

Summary of Chartered SAB Requested Revisions to the Draft (2-8-16) SAB Review of Framework for Assessing Biogenic CO₂ Emissions from Stationary Sources (2014)

Members of the Chartered SAB discussed the revisions needed for the Draft (2-8-16) SAB Review of Framework for Assessing Biogenic CO₂ Emissions from Stationary Sources (2014) (hereafter called the draft report). During the quality review the SAB acknowledged the Biogenic Carbon Emission Panel was presented with a very challenging topic and a charge that addressed narrow technical issues. Members noted that the panel's review was ambitious and found that recommendations in the report extend beyond the charge. The SAB identified revisions to the draft report in order to clarify the Panel's recommendations and in some cases to reframe them to ensure they are not policy prescriptive. The major revisions are summarized below and supplement the written comments provided for the quality review on March 31 and April 1, 2016.

- SAB members agreed with the Panel that the lack of a policy context made it difficult for the Panel to fully evaluate the proposed 2014 Framework except in a general way. The draft report may be understating how the lack of a policy context limits the SAB's ability to provide policy-relevant scientific evaluations. The draft report should explain the complexity of the underlying issues that were considered in order to provide clarity and a foundation for the general recommendations that put forth a scientific basis for policy decision-making moving forward (e.g., the use of stock versus flux and the importance of temporal context to determining the climatic impacts of using woody biomass).
- Among the challenges discussed by the SAB is that BAFs and time horizons may be selected according to multiple criteria, reflecting different outcomes that can be affected directly or indirectly by the BAF. These include atmospheric GHG concentrations, climate forcing potential, implications for the harvesting of forests to provide biomass, and others. Although EPA's charge to the Panel emphasized GHG concentrations, many on the SAB expressed concerns regarding other relevant issues related to the BAF timeline, such as impacts on climate forcing (particularly over short time horizons) and forest harvest decisions. A BAF or timeline optimized to meet one criterion will (or may) be suboptimal for others. This issue should be more clearly addressed in the draft report, along with implications for the recommended BAF calculations and timelines (if indeed a timeline is recommended – see note below).
- Members expressed concern regarding the proposal to specify a timeframe for the emission horizon. They found that there is variation in the BAF at points along the 100-year timeline and the draft report should not be prescriptive relative to time. Members suggested that graphs from the appendix should be brought forward into the body of the report to illustrate the variation in the BAF over different time horizons. Members noted that the proposed stock-based approach to BAFs is valid for any chosen time horizon, and some argued that a suitable time frame could not be specified without additional details on the policy context. The relevant emission timeframes are dependent on the timeframe required for specific policies, and the justification for any specific timeframe should include a discussion of the positive and negative impacts on the climate for the selected timeframe and if relevant other timeframes. Members identified references (e.g., Davis SJ et al. 2010) that examine the climate impacts as close in as 10 years rather than the 100-year timeline proposed in the report. Members noted that the draft report could compare net greenhouse gas emission/ net radiative forcing associated with different timeframes

(i.e., 30 to 50 years) to better illustrate the importance of policy makers selecting a timeframe, and thus weighing the temporal tradeoffs.

- There needs to be more discussion on how the models were selected and the advantages and disadvantages of the selected and other approaches to modeling the alternative case. The positive and negative aspects of the assumptions and decision points need to be more clearly articulated. The draft report should provide sufficient information for the agency to evaluate a range of options relevant to a various policy decisions and the implications with regard to using simpler or more complex models. The draft report should also show how the assumptions impact the use of the BAF. One member suggested that the draft report should highlight the boundary conditions of the framework and identify any limitations to its use beyond the range of conditions for which it has been validated. That discussion should identify the important issues for consideration and cite the implications of their use. One member provided Buchholz et al. (2014) as a reference to the limited literature in the field and the observed complications with models actually deployed to make similar predictions.
- The draft report makes assumptions that net CO₂ emissions are based on actively managed forestry practices, yet much of the timberlands that might produce biomass are privately owned and under limited to no active management. The report should specify which silvicultural treatments and associated biomass feedstocks are the basis for assumptions and approaches discussed and how management differences might impact those assumptions. The draft report also makes assumptions regarding the type of forestlands that will provide feedstock and should be very clear about those assumptions.
- SAB members expressed concern over the use of minimizing the long-term maximum temperature change as the basis for the time horizon recommendations, when that is only one potential criteria for US policy. Members noted that making this the exclusive frame is outside the charge to the Panel and asked that this be removed or expanded to a host of potential policy frameworks.
- There needs to be more explicit discussion of how the use of forest biomass effects net greenhouse gas emissions over time. There is discussion in the draft report appendixes and the EPA Framework (2014) document discussion of what the 2014 Framework covers in the draft report. Members found that bringing that discussion forward, from both the EPA Framework and the draft report appendixes, may help clarify the draft report.
- The Board expressed concern regarding the economic assumptions used to estimate biomass use. They noted that there are already plants in place that plan to use woody biomass for electricity generation and requested additional discussion and references to support the assumptions made.
- It would be helpful to clarify why approaches such as the social cost of carbon were not used as the basis for selecting BAFs and timelines, including relevant citations as appropriate.

Reference:

Buchholz T, Prisley S, Marland G, Canham C, Sampson N. 2014 Uncertainty in projecting greenhouse gas emissions from bioenergy. *Nature Climate Change*, 4, 1045–1047.

Davis SJ, Caldeira K, Matthews HD. 2010. Future CO₂ emissions and climate change from existing energy infrastructure. *Science*. Sep 10;329(5997):1330-3. doi: 10.1126/science.1188566. PMID: 20829483