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## **Renewable sources are essential for security and economic progress**

*By Chris Risbrudt*

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A key component to maintaining America's national security and the health of our economy is our ability to develop alternative sources of energy and fuel. Doing so will reduce our dependence on foreign oil and reduce emissions of harmful greenhouse gases.

Starting today at America's Center in St. Louis, the secretaries of the U.S. Departments of Energy and Agriculture are hosting a national conference called Advancing Renewable Energy: An American Rural Renaissance. The goal of the conference is to help build partnerships and devise strategies for speeding up the development and commercialization of domestic renewable energy systems.

America already produces more than 4 billion gallons of ethanol each year from corn, so corn obviously is an important source of biofuel. But as its use increases rapidly, corn for ethanol will start competing with corn for food. What the nation really needs is a breakthrough technology for producing ethanol -- or other transportation fuels -- from cellulose, a non-food substance.

There are two abundant sources of cellulose: crop residues and wood. Lumped together, we call them "biomass." A recent report issued by the two agencies hosting this week's conference estimates that there are 1.3 billion tons of biomass available annually for conversion to energy.

The United States is fortunate to have many sustainable sources of bioenergy. To have a successful national program that makes a significant impact, we need to draw on all of them. We also need to fund the research institutions that can develop and deliver the technologies necessary to use them effectively.

The Forest Service's Forest Products Laboratory has been around for nearly 100 years. Almost since its inception, it has been studying how to convert wood to fuel and chemicals. Because of the petroleum shortage during World War II, for example, FPL played a major role in creating a process to transform wood into ethanol, but the war ended before this technology was employed.

After the war, the need for alternative fuel sources seemed less critical, and FPL focused its research program on other national needs, including housing and paper production. Today, however, I believe we again are in critical need of alternative energy sources.

Wood holds a vast potential as a fuel source. America's forests constitute a valuable and renewable resource. The forests contain more than 30 billion cubic meters of commercial timber. In addition, annual biomass growth exceeds current biomass consumption by more than two to one.

The major stumbling block to efficiency in turning wood into liquid fuel always has been the difficulty of breaking down the tough cellulose molecule. However, recent advances at FPL and other research institutions have shown great promise.

Right now, the economics of producing energy from wood are poor. However, as key technical barriers help us get more energy from the same unit of wood, the

unused forest biomass produced annually -- conservatively estimated at 360 million tons per year -- could meet 30 percent of America's need for liquid fuels, perhaps more.

Much of the material to provide this fuel could come from the small trees that should be removed to improve the health of the forests. Millions of acres today are littered with an unnatural accumulation of stunted trees and woody debris. Fires in these areas are more intense and harder to control, and often result in catastrophic crown fires that kill older trees and sterilize the soil.

An estimated 8.4 billion dry tons of material need to be removed from the national forests alone. As Teddy Roosevelt imagined when he established the U.S. Forest Service, this material is available for production of wood products, chemicals and energy. These sorts of profitable uses help reduce the costs of forest management and keep our forest land from being sold and converted to other uses.

This is the goal of the USDA Forest Service: To help rural economies flourish and improve the health of our nation's forest, while at the same time improving the safety and security of our country as we help it achieve energy independence.

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