Comments of the Green Power Institute on the SAB's May 9, 2012, *Deliberative Draft Report*

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Introduction

The Green Power Institute, the renewable energy program of the Pacific Institute for Studies in Development, Environment, and Security, with support from the USA Biomass Power Association, has reviewed and analyzed the September 2011, EPA *Accounting Framework for Biogenic CO_2 Emissions from Stationary Sources* (AF), and previous versions of the *Deliberative Draft report* (SAB) on the AF. We believe that the new (May 9) draft shows considerable progress over the previous (March 9) version. In these Comments we make several specific suggestions for further improvements in the SAB *Deliberative Draft Report*.

The sentence on pg. 2, lines 37 – 40, of the SAB needs to be corrected:

> Only when bioenergy results in <u>additional</u> carbon being sequestered above and beyond the anticipated baseline (the "business as usual" trajectory) displacing fossil fuels over time can there be a justification for concluding that such energy use results in little or no increase in carbon emissions.

This is incorrect. In fact, there are two situations that can justify a finding of carbon neutrality, not just one. The first is a net sequestration of carbon, as acknowledged in the passage quoted above. The second is a shifting, from reduced form (CH_4) to oxidized form (CO_2), in the mix of emissions of biogenic carbon that would occur anyway as carbon is recycled from the biosphere to the atmosphere. Both of these situations can lead to a scientifically-sound finding of carbon neutrality, and both are important in understanding the greenhouse-gas emissions implications of bioenergy systems.

The sentence on pg. 4, lines 20 – 22, of the SAB introduces the concept of incorporating the time-path of decay into the EPA *Framework*:

> For logging residues and other waste feedstocks, decomposition cannot be assumed to be instantaneous and the Framework could be modified to incorporate the time path of decay of these residues if they are not used for bioenergy.

In fact, this is only part of the story. All parts of the active carbon cycle exhibit time-dependent transfers, of various kinds and characteristics. Some of these transfers occur relatively quickly, while others are very slow. For example, CO_2 has a residence time in the atmosphere of some 100 – 200 years, while CH_4 has a residence time of only about 12 years. Similarly, biogenic carbon in a fuel pile at a biomass power plant has a residence time measured in months, while the same biogenic carbon buried in a landfill has a residence time measured in tens of years. The only way to properly account for the widely varying time-dependencies of the carbon cycle is to perform a dynamic analysis of the carbon stocks and flows, as we advocated in our March 16, 2012, *Comments* on the March 9 SAB *Draft*. Dynamic modeling has been successfully applied to analyses of the greenhouse-gas implications of biomass energy systems in the past, including in some of the material that we have introduced into the record of this proceeding, and produces insights that cannot be gleaned with static modeling. Moreover, the issue of what timeframe to adopt in the *Framework* has led to a great deal of controversy. Dynamic modeling obviates the need to select an arbitrary timeframe, and elucidates the short, medium, and long-term climate implications of biomass energy use in a single analysis.

Page 7 of the SAB presents a series of recommendations for revising the *Framework*'s BAF. We endorse all of the bullet and sub-bullet points on this page, and wish to emphasize the following:

With regards to the first point in the first sub-bullet (lines 10 – 12 on pg. 7): "For long-recovery feedstocks like woody biomass, use an anticipated baseline approach to compare emissions from increased biomass harvesting against a baseline without increased biomass demand." We strongly urge the SAB to include the following reference in the report's Reference list, which we have previously placed into the record of this proceeding: USDA Forest Service Pacific Southwest Research Station, *Biomass to Energy: Forest Management for Wildfire Reduction, Energy Production, and Other Benefits*, California Energy Commission report no. CEC-500-2009-080, January 2010.[1] This extensively peer-reviewed report presents the results of an extensive dynamic lifecycle analysis of the use of forest-treatment fuels for energy production, and ought to be referenced in the SAB report. We would also like to see the Pacific Institute's report on the greenhouse-gas implications of bioenergy use (Morris, G., *Bioenergy and Greenhouse Gases*, Report of the Pacific Institute, May 15, 2008[2]) added to the SAB's Reference list.

We strongly support sub-bullet iii to the first bullet point (lines 23 – 32 on pg. 7), which, we note, covers most of the biomass fuel that is used for power production in the US today. We note that not only should the Agency "declare certain categories of feedstocks with relatively low impacts as having a very low BAF or setting it to 0," in fact, in cases where biogenic emissions are shown to decrease with energy production over the alternative disposal practices, the BAF should be given the appropriate negative value.

[1] http://www.energy.ca.gov/2009publications/CEC-500-2009-080/index.html

[2] http://www.pacinst.org/reports/Bioenergy_and_Greenhouse_Gases/Bioenergy_and_Greenhouse_Gases.pdf

We note that both sub-bullet ii (lines 20 – 22 on pg. 7) to the first bullet point, and the second bullet point (lines 34 – 35 on pg. 7), can be addressed most effectively by the use of dynamic modeling of the carbon cycle, as discussed above.
Line 9 on page 8 of the SAB states that: "facility-specific calculations face some daunting practical challenges." While that may be true, it is also true that every other approach that is under consideration in the *Framework*, and in the SAB report on the *Framework*, faces daunting practical challenges. That is the nature of the issue. We note that we have conducted several carbon footprint reports for biomass power plants over the past several years. We included a facility-specific carbon footprint report in our March 16, 2012, *Comments* on the March 9 draft of the SAB (for the Snowflake Biomass Plant in Arizona).

The SAB presents, on pg. 8, two options for the EPA's consideration, should it choose to consider alternatives to the BAF. The first option is to develop generic BAFs for a variety of feedstock categories. We endorse this approach, as it is not only scientifically sound, it is also administratively simple and straightforward. On the other hand we must oppose the second option, the institution of a certification system, because while it may be technically sound, it would likely be an administrative nightmare, and would represent a serious impediment to the use of all forms of biomass resources for energy production. The biomass power industry strongly supports sustainable forestry practices, but believes that using biomass energy as a means to regulate forestry is a textbook example of the tail-wagging-the-dog approach to governance.

An extensive discussion of time scale begins on pg. 10 of the SAB. The discussion makes multiple references to the "100-year timeframe" that is involved in restoring a forest to full stocking following clear cutting. However, the clear cutting of forests for purposes of producing fuel is not relevant to the biomass power industry in the US, not today, and not in the foreseeable future. In order to provide balance to this section of the report, we believe that it should point out that the forest fuels used for power production are typically derived from thinning operations conducted on stressed, overgrown forests. Forests may be thinned for a variety of purposes, but improved health and productivity, as well as resistance to major loss events such as fires, insects, and disease, are usually primary among them. Our work shows that when these factors are fully included in the analysis, particularly increased net growth, and reduced risk of major loss events modeled on a probabilistic basis, the restoration of the forest to a positive carbon stocking condition following thinning takes less than a decade, not the 100 years that seems to have become a common talking point among the opponents of biomass energy.

The paragraph spanning pgs. 17 – 18 of the SAB should be amended by the addition of the following sentence:

> … In addition, given that methane is so much more important than CO_2, the *Framework* should account for CH_4 emissions from landfills in cases where the methane is not captured. **Similarly, for energy production from solid-fuel biomass, the *Framework* should account for avoided CH_4 emissions from landfills for fuels that are diverted from landfill disposal, including the uncollected fugitive emissions at landfills that have methane-collection systems.**

We are pleased to see the paragraph on lines 22 – 30 of pg. 26 of the SAB. With respect to the discussion about the inclusion of N_2O in the *Framework*, we would like to see the inclusion of a caveat to the effect that N_2O is only of concern for biomass fuels derived from dedicated energy crops, not for biomass fuels derived from wastes and residues.

The discussion on pgs. 33 – 36 of the SAB includes a good deal of consideration about the dynamics of markets for products derived from forests, including fuels for power production. We believe that one very important fact is missing from the discussion. The missing fact is as follows: Energy is the lowest-valued use for biomass. In integrated biomass markets, if there is a higher-valued use for the material, the biomass will go to that use, and any leftover residues (there are always leftovers) can be directed to a biomass energy application. Producing fuels is virtually never the primary driver for conducting harvesting operations in the forest.

Please incorporate the changes we have suggested into the next draft of the SAB report.