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Net Benefits of Biomass Power Under Scrutiny

By [TOM ZELLER Jr.](#)

GREENFIELD, Mass. — Matthew Wolfe, an energy developer with plans to turn tree branches and other woody debris into electric power, sees himself as a positive force in the effort to wean his state off of planet-warming fossil fuels.

“It’s way better than [coal](#),” Mr. Wolfe said, “if you look at it over its life cycle.”

Not everyone agrees, as evidenced by lawn signs in this northwestern Massachusetts town reading “Biomass? No Thanks.”

In fact, power generated by burning wood, plants and other organic material, which makes up 50 percent of all renewable energy produced in the United States, according to federal statistics, is facing increased scrutiny and opposition.

That, critics say, is because it is not as climate-friendly as once thought, and the pollution it causes in the short run may outweigh its long-term benefits.

The opposition to biomass power threatens its viability as a renewable energy source when the country is looking to diversify its energy portfolio, urged on by [President Obama](#) in an address to the nation Tuesday. It also underscores the difficult and complex choices state and local governments face in pursuing clean-energy goals.

Biomass proponents say it is a simple and proved renewable technology based on natural

cycles. They acknowledge that burning wood and other organic matter releases carbon dioxide into the atmosphere just as coal does, but point out that trees and plants also absorb the gas. If done carefully, and without overharvesting, they say, the damage to the climate can be offset.

But opponents say achieving that sort of balance is almost impossible, and carbon-absorbing forests will ultimately be destroyed to feed a voracious biomass industry fueled inappropriately by clean-energy subsidies. They also argue that, like any incinerating operation, biomass plants generate all sorts of other pollution, including particulate matter. State and federal regulators are now puzzling over these arguments.

Last month, in outlining its plans to regulate greenhouse gases, the [Environmental Protection Agency](#) declined to exempt emissions from “biogenic” sources like biomass power plants. That dismayed the biomass and forest products industries, which typically describe biomass as “carbon neutral.”

The agency said more deliberation was needed.

Meanwhile, plans for several biomass plants around the country have been dropped because of stiff community opposition.

In March, a \$250 million biomass power project planned for Gretna, Fla., was abandoned after residents complained that it threatened air quality. Two planned plants in Indiana have faced similar grass-roots opposition.

In April, an association of family physicians in North Carolina told state regulators that biomass power plants there, like other plants and factories that pollute the air, could “increase the risk of premature death, asthma, chronic bronchitis and heart disease.”

In Massachusetts, fierce opposition to a handful of projects in the western part of the state, including Mr. Wolfe’s, prompted officials to order a moratorium on new permits last December, and to commission a scientific review of the environmental credentials of biomass power.

That study, [released last week](#), concluded that, at least in Massachusetts, power plants using woody material as fuel would probably prove worse for the climate than existing coal plants over the next several decades. Plants that generate both heat and power, displacing not just coal

but also oil and gas, could yield dividends faster, the report said. But in every case, the study found, much depends on what is burned, how it is burned, how forests are managed and how the industry is regulated.

Ian A. Bowles, the secretary of the Massachusetts Office of Energy and Environmental Affairs, said that biomass power and sustainable forest management were not mutually exclusive. But he also said that the logical conclusion from the study was that biomass plants that generated electricity alone probably should not be eligible for incentives for renewable energy.

“That would represent a significant change in policy,” Mr. Bowles said.

The biomass industry argues that studies like the one in Massachusetts do not make a clear distinction between wood harvested specifically for energy production and the more common, and desirable, practice of burning wood and plant scraps left from agriculture and logging operations.

The Biomass Power Association, a trade group based in Maine, said in a statement last week that it was “not aware of any facilities that use whole trees for energy.”

During a recent visit to an old gravel pit outside of town where he hopes to build his 47-megawatt Pioneer Renewable Energy project, Mr. Wolfe said the plant would be capable of generating heat and power, and would use only woody residues as a feedstock. “It’s really frustrating,” he said. “There’s a tremendous deficit of trust that is really inhibiting things.”

In the United States, biomass power plants burn a variety of feedstocks, including rice hulls in Louisiana and sugar cane residues, called bagasse, in parts of Florida and Hawaii. A vast majority, though, some 90 percent, use woody residue as a feedstock, according to the Biomass Power Association. About 75 percent of biomass electricity comes from the paper and pulp companies, which collect their residues and burn them to generate power for themselves.

But more than 80 operations in 20 states are grid-connected and generate power for sale to local utilities and distribution to residential and commercial customers, a \$1 billion industry, according to the association. The increasing availability of subsidies and tax incentives has put dozens of new projects in the development pipeline.

The problem with all this biomass, critics argue, is that wood can actually churn out more greenhouse gases than coal. New trees might well cancel that out, but they do not grow overnight. That means the low-carbon attributes of biomass are often realized too slowly to be particularly useful for combating [climate change](#).

Supporters of the technology say those limitations can be overcome with tight regulation of what materials are burned and how they are harvested. “The key question is the rate of use,” said Ben Larson of the [Union of Concerned Scientists](#), an environmental group based in Cambridge, Mass., that supports the sensible use of biomass power. “We need to consider which sources are used, and how the land is taken care of over the long haul.”

But critics maintain that “sustainable” biomass power is an oxymoron, and that nowhere near enough residual material exists to feed a large-scale industry. Plant owners, they say, will inevitably be forced to seek out less beneficial fuels, including whole trees harvested from tracts of land that never would have been logged otherwise. Those trees, critics say, would do far more to absorb planet-warming gases if they were simply let alone.

“The fact is, you might get six or seven megawatts of power from residues in Massachusetts,” said Chris Matera, the founder of Massachusetts Forest Watch. “They’re planning on building about 200 megawatts. So it’s a red herring. It’s not about burning waste wood. This is about burning trees.”

Whether or not that is true, biomass power is also coming under attack simply for the ordinary air pollution it produces. Web sites like [No Biomass Burn](#), based in the Pacific Northwest, liken biomass emissions to cigarette smoke. Duff Badgley, the coordinator of the site, says a proposed plant in Mason County, Washington, would “rain toxic pollutants” on residents there. And the American Lung Association has asked Congress to exclude subsidies for biomass from any new energy bill, citing potentially “severe impacts” on health.

Nathaniel Greene, the director of renewable energy policy for the [Natural Resources Defense Council](#), said that while such concerns were not unfounded, air pollution could be controlled. “It involves technology that we’re really good at,” Mr. Greene said. For opponents like Mr. Matera, the tradeoffs are not worth it.

“We’ve got huge problems,” Mr. Matera said. “And there’s no easy answer. But biomass doesn’t do it. It’s a false solution that has enormous impacts.”

Mr. Wolfe says that is shortsighted. **Wind power** and **solar power** are not ready to scale up technologically and economically, he said, particularly in this corner of Massachusetts. Biomass, by contrast, is proven and available, and while it is far from perfect, he argued, it can play a small part in reducing reliance on fossil fuels.

“Is it carbon-neutral? Is it low-carbon? There’s some variety of opinion,” Mr. Wolfe said. “But that’s missing the forest for the trees. The question I ask is, What’s the alternative?”