

**Summary Minutes of the
U.S. Environmental Protection Agency
Science Advisory Board
Biogenic Carbon Emissions Panel
Teleconference
January 27, 2012**

Biogenic Carbon Emissions

Panel Members:

Dr. Madhu Khanna, Chair
Dr. Robert Abt
Dr. Morton Barlaz
Dr. Richard Birdsey
Dr. Marilyn Buford
Dr. Mark Harmon
Dr. Jason Hill
Dr. Stephen Kelley
Dr. Madhu Khanna
Dr. Lydia Olander
Dr. John Reilly
Dr. Roger Sedjo
Dr. Ken Skog
Dr. Peter Woodbury

Purpose: The Science Advisory Board (SAB) Biogenic Carbon Emissions Panel discussed its draft SAB report, dated 1-19-12, on EPA's *Accounting Framework for biogenic CO₂ Emissions from Stationary Sources (Sept. 2011)*.

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

Other EPA Staff: Suzanne Kocchi, Jennifer Jenkins, Sara Ohrel, Allen Fawcett, Dave Evans, Heather Klenick

Public: Joel Visser (Sidley Austin), Michael Barson (National Small Business Association), Andrew Childers (Bloomberg Bureau of National Affairs), Tip Boddington (Edison Electric Institute), Dan Roach (Rayonier), Mike Jostrum (Plum Creek Timber Company), Linda Wilson (New York Attorney General's Office), Dawn Reeves (Inside EPA), Sheila Karpis (Environmental Working Group), Sascha Lyutse (Natural Resources Defense Council), John Gunn (Manomet Center for Conservation Sciences), Jeff Morris (Town Resource Management), Bob Cleaves (Biomass Power Association), Chip Murray (National Alliance of Forest Owners), Scot Quaranza (Dogwood Alliance), Shannon Binns (Green Press Initiative), Patrick Griffis, Los Angeles County Sanitation District), Gregg Morris (Green Power Institute), Paula Hammer (North Carolina Air Quality), Mark Flugge (ICF International), Bruce McCarl (Texas A&M University), Steve Priskey (Virginia Tech), Neil Sampson (The Sampson Group), Thomas Buchholz (Spatial Informatics Group), Charlie Canham (Cary institute of Ecosystem Studies), Joshua

Martin (Environmental Paper Network), Thomas Wells (Southern Company), Paul Noe (American Forest & Paper Association), Mary S. Booth (Partnership for Policy Integrity), Timothy Searchinger (Princeton University), Reid Miner (National Council for Air and Stream Improvement), Steve Hamburg (Environmental Defense Fund), William McDow (Environmental Defense Fund), David Carr (Southern Environmental Law Center), Dave Tenny (National Alliance of Forest Owners), Joshua Martin (Environmental Paper Network), Sasha Lyutse (Natural Resources Defense Council)

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/1db6ae2df05de7e8525793b0065b76e!OpenDocument&Date=2012-01-27>

- Agenda
- Federal Register Notice
- Charge Questions
- Draft Report of 1-19-12
- List of public speakers
- Public Comments (written):
 - American Forest and Paper Association
 - Biomass Power Association
 - David Garman
 - National Alliance of Forest Owners
 - Natural Resources Defense Council
 - Partnership for Policy Integrity
 - National Council for Air and Stream Improvement
 - Rubber Manufacturers Association
 - The Wilderness Society
 - Timothy Searchinger

Meeting Summary

The discussion followed the plan presented in the meeting agenda.

FRIDAY, JANUARY 27, 2012

Dr. Stallworth convened the meeting and explained that the Science Advisory Board operates under the Federal Advisory Committee Act. Dr. Madhu Khanna reviewed the agenda. Dr. Jennifer Jenkins (OAQPS) thanked the Panel for their efforts and asked that the Panel distinguish between the technical and policy recommendations. Dr. Jenkins also mentioned that it would be help if the Panel could include specific suggestions for how to construct an anticipated baseline forecast. Dr. Jenkins also pointed out that the Executive Summary had a mistake in it when, on p. 4, it referred to the Biogenic Accounting Factor (BAF) as being constrained between 0 and 1 when that constraint only applied to the Level of Atmospheric Reduction (LAR).

Beginning the public comment session, Dave Tenny, on behalf of the National Alliance of Forest Owners (NAFO), urged the Panel to make recommendations that are both scientifically sound and good practice, balancing complexity with pragmatic consideration. Mr. Tenny also mentioned a forthcoming report from Dovetail Partners on the carbon cycle which he said he would share with the Panel. NAFO's comments are posted at the meeting webpage.

Mr. Paul Noe, on behalf of the American Forest and Paper Association (AF&PA), also urged the Panel to avoid making the Framework unnecessarily complex. Mr. Noe asked the Panel to concur with EPA's classification of logging residues and forest product mill residues (e.g. black liquor) as "anyway" emissions. AF&PA's comments are posted at the meeting webpage.

Dr. Mary Booth, on behalf of the Partnership for Public Integrity (PFPI), voiced agreement with the Panel that the reference point baseline approach in the Framework was not appropriate. Dr. Booth was critical of the Framework's implicit assumption of an instantaneous increase in carbon sequestration and urged the Panel to advise EPA to restrict biomass power credits. PFPI's comments are posted at the meeting webpage.

Dr. Timothy Searchinger, speaking on his own behalf, criticized language in the report that suggested bioenergy should be judged only by whether it has reduced total emissions 100 years from now. Dr. Searchinger said the Panel should not be placing zero value on the damages from global warming over the next 100 years. Dr. Searchinger's comments are posted at the meeting webpage.

Dr. Reid Miner, on behalf of the National Council for Air and Stream Improvement (NCASI), voiced support for EPA's reference point baseline approach because it captures the actual net transfers to the atmosphere at a point in time. Dr. Miner defended the use of large spatial scales using the reference point approach in order to properly characterize the flows of carbon from the atmosphere. NCASI's comments are posted on the meeting webpage.

Dr. William McDow, on behalf of the Environmental Defense Fund (EDF), offered specific comments on how forestry operations work in the real world. Dr. McDow cautioned the Panel against separating forest waste from whole trees, e.g. whether a crooked tree would be classified as waste or a whole tree. Dr. McDow said that FIA data could be used to measure the net change in forest systems using a regional approach. Dr. McDow also said that using a regional approach does require using a reference point baseline.

Dr. Steven Hamburg, also on behalf of EDF, said it was really important to recognize the distinction between conceptual and operational strategies. Dr. Hamburg said Forest Inventory and analysis (FIA) data could be used to look at the spatial uncertainty relationship using FIA data. Dr. Hamburg said a regional BAF with an opt-out provision would provide the best chance of success.

Mr. David Carr, on behalf of the Southern Environmental Law Center, thanked the Panel for saying that biomass cannot be considered a priori carbon neutral. Mr. Carr objected to the suggestion (on p. 11 – 12 of the draft SAB report) that implied that only when the time for regrowth is much more than 100 years would the carbon debt be a serious problem. Mr. Carr warned that certification systems don't address carbon accounting.

Mr. Joshua Martin, on behalf of the Environmental Paper Network, thanked the Panel for their hard work and echoed some of the technical comments made by other speakers. Mr. Martin took issue with the idea that black liquor emissions were not a problem and pointed out the prominence of pulp and paper facilities in EPA's new greenhouse gas emissions map. Mr. Martin said the SAB draft report was a bit confused about "anyway" emissions and how they should be incorporated in the Framework.

Ms. Sasha Lyutse, on behalf of the Natural Resources Defense Council, congratulated the Panel for rejecting the notion of the carbon neutrality of bioenergy. Ms. Lyutse voiced support for the Panel's statement that "Only when bioenergy results in additional carbon being sequestered above and beyond the anticipated baseline (the "business as usual" trajectory) can there be a justification for concluding that such energy use results in little or no increase in carbon emissions" (p. 3). Ms. Lyutse said that bioenergy facilities should not be allowed to free ride on existing forest growth in the region. Ms. Lyutse warned against sustainability certification because it would incorporate the carbon impacts of biomass. NRDC's comments are posted on the SAB website.

Mr. Robert Cleaves, on behalf of the Biomass Power Association (BPA), asked the Panel to consider the benefits of using "open loop biomass" which, he suggested, are equivalent to EPA's concept of "anyway" emissions. Mr. Cleaves said that additional certification requirements are not needed for the use of open loop biomass. BPA's comments are posted on the SAB website.

Dr. Khanna directed the Panel to discuss the issues as listed in the agenda, beginning with issues related to long recovery feedstocks.

In reference to the time frame for considering anthropogenic impacts on climate, one panelist noted that the statements on the 100 year time frame were too strong and that he did not agree with implications that only changes in stock over the course of 100 years are important. Another panelist voiced support for Dr. Searchinger's criticism of the draft SAB report's statements about the time frame for considering the impacts of carbon emissions. Another panelist complained that the statements about a 100 year time frame muddled up policy judgment with science.

After one panelist expressed a concern that the Framework should not treat harvest and investment as independent, Dr. Khanna suggested this topic fit under the use of an anticipated baseline as well as the Panel's discussion of leakage. Dr. Khanna asked for any other comments on the science of the carbon cycle. In discussing the Allen et al. (2009) paper, panelists noted that its result (that peak warming is insensitive to the timing

of emissions) required a constraint on total cumulative emissions to 1 trillion tons over time.

On the topic of other greenhouse gases, Dr. Khanna said she believed that inclusion of N₂O from fertilization should not be included (in the calculation of a BAF) because it was outside the boundary of EPA's analysis given that EPA was not looking at upstream lifecycle emissions (in order to treat biogenic emissions in a manner that paralleled fossil fuel emissions). She noted that N₂O releases (e.g. denitrification) associated with direct land use change should be included. One panelist expressed a concern that the Panel should be pointing out all adverse consequences, even if the Panel agreed that N₂O associated with fertilization should not be incorporated in the calculation of BAF, given that the goal of policy was to reduce greenhouse gas emissions. Dr. Khanna pointed out that the Panel's draft report does point out the limitation of the current framework which disregards all upstream and downstream emissions.

On the topic of using a Global Warming Potential (GWP) metric for capturing biogenic emissions in the context of long recovery feedstocks, the Panel discussed the approach taken by Cherubini et al. (2011). The limitations of the GWP approach were recognized. One panelist suggested the text be revised so that the Panel recommends that the EPA consider alternative metrics for GHG accounting. On the topic of GWP, it was pointed out that Cherubini et al.'s approach did not take into account landscape effects as well as the phenomena of anticipatory planting. Dr. Khanna asked for revisions in Section 4.6 to reflect these points.

On the topic of scale, it was noted that a fuelshed scale would more closely connect the source with the emitter. The use of an anticipated baseline, however, might not require a sub-national scale. One panelist noted that an ability to monitor where feedstocks are coming from would render the use of a national scale more feasible. After Dr. Khanna pointed out the close connection between the choice of baseline and the choice of scale, panelists debated whether price effects could be seen at smaller scales, e.g. a fuelshed scale.

Panelists discussed whether it was necessary to calculate a facility-specific BAF. It was noted that one of the Panel's suggestions was for EPA to consider a feedstock-specific BAF or, perhaps, a BAF tailored to feedstocks by region. Panelists agree that the BAF doesn't have to be facility-specific.

One panelist pointed out the sensitivity of LAR to the regional scale and recommended a fuelshed approach, even if the fuelshed was not in a single contiguous area.

One panelist offered a proposal for how to develop an anticipated baseline for the use of pulpwood exclusively for fuel using FIA data to estimate life expectancy tables for stands of trees to look at a biomass energy use case to determine what would have happened to a stand had it not been harvested, while acknowledging that this approach would not include market mediated induced effects like anticipatory investment.

Panelists pondered the difference between taking harvest as a starting point for analysis versus starting with stand establishment (planting). Some panelists advanced the idea that starting with stand establishment would yield different results as compared to starting the analysis with harvest. One panelist expressed skepticism that current stationary facilities' purchase of biomass was envisioned in the past when trees were planted. Dr. Khanna pointed out that most investment decisions in forestry were driven by higher value uses for saw timber and pulpwood and, consequently, these phenomena weakened the effect of anticipatory planting for energy biomass. Dr. Khanna also pointed out that phenomena of anticipatory planting should already be incorporated in the baseline. Dr. Khanna pressed the proponents of anticipatory planting to offer ideas for how it would affect the projection of an anticipated baseline or any other advice contained in the Panel's draft report. She wondered whether the Panel's report should just recommend that the anticipated baseline approach incorporate these phenomena of anticipatory planting. It was noted that the phenomena of anticipatory planting could change from region to region, depending on, for example, the feasibility of switching land from agriculture to forestry. One panelist noted that most commercial forests in the South were planted in anticipation of timber prices, not the biomass market. A couple of panelists voiced the opinion that it would not matter whether the analysis started with harvest or with planting.

On the topic of logging and agricultural residues, Dr. Khanna asked the Panel whether they thought the waste residues should be categorized as "anyway" emissions or whether the time path of decay should be modeled (assuming residues could be collected without other environmental damages). One panelist objected to the concept of anyway emissions for forest residues and offered a numerical example for carbon storage through residues in a landscape under different harvest intervals. He noted that the rate constant of loss could potentially be much higher for agricultural waste and thus equating agricultural residues with anyway emissions might be more acceptable.

On the topic of short rotation crops, Dr. Khanna noted that there was no issue with direct emissions or LAR. One panelist inquired about how the Framework treated nonproductive lands and pondered whether implementation flexibility could be provided for feedstocks like black liquor that has unusual circumstances.

On the draft report's statements about the Intergovernmental Panel on Climate Change (IPCC) accounting method, one panelist voiced disagreement with the draft report's statements that supported EPA's conclusion that the IPCC approach was not appropriate to apply to adjusting a stationary source's emissions with a biogenic accounting factor. Dr. Khanna pointed out that the IPCC approach doesn't link the stationary source to the feedstock. One panelist did not think the Framework needed to link emissions to the stationary source while others insisted that such a causal link was indeed necessary. Dr. Khanna asked whether anyone objected to the SAB draft report's statement that carbon neutrality cannot be assumed for all biomass energy a priori. No one objected. Dr. Khanna clarified that the Framework was definitely a facility-driven approach. One panelist noted that EPA's proposal was facility-specific but that the Panel's advice was to

get away from a facility-specific approach and move toward a feedstock-specific approach.

Dr. Khanna said the Panel could expand its comments that were critical of the Framework's narrow system boundaries from the atmospheric perspective.

On the topic of alternatives to the BAF, Dr. Khanna asked panelists for their thoughts on certification and offsets. One panelist noted that certification systems were no guarantee of carbon neutrality. Another noted that a certification system could be created that would piggyback onto current certification systems while incorporating carbon considerations. Others worried whether certification would guarantee additional carbon sequestration. Dr. Khanna said any certification system would have to indicate whether growth was taking place to match harvests. It was pointed out that certification would not necessarily ensure the Level of Atmospheric Reduction (LAR) = 1. It was noted that the term "certification" might be confusing given its various meanings in different contexts. New York State, for example, has a "certification" that requires that a forest be maintained as forest for 100 years. A panelist expressed concern that the opt-out provision would discourage the use of biomass. Default BAFs by feedstock were suggested as one alternative by one panelist but then were criticized by another panelist.

Dr. Khanna noted that the Panel had few quibbles with the application of EPA's Framework to agricultural feedstocks. This was challenged by a panelist who said he didn't see any difference between feedstocks. Again, Dr. Khanna asked the panel for their reaction to the Framework's application to short-rotation crops. Panelists discussed changes in soil carbon and the use of fertilizer. Dr. Khanna pointed out that regions were not needed to determine the LAR for short-rotation crops and thus the Panel's criticism of the regional approach would not apply to agricultural feedstocks. One panelist said that the use of agricultural feedstocks caused a long term change in soil carbon. Dr. Khanna suggested such a change was being accounted for in the Total Change in Site emissions Per Acre (SITE_TNC) variable but that there may be implementation problems associated with measuring it. Another panelist noted that the greatest uncertainty with forest biomass is associated with the LAR variable whereas for agricultural feedstocks, the greatest uncertainty was in the leakage category. A panelist reminded listeners that there was huge differences among agricultural feedstocks, from one field to another and from one farmer to another.

Before adjourning the meeting Dr. Stallworth said that subgroups would be needed to address the various issues discussed during the call and that she and Dr. Khanna would follow up with actions items via e-mail. Dr. Stallworth reminded listeners of the next call, on March 20, 2012, and said that additional teleconferences could be scheduled if the Panel needed additional time to reach consensus.

On Behalf of the Committee,
Respectfully Submitted,

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