

**Pacific Regional Biomass Energy Program
July 2005 Monthly Report**

Back-to-Back Biomass Workshops in Bend, Oregon: A unique collaboration between federal and state agencies and local business interests produced a two-day public information and outreach event focusing on biomass energy opportunities. "Bioenergy 101: A Primer on Bio-Based Energy" was the theme of a workshop held on July 13, 2005 in Bend, Oregon. Organized by the Business Alliance for Sustainable Energy, the workshop provided a broad survey of biomass energy technologies. Speakers presented case studies of current development of biodiesel production, industrial biomass cogeneration, landfill gas-to-energy and biomass heating technology ("Fuels for Schools"). Other speakers addressed the environmental costs and benefits of bioenergy and the potential for job creation from biomass energy development in rural communities. Oregon Secretary of State Bill Bradbury addressed an evening reception and expressed his enthusiastic support for biomass energy development in the state.

On July 14th, a second workshop focused on biomass heating. "Fuels for Schools and Beyond" included a presentation on the details of the Darby, Montana, Fuels for Schools project addressing both the technical and economic considerations. Other presentations at the workshop provided information about biomass heating feasibility studies in Wallowa County, Oregon, and southeastern Washington. Rounding out the workshop were presentations on air quality impacts of biomass combustion and funding opportunities for Oregon communities. The workshop was organized by the Oregon Department of Energy, the Oregon Department of Economic and Community Development and the USDA Forest Service. The Central Oregon Intergovernmental Council handled the logistics and event planning for the two-day workshop series.

Fish Biodiesel Project. National Park Service, Pacific Biodiesel, University of Alaska Fairbanks (UAF), and Alaska Energy Authority (AEA) staff are troubleshooting poor combustion of B100 in Denali National Park's 50 kW Onan generator at Toklat Work Center. Biodiesel has made its way into the crankcase lube, presumably through fuel system seals, and the engine was smoking excessively until it was fueled by petrodiesel, which improved performance.

Project partners are preparing a brochure for public information.

Preliminary results of University of Alaska's emission testing of the instrumented Detroit Series 50 diesel generator show a decrease in CO; surprisingly, NO_x; and volatile HCs

Emissions (PPM) Diesel vs Biodiesel

Load [kW]	Engine Load (% Max)	Petro Diesel			Biodiesel (B100)		
		CO	HC	NO _x	CO	HC	NO _x
15	12	317	25	812	100	14	498
35	28	174	20	1068	100	18	701
61	49	157	17	1137	100	15	928
93	75	340	12	1096	250	16	1032
124	100	757	10	1135	500	16	1153

Alaska Rural Energy Conference. Alaska Energy Authority and University of Alaska Fairbanks (UAF) staff continue to organize the Alaska Rural Energy Conference, the state's premier energy conference, scheduled for September 20-22 in Valdez. A Biomass Energy technical session is scheduled for September 22nd. Representatives of the Pacific Regional Biomass Peer Exchange will also meet in Valdez on September 23.

State Policies and Incentives Favorable to Support Biomass Energy Use in Montana:

1. The Montana Department of Transportation (MDT) drafted language for review regarding implementation of a procedure and policy for later incorporation to a rule to provide the 15-percent state road tax reduction on E10 in Montana. Montana Department of Environmental Quality (DEQ) completed its review in July. The 15-percent tax reduction for E10 went into effect upon the Governor signing the ethanol incentive bill (SB293); however, the bill did not include a provision for immediate implementation so MDT drafted a policy until rules can be approved.

2. Art Compton, Administrator of Montana Department of Environmental Quality's (DEQ) Planning Prevention and Assistance Division, supplied information to a Governor's July 18th meeting regarding emissions and impacts of Fischer-Tropsch processing of biomass- or coal-to-liquid fuel (BTL, CTL). Fischer-Tropsch processing of Montana resources to diesel is a new initiative in Governor Schweitzer's energy portfolio.

Increase Biomass Energy Development through Technical Assistance

3. Montana Department of Environmental Quality's (DEQ) Howard Haines conducted a preliminary on-site evaluation of the Huterrite Martinsdale Colony for a possible biogas heat or combined heat and power project. The current Martindale operation has the equivalent of 275 dairy cows, and with hog expansion, about 320 dairy cows. This means they have enough waste (on average) to power a 59 to 69.4 kW engine-generator 96 percent of the year (cleaning and downtime). It also assumes everything is "perfect." Heat is now supplied by propane that would be able to provide a back-up and initial heat source. The next steps will be coordinated with NCAT and the local RC&D to develop a project.

4. During the week of July 25, Montana Department of Environmental Quality's (DEQ) Brian Spangler had language added to the Montana National Guard operations manual (J4 maintenance) for all Army National Guard E85 vehicles to refuel at the E85 pump(s) in Montana. The manual lists the locations and procedure.

Increase Biomass Energy Awareness in Montana:

5. The Montana Department of Environmental Quality (DEQ) participated in the Livingston Sustainability Conference on July 9th in Livingston, Montana. Howard Haines presented information on biodiesel and E85 at the Speakers Pavilion to a group of about 65 participants, in addition to the many people who came by the DEQ booth and E85 Avalanche. Part of Mr. Haines' (and other speakers) presentation and interview were broadcast by Yellowstone Public Radio and is available on their web site. DEQ traveled in the GM-donated E85 Avalanche (with a combined mileage of 15.8 MPG for the trip). Over 4,200 attendees were counted entering the event. Lieutenant Governor John Bohlinger was present to start the biodiesel-powered glass pulverizer.

6. On July 14th, Howard Haines presented information about biodiesel and ethanol to a number of small groups at the Judith Gap Wind Farm Open House. Over 450 people attended the Open House from 10 AM to 2 PM.

7. Howard Haines of Montana Department of Environmental Quality (DEQ) attended the Valley County Commissioner's meeting on Valley County Ethanol Plants in Glasgow, Montana on July 29th with Adam de Young, Technology Specialist of the Governor's Economic Development Office staff. DEQ supplied resource statistics and other information in support of Phil Madson's 2-hour talks (at 2:30 PM and 7 PM). About 20 people attended the afternoon meeting, with another 55 attending the evening meeting at the Court House. There are four groups interested in ethanol plants in the area. The discussion was focused on using local resources for the best profit.

Leveraging of State and Federal Funding including Project Implementation and Partnerships in Montana:

8. Montana Department of Environmental Quality (DEQ) worked with the Montana Department of Agriculture, the Public Service Commission, and others have helped to develop speakers' panels for the Governor's Energy Summit, October 17 and 18, 2005 in Bozeman, MT.

Upcoming Events in Montana:

- Regional Children's Environmental Health Summit - Helena, MT, August 3-4, 2005
- ACE (American Coalition on Ethanol) Ethanol Conference & Trade Show, Omaha, Nebraska, August 16 - 18, 2005.
- Fuels for Schools Workshop, September 11-14, 2005, Missoula Montana
- PRBEP Peer Exchange Meeting, September 23, 2005, Valdez, Alaska
- Emissions Forum Meeting - Missoula, MT, September 27-28, 2005
- Energy Management Institute, Professional Ethanol Management Program, Chicago, October 4 - 5, 2005.
- Greening the Hospitality Industry Conference - Washington, DC, October 5-7, 2005
- Governor's Summit on Energy, October 16-17, 2005, Billings, Montana
- 16th Annual Montana Ethanol Conference, June 13-15, 2006, Whitefish, Montana

State of Washington Biomass Energy Update for July 2005:

Introduction

The fast pace of bioenergy development in the State of Washington continues. This pace includes: 1) Bioproducts that offset up-stream use of petroleum or natural gas feedstocks, or add other new revenue streams; 2) Biofuels; and 3) Biopower. This year, like last year, is seeing a lot of activity including: 1) Completion of construction of the state's first major biodiesel plant. Seattle Biodiesel is 100% complete and testing is underway at 5,000 gallons per day. It is still awaiting their final operating permit; 2) Efforts to build crushers for oilseed based crops such as mustard, winter rapeseed and canola (see note under biodiesel feedstocks); and 3) Further bioproduct research efforts by WSU'S Center for Bioproducts and Bioenergy (CBB). The WSU Center for Sustaining Agriculture and Natural Resources (CSANR) is increasing its focus on Bioenergy separate from the Climate friendly Farming Initiative. The WSU bioenergy and bioproducts flyer was updated in July, 2005.

Biopower is the state's second largest renewable energy source (second only to hydropower). Power production alone is 370.75 MWc. This figure does not include biofuels, or heat from wood stoves. The forest products industry, especially pulp and paper mills, constitutes the greatest portion of this figure.

There are ten highlights for this month's report (greater details are below):

- 1) USDA/WSU held its Potato Cropping Systems Field Day at Paterson, WA on July 15, 2005. Two biofuel presentations will be made: 1) Biofuel variety trials; and 2) Switch grass trials for ethanol production;

- 2) A Tri-state Oilseed Crop university/USDA/Seattle Biodiesel meeting was held in Pullman, WA, on July 13, 2005;
- 3) A Hood Canal/Skokomish Valley digester field tour with stakeholder meetings was held July 13-14, 2005;
- 4) A biodiesel strategic planning collaboration meeting was held in Seattle, WA, on July 25, 2005;
- 5) Triple-Bio (Bioenergy, Bioproducts and Bio-Ag [reducing fossil energy inputs to agriculture]) is emerging as a major program development initiative at WSU. A July 29th meeting was held with the Policy Consensus Center (U of W/WSU) focusing on Triple-Bio;
- 6) The Governor has announced a \$50,000 grant to Clallam County network for a feasibility study of an up to 5 MWc wood fired CHP facility at Forks. Mill waste would be the feedstock;
- 7) The final draft of the *Biomass and Bioenergy Inventory and Assessment for Washington State* was circulated for final comment in July, 2005;
- 8) The WSU Bioenergy and Bioproducts Team continues to develop. It focuses on coordination, direction setting and development. Dave Sjoding of PRBEP serves as Team Leader. This team includes the WSU Extension Energy Program; the WSU Center for Sustaining Agriculture and Natural Resources; the WSU Center for Bioproducts and Bioenergy (CBB) and others. CBB is research focused;
- 9) Fact sheet development continues. Kim Lyon's *Biodiesel in Washington: A Snapshot* has proved to be timely and well received. Two other fact sheets have had further drafting: 1) Development of a WSU agreed upon specifications table for anaerobic digestion/energy calculations; and 2) A Vander Haak Dairy Biopower factsheet; and
- 10) The state government Bioenergy Team is now moving forward with a strategic planning focus. Monthly meetings are now being held.

Biopower

Biopower – Agricultural and food processing anaerobic digestion projects summary

A summary of agricultural anaerobic digestion efforts in Washington State is as follows:

- 1) A biopower/anaerobic digestion factsheet was developed by Dave Sjoding entitled *Have you asked all the right questions* (version one). It was used at the anaerobic digestion workshop was held on 2/25/05 in Sunnyside, WA, at the Snipes Mountain Brewery. The factsheet is now out for broader peer review. A second factsheet is being developed for the Vander Haak Dairy and an anaerobic digestion specifications chart. Both were further developed in July;
- 2) The Governor and the Legislature are focusing on the low oxygen levels of southern Hood Canal. It is one of only two west coast estuaries that have a low oxygen problem. The use of biopower/anaerobic digestion in a closed system (needed due to a flood plain) is a part of the solution under major consideration. A \$560,000 funding package has been proposed by the Governor and approved by the Legislature for the Skokomish Valley Anaerobic Digester. There is also Congressional interest. A tour with stakeholder meetings was taken on July 13-14, 2005 in Mason County, WA. The tour helped prepare for the study's statement of work; analyze feedstock volumes and seasonality; and discuss options, challenges and plans;
- 3) A Stanwood, WA, group has submitted a biopower value added producer grant proposal to USDA; and
- 4) Sunnyside Dairy submitted a biopower project proposal for the USDA 9006 funds.

Biopower - Landfill gas/municipal solid waste/wastewater treatment facilities

Projects in various stages of development include:

- 1) Fort Lewis is doing a feasibility study using landfill gas and possibly wastewater treatment plant gas for biopower CHP. SCS Engineers is doing the study. Possible size of power production is not yet determined. The draft study is due in August, 2005.

Biofuels

Biodiesel plants updates

Biodiesel plants in various stages of planning, construction and operation:

- 1) Washington Biodiesel is looking at several sites in Washington for a 10 million gallon/year biodiesel facility using waste grease, tallow, and oil from oil seed as feedstock. They are also looking into co-locating a crusher.

Blending/wholesale/retail and market development

Biodiesel can be blended with regular diesel at any percentage (B20 is 20% biodiesel) A number of market pull efforts using ASTM quality biodiesel are underway:

- 1) The Washington State Clean School Bus Program Report to the 2005 Legislature <http://www.ecy.wa.gov/pubs/0402029.pdf> is now available as part of 2003 legislation (ESSB 6072); and
- 2) The Washington State Ferry System has placed on hold its biodiesel purchases due to a fuel line clogging problem. Laboratory analysis the clogging material conducted by Univ. of ID revealed a high iron content (50%). In addition, the bottom of a tank that was later drained for maintenance revealed some normal bacterial growth (the bacteria is common to all diesel products). It would appear that serious and detailed tank cleaning is needed for conversion of very old diesel engine fuel tanks. There is a \$500,000 U.S. Senate Energy and Water Committee appropriation earmark for this demonstration.

Ethanol

Ethanol efforts in the state:

- 1) There is now discussion among Washington corn growers (260,000 acres in 2002) of development of an ethanol industry. The Potato Cropping Field Day at Patterson, WA, on July 15th will present switch grass trails for ethanol production;
- 2) In 1997 WSU Dr. Jim Kerstetter in cooperation with Dartmouth College published an *Assessment of Potential for Conversion of Pulp and Paper Sludge to Ethanol Fuel in the Pacific Northwest* for NREL. Pulp and paper sludge is an excellent place to begin building an ethanol industry in the Northwest. There are no additional feedstock transportation costs and pre-processing of the feedstock has already taken place. A review of this report was completed in July with an eye to updating and perhaps placement on the website;
- 3) A proposal to study low-lignin wheat and barley for ethanol production has been developed WSU and the University of Idaho;
- 4) ARS Prosser (Steve Fransen of WSU) has preliminary research plot yields for corn, wheat straw and switchgrass (a perennial). Early results show the yields 6-7 tons of dry matter per acre. Approximately 50,000 acres would support a 20 million gallon per year ethanol facility. Corn and switchgrass are similar in ethanol productive capacity per ton (80 gallons).

Biofuels Stakeholder Groups and Events

The state's first broad based biodiesel meeting since January, 2004 was held in Seattle on July 25, 2005. Approximately 35 people were in attendance. A time of brief presentations by various parties and interests was followed by discussion of policies to advance biodiesel.

A Northwest Farmers Bioenergy Trade Group has been proposed by the Institute for Washington's Future. Its first focus is on development of a mustard meal biopesticide market. A somewhat similar proposal with a northwest biodiesel logo is emerging from Climate Solutions.

Bio-gasification and direct heat

The J&J Bosma Dairy has received a USDA value added planning award of \$85,000 to examine the feasibility of a compressing digester biogas to liquid natural gas. Prometheus Energy of Bellevue, WA, provides technical support and CSANR of WSU will provide project evaluation support. An application for USDA 9006 funds was recently submitted.

Key national contacts

Association of State Energy Research and Technology Transfer Institutes (ASERTTI) Bioenergy Committee

ASERTTI has forming a Bioenergy Committee. Dave Sjoding serves as a member.

National Association of State Energy Officials (NASEO) Agricultural Task Force

NASEO has an Agricultural Task Force. Dave Sjoding serves as a member.

Siting and Permitting Issues

Introduction – Siting and permitting of bioenergy facilities (biodiesel facilities and biopower) is new to local government and air quality jurisdictions. Clear permitting processes are needed combined with training.

Seattle – Seattle Biodiesel has not received its final operating permit.

Department of Ecology – The Department of Ecology has received \$35,000 from EPA to develop a biodiesel permitting guide with the goal of standardizing the requirements. The report should be done in January, 2006 followed by several workshops for local governments. Contact Rob Reuter at 425.649.7086.

Other Pacific Regional Biomass Energy Partnership Washington Activities

Strategic, policy and governmental

The following efforts are underway:

- 1) The beginnings of broad discussion leading to a state biodiesel strategy began to emerge at the Biodiesel meeting in Seattle on July 25, 2005. Further meetings will follow; and
- 2) Biopower from digesters need utility interconnection. SSB 5101 has been signed into law with a requirement that 80 percent of the state's total customer load have uniform interconnection standards before the law takes effect. Uniformity means 90% of interconnection requirements are the same. Adoption of uniform interconnection standards for digester sized power production will be helpful. The Washington Utilities and Transportation Commission and the Washington Public Utility District Association are going to launch public processes to develop the standards. SSB 5101 focuses mainly on solar and community wind

by providing a fixed purchase price from utilities. However, small anaerobic digesters are also benefited. However, payments for these renewable energy systems are limited to \$2,000/year.

Technical assistance and outreach

WSU Extension Energy Program provides technical assistance and outreach on a wide variety of bioenergy topics. This effort includes serving as technical expert for a variety of meetings and groups, working with procurement officials wanting to purchase biodiesel, and advancing new technologies.

Technical support was provided for the Washington State Grange (broad bioenergy questions), Spokane Conservation District (biodiesel); Mason County Conservation District (anaerobic digestion); and Okanogan Economic Development (forest feedstock and biooil).

PRBEP website

The Pacific Regional Biomass Energy Partnership website is located at <http://www.pacificbiomass.org/>. Active collection of new website materials for an update is underway. A number of additional materials were discovered at the peer meeting. The website has been selected as the site for the Washington Biomass Inventory maps and data. A working draft of the maps and data has been prepared and is awaiting final production of the report and data. The website has a new masthead look. Biodiesel crops in bloom with trees replaced the corn cob (a more "Pacific" look).

Future events, conferences, meetings and workshops

The following future conferences, workshops, field days and meetings are scheduled:

- 1) U.S. Senator Cantwell will be touring various Washington Counties to discuss biodiesel in early August.
- 2) A WSU/PNNL bioproducts/bioenergy meeting will be held in Pullman, WA on August 19, 2005;
- 3) A University of Idaho Biodiesel Utilization and Production workshop is scheduled for September 15-16, 2005 in Boise, ID;
- 4) Alaska Rural Energy Conference September 20-22, 2005 in Valdez, Alaska with the PRBEP Peer Exchange on September 23;
- 5) The Northwest Renewable Energy Festival will be held September 23-25, 2005 in Walla Walla, WA;
- 6) A Global Oil Depletion and Implications for the Pacific Northwest Conference is being planned for October 4-5 in Spokane, WA. Dave Sjoding will lead a panel discussion of biofuels & bioproducts in the Pacific Northwest;
- 7) Tilth Producers Conference will be held November 11-13, 2005 in Wenatchee, WA. A pre-conference symposium on Alternative Energy on the Farm will be held on November 11 from 10:00 to 5:00;
- 8) The Spokane Ag Expo & Pacific Farm Forum will be held January 17-19, 2006. It will have a Bioenergy Pavilion;
- 9) The Harvesting Clean Energy Conference will be held in Spokane on February 27-28, 2006. There are monthly discussions. The start of a proposed agenda for "How much can we Harvest" panel was prepared. An early discussion with Jeff King of the Northwest Power & Conservation Council along the lines of "what we know, what we don't know, how we use the information and needs steps to fill knowledge gaps". Dave Sjoding participates in the planning; and
- 10) A second Oilseed Summit is in the discussion stages for March 1, 2006, as a follow-up meeting to the Harvesting Clean Energy Conference.

Funding

USDA Rural Development's energy efficiency and renewable energy Farm Bill Section 9006 rules are now final. The Rural Development Service is shifting to a year round continuous submittal window as opposed to the previous approach of a specific grant submittal deadline. \$200,000,000 in 9006 loan guarantee funds are now available. The deadline of applications is August 31, 2005.