

WOOD UTILIZATION RESEARCH (WUR) CENTERS

Investing in Our Renewable Forest Resources to Create Jobs and A New Green Economy

A plan to the President of the United States, to Congress,
and the Department of Agriculture



WOOD UTILIZATION RESEARCH (WUR) CENTERS

- Inland Northwest Consortium
 - University of Idaho
 - University of Montana
 - Washington State University
- Louisiana State University
- Michigan State University
- Mississippi State University
- North Carolina State University
- Oregon State University
- University of Alaska Fairbanks
- University of Maine
- University of Minnesota Duluth
- University of Tennessee
- Virginia Tech
- West Virginia University

A USDA RESEARCH, EDUCATION AND ENGAGEMENT PROGRAM

WOOD UTILIZATION RESEARCH (WUR) CENTERS

INVESTING IN OUR RENEWABLE FOREST RESOURCES TO CREATE JOBS AND A NEW GREEN ECONOMY

Plan Summary

The Congressionally-appropriated Wood Utilization Research (WUR) Special Grant, administered by USDA, supports research, education and engagement activities at key land grant universities with capabilities in forest products. The WUR Special Grant is the only Federal program that specifically supports our wood-using industries and those universities working in concert with the industry.

The WUR has provided creative and innovative science, technology, and advanced business practices that have enhanced the economic development and competitiveness of the U.S. wood products industry, fostered sustainable and environmentally acceptable product manufacturing and forest operations, led to greater and more efficient use of renewable wood-based materials and trained and created new leaders in industry, government, and academia. The program leverages university research on a national-scale to address varying and changing needs and opportunities of different regions of the country, within a national needs framework. By bringing resources from the top University programs in the field together, the WUR program is responsive to systemic and emerging needs and opportunities in the most cost-effective manner.



Tapping our Homegrown Biorefineries - Next generation cellulosic biofuels from American forests creating jobs in the USA.

The WUR Special Grant has been appropriated by Congress each year since 1985 and it continues to have strong Congressional support. These appropriations for the WUR program have enabled these universities to establish targeted regional research, education, and engagement programs associated with wood products manufacture, wood biomass conversion, and the development of new environmentally appropriate processes and green technologies.

The 13 universities currently supported by 11 WUR Centers have amassed an exceptional record of accomplishments and impacts, predominantly in research, graduate education, and economic development. Examples of these impacts are in the attachment to this plan. We propose an expanded Program that will build on the long-term success of WUR and



expand its research, education and outreach to help transform our use of forest resources, by providing new renewable products, sustainable biofuels, and other innovations, while helping to strengthen our traditional wood products industries. A key WUR objective is to maintain the competitiveness of America, building a strong economic and societal foundation through the use of its renewable forest resources in environmentally acceptable ways.



Protecting Americans at home and our troops abroad through advanced materials and design.

This plan seeks investment by the Federal Executive branch with the support of Congress and the USDA in a new program that will leverage and build on the investments made through the Special Grant and will develop and deliver innovative sustainable and green technologies, products, and business practices that can be used by the American public, new and traditional forest-based industries, and businesses to stimulate the economy and create employment.

Why are Wood Utilization Research, Education, and Engagement Important to the Federal Government?

- Americans consume more wood products than any other nation in the world. We are the largest producer of wood products—and the world’s largest importer.
- The U.S. wood products industry is a major and essential component of the national economy and employs over 2.1 million workers, most outside of urban areas. The industry is also highly fragmented; with most companies being small-to-medium sized, located in rural areas, without the resources to foster the innovation needed to compete in the global marketplace, leading to significant job losses.
- Forest biomaterials represent great potential for advancing America’s goal of energy independence. It is clear, however, that major technical and economic challenges, framed by regional constraints, must be resolved before that potential can be realized.
- Increased utilization of domestic renewable wood materials offer important opportunities to produce green products, innovative building materials, and energy for Americans with reduced energy consumption and carbon emissions. These are sustainable solutions that can mitigate global climate change.
- Reduced markets for domestic wood results in degradation of America’s forests and encourages the permanent conversion of forests to other uses.

There are many challenges that will not be overcome without investment in innovation—research, education and engagement. This is especially critical now because we lag behind other nations in sustainable technologies because of the significant investments that our foreign competitors are making in the field of wood utilization. In addition, although we have become well educated in identifying environmental issues; we have a looming

shortfall in people trained to implement environmental practices in the workplace. The solution is one part of the WUR plan; the educated, advanced wood industry workforce that understands environmental and productivity issues.

National Strategic Goals

We propose an expanded WUR program of regional and national activities to address three national strategic goals:

1. **ENHANCE THE GLOBAL COMPETITIVENESS OF THE AMERICAN WOOD PRODUCTS INDUSTRY AND STRENGTHEN RURAL VITALITY**
2. **UTILIZE WOOD TO ADVANCE ENERGY INDEPENDENCE AND ENVIRONMENTAL STEWARDSHIP**
3. **ENABLE SUSTAINABILITY THROUGH SOCIALLY AND ENVIRONMENTALLY ACCEPTABLE PRODUCTION AND CONSUMPTION OF WOOD PRODUCTS**

Proposed WUR Program Elements

We propose a five-year program to be funded annually at \$11.2 million to expand the nation’s ability to address these goals and target key issues of regional and national importance. The program will contain the following elements:

1. Each WUR Center will specifically address the highest priority regional needs and opportunities through internally-competitive peer-reviewed research, outreach and economic development. Priorities will be established in conjunction with stakeholder advisory groups. Each Center will emphasize strengthening the current workforce and developing a future workforce with advanced skills through their educational programs. Each WUR Center will receive \$600,000 (\$7.2 million total) to support these programs.
2. Multi-Center projects: \$2 million of funds will be allocated competitively for regional or multi-Center projects that address emerging regional or national issues and that can build strategic or multidisciplinary collaborations that may not otherwise exist. A competitive grant process will be used to encourage researchers and educators across the U.S. to conduct innovative research on wood utilization topics or to propose larger scale engagement and technology transfer programs.
3. Innovation in Education and Outreach: \$2 million of funding will be distributed nationally on a competitive basis to foster new innovative approaches to student education, technology transfer, and outreach both regionally and nationally.



Biopharmaceuticals from the Forest - Producing new life-saving drugs from small diameter trees, while reducing the Nation’s fire threat.

Examples of WUR Impacts and Successes

WUR research results in industry investment to create jobs - WUR research collaboration with the wood construction panel industry has led to a **\$150 million** investment in conversion and upgrading a mill to produce a new sustainably-produced product, oriented strand lumber, creating jobs in the northeast.

WUR researchers provide key forest supply leadership to meet a 25 percent clean energy mandate by 2025 - WUR researchers are providing silvicultural and operations leadership as a Midwest State increases the use of wood resources for electrical and energy generation, in response to 25 percent by 2025 renewable energy legislation passed in 2007.

WUR leverage leads to \$100 million cellulosic (non-food based) ethanol fuel investment - The WUR program has allowed one Center to participate in national and university biofuels research. **Investment** by federal, state, and private partners **exceeds \$100 million**, promising accelerated development of the southeast U.S. cellulosic ethanol industry.

Real-time process control results save composite board mills over \$600,000 annually - Real-time process control has provided the forest products industry with new methods to reduce wood waste, improve production efficiency, and lower costs.

Smart harvesting sensors for improved sustainable timber utilization - Conservative estimates of the increased net returns to the forest sector nationally are **\$2.5 billion per year**, independent of the benefits of increased mill recovery from improved matching of log properties with market needs.

Future professors, scientists, and wood science specialists are being developed through WUR - WUR research supports the training of over **50 future scientists and practitioners** each year and has produced over **30 new university professors**.

Formaldehyde-free resin systems provide new opportunities - WUR research has developed formaldehyde-free systems, enabling manufacturers to produce products without toxic formaldehyde and reduce dependence on petroleum-based adhesives.

Wood composite panels protect our troops - Modular Ballistic Protection System, composite ballistic panels mounted to the inside of a standard army tent frame, have been developed by WUR researchers in partnership with the U.S. Army.

Bio-oils find opportunities for use in petroleum refineries - WUR researchers have developed a hydrotreating/hydrocracking process to deoxygenate raw bio-oil to a hydrocarbon rich biocrude that can be used by petroleum refineries for distillation.

Dramatic market growth is occurring in wood thermoplastic composites - Wood-thermoplastic composite materials have grown into a **\$1 billion industry** in North America over the past 10 years. WUR research has helped this industry develop and grow.