

March 23, 2016

Dr. Peter Thorne, Chair
Chartered Science Advisory Board

Dr. Holly Stallworth, EPA Designated Federal Officer
Biogenic Carbon Emissions Panel

Dr. Thomas Carpenter, EPA Designated Federal Officer
Chartered Science Advisory Board

Dear Dr. Thorne, Dr. Stallworth, and Dr. Carpenter,

Thank you for the opportunity to comment on the draft report of the Science Advisory Board's Biogenic Carbon Emissions Panel (the Panel) on an accounting framework for biogenic carbon dioxide emissions. We appreciate the role of the Chartered Science Advisory Board (Chartered SAB) in conducting a quality review of the Panel's draft report before it is transmitted to the EPA Administrator.

This letter raises our serious concerns regarding the treatment of "temporal scale" in the Panel's draft report, dated February 8, 2016. We previously communicated these same concerns to Panel members regarding their previous draft, dated August 27, 2015, in a letter dated September 28, 2015. While the updated draft of the report acknowledges our concerns, it persists in reiterating erroneous conclusions that dismiss the need to account for short-term greenhouse gas (GHG) emissions.

The Panel's singular focus on long-term equilibrium ignores scientific evidence showing that short-term CO₂ emissions have a considerable effect on warming. As a result, the draft report's recommendations for assessing Biogenic Accounting Factors (BAFs) are biased, in that they insist on a single timeframe for evaluating this indisputably time-variant quantity.

For the reasons outlined below, we ask the chartered SAB to request that the Panel revise its report in two respects: (i) adjust its recommendations to reflect the legitimate findings in the peer-reviewed literature of threats from short-term emissions; and (ii) revise the substantive recommendations accordingly to reflect the time dependence of the BAF assessment, with a plainly uncontroversial statement such as, "The time at which a BAF value should be determined will depend on the policy in which the BAF is being considered."

In a series of charge questions, EPA asked the Panel whether the timeframe for computing a BAF should vary by policy, or be fixed. The Panel's current stance is that the timeframe is determined by finding that point at which the modeled carbon stocks of the reference and bioenergy scenarios are no longer changing relative to one another:

"The appropriate time scale for considering climate impacts from biogenic feedstocks is the time period over which all terrestrial effects on the stock of carbon on the land occur in response to a policy induced shock in sustained demand for bioenergy." (SAB, February 8, 2016, pg. 16)

The Panel recommends that this single time period—the time to equilibrium, termed the "emissions horizon"—should be used to assess the "temporal scale for biogenic carbon accounting" and is "the appropriate time scale for considering climate impacts." However, the Panel's report has not clarified

that this analysis horizon is different from the specific time at which a particular BAF value is determined. While we understand the Panel's view that this emissions horizon is the time period that captures all terrestrial effects on carbon stocks, we do not agree that it is the correct or appropriate time period for evaluating the value of a BAF (and thereby crediting future sequestration and offsetting stack emissions).

Our concerns can be summarized as follows:

1. The BAF¹ is a fundamentally time-dependent quantity; its value is dynamic and changes with time.
2. Insofar as different climate and energy policies have different time requirements for GHG emissions reductions, the value of the BAF will need to be assessed at particular times. The BAF is therefore a quantity whose value varies over time and whose value can be assessed at a chosen time.
3. Unfortunately the Panel's current discussion and recommendation regarding timeframes can easily be construed to mean that the BAF can take on only one single "equilibrium" value associated with the "emissions horizon". This conclusion would be fundamentally flawed. As the Panel knows, the BAF is *not* a single number; it is a dynamic, time-dependent factor based on projecting carbon re-sequestration and avoided emissions into the future. By suggesting that the only acceptable timeframe for assessing the value of the BAF is the equilibrium timeframe, it appears the Panel has tied the value of the BAF to one single year—in essence collapsing the BAF down to a single number. This is an unsupportable outcome that completely eliminates the dynamic nature of the BAF and the information it contains.
4. While we agree with the Panel that the "emissions horizon" is the time period that "captures all terrestrial effects on carbon stocks," we do not agree that it is the correct or appropriate time period for evaluating a particular value of a BAF relative to a particular policy (thus crediting future sequestration and discounting stack emissions).
5. Calculating the BAF by averaging over the whole period gives credit for carbon sequestration occurring over very long timeframes where outcomes become less and less certain. If the Panel suggests that the "emissions horizon" is synonymous with this evaluation point, it would introduce significant uncertainty into the analysis. Also, because the BAF is simply a ratio, under the Panel's current averaging approach, it is possible for feedstocks with greatly differing carbon debt payoff times to have identical BAFs.
6. In its discussion and recommendations, the Panel must clarify the difference between the time scale for *considering all impacts on terrestrial carbon stores from biogenic fuel use* ("emissions horizon") and the *particular time at which the value of a BAF is determined* within the context of a specific time-bound policy imperative.

We do not object to using the cumulative variant of the BAF, as recommended by the Panel. But the solution is to run the modeling out to the emissions horizon (i.e. to equilibrium), thus implicitly generating a BAF for each year. For any given policy context or policy imperative, (for instance, the need to reduce emissions by 32 percent by 2030 under the Clean Power Plan), one could read the BAF for that year off the curve (in this case at 2030), or calculate a moving average or other cumulative BAF measure at that year. This would specify the quantity of carbon sequestration or avoided emissions anticipated to occur by 2030, and thereby how much stack emissions should be weighted to achieve that policy goal. A different policy goal will produce a different year of evaluation and a different value for the BAF. We have used Figure D-4 from the Panel's February 2016 report to illustrate this process.

¹ While we recognize the integral and differential variants and formulations of the BAF in the report, in this letter we use the term BAF to mean the total cumulative $\text{BAF} \cdot \Sigma t$ unless specified otherwise.

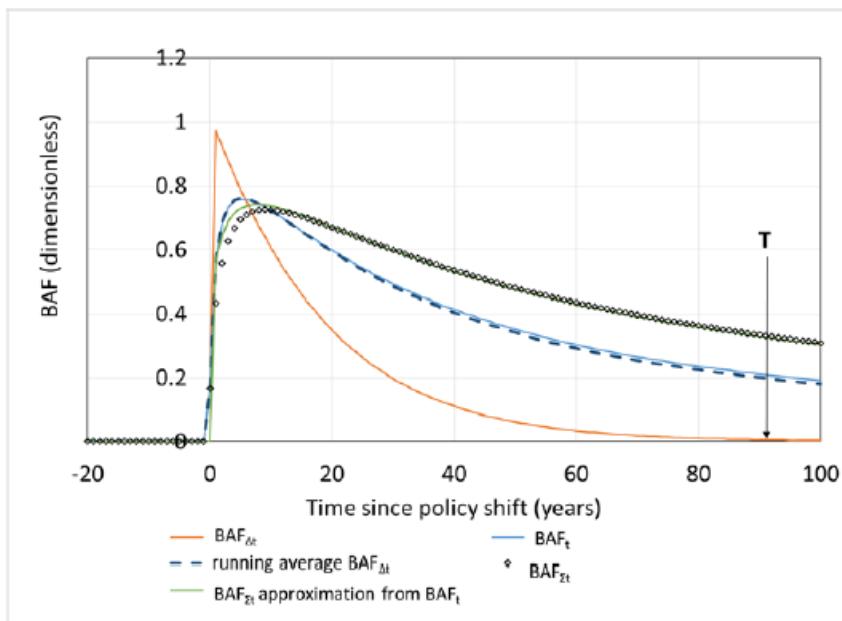


Figure D-4: Comparison of BAF calculation methods for the case in which biofuel harvest reduces carbon stocks relative to the reference scenario.

Moreover, as the emissions horizons extends into the future and it becomes more difficult to predict what would happen under the bioenergy and counterfactual scenarios, the uncertainties inherent in the carbon stocks analysis increase. The analysis assumes that planting and harvest regimes will be maintained in perpetuity. Such an assumption is typical for a modeling exercise, but policy decisions must account for the likelihood that reality will almost certainly deviate from that assumption. While the Panel has stated that such policy determinations are outside the scope of its charge, their report should acknowledge this effect and state clearly that these uncertainties would be smaller if net emissions were assessed against shorter, more policy-relevant time horizons.

Further, limiting BAF assessment times to long horizons erroneously ignores short-term warming risks. For example, Ricke and Caldeira (2014) recently found that the median time between an emission and maximum warming is 10.1 years, with a 90% probability range of 6.6 – 30.7 years.² They underscore the short-term benefits of reducing GHG emissions, concluding that “there is potential for emissions avoidance to provide substantial benefit to current generations.”

In a recent report summarizing the risks and costs of delaying emissions reductions, The Executive Office of the President concludes “[i]f a policy delay leads to higher ultimate [cumulative] CO₂ concentrations, then that delay produces persistent additional economic damages caused by higher temperatures, more acidic oceans, and other consequences of higher CO₂ concentrations.” In addition, they argue that uncertainty about the most severe, irreversible consequences of climate change “adds urgency to implementing climate policies *now* that reduce GHG emissions” (original emphasis). They argue that near-term reductions in carbon emissions can be seen as “climate insurance” because “the threat of a

² Ricke, R. L. and K. Caldeira, 2014. Maximum warming occurs about one decade after a carbon dioxide emission. *Environ. Res. Lett.* **9** 124002

climate catastrophe, potentially triggered by crossing an unknown tipping point, implies erring on the side of prudence today.”³

The Panel should not attempt (even unintentionally) to appropriate or limit policymakers’ authority and responsibility to determine the BAF at the time that is appropriate to a specific policy. In its current formulation, the February 2016 draft report does just that (perhaps driven by the EPA’s lack of policy direction in its charge). Moreover, by suggesting that only one time period applies to determining the BAF, the Panel itself—and the Chartered SAB by extension, if it approves the Panel’s recommendations in current form—would be unwittingly making a policy decision that would counter the purposes of EPA’s actual directives. In the Clean Power Plan, for example, this recommendation could mean that states using the Framework to assess biogenic carbon emissions would be allowed to use biomass for compliance with their emission performance rates or goals so long as full carbon re-sequestration or avoided emissions occur within a century or more, when the program’s compliance period ends in 2030.

In sum, the Panel in its final report must ***at a minimum*** acknowledge and clarify the difference between time scale for *considering all terrestrial carbon stock impacts from biogenic fuel use* versus the time *when the value of a BAF is assessed* relative to specific, time-bound GHG emissions reduction policy imperatives. At a minimum, we urge the Chartered SAB to ensure that the Panel clarifies both Recommendation #2 on page 7, and the temporal scale discussion on page 10, by adding a single phrase to both: “The time at which the cumulative BAF value should be determined will depend on the policy in which the BAF is being considered.” In addition, we request that the Chartered SAB seek that the final report be adjusted so that its recommendations reflect the legitimate findings in the peer-reviewed literature of threats from short-term emissions.

Thank you for your consideration.

Sincerely,

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Kevin P. Bundy, Senior Attorney, Center for Biological Diversity
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Peter Riggs, Director, Pivot Point, A Nonprofit Corporation
Sami Yassa, Senior Scientist, Natural Resources Defense Council

³ Executive Office of the President of the United States, (2014). The Cost of Delaying Action to Stem Climate Change.