

MEMORANDUM

April 5, 2017

FROM: Madhu Khanna, Chair /s/
Biogenic Carbon Emissions Panel

TO: William Schlesinger, Steve Hamburg, Robert Johnston and Peter Thorne

SUBJECT: Revised draft of Panel's report

Attached please find a new draft of our biogenic carbon emissions report for your review. Since our teleconference on October 12, 2016, we've been working to address comments of the SAB reviewers and we made revisions as follows.

- We have clarified that it is important to distinguish science from policy, and BAFs should be science-based and unaffected by policy goals. Climate policy goals should instead be reflected in the stringency of policies (e.g., emissions caps, emissions standards, carbon taxes), and BAFs should be immune to changes in administrations and agendas.
- We have clarified that computing BAFs is a scientific carbon accounting exercise and science provides guidance for identifying capital T, the time when expected changes in carbon stocks (between the reference and the policy scenario) due to increased demand for bioenergy stabilize (or reach a new steady state equilibrium). Furthermore, choosing a time horizon shorter than that supported by science (T) has implications for truncating expected carbon stock changes and could under- or overestimate the value of BAF compared to the level at time T. Additionally, we note (as before) that considering cumulative changes in emissions through T is appropriate as climate science suggests that it is changes in cumulative emissions that affect global mean temperature.
- We have addressed confusion about T and whether or not it should be 100-years by clearly noting that T should be determined with modeling analysis as described above and that we are not recommending a particular value for T. To avoid confusion, we no longer mention 100 years in the text and in certain figures.
- We have emphasized that the BAF will differ over time. It could be increasing or decreasing and $BAF_{\Sigma T}$ will be different from BAF_T .

Upon further discussions with Mark Harmon who did a lot of additional analysis, we added a couple of additional points as follows.

- We have defined T as the time where *system-wide* differences in carbon stocks stabilize. That horizon T should be applied for all feedstocks in a region. We have defined this time horizon T as the point where nearly all (>95%) of the changes in carbon stocks occur to acknowledge the practical reality of most of the changes.

- We have added a brief discussion on spatial scale of analysis and appropriateness of the landscape view (supported by our recommendation for an integrated modeling approach to determine the BAF).
- Based on simulations conducted by Mark and shown in a new Appendix E we have also stated the BAF appears to be robust to spatial scale and initial conditions since it is the ratio of the *difference* in stocks in two different scenarios to Potential Gross Emissions.
- Appendix E illustrates the relationship between stand and landscape levels and provides an important insight that the BAF_T and $BAF_{\Sigma T}$ are insensitive to trends that affect both the policy and reference scenarios in the same manner. Mark's analysis also illustrated the time trend in the estimate of BAF obtained using a landscape scale is very similar to that obtained using a stand level approach. It suggests that this trend is also relatively invariant to whether the biomass is obtained from old growth forests or a forest managed as a plantation.

We made numerous other edits in response to SAB comments (which may be found posted at [https://yosemite.epa.gov/sab/sabproduct.nsf/32ABE92AC616370185257F800076802A/\\$File/QR+members+comments+bio+emissions+032816.pdf](https://yosemite.epa.gov/sab/sabproduct.nsf/32ABE92AC616370185257F800076802A/$File/QR+members+comments+bio+emissions+032816.pdf)) however, given the difficulty of reading a track changes file, we did not add margin comments to explain each change. I have attached a clean version and a “track changes” version made by merging our latest file with the file discussed in our last teleconference.

My apologies for the long delay in getting these revisions to you. I would be happy to participate in subgroup calls about these revisions. Thank you for your attention to this.