

**Summary Minutes of the  
U.S. Environmental Protection Agency  
Science Advisory Board  
Biogenic Carbon Emissions Panel  
Public Teleconference  
August 6, 2015**

Biogenic Carbon Emissions

Panel Members:

Dr. Madhu Khanna, Chair  
Dr. Robert Abt  
Dr. Morton Barlaz\*  
Dr. Marilyn Buford  
Dr. Mark Harmon  
Dr. Jason Hill  
Dr. John Reilly  
Dr. Steven Rose\*  
Dr. Charles Rice\*  
Dr. Daniel Schrag  
Dr. Roger Sedjo  
Dr. Ken Skog  
Dr. Tristram West  
Dr. Peter Woodbury

\* did not participate in teleconference.

Purpose: The Science Advisory Board (SAB) Biogenic Carbon Emissions Panel discussed responses to charge questions on EPA's draft report *Framework for Assessing Biogenic CO<sub>2</sub> Emissions from Stationary Sources (November 2014)*.

Designated Federal Officer: Dr. Holly Stallworth, Designated Federal Officer

Other EPA Staff: Allen Fawcett, Sara Ohrel; Chris Zarba; Thomas Brennan; John Steller

Public: Steve Wooke (Weyerhaeuser); Ben Larson (National Wildlife Federation); John R. Barnwell (Society of American Foresters); Michael Case (The Westervelt Co.); Brian A. Kittler (Pinchot Institute for Conservation); Paul Noe (American Forests and Paper Association); Linda Tsang (American Forests and Paper Association); Stan Lancey (American Forests and Paper Association); Amanda Redfern (American Forests and Paper Association); Morgan Pitts (Enviva); Taylor Vann (ClearStak); John Bonitz (no affiliation given); Kim Cesafsky (Enviva); Mike Jostrom (Plum Creek Timber); Kerry Kelly (WM Waste Management); Jonathan Ohueri (Zilkha Biomass); Jeff Shumaker (International Paper); Dina Kruger (Kruger Strategies); Caroline Gaudreault (National Council for Air and Stream Improvement); Reid Miner (National Council for Air and Stream Improvement); Patrick Griffith (Sanitation Districts of Los Angeles County); Kate Shenk (Biotechnology Industry Organization); Dave Tenny (National Alliance of Forest Owners); Stephanie Batchelor (Biotechnology Industry Organization); Anne Germain

(Cascades Recovery); John P. Mulligan (Monument Policy Group); Mary S. Booth (Partnership for Policy Integrity); John Barwell (Society of American Foresters); Jennifer Jenkins (Applied Geo Solutions); Mark Flugge (ICF International); Dawn Reeves (Inside EPA); Michael E. Van Brunt (Covanta); Morgan Pitts (Enviva)

Meeting Materials and Meeting Webpage:

The materials listed below may be found on the meeting webpage at:

<http://yosemite.epa.gov/sab/sabproduct.nsf/a84bfee16cc358ad85256ccd006b0b4b/8adbef19abf5c30e85257e53004627a?OpenDocument&Date=2015-08-06>

Dr. Stallworth gave her opening statement noting the compliance of the Panel with the Federal Advisory Committee Act. Dr. Stallworth also noted there were 4 requests for public comment. Dr. Khanna thanked the Panel for their hard work and introduced the public speakers.

*Public Comments*

Reid Miner, on behalf of the National Council for Air and Stream Improvement (NCASI), emphasized the inherent uncertainty associated with stock change information as well as the need for a regulatory framework that is simple, predictable and low-cost. NCASI applied the new SAB BAF<sub>Σt</sub> (Biogenic Assessment Factor) approach based on the accumulation of annual differences in carbon stocks on the land and NCASI found that this approach yielded reasonable estimates of the net cumulative radiative forcing associated with the increased use of wood for energy for the idealized roundwood feedstock scenario. However, where there are differences in methane, e.g. with woody mill residuals, between the reference and policy cases, NCASI found the BAF<sub>Σt</sub> approach will overestimate the BAF. Mr. Miner's comments are posted on the meeting webpage.

Dave Tenny, on behalf of the National Alliance of Forest Owners (NAFO), said there is ample science supporting biomass as a carbon neutral energy source in federal policy. He also said EPA has signaled to states that biomass can be considered a carbon neutral source of energy on par with other renewables like wind and solar in its final Clean Power Plan. Mr. Tenny stated that states will have broad discretion to determine whether and how to incorporate biomass into their State Implementation Plans. In many instances states will use existing programs and frameworks to establish biomass as a qualifying emissions reduction pathway. According to Mr. Tenny, this suggests that there are a variety of policy pathways that appropriately apply the body of science around biomass carbon emissions. Mr. Tenny's comments are posted on the meeting webpage.

Mr. Paul Noe, on behalf of the American Forest and Paper Association (AF&PA) and the American Wood Council, requested the Panel recognize the carbon benefits of using forest products manufacturing residuals for energy production. Mr. Noe said methane must be factored into any biogenic carbon accounting approach, especially since forest products manufacturing residuals would, if not used in energy production, end up in industrial landfills where they would emit methane. Mr. Noe's comments are posted on the meeting webpage.

Dr. Mary Booth of the Partnership for Policy Integrity said the *Framework for Assessing Biogenic CO<sub>2</sub> Emissions from Stationary Sources* must be useful for Clean Air Act permitting and determinations of Best Available Control Technology. Dr. Booth noted that the implementation document for the Clean Power Plan states that the *Framework* and SAB review will “assist EPA in assessing potential qualified biomass feedstocks in federal plan applications.” According to Dr. Booth, that means the *Framework* must be able to determine net CO<sub>2</sub> emissions in terms of pounds of CO<sub>2</sub> per megawatt-hour at a particular facility. In response to a question from Dr. Khanna, Dr. Booth said a geographically specific fuelshed model that uses GIS data to identify the likely fuelshed for a facility and available data on rates of harvesting in that fuelshed (that pre-dates use of biomass at that facility) would allow us to make some educated guesses about the carbon effects of increased harvesting. Dr. Booth’s comments are posted on the meeting webpage.

Dr. Allen Fawcett of EPA’s Office of Air and Radiation presented his comments as posted on the meeting webpage. Dr. Fawcett complimented the simplicity offered by the carbon pool approach because it eliminated the Loss (L) and Product (P) terms due to the Panel’s approach of changing the point of assessment from the field to the boiler mouth. He said for the variables for Net Biogenic Emissions (NBE), Potential Gross Emissions (PGE) and Biogenic Accounting Factor (BAF), the  $\Delta t$ ,  $t$ ,  $\Sigma t$  notation provides the most clarity for flux in a particular year  $t$ , cumulative stock in a particular year  $t$ , and sum of cumulative stocks over an interval 0 to  $t$ . Dr. Fawcett said the increased clarity is a welcome suggestion. Dr. Fawcett said the intent of the Framework was not to determine how biomass was to be treated in any one specific policy. The Framework was intended to provide future policymakers with some guidance on how to think about the carbon consequences of biomass.

Dr. Khanna asked Dr. Fawcett how to think about leakage in the carbon pool framework given the lack of separability between direct and indirect effects. Dr. Fawcett said that by indexing over feedstock and regions and then looking at the incremental demand change in a specific feedstock in a specific region, he hoped to be able to disentangle aggregate from specific effects.

In response to a question from Dr. Khanna, an EPA representative confirmed that FASOM did not subtract avoided coal emissions in deriving a BAF for a feedstock.

Dr. Khanna directed the Panel’s attention to the draft response to charge question 1a which asked about criteria for considering different temporal scales. Dr. Skog mentioned the possibility of no stabilization of the difference in the carbon stocks between the policy case and the reference case. Dr. Harmon directed the Panel’s attention to the case in Appendix C (Case 4 on p. C-15 of Appendix C) where the environment is changing in a way that enhances the ability of the system to remove carbon from the atmosphere over time. For this case, capital T is reached when  $NBE_{\Delta t}$  approaches an asymptote.

Panelists discussed the possibility of the NBE term not reaching an asymptote (or stabilizing) and Dr. Harmon pointed out the graphs in Appendix C that depicted such cases (Figures C-17 and C-19).

Dr. Khanna reviewed the basic difference between the Panel's alternative cumulative  $BAF_{\Sigma t}$  which accumulates annual differences in carbon stocks on the land versus EPA's cumulative  $BAF_t$  taken at a single point in time. She explained that the general view from the most recent subgroup call that the Panel does not want to recommend a particular cumulative metric but they did want to recommend a cumulative metric over any short-run calculations.

Dr. Woodbury summarized a possible language for the report as follows: (1) The Panel favors selection of a BAF based on cumulative emissions; and (2) It would also be scientifically valid to have some weight on the timing of those emissions.

Dr. Skog pondered what changes should be made to the Panel's recommendation given NCASI's presentation on the effect of avoided methane emissions for woody mill residues that are used for bioenergy rather than being landfilled. Dr. Khanna pointed out that the Panel's draft report already mentioned methane in regard to waste feedstocks. Dr. Harmon said there were other ways to take the time profile of emissions into account other than  $BAF_{\Sigma t}$  but Dr. Khanna said further nuances in cumulative metrics were not needed. Dr. Harmon clarified that it is not true the  $BAF_{\Sigma t}$  is weighted toward the near-term. He said it was weighted toward the end of the time period (T).

On the subject of how to do a retrospective evaluation, Dr. Khanna said she did not see how an econometric analysis would be useful to tease out the role of biomass in historic carbon emissions. She directed the Panel's attention toward model features. Dr. Abt said he would not assume the wedge (the difference in carbon between the reference case and the policy case) is robust between modeling frameworks and that comparing the wedge between modeling frameworks would help elucidate whether the model structure was important. Dr. Khanna noted the wedge was not observable because the counterfactual was unobservable. In the discussion of perfect foresight models, Dr. Sedjo said the language should recognize that a perfect foresight model only assumes that parties will, over time, make correct decisions on average, with errors on the plus and minus sides offsetting each other. This could be true even if the majority of parties make the "wrong" decision. Dr. Khanna said she preferred language that recommended EPA be aware of some criteria for model selection and various features of models.

Dr. Hill said he would like to see specifics on how the alternative framework would be implemented for a specific feedstock. Dr. Khanna said she didn't think the Panel could go beyond the stylized examples because FASOM would be needed to implement the Panel's alternative framework.

Dr. Woodbury noted the alternative framework ( $BAF_{\Sigma t}$ ) would not be helpful with other questions like changes in soil carbon, international imports and exports and other phenomena which would not be captured by carbon stock data. Dr. Khanna pointed out that leakage is already incorporated when using carbon pool data.

Dr. Stallworth asked the Panel whether they had any "big picture" concerns about the Executive Summary given that she wanted to post a close-to-final version by August 21, 2015, some three weeks prior to the next public teleconference. She noted that if the Panel is to stick to its current timeline and close out its review on September 9, 2015 (without scheduling additional

teleconferences), the report that will be posted should represent the Panel's consensus views as expressed on the call. Dr. Woodbury said he would like to see some mention in the Executive Summary of global warming potential (GWP) and non-CO2 greenhouse gases.

Dr. Khanna thanked the Panel and Dr. Stallworth adjourned the meeting.

Holly Stallworth, Ph.D. /s/  
Designated Federal Officer

Certified as Accurate:

Madhu Khanna, Ph.D. /s/  
Chair, SAB Biogenic Carbon Emissions Panel

NOTE AND DISCLAIMER: The minutes of this public meeting reflect diverse ideas and suggestions offered by committee members during the course of deliberations within the meeting. Such ideas, suggestions, and deliberations do not necessarily reflect definitive consensus advice from the panel members. The reader is cautioned to not rely on the minutes to represent final, approved, consensus advice and recommendations offered to the Agency. Such advice and recommendations may be found in the final advisories, commentaries, letters, or reports prepared and transmitted to the EPA Administrator following the public meetings.