

**Summary Minutes of the  
U.S. Environmental Protection Agency  
Science Advisory Board  
Biogenic Carbon Emissions Panel  
Public Teleconference  
May 29, 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. Roger Sedjo  
Dr. Ken Skog  
Dr. Tristram West  
Dr. Peter Woodbury

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: Sara Ohrel, Allen Fawcett, Chris Zarba

Public: Kevin Moran (America Chemistry Council); Katie Fletcher (Biomass Magazine); Dawn Reeves (Inside EPA); Max Williamson (Biogenic CO<sub>2</sub> Coalition); Linda Tsang (American Forests and Paper Association and American Wood Council); Reid Miner (National Council for Air & Stream Improvement); Stan Lancey (American Forests and Paper Association); Katie Shank (Biotech Industry Organization); Jessie Levine (Rubber Manufacturers Association); Sasha Stashwick (Natural Resources Defense Council); Peter Thorn (University of Iowa); Steve Woock (Weyerhaeuser); Nathalie Mills (Southern Company); Dan Foster (Food and Drug Administration); Bennett Leon (State of Vermont)

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/339636eacf3c0c9a85257de7006d3d4b!OpenDocument&Date=2015-05-29>

- Calculation for GWP100 for forest thinnings based on a 10-year difference between the reference case and the policy case by Dr. Ken Skog.
- General Conclusions on Biogenic Carbon Accounting by Madhu Khanna with Comments from Panelists.
- Individual Panel Comments, Updated April 8, 2015
- Individual Panel Comments. Updated April 23, 2015
- American Chemistry Council comments submitted by Kevin Moran of Pine Chemistry Panel
- Antares Group Inc. Comments submitted by Ed Gray
- Green Power Institute comments submitted by Gregg Morris
- Natural Resource Defense Council comments submitted by Sasha Stashwick
- The Earth Partners comments submitted by Emily McGlynn

Dr. Stallworth gave her opening statement noting the compliance of the Panel with the Federal Advisory Committee Act. She also noted that the Panel would be teleconferencing three additional times over the summer, specifically on July 6, August 6 and September 9, 2015. Dr. Khanna thanked the Panel and the public for their participation in this review, noting that the subject matter was extremely complex and there were no simple answers on how to design a framework to account for biogenic carbon emissions.

### ***Public Comments***

#### *Emily McGlynn, The Earth Partners*

Ms. McGlynn said the Earth Partners is a private company that designs and implements business models for land restoration. Today, the most successful business model to restore landscapes is to use biomass, what she called “conservation biomass.” As examples of three types of conservation biomass, Ms. McGlynn cited (1) Utilizing woody invasive brush; (2) restoration of perennial native grasses in the coastal prairie regions of the Gulf Coast; and (3) using mountain pine beetle infested trees. The Earth Partners was trying to pair biomass recovery with land restoration and ecosystem service benefits in each of these cases. Invasive brush has continued to encroach on rangelands and grasslands, even at high rates of brush removal. Even with aggressive regrowth and removal rates, it’s long been the objective of landowners not just to keep up with the brush challenge but to reduce brush overgrowth. If the brush could be used by stationary sources, that would provide landowners with a profitable way to address brush. Ms. McGlynn urged the Panel to consider counterfactual scenarios of the fate of utilized biomass material so that net land carbon impacts would be captured in the biogenic accounting framework.

#### *Sami Yassa, Natural Resources Defense Council (NRDC)*

Mr. Yassa commended the Panel for its continuing efforts to guide EPA. He called the Panel’s attention to the Agency’s treatment of leakage, i.e. positive leakage in which changes in forest management occur in order to meet displaced demand for forest products. To the extent demand is displaced to other forests, we can expect significant transfers of carbon removal to other forests outside the “fuelshed.” The Framework does not provide guidance on how to quantify this kind of leakage. Without quantifying demand displacement, it isn’t possible to assess carbon

impacts of stationary facilities' use of biomass. We believe the uncertainties associated with long term economic forecasts are substantial. Therefore we recommend two simple precautionary assumptions that can capture the demand displacement for wood products, specifically: (1) When wood that would have otherwise gone to a non-biomass, it is reasonable to assume that demand for that product is displaced on a 1:1 basis to a new, similar forest stand; and (2) displaced demand is met with similar, standing trees.

Dr. Khanna noted that the Forests and Agricultural Sector Optimization Model (FASOM) used by EPA is taking demand displacement into account, along with other market effects. She noted that a 1:1 displacement would be contrary to market effects because price will likely increase and demand would fall.

*Reid Miner, National Council for Air and Stream Improvement (NCASI)*

Reid Miner explained that NCASI is funded by forest products industry. Understanding impacts of increased use of biomass requires an anticipated baseline versus a BAU baseline, however EPA could decide that a rule based on a reference point baseline was more robust and practical. The issue of scale also needs deliberation. EPA might decide that carbon balances based on individual plot scale were the most accurate, however there are benefits to using much larger spatial scales. Deciding on a spatial scale that is the most practical is not a scientific endeavor. The Panel's recommendations may not address very practical considerations that EPA must take into account.

Dr. Rose questioned Mr. Miner about his claim that spatial scale was not a scientific issue. Mr. Miner responded that science can say a lot about spatial but that practical considerations will also play a role, e.g. availability of data.

*Gregg Morris, Green Power Institute*

Mr. Morris said yesterday was a sad day for biomass power industry in California. One of our pioneering plants, Blue Lake Power LLC, announced it was closing, after being in operation since 1985 but it can no longer compete with photovoltaics. Mr. Morris said the biomass industry faces the prospect of shrinking to half its size as power contracts expire. He noted that California's "cap and trade" program on carbon emissions excludes biomass (residue and by-product fuels). Even in this environment, we have biomass facilities shutting down. Mr. Morris said the existing industry needs clarity on how their fuels (residues and by-products) are going to be treated with respect to their carbon consequences. He asked the Panel to go ahead and recommend a Biogenic Accounting Factor (BAF) of 0 for residues and wood by-products.

In response to a question from Dr. Khanna, Mr. Morris clarified that "residues and by-products" included by-products of forests products industry (sawmill residues), wood type materials diverted from landfill disposal, e.g. discarded pallets, parks and recreation byproducts, crop residues (trimmings from orchards), thinnings from forests and commercial harvesting byproducts.

*Linda Tsang, American Forests and Paper Association and American Wood Council*

Ms. Tsang said that a future anticipated baseline may be the Panel's preferred approach to calculating a BAF however it is important to remember that the calculation method has to be

transparent, reproducible, consistent, etc. She reminded the Panel that for member companies, calculating a BAF would not just be a scientific exercise but would be a reality of their permitting process. The future anticipated baseline approach would only add to uncertainty. Ms. Tsang said carbon accounting should be based on broad regional scales over a long time period to capture investment responses. No industry has more interest in protecting forest carbon industry than the forests and paper industry.

### *Panel Discussion of General Principles*

Dr. Khanna explained that she took the Panel's comments on her 4-23-15 general principles (posted on the meeting webpage) and revised them.

As the first general principle, Dr. Khanna offered the following:

1. EPA should acknowledge the overall goal is to estimate net C emissions association with using biomass to produce energy in support of policies seeking to control greenhouse gas emissions.

Dr. Rose suggested the statement say "track" rather than "control." Dr. Skog said we should be seeking to characterize GHG in a manner that is consistent with EPA's Inventory of Greenhouse Gases and Sinks, i.e. tons per CO<sub>2</sub> equivalent to represent radiative forcing over 100 years. Dr. Khanna said the Panel could address this issue later.

Dr. Khanna stated her second principle as follows:

2. The appropriate time scale for considering climate impacts from biogenic feedstocks is the time period over which biophysical effects occur in response to a policy induced shock in demand for bioenergy.

Dr. Harmon requested the term "shock" be replaced with "change." Dr. Skog said "atmospheric" effects was more accurate than "biophysical." Dr. West questioned whether the choice of time period was a scientific question. Dr. Khanna explained that choosing a time period (T) was unavoidable and that the Panel had been asked for advice on how to approach this. Dr. Skog reminded the Panel of the scientific practice of capturing radiative forcing over 100 years. Dr. Rose said the Panel should simply say the temporal effect of emissions should be accounted for. Dr. Khanna said the details of choosing a time period could be addressed in the first charge question.

Dr. Khanna stated her third general principle as follows:

3. EPA's anticipated baseline approach to calculating BAFs, while subject to implementation difficulties and all the uncertainties associated with modeling the future, is preferred to the reference point approach.

Dr. Skog voiced support for this statement. Dr. Harmon said we should keep in mind the BAF is a relative number, that it's basically a ratio, and that a lot of uncertainties would cancel when comparing two projected scenarios.

Dr. Khanna stated her fourth general principle as follows:

4. A regional approach, rather than a facility-specific approach, should be used to calculate BAFs that are representative for the region with the option of facilities to make a case to override the default so that facilities have an incentive to do better than the average.

Dr. Hill voiced concern with the new language because it seems very one-sided because it left out facilities that are worse than average. Dr. Khanna said it would be desirable to provide an incentive for facilities to reduce their carbon footprint. Other panelists agreed with dropping the sentence about overriding the default. Dr. Woodbury said he would prefer to say “an advantage of a regional approach” rather than making a recommendation. Panelists discussed what geographic scale constitutes a “region” and Dr. Harmon said he would send out his written comments on scales. Dr. Khanna noted a regional approach was more necessary for long-rotation feedstocks.

Dr. Khanna stated her fifth general principle as follows:

5. EPA should be explicit about its policy context within which the framework is to be utilized.

Dr. Khanna noted that the 2014 Framework said its intent is to evaluate biogenic carbon emissions from stationary sources with correction for the carbon cycle effects. Dr. Khanna said you could infer policy context is regulation of emissions from stationary sources under the Clean Air Act. She asked the Panel to drill a little deeper and specify what kind of information would be useful to have. Dr. Woodbury said the Panel should state that the Framework should be evaluated for its use in any specific policy context. Dr. Harmon noted that the BAF calculation would change radically depending on specific boundary conditions.

Dr. Rose said he struggled with the fact that the Panel had to imagine all the possibilities and try to make a decision about whether the policy context matters. Dr. Rose voiced concern about the Panel giving carte blanche approval to the Framework without evaluation in a specific policy context.

### *Panel Discussion of Charge Question 1*

Dr. Khanna called the Panel’s attention to charge question 1, as follows:

1. What criteria could be used when considering different temporal scales and the tradeoffs in choosing between them in the context of assessing the net atmospheric contribution of biogenic CO<sub>2</sub> emissions from the production, processing, and use of biogenic material at stationary sources using a future anticipated baseline?

Dr. Khanna differentiated between an “analytical time horizon” ( $T_a$ ) and the time period over which biophysical effects occur. She noted Dr. Rose’s concept of  $T_a$  as the length of time it takes for all feedback effects to work themselves out, i.e. when  $BAF_t = BAF_{t+1}$ . She also noted that, per Dr. Rose’s suggestion, for consistency, the Framework should use the  $T$  associated with the longest lived feedstock.

Dr. Khanna also described Dr. Skog’s proposal to look at radiative forcing effect, noting its relevance for a different reason. There is a difference in the timing between the initial release of CO<sub>2</sub> and the time it’ll take to recapture the CO<sub>2</sub> through regrowth and sequestration and so on.

Dr. Khanna said the 2014 Framework treated emissions as equivalent regardless of whether they are emitted today or 100 years from now and a radiative forcing calculation would correct for

that. Panelists debated the concept of radiative forcing and whether it offered a superior way to track carbon emissions.

Dr. Skog said the radiative forcing calculation was needed in order to capture what the atmosphere sees. Panelists debated whether the initial CO<sub>2</sub> level was a factor in calculating radiative forcing and Dr. Rose suggested the Panel stay as close to emissions as possible. Panelists discussed the conditions under which a forest plantation could be considered carbon neutral.

Dr. Khanna again asked the Panel to think about whether they wanted to recommend using radiative forcing or just the simple approach of accumulating emissions over time.

Dr. Khanna asked the Panel to think about whether the 100 year time frame needs to be revisited and whether 1 ton of emissions today be considered equal to 1 ton of emissions 50 years from now. Dr. Khanna noted that treating current emissions and future emissions as equivalent does not imply that all current emissions will be offset by sequestration in the future and therefore  $BAF = 0$ .

Dr. Reilly pointed out that the radiative forcing of a unit of CO<sub>2</sub> is always 1 over a 100 year period; therefore converting emissions and sequestration at different points in time to radiative forcing would not affect the BAF if the time horizon for calculating their radiative forcing always remained a 100 years.

Dr. Rose said the issue is how you think about landscape equilibration over time since there can be new demand associated with the policy. Dr. Khanna that the standard practice is to assume a policy exists in perpetuity.

Dr. Khanna said she and Dr. Stallworth would revise the general principles and draft a response to charge question 1 which would be shared with the Panel for their comments. Dr. Stallworth said she would take comments from panelists and post a revised version on the web prior to the next teleconference on July 6, 2015.

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

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