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FOREST INDUSTRY DEBATES PROS, CONS AND CONTROLS FOR MAKING ELECTRICITY FROM 'WOODY BIOMASS'

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Five new wood-fueled power plants are being considered for construction in Missouri. Two are permitted, and one is under construction. In response, heavy hitters in Missouri's forest industry are calling for actions designed to avoid a scenario some describe as "chip mill two."

Some industry analysts view these plants' arrival as an opportunity, providing a new buyer for otherwise unprofitable "woody biomass," small trees and tree limbs unsuitable for lumber. They're saying much of the state's largely unmanaged private forestland is overcrowded and could use a good thinning. If harvests are done correctly, this new market could represent an opportunity to improve forests, while making money for both landowner and logger.

Opponents are less optimistic. They say that since only an air emission permit is needed to build a new power plant, and since Missouri laws do not regulate timber harvests, and loggers are not licensed, there is nothing to prevent overharvesting. They fear that demand for fuel could strip rather than merely thin the state's native forests, devastating ecosystems and ruining future supplies for existing industries that depend on saw timber.

UNANIMOUS CONCLUSION

Even those who look forward to the new market acknowledge that possibility. A range of speakers at a late October forestry conference in Jefferson City said emphatically and unanimously that Missouri's forest resources cannot sustainably feed too many large wood-burning power plants. The closer the plants are to one another, the greater the concern, because hauling wood fuel further than about 50 miles is not economically feasible, they said.

"Challenges of Producing Energy from Woody Biomass" was the conference title. Speakers and attendees, numbering about 120, included staff with Mo. Dept. of Conservation (MDC), Mo. Department of Natural Resources (DNR), U.S. Forest Service and other agencies, plus forestry professors, professional foresters, industry reps, landowners, and environmentalists. Host was the Missouri Forest Resources Advisory Council (MoFRAC). Topics ranged from the carbon footprint of power plant emissions to possible biomass energy plantations in the river bottoms.

MOVING FORWARD; UNDER DISCUSSION

DNR air program staffer Kendall Hale reported two recently issued permits for woody biomass power plants: a new 32 megawatt plant to be built near Perryville, and a retrofit of an existing coal-fired boiler at the University of Missouri at Columbia (MU), which produces both electricity and steam for heat.

Not permitted yet but moving forward is 15-20 megawatt power plant for the Salem. Mo., area, promoted by Sedalia-based Pro-Energy, said company spokesman Mike Mills.

Projects also have been discussed for Viburnum and Fort Leonard Wood.

In a paper posted on the MoFRAC website, Pioneer Forest manager Terry Cunningham, Salem, said he calculates the fuel needs of the proposed Salem plant would be equivalent to cutting all wood on 7,200 acres per year. He opposes that plant, saying the scale is too large.

South central Missouri counties, particularly Texas, Shannon, and Reynolds, consistently appear on maps showing the heaviest concentrations of available woody biomass. But looking at the big picture, Missouri forests can only meet a small percent of the state's "huge demand" for electricity, said Stephen Shifley, a U.S. Forest Service researcher.

Forest consultant Shelby Jones analyzed biomass availability from Missouri's privately owned forests. Currently, overall annual forest growth is almost four times higher than removals, he said. However, a fraction of that growth would actually be available for fuel, since only about a quarter of landowners have indicated they would allow a biomass harvest on their land, Jones said.

RESOLUTION CALLS FOR SUSTAINABLE FORESTRY PRACTICES

MoFRAC chairman Scott Brundage said the group has passed a resolution which, if implemented, could put some controls on harvests. MoFRAC is asking government agencies to put strings on government grants and tax credits given to wood-burning energy plants. Recipients should only be allowed to buy fuel wood from sellers who employ a professional forester to oversee the harvest, and where forestry "best management practices" (BMPs) were followed during harvest, he said. Further, an independent third party should verify those practices, he said.

Under these guidelines, biomass fuel buyers would not be expected to require BMPs from sellers of sawmill residue or urban wood waste. The woody biomass BMPs are spelled out in a 42-page booklet available from MDC; they were hammered out with input from a wide variety of stakeholders.

Requiring energy plants to purchase fuel only from qualified sellers "would solve a world of problems," Brundage said. About 84 percent of Missouri's forestland is in private property, but no forester is involved in 95 percent of all private timber sales, he said. "The loggers of the state are managing the timber of the state," he said.

CHIP MILLS REVISITED

Brundage recalled "the chip mill fiasco" of the late 1990s. "A thousand-acre clearcut is not pretty viewed from any angle," he said, referring to forest liquidations which supplied the chip mills.

At that time, this Quill reporter covered the chip mill controversy, which pitted industry supporters against environmentalists. As with today's biomass power plants, promoters then touted chip mills as a new market for low-value forest thinnings.

Environmentalists said the voracious appetites of the high capacity chip mills could lead to deforestation. The governor put a moratorium on new chip mills and held hearings. The two chip mills which had set up shop in southeast Missouri closed within a few years, not because of regional factors, but due in part to a world glut on wood chips that led to a collapse in the Asian chip market. However, while the chip mills were in operation, thinning turned out to be difficult and unprofitable, and many owners chose instead to clearcut their timber.

NEAR-UNANIMOUS SUPPORT FOR BMPS

A number of individuals who had been at loggerheads about chip mills over a decade ago were in the same room for the conference, but no one argued. While disagreements remain about whether biomass energy will in the end be a boon or menace, forest stakeholders of all stripes appeared united in calling for government agencies to withhold money from anyone who would not agree to sustainable forestry management practices in the form of BMPs.

The exception was Pro-Energy spokesman Mills, who spoke of ideally using BMPS, but did not commit the company to voluntarily implementing them at the proposed Salem biomass plant.

But Liberty Green, an Indiana-based company developing the biomass burner at Perryville has verbally agreed to use BMPs, said conference speaker Hank Dorst, representing Mark Twain Forest Watchers. MU forestry faculty previously said they expect all eyes to be watching as they supply their new boiler, and they will “set the standard” for doing it right.

OTHER MEASURES DISCUSSED

“I think these BMPs are so important they should be mandatory,” said Cunningham.

Brundage answered. If voluntary measures don’t work, MoFRAC will work with legislators to make BMPs mandatory, he said. Several attending voiced support for forming a multi-agency oversight committee, which among other things could coordinate plant sites.

Steve Jarvis, who directs the Missouri Forest Products Association, told of the new comprehensive Master Logger certification program, which trains loggers in BMPs and good business practices. Graduates sign a code of ethics, their harvests are audited, and they go before a certifying board every two years, he said. To date, eight Missouri loggers have completed the program.

WOOD EFFICIENCY, ATMOSPHERIC CARBON CLAIM EXAMINED

Wood, as a renewable fuel source, is sometimes promoted as being “carbon neutral.” That concept was refuted by Peter Becker, a researcher with the Eastern Ozarks Forestry Council. As far as the atmosphere is concerned, “CO2 is CO2” regardless of whether it is released from wood or fossil fuels, he said. Carbon is not absorbed instantly by plants; regrowth removes it over decades, and excess carbon will build up if more is burned than can be removed. To reduce greenhouse gases, either total emissions must be reduced or terrestrial absorption through plants must be increased, he said.

Becker displayed a chart showing how burning wood actually produces more pollution than burning coal, relative to the amount of electricity produced. For every megawatt-hour of electricity produced, coal puts out 2,200 pounds of carbon dioxide, while wood puts out 2,900 pounds, the chart shows. His figures are based on a 2010 study by the Manomet Center for Conservation Sciences.

This study also reports that some 75 percent of the stored energy in wood can be captured when it is burned to heat a building, Becker said. But when wood is burned in a power plant, only about 25 percent of its energy value is converted to electricity, he said. A facility that combines heat and power, such as the MU boiler, can expect about 50 percent efficiency.

“Investing in wood to make electricity, with only a 25 percent conversion factor, is just wrong-headed,” Becker said.

GARRETT: OPPORTUNITIES FOR FOREST MANAGEMENT AND ENERGY PLANTATIONS

MU forestry professor Gene Garrett expressed optimism in his conference-closing comments. Biomass “perhaps holds the key to future forest management” in Missouri, he said. “We do have an abundance of feedstock,” he said, referring to large volumes that should be thinned “just to get our forests under management.”

Forest landowner education, a long-time goal of Garrett’s, is essential for success, he said. Owners need to understand that “forest management is more than a one-cut deal.”

Garrett acknowledges the potential for the demand to far exceed the supply. “We heard it over and over today,” he said. Thus, the industry must be proactive. “If we don’t police ourselves, somebody’s going to do it,” he said. Garrett favors a certification and verification program, and praised the new Master Logger program.

Critical to success, he said, is strategically positioning the end use facility. “Somebody has to be in charge, or it’s going to get screwed up,” he said, speaking in support of a multi-agency oversight committee.

Garrett said energy plantations will be needed to supplement existing forests to ensure a sustainable energy biomass program. He proposes using “wasteland in the Mississippi and Missouri river floodplains” which he said is “ideally suited” for such plantations. He has been testing species for that purpose, and has identified good potential in cottonwood, willow and silver maple. He is also looking at biomass sorghum, switchgrass and a couple of exotic species, he said.