

Wednesday, December 01, 2010

Comments: EPA Docket No. EPA-HQ-OAR-2010-0841-0001, PSD and Title V Permitting Guidance For Greenhouse Gases

From: Mary S. Booth, Massachusetts Environmental Energy Alliance

Please accept the following comments on EPA's guidance for the tailoring rule as it regards biomass power. I write on behalf of a contingent of citizens in Massachusetts and other states who are dismayed by the impacts that large-scale biomass power presents to forests, air quality, and carbon emissions.

Having studied the net effects of biomass power on carbon emissions extensively, I well appreciate the bind EPA is in as the Agency attempts to implement the tailoring rule for biogenic emissions. Characterizing the net carbon impacts of biomass power is not straightforward, yet EPA must be careful to not create a carbon accounting system that is too overly complicated and open to attack.

Leaving aside purpose-grown energy crops, there are generally two main reasons that biomass fuels are represented as producing “carbon neutral” energy:

First, because the plant material utilized for biomass fuel can grow back, net carbon emissions from combustion are seen as negligible, since the carbon released by burning is later sequestered into new growth.

- However, this assumption does not reduce emissions in a timeframe meaningful to addressing climate change. EPA is by now familiar with the outcome of the Manomet Study, in Massachusetts. The study concluded that when trees are cut to provide biomass fuel, the net greenhouse gas emissions from utility-scale biomass power are greater than from fossil fuels, even after decades of forest regrowth. (The assumptions behind this study were quite optimized and therefore the true greenhouse gas impact of burning woody biomass is probably even greater than the study concluded. I am including a whitepaper I authored for the Clean Air Task Force as an attachment to this letter, which explains the approach used by Manomet and the effect of the study's assumptions.)

Second, biomass fuel is often portrayed as being derived from “waste” materials, particularly the low-diameter unmerchantable tops and branches left after commercial timber harvesting, as well as mill residues generated at sawmills and other wood-working operations. Since this material is expected to decay eventually, burning it in a power plant is considered to emit no more carbon than would be emitted if it were left to decompose onsite.

- The assumption that burning waste materials does not increase emissions, however, is only justified when the fuel represents “additional” carbon¹ that if it were not burned, honestly would just decompose. Otherwise, using material that had other uses (such as pulpwood chips, or firewood, or commercial timber) for biomass fuel simply displaces that use and increases harvesting elsewhere. Thus, displacing fossil fueled power with biomass facilities that are fueled with waste wood appropriated from other end-uses actually *increases* carbon emissions, because carbon emissions from burning wood are higher than carbon emissions from fossil fuels, per unit useful energy.

The State of Massachusetts took the results of the Manomet Study seriously enough to issue new regulations that will restrict the receipt of renewable energy credits to facilities that can demonstrate that net lifecycle emissions over 20 years are no greater than 50% of emissions from natural gas. Massachusetts stands alone

¹ Searchinger, T., et al. 2009. Fixing a critical climate accounting error. *Science* 326: 527 - 528.

among the states as having made a serious effort to grapple with the question of net carbon emissions from biomass. The state has formulated a biomass policy that is largely science based.

However, no other state has even begun to consider the biomass problem - instead, we see rampant promotion of biomass power across the country. Maine provides one example. On paper, greenhouse gas emissions from Maine's electricity generation sector are relatively low, because biomass emissions are not counted, and (according to EIA) the state generates about 23 percent of its electricity from hydropower, which has no stack emissions. The state gets another 41 percent of its power from natural gas, which has the lowest emissions per unit energy of any fossil fuel. Thus Maine's reported carbon dioxide emissions from the power sector were 5.57 million tons for 2007. However, if stack emissions from biomass power generation were counted, it would more than double total emissions from the power sector, contributing an *additional* 7.9 million tons of carbon dioxide each year. How much of this carbon is emitted from "waste" sources that would emit carbon anyway? No one knows, but it is significant that the state's forest cutting practices allow clear cuts of up to 250 acres for "forest products," the definition of which includes biomass fuel.

Or take for example Ohio. The Public Utilities Commission there has approved over 2,000 MW of biomass power in the state, most of it to be generated by co-firing biomass in coal plants. The combined wood demand for this biomass power generation will be 20 to 25 million tons of trees a year, or the equivalent of clearcutting 230,000 acres of Ohio forests per year. Is anyone seriously going to claim that this wood will come from "waste"?

These examples show how states have taken the idea, until recently endorsed by EPA itself, that biomass is "carbon neutral", and promoted the development of large scale plants all over the country. In fact, according to industry sources, there are proposals for about 6,000 MW of new wood-burning biomass capacity currently "in the pipeline" around the country, representing a demand for about 71 million green tons of wood per year. To this may be added the European demand for wood, which industry sources say will be 72 million green tons per year by 2014, with much of that expected to come from North America.

It is thus extremely worrisome to see EPA state in its guidance,

"In particular, a variety of federal and state policies have recognized that some types of biomass can be part of a national strategy to reduce dependence on fossil fuels and to reduce emissions of GHGs... EPA believes that it is appropriate for permitting authorities to account for both existing federal and state policies and their underlying objectives in evaluating the environmental, energy and economic benefits of biomass fuel."

In fact, existing state policies promoting biomass power are based on a now-discredited idea that biomass is carbon neutral. Truly, *nothing* could be less "appropriate" than letting this outmoded convention inform future policy.

It is also concerning that EPA appears to think that "trends in carbon stocks at different spatial scales (national, regional, state)" are relevant to the calculation of net carbon emissions from biomass. The magnitude of stocks is actually not relevant to the calculation of net emissions from biomass power - instead, what matters is the rate of carbon being moved into the atmosphere, versus the rate of carbon being taken out of the atmosphere.

EPA must realize that the amount of biomass power that can be supported with existing "waste" wood sources is really trivial. Forest Service inventory data say there's about 100 million green tons of "logging residues" generated in the US each year. Assuming half that were available for fuel (this is highly optimistic, since we want to leave a major portion of those materials in the forest to maintain soil fertility, and much of the material is not accessible, anyway), this would provide 50 million green tons. This amount of wood could fuel 3,800 – 4,000 MW of biomass power capacity at direct-fired plants, or just over 5,000 MW if the material

were co-fired in coal plants. In 2008, the US generated 1,986,801,247 MWh of power from coal. Thus, using all available logging residues in the whole county and co-firing this material in coal plants would replace about 2% of the country's coal use. Burning this material in direct-fired plants would generate less energy, because the efficiency of these plants is dramatically lower than the average efficiency of the country's coal plants.

I am not sure if EPA is proposing to regulate stack emissions of carbon dioxide from biomass power plants based on what those emissions will be in the future, assuming some of that carbon is taken up and sequestered into new plant growth. Several questions arise. First, what gives the Clean Air Act the authority to regulate net emissions, taking into account future carbon sequestration, instead of emissions that occur at the stack? We do not regulate any other pollutant that way – for instance, we don't regulate NO₂ based on its future concentration once some of that nitrogen has reacted to form other compounds in the atmosphere, or perhaps fallen out as atmospheric deposition. So where does the authority lie for the Clean Air Act to regulate future net carbon emissions?

I also wonder, if EPA is planning on regulating net emissions based on future carbon sequestration, how that carbon sequestration can be assured. Facilities that use biomass fuel don't generally get it from lands that they themselves own or control, so how can they be confident that future carbon sequestration will occur? Why do they get to claim the benefit of the carbon sequestered in those forests?

Given that the Manomet study demonstrated that net carbon emissions (measured as stack emissions minus forest carbon sequestration) are lower from fossil fuels than biomass, it actually seems about as reasonable for a natural gas plant to claim credit for future carbon sequestration in those same forests, based on the argument that as a gas plant, they will *not* be cutting forests, and instead just allowing them to grow. When we grant credit for carbon offsets through forest growth, don't we put in place provisions that ensure forests will be managed in a way to ensure continuing carbon sequestration? Shouldn't biomass plants be required to do the same, if they are going to take credit for "reduced" carbon emissions as reckoned following forest carbon sequestration?

These are just some of the questions that I hope EPA is contemplating. The agency should not discount the importance of getting this policy right. Getting it wrong will threaten forests and increase carbon emissions. Getting it right will assure the continued integrity of the Clean Air Act, of which we are all justly proud.

Thank you for the opportunity to comment,

Mary S. Booth