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Values, Tradeoffs, and Context:

A Call for a Public Lands Policy Debate on the Management of Fire-Dependent Ecosystems

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Thanks for that introduction. I feel privileged today to be among the keynote speakers here. I want to take this opportunity to do three things:

1. First, I'd like to thank the international wildland fire community, in particular the leadership and firefighters from Australia and New Zealand, for all your support in the past few years, including again this year. Your leadership and help on the firelines has come at crucial times. In two of the last three years, we've had some of our heaviest fire seasons since the 1950s. When we needed your help, we've been able to count on wildland firefighters from around the world. We are grateful for your support.
2. Second, I'd like to share some perspectives on wildland fire management in the United States—where it is and where I think we're going.
3. The third thing I'd like to do is to share some thoughts on what might be the next big step—the next big challenge—I see in wildland fire management for the United States, and perhaps for all of us.

The U.S. Forest Service is one of the five federal agencies with wildland fire responsibilities in the United States. Let me qualify my comments by saying that I speak from a Forest Service perspective.

I'll start by offering some perspectives on where we stand in wildland fire management in the United States:

- We are learning that protection strategies for many forests and grasslands require *using* fire, not excluding it.
- We are also learning the need for integrating the social sciences into fire management. That notion came out in a discussion on the back of a bus on a study tour exchange here in Australia!
- And we are learning the need to tailor our suppression strategies to four different kinds of fire. Let me start at the top and work down.

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Perspective: Need for Fire Use

Sustaining healthy, resilient fire-dependent ecosystems is going to be the key to protecting people and property. We've departed from the policy of fire exclusion that characterized our fire management for most of the 20th century. There will always be a need to fight fire, but the wholesale exclusion of fire was a major factor in putting our fire-dependent ecosystems at risk, particularly our long-needle pine forests, such as ponderosa pine. It's not so much that our suppression policy was flawed as it is that our fire use policy is too constricted.

In a way, things are “coming due” for wildland fire operations in the United States. Things are coming due for our workforce—we rely on retirees during difficult fire seasons. Things are also coming due for some of our equipment, such as our air tankers—our average air tanker is 46 years old. And things are coming due for our forests—we have about 161 million hectares at risk from wildland fires that compromise human safety and ecosystem health.¹

The risk is due to altered fire regimes. Fire regimes are an expression of fire’s role in terms of historical or natural fire frequency and burning intensity. Fire managers expect large, stand-replacement fires in our long-interval fire regimes. Ecologically, that is how these forests established. Alarmingly, however, we are beginning to see landscape-scale, stand-replacement wildfires in our short-interval fire regimes, such as ponderosa pine.

Sustaining these forests will require a management approach that uses fire as a bedrock. Historically, the ponderosa pine canopies were very open, with trees that were very big and widely spaced. Low-severity fires burned through on the ground every few years without doing much damage to the big trees. But fire exclusion and other factors allowed small trees and brush to build up in the understory. Today, where we once had 50 large trees per hectare, we might have thousands of small trees that “choke” the overstory.

In a drought, we now have continuous fuels from the ground into the canopy. So when we get a fire, it climbs into the canopy and becomes severe and stand-replacing. In 2002, four states in the West had their biggest fires ever, and a fifth state came close. That’s partly because the fire regime has changed in our long-needle pine forests.

We recently mapped fire regime condition classes in relation to wildfire activity in the United States. In many of our ecosystems, fire regimes have significantly changed from their historical range. I mentioned those 161 million hectares at risk nationwide—that’s an area almost three times the size of France. In the West, nearly all of the area most at risk is ponderosa pine in the prolonged absence of periodic underburning.

¹ In all ownerships nationwide, 397 million acres (161 million ha) fall into Fire Regimes I and II and Condition Classes 2 and 3. Kirsten M. Schmidt, James P. Menakis, Colin C. Hardy, Wendel J. Hann, and David L. Bunnell, *Development of Coarse-Scale Spatial Data for Wildland Fire and Fuel Management* (GTR RMRS-87; USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, Missoula, MT), table 6, p. 13.

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From a social perspective, ponderosa pine forests are most common at lower elevations, where most people live, work, and play. That makes them of particular concern because of the huge fire danger they represent. It is no coincidence, then, that many of our most costly, damaging, and destructive wildfires are occurring in these changed ponderosa pine forests, often in close proximity to the wildland/urban interface, or WUI. Stand structure is much more dense, with small trees and undergrowth choking the forest. Species composition has often shifted to Douglas-fir and other fire-intolerant species. And people have moved into the forest.

Perspective: Need for Social Science

That brings me to another thing we are learning to recognize: The *kind* of science we will need in fire management is evolving. Although the physical sciences will remain essential for understanding ecosystems and fire behavior, we will need a deeper understanding of the social sciences to help us widen the decision space we will need for ensuring the health, resilience, productivity, and safety of fire-dependent ecosystems.

The reason is that altered fire regimes in our long-needle pine forests are increasing the fire danger to communities. In our 2000 census, the five fastest growing states were all in the western United States. By 2020, our 20 fastest growing counties are all expected to be in the South and West. Our population is gradually shifting from the Northeast and Upper Midwest to the South and West.

Why? Because people are moving to places they value for a better quality of life. People value forested settings. They value places with water, mountains, and amenities, such as hunting or hiking on public land. People are moving to the West or South to find these places. These are also the regions dominated by long-needle pine ecosystems with altered fire regimes.

The result is often a dangerous mix. People are moving in record numbers into forests that are increasingly susceptible to crown fire. The very qualities that people value—dense forests that provide a sense of seclusion and screening from neighbors—these same qualities put people at risk. The risks are enormous, and they go way beyond individual homes. If their houses are saved but the surrounding landscape is blackened, then as far as they're concerned, people in the WUI have lost the very values that brought them there.

Fire protection in the WUI is therefore not just about protecting houses—it's about protecting quality of life. We're expected to protect the entire landscape—not only communities, but also watersheds, viewsheds, recreational opportunities and other amenities, and forest health—everything people value in the WUI, everything they move there to find.

That's why we will need a better understanding of the social sciences. If we're going to protect quality of life in the WUI, then we've got to do more to understand people's motivations so we can better influence social attitudes and behaviors. We have to do a better job of addressing public biases and fears in connection with fuels management and fire use in our fire-dependent

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ecosystems. We also have to do a better job of addressing public preferences and lifestyles in the WUI. For that, we will need to take such fields as sociology, communications, community relations, and public administration more into account when we formulate policy for public lands.

Perspective: Four Kinds of Fire

A third thing we are learning has to do with our suppression program in the context of the fuels and fire environment. Despite significant advances in our firefighting technology, budgets, and personal protective equipment, we're seeing an upward trend in the number of acres burned per acre protected. Also, again in spite of all the advances we've made, the number of entrappments and fatalities we're seeing remains a major concern.

Although accumulated fuels and drought predispose many of our forests to wildfires, we are coming to realize that there are four distinctly different kinds of fire. We have good suppression strategies for two of them. But there are two other kinds of fire for which we don't have good strategies, and it shows in our statistics.

These four kinds of fire occur along a spectrum of size and complexity. They range from the small initial-attack fire to the enormous and complex "megafire." We have sound approaches for dealing with the small initial-attack fire and with the large fire. We train, organize, and staff to address the unique characteristics of these two types of fire. But for the transition or extended-attack fire and the so-called megafire, we do not do this well. We tend to treat the extended-attack fire like we do the initial-attack fire, only we fight it harder. And we tend to treat the megafire like the large fire, only—believing more is better—we fight it with more people, more equipment, and more money.

We might argue that the extended-attack fire and the megafire are our two most important kinds of fire—one in terms of safety, the other in terms of cost. Some 70 percent of our fireline fatalities occur on transition fires, such as South Canyon in 1994 or Thirtymile two years ago. We get into trouble when we keep using initial-attack tactics on a fire that requires a shift in thinking about potential fire behavior—when fire behavior has become too extreme for initial-attack tactics to be safe and effective.

Large fires and megafires are less than 1 percent of all of our fires, but they account for a disproportionately high percentage of our total suppression costs—about 80 percent—and of our total area burned—about 90 percent. We've learned that we can't go toe-to-toe with these big fires under extreme burning conditions. The megafire accounts for the majority of these costs and acres burned, even though these fires probably only comprise one-tenth of 1 percent of all fires.

We've got to back off and take a defensive posture. Megafires are qualitatively different from large fires and need a qualitatively different type of management, just as extended-attack fires

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need a qualitatively different type of management from initial attack. For both kinds of fire, we need to develop discrete strategies in terms of policy, procedures, and practices.

Many of us believe that the suppression fight against large fires and megafires will ultimately be won or lost on the fuels front, where we're using fire and mechanical fuel reduction tools to take a little heat out of the woods. Basically, we need to fight fire where we must but use fire where we can. We are getting megafires in long-needle pine forests because fire regimes there have been altered. The long-term solution is to restore these forests to something more resembling their historical condition and *then* get the right kind of fire back into the ecosystem.

Perhaps one of our lessons in accelerating fuels reduction work involves learning to mobilize for fire use operations like we mobilize for fire suppression operations. Although we've made progress toward a more balanced wildland fire policy, we still have to work on overcoming the bias toward fire suppression that stems from a legacy of fire exclusion.

Next Big Step

The three things we are learning—the need for more fire use, for a better understanding of the social sciences, and for discrete strategies on the four kinds of fire—these three things are all interconnected. In fact, our ability to make progress in one area depends on understanding all three. That brings me to what lies ahead: the next big challenge for wildland fire policymakers in the United States.

Our objectives in wildland fire management are clear. Our aim is to protect values—to protect quality of life by restoring fire-dependent ecosystems such as long-needle pine. For that, we need to establish a total, balanced program of fire management where there is no longer any bias toward fire suppression or fire use.

Given these objectives, we have probably pushed our fire management policy about as far as we might effectively go. Today, our policy provides for fire use, suppression, and prevention. But I'm afraid it's not balanced enough. Let me explain.

In 1995, the five federal agencies with fire management responsibility in the United States wrote a collective policy for fire management. In 2001, we updated the federal fire policy. As part of the implementation process, we gave the revised fire policy to two outside panels for their review.

One panel was made up of fire experts. They were satisfied that our revised federal fire policy reflected good science and sound fire management. The other team was made up of policy experts. They, too, were generally satisfied that we'd provided a coherent fire policy.

But one of these reviewers, from the JFK School of Government at Harvard University, had something a little different to offer. He said our fire policy seemed to be on the right track, but

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it's missing something. What's missing is the much larger public land policy debate that more directly confronts the challenge of managing these fire-dependent ecosystems in a way that takes into account all the attendant *long-term* social, legal, and economic factors. These go beyond fire policy per se.

In other words, a sound fire policy must be predicated on a public lands policy that is not only socially acceptable, but also ecologically appropriate and economically efficient over time. Our fire policy is somewhat "stuck" until we can do three things:

- more effectively influence development or growth behaviors in the WUI;
- better align regulatory controls for clean air, clean water, and endangered species with the disturbance processes that define these fire-dependent ecosystems; and
- more specifically tailor resource objectives that are consistent with the ecological dynamics of these fire-prone forests and grasslands.

Let me illustrate what I mean about the importance of a public lands policy debate for the viability of a balanced wildland fire policy.

We know that we need to thin overcrowded long-needle pine forests to reduce fire danger in the WUI. The result would be a forest that's very open, with maybe only a hundred trees per hectare. But, as we've discussed, people move to the WUI partly because they value the sense of seclusion and the sense of "naturalness" they get from lots of trees. They're used to seeing thick forests, with maybe thousands of trees per hectare—it's what they *think* of as natural and healthy, even if it isn't *really* natural or healthy or resilient.

So people often object to a thinning project. Some people might object in principle to cutting any trees at all—there are even counties with ordinances against tree cutting. Other people might see it as affecting their quality of life if we remove most of the trees near where they live. In fact, our projects are often appealed and even litigated for just this reason.

That's part of the social influence on wildland fire policy. Here's an example of the regulatory side.

Under the Endangered Species Act, we are legally bound to protect habitat for threatened, endangered, and sensitive species. In the case of the northern spotted owl and Mexican spotted owl, we do that partly by managing for late seral stand conditions to maximize canopy cover. But managing for closed canopies might keep us in some places from restoring the more open forests that existed historically. The regulatory context can actually put us at cross-purposes. In fact, two of the megafires we had last year burned partly in areas we were managing for late seral stand conditions. Ironically, such fires not only consume the old-growth forest we are trying to protect, they imperil the very species we are trying to sustain.

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We're in some serious quandaries. Social and regulatory factors can freeze our ability to reduce fuels and restore long-term forest health. Here are some more examples:

- When we use fire, people sometimes object to the smoke. Under provisions of the Clean Air Act, prescribed fire emissions count as air pollution, whereas wildfire emissions do not—even though, over time, wildfire emissions have actually increased due to our attempts to exclude fire. People tend to focus on immediate impacts, not future benefits.
- When we mechanically thin trees, the reduction in vegetative cover can temporarily affect local water quality, which might trigger a prohibition under the Clean Water Act. This is another example of a tradeoff between short-term environmental impacts and long-term environmental benefits.
- When we try to get people to be smarter about building houses and maintaining their property in the woods, they might see that as a states' rights issue or as federal meddling in private affairs. Local building codes often favor economic expansion and development, even though development in some cases puts people, businesses, and local communities at risk in fire-prone forests.

We think we have the ecological science to restore fire-dependent ecosystems and better protect the people we serve, and technically maybe we do. But technical solutions aren't enough. We also need social, legal, and regulatory solutions that focus on the dynamics of fire-prone forests.

As wildland fire professionals, we need to prompt a larger public lands policy debate that deals with values and tradeoffs if we hope to redeem our protection mandate. And we need to do it in the context of the dynamics of fire-dependent ecosystems. That is the next big step in the evolution of wildland fire policy in the United States—and maybe in other countries as well.

This conference presents a unique opportunity to exchange ideas, perspectives, and visions for the future of wildland fire management. I thank you for the privilege of sharing some of my thoughts with you. I look forward to hearing from you.