

Fueling Washington With Bioproducts

WSU Bioproducts Partnership with Pacific Northwest National Laboratory

A cost-effective solution for bringing more doctors and dentists to the Pacific Northwest was presented to A \$6.7 million comprehensive research program that promotes manufacture of fuels from Washington-grown crops and forest products was supported by President Lane Rawlins last week in discussions with the governor's budget staff here in Olympia. The 2006 Legislature assisted new fuel plants being built in this state to relieve reliance on foreign petroleum products. But some of these plants still rely on palm oil and other "feedstock" materials imported from countries like Indonesia, Malaysia, and Canada.

WSU is just one of the entities involved in this project that will ask the 2007 Legislature and the governor to accelerate research that utilizes Washington products in Washington processing plants for sale to Washington consumers. In an unprecedented partnership, this comprehensive bio-products technologies strategy has been developed jointly by:

- Washington State University, the state's land grant university with a scientific team that is nationally prominent in bio-products. WSU has research teams in Biological Systems Engineering, the Institute of Biological Chemistry, Wood Materials Engineering Lab, and is among the top research universities in cereal grains.
- The Pacific Northwest National Laboratory, which is managed by Battelle in Richland for the U.S. Department of Energy. PNNL has 30 years of history working on biomass conversion and production of fuels and chemicals and has about 25 staff engaged in this research area.
- The Washington State Department of Agriculture, the lead state agency for developing a bioenergy industry in the state.

Much of the research efforts will focus at or near WSU Tri-Cities, where the new Biological Sciences and Engineering Laboratory is now under construction. It is jointly operated by WSU and PNNL. Also involved is the WSU Extension Energy Programs office in Olympia.

Gov. Christine Gregoire and her staff are currently considering whether to recommend this joint proposal to the 2007 Legislature. In Olympia next week to discuss the proposal with the governor's staff are Ed Baker, Pacific Northwest National Laboratories process science and engineering division director from Richland, and Ralph Cavalieri, WSU's lead on the bio-products issue and director of agricultural research. WSU and PNNL researchers are also scheduled to speak on the proposal at the upcoming biofuels conference at Columbia Basin College in Pasco next month.

Other discussions are underway with the state Department of Ecology on ways to partner with that agency on these issues.

The PNNL-WSU-WSDA package seeks outcomes that are specifically detailed in the request:

1. Short term: Washington-grown feedstocks. This proposal seeks alternatives leveraged by federal dollars that would develop Washington-grown feedstocks to be processed into fuel and other products by in-state plants, and sold to Northwest consumers. Such feedstocks include canola and other oilseeds, starchy crops such as wheat, barley and cull potatoes. This research package will lead to short-term outcomes like identifying three to five plants to serve as the fundamental feedstock base for fuels in Washington, documenting oilseed crop performance in different climate zones, demonstration of new products from starch-based biomass, more effective conversion of glycerol from bio-diesel production.
2. Long term: Move toward using cellulose for biofuels and bioproducts. Cellulosic materials could include forest residue, wheat straw, corn stalks, orchard trimmings, urban yard waste such as grass clippings, poplar trees, etc. These materials could provide 3-4 times the energy as the energy expended to convert them.
3. Advance the strategies for “anaerobic digesters.” Anaerobic digesters use microorganisms to create gas that can power a generator to make electricity. In order to maximize the advantages of anaerobic digesters. Such strategies include improved anaerobic digestion technology and nutrient recovery from digested dairy waste.
4. Make byproducts of the processes above into high-value goods such as oils and plastics. Some of these products may have a higher value than methane, ethanol, or biodiesel, thus making the fuel products more cost-effective.
5. Educate a Washington workforce to design and operate these emerging technologies.

The 2007 Legislative Request. Specifically, Washington State University requests \$4.7 million; and the Washington State Department of Agriculture and WSU jointly request \$2 million from the Legislature to:

- [WSU request] Fund a system-wide Center for Bio-products and Bio-energy (CBB) at Washington State University led by a director with exceptional experience and qualifications, desirably with standing in the National Academy of Engineering or the National Academy of Sciences. The CBB is the overarching program that links together the efforts system-wide of WSU faculty, PNNL scientists, and the WSDA.
- [WSU request] Provide \$2 million in matching state funds to complete a team of ten scientists in Tri-Cities that would have joint Washington State University/Pacific Northwest National Laboratory appointments. These scientists would work on longer-term projects (five years or more) but also have goals for short-term deliverables. The ten scientists will occupy the new, jointly-funded (WSU and PNNL) Bio-products Science and Engineering Laboratory under construction on the campus of WSU Tri-Cities. The request funds and supports five state Bioproducts faculty scientist positions, which would be matched by the equivalent of five positions funded by federal research programs through PNNL. These scientists will also educate undergraduate and graduate students participating in research and taking classes at WSU Tri-Cities.
- [WSU request] Fill three critical gaps in state Bioproducts research capacity with new Pullman-based scientists in metabolic engineering, microbiology and molecular biology, and a crop scientist/Extension specialist. The cost is \$1.1 million. Like the Tri-Cities-based scientists, the three new Pullman scientists would either fill critical technical gaps or enhance the critical mass of the existing expertise identified collaboratively by WSU and PNNL. A metabolic engineer is needed to understand how microorganisms can break down feedstock more efficiently. A crop scientist is required to understand how to grow the proper crop to be converted to fuel and other bio-products more efficiently.

- [WSDA-WSU request] Conduct \$2 million in pressing applied agronomic, economic and engineering research on technology and cropping systems for more efficiently growing oilseed and other energy crops and more economically converting these and other biomass to fuel. These research projects, with short-term implications, would be directed by the “Bioenergy Roadmap for Washington” which is currently being developed by WSU and WSDA. The funding for this joint applied program would be passed to WSU from WSDA. WSU will partner with PNNL to execute portions of this applied research.

These efforts are consistent with the state’s “The Biomass Inventory and Bioenergy Assessment” and “The Technology Matrix/Assessment.”

Annie Van Scyoc Joins Government Relations Team

Annie Van Scyoc has joined the WSU government relations team. For the past 14 years, she has worked for Olympic College, holding a number of positions including executive assistant to the president in Bremerton. She also worked on the Poulsbo campus. She will be the full-time assistant to Larry Ganders, who directs WSU’s government relations efforts. You can reach her 360-956-2020 or Vanscyoca@energy.wsu.edu. Laurel le Noble will continue her work with Larry as well as Jane Sherman, assistant vice provost, as administrative coordinator. Laurel has worked with government relations for six years.

For a complete text of the WSU-PNNL-WSDA budget request, as it was submitted to the governor, [click here](#).

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