHERING. Thank you, Senator Udall. Thank you for those comments. I think we were all tutored a little bit by Dr. Kaufman over the years, and we did a lot of learning together throughout the State of Colorado.

I am pleased that today's hearing is focusing on solutions, but solutions, to me, is action. It means changes in policy and financing, in my view. So, therefore, most of what I'm going to say is going to have to do with where the rubber hits the road, which, to me, is the industry, the folks that are out there cutting the trees, hauling the trees, culling the biomass from the national forests and trying to figure out how to do it economically so we can treat more acres.

Fire has always been present. We've been talking about it in our little tutorials, and it's important for Coloradoans to keep in mind. But my observation over the past 15 years is how huge the challenge has become for the State of Colorado. Mike King talked about 4 million acres. That was one small part of it. It's close to 7 million

* Exhibits have been retained in committee files.

or 8 million acres in Colorado if you added all the bark beetles, all the fire acres, and we only have 22.6 million forested acres. It has become a huge thing in the State of Colorado.

So we are a poster child of these issues. So much of it is managed by the Forest Service. We've got 68 percent of the lands in some sort of public management, most of that in the U.S. Forest Service. We have a big problem, as you mentioned, and we need big solutions. I've been dismayed over the years. I've been in the industry since the early 1990s.

We haven't done big, huge policy changes yet. We keep tinkering and tinkering and tinkering, and I think it's to the point that, hopefully, after this year, we actually grab it, figure out the finances, get the right people at the table, and make some of these policy changes. So I do believe that we might have legislation, but I think some of it ties the hands of our public lands managers. I work closely with them. I serve on collaboratives. We need to take the handcuffs off. We have big problems.

Nationally, we have 65 million to 82 million acres that are in need of some type of restoration across the whole United States. Colorado isn't the whole story. Of those, the experts on the ground have said some 12 million acres need some sort of mechanical treatment.

Last year, we treated 195,000 acres across the whole United States and all the national forests. That means it would take 64 years to get through a treatment cycle. Something needs to change. The cost paid by the city of Colorado Springs is way too great. So what are we going to do differently going forward?

I think the Forest Service has to have as their highest priority—just cut to the chase—forest health is key for recreation, for so many other uses in our national forests. I think sometimes it gets lost in all the different programs that we throw at the Forest Service and say, "Get these done, too." We've got to figure out our highest priority.

Forest products companies will not invest in Colorado. We will not grab the capacity that we spoke of that we need unless we have a reliable supply for the long term. Then we get into these little conversations between 100 feet from a home, back country, Western Slope, Front Range. We have got to figure out a way that prioritizes it in a way that doesn't eliminate the industry.

The industry—what that allows you to do is take trees off that we pay for. The industry that—by the timber sale, we actually pay into the Treasury. We don't just get paid to operate. The more we can pay into the Treasury, the more acres you're going to get treated. We've got to figure out that sweet spot there.

The Forest Service must look for efficiencies in every timber management project. I don't care what kind it is. Because we know at the end of almost every project we see, we've left out acres, we've left out trees, we've tried to be careful, we've tried to be too careful. I would argue that across the United States, we would be astounded at how many of those acres could not mitigate a forest fire of the scale we're seeing today, as Merrill Kaufman explained.

We need to look at the reorganization of the Forest Service. Where are the staff? Are we spending too much money in regional offices, Washington offices? The money needs to go to the ground.

I believe that we still have analysis paralysis. We say that the laws are good. We've had 3 Forest Service chiefs go on record that it doesn't work. We're tying them in the Gordian knot that Mike King spoke of. We need to fix that. How long can we talk about it? We've been talking about it as long as I've been in the industry.

NEPA came out last year—the Council on Environmental Quality said no NEPA document needs to be over 150 pages long, or 10 to 12 pages long. I challenge you to find one that short. We need to stop spending the money—quite the amount of money, but the analysis is important. NEPA is very important. Environmental protection is important, but we are spending way too many resources on that, in my view.

Then I think we've never really acknowledged that the 40 million or 73 million acres that we have identified across the West—we're just the 6.6 million acres of that 40 million to 73 million acres of bark beetle. No one has declared an emergency situation and used NEPA to get out there and do some broad scale stuff. I think that there's room within our existing legislation. I agree. But we need to be using it and thinking outside the box.

We need to look at our Lynx Amendments. We're now doing sage grass planning. Every time we plan a new initiative, we tie the hands of our land managers. You slow down the process. The loggers that are working on the ground can't work this day and this day, and you have to carve out this time for this project and this project. We are in a hurry. Sixty-four years is too long to fix the problem. We have gotten biomass studies that for every ton we take, there's 18 new tons coming on at the same time. We are not at all keeping up with the scale of the problem.

Last is funding. I put it last, but I think it's most important. But I do recognize we have a funding crisis at the State level, at the municipal level, at the Federal level, but is it key. Colorado is the second lowest funded region in the country. For the most part, for as long as I've been in the industry, they say, "Use your existing resources. Here's \$40 million." But then they cut us \$20 million over here. When you are the second lowest funded region, which is Colorado, Wyoming, and South Dakota, you can't do it from your existing budgets.

Bottom line, we have needed every bit of your leadership, and I know you've been working nonstop on this issue. You've been trying to get authority for more money just for bark beetle. But that's essential. Thank you so much for all the work and attention, Senator Udall, that you've put, personally, on that issue.

So I'm going to cut myself off, because I know I'm in the red zone. But I am going to say two more things.

Senator UDALL. There's a red zone and there's the red zone.

Ms. FISHERING. I know. I know. Because it might not come up again, we do have a web site for the Colorado Timber Industry Association. It's going to be so important for your defensible space—how to choose a logger that can do it safely. That's the next hurdle that you deal with after a fire, and you need to know that kind of information. You can get it from the Colorado Timber Industry web site.

The smoke that we're seeing around Colorado Springs right now—there are fires happening right now. It's not just Colorado.

The smoke we're seeing today is from California and Montana. It's all over the West. We've got to figure out a way to cut to the chase, to bring down the cost so you can treat more acres. My argument is you're going to have to marry your WUI treatments with some back country treatments, and back country treatments are going to protect your electric grid.

The entire eastern United States requires some of the power grid that goes over our national forests. Eighteen downriver States use our watersheds. Those watersheds up there need as much protection as springs and reservoirs outside of Colorado Springs. So I'm saying that there's some sweet spots. We can get some real saw timber that will keep an industry alive and bring down the cost of biomass removal.

I'm all for this hearing. Thank you so much for having me.
[The prepared statement of Ms. Fishing follows:]

PREPARED STATEMENT OF NANCY FISHERING, VICE PRESIDENT, COLORADO TIMBER
INDUSTRY ASSOCIATION, MONTROSE, CO

Thank you Chairman Bingaman, Senator Udall and Committee Members. Thank you for the opportunity to present the perspective held by the forest products companies in Colorado regarding wildfires in our forests and practices to improve the long-term health of our forests. I am pleased that today's hearing is focused on solutions which in my mind equates to action. "Lessons learned" are important only if they translate into policy change and implementation. I welcome your efforts to make this happen.

Fire has always been present in Colorado's forest landscapes, but started to escalate as a major concern in the mid-1990s. The scale and intensity of fires over the past 15 years has increasingly placed lives and property at great risk as evidenced in the recent Fourmile Canyon Fire near Boulder, the High Park Fire adjacent to Ft. Collins, the Waldo Fire here in Colorado Springs, and numerous smaller fires along the Front Range as well as the Western Slope. The following chart* displays this growing issue in our forests, and we note that this risk affects all land ownerships. Cumulatively nearly 1 million acres have burned in Colorado during this time span.

Simultaneously, during the same 15 years, Colorado's forests have been under siege by a variety of insect epidemics, including:

- 6.6 million acres affected by bark beetles (all beetles) since 1996
- 3.1 million acres affected by the mountain pine beetle alone

Keep in mind that Colorado has 22.6 million acres of forestland, of which 68% is owned and managed by the federal government, with 72% of those federal lands managed by the US Forest Service. Private lands account for 28%, with the State and municipalities a small 4%. Putting all those numbers in context, over 1/3 of Colorado's forested landscape have significant forest health issues. Cumulatively, these issues: 1) have affected public health and safety, 2) can threaten the water supply for Colorado and the other 18 downstream states dependent on our headwaters, 3) can threaten the electric grid that transverses the Rocky Mountains, and 4) affects all uses and users—recreation, timber, grazing, wildlife, and the people who live, work and play in our forests. Our possible remedies and solutions are largely tied to the entities having legal jurisdiction of our forests.

The point of this summary is to acknowledge the sheer scale of forest health issues that challenge this special state (and many other states as well). There is no question that the proactive responses implemented by the various entities have not been on anything close to a comparable scale. Big problems require big solutions. Unfortunately, my observation is that big solutions for Colorado's forest health issues are inhibited by old style management paradigms and conflicting laws passed in times of other forest conditions. I believe we have a problem with bureaucracy and case law, and policies and financial directions that were built over many years for another time. The very best efforts by the folks who work in these agencies cannot meet the new challenges posed by Mother Nature unless we change or enhance the tools. Again, my observation is that the public and many in Congress

* Chart has been retained in committee files.

agree that forestry work is important and that it needs to be done in a reasonable amount of time, and especially now, at a reasonable cost.

The Colorado forest products companies have been significantly impacted and integrally involved in working on forest health projects and have identified both barriers and potential solutions for moving forward. (The picture* below is a mitigation project completed by Morgan Timber Products that successfully protected property in the 2012 High Park fire.)

This input is nothing new. . . sadly many of these ideas were discussed after Colorado's largest fire year in 2002, and some were re-stated as we addressed the escalating bark beetle epidemic. One can only hope that these past two years of large scale events in Colorado, New Mexico, Arizona and other western states will bring us to the point that you can garner the bi-partisan support to adopt policies and regulations that fit the times.

Now I will share some forest product company suggestions.

These recommendations include:

1. The Forest Service and USDA, from the top down, need to make the health of our national forests their highest priority—not just the words, but also their actions.—The Forest Service has so many competing programs, constituencies, and initiatives that forest health gets lost in the priorities and budgeting.

2. Reliability of supply is essential for the economic solvency of the forest products companies.—Colorado's forest products companies are more heavily dependent on the national forests for supplies of forest products than are our counterparts in most other western states. The flat or declining budgets result in uncertainty, missed opportunities, swings in funding priorities, and therefore more uncertainty in the supply of timber which is essential to maintain an industry. Several options are for the Forest Service to evaluate the trade-offs of providing for every program currently performed in their agency, and reducing staffing and costs of the Regional and Washington Offices

3. Efficiencies need to be found in every timber management project.—This concept would achieve treating more acres at a reasonable cost by maximizing sawlog-quality material in every single timber project from conventional timber sale contracts, stewardship contracts, service contracts, and Indefinite Duration Indefinite Quality (IDIQ) contracts. The forest processors and loggers have unavoidable costs and break-even points. We are not a high margin business sector, and sawtimber is essential to our existence.

Myriad issues exist which drive up costs and drive down management acres. To name a few:

- multiple restrictions on operating seasons;
- delays in new contract offers which results in skewed appraisals/ timber costs since up to 49% of timber sales are offered during summer construction seasons when lumber costs are highest;
- inflexible financial clauses which place the costs and risk on business rather than shared risk between contractual parties;
- road packages that are too costly in today's economy; and
- maintaining a balance between service contracts (FS pays to manage) and timber sale contracts.

Many foresters who work for the forest products companies, and some who work within the agencies, and some in academia have concerns that the myriad design compromises within forest management projects are resulting in final projects that do NOT meet the original project objectives. We may find that the final treatments are no longer effective enough to mitigate fire risk or ultimately improve forest health. We rarely hear this conclusion in public (one example is with the Fourmile Canyon Fire Report discussed in this hearing), but we can no longer afford to sweep this issue aside. The challenges are too great and ineffective treatments are simply too costly.

4. The Forest Service needs help with “analysis paralysis” or the “process predicament” and the National Environmental Protection Act (NEPA).—NEPA is a valuable process but has become too costly and time consuming. Thus far three former Forest Service Chiefs have raised this point. We saw NEPA used efficiently in the aftermath of Hurricane Katrina, yet we haven't implemented complementary fixes. In the fire prone areas and insect threatened forests, why not put together a 10-year program of NEPA-cleared work? We need to stop

*Photo has been retained in committee files.

holding every forest management project in those non-controversial acres to the same standard as you would if you were entering roadless.

Last year, the Council on Environmental Quality published a draft document titled "Improving the Process for Preparing Efficient and Timely Environmental Reviews under the NEPA". In that document, the CEQ reiterated previously issued CEQ Guidance encouraging agencies to focus NEPA documents on environmental analysis, not producing an encyclopedia of all applicable information, and specifically re-iterated that FEISs should not exceed 150 pages and EAs should not exceed 10-15 pages. I won't mention specific Forests or projects, but trust me, you don't need to look very hard to find FEISs and EAs that significantly exceed those page recommendations.

5. Acknowledge that a 40 or 73 million acre beetle outbreak is an emergency and use emergency authority under NEPA to do something about it.—If every NEPA project implements every possible acre, the result would be more trees per acre (paid for by industry and not taxpayers) and then more acres treated at less cost. The essential task of removing biomass simply costs time and money. In a recent biomass conference an interested statistic was presented that the Colorado ratio of net forest growth to removal (in green tons) is 18.2. This means that for every 18.2 tons of new growth, we are only removing one ton of wood from the forest. We are losing the battle of thinning the forests to reduce overstocking and fuels build-up. Colorado had the highest biomass ratios in any western state, or Colorado has one of the biggest jobs to keep up with necessary fuels and forest health treatments. Adding sawtimber components (which has a higher value for processing) would help to subsidize, and therefore, increase the treatment rate of removing small diameter trees and fuels that exacerbate forest fires.

6. Review and reconsider the direction in the Southern Rockies Lynx Amendments as part of their forest plan revisions.—This doesn't require legislation. In fact, the Forest Service committed to do just that in their SRLA Record of Decision, but they now appear to be renegeing on that commitment. That decision has unduly and unnecessarily encumbered management of suited timberlands, increased Forest Service costs, and reduced the effectiveness of their forest management. The Endangered Species Act requires the Forest Service a) to not jeopardize listed species and b) to not adversely modify critical habitat, neither of which justify a decision to manage 54% of the national forests in Colorado for lynx habitat.

7. Last, and of great importance is providing adequate funding to meet the scale of the challenge.—This item comes last in deference to the fiscal challenges facing the country, but the reality is that significant progress cannot occur without an infusion of dollars. Somehow, we recognize that fact in extraordinary events like drought, hurricanes, and floods. There has never been an adequate, realistic economic response to address the unprecedented events happening in our forests and wildland urban interface. Asking the Forest Service to meet these new issues from their existing budgets is an impossible task. In actuality, the budget belies the words about forest health priorities and undermines the Forest Service mission "to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations."

The final suggestion is cautionary and regards winners and losers. Operating under the numerous constraints discussed above can lead to ideas and solutions that pose new and different problems. Throughout Colorado or throughout the USFS system, new areas are faced with fire or insect pressure in ever increasing geographical areas. In Colorado, one year it is on the Front Range, one year in the ski country, and one year SW Colorado. In 2012 it was first one incident in Larimer County, then one incident in Montezuma County, multiple fires in other counties, and the major fire in El Paso County. Limited resources lead to incredible competition between national forests, states, and among counties and even municipalities. I would urge everyone not to lose sight of the big picture, both the near term threats and the mid-term threats. We need to find long-term policy improvements that increase our treatment capacity across the vast forested landscapes without sacrificing one area to treat another.

I'd like to make it clear that I consider these ideas to be systemic. I have watched fine people in my local districts, the Regional Office, and the Washington office of the FS and the USDA search and find directives that can address emerging problems. We benefited from several solutions that were specific to issues rather than systemic such as the recent provision for mutual cancellation of timber sales. The industry was thankful, especially to Senator Udall, because the remedies were es-

sential for some companies to survive the great recession, but achieving that result took far more work than it should have. Many of barriers receive attention and are works in progress with the Forest Service, but the patchwork of old laws and new laws and shifting priorities create a huge challenge and uncertainty for Forest Service staff as well as our industry. Since the early 2000s, the Colorado Congressional delegation and other members of Congress have been actively engaged on many of these fronts and have supported numerous pieces of legislation to assist this unwieldy system.

(Examples include Senator Udall's forest health bill, Senator Bingaman's Community Forestry Landscape Restoration, Senator Tester's Montana approach, and Senator Wyden's Oregon Forest bill. Simultaneously we receive important new studies: "The True Cost of Wildfire in the Western US, 2009 by the Western Forest Leadership Coalition, "The Process Predicament, 2002 from the USFS, "Review of the Forest Service Response: The Bark Beetle Outbreak in N. Colorado and S. Wyoming 2011 requested by Senator Udall from the USFS, The Conference Report for HR 2055, which included the FY 2012 Forest Service appropriations, stated "The Forest Service is directed to improve the health and resilience of national forests and through these efforts, work to achieve 3 billion board feet of timber sold." Unfortunately, the Forest Service appears unable to achieve even this modest increase in timber outputs as a step in accomplishing more on-the-ground management, and the national target to the "field" of only 2.6 billion board feet.)

In spite of all this effort, we have not successfully passed many good ideas. We all want a system that is rational, environmentally sound and one that is economically viable and sustainable. Our fear is that the patchwork approach that adds laws while not removing antiquated processes designed for a different time.

I am honored to testify, and I would be delighted to work with you to give additional detail to quickly enhance an efficient, environmentally sound forest health strategy.

Senator UDALL. Thank you, Ms. Fishing. Thanks for challenging the policymakers, the public, all the stakeholder groups. I have to suggest that I think the only red zone we're excited about as Coloradoans is when the Denver Broncos are in the red zone, and the other red zones we want to avoid if at all possible.

[Laughter.]

I was thinking about your comment about NEPA. I think we'd like to turn those trees into less paper and more energy crops. Maybe that's another way to think about it. But thank you for those comments.

Our next witness is Jim Hubbard. I'm going to correct for the record—Jim did head the Colorado State Forest Service ably and with passion. The U.S. Forest Service noted that experience and his record. He now works as the United States Forest Service Deputy Chief for State and Private Forestry.

He's been joined by Jack Cohen, who is a research scientist, who works at the U.S. Forest Service Rocky Mountain Research Station. Jack was a key director of the Four Mile Canyon fire study. Jack, because of a rule, is not listed as a formal witness. United States Forest Service line staff are not permitted to serve as witnesses under the definition of a witness. But he's here because we want to hear from him. I know Jim and Jack are going to team up to share their point of view with us.

So, Jim and Jack, welcome. Jim, the floor is yours.

STATEMENT OF JAMES HUBBARD, DEPUTY CHIEF, STATE AND PRIVATE FORESTRY, FOREST SERVICE, DEPARTMENT OF AGRICULTURE

Mr. HUBBARD. Thank you, Senator.

The State and Private Forestry part of the Forest Service does include the fire program, and so that's part of my being here.

Nancy, I'm glad you cut yourself off. I wasn't about to.

[Laughter.]

The Forest Service would also like to express our condolences to the losses. We know those are serious. We deal with them a lot in a lot of places, and we never like it when we have to face those kinds of losses. We offer our condolences.

I'm going to talk more broadly and set some context and talk more about some of the Forest Service activities in the fire program across the West with some specifics, but, hopefully, the questions will get us to more. Western wildfires—on a 10-year average, we deal with 42,000 of them. They burn about 3 million acres. That's growing.

It's getting to be more of a problem because of the prolonged drought, because of the high temperatures, because of the low humidities. That results in lower fuel moisture, higher fire intensity when we try to deal with fire, uncharacteristic behavior of fire, and seasons that start earlier and last longer. After a fire, that burn severity on the ground is more than we're used to, so it makes the restoration more difficult.

Those aren't just seasonal anomalies. That's a trend that we've been facing for some time, and we expect it to be with us for some time. Typically, our Western fire season begins in Arizona and New Mexico, although we've had a little bit of trouble with Oklahoma and Texas lately, and moves up into Colorado. Currently, it's in Utah, Montana, Idaho, and California. We have 18,000 firefighters deployed today, fighting 70 uncontained large fires.

So those seasons have become busy, and I expect they will remain busy and in large part due to the condition of the vegetation in the West. Colorado is no stranger to this. As you've heard, we've experienced in Colorado a lot of large fires, damaging fires, especially along the Front Range. If you try to take the footprint of those fires that have already occurred and put it anywhere else along the Front Range, it doesn't fit without affecting property and sometimes lives. So it is a major issue.

Our response and our mitigation priorities are definitely in the interface and something that we have to pay even more attention to. We'll continue with aggressive initial attack, and our priorities will be life and property. But when wind comes along in combination with all those other factors, we quickly turn to evacuations. There's not a lot of firefighting that you can accomplish in wind events, and you get people out of the way. In Waldo, it was 32,000 people out of the way. Most of our losses on those major fires come during the periods of those wind events.

We constantly evaluate what happens with our fires, what goes on in an incident, what actions need to be taken, what the conditions are that we are facing. That translates into response evaluation and interagency deployment. The Forest Service is heavily involved, but by no means the only ones, and never the only ones. It's always an interagency response which has to be well coordinated if it's going to be effective.

We constantly evaluate from those incidents the fire behavior to see what we're learning new because of those changed conditions. Within the communities, it becomes a mitigation and a prevention activity—what else we can do to prepare a community when fire

comes. On the landscape, it's how do we reduce those hazardous fuels that pose the risk to life and property.

We have 70 million acres nationally, a little over 70 million acres, that we consider a forest at high risk to this kind of fire behavior. So, yes, Mike King is right. We have to prioritize. We do that on a basis of fire occurrence, vegetative condition, values at risk, and cross-boundary actions that can be taken. We don't do very well when we just come up to a boundary and stop. It works a whole lot better when we ignore those boundaries and work across them. So it's a matter of where we need to make some change that makes a difference, and it's a matter of where we can make a change that makes a difference.

I'll leave you with 3 thoughts. The critical area of priorities, including the home ignition zones that Jack is going to talk a little bit about and more this evening, are priorities that we really have to place a high emphasis on. The policy tools that help us get more done have been mentioned, Good Neighbor Authority and stewardship contracting. Good Neighbor allows us to cross those boundaries. Stewardship contracting allows us to get more done for less cost.

Then maybe most important is this idea of local agreements, local agreements that involve the home owners, the land owners, the local government, the State, the Federal—as the Chancellor said, the coming together. We find that coming together happens often and strongly during an emergency event. It's harder to maintain after one, because that's rolling up your sleeves and doing a whole lot of work together, and it's not necessarily the same work in any two places. It's similar, but it's not the same. Those local modifications are important.

So we look at fire response, we look at community protection, and we look at landscape treatment. There aren't many certainties in this business, and the conditions I would offer you will remain difficult in the West. But some actions that we take can make a difference and improve our chances.

Dr. Cohen is going to talk to you just a minute—give you a preview, maybe, of this evening and a little bit about this home ignition zone and the importance of it.

Jack.

Mr. COHEN. Thank you, Jim.

Thank you, Senator Udall.

Actually, we need slides. There we go. I'm here to provide some information and some perspectives with regard to houses burning down during wildfires. In the next slide and thereafter, I'm going to give you a sense of some of the research examinations that I've done that reveal most homes destroyed during extreme wildfires are not ignited directly by the big flames of intensely burning wildfires.

In this next slide, it shows you an example of what used to be 4 houses, totally destroyed, surrounded by unconsumed and green vegetation. What that tells us is that something other than the intense wildfire, which, by the way, never actually entered this particular community, can destroy the houses.

So how is that occurring? In the next slide, intensely burning wildfires commonly loft burning embers, what we call firebrands,

to initiate ignitions—in the next slide—directly on homes, where we—and in this particular case, where we have highly vulnerable flammable wood roofs that result—in the next slide—in total destruction surrounded by unconsumed vegetation. Note in that photo that we have a highly involved home surrounded by—well, this is southern California, so those are eucalyptus trees, gasoline on a stick. Or they ignite within the community fires that spread potentially continuously to contact the structure.

So now I have a video for you that shows you a demonstration experiment that we did in South Carolina, and we'll go ahead and roll it. What we're seeing here is a house being exposed to a firebrand blizzard, which would be reasonable for short main spotting, which would be on the order of a few hundred yards to less than a quarter of a mile, during a very high wind event with canopy fire, crown fires, burning upwind.

As you're watching real time, there are pine needles along the base of the front of the structure and bark mulch around that reentrant corner. There are pine needles in the gutters and in the valley of the roof. What we see are the ignitions that are occurring without any flame exposure whatsoever. You can see that because of all the personnel that are standing there between the exposure and the structure. So the only fire that's going on is ignited by firebrands, which then burns and potentially can ignite that structure.

Some of the gutters, the ones that don't collapse, are metal. The ones that do are vinyl. There is vinyl siding on the right side of the structure on the front, fiber cement on the left side, and composition—what we call comp board, manufactured wood comp board, on that reentrant corner. Interestingly enough, the pine needles burning in the valley of the roof, which is composition shingles, is not a problem with regard to igniting the structure.

Here we have heavy involvement of the structure, which we ended up suppressing. What you saw there was the ignition of the structure without protection to its total destruction in less than 5 minutes. It always doesn't happen that way, however.

So what I've found is that, given extreme wildfire behavior, the home characteristics in relation to the area surrounding the home within about 100 feet principally determine the potential for the home ignitions. This is what I call the home ignition zone. The idea here is to address the ignition resistance of the home such that an exposure such as this can result in something like this. This is the same home afterwards.

Next slide. This is the idea. This house survived without any significant protection.

So in the next slide, the point is that we have the opportunity—and let me emphasize—we have the opportunity to prevent at least the disastrous home destruction during a wildfire. It's one of the issues we have with wildfires, but we have the ability to deal with this problem if we so choose.

One of the huge issues, one of the huge obstacles, as I see it, is that in the next slide, the home ignition zone, this area of the house and its immediate surroundings within 100 feet, is largely privately owned. So the point I make in the next slide is that without home owners taking the responsibility commensurate with the authority that they have, because it's private land, private owner-

ship, we cannot deal with this problem. Home owners have to become engaged. That's it.

Thank you.

Senator UDALL. Thank you, Jack.

Thank you, Jim.

[The prepared statement of Mr. Hubbard follows:]

PREPARED STATEMENT OF JAMES HUBBARD, DEPUTY CHIEF, STATE AND PRIVATE FORESTRY, FOREST SERVICE, DEPARTMENT OF AGRICULTURE

Senator Udall, thank you for the opportunity to come before the Committee. I am James Hubbard, Deputy Chief for State and Private Forestry of the United States Forest Service. With me today is Jack Cohen, Research Physical Scientist from the Rocky Mountain Research Station's Fire Sciences Laboratory in Missoula, Montana. I want to extend my deepest condolences on behalf of the Forest Service to the families of those who lost lives, property or were otherwise affected during the recent wildfires which have impacted Colorado and other states throughout this fire season.

I am here before you today to discuss the recent Colorado wildfires, restoration efforts and what was learned as a result of these fires. Finally, I will discuss projections for future wildfire conditions and best practices that can improve forest health.

The Southwest United States and the State of Colorado are currently in a severe drought condition. Snow pack during the 2011-2012 Winter was below the 25 percentile of normal snowfall. At the time of ignition of the High Park and Waldo fires, heavy and fine fuels were extremely dry—the result of extended periods of above average temperatures and below average moisture. In June and early July, record low fuel moistures, weather and topographic elements aligned to produce extreme fire behavior.

The recent fires that have impacted the State of Colorado were unprecedented in their destruction of life, property and resources. At the peak of fire suppression efforts this summer in Colorado there were over 4,700 firefighters and support staff working in a coordinated interagency effort to suppress the fires. During the height of Waldo Canyon fire suppression activities, there were over 1,500 personnel assigned to the fire. Air resources committed in Colorado during that same time included 37 helicopters and 10 large airtankers—including 4 Air National Guard C-130 Modular Airborne Fire Fighting System (MAFFS) retardant planes. In total, over 470,000 gallons of retardant were delivered to the Waldo fire.

As a contingency and in coordination with the United States Army at Fort Carson, basic firefighter training was initiated for over 400 soldiers. The Forest Service worked closely with Federal Emergency Management Agency (FEMA), and other federal, state and local agencies to assure communities were supported to the highest degree possible. Additionally, the Forest Service remains committed to working with partners to coordinate restoration of impacted lands in Colorado.

FIRE RECOVERY AND MITIGATION EFFORTS

The Forest Service, along with the Natural Resource Conservation Service (NRCS), other Federal, State and local partners, began planning and implementing immediate recovery efforts to mitigate the impacts of fire affected lands. In the case of five Colorado wildland fires this year, including the High Park and the Waldo Canyon fires, Forest Service Burned Area Emergency Response (BAER) and NRCS Emergency Watershed Protection teams began planning and implementing emergency flood prevention on National Forest System and adjacent private lands before the fires were declared contained.

BAER is a Forest Service emergency program for National Forest System lands that responds to imminent and unacceptable risks to people and resources that are triggered by changed conditions caused by fires. Common threats include excessive erosion, flooding, invasive plants and falling trees/rocks. The goal of the BAER program is to recognize these potential problems and, when possible, take immediate actions to minimize the damage. BAER treatments are completed for the purpose of preventing or minimizing additional damage. Emergency response actions, including treatments, are implemented immediately and for up one year after the fire.

USDA's Natural Resources Conservation Service administers the Emergency Watershed Protection (EWP) Program on private, State, and tribal lands. Through EWP, assistance is provided for reducing threats to life or property, protection from flooding and soil erosion, and restoring a watershed's hydraulic capacity. EWP work typically includes removing debris from stream channels, road culverts, and bridges;

reshaping and protecting eroded streambanks; correcting damaged drainage facilities; repairing levees and structures; reseeding damaged areas; and purchasing floodplain easements. Assistance is provided through a project sponsor, such as a State or unit of local government or Indian tribal organization.

The Waldo Canyon BAER team began assessment of the 18,247 acres impacted by the fire on July 5, five days prior to the actual containment of the fire. The Forest Service joined with Natural Resource Conservation Service (NRCS), Federal Emergency Management Agency (FEMA), Army Corps of Engineers (ACOE), Colorado Springs Utilities and Colorado State Forest Service to share information and coordinate emergency response measures. The Forest Service has committed \$5,087,000 to the emergency response efforts to complete over 3000 acres of aerial mulching, road and trail storm protection mitigation, closures and warning signs, invasive detection/treatment, shooting range hazmat stabilization, and recreation site safety measures on National Forest System lands.

The USDA Natural Resources Conservation Service received a verbal request for EWP assistance from the Colorado Springs Utilities Board, which owns and operates reservoirs within the burn area that provide a significant portion of drinking water for Colorado Springs.

The Forest Service response to the High Park fire was similar. Approximately 50% of the total High Park Fire acreage was on National Forest System lands. An interagency BAER team was formally established and started field evaluations in safe areas. To date, nearly \$7,000,000 has been approved to implement the High Park Fire BAER assessment and recommendations on National Forest System lands. Projects include aerial straw mulching on approximately 5,000 acres and wood shred mulching on approximately 600 acres, road storm proofing, closures, trail stabilization, warning signs and invasive plant prevention treatment.

The USDA Natural Resources Conservation Service also responded to the High Park Fire. NRCS team on the ground in Soldier Canyon identified potential treatments to protect Horsetooth Reservoir and all of the Colorado Big Thompson Project facilities. NRCS personnel have also reached out to Larimer County, Northern Colorado Water Conservancy District, City of Fort Collins, and Soldier Canyon Water Treatment Plant for potential EWP funding.

The Forest Service and NRCS remain committed to providing the resources necessary to meet emergency response to the wildfires that occurred on National Forest System, private, state and tribal lands in Colorado and throughout the west. Additionally, the Forest Service will continue to closely coordinate with other Federal, State and local partners to assure that we complement our respective efforts.

FOURMILE CANYON FIRE REPORT

The Fourmile Canyon Fire study was conducted by a team of Rocky Mountain Research Station scientists at Senator Udall's request, in an effort to learn from this incident and focus on reducing the risk of future catastrophic fires to communities in the wildland urban interface (WUI). Understanding how the Fourmile Canyon Fire burned, the damage it caused, and how people and agencies responded is an important way for us to reduce the destructive results of future wildfires on the Front Range.

Without widespread fuel reduction on public and private lands, ignitions that occur during extreme weather conditions are now capable of burning tens of miles in a matter of one or two days. The Fourmile Canyon fire, Waldo Canyon fire, and High Park fire are just the latest examples. Decades of research has demonstrated fuel treatments can be extremely effective at changing fire behavior, limiting ecological and watershed damage, and improving suppression effectiveness even under extreme weather conditions.

During wildland fire events, public and firefighter safety is the highest priority. While property losses experienced during the Fourmile Canyon Fire were tragic, there was no loss of life thanks to an efficient, coordinated emergency response. There are no guarantees when it comes to protecting homes from wildfires, but we have opportunities to reduce home ignition potential by focusing efforts at the home and its immediate surroundings (within the home ignition zone, HIZ) to increase chances homes will survive without necessarily controlling extreme wildfire behavior.

Firebrands/burning embers directly igniting homes and surface fire spreading to contact homes were largely responsible for home destruction in the Fourmile Canyon fire. This serves as a reminder that reducing home ignition potential is more than a one-time effort of thinning dense stands of trees and other large fuels—it also requires regular maintenance like removing flammable materials adjacent to

the home, keeping tall grasses mowed, removing dead vegetation and pruning shrubs, and clearing debris from roofs and gutters.

Homeowners have the opportunity to significantly reduce the potential for wildland-urban interface disasters by creating and maintaining a HIZ. A HIZ includes a home's design, materials and removal of flammable debris in relation to its immediate surroundings within 100 feet. Although home ignition potential is most effectively reduced within the HIZ, in some vegetation types fuel treatments beyond the HIZ can affect fire behavior by diminishing the intensity and slowing the spread of wildfires. This can provide more options for residents to evacuate safely during a wildfire, and enhance firefighter safety.

IMPROVING FOREST HEALTH AND FUTURE WILDFIRE CONDITIONS

Increasing the pace of restoration of the Nation's forests is critically needed to address a variety of threats—including fire, climate change, and bark beetle infestation, among others—for the health of our forest ecosystems and watersheds. The Forest Service is engaged in a broad range of actions designed to restore the health of the lands and waters of the National Forest System.

There is no one correct strategy for reducing risk to, and protecting communities and firefighters from wildfires. While reducing fuels through prescribed burning or mechanical treatment might be most effective in some areas of the country, in others it may be more effective to focus on landowner awareness, preventing ignitions and preparing communities for wildfire.

Through the Accelerated Restoration Strategy, the Forest Service is responding by restoring and working to maintain the functions and processes characteristic of healthy, resilient forests and watersheds not only in Colorado, but nationwide. There are between 65-82 million acres of National Forest System lands in need of restoration. In 2011, restoration treatments (watershed, forest and wildlife habitat restoration, and hazardous fuels reduction) were accomplished on 3.7 million acres. Components of the Accelerated Restoration Strategy include a suite of programs and efforts to efficiently advance restoration efforts. Stewardship contracting, Good Neighbor Authority, the Bark Beetle Strategy, the Collaborative Forest Landscape Restoration Act, and the Cohesive Strategy are all tools the Forest Service has available to implement the Accelerated Restoration Strategy.

Stewardship Contracting

This tool allows the Forest Service to acquire needed restoration services. Reauthorizing this authority and expanding the use of this tool is crucial to our ability to collaboratively restore landscapes at a reduced cost to the government by offsetting the value of the services received with the value of forest products removed pursuant to a single contract or agreement. In Fiscal Year 2011, 19% of all timber volume sold was under a stewardship contract and funded activities such as watershed and wildlife habitat improvement projects, and hazardous fuels reduction. In 2011, 208 contracts were awarded treating 189,000 acres of hazardous fuels.

Good Neighbor Authority

The Good Neighbor Authority was first authorized in 2000, responding to increased concern regarding densely stocked stands at risk from insect and wildland fires. The law authorizes the USDA Forest Service to use contracting procedures of the Colorado State Forest Service to conduct certain watershed restoration activities on National Forest System land when conducting similar activities on adjacent state or private land. In 2004, Utah and BLM received the Good Neighbor Authority. Federal and state officials who have used Good Neighbor Authority cited project efficiencies and enhanced federal-state cooperation as its key benefits.

Bark Beetle Strategy

The Bark Beetle Strategy, developed in 2011, focuses management efforts on priority treatment areas to ensure human health and safety and to reduce hazardous fuel conditions. The mortality of conifer trees caused by the bark beetle has escalated in the last decade, affecting nearly 18 million acres of National Forest System lands. In Colorado, nearly 3.2 million acres of National Forest System lands have been infested with bark beetle. The Chief of the Forest Service has committed to spending \$101.4 million on bark beetle work throughout the western regions in FY 2012. The Rocky Mountain Region's share is \$33 million.

The Region has focused initial efforts on heavily impacted areas around the White River, Routt and Arapaho Roosevelt National Forests. We are prioritizing our forest health efforts across the entire region focusing on safety, resiliency and recovery. Within the bark beetle area, the Region has worked with partners to address threats to the infrastructure, including powerlines, roads and communities. For ex-

ample, the Forest Service developed a large-scale powerline Environmental Impact Statement (EIS) which covers the three national forests most heavily impacted by beetle mortality. The Region remains committed to working closely with the powerline companies where they are interested in more aggressively treating the transmission corridors.

Collaborative Forest Landscape Restoration (CFLR)

In fiscal year 2012, the Forest Service received the full \$40 million authorized by the CFLR Act. The Secretary funded ten new projects, in addition to the continued funding for ten projects selected in 2010. Three additional high priority collaborative projects were also funded from other appropriated FS funding. These 23 projects have demonstrated collaboration among stakeholders can facilitate large, landscape scale restoration, thereby improving forest health, reducing wildfire risk, restoring fire-adapted ecosystems, and increasing timber and biomass production from our national forests.

The U.S. Forest Service reduced fire threats on more than 123,000 acres of land under the Collaborative Forest Landscape Restoration Program nationwide in fiscal year 2011 as part of a larger effort to improve the health and resiliency of national forests.

In its second year of funding, the Collaborative Forest Landscape Restoration Program also contributed \$21 million to local economies through treatments which included prescribed burns and fuels thinning, producing 121 million board feet of lumber and 267,000 tons of woody biomass for bio-energy production on ten projects around the country. On three National Forests throughout Colorado, CFLR projects have reduced fire threats over 14,000 acres using mechanical thinning and prescribed fire.

National Cohesive Wildland Fire Management Strategy

Annual fire suppression costs are significant for Federal, State and local governments and can exceed \$2 billion for the Federal Government in severe fire seasons. In 2009, the escalating Federal fire suppression costs and adverse impacts to other Federal land management programs led Congress to pass the Federal Land Assistance, Management and Enhancement Act (FLAME Act), which authorized an additional funding source for Federal emergency wildland fire suppression. The FLAME Act required the development of the National Cohesive Wildland Fire Management Strategy for managing fire-prone landscapes and wildland fire across the Nation.

The National Cohesive Wildland Fire Management Strategy has three major components:

- 1) To restore and maintain landscapes.
- 2) To develop fire-adapted communities.
- 3) To use the most cost-effective and safest fire response.

Restoration

The Forest Service is pursuing a number of policies and initiatives to increase the pace of forest restoration and management on the national forests and grasslands.

Over the next three years, the Forest Service is also committed to increasing by 20 percent the number of forested acres being mechanically thinned. This will increase the number of acres and watersheds restored across the system, while supporting jobs and increasing annual forest products sales offered to 3 billion board feet, up from 2.4 billion board feet in 2011.

Building public support for forest restoration and active-management activities is critical. To this end, the Forest Service continues to collaborate with diverse stakeholders in developing restoration projects on National Forest System lands.

Fire-Adapted Residential Communities

Homeowners and others are not powerless against wildfires. In fact, many studies have shown homeowners who take an active role such as clearing brush and debris away from structures are a vital component in slowing the spread of fire and protecting their property, as identified in the Fourmile Canyon report.

The National Fire Protection Association's Firewise Communities program teaches homeowners, community leaders, planners, developers, firefighters and others about ways to protect people and property from wildfires. The Forest Service is a partner in this vital effort and others such as the Ready, Set, Go Program (International Association of Fire Chiefs).

In addition to urging homeowners to make their properties as safe as possible from wildfire, the intent of the Cohesive Strategy is to work through cross-jurisdictional partnerships with Tribes and other Federal, state and local governments before wildfires start. The agency's community partners have an array of tools at their

disposal, including building external fuel buffers and internal safety zones, developing community wildfire protection plans (CWPP), supporting codes and ordinances, that address wildfire threats, using proven forest management and fuels mitigation techniques and joining cooperative fire agreements.

Wildfire Response

The intent of the Cohesive Strategy is to conduct rigorous wildfire prevention across all jurisdictions. Most wildfires are human caused, and while the Forest Service will continue to fully suppress all human-caused wildfires and actively promote fire prevention, firefighter and public safety are the highest priorities on all fires. Human safety and risk management guide all fire-management decisions and actions undertaken by agency fire managers. Wildfire-management strategies are based on many factors including risks to public and firefighter safety, type and condition of fuels, weather, land management plan directions, cultural and historic properties protection, and available firefighting assets. Strategies can change as conditions change. All wildfires have a suppression strategy to—at a minimum—protect life and public safety, but some fires will have additional management strategies to meet ecological objectives.

The Forest Service responds vigorously to wildfire with an array of assets, which include more than 15,000 USDA and DOI firefighters (about 70 percent from the Forest Service), up to 950 engines, 19 large airtankers, eight Modular Airborne Fire Fighting Systems, 34 heavy helicopters and 300 call-when-needed helicopters.

The Forest Service has also awarded exclusive use contracts for seven “Next Generation” airtankers. Three will be operational in 2012 and four in 2013. This is the first step in implementing the Large Airtanker Modernization Strategy, which was submitted to Congress in February 2012 and recommends 18 to 28 large airtankers.

In addition, wildland fire managers use fire analysis tools developed by Forest Service Research and Development, such as fire behavior software, to model the probability of fire occurrence in a specific location. They can also help predict the spread and direction of a fire based on, among other things, the type of trees or other fuel for the fire and whether the fire is on the surface or in the tree crowns where a wildfire can quickly spread.

The three main factors that influence fire behavior are fuel, weather and topography. Of the three elements that determine fire behavior, fuels represent the one element that can be adjusted to reduce the potential for extreme fire behavior. Whether by reducing heavy fuel loads in forests or by reducing the amount of fuel around homes and private property, fuels management is an effective approach for reducing risks to homes and structures.

In 2006, the USDA Forest Service initiated a program to evaluate the effectiveness of prescribed fire and mechanical treatments designed to reduce the risk of wildfire. When a wildfire starts within or burns into a fuel treatment area, an assessment is conducted to evaluate the resulting impacts on fire behavior and fire suppression actions. In 2011, the Forest Service made the effectiveness assessment mandatory whenever a wildfire impacted a previously treated area.

Since 2006, over 1,000 assessments have been completed. Data has shown fuel treatments are effective in reducing both the cost and damage from wildfires. The summary of data from these administrative studies indicates over 90% of fuel reduction treatments changed fire behavior and directly led to control of the wildfire.

In summary, wildfires know no boundaries and we must work within an all-lands context to manage for and respond to wildfires. Additionally, we will continue to provide assistance to communities that have been or may be threatened by wildfire. As wildland fires have impacted lands across the Country, we recognize the interest, urgency and willingness of many members of Congress to provide tools for the Forest Service to apply restoration principles.

Thanks to the panel for some very enlightening and important comments. I'd like to acknowledge some of the other experts and elected officials who are in the audience. I'm sure I will miss some of you. If you will let me know if I've missed you, we will ensure that you are acknowledged by the end of the hearing.

But I see Commissioner Dan Gibbs from Summit County here, former State Senator Gibbs, who lives in the Frisco-Breckenridge area. Those of you who have been to the Frisco-Breckenridge area know that there are a few bark beetle killed trees in that county. Dan has been a leader on this topic for many years.

Sitting next to him is Commissioner Clark, a long-term friend of mine who served El Paso County well and I know still is feeling the effects of what happened just a few weeks ago here.

So it's great to see you, Sallie.

I think Kyle Hybl is here—CU Regent—right here, yes. OK. You didn't move around on me. I think I see Commissioner Domenico from Boulder County as well. I always feel thrilled when Boulder and El Paso Counties are in the same room together, brought here by a common interest and two very highly respected county commissioners.

I alluded to the fact earlier that I didn't want to be called a senior citizen. But I am going to call for a 5-minute recess. I'll be back shortly, and we will then convene a round of questions with our witnesses. So I'll be back in 5 minutes. If anybody else needs to take a quick break, please do so, but we'll start right back up in 5 minutes.

[Recess.]

Senator UDALL. If everyone will take their seats, we have about an hour. I'm really looking forward to the conversation that we'll have. I want to start with Jim Hubbard.

Jim, as I mentioned, we saw each other at the after-action review meeting just a few short days ago. I thought, all in all, the various agencies and sectors involved worked extremely well. We can always improve our response. But as far as a baseline goes, there's a lot to acknowledge that went well.

There were a lot of news reports—it wouldn't come as a surprise to you all—that questioned why more air tankers or airplanes were not used to fight the fire. I've been on the scene of a lot of fires. I'd like to actually reduce the number of fire scenes I visit in the future. But that's why we're here. In the process of doing so, I've learned a lot about how fires are fought.

Tankers play an important supporting role. I want to underline the word, supporting. But the most important are the ground crews that get literally on the ground. As a member of the Armed Services Committee, I've also learned that fighting a fire is similar to fighting in a theater of war. You've got to have air support, but you have to have troops on the ground to win.

We've discussed in detail whether the Air Force's C-130s were deployed quickly enough. I believe that they were launched as soon as they could be safely and effectively deployed. I also mentioned the Economy Act of 1932, which basically says the private sector should have every opportunity to provide services before we call in the military or other government agencies and—well intended, as I said, but it's one of those I'm going to take a look at for the long term.

But will you describe the U.S. Forest Service's, in this context, strategy for air tankers and any takeaways you had from the after-action review?

Mr. HUBBARD. Certainly. You're exactly right on the use of air tankers. The primary use by the Forest Service for air tankers is initial attack. Their purpose is to slow a fire down until ground forces can get there. When we get into large fires, we often have air tankers, but in a support role, and the role they're playing is in combination with those ground forces, where we're taking ac-

tions to not only protect the ground forces but to buy them some time.

Burnouts are something that we often do, and those planes lay down a line between that burnout and those firefighters so that they have some protection. So those planes aren't flying to drop retardant on the head of a wind-driven, large fire. It doesn't do any good. Those planes usually aren't even flying in winds. If the wind speed is at a certain level, we don't launch.

It's a matter of working with the two together. So if you can't put ground forces into a situation, an air tanker is probably not going to do much good on a fire. But in combination, they do a lot of good. We had no shortage of aircraft during this last siege. At one point, Colorado had 92 aircraft committed. That includes the helicopters as well. That's a lot of aircraft. It takes quite a bit to manage that kind of air space over fires, too, and that's an important consideration.

As far as the C-130s, the Forest Service very much likes that platform as an air tanker tool and would like to use it more. The Economy Act does require us to exhaust the private resources at our disposal before we call on the military to activate the 130s in the mass units. But we're having conversations, as you well know, about perhaps where we have some imminent threats and we have some capability to deploy those resources. Maybe there's an exception that should be considered. We hope that gets examined.

Senator UDALL. Thank you for that, Jim.

I direct these comments to Commissioner Clark, but also other Front Range communities, county commissions, and local government entities. We all know the history here in the Springs and the pride in which we all take in the presence of the military and the men and women who serve us so well. I know, as we all tried everything we possibly could, it was not initially understandable why the airframes at Peterson weren't covering El Paso County.

The point I'm making is I think there's a possibility of a MOU or some arrangement here, because we don't want another fire to occur here, but we have to be prepared, given that Colorado Springs' red zone is particularly prone to fires, which, Sallie, we've all known for a long time. In fact, there's a lot of planning that's already been underway.

But I want to pursue further whether there's not some sort of a specific agreement here, given the proximity of the aircraft, that would be in force if, in fact, in the future we need to fight a fire of any size. I'll work with the commission, with our military leaders, and the Forest Service. That was one of the conversations we had at the after-action review.

There's still a lot of questions to be answered, and we don't want to, again, create an impression that Colorado Springs gets special treatment, but I think that's not what we're talking about. We're talking about making sure we plan for every contingency, particularly given the proximity of aircraft that could be of help. I just wanted you to know that.

Let me go to Jack. As I mentioned, you were one of the primary researchers on the Four Mile Canyon fire. Based on your findings, what are 3 things a home owner can do in the wildland-urban interface to protect their property?

Mr. COHEN. I think the first thing that a homeowner needs to recognize is that the fire is inevitable. The wildfire is inevitable. It's going to be inevitable under extreme conditions. It may not be very frequent, but they need to recognize that they're not necessarily immune for this kind of an event.

They also need to recognize that fire suppression, fire resources, are going to be overwhelmed during those conditions. Because of that, many houses are not going to be capable of being protected. So, given that kind of motivation, perhaps we can then get homeowners engaged, with their recognition that without their engagement, fire resources can't protect communities.

So, in essence, what we've got, then, is fire suppression and fire protection from structure agencies assisting, essentially, what homeowners have already done. Having said that, then, with that motivation, the homeowner—the first thing that needs to be done is to look at where to change out flammable wood roofs. If you don't remove flammable wood roofs, then, by and large, you can't do anything. From my experience and from the research that I've done, there is virtually nothing that you can do if you're exposed to firebrands.

So the first thing is to get the largest piece of flammable material off your house, at which point, then, you begin with the house to look at flammable debris that's in the rain gutters, that's on the deck next to your house, between the deck and the wall, and start removing that kind of material—firewood piles, lumber. I mean, just because we live there, it's going to be vulnerable, and my house included.

We start at the house and look for all of those things that can ignite and start working our way away from the house and making sure that flammable material that can produce flames and contact the house or be in contact with the house, like bark mulch, just isn't there. We just remove that. That doesn't mean that you have to live in pavement. You just need to make sure that the dead material is out of those shrubs and removed away.

To cut myself off, I would suggest that homeowners start looking at web sites like Firewise.org for greater details to remind them of all of those things that might be present at their house that they should be mitigating.

Senator UDALL. Thank you for that.

Mike, I want to go to you and then Jim, in turn, a simple question, but I'll ask you all to try to keep your answer succinct because it's the fundamental question, in a way. What's the reason that more fuels treatments aren't done?

Mr. KING. Money. I mean, that's it at the end of the day. We're struggling with that at the State level, as we've done—you know, the private sector folks are out of jobs, and it results in less revenue through taxes. We've lost \$4 billion in the State budget over the last 4 years. We've begun to turn the corner this year. We cut down, through the fat, through the meat, to the bone, into the bone, and it became a matter of prioritization.

So you've got to make decisions in State government, like are you going to close schools or do fuels treatments—horrible decisions. We simply at the State level don't have the ability to spend in def-

icit, and so we kept our infrastructure in place and the emergencies were taken care of.

Luckily, we're coming through that, and I think that you can rest assured that we are looking for ways to increase our funding for forest health and to partner through the State Forest Service with the U.S. Forest Service and local governments and water providers. We think there's a real opportunity there.

We're talking about potentially making money available with a match to municipal water providers to do work that protects local infrastructure. Denver Water is clearly out in front on this. They did it on their own around Dillon reservoir, and we think that it protected their water infrastructure, but it protected the community as well.

When you look at Rampart reservoir and other reservoirs around the State, there are the opportunities to get multiple benefits for the expenditure of limited resources through this partnership. I think that's what you're going to see at the State level. As we begin to come out of this recession, that's where our priority will be, and we'll show progress in the next legislative session toward doing just that.

Senator UDALL. Excellent.

Jim, do you want to follow on? I know you have some of those numbers in your head. What's really vexing about this is it's less expensive to treat and prevent a fire than it is to respond to the fire, which is very expensive. Any time you hear a helicopter going over, it's cha-ching, cha-ching, cha-ching, not to mention all the people that are on the ground. But then to rehabilitate those areas and then to find the capital to rebuild the infrastructure that's destroyed—much, much more expensive. But it's hard to find those dollars on the front end. Would you comment, too, on that on the heels of Mike's comments?

Mr. HUBBARD. Certainly. The succinct answer is it's money. But the Forest Service budget has in it \$946 million for suppression. We're likely this season to spend \$1.4 billion on suppression. We have \$300 million for hazardous fuel reduction. Of that \$300 million, whatever hasn't been spent probably will pay the bills for that suppression effort, because you don't stop fighting fires. So it's hard to get ahead of this one because of the press of the emergency that you have to respond to.

In hazardous fuel reduction, the cheapest acres we do are prescribed fire, and we can do prescribed fire for as little as \$30 an acre in some places. The most expensive is \$2,000 an acre, and that's when you're removing small material with no market, and you're in the interface, and you have limited opportunities for any kind of efficient operation. We have 70 million acres plus that need this kind of treatment, and we get to about 3 million a year. It's really important that we pick the right 3 million.

Senator UDALL. On the heels of those comments, let me turn to Nancy and Jimbo and Merrill. I think we're all in agreement that we ought to do more fuel treatment. Supporting the forest products industry, in my opinion, is a way to have a triple win scenario, a win-win-win scenario. If you do it right, we're removing these hazardous fuels and we're turning that opportunity into jobs. How

should fuels treatments be designed, and what needs to be done to get more work done on the ground?

I think, Nancy, the killer opportunity, the killer app, almost, is how do we empower the private sector, and can we craft a model, a formula, that has a profitable incentive behind it, and then we would unleash the private sector? That's my vision, my hope, my dream. But would you comment? Then we'll, in turn, go to Jimbo and Dr. Kaufman.

Ms. FISHERING. Thank you for the question, Senator Udall. I think we've had examples in Colorado where we have had that sweet spot. I see Forest Supervisor Casamassa. The one that comes to mind is a stewardship contract that we did around Grand Lake in the middle of the bark beetle epidemic, where the essential services were to make those campgrounds safe. That's hand work. It's biomass. It's not a saw timber kind of quality thing.

So the person that had the stewardship contract goes in there, does the hand work, gets paid for the hand work. But then they went into the back country a little further where there was conventional saw timber. That's a tree that you can actually turn into a two-by-four and actually sell it on the market and pay for the cost down below. It made perfect sense.

So what I see slipping is we get work—and it's a huge challenge. The biomass thing is huge in Colorado and throughout the West. But we keep saying, "Well, we can't afford to do everything. We'll do a service contract." We do way too many service contracts. There's got to be a way to marry it into stewardship where you have enough saw timber to pay for the hand work. That's the combination.

I would argue our industry across the United States has come up with examples of way too many environmental impact statements. We've gone through the community meetings. We have all the consensus. Then we don't treat it aggressively.

Senator UDALL. Explain to us the difference between a service contract and a stewardship contract.

Ms. FISHERING. The Forest Service is so segregated in these different entities. But a service contract is like a procurement contract. It follows different rules, and you're paying somebody to go out and just start cutting trees or cleaning campgrounds or cutting hazard trees. There's a lot of things. But you're paying money for services because there's not enough value there to cover it.

In stewardship, what we're trying to do to bring down costs is to have enough saw timber. It's a technical term, but it's what you need if you're going to turn it into a two-by-four where you can make some money. That pays for the service work. We're not doing that aggressively enough.

Senator UDALL. It's a form of hybrid technology, if you would. We're all excited about hybrid vehicles in the military, hybrid energy systems—

Ms. FISHERING. It is a hybrid.

Senator UDALL. I don't think I'm putting words in your mouth. It's a hybrid—

Ms. FISHERING. No, because the Colorado timber industry isn't what some people stereotypically would think of.

Senator UDALL. Yes.

Ms. FISHERING. We do a lot of—you mentioned West Range Reclamation, a very interesting and progressive company that wants to do restoration, and they want to work with the biomass. Even their business plan requires saw timber. It helps them cash-flow everything they do. Saw timber is the economics. Where the rubber hits the road, you get the value and you can treat more acres.

Senator UDALL. Jimbo, share your thoughts on this. I know you may bring a slightly different perspective. Please feel free to tell us how you see it.

Mr. BUICKEROOD. Thank you, Senator. First of all, as sweet as it would be that we could have one model that fits everywhere, that's probably not the case. So I do think the solution by region, by area, by community, needs to be given consideration. As noted before, my experience most recently has been working with the Pagosa Springs community. You know, we've hit the multiple benefit win-win-win piece there.

Fortunately, the Forest Service awarded the stewardship contract there, and that's really going to make it happen. I mean, our working group has really looked at the forests around the community and priorities and what needs to be done. The stewardship contract will give us the money over—it's a 10-year contract—to really get after the action piece of that.

At the same time, it's not a lot of acreage every year. You're talking about 1,000 to 2,000. However, we hope to be smart about that and operate in the WUI and get after that to begin with. The other piece of that—and I know you've been out on the ground there. The exciting piece of that project is that that will really remove the fuels from the ground.

Senator UDALL. Yes, literally from the ground. When you say from the ground, you don't mean it figuratively. You mean from the ground level.

Mr. BUICKEROOD. Yes. That'll be taken off of the forest, and in this case would be used for chips for the biomass plant that'll be generating electricity. However, that said, it's a great model for the Pagosa area. I think the scaling of that is really important. J.R. Ford, who is the proponent of that project and the businessmen behind it—when he gave his testimony in Montrose at the House hearing, he said, "Hey, the way this is going to work is because it's scaled to this." You know, his haul distance he can work with economically is 50 miles.

So it's not going to be a one-large-project-takes-care-of-everything type of thing. But it fits well in that community for what the needs are. So I think that's an important piece of the puzzle.

I would say the other piece of it, Senator, is—and this is what the working group was—our next phase here is to bring the public along, basically. You know, we've done our initial work, examining the landscape priorities, et cetera, et cetera, with this great diverse group. But the next piece is we need to get the public on board. So that's our next piece, this outreach to the community. Frankly, we're trying to piece together the funding to do that, but, you know, as everyone has pointed out here, that's the best return of investment right there on that piece of it.

So, anyway, I'd say, overall, that scaling is really important. It might be a different fit for different communities, as far as what

forest type they have around and so forth, and the scaling is really a big piece. So what might work in Pagosa may not be the solution in some other communities in the State.

Senator UDALL. Merrill, would you comment, and perhaps as you do, give us all a 60-second tutorial on the context of your comments tied to my question about the different forest types in Colorado? It's tempting to talk about the lodgepole forest where you have stand replacement fires and where the bark beetle is most evident. But you have the ponderosa-Doug fir ecosystem up and down the Front Range, where I'm very, very worried, but then in Jimbo's area, it's a slightly different forest type that's more southwest, more 4 corners based.

Then, of course, you have the Piñon-juniper forests that were part of, I think, the Mancos fire, certainly the Piñon Ridge fire, which, by the way, almost overran I-70 and that railroad corridor and quite a number of natural gas and oil wells. Although it didn't burn many structures, that was a fire that was very, very scary for, I think, about a 2-hour period.

I'm saying too much. I want to hear from Dr. Kaufman.

Mr. KAUFMAN. There's no question that we have 3 or 4 major forest types that are fire dependent in one form or another—lodgepole pine, ponderosa pine-Doug fir forests, Piñon-juniper—to a much lesser extent the Subalpine forest and spruce-fir. What keeps coming up in my mind is that we've got an enormous problem with dead trees in the lodgepole pine zone, and attention to that issue is really important.

But I can't escape in my mind the observation that so many of the big fires have been occurring not in the lodgepole pine zone—including with the dead trees that are standing around the ground—but rather in these ponderosa pine-Doug fir forests, particularly in the Front Range. That could change tomorrow. We could have a bad fire in lodgepole pine somewhere.

My colleagues at the Nature Conservancy—I just learned this morning—have done some calculations of how much fire has occurred in lodgepole pine in the last decade or two. It's numbering in the 10,000-acre range, not in the half million-acre range. So from the standpoint of the sheer impact of where the fires are and where the risks are, I still think the ponderosa pine-Doug fir forests are the worst case.

I actually led a review for the Joint Fire Science Program a couple of years ago, looking at fuel treatment approaches to substitute for fire. This was a review of a study that had 11 different sites around the country. In all honesty, the Front Range situation with ponderosa pine-Doug fir forests and, particularly, then with the WUI is probably one of the top one or two worst situations around the country, not lodgepole pine, in spite of how damaging the beetle kill has been and how it has changed the look of those forests.

Again, I don't want to get into a judgmental position here of what's more important. But the observations are that the fires and the damage, the loss of lives, are occurring in these lower forests.

There's a conundrum. Treating these forests is cheaper than fighting the fire and putting out the fire that burns them down. But can you tell me where the next fire is going to be, so you know where to treat? So we don't have that knowledge. We can do some

things. Obviously, we try to prioritize in the WUI. But we can't come up with a true prediction of where the fire is actually going to occur.

Now, all this said, you know, I hear Nancy's point that the industry needs to make some money, and they can make some money with saw logs. Ponderosa pine doesn't produce a whole lot of really high-quality saw logs, in the Front Range area, at least. It may in the southwest—certainly has over the years. So we're left with enormous quantities of biomass in trees that don't have that much commercial value.

So if you look at the whole picture, somehow or another, we have to find ways to extract the best economic benefit that we can from whatever we take out of these forests to improve their ecological condition and to improve the protection from wildfire. But we're still going to have mountains of biomass to deal with. If we let it sit there, we'll, obviously, at some point in time, burn it up and have another big fire, whether it's in small piles around the woods or whether it's in big piles in centralized locations.

There's energy in it. Can we somehow or another figure out a way to use that energy to offset fossil fuels, to provide either power or fuel, gas—you know, liquid fuels or whatever. I don't know the technology. I'm not going to pretend to know it at all. I know there are a lot of problems, or we would have had that nut cracked by now.

But I don't see how we can address some of these major fuel problems for wildfire without addressing what to do with the biomass. We cannot pile it along the road somewhere outside of subdivisions. So, you know, again, we're going to have to come back to some kind of prioritization.

Nancy's point that you have to make some money to support the industry and that then will generate enough of a picture to help deal with the places that are not so profitable—I agree. We've got to do that. I won't say for a minute that lodgepole pine harvesting should not be done to support the industry and keep it on its feet in some fashion or another. But we've got to find a balance, and I'm not going to tell you I've got the answers.

Senator UDALL. You spoke earlier about research in your lane, and we need to redouble our efforts there. You're also alluding to the fact that we need to continue to do research on the alternative liquid fuel front. There's some promising developments there, but we still haven't cracked another code, that is, how do you accelerate mother nature's processes that generally take millions of years to work to create liquid fuels into a few short years.

Mr. KAUFMAN. We've got questions of how to be effective at a large scale of operation, at a landscape scale. Do we really know how to modify the forest landscape in a way that does provide the protection that keeps Jack Cohen and his colleagues happy, that we're protecting places? So we've got to do that.

But, to my mind, having spoken countless times to groups of people, we've got an enormous education process that's been alluded to to help people understand what their problem is and to help people get into a better position to decide whether we can undertake this kind of industrial activity in our forests. Because if we really expect to solve the problem, we're going to have to tolerate some

things that aren't very comfortable for us. We like our forests the way they are. We've all come to like them. But we may—you know, I think we understand the risk of that as well.

Senator UDALL. Again, back to you, the photos that you showed me that were taken along the I-70 corridor as you come out of Denver—that landscape looks natural and healthy. We venerate, literally, because the trees to us are something—I should speak for myself—sacred, something marvelous, something that demonstrates the miracle of life on this planet. There are way too many trees—and you'll have to correct me in the back room here, but I remember something on the order of just a few mature trees per acre 100 years ago in the ponderosa ecotype.

Mr. KAUFMAN. Many places, historically, would have had 40 fairly large trees in an acre.

Senator UDALL. In an acre.

Mr. KAUFMAN. You know, that's a very open forest. It's almost a woodland kind of setting instead of a forest setting. Where restoration work has been done, like on some of Denver Water's land in the South Platte—where that kind of work has been done and is shown to the public, the public buys into that end result. They may not like the way it looks for a year or two in the process. But, afterwards, the place is good for biodiversity. It's a pleasing environment to look at. It doesn't have the same privacy if you are screening from somebody's house a few yards away.

Senator UDALL. That's one of the changes that'll be—this will all work out. It just won't necessarily work out in the human life span. That's what's so distressing to all of us.

Mike and Jim and Nancy, in turn, speak a little bit more about biomass and what we're doing or what we could do. Of course, again, biomass—we throw that term out there. You can use it to produce heat. You can use it to produce electricity. You can use it to produce liquid fuels, although, as I mentioned, that's still a big challenge. But speak to what you know on that topic.

Mr. BUICKEROOD. We're wrestling with a lot of different variables. Every time we try and crack the nut, we find that there's another impediment in the way. What we found with some of the liquid fuels companies was a sense that to get the investment into the new technology, they needed 20-year supplies of massive quantities of trees. Then, of course, the Forest Service contracting doesn't allow that. So that was an inherent impediment.

Some utility providers look at coal fire, which I think has the potential to really make a difference at a landscape level. Then you get coal that's remarkably inexpensive and gas treating at \$2.10 an mcf, and the economics don't work. So every time we think we have a potential solution, just invariably something pops up, whether it's economic or technological or contracting or NEPA or all of these things that seem to be conspiring to lock us into a situation that is untenable.

Every one of them seems to have something, which is why I think that the Pagosa experiment—the model works, because it is site-based. It's not requiring a level of resource that makes people uncomfortable. We're not talking about 400,000 acres of trees being dedicated to this facility. It's right sized, and if we can replicate

that model at various businesses around the State of Colorado, I think that, again, gets us a long way toward where we need to go.

But I absolutely share your perspective that if the private sector isn't driving this, if we don't figure out a way to have these products making money in the private sector, we in the public sector simply don't have the resources to ever scratch this.

Senator UDALL. Nancy, do you want to speak?

Ms. FISHERING. It sounds disheartening, but I think we just went through one of the worst economies, the great recession. But the sawmills that I know in Colorado were right on the edge of implementing more and more of those wood-to-energy projects when the capital dried up just to nothing. But credit is now loosening up.

The good news—we had the—we don't have many sawmills in Colorado. But the largest one we had that did 90 percent of the fire killed around the Hayman fire in Colorado Springs in 2002—95 percent of the bark beetle processing in the lodgepole went to a mill in Montrose, Colorado. That's where I used to work. It went into receivership. It's coming out of receivership. We now have two mills close to Colorado, being Saratoga, Wyoming, and the one in Montrose, that are perfectly capable of making money and helping with the biomass issue.

So I think we're on the precipice again of getting back into where the economics are going to work, and we're going to see what we're speaking about on Pagosa. We're talking small biomass. We're not talking the huge size. When the Intermountain mill went into receivership, we had companies from China coming to buy it. But they wanted to work on a scale that you're going—please, don't. We have community support. We want to keep that community support. But I think we're going to be very encouraged to see our opportunities grow for biomass.

Back to the research, we have a good research project going on the Western Slope specifically on this issue. We're doing it through Rocky Mountain Research Station. It's part of our monitoring money through the Community Forest Landscape Restoration Program. His findings are going to be out in September.

But he's got the dollar figures. How much does it cost to get the biomass out of the forests? How much is it going to cost you to get back on a kilowatt hour before it's going to make sense? What we're finding is combined heat and power are the most efficient projects, where you have a use for the heat, a use for the electricity, a use for the—you need all 3 of them, combined heat and power. We have those opportunities in Colorado.

So I think we've got opportunities. We talk about challenges, but we've got huge opportunities. Getting out of this economics of the past two or 3 years is going to help us. But we've got the feasibility studies already done. We've got engineering done. It's on the shelf ready to be implemented. We're pennies away. So I think we're going to get there.

Senator UDALL. Jim, would you respond as well from the Forest Service perspective?

Jimbo, you've got your hand up. Do you want to make a comment as well after—OK.

Mr. HUBBARD. I agree with what's been said. I've been waiting for that breakthrough that hasn't come. Even some progress on

electricity to the grid hasn't moved ahead enough to be the answer. So it becomes a matter of local heat and power, and it becomes a matter of scale, like Pagosa has learned.

Pagosa put together some unique approaches and some unique public support to do what they're doing. There are some common elements there that everybody shares, though, and that's the fire risk and the values to be protected. But those local solutions, to me, offer us the most hope. That's a local solution for a piece of this puzzle, though. That's the hazardous fuel piece. If we don't do that in combination with a Firewise community and with the coordinated suppression response as a package, then we still will have trouble.

Senator UDALL. Mr. Buickerood.

Mr. BUICKEROOD. It's pretty obvious, but just to carry through on that, this is one of these situations that the magnitude—it's like we need all the tools. I just want to throw out another possible tool—and maybe you're becoming familiar with that—and that's the use or the term of biochar. The reason I bring that up—and we're starting to work on—it's another one that is very local, but who knows what the scaling is on that. We're starting to work on that locally.

But there is a commercial enterprise—it's outside of Loveland or Fort Collins—that is starting up with a very large project right now, which is very exciting. So I think that's a large scaling on that. I mean, they're talking about semi loads of materials.

But the reason it has come up in our community is, coming off a Firewise program, we have contractors who are doing fuels reduction projects, and they're like, "OK. What are we going to do with the biomass?" The county is like, "Well, we don't want it in the land fill," et cetera, et cetera. So it's, once again, one of these things that could line up to be multiple benefits.

There are some hurdles to overcome, but the State has—I think you had funds before for it, for the support, and maybe that's run out, because, you know, it deals with a little bit more money to be able to figure a couple of these pieces out. I'm not sure if you're aware of it, but with biochar, one of the win-win-wins on this is that we also have a lot of mine reclamation pieces, and we have well site reclamation. These are all agricultural amendments, et cetera, that biochar can be used for.

The market for biochar is definitely there. We have to get over this hump—production deal. We're just looking at it in a small way, but it might be possible, as is being done up—I think it's the Fort Collins area—to do that large scale, too. So I'm just suggesting this, like, "Yeah, let's look at all the tools." I think that's one of them that, hopefully, we can move forward on.

Senator UDALL. Biochar is a fascinating opportunity for us. It sequesters carbon. It puts minerals back in the soil. There's a lot to recommend. So thanks for pointing that out.

I know we're starting to get close to the end of the time we have allotted. I did have a couple of other questions I want to ask, and then I'd like to ask each one of you to summarize in your final comments the 3 most pressing things that Congress could do. So you can get ready to share that with me.

But, Mike, let me ask you a question about the roadless rule. We went through a 7-year collaborative process. Some would argue it

went on even longer than that. I played a role in it. I think we did ourselves proud, frankly. There are some who still have concerns about it. But I want to ask you did any of the major wildfires this year affect areas protected by the Colorado roadless rule?

Mr. KING. Senator, the answer is no. I'm not as familiar with the one down by Mancos because it didn't have the huge impact on the communities like the 3 on the Front Range did, or at least the immediate acute impact. So what we've seen is that the Colorado roadless rule does provide far more flexibility than the 2001 rule for treating around these communities. That is one of the fundamental benefits of the Colorado roadless rule.

The 2001 rule was a great conservation effort, and it did some tremendous things. But it was promulgated in a time when we weren't sitting on 4 million acres of dead and dying trees in Colorado. So this is one of the things that we felt was so important, that we had the ability to treat within a half mile of the wildland-urban interface with temporary roads and tree cutting, and then we could go another mile beyond that with tree cutting and fuel removal. So we think that, again, if we can come up with the resources and focus our energies in those areas where roadless does come up adjacent to communities, we have far more flexibility and that's one of the primary benefits of the Colorado roadless rule.

Senator UDALL. I'm a strong supporter of the roadless area concept. I think the Clinton administration was wise to promote it and propose it. I also know that in the process of working through it, we found the need for some flexibility as you described. I know the really destructive fires have been occurring most notably along the Front Range, with some notable exceptions. But that doesn't mean that in the roadless and wilderness areas we don't have water systems that are at risk, we don't have transmission lines that are at risk and other infrastructure that is an important part of Colorado.

Jim, in that context, would you speak to wilderness areas? Can the Forest Service fight fires in designated wilderness areas, and did any of our major wildfires this year affect wilderness areas? You can be frank on this. I think people know where, certainly, my lean is on this. But we want all the facts in front of us so that we're making the right kind of policy decisions. But please speak to that question.

Mr. HUBBARD. Certainly. Yes, we fight fire in wilderness areas. Even though there are some restrictions, those restrictions are left at the discretion of a regional forester, so they can grant an exception within minutes if they need to. But our response is aggressive, and we go into wilderness areas. Oftentimes in remote situations, that might be smoke jumpers, but along with those smoke jumpers on that plain are chain saws and mechanized equipment, that if they decide they need it, it goes in with them.

So we sometimes aren't as aggressive with our suppression response in wilderness areas, and fire does its thing in the system and reduces future risk. But we are aggressive any time we have values at risk.

Senator UDALL. Talk about the High Park fire, the western reach of that fire. You'll have to remind me the category that area is a part of. But we let that part of the High Park fire burn for a while

because it was in an area similar to wilderness. Will you speak to that a bit?

Mr. HUBBARD. Yes. It falls into that land management planning decision that the local line officer has authority to make. If that means that that part of the fire doesn't get the same suppression action, the same asset allocation that other parts of the fire that are threatening higher values get, then they have that discretion to pick that kind of a strategy and they do. They use that.

So we put our assets where we have the most values at risk. We don't ignore any fire on the landscape, because it does threaten to be a future problem. But if it is reducing future risk, we like to manage it that way.

Senator UDALL. It was a silver lining, albeit a very dim silver lining, in the High Park fire that there were areas that, in effect, then, were subject—back to Dr. Kaufman's comments—to controlled burns because of the fire that began outside of our control, and we were able to at least put that fire to a little bit of good use. If we take the attitude, which we're—and Dr. Kaufman has made it clear we have to take the attitude that we have to coexist with fire. Fire is going to have the last say—that there are, in some cases, those kinds of opportunities.

It certainly wasn't the opportunity in the Waldo fire, because it's been so devastating. But you still had a mosaic pattern of burns, which is, in the end, what—a healthy forest would have a mosaic pattern, not in the kind of way we've seen some of those patterns.

Mr. HUBBARD. Whether we like it or not, fire treats more acres by far than what we have money to treat.

Senator UDALL. Yes. I think we've come to the point in the hearing where I would, as I said, like to ask each of you to make any final comments and to give it to me straight, as a member of the Senate and a member of the U.S. Congress, what would be on your list that the Congress could and should do, either in an imperfect or a perfect world.

So maybe I'll start with Mike, and we'll move across the panel.

Mr. KING. Thank you, Senator. Again, I want to reiterate my appreciation for you hosting this forum for us to put some ideas out on the table. It's been very enlightening, and I look forward to following up on some of the ideas that have been presented.

I think that, from my perspective, one of the things that's frustrating is the contracting provisions. Having dealt closely with trying to get the Montrose mill up and running and viable, I think there's a fundamental problem with the Federal contracting process that cannot shift from viewing our trees as an asset for the Federal treasury. They are now a liability, and the contracting process simply cannot adjust to that dynamic, and we need to have a different contracting process for our dead and dying trees, because they are a liability, not an asset at some point.

I think we need to have a streamlined review process. I hit on that a little bit. I'd like to see those areas in the WUI be given an expedited process. They've got to be economical. They're marginally economical at best. But maybe if we can get to them faster, they can fill in the blanks for mills as they are working toward their longer-term, more sustainable, more economic material.

Then, finally, I think that we need to always be looking to make sure that our air quality permitting process is appropriate for our treatments. So one of the things that I hear is a constant concern is that the windows of opportunity open and shut too quickly and that we can't do the prescribed treatments in an effective way because of some of those things.

Of course, when you have these massive conflagrations, the air quality standards aren't—they go out the window, because mother nature doesn't comply with air quality permits. So I think in the long run—

Senator UDALL. Let's haul her into court.

[Laughter.]

Mr. KING. She rules me, not the other way around. So those would be the 3 things that I would put on the table.

Senator UDALL. Those are all very helpful.

Merrill.

Mr. KAUFMAN. I haven't given a ton of thought to your questions.

Senator UDALL. You can submit ideas, too, for the record later.

Dr. KAUFMAN. Yes. Thank you. Thanks for the opportunity to be here. I really appreciate the discussions you're fostering with your actions and activities.

I've mentioned this numerous times. The whole question or difficulty of ecology and field problems is worse in the Front Range, so focus there. Others may dispute or argue with that. That's fine. But my take would be that this Front Range has a demonstrated bad problem, and related to that, sort of some knowledge questions or issues that need to be addressed.

One is how do we actually distribute the work that we do on the ground to be the most effective for mitigating the fuels problems and for getting the ecology as restored as we possibly can? Second, fostering collaborative analysis and research effort to understand what both the possibilities and the barriers are for kind of the system or body of work that needs to be done to pull everything off—how do you make all the pieces and parts come together, and which parts? Is it energy? Is it the biomass? Is it the economics? Is it whatever? Try to come up with a kind of a systematic or systems analysis of where the most critical barriers are, and try to then foster activities and efforts that would address those to become more effective.

I know the roundtable asks that kind of question on a regular basis. Those questions, I think, need to be addressed, I mean, at the State level as well. They obviously are.

Finally, again, a knowledge question—we need to make sure that we've got a growing understanding of the ecological issues as they come up, having to do with scaling up treatments over large areas. It hasn't gotten mentioned today, but the whole uncertainty of climate is a big concern. I know the Senate and many other players are looking at that question.

It's not necessarily just the ponderosa pine-Doug fir zone that's out of whack. All of our Front Range and all of our statewide life zones may be out of whack for the conditions that we're likely to have emerging in the next decades. So issues such as that, as well as the human dimension, the social issues, and how they play a factor in understanding the nature of the problem, committing to

doing something about it, and how to implement those efforts in a way that our public, all of us, can live with.

Senator UDALL. Thank you for that.

Jimbo.

Mr. BUICKEROOD. Thank you. Three pieces here. I think, first of all, Senator Udall, your leadership and leadership, in general, on this issue is big. It's kind of the oeuvre piece to the whole issue. You know, to have the visibility for the concerned and to move it along in the State level and the Federal level and so forth really takes, you know, leadership, and I appreciate you taking the point on that. I would challenge you to do something that you like to be challenged to do, which is to bring that leadership in a bipartisan nature to the State and to the Nation.

But, you know, if we can get the full congressional delegation here in Colorado on the same page as to what the priority of this issue is and all hands on deck, all tools we need, funding and so forth, I think that's like the top issue. Adjacent to that is the funding issue. I guess it humors me kind of in a sad way that we can't get across the point that the cost to treat, to do fuel treatments and so forth, as noted by Jim's numbers here, is multiple times cheaper than suppression.

So there's your challenge on that one, which is of the Senate. It's like do we want to spend money with this return on investment, or this, you know? So I think that's a really strong piece. I think there's a lot of information there to support you in making that point. But it's a big piece, like let's get the money up front here, as much as we can. I know it's a big challenge, but I think that funding—you know, let's put it where it's going to pay off.

Then another piece, I think, what was curious about pieces of the solution that are maybe a little bit different or inventive or—maybe not in a huge way, but on the State level, I'm curious as to what could be done legislatively to move communities forward toward prevention efforts. For example, the county that I live in, Montezuma County, which is not the most progressive county in the State, nonetheless has what I believe is the first piece of the land code—though there may have been others since that time, but they tell me they're first—and it has to do with new subdivisions in the land use code and requiring them to have CWPPs.

I'm not all the way up on what the latest is on that, if other counties are doing it. But that would be a great initiative to see in the State legislature of moving that forward. Once again, one size doesn't fit all. But, you know, to move the communities toward that—it's a good use of time and investment. So I think those—and there's other pieces like that, too, that might be done legislatively in the State. But I think that one, to move the home owners, to move HOAs, and counties in that direction would be very helpful as well.

Senator UDALL. Thank you.

Mr. BUICKEROOD. So I appreciate your leadership on this issue.

Senator UDALL. Thank you.

Nancy.

Ms. FISHERING. Thank you, Senator Udall.

Thank you, Mike King, because you pretty much said my top three. So I'm going to reiterate that funding is key. We've said it.

We understand the constraints at every level. But funding, fundamentally, has to be part of that whole equation.

The operating restrictions—that's an in-the-weeds suggestion, but I'm sure that there's fixes that the Forest Service would like to see, because they're the ones that—their hands are tied, because it's in case plots and old regs. They're not designed for trying to walk into 6.6 or 7.6 million acres of problems. We can't do it the old way. So that's huge for me.

I understand the priority issue, something we talk about at every collaborative table that I know of in the Colorado Forest Health Advisory Council. But we don't want to tear our State apart by saying this is the only place we have a priority or it's our biggest priority.

We've got to figure out a way to be working across the State, because there's issues across the State. Perfect solutions in Pagosa—we've been working on it outside of Montrose. But it would be awful. At one point, they talked about taking 60 percent of all the funding from southwest Colorado to deal with the lodgepole. We do not want to do that in the State of Colorado.

Senator UDALL. Thank you for that.

Jim, will you speak on behalf of yourself and Jack?

Mr. HUBBARD. Certainly.

Senator UDALL. You've been waiting for that moment.

Mr. HUBBARD. Thank you, Senator Udall. Thank you for the hearing and inviting us to participate.

I would still want to reiterate that our solutions come in the form of fire response, community protection, and landscape treatment, and that addressing those issues as a package is important to us. But, specifically, things that we could use your help with—our large air tanker fleet is old, 50 years old, and that needs some attention. We've had some discussions about options, and we need to figure out how we want to modernize that fleet.

Our approach to how we finance suppression is problematic, too, because it affects too many of the other funds that can help solve this problem and get ahead of this problem perhaps. So I'm not offering you a solution, of course. But I am suggesting that it's a major impediment to getting at some of the solutions, making the money available to get at some of the solutions, even within the current budget. I think your attention to some of the tools that can help promote local solutions, like Good Neighbor and stewardship contracting, are important.

Senator UDALL. Thank you for that, Jim.

If I might, I would like to make a couple of comments to further clarify a couple of other comments I've made and ensure a couple of my thoughts, and then we'll conclude the hearing.

I'll speak to Commissioner Clark again. I got caught up—as we all said we shouldn't fully get caught up—in the air support that we can direct to fires. One of the other conversations we had at the after-action review was training the soldiers and airmen that are based here, within the military's budgets and within the military's other needs, to be on call to fight fires.

The point I'm making is that, as we've heard over and over again, it's the firefighters that really make the difference. I know that was another concern here. But Dan Gibbs is a firefighter, and

he knows the adrenalin rush, but he also knows the danger that's involved. I think I heard from everybody from General Anderson to General Jacoby that they think they can find some ways in which to train their personnel here so that if again there is a fire in this area, we may have additional firefighting capability right here on the ground, which is what the community has asked for and which the community would, I know, fully support.

So that's, again, back to what I was saying earlier about looking at some arrangements here, given the assets we have right here on the ground. I don't know that it would have made, with the terrible conditions that developed that night, that late afternoon, much of a difference in those few hours with the intensity and ferocity of the winds and the fire. But that was also part of the after-action review, so I wanted to make sure you and the community knew that.

Let me just say thanks to all of you for compelling testimony, excellent insights, some ideas I can take back to Washington. I heard a lot about local involvement.

Jimbo, you asked about the insurance sector. I think you're beginning to see that that's another form of the private sector responding, providing incentives. When that's tied into counties and local governments working in the best way to develop some ordinances and codes to encourage and incentivize home owners to create firewise communities and fire adapted communities, I think that's a form of a sweet spot.

Nancy, I never thought 20 years ago, when I envisioned perhaps having an opportunity to serve in public office, of being an advocate for sawmills, I have to confess. But, as you know, I have been. We worked closer together to keep the Montrose mill open, although there's still real concerns. Of course, there's a sawmill in Delta. There's one in Sawatch. We'll keep weighing in, pushing the Forest Service, respectfully, but nonetheless pushing them and working with the private sector, because the sawmills are important to forest health, particularly here in our State of Colorado.

Merrill, you mentioned climate. I don't want to give you my 30-minute speech on climate. But, certainly, you're welcome to visit my web site, listen to and read what I've had to say. I think we have to factor this in. There's so much opportunity in responding to the threat of climate change that I get excited about it, from national security to job creation to the environmental benefits.

This hearing was focused more on the short and the medium-term steps we must take. But you can't ignore what's happening with climate. After all, even if the 99.9 percent of the scientists are wrong, the steps we ought to take to respond to climate change will serve us well, again, when it comes to national security, job creation, and environmental protection, because of the new technologies that will be generated. So thank you for mentioning that.

Jimbo, you've triggered in me a thought that, although there's a loose coalition of senators in both parties who are working on forest health, perhaps we ought to formalize that. Perhaps we ought to come up with a set of principles and proposals that include many of the ideas that have been generated here.

There's a great list of senators, from Jim Risch in Idaho to John Thune from South Dakota—who would have been an excellent vice

Presidential candidate, by the way, but we'll talk about that later—to Mike Johanns in Nebraska to Orrin Hatch in Utah, and those are all Republicans I mentioned. There are, of course, Democrats who are very engaged in this as well. So that's a great call to action.

I wanted to finally acknowledge the great staff that serve us all so well. There's a question in Washington: How do you know who the senators are? The answer is always: They're not carrying anything. If you've ever been there—and you can take that literally or figuratively. But, you know, they're a great staff, young and middle aged and the like, carrying big notebooks around and making hearings like this happen. Then they're responsible for accumulating all of the thoughts and ideas and keeping those thoughts and ideas alive.

So I just wanted to mention the staff that are here today. Kevin Rennert is behind me right here, and he has worked closely with Senator Bingaman and has taken time out of his August State work period to come up here and help this happen; Jill Lazarski, who is back here to my right; Jacqueline Emanuel, behind me, who works for the Forest Service and is a Fellow in my office right now; Melissa Peltier—she's back up here and works in Colorado Springs, and she and Angela Joslyn—where's Angela—there's Angela, who is my regional director here in the Springs.

They're quite a team, and they're always on call to respond to any of your questions having to do with anything with the Federal Government.

Jennifer Rokala is here. She's my State director.

Now, who have I forgotten, Angela? Who's here that I didn't—Mike Seconi—and wonderful interns. We pay interns marvelously well in psychic rewards. But, seriously, they're a real important part of my office, and they are marvelously tireless in their work. Thank you for your support. But, again, this is one of the many steps in this journey.

Pam, let me do a couple of housekeeping matters and then I'm going to turn it over to you.

Again, I want to thank you all formally for being here. We're going to keep the hearing record open for 2 weeks for additional comments and maybe additional questions that I might direct your way or Senator Bingaman might direct your way. You can send statements, those of you here, to my office in Colorado or to the Energy and Natural Resources Committee.

I will formally adjourn the hearing, but I'd ask you all to sit just for a few more minutes so the Chancellor can make her remarks. So the hearing in Colorado Springs, in the great State, the centennial State of Colorado, of the Energy and Natural Resources Committee is adjourned.

[Whereupon, at 12:15 p.m., the hearing was adjourned.]

APPENDIX
ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

STATEMENT OF ERIC HOWELL, COLORADO SPRINGS UTILITIES, FOREST PROGRAM
MANAGER, COLORADO SPRINGS, CO

With the recent wildfires along the Front Range this year, Colorado Springs Utilities itself has been directly affected by the Waldo Canyon Fire from both a water supply standpoint as well as disruption of service and extensive damage to gas and electric systems from the fire storm that entered into the Mountain Shadows subdivision in the north western part of Colorado Springs. While efforts to made to repair and quickly restore gas and electric service shortly after the fire, Colorado Springs Utilities is facing long term risks to its water supplies and infrastructure from post fire flooding and sedimentation. Given the nature of the infrastructure and operations at risk, there is a potential that water service to nearly 200,000 customers-owners could be disrupted.

Of the total 18,247 acres burned by the Waldo Canyon Fire, 14,422 acres was on national forest land, 3,678 acres private land, and 147 acres on Department of Defense land. Of the private land burned, only 60 acres operated and managed by Colorado Springs Utilities was burned. Predominantly the lands of concern with the greatest potential to disrupt water service or cause damage to infrastructure from post fire impacts are under the ownership of the U.S. Forest Service.

Colorado Springs Utilities worked diligently during the incident as well as during this post fire period to communicate our values at risk and provide support to the Type I Incident Command Team and U.S. Forest Service during suppression operations. Those efforts graciously resulted in the protection of our water system as a high priority during the incident and continued with ongoing coordination with the BAER Team during the emergency response planning phase. Recognizing the priority and limitations of the BAER Team to protect life and forest service assets, Colorado Springs Utilities is seeking to work beyond the BAER Team recommendations through a collaborative effort with the U.S. Forest Service, Pikes Peak Ranger District and Coalition for the Upper South Platte. These efforts will include supplementing immediate emergency response treatments as well as focusing on long term restoration projects to better protect Colorado Springs Utilities water supplies and assets affected by the burn area.

In light of the extreme fire and weather conditions that led to the explosiveness of the Waldo Canyon Fire, it must be recognized that this incident is an ongoing need to address the forest health and wildfire conditions along the Front Range. As already studied and summarized in the 2007 Protecting Front Range Forest Watersheds From High-Severity Wildfires, An Assessment By the Pinchot Institute For Conservation Funded By The Front Range Fuels Treatment Partnership, wildfires in Colorado are increasing in intensity, severity, and size due to forest conditions and the prolonged disruption (suppression) of fire regimes and intervals in the lower montane and Ponderosa pine forest types common along the Front Range. As a result of suppression activities, frequent-low intensity fires have no longer been allowed to burn and naturally thin and reduce excess fuels to better maintain healthy forest conditions across these landscapes. Not only would these low intensity fires help to reduce the wildfire hazards, but they also serve to create forest conditions that are more resilient to insects and disease that in turn provide a more sustainable system for water supplies and many other resource values of importance.

The Pinchot report should be revisited by members of the Energy and Natural Resources Committee as a guide for the forest management needs in Colorado along the Front Range. Although there are many forest management issues across the state, especially with bark beetle incident, there is, however, the greatest wildfire issue occurring in this ten county area and funding to address this issue is lacking as compared to what is available for the bark beetle incident.

Colorado Springs Utilities has long been engaged and active in forest management programs for the purposes of mitigating wildfire hazards and forest restoration on its watershed properties. Through a cooperative agreement with the Colorado State Forest Service, nearly 3,500 acres have been treated on Utilities watersheds in El Paso and Teller County. Colorado Springs Utilities has also collaborated with the U.S. Forest Service to participate and fund the 2010 Catamount Forest Health and Hazardous Fuels Reduction Project, Environmental Assessment. Colorado Springs Utilities will continue to participate and assist with funding for the implementation of this project which will allow treatment of approximately 23,000 acres on the Pikes Peak massive to protect critical watersheds and other natural and developed resources within the project area.

In October 2012, the U.S. Forest Service and The Nature Conservancy will be initiating the West Monument Creek Collaborative (WMCC) as another restoration project within the Pike National Forest. The WMCC project area, which includes the land area burned by the Waldo Canyon Fire, was targeted for the overlying assessment area prior to the fire. Colorado Springs Utilities will again participate in this effort to assist with developing priority areas for forest restoration, post fire rehabilitation, and evaluate funding opportunities for project implementation in priority watersheds. Recognizing the need to partner and collaborate with the U.S. Forest Service to advance such projects, Colorado Springs Utilities is currently working to formalize its partnership with the U.S. Forest Service through a Memorandum of Understanding to focus on restoration and wildfire priorities Forest Service lands.

As we move forward to address the current forest health and wildfire conditions in Colorado, Colorado Springs Utilities recognizes the need for greater action to mitigate wildfire hazards on private lands as well as developing partnerships to manage federal lands. With the Catamount project as an example, it is of our opinion that those that wish to engage and help direct forest management decisions on Forest Service lands, the opportunity exists through the National Environmental Policy Act and Healthy Forest Restoration Act to work collaboratively with the U.S. Forest Service to achieve both community and natural resource goals. With this said, it seems that the Healthy Forest Management Act of 2012 may be unnecessary as it could lead to additional layers of government control and conflicting priorities rather than allowing the technical and public process to formulate the best forest management alternatives and decisions.

It is also of interest to Colorado Springs Utilities in effort that there U.S. Forest Service and State of Colorado recognizes the importance of allowing forest management in priority watersheds to sustain water supplies for future generations as well as meeting needs as the state's population increases. Understanding the final ruling of the Colorado Roadless Rule the rule allows for treat cutting under certain circumstances, water providers will be working to request for exceptions in Roadless Areas and Upper Tier designations where appropriate forest management projects can be completed. In addition to working through Roadless Rule constraints, Colorado Springs Utilities encourages the ongoing use of prescribed fire as a management tool when it can be safely and effectively be implemented. With respect to those lives that were lost and the damages suffered from the Lower North Fork Fire, Colorado Springs Utilities understands the need for halting prescribed fire operations to assess the circumstances and protocols that can be improved upon. As an agency willing to continue with its prescribed fire program when appropriate, we will be cognizant of the lessons learned from the Lower North Fork Fire as well as reassessing our own internal protocols to ensure the safety of our program. As we look to continued use of prescribe fire on City-owned watershed lands, we also encourage greater flexibility within the Colorado Smoke Management Program to allow greater use of prescribe fire by the U.S. Forest Service on federal lands in Colorado.

On behalf of Colorado Springs Utilities, I very much appreciate the focus on these issues and the opportunity to provide comments in the best interest of our national forests and our reliance on these critical watersheds. If you have any questions or would like further information on Colorado Springs Utilities forest management program, please feel free to contact me.

STATEMENT OF SALLIE CLARK, COMMISSIONER, DIRSDRICT 3, AND VICE CHAIR, BOARD OF COMMISSIONERS OF EL PASO COUNTY, COLORADO BOARD MEMBER, NATIONAL ASSOCIATION OF COUNTIES

Thank you for the opportunity to attend and comment on the recent field hearing conducted on August 15, 2012, by U.S. Senator Mark Udall regarding forest mitigation efforts, wildfire concerns and healthy forest management. This discussion is

about more than healthy forests; here in Colorado it is a matter of public safety. The lives of our citizens are at risk when dead and diseased trees turn the mountainside into a tinder box, ready to explode into a firestorm with the next bolt of lightning.

On June 23, 2012, the Waldo Canyon Fire began in El Paso County, Colorado, very near to our well-known mountain Pikes Peak, in the Pike National Forest. While this fire primarily impacted the commissioner district which I represent in western El Paso County, it also took its toll and had a profound economic and emotional impact on our entire community. Fuelled by dead trees on National Forest lands, the fire quickly spread over 18,000 acres. It was the most destructive fire in Colorado history. More than 300 homes were lost and two El Paso County citizens lost their lives.

There were many lessons learned from this disaster, but one of the most painful is that the public lands which contribute so much to our quality of life also pose a substantial threat to public safety. Wildfire risks can and must be mitigated. Thousands of acres of dead or dying trees adjacent to urban neighborhoods are a recipe for the kind of disaster we experienced with the Waldo Canyon fire. Now, as our community only begins to recover in the aftermath of the fire, the burned and scarred mountainside provides little comfort or mitigation to the ensuing flooding we are seeing today. This is currently threatening, not only homes, roads and infrastructure, but the lives of both adults and children, with at least one elementary school in the direct line of flooding destruction for which our county and school district must protect through local taxpayer dollars.

It is our belief that with the right tools in the hands Forest Service managers, working collaboratively with state and local officials, they can identify and mitigate the dangers posed by unhealthy forest lands throughout Colorado. Beetle infestation, drought, and poor forest health are undoubtedly contributing factors to deadly wildfires. By flagging this threat and outlining prescribed remedies and streamlined efforts, this will prevent avoidable fires and create defensible boundaries between future wildfires and urban neighborhoods.

The climate of the Western United States' will continue to see cycles of ample precipitation and drought. Insects and disease will continue to take a toll on our forests but we have a responsibility to manage these issues and mitigate the risks. The Waldo Canyon Fire was a stark reminder of the need to be proactive in our efforts to protect our citizens, property, and resources. We understand that no single effort is perfect and we cannot end the threat of destructive wildfires. But it is important that we recognize and establish a framework for state, local and federal government agencies and the private sector, to work together to identify and manage our forests in a responsible way and to implement policies that provide the ability to get the job done. Appropriate forest mitigation recognizes the need to preserve our natural resources while protecting the health, welfare and safety of our citizens.

On behalf of the National Association of Counties (NACo) and the Board of Commissioners of El Paso County, Colorado, I urge proactive measures to lessen the likelihood of future deadly and destructive wildfires like Waldo Canyon. We thank you and each of your subcommittee members for your thoughtful consideration and for your ongoing support of legislation and policies that will provide state and local agencies with the proper tools and resources to ensure the protection of our public lands and the safety of our communities.

STATEMENT OF SHIRLEY PFANKUCH, REGISTERED AGENT AND MANAGER OF
ADMINISTRATION, SLASH SOLUTIONS, LLC

I am writing as an owner and overseeing operator of an Air Curtain Burner in Red Feather Lakes and our business is called Slash Solutions. Last year as our community was faced with more roadblocks to a local slash disposal site, I raised \$150,000 and engaged 49 property owners to open our ACD site in 95 days. Why—because it was imperative we have a local and affordable site or owners would likely not continue the work.

Having just survived the High Park Fire, Hewlett Gulch Fire and others nearby, this is so important!

AIR CURTAIN DESTRUCTORS

Slash Solutions sole purpose is to allow the property owners in our area the ability to conveniently continue to mitigate their properties for Forest Health, RMP Beetle mitigation and most importantly for Fire Safety. A large part of the volume we receive comes from Crystal Lakes, which is 1630 properties (800 homes), which are in heavily forested severe mountain terrain, with 85 miles of dirt roads, and

with limited access to the area if a large fire should occur. The majority of our owners are weekenders—and for them to continue mitigation of their properties and have to haul material to the Fort Collins Landfill would in all likelihood have brought many efforts to a halt, as most do not have the equipment or wherewithal to make large hauls that distance. And at one haul per weekend, the progress would have been all but derailed! Every day we in mountain communities are at huge risk from accidental ignition and lightning strikes. So just because the big fires have occurred—it does not mean we are safe!

STATE EPA PERMITTING

As we have been in the midst of the recent new permit process with the Colorado Department of Public Health and Environment it has become blatantly apparent that there are so many things that are involved in a Title 4 Permit that really should not apply to the burners. It is imperative that Federal Standards be modified to allow States with particular crisis situations to be able to assess and make decisions as to what is the biggest benefit. Our units are not huge polluters—yet we are pushed into a class with those. I received a 100 page application to complete . . . Yes we do create some pollution, but it is miniscule in comparison to the fires and the smoke they produce. Further we are held to State Regulations that indicate the fire must be totally extinguished—which is not possible. And, that there cannot be ANY release of after hours smoke. Our operation has reduced that to an absolute minimum, but it is imperative that the CDPHE be given the “authority” to weigh individual situations more carefully, as we have other measures in place that should allow us to meet the requirement. Otherwise, we subject ourselves and CDPHE to regular and frequent difficulty!

The standards for open and prescribed burns also need to be amended. Part of why we came into existence is that the local Mutual Aid Agreements made it too scary for anyone to want to continue to do large pile burns in the winter.

ROAD ACCESSIBILITY

Obviously the recent fires have hit home for us as we are reachable from one direction at this point and the secondary routes that were available when CR 74E closed are in many places one lane and jeep like terrain. While there could be access from a couple of directions over USFS land, they have been blocked for years and berms have been put in place to keep folks out. It is imperative that the forest service consider reopening some secondary routes for our safety.

TAX SUBTRACTION MEASURE

Also, there is a Tax Subtraction that allows credit for mitigation work—but it is set to expire. Further, the amount of the credit is not sufficient for most folks! It costs approximately \$2,000-5,000 to mitigate an acre depending on the forest density. This is not a one or two year project and this incentive is not known to enough property owners. We have it on our web-site at www.slashsolutionsllc.com

FUNDING TO ASSIST PROPERTY OWNERS

It is imperative that more grant funds and stewardship assistance be available. So often people want to do the work, they simply cannot afford it. By working in communities we can team together and get more done for the dollars spent. This year Crystal Lakes Greenbelt Committee was able to mitigate 12.2 acres of Greenbelts. 6.6 acres was done by a professional contractor with grant funds, and the remaining amount was done with volunteer workers. That was a terrific accomplishment—however we have 563 acres of greenbelts . . . so at that rate it will take us a lifetime to complete. Our grant money was stretched as far as possible to get the most out of it and absolutely would not have paid for the entire requirement of 16-18 acres without hundreds of hours of volunteer labor. And, while our volunteers are awesome—often this terrain is not for the everyday volunteer and requires professional contractors.

INSURANCE AND INSURABILITY

I have held Property and Casualty Insurance License in the State of Colorado and my concerns here are 1. I hear there is a push to “exclude wildfire” from the standard policy. 2. The settlement process—particularly on Personal Property poses a nightmare on the victims—as I have talked to several 3. Writing moratoriums. Many states do not allow the agonizing “proof process” for personal property. If you have a set personal property coverage, the check is written. People are forced through thousand step processes to determine their settlement. Even though they

have Replacement cost coverage on contents, they are told they will only receive Actual Cash Value—until they purchase the replacement. Certainly there is enough trauma in this type of situation; they have paid for the coverage for years and often decades. They should be able to regroup and use those dollars in ways that make sense today to rebuild and refurnish their homes; not be restricted to those items. The same standards should apply to dwelling replacement. If the owner decides to change their floorplan, increase or decrease size, postpone rebuilding, etc., should not matter. They should not be punished by reverting to a lower pricing because of that. Obviously they have invested and funded the coffers for the companies to allow them to operate. Insurance companies can set their rate structure, and the loopholes do nothing but add insult to injury! I know it costs them horrendous amounts of money to micro-manage these claims . . . perhaps it would be better spent benefiting the victims. The overall principle of insurance is to rate and make the coverage affordable to the masses.

Thank you, Senator Udall for hosting this hearing and for your regular support on these types of issues. It is crucial that we think outside the box and get to solutions that are available, affordable and efficient.

I am willing and able to serve wherever I am able.

STATEMENT OF MICHAEL T. GOERGEN, JR., EXECUTIVE VICE PRESIDENT AND CEO,
SOCIETY OF AMERICAN FORESTERS

The Society of American Foresters (SAF), the national scientific and educational organization representing the forestry profession, would like to thank Chairman Bingaman, Ranking Member Wyden, Senator Udall, and other members of the Senate Energy and Natural Resources Committee for holding the hearing today on Colorado Wildfires. We appreciate the opportunity to testify on this issue as it greatly affects our jobs, communities, and safety. We would also like to thank Senator Udall for his support and urgency in addressing the issue of wildfire. Thank you for your leadership, and know that the SAF and its members are able to assist in research, on-the-ground projects, and development of strategies to reduce risk of catastrophic wildfire in our communities.

SAF is one of the largest professional societies of foresters in the world with more than 12,000 members including CEOs, administrators, natural resource managers, scientists, and academics. We believe in forest management capable of responding and adapting to the ever-changing conditions that impact our nation's forests. Across the country, there are seriously impaired forests (particularly on the federal estate) that will have wide-ranging negative impacts on adjacent lands and the entire forest sector. These negative impacts include, but are not limited to: additional loss of forest management infrastructure, the loss of high-paying jobs in rural communities, pressures from invasive species, increased areas of negative impacts from insects and disease, overstocked stands, and high risk of wildfire.

We are focusing this testimony on how wildfires have impacted Colorado this year, and addressing the larger issue of wildfires throughout the west. We will discuss several of the barriers that challenge and impede the ability of forestry professionals to use their knowledge and expertise to manage forests. Finally, SAF will present several recommendations for the Committee regarding how these obstacles can be addressed by Congress and stakeholders to help reduce the high risk of catastrophic wildfire and improve upon forest resilience.

WILDFIRE AND ITS IMPACT

Impacts of wildfire play an integral role in our communities and affect everything from wildlife, to recreation, to our water sources. One in five Americans get their drinking water from National Forest Systems.¹ Fire can be beneficial in fire-adapted forest types, but increasingly larger, hotter, faster fires are severely damaging forested ecosystems. Data from the National Interagency Fire Center shows that in the mid-1980s, the annual number of large wildfires increased nearly four-fold when compared to the previous decades. Total area burned increased 6.5 times, and fire seasons were also found to have increased in length.²

¹ USDA Forest Service. 2012. US Forest Service Teams with Nonprofit Foundation in Wildfire Recovery Efforts. Available online at <http://www.fs.fed.us/news/2012/releases/08/nonprofit.shtml>; last accessed August 21, 2012.

² A.L. Westerling, H. G. Hidalgo, D. R. Cayan, T. W. Swetnam. 2006. Warming and Earlier Spring Increases Western U.S. Forest Wildfire Activity. *Scienceexpress*. 1-6. Available online at

Continued

As you know, Colorado has already had several record fires that have devastated the State. The fire season began early this year with the Lower North Fork Fire that burned approximately 4,000 acres near the town of Conifer, south of Denver. This summer the High Park Fire, north of Fort Collins, caused extensive damage to the forest, and was quickly followed by the Waldo Canyon Fire that burned over 350 homes outside of Colorado Springs. These three fires alone burned 110,371 acres. Direct suppression costs for the High Park Fire and the Waldo Canyon fire total \$54.5 million with the suppression costs of the Lower North Fork Fire still unknown.³ This is not the end to the cost of these fires. The Western Forest Leadership Coalition in its report, *The True Cost of Wildfire in the Western U.S.* states, “the true costs of wildfire are shown to be far greater than the costs usually reported to the public, anywhere from two to 30 times the more commonly reported suppression costs.” Costs associated with erosion control, loss of property value, loss of business, loss of ecosystem service, and more aren’t often fully known until years later.⁴

This year, the US Forest Service has approximately \$1.7 billion dollars in Wildfire Fire funding.⁵ This includes: Suppression, Preparedness, Hazardous Fuels, Rehabilitation and Restoration, State Fire Assistance, and other fire operations. The Forest Service forecasted in March 2012 that the agency could spend upwards of \$1.4 billion in suppression costs (FLAME included) alone.⁶ This would mean having to shift much-needed funding from other Forest Service accounts to cover the costs of just fire suppression expenses. According to the National Interagency Fire Center, the current wildfire acreage burned is approximately 1.5 million acres above the 10-year average. If this trend continues, the Forest Service will need to move funds from other important programs to cover these costs.

BARRIERS TO REDUCING WILDFIRE RISK

There are approximately 65 million acres of the total 193 million acres of National Forest System lands that are at high or very high risk of catastrophic wildfire.⁷ Many factors have led to the high-level wildfire risk we are experiencing today. For purposes of this testimony, SAF would like to highlight several key barriers that greatly affect SAF members. This includes the loss of the timber sector and associated reduction in available infrastructure, the bottleneck of planning, and an insufficient emphasis on prevention treatments as opposed to the focus on suppression after the fire starts.

Timber-Sector Losses

Constraints on forests and forest management have led to a steady decline in fuels treatments, and subsequently a decline in timber-related employment. From 2005 to 2010 primary (forestry and logging, paper, wood manufacturing, etc.) and secondary (residential construction, furniture, etc.) employment have seen a combined reduction of 920,507 total jobs. In fact, total US annual timber harvests are at their lowest levels since the 1960s. Loss of jobs and capacity to manage our forested landscapes has, in part, led to the “perfect storm” conditions that have resulted in the current 40 million acre Mountain Pine Beetle epidemic and increased fire frequency and intensity.

This lack of production has also led to the closure of more than 1,000 mills from 2005 to 2009, which decreased overall sawmilling capacity by 15 percent, and low-

<http://www.sciencemag.org/content/early/2006/07/06/science.1128834?explicitversion=true>; last accessed August 21, 2012.

³Denver Post. 2012. Colorado’s Largest Wildfires (Burn Area). Available online at http://www.denverpost.com/breakingnews/ci_20934186/colorados-largest-wildfires-burn-area; last accessed August 21, 2012.

⁴Western Forestry Leadership Coalition. 2010. *The True Cost of Wildfire in the Western U.S.* Available online at http://www.wflccenter.org/news_pdf/324_pdf.pdf; last accessed August 21, 2012.

⁵US Congress. 2012. Consolidated Appropriations Act 112th Congress. Available online at <http://www.gpo.gov/fdsys/pkg/PLAW-112publ74/pdf/PLAW-112publ74.pdf>; last accessed August 21, 2012.

⁶USDA Forest Service. 2012. Federal Land Assistance, Management and Enhancement (FLAME) Act Suppression Expenditures for Interior and Agriculture Agencies: March 2012 Forecasts for 2012. Available online at http://www.fs.fed.us/aboutus/budget/requests/7166984_FY2012%20March%20FLAME%20Report.pdf; last accessed August 21, 2012.

⁷USDA Forest Service. 2012. Increasing the Pace of Restoration and Job Creation on Our National Forests. Available online at <http://www.treefarmer.com/images/Increase—PaceRestoration-1.pdf>; last accessed August 22, 2012.

ered production levels below 50 percent of capacity at the remaining mills.⁸ Less than 2 percent of wood from timber harvests come from our National Forest System lands. It's imperative to build support for a vibrant market and timber sector in order to reduce wildfire risk and create a sustainable supply of wood products. This will, in turn, bolster the forest sector and allow for the mitigation of insects and diseases, and overall reduction of wildfire risk.

Bottleneck of Planning

Every year the Forest Service spends millions of dollars on planning that could otherwise be used on implementing projects and monitoring the results. Research has documented that the NEPA process (and subsequent judicial review) can significantly delay federal agency decisionmaking because of controversy that may occur from its final decision. To discourage conflict, federal agencies often overcompensate and conduct excessive analysis to make more certain of the success of the project under litigation, thus adding additional time and resources to the NEPA process. According to a 2008 article for the *Journal Environmental Practice*, The Forest Service, on average takes 2.7 years to complete an Environmental Impact Statement (EIS). Within the timeframe of the study, the average time to complete an EIS actually increased by another 60 days. Finally, it was noted by the authors that while NEPA litigation is not a major component of all federal litigation, the threat and the potential for adverse judicial decisions has had a much greater effect on "bullet proofing" the EISs than litigation itself.⁹

Earlier this year the Council on Environmental Quality (CEQ) published their draft National Environmental Policy Act (NEPA) Guidelines. In those comments CEQ acknowledged that there is a current "bottleneck" to the planning process, and recommended that federal agencies make Environmental Assessments and EISs concise and no longer than necessary, limiting page counts to 15 and 150, respectively. While arbitrary limits on page counts may be unnecessary, it is important that federal agencies begin making their analyses more concise.

Preventative Measures

In the current framework, forest treatments and management by the Forest Service and other federal agencies are, unfortunately, heavily driven by incident response as opposed to application of treatments to prevent catastrophic events. Preventative measures are often less costly in the long run, and would help stop the need for program borrowing when large fire seasons occur. The *True Cost of Wildfires in the Western U.S.* report notes that, in 2008, total expenditures were \$260 million more than the total wildfire funding for the Forest Service. The extra monies had to be transferred from other programs, thus impacting other agency work.¹⁰

Following the 2011 Wallow Fire in Arizona that burned over 500,000 acres, a report was completed by several Forest Service employees to evaluate the effectiveness of fuels treatments prior to fire. The report found that several of the prior treatments to thin forest density resulted in the high-severity crown fire dropping from the tree crowns to the ground surface. From there firefighters were able to contain and extinguish the flames.¹¹ Preventative treatments also reduce the risk of wildfire, especially in the arid west. Treatments both within the Wildland Urban Interface (WUI) and outside the WUI are important to improve forest health while reducing risk of wildfire, insects and disease, public safety, loss of property, and more. While size of treatments and removal of slash and debris from treatment areas play an important role in effectiveness, it's important that stakeholders, Congress, and the general public understand the benefits of preventative treatments.

Recommendations

SAF has several recommendations that we believe would benefit forests and people, reduce the barriers we have discussed, and offer a larger solution.

⁸Smith, B.W., and Guldin, R.W. 2012. Forest Sector Reeling during Economic Downturn. The Forestry Source January, 2012. Available online at <http://www.nxtbook.com/nxtbooks/saf/forestrysource—201201/index.php>; last accessed March 2012.

⁹deWitt, P. and deWitt, C. (2008) "Research Article: How Long Does It Take to Prepare an Environmental Impact Statement?" *Environmental Practice* 10(4):164-174.

¹⁰Western Forestry Leadership Coalition. 2010. The True Cost of Wildfire in the Western U.S. Available online at <http://www.wflccenter.org/news—pdf/324—pdf.pdf>; last accessed August 21, 2012.

¹¹US Department of Interior: Indian Affairs. 2011. Wallow Fire Fuel Treatment Effectiveness on the Fort Apache Indian Reservation. Available online at <http://www.bia.gov/cs/groups/xnifc/documents/text/idc015931.pdf>; last accessed August 21, 2012.

1) We need a viable forest-products industry that supports a healthy forest sector. A healthy industry and market creates jobs, benefits rural communities, helps pay for forest management improving forest conditions, and improves public safety. We are losing infrastructure and capacity at a rapid pace; it's important that Congress and the public support the remaining industry and encourage investment.

2) Federal Agencies need to more effectively and efficiently develop and implement project plans. We understand funding is limited, which demonstrates the strong need for efficiency. SAF encourages the Forest Service and other federal agencies to implement CEQ's recommendation to develop concise EAs and EISs. We also ask that Congress and the courts support this direction. SAF also supports the Forest Service's proposed Predecisional Administrative Review rule. We believe it will increase collaboration in the beginning of project scoping, reduce conflict, and speed implementation of treatments.

3) Landscape-scale restoration efforts need to be increased. The Forest Service, in their 2010 report *Increasing the Pace of Restoration*, identified the need to increase treatment efforts on NFS lands. SAF supports their efforts and would recommend increasing annual goals for acres treated. There are approximately 60 to 80 million acres in need of restoration; it's important that federal, state, and local entities work together to implement restoration projects.

4) SAF would like to thank Senator Udall and other members of Congress for their work to reauthorize the Stewardship Contracting Authority, and the Good Neighbor Authority through the Draft Senate 2012 Farm Bill. We would also like to thank Senator Udall and others for their continued support to treat insects and diseases in our National Forests. The provision in the 2012 Draft Senate Farm Bill to amend the Healthy Forest Restoration Act of 2003 to increase treatments on insect and disease-infested forests is very important. We need these tools to address the Mountain Pine Beetle epidemic so that we can restore our forests.

We sincerely appreciate the opportunity to comment.

STATEMENT OF PAM MOTLEY, WEST RANGE RECLAMATION, LLC, HOTCHKISS, CO

Thank you for the opportunity to submit written testimony. My name is Pam Motley and I represent West Range Reclamation, LLC, a forest management company based in Hotchkiss, CO. West Range was founded in 2001 by Cody and Stephanie Neff out of a deep desire to manage forests in a responsible and beneficial way. Over the past 11 years, our firm has completed over 300 contracts and 70,000 acres of forest improvement projects on public and private land in five western states, helping to reduce the risk of catastrophic wildfire, restore native vegetation and wildlife habitat, and create a healthy environment to ensure forest regeneration in the future.

Over the past several years, Colorado has witnessed unprecedented forest health problems and large catastrophic wildfires. Although wildfire has historically played an essential role in the natural development of our western ecosystems, today's wildfires are not those of the past. We have all seen on television, or witnessed firsthand, the recent devastating wildland fires. They are haunting evidence of the effects of a century of fire suppression combined with several decades of declining forest management activities. Unhealthy forests are not only at risk of wildfire, they are much more susceptible to disease and insect epidemics. Fuels reduction of these hazardous substances is a necessity. Forest management, when done properly, will help conserve the western landscape attributes that are so greatly valued by all. Most importantly, sound management of these resources will help insure that our forests can achieve their full potential and will continue to provide for the rural communities and wildlife that depend on them.

West Range employs 55 full time people and subcontracts to over 50 additional fulltime individuals. Our crews are currently hard at work on forest restoration and fuel reduction treatments on numerous private ranches and state lands throughout Colorado and southern Wyoming as well as stewardship contracts on the White River, Arapahoe-Roosevelt, Pike-San Isabel, Grand Mesa-Uncompahgre-Gunnison, and Medicine Bow-Routt National Forests.

In 2009, West Range was honored to have been selected through a competitive bid process to serve as the contractor on the 10-Year Front Range Long Term Stewardship Contract. The purpose of this contract is to restore National Forest System lands along the Front Range of Colorado to historic conditions in order to prevent catastrophic wildfire and improve overall forest health. Through strategic placement of treatments, the Forest Service aims to reduce risks of uncharacteristically severe

wildfire to the ecosystem and communities and lower fire-fighting costs. Much of the area is deemed critical for protecting communities and municipal watersheds (which supply drinking water to over 75 percent of Colorado's population) from the impacts of catastrophic fire. The partnership between West Range and the Forest Service has pioneered for the nation a new approach to managing our national forests in a manner that increases the pace of forest restoration and fuels reduction work while creating economic growth. Through the contract, West Range treats a minimum of 4,000 priority acres annually.

We believe that Long Term Stewardship Contracting (LTSC) is an effective and necessary tool to manage the millions of acres of National Forest in this country that require fuels and forest health treatment. This work could not be accomplished at the scope and scale that is required if we were to continue working project-by-project. Our experience on the Front Range LTSC shows us that it can facilitate the creation of a 'Restoration Economy'—allowing for the utilization of more byproduct material and creating economic growth. Utilization of large quantities of dead trees, small roundwood and limb, tops and brush would not be possible without a ten year commitment of supply. Lumber, pallet and pellet mills, as well as future bioenergy facilities, require the security of this steady supply of material. By utilizing woody biomass material, we can generate additional funds to further offset treatment costs, resulting in more work accomplished and supporting strong industry in the region. We also reduce waste and air pollution by limiting pile burning. The continued stability of the ten-year project has also allowed West Range to provide well-paying, steady, year-round work for our employees. In addition, LTSC establish cooperative relationships and open communication between industry, land managers and key partners leading to more effective and efficient management of our forests and natural resources.

We feel our experience to date has given us valuable insight into ways to improve forest health in a manner that will support communities and encourage economic growth. Therefore, we respectfully submit the following recommendations to the U.S. Senate Energy and Natural Resources Committee.

Stewardship contracts need to include a larger commercial sawlog component

Dead trees, small roundwood and limbs, tops and brush alone do not contain enough value to effectively offset treatments. To truly make forest treatments and biomass utilization economically viable, costs must be offset with higher value sawlogs costs. This is the power of stewardship contracting, allowing forests to retain timber receipts to accomplish more acres and moving us closer towards the goal of zero cost treatments. As federal budgets continue to decrease, sawlogs will provide much needed funds to accomplish vital work. I commend the Forest Service for their progressive partnerships with private entities like Denver Water and I see that by incorporating higher value timber, the forest products industry can be a similar strong partner. In addition, incorporating sawlogs into LTSC helps support existing sawmills in the region that currently struggle to maintain viability while being supplied only through individual timber sales. Lastly, because LTSC focus on fuels, forest health and restoration treatments, the ability to remove green trees and larger diameter trees will lead to healthier forests, rather than creating even-aged stands.

The Forest Service must guarantee minimum annual volumes of sawtimber and non-sawtimber within Long Term Stewardship Contracts

Currently, the majority of stewardship contracts only guarantee a minimum amount of acres per year. To encourage utilization and support industry, National Forests should be required to guarantee a minimum and maximum volume per year for sawlog and non-sawtimber material within LTSC. Private industry invests millions to develop infrastructure to utilize woody biomass and inconsistent supply leads to businesses failing, loss of jobs and a loss of trust.

The Forest Service needs to set minimal operating restrictions for priority forest health treatments

It is understood that forest treatments are ultimately best for wildlife and recreationalists, yet implementation of sound forest management projects are regularly handcuffed for wildlife and recreational interests in unmanageable ways. Examples include: weekend and hours of operation restrictions, deer and elk winter range, and lynx. These restrictions add significant cost to projects and slow progress down.

The appraisal system needs much more flexibility in terms of rates as well as using discretion at the local District level

The US Forest Service needs to update appraisal procedures to reflect current markets and the deteriorating quality of dead trees. Appraisal policy and procedures should be revised to allow for timber to be sold at Base Rates for a five year emergency treatment period, either Statewide or in designated "high priority areas".

Weight limits should be increased on State and Interstate Highways in Colorado to reduce haul costs

The high cost of transporting low value woody biomass currently limits the ability to utilize material. Increasing weight limits on highways will lead to increased utilization, less pile burning in the woods and fewer logging trucks on the roads.

In closing we want to extend our gratitude to Senator Udall for his continued support of forest management in Colorado. His assistance has resulted in additional priority acres being treated this year. We believe that all fuels and forest health treatment projects should be approached as a partnership and we are privileged to be a part of the collaborative, sharing in the vision of enhancing ecological, economic and social values.

Thank you for the opportunity to submit written testimony. West Range is committed to supporting sustainable forest management, strong communities and job creation. We would be delighted to work with you and your staffs to develop efficient, environmentally sound forest health strategies.

STATEMENT OF MARK A. VOLCHEFF, MAJOR GENERAL, USAF (RET), 10 TANKER AIR CARRIER, COLORADO SPRINGS, CO

Thank you for the opportunity to provide comments for the record to the Senate Committee on Energy and Natural Resources conducted in Colorado Springs, CO on Aug 15, 2012.

Recent Colorado wildfires have once again reinforced the importance of aerial fire fighting tankers providing fire suppression and containment support. Hindsight and lessons learned from each fire would likely tell us that incremental use of fire fighting resources which provides "just enough" resources to fight the fire at hand did little to avert the large fires we have encountered in 2012 and past years. Fires grow out of control most likely from not bringing in overwhelming resources, sooner, to contain the fire. The product needed from an aerial fire fighting perspective is gallons of suppressant in the right place at the right time. The right time is always early. Inadequate "gallorage" in the initial load dramatically decreases effectiveness. Hence the (inaccurate) paradigm that, "airplanes don't put out fires." While historically true, that can and has been proven wrong by the early use of a DC-10 fire fighting aircraft. Deployment of DC-10 aircraft successfully containing fires in other fire fighting efforts allows us to conclude that bringing in the DC-10 to drop on the ridgelines of Waldo Canyon, for example, would have contained that fire in its early stages.

There are initiatives underway to provide US Forest Service with organic aircraft platforms. They will have no mission in the fire fighting "offseason" nor can they be operated as economically as commercial options, and some of the specific platforms being considered, have no demonstrated capability to fully perform the mission.

Similarly, considerations to increase or rely more on the DoD fleet is costly, detracts from their current wartime mission and violates the specifics and intent of the Economy Act, 49 USC 40125 and other Public Law and policies. Relative to the DoD Modular Airborne Fire Fighting System aircraft, the assets are typically on a 48-hour initial capability call up. The aircraft's proximity to the fire is not the limiting factor, nor can it alone accelerate the initial response time. Commercially available assets typically respond in 24 hours, or less, and faster if on an exclusive use contract. Hence, it is prudent to call commercial first in accordance with the Economy Act. Altering the Economy Act to more quickly access DoD assets does nothing to improve their response time.

The key to the viability of a commercially available aerial fire fighting capability is long term, exclusive use contracts with the US Forest Service. In particular, multiple DC-10 "air bombers" will significantly supplement ANY current aerial fire fighting fixed wing re-fleeting plan. The technology is tested, certified, field proven, immediately available, and as important, the cheapest option of fixed wing platforms given the amount of retardant typically dropped on a wild fire. DC-10s, when

realistically evaluated, will effectively and efficiently do the job and save taxpayer dollars.

I appreciate the opportunity to submit these comments for the record of the proceedings of the field hearing of the Senate Committee on Energy and Natural Resources. I am available to provide additional information on this subject as we work together to provide the most effective and efficient resources for aerial fire fighting support.

Note: Attachments provided with this statement have been retained in committee files.

STATEMENT OF CINDY DOMENICO, CHAIR, BOULDER COUNTY BOARD OF COUNTY COMMISSIONERS

Boulder County expresses our sincere gratitude for your coordination of the Senate Energy and Natural Resources Committee Field Hearing on Wildfire and Forest Health, which will be held this week in Colorado. This forum will provide an important opportunity to discuss the forest health issues that persist across the West and the recent wildfire issues we have experienced here in Colorado. Your continued attention to wildfire and forest health issues at the federal level has been instrumental in advancing understanding of the complexities involved with these issues and the search for long-term solutions in Colorado. Within this context, we would like to take the opportunity to provide some recommendations for policies and programs that will further support your efforts.

In 2010 when the Fourmile Canyon Fire burned 6,191 acres and destroyed 168 homes in Boulder County, it was recorded as the most destructive fire in Colorado history in terms of homes lost. Since that time, several fires have taken an even greater toll on Colorado residents and our environment. We are very grateful for your role, Senator Udall, in requesting the Fourmile Canyon Fire Assessment Study, which provided Boulder County with scientific findings from the fire that have influenced our efforts around wildfire mitigation. Now, with the experience of additional large-scale fires in the wildland urban interface this year, we are beginning to understand that many of the contributing factors to the Fourmile Canyon Fire similarly contributed to the severity of other fires. Weaving together the evidence from these fires and identifying best practices that will truly improve the outcomes for residents and the environment is the next challenging step that we face.

To that end, Boulder County strongly supports efforts at the federal, state and local level that will reduce expanded growth and development in the wildland urban interface. Below, we respectfully convey our recommendations for policy and funding that will better facilitate implementation of such efforts.

Where development does occur in Boulder County and across Colorado, we support strong policies and programs to ensure that residents create and maintain adequate defensible space and a safe home ignition zone. Local governments in Colorado have the ability to enact many of these policies on our own, but we will need the support of the state and federal government in order to identify and implement effective programs to achieve these goals.

Further, increased federal investments in reducing wildfire risk will also be necessary to lessen the severity and impacts of wildfire in the West. Programs such as the Collaborative Forest Landscape Restoration Program and other funding designated for public lands restoration and fuels reduction work—specifically in the wildland urban interface—will improve the overall condition of our forests, potentially saving homes, lives and reducing negative impacts to the environment (such as water quality). Increased funding for programs such as FEMA Pre-Disaster Mitigation grants which allow for wildfire mitigation on private lands is also critical in addressing the need for mitigation on privately owned lands, which property owners often are unable or unwilling to complete on their own.

In addition, there is a significant need for federal funding to support local Community Wildfire Protection Plans (CWPPs). Enormous time and effort has gone into developing plans at the local level across the country—but with few resources to implement them. As a result, CWPPs have failed to reach their full potential and have not been integrated into existing programs. Boulder County's CWPP identifies numerous recommendations to engage and support private homeowners in fuels reduction and to increase wildfire mitigation projects across public and private lands. The County has invested significantly in implementing those components of the plan that don't require partnership with other public land entities, but full implementation is stalled due to inadequate support of state and federal funding.

In closing, we greatly appreciate your strong commitment to wildfire and forest health issues and your continued support for improving the conditions of our west-

ern forests. We look forward to identifying cost-effective, viable policy and funding solutions together that will improve the health of our forests and reduce the risks of wildfire in our communities.

