Comments on the 1-19-12 draft report of the SAB Biogenic Carbon Emissions Panel on EPA's *Accounting Framework for Biogenic CO2 Emissions from Stationary Sources*

Prepared by Environmental Defense Fund
Ruben Lubowski, Steven Hamburg, Will McDow
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EDF strongly supports the key finding of the panel that "Carbon neutrality cannot be assumed for all biomass energy a priori" (p.3, line 20). The panel is correct that "There is considerable heterogeneity in feedstock types, sources and production methods and thus net biogenic carbon emissions will vary considerably" (p.3, line 21). This conclusion is the underlying premise that motivates EPA's proposed Framework for accounting for the net emissions from using bioenergy feedstock under different conditions. The production of different feedstocks will have different net impact on carbon sequestration on the landscape which will, together with combustion emissions, determine the net emissions from bioenergy use.

We thus support the panel's conclusion that a blanket categorical inclusion or exclusion of biogenic carbon emissions would not reflect the net emissions impacts from the use of different biomass feedstocks, which can result in either higher or lower net emissions than fossil fuel combustion depending on the circumstances. In developing an alternative approach to a blanket inclusion/exclusion, we agree with the panel that while the above scientific basis is correct, there are critical areas where EPA's Framework needs improvement, as laid out in our comments submitted on October 18.

We agree with the panel's overall findings on two main issues: the need to account for leakage and to provide incremental incentives for individual facilities. We also support the recommendations for creating separate factors for different feedstock categories and for including leakage. Our comments from October 18 proposed a practical system for including leakage based on net changes in exports/imports from a region. As also described in our prior comments, we believe the priority of the accounting system should be on influencing the marginal facility that is incrementally increasing in bioenergy feedstock use over and above current installed capacity. This will create the appropriate signals for the considerable future projected growth in the industry.

We disagree with the panel's conclusions on two other issues, the appropriate treatment of scale and time. In particular, we disagree that the panel's recommendations of avoiding a region-based system and for incorporating the timescale of carbon stock changes in the analysis. Below we describe in more detail why a well-structured regional approach with a 5-year time scale of accounting would create a biogenic carbon accounting system for stationary sources that is scientifically robust as well as practically implementable, with available data and low transactions costs. The analytical underpinnings of the regional approach as outlined in the EPA Framework were limited – but sound. To help the subcommittee better understand why the regional approach is in fact the most statistically rigorous approach that can be practically

implemented we have included the following analysis based on FIA data (see figures in the Appendix).

- **Measuring carbon stock changes over an appropriately-sized and constructed region (excluding non-working lands) offers the best combination of both scientific accuracy and practicality.** This approach offers the method that has the greatest likelihood of being both practically implementable and of getting an answer that is scientifically accurate with a reasonable degree of precision. The panel is correct to note that, "The atmospheric response to an additional ton of carbon is the same, regardless of its geographic origin" (p.4, line 15). However, the production of the biomass that produced a ton of biogenic carbon emissions emitted from the smokestack of a stationary source in one part of the country might have a very different impact on net carbon emissions on the landscape than the production of biomass that led to a similar ton of combustion emissions in a different region. Identifying these differences provides the rationale for differentially adjusting the BAF according to different biomass production regions. As described in our prior comments, we also believe the Framework should provide sufficient flexibility such that facilities which can prove net emissions performance better than the regional BAF can receive an individual score on a case-by-case basis (with subsequent readjustment of the regional BAF for the remaining facilities).

  Accounting for net changes in carbon at regional scales increases the precision of measurement, as well as captures landscape level effects of changes in markets and management which will be missed with a site-by-site analysis. These are some of the reasons that decisions under the United Nations Framework Convention on Climate Change (UNFCCC) have endorsed a regional rather than project-scale approach for measuring changes in carbon emissions associated with Reducing Emissions from Deforestation and Forest Degradation (REDD). The U.S. Forest Service's Forest Inventory and Analysis (FIA) data is the best currently available source of data for tracking changes in forest area and associated carbon stocks in the United States. Based on the FIA data, Figures 1, 2, 3 , 4 in the Appendix to these comments show how the confidence interval associated with forest area and forest carbon measurements declines as the regional scale increases. The shape of the curve of these figures also show that there is a point at which increasing area extent no longer provides benefits in terms of lowering the confidence interval of measurement. The size of regions for measuring changes in forest carbon stocks should strike a balance between being small enough so that incentives can influence marginal facilities and being large enough such that measurements are accurate to a reasonable level of approximation. Given the point where the curves in figures 1, 2, and 3 level off, there are many cases where aggregating to regions larger than states will not increase precision and very few cases where having regions smaller than states will be able to reduce size without compromising precision. Examining changes over a small woodshed surrounding an individual facility are unlikely to provide accurate measurements (figure 4). The measurement problem is even more significant given that the Framework needs to be able to achieve a reasonable

degree of confidence in measuring changes in forest carbon stocks rather than only a static snapshot for a single year (see figure 5).

- **Excluding non-working lands means that a reference point baseline may in many cases be an appropriate "business as usual" baseline.** An appropriately constructed region for accounting purposes should exclude non-working lands as these are not likely to be influenced in any way by bioenergy usage. Non-working lands are likely to account for a large share in the net increment of forest carbon stock growth over time in most states. This means that once non-working lands are excluded, recent changes in carbon stocks that can be detected with a reasonable degree of accuracy (e.g. the area outside the error bounds in figure 5) are likely to be close to zero in any region chosen to have the optimal tradeoff between size and measurement precisions. Thus, using a reference point baseline for working lands in most regions provides a reasonable and simple approximation of "business as usual." In fact such an approach is the only statistically valid and method other than requiring full accounting of all stocks on all lands – an unrealistic and non-economic approach. If a lower end of a confidence interval as shown in figure 5 is used for detecting changes, this would be conservative in terms of rewarding and penalizing increases and decreases in stocks, respectively.

- **Approximate real-time accounting (e.g. 5 years) is appropriate for comparing emissions from bioegenic and non-biogenic sources.** A system that tracks observable changes in net landscape emissions in as close to real time as possible given available information is appropriate for the purpose of differentiating impacts between biogenic and non-biogenic fuels used by stationary sources. For example, if harvesting bioenergy leads to a large loss of carbon over one period that will take a long time to recover, this will mean that the BAF will be high and will remain high for an extend time period. This provides the right signals to investors or bioenergy users deciding whether or not to locate a bioenergy facility to a particular region or to source biomass of a particular type from that region relative to another. Requiring the BAF to *ex ante* reflect the future time path of resulting emissions/sequestration would increase speculation and add unnecessary complexity.

Appendix

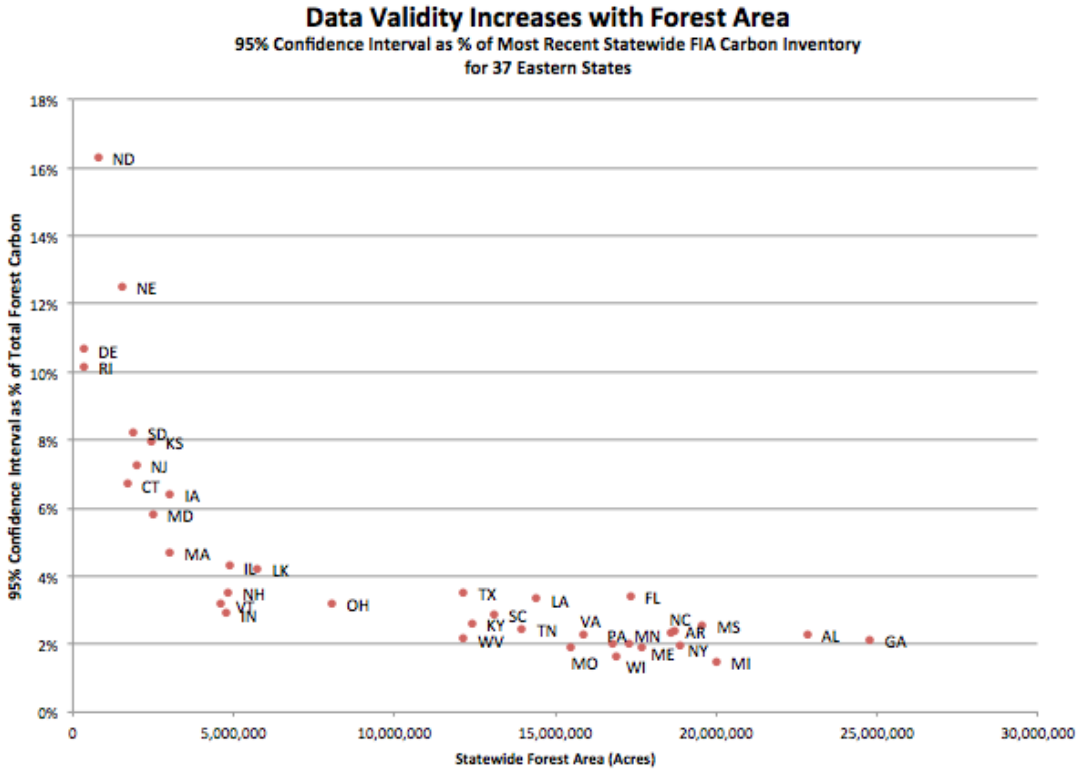

Figure 1. Data Validity Increases with Forest Area
Source: Analysis of 2010 FIA data by Ray Sheffield

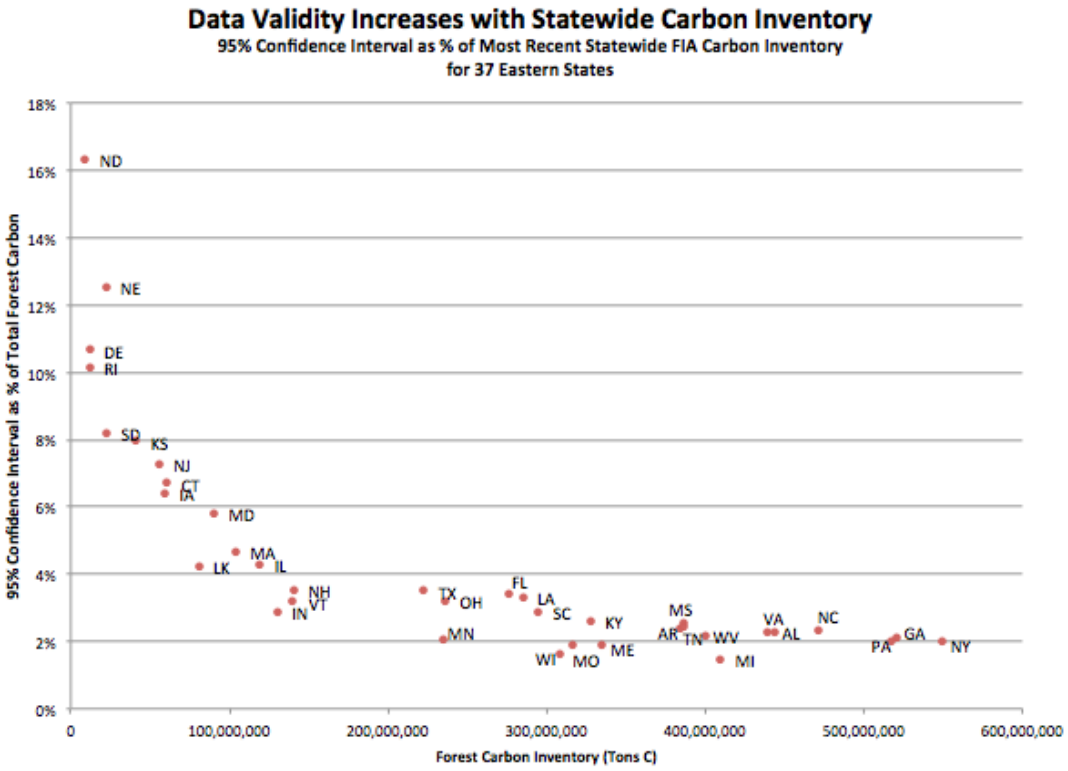

Figure 2. Data Validity Increases with Statewide Carbon Inventory
Source: Analysis of 2010 FIA data by Ray Sheffield

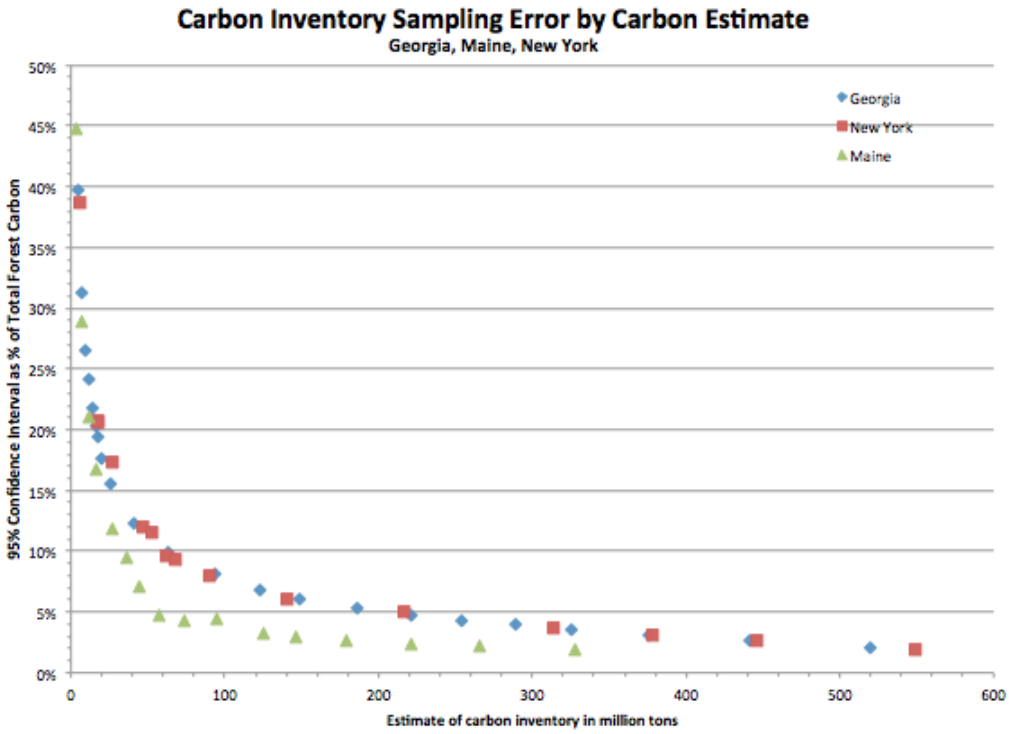

Figure 3. Carbon Inventory Sampling Error by Carbon Estimate
Source: Analysis of 2010 FIA data by Ray Sheffield

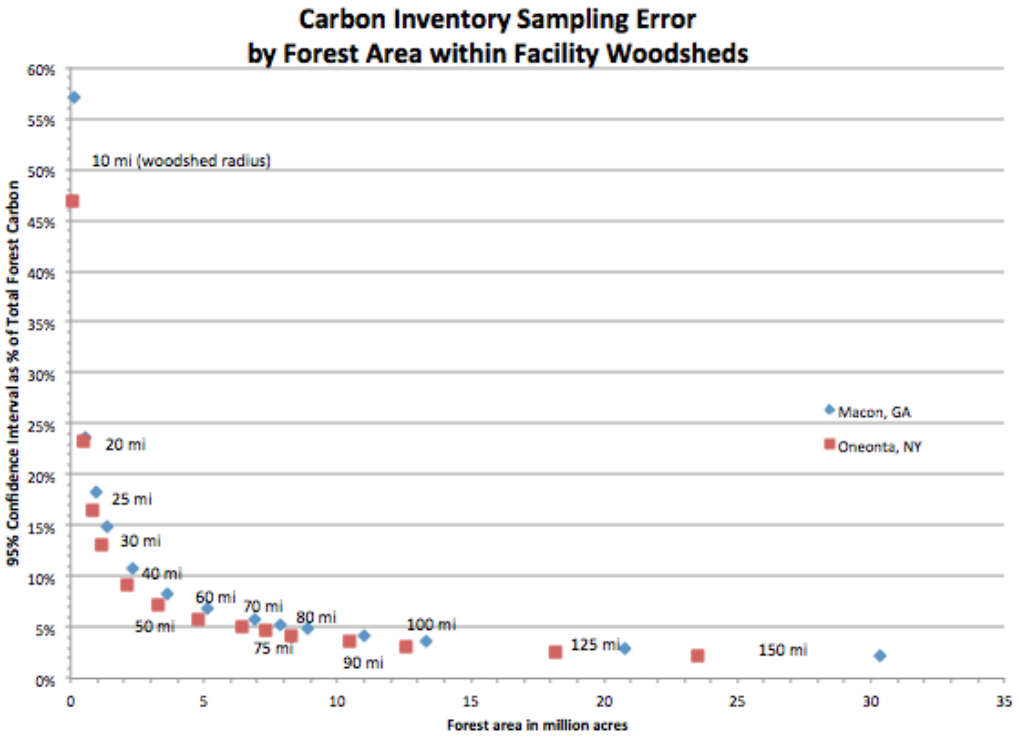

Figure 4. Carbon Inventory Sampling Error by Forest Area within Hypothetical Facility Woodshed, by Size of Radius
Source: Analysis of 2010 FIA data by Ray Sheffield.

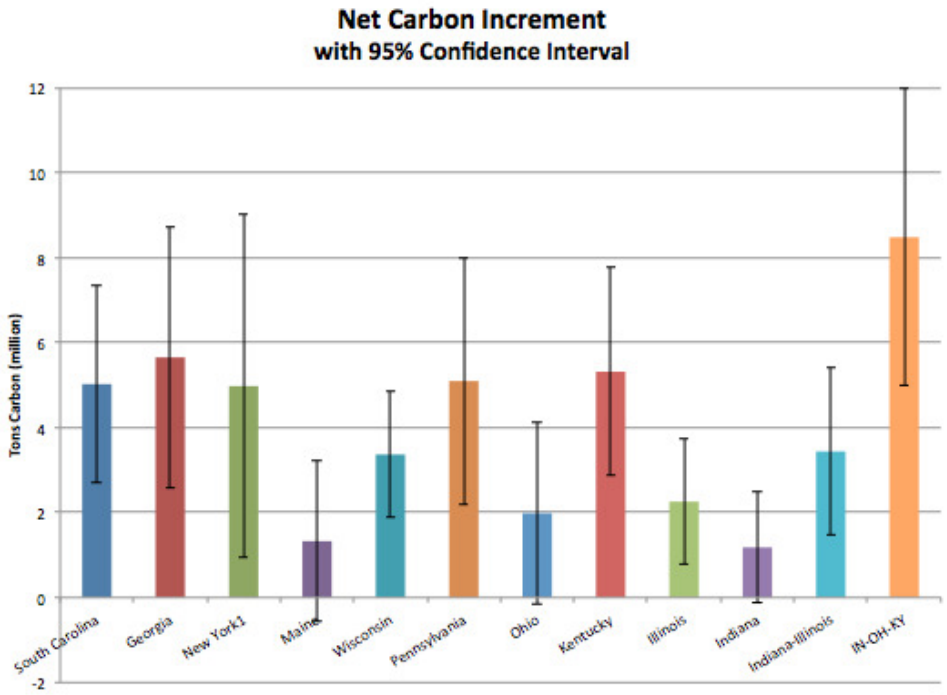

Figure 5. Net Carbon Increment for Selected States between 2005-2010
Source: Analysis of 2005 and 2010 FIA data by Ray Sheffield