

SEPTMEBER 11, 2018

TO: Corporate Correspondents — CC 18-006

FROM: Dirk Krouskop, President



SUBJECT: Biogenic CO₂ - Draft EPA SAB Findings and Recommendations -
August 29, 2018

EPA's Science Advisory Board (SAB) recently issued a draft report providing updated recommendations to EPA on how to account for biogenic CO₂ emissions from stationary sources. The August 2018 SAB draft is available on the [EPA website](#). This draft report comes from the full SAB after it rejected earlier recommendations from the SAB Expert Panel assembled to assist the SAB in reviewing the issue. The important differences include the following:

- The full SAB recommends that time horizons used to estimate biogenic CO₂ emissions be aligned with the timing of targets in climate change policies or rules. This differs from the SAB Panel recommendation that the time horizon be selected based on the time required for the landscape to respond to the policy or rule. The new SAB recommendation will often result in higher (i.e., less favorable) emission factors for biogenic CO₂ than the Panel's earlier recommendation.
- In earlier iterations, SAB's Expert Panel recommended using anticipated future baselines for determining biogenic CO₂ emissions. In the new material, while SAB devotes considerable text to the use of anticipated future baselines, it raises concerns about their complexity and impracticality and opens the door to using reference point baselines, provided they are periodically adjusted going forward. In commenting on past activities of the SAB and SAB Panel, the industry has generally supported the use of reference point baselines.

In many areas, the SAB backs away from specific recommendations, indicating that such recommendations can only be made once EPA identifies the specific regulatory or policy context in which biogenic CO₂ emissions are to be addressed. The SAB also instructs EPA to more thoroughly justify the approaches, models, and other choices it makes.

Below we briefly summarize the key elements of the most recent SAB findings and recommendations.

BACKGROUND

In July 2011, EPA issued a three-year deferral of the application of Prevention of Significant Deterioration (PSD) and Title V permitting requirements to biogenic CO₂ emissions from stationary sources. That deferral is described in NCASI Corporate Correspondent Memoranda [No. 11-015](#) and [No. 11-022](#).

In September 2011, EPA's initial thinking on how to account for biogenic CO₂ emissions was described in a *Draft Accounting Framework for Biogenic CO₂ Emissions from Stationary Sources*. The contents of the draft framework report are examined in NCASI Corporate Correspondent Memorandum [No. 11-028](#).

Following release of its draft framework report, EPA formed an expert Panel under its Science Advisory Board (SAB) to review the draft framework. The results of the SAB Panel review were described in NCASI Corporate Correspondent Memorandum [No. 12-029](#). In its review, the expert Panel identified several limitations and challenges.

In November 2014, EPA reissued its accounting framework, addressing some of the issues raised by the Panel in 2012. The contents of the revised framework report are examined in NCASI Corporate Correspondent Memorandum [No. 15-002](#).

Upon issuing the revised framework, EPA reconvened the SAB Panel to review and address specific questions related to the revised framework. The SAB Panel reviewed the draft framework revisions from EPA and issued its findings in February 2016. The February 2016 report from the SAB Panel is summarized in NCASI Corporate Correspondent Memorandum [No. 16-004](#). The SAB Panel submitted the February 2016 draft report to the full SAB for review.

The SAB failed to approve the February 2016 Panel report, identifying several issues it wanted reexamined. In response, in June 2017, the SAB Panel issued an updated report. NCASI Corporate Correspondent Memorandum [No. 17-012](#) summarized the important changes reflected in this update. The June 2017 SAB Panel report was again submitted to the SAB. Once again, the SAB failed to approve the Panel report. This time, instead of sending the report back to the Panel, the SAB decided to rewrite the report itself. On August 29, 2018, the SAB issued its revised draft.

On a different track, in 2017 and again in 2018, Congress passed Appropriation Acts which contained text directing EPA and other government Agencies to "establish clear and simple policies for the use of forest biomass as an energy solution, including policies that ... reflect the carbon-neutrality of forest bioenergy and recognize biomass as a renewable energy source, provided the use of forest biomass for energy production does not cause conversion of forests to non-forest use..." This direction from Congress is described in NCASI Corporate Correspondent Memorandum [No. 17-008](#). At this point, it is too early to know how, or if, EPA will integrate the direction from Congress with SAB's work on biogenic carbon.

SUMMARY OF THE SCIENCE ADVISORY BOARD AUGUST 29, 2018, DRAFT REPORT

Important changes from earlier recommendations

Time horizon: In earlier reports, the SAB Panel observed that it can take considerable time for forested landscapes to adjust to policies and changes in demand. The Panel therefore recommended that determinations of net biogenic CO₂ emissions be based on time horizons long enough for these adjustments to occur (e.g., 100 years).

The SAB disagrees with the Panel's recommendation. Instead, the SAB recommends that the time horizon used to assess biogenic CO₂ emissions be based on the timing associated with the specific policy or regulation. The SAB recommendation would mean that, for instance, if a policy has the objective of meeting an emissions target in 2030, the regulations implemented under that policy would judge net emissions of biogenic CO₂ over the same period.

Most climate change policies incorporate emissions targets that take effect relatively quickly. The Obama Administration's Clean Power Plan, for instance, contained final reductions targets for 2030 and interim targets at earlier dates. The SAB's recommendation, therefore, is likely to result in higher calculated biogenic CO₂ emissions from many types of forest-derived feedstocks than would be calculated using the Panel's earlier recommendation.

Baselines: In earlier iterations, the SAB and the Panel recommended that biogenic CO₂ emissions associated with a policy be calculated relative to an "anticipated future baseline" scenario without the policy.¹ In the August 2018 recommendations, this approach is retained but the SAB opens the door to using a "reference point baseline" approach.² Specifically, the SAB notes that "the reference point approach, if adjusted at regular intervals (e.g., every 5 to 10 years) to account for any additional regional sequestration, would address the SAB's earlier concerns, allowing for the more direct establishment of a baseline while capturing additional increases in carbon stocks." The reference point baseline approach is inherently less uncertain than the anticipated future baseline approach because it does not rely on modeled future scenarios. The report also points out that the members of the SAB "continue to recognize the difficulty of undertaking an anticipated baseline approach, and practicality should be an important consideration in the agency's decision making. All methods considered should be subject to an evaluation of the costs of implementation and compliance and weighed against any increase in accuracy and precision that they might yield."

In its comments over the years, the industry has generally favored the reference point baseline approach. That said, it must be noted that if forest carbon stocks eventually stabilize as predicted, a periodically adjusted reference point baseline creates the possibility that temporary reductions in stocks caused by changing demand or natural disturbances could result in increased net emissions attributed to forest-derived biomass. This could be addressed by the careful selection of averaging periods and updating intervals and use of statistical methods to identify changes that are outside of the range of normal variation. It might also be necessary to examine the underlying causes of observed declines in forest carbon stocks before attributing them to the use of forest-derived biomass for energy instead of other causes such as urban expansion.

Regardless of the baseline approach selected, the SAB recommends that the baseline be periodically updated.

¹ With an anticipated future baseline, if the policy results in higher biogenic CO₂ emissions than would occur without the policy, the calculated emissions would be greater than zero. On the other hand, if the policy results in lower biogenic CO₂ emissions than would occur without the policy, the calculated emissions would be less than zero

² With a reference point baseline approach, net emissions are calculated as the difference in emissions from a system at two points in time rather than the difference between two scenarios.

The metric for expressing Biogenic Assessment Factors (BAFs)³: The SAB report is consistent with earlier recommendations from the SAB Panel which concluded that a cumulative metric be used to calculate BAFs and that EPA should consider two cumulative metrics, BAF_T and $BAF_{\Sigma T}$.⁴ Past recommendations, however, did not express a preference while the SAB report states that “until the implications of the differences are better understood, we support EPA’s cumulative BAF (which we designate as BAF_T) approach, i.e., the difference in carbon stocks at the end of the time horizon T.”

The selection of models: In its August 2018 findings, the SAB indicates that a model should be selected against a set of criteria, which EPA has failed to provide. SAB further states that:

Regardless of the model structure chosen (reference baseline or future anticipated baseline), validation and evaluation of the model will be critical. ... Similarly, understanding model sensitivity to input parameters and assumptions is important with respect to assessing model applicability over time. The model selected for estimating BAFs should be reviewed and updated at regular intervals using observed changes in economic and land use conditions....

In many applications involving biomass use, EPA relies on the Forestry and Agricultural Sector Optimization Model (FASOM), a complex model which considers a range of biophysical and economic factors, including the response of landowners to increased demand for biomass. In its 2014 draft framework report, EPA used FASOM to illustrate the application of the anticipated future baseline approach. In past reviews, the SAB Panel has been generally supportive of the use of such integrated models and has emphasized on several occasions the importance of considering economic factors. Integrated biophysical and economic models generally indicate that, in response to increased demand, landowners undertake a range of activities that help to mitigate the carbon impacts of increased harvesting. Environmental groups have been generally critical of models that consider economic factors, citing the uncertainty that economic analysis introduces.

Regarding the use of FASOM or similar models, SAB states that “such models have not been validated for this application, and heavy reliance on them is unwarranted.” SAB also observes that “the more complex the model, the greater the dependence of outputs on input assumptions; thus, sensitivity and uncertainty analyses are needed to adequately interpret the results from complex models. Often, simple models are best.” In this context, SAB cites Bucholz et al. (2014)⁵, a study which identified reference point baselines as being more accurate than anticipated future baselines.

Areas where the SAB recommendations are largely consistent with earlier recommendations

- The SAB finds that it cannot provide recommendations in several areas due to the lack of guidance from EPA regarding the specific policy context within which the framework is to be applied. It asks EPA to provide this guidance and then allow additional SAB review.

³ BAFs are essentially emission factors applied to biogenic CO₂ that adjust stack emissions to reflect removals of CO₂ from the atmosphere and, in some cases, avoided emissions over a time period.

⁴ BAF_T is the cumulative effect on carbon stocks over a period while $BAF_{\Sigma T}$ represents a cumulative ton-year approach which considers both the cumulative tons of carbon as well as the length of time each ton of carbon is in the atmosphere. Emissions calculated using BAF_T will be lower than those calculated using $BAF_{\Sigma T}$.

⁵ Bucholz et al. (2014), “Uncertainty in projecting GHG emissions from bioenergy,” *Nature Climate Change*, Vol. 4, December 2014

- The emissions determinations and BAFs should be feedstock specific. Feedstock determinations and factors should not be site specific. Instead, they should be generic, representative and widely applicable to the extent possible.
- Feedstock calculations and factors should not be performed at the plot- or site-level because facilities require feedstock from the landscape. Instead, SAB recommends BAFs be “region-specific.” The size of a region is not specified, however. In the past, the SAB Panel has been generally supportive of a regional approach, without specifying the scale of the regions. EPA has developed example BAFs using FIA regions.
- The calculations should be based on changes in carbon stocks rather than carbon flows.
- Residuals used for energy should be assessed relative to an alternative non-use scenario. In the case of woody mill residuals, the SAB notes that methane releases should be considered where the alternative is landfilling. SAB points to NCASI’s work as an example of how this can be done.

Areas where the SAB report is silent on issues addressed in earlier SAB Panel reports

Earlier draft recommendations from the SAB Panel addressed issues important to the forest products industry that are not addressed in the most recent SAB draft. These include the following:

- There is no mention of black liquor solids. Given the brief discussion of woody mill residuals, however, it is possible that the SAB agrees with earlier EPA and SAB assessments which found that the use of black liquor solids for energy and chemicals results in net zero biogenic CO₂ emissions compared to alternative management methods for these solids, and that it was not addressed in this draft because of that agreement.
- There is no mention of thinnings or harvest residuals used for energy. Past discussions in the SAB Panel have suggested varying opinions among Panel members about the CO₂ emissions associated with using these materials for energy compared to alternative scenarios.

The SAB is scheduled to conduct a “quality review” of its August 2018 draft report at its meeting on September 26, 2018, from 1:00 p.m. to 5:00 p.m. (Eastern). Information on that meeting, including instructions on how to participate and comment, are available on the [EPA website](#). NCASI has not yet decided whether it will provide comments.