

Disposition of Comments – Revised
Biogenic Carbon Panelists’ Major Comments on (May 9, 2012 Draft) “SAB Review of EPA’s Accounting Framework for Biogenic CO₂ Emissions from Stationary Sources”
To be Discussed on the May 23, 2012 Teleconference

Page	Line	Comment	Com- menter	Suggested Disposition – to be discussed
Temperature/Time Horizon				
3 Letter	3 - 7	Delete. I don’t think estimating temperature (or radiative forcing) effects makes any sense. There is massive uncertainty, significantly more than estimating leakage. Think about all the assumptions one has to make about future global emissions, non-CO2 gases, climate and c-cycle modeling.	Rose	
5 Exec. Summary	22	We need to discuss the value of a single stand perspective for this purpose. This section relies heavily on that concept. I don’t find it useful since what we really care about is landscape effects	Rose	This section does not rely on a single stand perspective.
6 Exec. Summary	5 – 34	I suggest deleting. First, this is not ES material. Second, I’m not convinced of the value of Cherubini’s approach for our purpose, and therefore the value of including in the document at all. Among other things, it is stand based. In addition, I don’t think we can legitimately estimate temperature (or radiative forcing) implications.	Rose	

Categorical Approach				
2 Exec. Summa ry	22-23	The discussion on page 2 and elsewhere proceeds as though the Panel was in agreement to reject a categorical approach. This is not accurate and we have not evidence of the sense of the SAB.	Sedjo	The Panel did not take a position on categorical approaches. Rather the Advisory points out that a categorical inclusion would remove any incentive for using biogenic feedstocks that compare favorably to fossil fuel while the exclusions would remove any responsibility on the stationary source for net CO ₂ emissions that may result from its use of biogenic material.
IPCC				
15 Body	15-23	The statement that the SAB supports the IPCC approach is not correct.	Sedjo	The Panel did not say it supports the IPCC approach. The Advisory says the Panel agreed with EPA's concerns about applying the IPCC national approach to biogenic CO ₂ emission from stationary sources, specifically: "IPCC national approach does not explicitly link biogenic CO ₂ emissions ... to stationary sources." It was for that reason that the Panel agreed with EPA that the IPCC approach would not enable EPA to assign a biogenic accounting factor to stationary sources. There would be no cause-and-effect linkage.
Existing Framework/Alternatives				
3 Letter	9-13	we need to think about what message we want to convey, and the purpose. The sentences here could be interpreted as don't bother trying. I don't think that is the message, nor is it constructive. The second sentence is misleading. We haven't characterized these trade-offs and I don't necessarily see them. For instance, I don't see the trade-off for default BAFs. Given the difficulties of estimating the effects of incremental demands for biomass by individual facilities, what would be more accurate?	Rose	The Panel is trying to strike a neutral tone and merely point out the pros and cons of various approaches. Could modify the paragraph beginning with "Finally" as follows: Finally, the SAB found that QUANTIFICATION OF MOST COMPONENTS OF THE FRAMEWORK IS LIKELY TO BE FRAUGHT WITH uncertainties, technical difficulties, AND data deficiencies. THE implementation of the Framework would require sound judgement to balance scientific accuracy with ease of accounting and implementation. While there are no easy answers to accounting for the greenhouse gas implications of bioenergy, FURTHER CONSIDERATION OF THE ISSUES RAISED BY THE PANEL AND REVISIONS TO THE

				FRAMEWORK COULD RESULT IN A MORE JUDICIOUS APPROACH TO ACCOUNTING FOR BIOGENIC EMISSIONS. Additionally, we encourage the Agency to “think outside the box”
3 Letter	15-23	We need to think about what message we want to convey, and the purpose. The sentences here could be interpreted as don’t bother trying. I don’t think that is the message, nor is it constructive. The second sentence is misleading. We haven’t characterized these trade-offs and I don’t necessarily see them. For instance, I don’t see the trade-off for default BAFs. Given the difficulties of estimating the effects of incremental demands for biomass by individual facilities, what would be more accurate?	Rose	The Panel is suggesting feedstock-specific default BAFs not facility-specific BAFs.
3 Letter	17-19	I don’t see default BAFs as an alternative necessarily, just an adjustment. ..Regardless, I see this as the most promising approach. Do others agree? If so, we should say so.	Rose	The Panel can discuss whether to elevate the recommendation to develop default BAFs.
8 Exec. Summary	20-41	To reflect better the variation in biomass feedstock GHG intensity, it would be advisable to at very least differentiate feedstock further to include "prior land-use" and "management practices". The recent National Research Council report “Potential Economic and Environmental Effects of U.S. Biofuel Policy” concluded that “biofuel production could result in positive, neutral, or negative environmental outcomes depending on the particular effect of concern, the crop used, the land used to cultivate the crop and its prior use, the management practices used, and other factors including environmental effects from market-mediated	Hill	A new section on system boundaries and accompanying table would illustrate how EPA isn’t looking at the whole system. It’s quite possible the BAF will increase when the system boundaries expand. If EPA stays within its regulatory boundaries, they will likely get BAFs very closer to 0 for most feedstocks.

		land-use and land-cover changes.” In fact, a major problem with the environmental efficacy of the Renewable Fuel Standard is that it did not prescribe production of biomass to those feedstocks, prior land-use, and management practices that are most likely to result in environmental benefits such as greenhouse gas mitigation. Should EPA choose to implement the recommendation of the SAB, it would be advisable to differentiate biomass feedstock categories further as described above. http://www.nap.edu/catalog.php?record_id=13105		
3 Letter	19-21	I don’t see how certification is any better, and therefore don’t see it as a useful recommendation. This is something we should discuss.	Rose	The Advisory did not say certification is better.... The Panel is not recommending certification. The Panel’s recommendation is softer than that: that the Agency “consider” certification options.
8 Exec. Summary		Why is option 2 better? I don’t see it and, if others don’t as well, I don’t think we should recommend it. For instance, I don’t see how it obviates the need to quantify net emissions changes. Certification is still required.	Rose	The Advisory has not implied Option 2 is better but the Panel can discuss its language recommending that EPA consider certification approaches.
8 Exec. Summary	35-37	A certification system would not “obviate the need to quantify a specific net change in GHG a specific net change in greenhouse gases associated with a particular stationary facility.” This seems misleading. At least background calculations would be needed to assess the GHG effects of using particular feedstock sources. One could not certify feedstocks without quantifying GHG effects for using those	Skog	Since certification would be based on feedstocks FROM SPECIFIC SOURCES (and not facilities), it would obviate the need to quantify a specific net change in greenhouse gases associated with a particular stationary facility.

		feedstocks.		
33 Body	33 – 35	Forest carbon certification systems have factors to adjust for leakage. I think it is premature to judge if it is not possible for to identify leakage adjustments for a biomass certification system without further study.	Skog	The methods being used by existing systems to determine leakage are not transparent and their scientific accuracy would need to be examined. In general, determining leakage would require the use of global models. If certification is being recommended as an option to avoid reliance on models then we should not suggest estimating leakage factors. Even with the existing framework we are suggesting using supplementary approaches to control leakage and not estimate leakage factors.
System Boundaries				
9 Exec. Summary	16-26	If I were to point to a single paragraph in the current draft that conveys what I feel is our most important message it is Page 9 Lines 16-26. This paragraph points to the major shortcoming with EPA’s proposed Framework. To demonstrate this shortcoming, I have drawn a table depicting examples of factors that are included in the Framework and those that are excluded (See below). To estimate net emissions that can be attributed by the use of bioenergy, EPA would need to calculate the net change in global temperature, integrated over all future years, resulting from the construction and operation of a facility that uses biomass feedstocks as compared to a future without the use of biogenic feedstocks. To capture this difference, the boundaries of analysis would need to include all factors in the life cycle of this decision, not just those EPA is allowed to consider. EPA can only regulate end-of-pipe emissions and thus has to design a system that	Hill	

		fits within its regulatory authority. Furthermore, EPA does not consider methane and nitrous oxide. So, as the paragraph on p. 9 states, EPA has drawn very narrow system boundaries. Even after incorporating the Panel’s recommendations, application of the Framework will like render most BAFs approximately equal to zero. Although EPA included a term for indirect effects (leakage), we know that it is difficult to estimate. Given the omission of so many important factors, I have little confidence that EPA’s BAF will reflect the real-world net change in global temperature that might be observed from constructing and operating a facility that uses biomass.		
9 Exec. Summa ry ...	19-26	The panel should be more explicit in its recommendations about how EPA should be considering processes closely associated with the system it focuses on – the stationary source plus land where biomass was obtained. Several places in the text suggest including in the evaluation – in some way – emissions from a broader system (e.g. “upstream and downstream emissions”).	Skog	See Jason Hill’s proposed language to be inserted into the Executive Summary (as a new section called System Boundaries).
7 -8 Exec. Summa ry	40	Delete. What is their value? What are we recommending? The remark about optimal policy is esoteric and not realistic in this context. Really just an intellectual concept. The remarks about ethanol and downstream emissions are moot.	Rose	It would be good to make the larger point that the Framework is a conceptually flawed way to regulate GHGs and not all factors are included in EPA’s approach. See Jason Hill’s and Ken Skog’s comments. See Jason’s proposed insertion that expands on this concept.

9 Exec. Summary	19 – 26	Delete. First, it is inconsistent with the discussion to this point that EPA has the right factors. Second, it is too broad, and vague (“boundaries”?), as well as introduces new points. Third, accounting for time is ok, but downstream emissions is out of scope.	Rose	See Ken Skog’s and Jason Hill’s comments about boundaries. These sentences point out that EPA is operating without full information. It is also part of our point that EPA is regulating GHGs in an inefficient way (not that EPA has a choice).
Miscellaneous				
		Albedo: There is growing interest in the effect of albedo on climate. Generally, a denser forest will decrease albedo, increasing warming. Conversely, forest removal promotes increased albedo thereby promoting warming. A study I just review for a journal found that for Norway, the warming associated with the removal of forest was significantly offset by the albedo created by those removals. While it is true this effect is not directly via a carbon emission, it is nevertheless an indirect effect associated with biogenic emissions. We need to at least mention this issue. Below is a recent piece out of OSU on the subject.	Sedjo	
		Need to incorporate the effects of harvesting biomass on fire risks	Khanna	

Table 1: List of factors included and excluded in EPA's calculation of BAF.

	Included	Excluded
Land Conversion	Soil CO ₂ flux Residue burning CO ₂ emissions CO ₂ from some indirect effects (<i>e.g.</i> , land clearing due to market-mediated changes in commodity prices)	Soil CH ₄ and N ₂ O flux CO ₂ and CH ₄ from fossil fuel used in clearing land CO ₂ , N ₂ O, and CH ₄ from other indirect effects (<i>e.g.</i> , energy market rebound effects)
Growth	CO ₂ fixation into biomass Soil CO ₂ flux	Soil CH ₄ and N ₂ O flux N ₂ O from synthetic sources (Haber-Bosch nitrogenous fertilizers) N ₂ O from biogenic sources (Legumes and manure) CO ₂ and CH ₄ from planting equipment use
Harvest	CO ₂ from degradation of non-harvested residues	CO ₂ and CH ₄ from harvest equipment CO ₂ and CH ₄ from transport machinery
Conversion	CO ₂ from biomass combustion, fermentation, or degradation	CO ₂ and CH ₄ from fossil fuel generated process heat and grid-purchased electricity ¹
End Use	None	CO ₂ and CH ₄ from combustion of manufactured products (<i>e.g.</i> , biofuels)
Disposal	None	CO ₂ and CH ₄ from degradation or combustion of manufactured products (<i>e.g.</i> , furniture or paper)

¹ Although regulated, these are not used in the calculation of BAF.