

August 18, 2012

EPA Science Advisory Board
c/o Dr. Angela Nugent
Designated Federal Officer
via email to nugent.angela@epa.gov

Re: Comments on SAB Review (7-26-12 Draft) of EPA's Accounting Framework for Biogenic CO₂ Emissions from Stationary Sources (September 2011)

Dear EPA Science Advisory Board:

We wish to commend and thank the members of your Biogenic Carbon Emissions Panel for their efforts to improve the EPA's Accounting Framework. Importantly, the Panel affirmed that biogenic emissions are not inherently carbon neutral, and that their impact *on the atmosphere* must be estimated. The Panel rightly concluded that estimating the additionality of carbon sequestration under a particular bioenergy scenario is essential, and that this requires an anticipated baseline approach.

We believe, however, that a key element of the draft report, namely the appropriate time frame for assessing the environmental impact of carbon emissions, requires further consideration before submission to the EPA Administrator.

The Panel's reports have sometimes incompletely or inaccurately summarized findings concerning the significance of the timing of biogenic emissions and their reabsorption by vegetation on climate response. Where we quote the panel, reference is to its 7-26-12 Draft, henceforth Report.

Another climate modeling study has demonstrated that peak warming in response to greenhouse gas emissions is primarily sensitive to cumulative greenhouse gas emissions over a period of roughly 100 years, and, so long as cumulative emissions are held constant, is relatively insensitive to the emissions pathway within that time frame (Allen et al. 2009). What this means is that [for] an intervention in forests or farming that results in either an increase or decrease in storage of carbon or emissions reductions ... [and that] last[s] less than 100 years, harvesting of biomass for bioenergy resulting in release of carbon dioxide will have a relatively small effect on peak warming (p. 16, emphasis added).

The caveat that cumulative emissions be held constant is critical because the study by Allen et al. (2009a) held emissions to one trillion tonnes of carbon to avoid global warming exceeding 2°C. This was meant to prevent potential climate destabilization, which would render their 100-year time frame irrelevant. Thus, like the study by Meinshausen et al. (2009), that of Allen et al. (2009a) had an implicit global warming limit. Nevertheless, the Report created an appearance of disagreement between these studies by erroneously stating that “[t]he importance of the timing of emissions depends on whether one uses a global warming limit or a cumulative emissions limit” (p. 16).

The authors of these two studies jointly elaborated in Allen et al. (2009b) that the small size of the cumulative emissions budget requires that global CO₂ emissions peak around or before 2020 so that limiting global warming to 2°C remains technologically and economically feasible. Other analyses favor more drastic emission reduction pathways and indicate that even 2°C global warming above the preindustrial level likely constitutes dangerous anthropogenic interference (UCS 2007, Mann 2009, Smith et al. 2009, Anderson and Bows 2011). Thus, carbon debts incurred by bioenergy production should

be repaid within a few decades, not a century, to avoid potential climatic tipping points and other disastrous outcomes.

The above four studies also provide critical, but missing context for evaluating other studies cited in the Report. Although both stand scale (Walker et al. 2010, Cherubini et al. 2012) and landscape scale (Mitchell et al. 2012) studies give broadly consistent results over 20-50 year time frames, the Report (p. 8, lines 7-9) wrongly implies that these spatial scales lead to different results. The Report should instead emphasize that the results of both approaches indicate that during the crucial next few decades, carbon emissions from some biomass fuels would equal or exceed those from replaced fossil fuels.

Although declaring that “[t]here is no scientifically correct answer when choosing a time horizon” (p. 17), the Report nevertheless consistently favors a century-level time frame, without adequate justification (e.g., Appendix B).

This is reinforced by unsubstantiated conclusions: “*So long as rates of growth across the landscape 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*” (p. 29-30). No evidence was cited to support the claim of climate insensitivity to short-term carbon imbalances.

The Report further promotes a century time frame by uncritically referencing IPCC guidelines: “*A current practice for international reporting under IPCC guidelines and international treaty negotiations is to use greenhouse gas emissions and sink values that represent the cumulative radiative forcing for greenhouse gases over a 100 year period with uniform weighting over 100 years.*” (p. B-3). The IPCC guidelines have been superseded scientifically by subsequent assessments of appropriate emissions time frames (Anderson and Bows 2012).

Even if the Panel believes that uncertainty concerning the requisite conditions to trigger climatic and ecological tipping points precludes selection of a decadal time frame, its report should recommend that the EPA explicitly consider this issue from a risk assessment perspective (e.g., Smith et al. 2009) when revising its Accounting Framework. DOT (2009) comprehensively reviewed studies of climatic tipping points, while CCSP (2009) summarized evidence that ecological tipping points have already occurred.

The Report correctly acknowledges the relevance of time scales to establishing a carbon accounting system (p. 15), but it fails to incorporate expert knowledge and scientific evidence that indicates the necessity for rapid and substantial emissions reductions which are incompatible with some uses of bioenergy.

We believe that this deficiency must be addressed before the Report is approved for submission to the EPA Administrator.

Sincerely,

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