



## New Concept Takes Flight

By Barbara Coyner

A wood-powered jet? Really? Believe it or not, the concept of propelling an aircraft with woody biomass and mill residue is taking off in Washington State. Recently, the 2011 Washington Legislature passed the Residual Forest Biomass-to-Jet Fuel Bill, attracting large majorities in both houses; House Bill 1422 was signed into law on April 29 by Governor Chris Gregoire.

The bill authorizes the Washington State Department of Natural Resources (DNR) to collaborate on the development of a sustainable bio-aviation fuel-from-forest-biomass sector in the state. Working with the state Department of Commerce, Washington State University, and the University of Washington, the DNR will move forward with a demonstration project for the concept.

“We have an opportunity to bring our timber heritage and our aviation industry together to contribute to a more sustainable energy future,” Commissioner of Public Lands Peter Goldmark said of the new direction. “We can now move forward with a pilot project that will help us build a sustainable and efficient bio-aviation fuel industry. Instead of burning slash piles in the woods, we will be putting biomass to a higher and better use, while continuing to protect ecological health.”

### Getting the Idea off the Ground

Goldmark began promoting woody biomass in earnest in February 2009, launching the Forest Biomass Initiative. The stars seemed to align, with green energy being pushed to reduce dependence on fossil fuels, along with the need to decrease wildfire danger through forest health projects. The matter of rural jobs colored the thinking, as well, and the idea of bringing new green jobs to depressed rural economies was a no-brainer. Then too there was the matter of trying to slow down the conversion of forestlands to housing developments. For the Evergreen State and the legislature, opportunity was ripe to forge a strong direction.

Long a player in the Washington economy, the aerospace industry seemed a likely candidate to audition some of the new biofuels being researched.

“We’ve crafted this legislation to emphasize important new policy both for the environment and for the aerospace industry,” said State Rep. Derek Stanford, D-Bothell, the prime sponsor of HB 1422. “The biomass-to-fuel will spur investment in new technology for renewable energy, which is exactly what we need to generate new green jobs and to reduce our dependence on fossil fuels. This work is critical for our energy security and for the environment. What we’re talking about here is a win-win for Washington people — and with no cost to the state budget.”

### Team Effort

Of course it’s a long way from the hype of politicians to the reality of powering a jet with biofuel refined from woody biomass. But the step will be that of the academics who specialize in such research.

In partnership with Alaska Airlines, Boeing, the Port of Seattle, The Port of Portland, and Spokane International Airport, a project based at Washington State University will look at biomass options within a four-state region as possible sources



for creating renewable jet fuel. Washington State University is recognized as one of the leading institutions in the world for its research and discovery work in biofuels.

“WSU scientists are already working on overcoming the obstacles standing in the way of efficiently using biomass to make bio-aviation fuel,” said Ralph Cavalieri, director of WSU’s Agricultural Research Center.

For example, Professor Norman G. Lewis is working on how best to break down the lignin in woody biomass—such as forest byproducts — to make it more easily convertible to fuel. And researcher Shulin Chen’s lab is focusing on developing energy-rich algae, the technology to grow them all year, and a way to convert them into fuel and other products.

“We are uniquely poised to deliver the nation’s aviation biofuels in an aggressive and cost-effective timeline,” added Howard Grimes, WSU vice president for research. “We stand as a national leader with the breadth and depth of our clean technologies.”

### **Bio-refineries**

Not far from Washington State University, an actual bio-refinery is about to go online at Moses Lake. According to Ramon Benavides, the company’s co-founder and vice president of business development, Gen-X is in the final stage of air permit review for the facility.

A Burbank, Washington-based biodiesel plant owned and operated by Gen-X was destroyed by a non-biodiesel-related fire in 2009, and Benavides said his company has been working on the new project ever since. He noted that Gen-X is converting an idle waste-to-ethanol plant to produce biodiesel and other biomass-based products. “This is an advanced bio-refinery, and it will manufacture multiple products,” he said.

As politicians crow about new technologies, researchers diligently study the prospects and realities, while a sprinkling of small start-up bio-refineries take the technologies to market. It’s not a straight path from the idea to the actual, and with venture capital scarce, some are relying on stimulous funds. Yet for logging contractors and sawmills, the potential to be part of the action is real. One day — maybe soon — we can fly the friendly skies, knowing that the wood products industry is doing its part to make the U.S. more energy independent.