

**STATEMENT OF
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**BEFORE THE
UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE AND TECHNOLOGY
SUBCOMMITTEE ON ENERGY AND ENVIRONMENT**

**CONCERNING
THE ROLE OF FOREST PRODUCTS IN SOLVING THE NATION'S ENERGY AND
CLIMATE CHALLENGES**

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I am Mary Wagner, the Regional Forester for the Pacific Northwest Region of the Forest Service. Thank you for the opportunity to participate in today's panel discussion.

Today I will address the role forests may play in contributing to a sustainable energy future for our country and in mitigating the effects of a changing climate. We care deeply about this issue at the Forest Service because it affects our ability to fulfill our mission. I will also give an overview of the wood-to-energy activities and partnerships in which the Forest Service is engaged across the Pacific Northwest.

The mission of the U.S. Forest Service is to sustain the health, resilience, and productivity of the nation's forests and grasslands for the benefit of present and future generations. Our mission extends to both public and private forests nationwide, and we are deeply concerned because we see a number of serious challenges to sustainability, particularly in connection with climate change.

Americans use and enjoy their forests for all the ecosystem services they provide: **supporting services** like nutrient cycling, soil formation, and primary production; **provisioning services** like wood, forage, and freshwater; **regulating services** like water purification, carbon sequestration, and erosion control; and, **cultural services** like educational experiences and outdoor recreation. However, observations show that climate change is currently impacting the nation's ecosystems and services in significant ways and those alterations are very likely to accelerate in the future, in some cases dramatically.¹

¹ Backlund, P., A. Janetos, and D. Schimel. (2008) *Synthesis and Assessment Product 4.3 (SAP 4.3): The Effects of Climate Change on Agriculture, Land Resources, Water Resources, and Biodiversity in the United States*. A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. [Julius, S.H., J.M. West (eds.). Abstract.

Our scientists tell us that climate change will exacerbate the impact of major stressors on forest ecosystems. Wildfires, non-native and native invasive species, extreme weather events, and air pollution are the most critical stressors that climate change will amplify within the forest and grassland ecosystems managed by the Forest Service.² Reduced snowpack, earlier snowmelt, and altered hydrology associated with warmer temperatures and altered precipitation patterns are expected to not only complicate water management, especially in the West, but affect all the other ecosystem services that forests provide.³

Drought has weakened trees, reducing their resistance to insect attack. Two types of low-elevation pines, pinyon pine and ponderosa pine, have died on millions of acres due to a combination of drought and bark beetle infestations.⁴ At higher elevations and farther north, including here in Washington and Oregon, we have observed that mountain pine beetle has killed lodgepole pine across similarly vast landscapes.

These indirect impacts also interact with the effects of previous management; for example, many fire-adapted forests in the United States have grown denser than they were historically, making them more susceptible to drought and insect attack. Climate change has very likely increased the number and frequency of forest fires and insect outbreaks in the Interior West (Colorado and the Great Basin), the Southwest, and Alaska, and will continue to do so.⁵ Given that wildfires are difficult to predict in advance, we believe that climate change is likely to exacerbate the current fuels situation and can contribute to a substantial increase in the number of forest acres burned annually in the coming years.

What can we do? To improve our ability to carry out our mission in a changing climate, the Forest Service has developed a *Strategic Framework for Responding to Climate Change*. The framework is based on seven strategic goals in three broad categories: foundational, structural, and action.

Our two foundational goals are *science* and *education*. We need sound science to understand the impacts of climate change—our researchers have been working on understanding the effects and implications of climate change on forest and grassland ecosystems for more than 20 years. Over the years, nearly 125 Forest Service scientists have published climate change research reports and peer-reviewed publications. Thirteen Forest Service scientists were involved in the climate change work of the Intergovernmental Panel on Climate Change (IPCC) that shared in the 2007 Nobel Peace Prize. We are working from a firm scientific foundation. The Framework recognizes that institutional and public support and encouragement is essential for implementing innovative approaches.

² Joyce, L.A. et al. (2008) Chapter 3 National Forests in US Climate Change Science Program: Preliminary review of adaptation options for climate-sensitive ecosystems and resources. A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. [Julius, S.H., J.M. West (eds.), J.S. Baron, L.A. Joyce, P. Kareiva, B.D. Keller, M.A. Palmer, C.H. Peterson, and J.M. Scott (Authors)]. U.S. Environmental Protection Agency, Washington, DC, USA, 873 pp.

³ Backlund, P., A. et. al. (2008) *Synthesis and Assessment Product 4.3 (SAP 4.3)*

⁴ Phillip J. van Mantgem et.al. (2009) Widespread increase of tree mortality rates in the Western United States *Science* 323 (5913): 521–524.

⁵ Backlund, P., A. et. al. (2008) *Synthesis and Assessment Product 4.3 (SAP 4.3)* p. 118.

Our two structural goals are agency *policy* and *alliances* with other organizations. Next to a firm foundation of science and public support, we need the right institutional structure to respond to climate change. And we can't do it alone. We need to work together—which is partly why we are here, to build alliances.

Finally, as an agency responsible for the management of 193 million acres of forests and grasslands, we have three action goals: *adaptation*, *mitigation*, and *sustainable operations*. All three hinge on a strong foundation in science and education as well as an institutional structure based on sound policies and strong alliances. *Sustainable operations* involve practicing what we preach by reducing our environmental footprint as an organization—we have a plan in place, and we are making progress.

Adaptation and *mitigation* are at the core of our response to climate change. Our goal is to enhance the capacity of natural systems to adjust to the impacts climate-related stresses while continuing to deliver all the ecosystem services that Americans want and need. We also want to maximize carbon storage in natural systems by finding the optimal balance between carbon emissions and sequestration, making sure to take any tradeoffs with other ecosystem services into account.

Fortunately, these goals are generally linked, and that brings me—finally—to woody biomass utilization and wood-to-energy platforms. Each year, we manage millions of acres of National Forest System land to make forests and grasslands more resistant to wildland fires, insects and diseases, and more resilient to major disturbances such as intense wildfires, tropical storms, and floods. For example, we conduct prescribed burning and thin dense stands to reduce competition, alter species composition, reduce fuels, and improve forest health. These same treatments help our national forests and the species that depend on them adapt to the stresses associated with climate change. Healthy, resilient forests represent one of the best insurance policies we have in a changing climate.

The Forest Service is looking at ways to facilitate the use of woody biomass removed from overcrowded forests as one part of our climate change mitigation work. Biomass removal through forest restoration projects not only reduces the risk of damage from wildfires and other disturbances but can provide a source of cellulose for bio-energy and wood products. Currently, this kind of woody biomass is generally low in economic value and is, consequently, poorly utilized--its fate often being landfill disposal or pile burning. If new uses can be found, then we can recover part of the cost of removal and use those savings to restore more acres. We may decrease the net effective emissions from disturbance events such as wildfire.

To accomplish our goals, we have instituted a National Woody Biomass Utilization Strategy, which includes both a Forest Service woody biomass utilization team and an interagency woody biomass utilization group working across all natural resource disciplines, and a national Woody Biomass Utilization Grant program.

Funds administered under the Woody Biomass Grant Utilization program are specifically targeted to help communities, entrepreneurs, and others turn residues from forest restoration

activities into marketable forest products and/or energy products. During the first 4 years of this national program, the Pacific Northwest Region has received over \$3.5 million for 15 projects.

Examples of funded grant proposals include:

- The demonstration of roll-off container technology to facilitate removal of woody biomass in southwestern Oregon.
- The development of an integrated biomass processing park in south central Washington that houses value-added businesses.
- Funding the purchase of equipment for a green shaving animal bedding production facility in central Oregon that uses small diameter pine logs that are byproducts of thinning and fuel treatment.
- Assisting an established wood products company in Northeast Washington to acquire equipment to utilize more of the material previously left in the woods as slash.

At a regional level in Oregon and Washington the Forest Service actively cooperates on biomass utilization and bioenergy issues with a wide diversity of partners including the Bureau of Land Management; the States of Oregon and Washington; Tribes; community-based groups like the Rural Voices for Conservation Coalition; non-profits such as Sustainable Northwest, Wallowa-Resources, and the Gifford Pinchot Task Force; Tribes; private industry; environmental groups; and local governments. The Pacific Northwest Region is an active participant in the State of Oregon's Forest Biomass Working Group.

The Forest Service—including the Pacific Northwest Region and the Pacific Northwest Research Station, as well as the Forest Product Laboratory in Madison, WI—has provided direct technical and financial assistance for a number of biomass utilization initiatives in Oregon and Washington including:

- A statewide boiler assessment in Oregon to help identify the prime boiler candidates for conversion to biomass fuel.
- Supporting development of a nascent cellulosic ethanol industry in western Oregon by updating a sustainable biomass supply study for Lane County; leading educational activities to enhance the level of public understanding of the use of forest residuals; and, strengthening local forest contracting businesses through training and networking.
- Collaborating to create sustainable forest bioenergy production in SW Oregon using portable, in-woods fast-pyrolysis conversion technology which produces both bio-oil and bio-char (a soil amendment increasing soil nutrients).
- Examining the feasibility of building a portable, replicable unit that converts woody biomass into methanol for use in making bio-diesel.

There is broad national agreement on the need for more renewable energy and biofuels, and cellulosic ethanol and other advanced biofuels may play an important role in addressing this need. To attract investors, biomass-based enterprises must have a steady and reliable supply of materials, and the Forest Service is working with partners to secure sustainable supplies. A coordinated resource offering protocol or CROP helps calculate the sustainable biomass supplies available—both ecologically and economically—in a region on a 5-, 10-, and 15-year basis. Then forest restoration planning and business planning can be linked in a way that evens out the flow, creating a basis for bioenergy businesses. In Lane County, Oregon, for example, a

partnership of local businesses and community groups won a Forest Service biomass utilization grant for such a CROP study. A number of CROP studies have been implemented across the country.

Biomass/bioenergy is a scalable source of energy and includes a wide range of technologies and facilities. It is a continuum with, at one end, the 50MW biomass power plant and the other residential pellet stoves. The Pacific Northwest Region actively provides information needed by communities, businesses and investors to make decisions about larger sized facilities, while helping entrepreneurs and businesses grow the market for smaller boiler applications and portable processing units suitable for schools and other institutional settings such as hospitals, prisons, government complexes, as well as commercial settings. For example, new biomass fueled boilers and hot water heating systems have been installed in the Enterprise School System, Enterprise, Oregon and at the Harney District Hospital in Burns, Oregon. The Forest Service has included a wood-fired boiler in the design of a new office for the Deschutes National Forest in Bend, Oregon.

If cellulosic forms of biomass are important, current definitions of renewable biomass in major energy policy legislation takes a large portion of the land base out of consideration for use in renewable fuels. The American Recovery and Reinvestment Act (P.L. 111-5) calls for using federal funds to “make wood-to-energy grants to promote increased utilization of biomass from Federal, State and private lands.” Last year’s Farm Bill (P.L. 110-234) and the Energy Policy Act of 2005 (P.L. 109-58) are both consistent with that definition. But the Energy Independence and Security Act of 2007 (P.L. 110-140), in its amendments to the Renewable Fuels Standard, excludes by definition most biomass from most federal lands. A similar definition is proposed for the federal Renewable Electricity Standard, the Low Carbon Fuel Standard, and the Global Warming Pollution Reduction Program in the American Clean Energy and Security Act, presented as a discussion draft by the House Committee on Energy and Commerce. Other versions of the definition under consideration would allow biomass from federal lands to be included in incentives and exemptions used to promote generation of renewable energy.⁶

In this era of climate change, in this new management environment, we need an integrated approach to sustain the health, diversity, and productivity of America’s forests. Woody biomass utilization will be part of that approach.

⁶ See, for example, H.R. 890 American Renewable Energy Act and the discussion draft of The American Clean Energy and Security Act (Waxman-Markey).