

Woody Biomass & Conservation Districts

A Second Look

2008 marks the fifth year that NACD has been collaborating through a formal cooperative agreement with the Department of the Interior (DOI) and the U.S. Forest Service (FS) on the utilization of excess woody biomass in our nation's public and private forest lands. The goal of this partnership was to encourage engagement by conservation districts in efforts to reduce hazardous fuel accumulations, develop community wildfire protection plans, protect forest and watershed health, improve local or regional economies, enhance wildlife habitat, and increase forest esthetics.

Conservation districts have an important role in achieving any and all of the above objectives as they are uniquely situated to help facilitate the education of county supervisors, city councils, homeowner associations, landowners, and local entrepreneurs about woody biomass utilization.

Educational efforts can include helping them to explore and understand just what is woody biomass, the various local sources, the myriad of potential uses and products, and conduct feasibility studies and public forums so that communities, entrepreneurs, and landowners understand not only the economic and ecological opportunities associated with using woody biomass but also any attendant barriers and limitations.

Over the past five years we have worked to incorporate background information, special inserts, and success stories about local conservation districts engaged in the utilization of woody biomass. These have been published in and with our popular Forestry Notes monthly newsletter. We have helped sponsor two national and three regional workshops on these topics. We produced "The Hidden Treasure," a woody biomass booklet for K-12 students that

introduces students to wood as an energy source. This past May we worked with our DOI and FS partners and provided scholarships for 27 people from 21 states to attend the 2008 SmallWood Conference in Madison, Wis. At present we are working with DOI and the FS to provide sponsorships for state or sub-state level woody biomass workshops by conservation districts, rural conservation and development districts, and local governments.

Last, but not least, in this culmination year of our work under a formal cooperative agreement with DOI and the FS in woody biomass utilization, we are working on developing a set of desk guides and toolkits to better assist officials of conservation districts, rural conservation and development districts, and county

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A step ahead



Nebraska college sets example for how to utilize wood energy

Tucked away in the northwest corner of Nebraska, Chadron State College is home to 2,000 on-campus students. Those students sleep, eat and study in the campus' two dozen buildings, all of which have relied on wood heat since the installation of two boiler systems in 1991.

Surrounded by forestland, Chadron has a comfortable supply of wood chips, which made it a good fit for the conversion from natural gas. Still, what makes the Chadron story remarkable is that it converted well before fossil fuel costs were at the astronomical rates they are at today.

The Ft. Robinson Fire of 1989 that devastated over 25,000 acres of Pine Ridge forestland encouraged campus leaders to explore alternative energy options. The College's administrators made the bold decision to move forward with the project even though it was criticized by a number of people.

"Once the natural gas prices took off it quieted all of the neysayers," said Dale Grant, the school's vice president for administration and finance.

Said University of Nebraska northwest district forester Doak Nickerson, "As it turns out, it's been a huge success story. The College's natural gas supplier said they'd return to gas, but they haven't. The College has made a steady diet of wood chips for 20 years now."

With the forest nearby, the College saw an opportunity to make the conversion when it was told it would need to update its boiler system. Accelerated timber harvesting and followed by forest thinnings on private forestland served as preventative measures for wildfire. Initially, Chadron used sawmill residue but switched to chipped slash material from sawlog harvest and thinning when the local sawmill went

out of business.

According to Nickerson, the College uses approximately 9,000 tons of chipped ponderosa pine material annually, and has roughly 900 tons on reserve at all times. The school has two gas-powered boilers in place as a backup system.

The savings over those two decades has been considerable, and it's allowed the College a sense of self-reliance. Two years ago rising fuel costs forced Nebraska's

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Flambeau explores the future of wood fuel



Proposed biofuels plant aims for self-sufficiency and a healthy bottom line

In July, Flambeau River BioFuels received word that a \$30 million grant through the U.S. Department of Energy has been awarded for their proposed facility in northern Wisconsin. The news was another positive step in the two years worth of exploring and planning for the group.

Relying on forest residue supplied by Johnson Timber, the company aims to use 600 dry tons each year to produce approximately six million gallons of sulfur-free Fischer-Tropsch liquid and one trillion Btu of heat and power. The efforts also hope to stimulate a local economy that's been stymied by the struggling paper industry by adding new temporary and full-time jobs.

Butch Johnson grew up in Park Falls and helped to expand his father's successful business, Johnson Timber. In 2006 he was asked to help shop Flambeau River Papers to potential investors after it closed due to financial hardship. He and his son, Bill, explored all of the options for how it could once again become financially viable.

Said Bill Johnson, "The more we looked at it, the more we began to think we could make it work. Nobody in our company had worked at a pulp and paper mill, we had always been wood procurement and wood manufacturing guys. What we did know was that if we continued to do things the same way, we weren't going to make it."

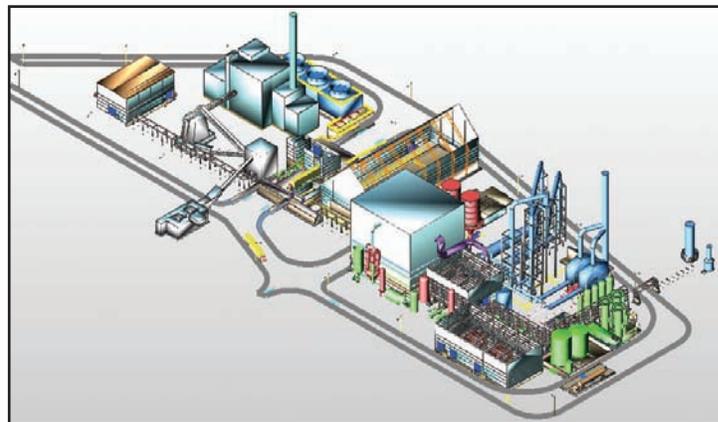
The biggest obstacle in the past had been the increasing costs of natural gas which had made mill operating costs unbearable.

Johnson enlisted the help of CleanTech Partners, a Madison-based consulting firm which ran an energy audit. One of their recommendations required \$197,000 capital expense but helped to save \$2.1 million in the first year of that program. "Thanks to CleanTech we were able to win the Governor's 2007 Pulp and Paper Energy Efficiency Award," said Johnson.

As the company explored more energy-saving measures it began to hear more about wood-based ethanol as an alternative. CleanTech Partners and company consultant Ben Thorp helped connect Flambeau River Papers with an operation in Atlanta, Ga. where cellulosic ethanol had been effectively used at a pulp and paper mill.

"We decided maybe that wasn't quite the right technology we wanted to get into," said Johnson, "but going down that route we learned a lot about gasification."

Now, thanks to that knowledge, the proposed plant should solve the bulk of the company's energy operating concerns. The paper mill and biorefinery will share utility and waste water treatment costs, and with the expected annual amount of Btu to be produced, Flambeau



A preliminary illustration of the proposed Flambeau River BioFuels plant. The project was the recipient of a recent \$30 million grant from the Department of Energy.

River Papers will become the country's first fossil-fuel-free pulp and paper mill.

All of the material will come from within a 150-mile radius of Park Falls and transported to the plant where it will undergo gasification. The syngas will then be fed through a gas-to-liquids Fischer Tropsch catalytic process.

Even before receiving the DOE grant the \$84 million facility had received a stamp approval from state political leaders and financial backing from Citigroup. Still, Johnson acknowledged the announcement has helped to push this project to the next level.

"The award puts a stamp of approval on our project and confirms we're doing the right thing," said Johnson, whose group is now seeking additional capital. "We're hopeful that with the grant and the DOE putting a fine tooth comb through this project will make this a project that investors believe in and wish to be a part of."

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governments in working with their communities in exploring and understanding their role and opportunities in community wildfire protection, removal of debris after major storm disasters, and the utilization of woody biomass.

We have also spent considerable time and effort over the past five years exploring the use of woody biomass for energy ranging from the "Fuels for Schools" concept for using wood chips to replace high cost natural gas to heat public facilities to the use of wood as a potential feedstock for cellulosic ethanol. Today we see the entire biomass energy field in a state of flux. The Energy Bill passed in December of 2007 contains a badly flawed definition of "renewable biomass" which makes woody biomass from much of our nation's public and private lands ineligible for qualifying as a source of

renewable fuels. The use of corn for ethanol has come under increasing scrutiny because of the "food verse fuel" debate. Wood residues are currently in short supply because of the downturn of the economy and construction. Some forest industries are quietly and aggressively moving forward in exploring wood energy opportunities while others are fearful of the impacts on raw material supplies and costs. Fuel costs are climbing and having an impact on the livelihood and business operations of farmers and loggers. Exploration and use of our nation's natural oil and gas reserves are moving back into the forefront of consideration as are clean coal gasification, and nuclear power.

Given this state of flux as we near the completion of this project it is a good time to reflect and think about important role of conservation districts can play in assisting

their local communities in exploring the realm of wood as an energy source or for that matter for any wood related product. The need to focus on the utilization of woody biomass will continue beyond this formal five-year effort as communities need the latest and most reliable information in order to fully explore and understand their options and the potential ramifications of their decisions when it comes to using woody biomass. This is an important role that conservation districts all over the U.S. can and should play. It is in this knowledge that we present this special insert and set of educational and other resources for consideration and use by conservation districts in assisting their communities as they explore the opportunities and pitfalls in the brave new world of woody biomass utilization.

The value of CROP



Valuable data is helping to encourage investment dollars

Following the Healthy Forest Restoration Act of 2003, Catherine Mater began to explore ways in which biomass could be ecologically and economically harvested from public and private lands by coordinating the removal across forest ownerships on a landscape scale.

According to Mater, that Act, the continued lack of coordinated, leveled resource offering, the shift in demand for biomass, and urgency placed on fuel load reductions on public forestland prompted the development of the CROP model (Coordinated Resource Offering Protocol).

CROP's tenants include:

- *Coordinate projected resource offering over a five-year period within an area that typically extends 200 radial miles out from a defined centerpoint. This resource offering coordination would take place between all public forestland owners within the CROP landscape (USFS, BLM, state, county, etc.) federal agencies and between all public agencies.*

- *Levelize the resource offering between agencies included in the CROP landscape to reduce investor risk; invite investment within CROP regions; and capture highest off the resource being removed.*

- *Increase the trust factor with industry/environmental stakeholders and the general public through the transparency of the CROP process.*

- *Create new partnerships with forest-based community organizations in CROP landscapes to implement and monitor both the ecological benefits and removal performances of agencies within the CROP landscape over time.*

While the urgency for getting a handle on available biomass was there, Mater observed that efforts across the U.S. tended to be focused on biomass inventory rather than removal performance. As a result, many studies were being conducted on the overall

biomass picture, but without much actually being accomplished on the ground.

"We needed to have a protocol that changed the dynamic of that," said Mater.

Her company, Oregon-based Mater Engineering, was initially asked to do an inventory evaluation of biomass for the Greater Flagstaff Forests Partnership in Arizona. The group's goals were to restore the natural ecosystem, reduce the risk of catastrophic wildfire, and research, test and demonstrate key ecological, economic and social dimensions of restoration. However the group lacked the coordination and markets to effectively utilize the smallwood and biomass material being produced. "That's when our focus shifted from inventory to coordination/removal," said Mater. "We wanted to know what these agencies believed they could actually perform to regarding biomass offering within a five-year period at landscape scale that would meet the area stakeholders' approval process."

In 2005, the U.S. Forest Service's Woody Biomass Utilization Team headed by Ed Gee issued a contract to Mater Engineering to conduct 10 CROP pilot projects across the country. Located in 15 different states across the US, the projects covered 27 national forests, 84 ranger districts, 35 BLM field offices and almost 200 county jurisdictions. The results of these CROP projects can be found on the national U.S. Forest Service CROP Web site at http://www.forestsandrangelands.gov/Woody_Biomass/supply/CROP/index.shtml.

According to Mater, the results from those projects are encouraging, but only a beginning. The estimated volume of biomass and 50 percent of small log volume converted to biomass to be removed over the next five years would satisfy about one percent of recent national policy requirements that have since been put in place, including the 2007 Energy Independence and Security Act.

"The amount of coordinated and leveled biomass coming off of those 10 CROPs conducted across the United States could really contribute to the 36 billion gallons of 2022 biofuel for the motor use production target set by Congress" said Mater, "and all of it within a context of sustainability and coordination amongst public land managers that sets a template for other public and private forestland owners to follow." In terms of

numbers, the biomass and small log CROP volume would equate to almost three million green tons of woody biomass each year for the next five years or, enough biomass to service 11 new commercial scale bio-refineries that each could produce 20 million gallons of biofuel per year.

Other USFS-funded CROPS are currently in process. They are located in southeast Alaska, and the State of Missouri. Additionally, the State of Utah has its third CROP analysis just completed, making it the first state in the nation with all of its forestland CROP-analyzed. Central Oregon has already updated its initial 2003 CROP data and credits the CROP process for helping to secure \$60 million in investment capital.

"We're seeing financial institutions paying attention to this data and using it for investment decisions," said Mater, "and all of it with the transparency at landscape scale that allows for a clear view of sustainability in what happens on the ground and in the ecosystem."

Thanks to advancements in technology, Mater emphasized the importance of tracking everything coming out of the forest, even though in the past much of that material may have been discarded.

"Outside of subsidies that may be allotted, if you really are trying to pay attention to both sustainability in the field and making it work on the bottom line you've got to pay attention to the value added component," said Mater. "Every CROP we do we request a break down on every species coming out of the forest broken down into six different diameter classes."

The next step, said Mater, could be to evaluate woody biomass next to agricultural feedstock.

"The demand for feedstock, particularly for biomass to biofuels production, is so great that part of the real fear is that there is not enough guidance in place to ensure that good practice and procedure is being followed relative to sustainability," said Mater.

"You'll never be able to satisfy the needs with just woody biomass. It needs to be combined with other feedstocks like ag feedstock, and there may be other things out there that we haven't considered yet."

For more information on CROP, contact Ed Gee, National Woody Biomass Utilization Team Leader & National Partnership Coordinator, Forest Management for the Forest Service at 202/205-1787 or email him at eagee@fs.fed.us; or contact Catherine Mater at Mater Ltd. at 541/753-7335, or email her at catherine@mater.com.

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Catherine Mater
Mater Ltd.

Finding common ground



Oregon group shows results thanks to a collaborative effort

The tug-of-war between competing interest groups has long created a standstill on public forestland, often with neither side willing to give ground or admit to the need for compromise.

In Lake County, Ore., located in the state's south central region, a unique working group has offered encouraging results for how good work can be done through the power of collaboration.

By the mid-1990s, the area's timber industry had declined to the point where the number of mills had been decreased from a half-dozen to one in a short amount of time.

Oregon's sustained yield unit had guaranteed those mills the right to the logs coming from 450,000 acres of the state's national forestland. "It was intended to sustain local industry," said Jim Walls, executive director for the Lake County Resources Initiative, "but when it got down to just one mill there was no competition within the unit for those logs. It brought out a review as to whether the state should keep the sustained yield unit or not."

At that time, Walls said, no environmental group was willing to support the policy. "We knew we had a difficult road," he said.

Several of the area's community leaders, including Jane O'Keeffe, the county commissioner, started examining ways to continue the policy through a group called Sustainable Northwest. At a meeting in 1998, scientists and environmental groups were invited to contribute to the discussion and what came from that meeting was the Lakeview Stewardship Group, which has since that time met quarterly and acted as a catalyst for the local wood industry while meeting the approval of its environmental partners. In 2002, thanks to the Group's lobbying efforts, the sustained yield unit was re-established.

Walls was welcomed in 2002 by the group

to start a non-profit to serve as a facilitator for the group and find new markets for the small diameter material that comes from thinnings. The non-profit, Lake County Resources Initiative examined all of the options. Of them, biomass seemed the safest and most reasonable. Even so, he acknowledged at the time that biomass was not competitive in the northwest.

Walls' group began to explore what the affects would be if open-biomass could get the same federal protection credits that solar and closed-loop biomass got, and what the potential benefits carbon savings could be.

Soon after the Group began to track trends for thinning efforts and U.S. Forest Service activity, and set up a long-range strategy for the acreage in the sustained yield unit.

The Lakeview Stewardship Group was also instrumental in the Collins Companies deciding to put in a new \$6.5 million small-diameter mill that was constructed in 2007. Plans for a \$30 million 13 MW biomass plant are in the works. Perhaps the biggest success is that for the past few years the area has not been a single threat of litigation. That's because Lakeview Stewardship Group's diverse representatives can speak to all of those concerned parties and assure them of the Group's mission.



Thanks in part to the Lakeview Stewardship Group, the local wood industry in south central Oregon has found new life.

Said Walls, after working to find common ground, all of the group's members have become advocates of the collaboration.

"When people on all sides of an issue can come together and craft a proposal or a project, it is much less likely that the project will be litigated," said O'Keeffe. "Collaborative solutions are good for the environment and good for communities who depend on natural resources economies."

Added fellow member Mike Anderson, the senior resource analyst for The Wilderness Society, "Lakeview is a great example of how environmentalists can work with rural communities and the timber industry to achieve common goals."

Group members understand that thinning efforts not only attract local industry, but they are important in helping to protect the forested resources that all of the partners on the Lakeview Stewardship Group value so much.

Said Walls, "One of the collaborators is Andy Kerr, a noted environmentalist in this area, and he's now telling the Forest Service they're not thinning heavy enough."

For more information on the Lakeview Stewardship Group, contact Jim Walls at 541/947-5461, or email him at jwalls@gooselake.com.

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colleges and universities to go to the state legislature for emergency appropriations to pay for the increased bills. The only college that did not need the assistance was Chadron.

"The only reason Chadron didn't need the help was because wood had been saving them money steadily as the year went on," said Nickerson.

Thanks to a new computer monitoring system added recently, the school has been

able to burn its wood supply even more efficiently in recent years. The computer has streamlined the combustion process and made the boilers more responsive to heating and cooling needs on campus. According to Nickerson, before they were seeing approximately three percent ash left over. Now that number has been cut in half. Said Nickerson, "We're getting all the Btu's out of the chip we possibly can."

Perhaps what makes Chadron's setup more

unique than other schools is its addition of a wood-powered cooling system. In 2006, the school invested \$1.3 million in a 700-ton air conditioning chiller system and now uses it to cool four of the campus' buildings; in time, the school would like to expand their cooling system.

"Wood will pay back that investment in a short order," said Nickerson, "especially if these natural gas prices continue to go up."