

Manomet: Time to Turn Up the Heat on Woody Biomass

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At the June 2010 joint meeting of the Northeastern Area Association of State Foresters' (NAASF's) Cooperative Forest Management and Forest Utilization committees, I attended a presentation on the recently released "Biomass Sustainability and Carbon Policy Study." Produced by the Manomet Center for Conservation Sciences

(2010) for the Massachusetts Department of Energy Resources, the study was commissioned following intense public pressure in that state over the sustainability and carbon neutrality of using woody biomass for energy. The presenter said the study had turned his views on biomass "on their head," but as I listened to his presentation and later read the report, I sensed that, while a landmark study for biomass, the Manomet report actually shouldn't contain that many surprises. If anything, the study's conclusions give a green light to biomass projects, just not the ones that traditionally get attention.

First the bad news: the study concludes that biomass is unfavorable compared with coal for electricity generation. Biomass releases more carbon dioxide per Btu than coal, and as much as 90 years are required for forest regrowth to make up this "carbon debt" as the Manomet report terms it. In addition, Manomet's study concludes that, at current prices, there is inadequate fuel supply in Massachusetts to sustainably support even one biomass power plant. However, these conclusions should not shock the forestry community; the US Forest Service Forest Products Laboratory (2004) noted that biomass-powered electricity-generating facilities are inefficient compared with biomass technologies that generate heat and combined heat and power (CHP).

That leads to the good news: according to the Manomet study, biomass technologies for heat and CHP compare favorably with fossil fuels and can be sustained at current forest productivity levels. In contrast to the long carbon payback associated with using biomass to generate electricity, the Manomet study concludes that when biomass replaces fuel oil for heating or CHP, the carbon debt can be as short as 5 years. After that, regrowth of biomass provides "carbon dividends" compared with oil. Furthermore, although the study found that Massachusetts could not sustainably supply a power plant at current biomass prices, it could sustainably fuel sixteen 50 MMBTU/hr facilities

utilizing biomass for heating purposes. Particularly noteworthy is the study's statement that providing biomass at this level would not increase the number of harvested acres in the state, and the total annual volume harvested would be less than half the annual net growth on the state's private forests.

Unfortunately, the same uses that the Manomet study concludes are a good fit for biomass seem to be precisely the uses that largely get ignored. Reporting on Manomet's study, a New York Times article (Zeller 2010) dealt almost exclusively with power plants (it briefly mentioned CHP facilities). The Associated Press ran the headline "Mass. Study: Wood Power Worse Than Coal" and addressed only the Manomet report's conclusions regarding electricity production (LeBlanc 2010). None of the words "heat," "thermal," or "CHP," even appeared in the article. These articles tragically lead the public to equate biomass with large power plants, when in reality there are numerous examples in the U.S. of small-scale institutions using established biomass heating and CHP technology cleanly, sustainably and cost effectively. Vermont is a prime example of this success, ironically on Massachusetts' doorstep: as of 2007, thirty Vermont public schools heated with wood, saving the state's taxpayers over \$760,000 in energy costs in a single heating season (Vermont Division of Forestry 2007).

I believe Manomet's conclusions are spot on: biomass is inefficient for big electricity projects. However, they are also spot on in that biomass is renewable, sustainable, and more carbon friendly for heating and CHP. Based on the Manomet report, Massachusetts is planning on revising its renewable energy subsidies for biomass. Hopefully when they do, they will consider all the conclusions of the report and not just those featured in the popular press.

Even if Manomet's science favors biomass, the debate is perhaps more public opinion than science. That public opinion role, however, is where we as resource managers are pivotal. When we answer questions about biomass, we should stick to the science and address criticisms openly and honestly. Biomass is not truly "carbon neutral," and we should stop advancing that claim. We should note instead that biomass provides carbon dividends when it replaces fossil fuels for heating and CHP, and that it can sustainably provide that energy when implemented at institutional levels. We must further clearly distinguish between "renewable" and "carbon neutral." They are not synonyms. Nuclear power may be carbon neutral, but it is not renewable.

By contrast, woody biomass burning may not be carbon neutral, but it is renewable. Fossil fuels are neither.

If biomass is to be part of renewable energy policies, we as resource managers have two clear tasks. First, we must prove to the public that biomass is renewable and sustainable. Fortunately, the Manomet report clearly demonstrates biomass' renewability when used judiciously. Second, we must shift the focus of biomass use in the eyes of everyone, including the industry itself, away from power plants and toward heating and CHP. I heard at the NAASF meeting whispers that the Manomet report would "change everything" on biomass. I believe it will, but what that change will look like depends on our ability to spread the science of woody biomass utilization and the role it plays in a better energy future.

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