EPA Scientific Advisory Board Biogenic Carbon Emissions Panel

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Re: Comments on *5-9-12 DELIBERATIVE DRAFT Report of the EPA Biogenic Carbon Emissions Panel*

May 22, 2012

Dear EPA Scientific Advisory Board Biogenic Carbon Emissions Panel:

Thank you for the opportunity to comment on the Deliberative Draft Report of the Biogenic Carbon Emissions Panel, dated May 9, 2012.

We commend the panel for continuing to emphasize key points made in previous drafts. We focus here on suggesting improvements to several new passages. We encourage the Panel to elaborate further on trade-offs related to emissions timing, to simplify the modeling suggested for roundwood accounting, and to improve the proposed certification alternative.

Positive elements retained from previous drafts:

The May 9, 2012 Draft Report retains clear statements that:

- not all biogenic energy sources can be assumed "carbon neutral" (p. 2);
- net emissions must be assessed by comparing the biomass-use scenario with a non-use anticipated baseline scenario (p. 3);
- net emissions (and the factors to balance stack emissions against land-based reabsorption) must be linked to specific regulated facilities (pp. 3, 6);
- accounting for different categories of feedstocks, particularly forest residues and wastes, should be based on the alternative fates of those materials (p. 4); and
- the time path of emissions and reabsorption matters (pp. 5-6).

Significant new elements that would benefit from further clarification:

Time-frame

The discussion on short-term vs. long-term effects and the need to determine explicit trade-offs (pp. 5-6 in Executive Summary and pp. 10-14) is helpful. In particular, estimating damages due to climate changes and using a social rate of time preference will be helpful to EPA in setting appropriate time horizons. However, the text overall appears biased toward ignoring effects that occur within a 100-year period. For instance, on p. 14 the text states *"The GTPbio value would continue to decline for time horizons beyond 100 years since there is no net temperature increase after 100 years!"* [emphasis in original] and *"If a high value is placed on the longer term temperature impact, then the effect of the initial biogenic emission would be near zero"*. On p. 27, conclusions based on a very limited case of peak warming and identical cumulative emissions are stated as a more general principle that does not follow from the science: "*Scientific understanding of the time scale over which the climate system responds to cumulative emissions implies that the carbon release caused by harvesting and combusting biomass at stationary sources is a serious problem if carbon storage, on average, is reduced over long periods of time. So long as rates of regrowth are sufficient to compensate for carbon losses from harvesting over the long run, the climate system is less sensitive to the imbalance in the carbon cycle that might occur in the short run from harvesting of biomass for bioenergy facilities."*

In the interest of balanced treatment of time factors, the SAB should include reasons for concern about shorter-term effects. The one study cited in favor of ignoring impacts that are offset within 100 years (Allen et al. 2009) uses a ***single climate metric*** – peak warming – and its scenarios all assume the ***same cumulative emissions*** burden. In general, greater short-term emissions reductions imply greater cumulative reductions assuming the mitigation effort continues to ramp up over time. Other metrics than peak warming may also be important. Kirschbaum (2004, 2006, cited on p. 14) suggests several alternative metrics that the SAB has failed to explain effectively. The ***rate*** of warming affects the ability of human and natural systems to adapt. Emissions over the next 20 years, even when offset by year 100, could cause a much more rapid approach to a given peak temperature. Similarly, the ***date*** at which a given temperature threshold is reached will affect the timing at which we cross certain climate thresholds (e.g. melting of ice and permafrost), and presumably welfare will be increased by delaying these events even when their occurrence is inevitable.

It would also be helpful to note that the Cherubini et al. (2011, 2012) modeling assumes unchanged parameters for the Bern equations based on current (or recent past) conditions. Feedbacks due to increased atmospheric GHG concentrations are likely to change these parameters significantly on a 100-year time-frame, or even to invalidate the Bern formulation. If EPA chooses to use this metric as an accounting tool, climate scientists would need to advise on the best models to capture carbon dynamics over time.

Bioeconomic Modeling and Anticipatory Sequestration

Text on pp. 33-36 elaborates on a theme introduced in the previous draft – the importance of capturing increases in forest carbon due to changes in land management incentivized by biomass markets. By nature, this type of modeling involves guess-timates about future human behavior and is even less certain than forest growth modeling. It also applies at a large regional, national, or even global scale

that reintroduces problems with additionality and linking effects to a particular facility, that the SAB has rightly emphasized as weaknesses in the initial EPA framework.

The effects at issue here are likely to be small, for two reasons:

1) In most cases, forest conversion in favor of so-called "highest and best use" is so much more lucrative than growing timber that adding a marginal market for low-value wood is highly unlikely to influence rates of land conversion.
2) Most biomass sourced from plantations will be a byproduct of planting for sawtimber with much higher values. Although a market for pre-commercial thinnings will marginally improve the economics of tree planting, again the low value of the material will result in very little overall management change.

Because of the high costs of the recommended bioeconomic modeling in terms of increased uncertainty and complexity, and the low benefits in terms of the small effects it might capture, we recommend a different approach to capturing "anticipatory sequestration".

General land management changes in response to developing biomass markets across a region may be captured in leakage calculations. Both positive and negative leakage may be estimated regionally, in order to develop generic leakage factors that are checked against real data over time. As pointed out elsewhere in the report, leakage is difficult to estimate, as it may involve market responses in distant countries. On-going monitoring would be important to check assumptions against reality, and to tease out the role of biomass markets in observed landscape changes.

Land management changes made specifically to supply a regulated facility may be treated as a special case of the short-rotation woody crops feedstock category. If a facility has a long-term supply contract that includes a pre-purchase down-payment on future supply from an energy-wood plantation established after the facility is announced, that facility may be permitted to count sequestration on those lands (above an appropriate business-as-usual baseline) against current emissions. If the wood once harvested is not actually delivered to that facility, a correction could be made to eliminate the previous credit. Such arrangements would likely apply only in regions with relatively short-rotation woody energy crops, as advance supply contracts of 10 or more years would be unlikely.

<u>Certification Alternative</u>

The May draft elaborates on how a certification alternative might work, and improves the description of carbon accounting mechanisms that might be used. The draft mentions SFI by name. FSC has a better chain-of-custody mechanism, which would be essential in a carbon accounting system, and should also be mentioned by name.

Certification systems face the same challenges that EPA and the SAB face in defining baselines, spatial extent, time-frames, leakage, etc. The offset protocols mentioned in the draft all use different approaches with different degrees of rigor. EPA is obligated to treat all regulated sources equitably, so EPA would need to develop a consistent accounting protocol for any and all certification systems to use. Given this requirement, it would be much simpler for EPA to enforce its own carbon accounting standard. Certifiers might play a role in helping facilities to track chain-of-custody for feedstock sources by category, if generic BAF factors are used. The text mentions the possibility of assigning a BAF of 0 to fuels from certified sources and 1 to other feedstocks. There is no scientifically valid reason for such an approach. Certification systems would merely do the accounting to determine how much and how fast

forests reabsorb combustion emissions. They would very rarely if ever conclude that net emissions were zero, no matter how responsible the management of source lands.

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Thank you for the opportunity to comment on the on-going SAB process and for supporting in-depth discussion and review of these important issues.

Sincerely,

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