Missouri Faces Huge Increase In Logging For Inefficient Woody Biomass Electrical Generation
Increased Carbon Emissions For Very Little Power Production
Efforts To Ensure Sustainablity and Minimize Damage Described

Overview

- Missouri is on the brink of a huge increase in logging to fuel inefficient electric generating plants with "woody biomass." Several projects are proposed with **overlapping sourcing circles**, and more projects are being shopped around.

- Missouri's forestry community and existing forest products industry are concerned about the potential negative impacts on future forest productivity and the forest products industry.

- There are no forest management regulations or requirements in Missouri. Observers are unanimous that Missouri's private forests are poorly managed, with very little forester involvement. The industry is being described to the public as a way to thin undesirable small trees out of the forest while leaving healthy stands of trees to grow, but some in the industry prefer heavier cutting, described as being more "economical."

- While some in the woody biomass industry seek to emphasize non-forest inputs, like urban wood waste and sawmill residues, the fact is that most mill residues are already being used, and the competition for urban wood waste is intense. Everyone knows they'll have to go to the forest for significant amounts, in some cases all of their volume.

- Initial attempts by both the University Extension and the Missouri Forest Products Associations were for small community based "demonstration" projects in the 2 Megawatt (MW) range to see if the strategy was workable. But now large players have moved in and proposed rapid development of several 20-30 MW plants. **Together these plants could use 1.4 million tons of wood a year, while generating only 125 megawatts (MW). In contrast, there are 14 wind farms in Iowa that each generate over 150 MW, some as much as 300 MW.**

- Generating electricity by burning wood actually emits more carbon than coal, previously the dirtiest source. And it is only 25% efficient, the least efficient use of wood for energy.

- Because of concerns like these, **Massachusetts acted in September to place limits on Renewable Energy Credits under the states Renewable Energy Portfolio Standard:** to limit the amount of woody material that can be removed from the forest as biomass; to require field audits to ascertain compliance; and that **only projects with a 60% efficiency rate be granted full Renewable Energy Credits.** This will **encourage production of CHP (combined heat and power,) heat alone, and even more efficient biofuels, instead of inefficient electric production.**

- **The Missouri Forest Resource Advisory Council** (MoFRAC) has passed a resolution sent to the governor and legislators that any state subsidies for woody biomass developments should be conditioned on use of professionally prepared forest management plans using Best Management Practices with field audits to verify sustainable forestry practices. **MoFRAC has also commented to DNR that these requirements should be included in determining eligibility for Missouri's Renewable Energy Credits.**

- A **conference** organized by MoFRAC, **"Challenges of Producing Energy From Woody Biomass"** will explore the challenges of ensuring sustainable harvest practices while utilizing woody biomass. The conference will take place Friday Oct 22 in Jefferson City

The Details

There are as many as five large wood burning electric plants on the drawing boards in Missouri that could come online within the next three years. Not all of these are likely to materialize, but most could, and the existence of the others is representative of proposals that keep coming out of the woodwork. Most people in the state don't seem to be aware of the extent of the industrial development of Missouri forests poised to happen. The situation we find ourselves rapidly slipping into is one of potentially unprecedented new

demand with little immediate ability to meet it, one in which opportunistic players see millions of acres of Ozarks woodland laid out before them as a supply of low cost feedstock. The raw numbers say there is plenty of excess wood above and beyond what is logged each year being grown in Missouri, often poorly formed trees on low-fertility soils. Missouri has the highest percentage of cull trees of any state, so in a perfect world having a market for thinning poor quality trees out of the forest would be good. But actually getting this low-value wood out of the forest in a way that doesn't degrade the forest or wipe out young growing stock isn't so easy. **Together these plants could use 1.4 million tons of wood a year, while generating only 125 megawatts (MW). In contrast, there are 14 wind farms in Iowa that each generate over 150 MW, some as much as 300 MW.**

The push for "renewable energy" is benefiting the woody biomass electric generating industry without regard for the facts, facts which point to higher carbon emissions from industrial scale wood burning than from coal, and to the potential for vastly increased destructive logging.

Exaggerations like Senator Bond's recent assertion that 'Missouri could be the Saudi Arabia of biomass' are unfounded boosterism, and disregard realities such as the fact that neighboring Arkansas has more than twice the forest biomass potential as Missouri.

Parts of Missouri's forest products industry are concerned about the implications for their future timber supply and the loss of existing jobs, particularly in the pallet and charcoal industries. Most of the forestry community in Missouri is concerned that without commitments to Best Management Practices, professional forest management, and field audits this industry could be a forest mis-management disaster in the making. Yet some in government agencies and academia persist in pushing the rapid development of industrial scale electric generation, (even though it's only 25% efficient, the least efficient use of wood for energy.)

Aside from luck, the only thing standing between our forests and potential disaster are Missouri's new Woody Biomass Best Management Practices (BMPs) developed specifically to deal with the oncoming situation. Going beyond typical state BMPs that aim to protect water quality through smart road and trail construction and streamside caution that every state has, the Missouri biomass BMPS read like an updated "how-to in the woods" primer. The BMPs cover these subjects and more: leaving snags and den trees standing for wildlife; leaving branches, tree tops, and portions of logs on the ground for wildlife and replenishment of soil nutrients and wildlife; recognizing rare or high conservation value forests; and stressing that enough viable trees remain on site after logging to grow. This last component is extremely important if we are not to embark on an accelerated binge of destructive logging that reduces future growing stock.

But the BMPs are voluntary. The only responsible way for these large facilities to operate is a commitment that they require their wood suppliers to follow the BMPs and source only from lands with forest management plans, and conduct field audits to prove it. Otherwise it's a free for all.

The Missouri Forest Resource Advisory Council (MoFRAC) is an organization of agency, academic, industry, consultants, and conservationists that has been meeting for two years. MoFRAC members coming from multiple resource management perspectives are concerned about an intensification of the heavy cutting and forest liquidation spurred by the short-lived operation of high capacity chip mills in the late 90's, with their out of state logging crews and company procurement foresters. This time it could be more widespread and sustained. **MoFRAC has passed a resolution sent to the governor and legislators that any state subsidies for woody biomass developments should be conditioned on use of professionally prepared forest management plans using the BMPs with field audits to verify sustainable forestry practices.**

MoFRAC has also commented to DNR that these requirements should be included in determining eligibility for Missouri's Renewable Energy Credits.

Wood burned for electricity is the least efficient use, converting only 25% of the wood's potential into energy. Does it make sense to commit so much of our wood supply to the least deficient energy use when more efficient technologies like combined heat and power (CHP) exist now, and when far more efficient technologies like bio-oils and fuels loom in the future?

Carbon Neutral? Carbon neutrality is a myth that the woody biomass industry rode in on, and continues to rely on. But burning wood for electricity actually emits more carbon than coal. Woody biomass supporters argue that the carbon would be released anyway when trees die and decompose in the forest, but that takes many years, compared to the immediate carbon release when wood is burned. The atmosphere doesn't care whether the carbon is from forest or coal. Burning wood immediately releases the carbon stored in the wood all at once. And the forest doesn't grow back and sequester equivalent amounts of carbon immediately, so there is a "carbon deficit." Woody biomass advocates claim that because the carbon comes from trees that have grown for, say, 50 to 100 years, compared to the carbon released from burning coal which has been stored for millennium, that makes the carbon "biogenic" and it will be recaptured as trees grow back, therefore it is carbon neutral. The reality is that it will be many years before an equivalent amount of carbon will be sequestered to equal the amount released by combustion. A study done for the state of Massachusetts estimated that when replacing coal with wood it will be at least 20 years before there's a carbon "dividend." Eventually the re-growth will sequester as much if not more carbon than was released during combustion, but this will not happen in a meaningful period of time, given the urgency to reduce carbon emissions. Reluctance by many advocates to realize this fact could be described as "The Emperor's New Clothes Syndrome."

The Massachusetts Study and Changes in Renewable Energy Credits: As a result of public controversy over proposals for two large wood-to-electricity plants in western Massachusetts this state commissioned the Manomet Center for Conservation Sciences in Plymouth to do a study. During the study, and continuing to the present, the state discontinued subsidies for wood-to-energy plants. The study found that estimates of available wood were too high, particularly for urban waste and logging residue, and that the industry would have to go extensively to the forest for trees to fuel their plants. Even there the study concluded that estimates of amounts actually available from the forest (vs pure forest inventory data showing excess non-utilized growth) were higher than what could realistically be obtained. The study is available online:
http://www.mass.gov/Eoeea/docs/doer/renewables/biomass/Manomet_Biomass_Report_Full_LoRez.pdf

Massachusetts' Department of Energy Resources, after study, has moved to rewrite their Renewable Energy Credit regulations so that only 15% of total weight off a cut can go to biomass energy, in order to prevent forest mis-management. They also propose that only projects with a 60% efficiency rate be granted full REC's, with a partial credit for projects at 40%. They also call for a chain of custody type certification to insure that the wood is tracked across the production cycle. This will **encourage production of CHP (combined heat and power,) heat alone, and more efficient biofuels over inefficient electricity.**

The Situation

Perryville: - Liberty Green Biomass Missouri has an air permit from Missouri DNR for its proposed 32 MW facility in Perryville, on the edge of the Ozarks near the Mississippi. This plant would need between 340,000 to 400,000 tons a year, 42 semi-truck loads of chips a day. That's roughly one truckload every 12

minutes in an eight hour day. They have described their feedstock differently at different times: To some they've said it'll come equally from urban wood waste, sawmill residues, and from the forest. At another time they have stressed how they hope to get more than half their supply from urban sources, primarily St Louis.

Most observers agree that in the final analysis they will have to get a significant portion of their feedstock from the forest as these other sources are either already being utilized or not available in the quantities projected. Liberty Green has said it will probably lease expensive new equipment to loggers, contract with foresters, and follow the logging BMPs, including the recommendations for leaving viable stands of trees on site after harvest. We need to hold them to this.

Salem: ProEnergy and Spectrum Consulting are proposing a woody biomass electrical plant for this Ozark town, forecasting a need for 325,000 tons of wood annually to generate 20 megawatts of electricity. This would use 300,000 gallons of water daily. In January 2010 the Missouri Forest Products Association (MFPA) issued a study done with Spectrum that proposed two smaller plants, one each in Ava and Salem, building on an earlier study that used a 2 megawatt plant as a good starting point. MFPA is not participating in the new, expanded 20 megawatt plan for Salem due to objections from some of its members worried about the potential impacts to their wood supply.

Viburnum: The town of Viburnum, only 32 road miles from Salem, has received a $50,000 grant from DNR to explore the feasibility of a woody biomass fueled electrical generation plant.

Columbia: The University of Missouri will be the site of the only project on this list that we know for sure will happen. The University plans to build a new wood-fueled boiler, which will be one of five, the other four being coal fired. This project will generate heat for the campus as well as power for it, and so is more efficient than just generating electricity. (50% vs. 25%.) It will require 100,000 tons, a sizeable amount particularly considering the relative scarcity of forest in the area. M.U. hopes to plant massive acreages of formerly flooded river bottom land to fast growing trees like cottonwood on three year rotations to produce a third of their needed volume, but that will take three years to come on, and the farmers need to be convinced to do it. In the meantime the pressure will be on for trees from the forest, urban waste wood, and mill residues. As of now the University has not formally committed to using the BMPs. All eyes will be on the University as it tries to sustainably source this project's feedstock.

Fort Leonard Wood: The Fort had a request for proposals out in spring 2010. Liberty Green was interested in going in on a proposal for a large facility there with a group out of Rolla.

Springfield's City Utilities last year did a test burn of torrefied wood (chips that have been roasted to increase their energy density) and said at the time they were considering building their own torrefaction facility for 100,000 tons annually. We don't know the status of this now, but its inclusion here is a good example of the proposals that can pop up at any time these days.

MFPA Community Demonstration Study - January 2010

Below is the conclusion of the Mo Forest Products Association's "Woody Biomass Community Demonstration Report," found on page 27 at: http://www.moforest.org/information

"While the basic economics suggest that woody biomass based electricity generation may be viable, significant risks are evident as large scale woody biomass harvesting systems have not been deployed and only limited power generation facilities by smaller communities have been successfully developed in Missouri. These concerns demand that a demonstration of these systems is needed to ensure the goals of both economic and ecological sustainability, before the forest industry

and communities make the major capital commitments required to develop wood-to-energy systems." That study proposed small, community sized plants in the 2-5 MW range. ProEnergy and Spectrum Consulting have disregarded the study's results by proposing a 20MW plant, twice the size of the largest facility envisioned in the study for Salem.
MFPA has dropped out of this project due to objections from some of their members that it will compete for wood.

Creating Micro-Markets: Six Missouri Schools Get Fuels for Schools Grants

The Missouri Department of Conservation (MDC) recently awarded almost $6 million in grants to six public school districts to install wood-fueled heating systems. The grants are funded with stimulus act funds. The volume required for each school might be in the 10-15 semi-truck load a year range, tiny compared to the 42 semi-loads a day of woodchips needed for Liberty Green's electric plant proposed in Perryville. Grant recipients are schools in Ellington, Steelville, Gainesville, Eminence, Perryville, and Mountain View-Birch Tree. **Importantly, and to MDC's credit, if wood is sourced from forests, it must be with professionally prepared management plans that follow the Woody Biomass Best Management Practices and are susceptible to field audits. This should be the standard.**

The Background

A bewildering array of generous public subsidies await the intrepid developer, especially if the project goes online before the end of 2013. These include a 30% of capital expenditure grant from the US Treasury, federal grants and earmarks from the Department's of Energy and Agriculture, rural development grants, federal low and no interest loans for alternative energy, community development block grants, Mo DNR's energy programs, and tax exempt municipal bonds.

Liberty Green Renewables is a new company based in Indiana, created by former big-utility industry executives. A new partner in their venture is the Macquarie Group, an Australian financial /energy conglomerate. They are proposing six woody biomass electric generating plants across the American southeast, all in the 28-32 megawatt range. Two are planned in southern Indiana within 40 miles of each other, and one in Missouri at Perryville.

ProEnergy is an engineering firm based in Sedalia which is working on the facility proposed by Liberty Green in Perryville, Mo. **Spectrum Consulting** is a firm out of Columbia that has been working with the Missouri Forest Products Association on studies and efforts to bring woody biomass developments to fruition. Now Spectrum and ProEnergy have joined forces in a new push for large woody biomass fueled electrical generators. **ProEnergy's vision is to develop as many as five plants across the Ozarks.** Hopefully they will not be able to convince that many communities, but they appear to be having success with Viburnum. The Viburnum and Salem plants would be within 30 miles of each other, so there will be a large overlap in their sourcing circles. (Map showing overlapping sourcing circles available on request.)

(Here's a disconnect: In September two Missouri foresters wrote an Op-Ed piece in the Salem News endorsing the proposed plant there, implying that all the logging would be beneficial thinnings, and that there are commitments from ProEnergy to the BMPs and professional forest management with field audits. Yet within a few weeks of the Op-Ed, at the Ozarks New Energy Conference in Springfield, the spokesman for ProEnergy's Salem project refused to commit to the BMPs.)

This report prepared [18 October, 2010] by Hank Dorst, Mark Twain Forest Watchers.