

Comments from Dr. Steve Rose
August 6, 2015

Unfortunately, I am unavailable for our Aug. 6th call. I'll be on a plane at the time. Therefore, I am sending in a few higher level comments on the draft documents in order to flag some key issues. Overall, the draft documents are a nice start, but there is still much to do with our panel response to EPA. Given the substantive new material before us at this stage, I assume that there will be another round of revisions and discussion following the Aug. 6th call, especially to allow panelists unable to make the call an opportunity to engage with the full group.

Note that in addition to the key issues noted below, I have a number of specific editing suggestions that I'll type up and send later.

Key issues

1. The stage needs to be set better. In particular, we need to note immediately upfront in the ES that (a) the goals of the framework documents themselves were ambiguous, (b) no specific application of the framework was offered, and (c) the framework lacked specificity on how EPA proposed to calculate BAFs (instead describing a menu of potential BAF calculations and offering a few illustrative calculations in the appendices without actually proposing one). The lack of concreteness in these three areas has caused the panel a great deal of trouble, and has made it extremely difficult to comment on the framework, much less evaluate the framework and its implementation. This point should be crystal clear and upfront, as should the point that an actual application of the framework needs to be presented and scientifically evaluated. The current ES is vague and even fickle on this, suggesting that we know the goals with certainty, but also that we were hampered by the lack of policy context.
2. As far as I can tell, EPA has not proposed a BAF calculation. However, the draft response seems to suggest otherwise.
 - a. First, the draft response assumes that EPA has proposed an anticipated baseline approach. This is understandable given the charge questions. However, the framework simply offers the anticipated baseline approach as an option along with the reference point approach (and includes examples of both in the appendices). Since we have a clear opinion on this, we should make it unambiguous that we do not support the reference point approach.
 - b. Second, the draft response focuses on the cumulative BAF. However, as noted above, EPA describes a variety of BAF calculation options but does not propose one. These include the following: representative/customized/hybrid, ref point/anticipated, marginal/average/augmented average, BAF per period/BAF average over time/BAF cumulative, undiscounted/discounted. I think we need to acknowledge the full set of BAFs EPA mentions and then comment on the scientific pros and cons of each. Doing so will give us a solid foundation for

recommending scientifically valid characteristics and discussing alternatives. At the moment, this is completely missing from the drafts.

3. Our response needs a climate science discussion (drafted by Dan Schrag). This is critical. The key issue is whether the climate is concerned about the transition time profile of the carbon stock over time or only the final new equilibrium carbon stock at the final year T? If the later, then we need only focus on the cumulative BAF. If the former, then we need to consider alternatives for considering the time profile (e.g., annual, discounted, new $BAF_{\Sigma T}$). According to our conversation with Dan Schrag, the main factor for climate appears **not** to be the transition time profile of the carbon stock over time but instead the final new equilibrium stock at time T.
4. I am not comfortable recommending the new BAF that sums carbon stock differences relative to reference over time ($BAF_{\Sigma T}$). I think it is fine to put it forward as an alternative with issues (like the others). First and foremost, such a BAF may be unnecessary (see comment #3). Second, this $BAF_{\Sigma T}$ over-simplifies the carbon cycle into two boxes (terrestrial and atmosphere) and misses important carbon cycle effects such as the decay of carbon from the atmosphere over time and CO₂ fertilization. Both of these would suggest that the current $BAF_{\Sigma T}$ calculation would be biased high. There are also potential carbon cycle feedbacks to consider.
5. Our position on the policy neutrality of the framework is unclear to me. At some points, we seem to be accepting, but at others we seem not to be. In my opinion, I do not think that policy neutrality is something we can grant. I think it must be proven, not hypothesized as we would be doing.
6. The ES “Choice of Model” section is incorrect and misleading. It is based on a misunderstanding and mischaracterization of intertemporal optimization modeling. First, “perfect foresight” is a mathematical programming term of art and not useful for general communication. Modeling of this type is simply accounting for the fact that investments today consider some expectation about future prices and returns. Second, an assumption that decision-makers consider future returns does not guarantee investments as is current stated. Investments are not free. They have direct costs and opportunity costs (require a reallocation of inputs and budgets) that rise due to scarcity. This section needs to be corrected and substantial re-focused and revised or deleted.
7. History will not be a good bound for biomass demand levels since we are potentially considering policies that could incentivize far more biomass than observed. The guide for demand levels should be economic competitiveness of bioenergy.
8. The goal with comparing BAF-related projections to new historical data and estimates should be to revise assumptions and input data, not validate the BAF or modeling. Validation is a different activity that that would require reconfiguring the model with assumptions to match new historical assumptions.

9. Uncertainty about the future anticipated baseline and not knowing the future is not an issue and we should refrain from implying such in the draft (e.g., ES). The focus should be on the degree of uncertainty about the deltas (differences from baseline). This is an important point and we should educate the public and shift them away from debating over uncertainty about the baseline.
10. For charge question 1 (and in ES),
 - a. We should be a bit more specific and note that the time horizon should be based “on the time horizon over which effects are expected to occur and a new equilibrium carbon stock condition reached.”
 - b. We should avoid using “direct and indirect effects.” It is problematic because there is no one definition for each of these. It depends on the boundaries. In some cases we can replace “direct and indirect” with “land use change,” and in others we could simply delete.
11. For charge question 1c response
 - a. We are conflating three distinct issues: (1) single BAF vs. annual schedule, (2) carbon stock based BAF equation vs. emissions based, and (3) options for computing a single BAF. As such, the discussion doesn’t stand up or communicate well. Each of the three should be called out and discussed separately. As for #3, it needs a pros/cons discussion of alternatives and a climate science discussion about whether the carbon stock transition timing matters. At the moment, the current text regarding $BAF_{\Sigma T}$ is based on two strong assumptions (a) an over-simplified carbon cycle, and (b) a presumption that the climate cares about the time profile of annual carbon stock changes.
 - b. The BAF figures in the appendices are confusing since the only values that matter in most cases are the values at time T and we have provided clear guidance on how to identify T in our response to charge question 1.
12. For charge question 1c response, for isolating the effects of individual feedstocks a bounded decomposition approach would be useful.
13. For charge question 2e response, carbon value could drive the demand for biomass and it shouldn’t be considered perverse if society values the carbon mitigation value enough.
14. For charge question 2g response, I think we need to state more strongly and clearly that we are not endorsing policy neutrality.

I hope you find my input useful. Best wishes for a productive call!