National Alliance of Forest Owners
*Investing in the Future of America's Forests*

March 16, 2012

Submitted via email

Holly Stallworth, Ph.D.
Designated Federal Officer
EPA Science Advisory Board
United States Environmental Protection Agency
1300 Pennsylvania Avenue, NW
Washington D.C. 20004
stallworth.holly@epa.gov

**Re: National Alliance of Forest Owners' Comments to the Science Advisory Board Biogenic Carbon Emissions Panel**

Dear Dr. Stallworth and Panel Members:

The National Alliance of Forest Owners (NAFO) welcomes the opportunity to submit these comments to the Environmental Protection Agency's (EPA's) Science Advisory Board (SAB) Biogenic Carbon Emissions Panel (Panel), in advance of its March 20, 2012 conference call to discuss the Panel's revised *Deliberative Draft Report* (*Report*) on EPA's *Accounting Framework for Biogenic $CO_2$ Emissions from Stationary Sources* (Sept. 2011) (*Framework*). NAFO and its members are key stakeholders who contribute to the solutions that private forests and forest biomass bring to lowering greenhouse gas (GHG) emissions and, in turn, are keenly impacted by any controls or regulations on biogenic GHG emissions. NAFO – as the party that filed the Petition for Reconsideration with EPA that led to the present SAB process – is an acutely interested stakeholder in EPA's reconsideration of the treatment of biogenic $CO_2$ emissions from stationary sources and the scientific analysis EPA will utilize in making ultimate policy and regulatory decisions on how to treat biogenic $CO_2$ emissions. A detailed summary of NAFO's past participation was included in its October 18, 2011 comments to this

Panel.[1] As we have done from the earliest outset of EPA's review of the treatment of biogenic GHG emissions, we remain prepared to provide our significant scientific, technical, and pragmatic expertise and experience and a considerable body of scientific studies and analyses to assist the Panel throughout its review and evaluation of the *Framework*.

## Introduction

As NAFO and its members have explained in earlier comments and presentations to the Panel and EPA, critical to NAFO's mission in reducing GHG emissions is supporting the use of biomass as a renewable energy supply that offers important climate and energy security benefits. EPA's decision to reconsider its approach to regulating biogenic $CO_2$ emissions from stationary sources offers an opportunity to encourage the continued development of climate-beneficial bioenergy capacity. It is NAFO's goal that, with the assistance of the Panel's expertise, EPA will develop a regulatory framework that accurately reflects the climate benefits offered by biomass, encourages its continued development, and promotes appropriate distinctions between bioenergy and other types of energy such as fossil fuel combustion. We believe that the Panel can achieve these goals by making recommendations that avoid unnecessary complexity and by using its expertise to apply scientific theories to real-world scenarios.

First, we applaud the Panel's commitment to distinguishing between scientific and policy questions and leaving the latter category to EPA. However, the Panel need not retreat to the consideration of purely abstract and theoretical issues detached from real world considerations relevant to forest management and bioenergy production. It is not enough for the Panel to verify that a particular model or approach to carbon accounting is scientifically valid at an abstract level. Instead, the model's assumptions must be rigorously evaluated to ensure that they are consistent with the way that forests are managed and biomass energy is actually produced in the United States. When the Panel finds that multiple alternatives accurately reflect the forestry and forest products

[1] National Alliance of Forest Owners' Comments to the Science Advisory Board Biogenic Carbon Emissions Panel (Oct. 18, 2011) (NAFO October SAB Panel Comments), *available at* http://yosemite.epa.gov/sab/SABPRODUCT.NSF/MeetingCal/D1D833DBF27626A6852578F600610AC5?OpenDocument.

sectors and are capable of efficient implementation, it is appropriate to include such an assessment in the final report and allow EPA to make an informed policy choice among such alternatives. At the same time, when, as a result of its experience, expertise, and investigation, the Panel finds that a model's assumptions do not accurately reflect real-world domestic forestry practices, it must include that information in the final report, and recommend against adoption of the model. For example, the Panel should make clear that the assumptions underlying stand-based accounting methodologies, as well as other assumptions or methodologies that constrain temporal and spatial scales, are inconsistent with U.S. forest management practices and thus are inappropriate for inclusion in an accounting framework.

Similarly, the Panel should not merely defer consideration to EPA of factors and conclusions that can inform EPA's policy decisions. Again, as a result of its expertise and experience, the Panel is uniquely qualified to assess the costs and benefits of various approaches and determine whether they can be successfully implemented from both a technical and practical perspective. The Panel must bring its experience to bear and inform EPA's decision-making process with sound, objective, and reliable information. It is appropriate, after identifying the pragmatic challenges, costs, and benefits of alternative approaches, to defer a legitimate policy choice for EPA with the benefit of the Panel's analysis of the underlying considerations. It is also appropriate for the Panel to conclude that the benefits of an alternative cannot be achieved without increasing transaction costs to the point that the proposal becomes technically or practically infeasible. These circumstances arise, for example, in facility-based chain-of-custody approaches that require the collection of detailed data from countless landowners and suppliers. In such circumstances, the Panel should inform EPA that the alternative is not viable and recommend against its adoption.

Finally, above all, the Panel must strive to reduce uncertainty and complexity. The Panel's conclusions will serve as the foundation for EPA's regulatory decisions, which, in turn, will have a critical and long-lasting influence on the future of sustainable bioenergy in the United States. As the Panel has noted, the *Framework* proposed by EPA presents "daunting technical challenges" for implementation due to its complexity. *Report*, at 6. Unfortunately, NAFO remains concerned that the Panel's efforts to

provide greater scientific precision and accuracy threaten to increase rather than decrease that complexity. In our prior comments, we provided a series of ways in which the Panel could reduce the complexity of the EPA's proposed regulatory program.[2] Those suggestions are summarized below. First, NAFO urges the Panel to limit its analysis to actual rather than hypothetical biomass energy feedstocks in order to develop generally applicable principles that could be applied uniformly to all biomass energy feedstocks without introducing complex analyses into the regulatory framework. Second, we urge the Panel to focus on spatial and temporal scales that are relevant to U.S. forestry practices in order to avoid complex analyses that are simply irrelevant to biomass energy production. Third, we urge the Panel to avoid consideration of factors that are beyond the scope of EPA's regulatory review. Fourth, we urge the Panel to accept the limits of science in resolving uncertainty and avoid recommending impractical data collection processes that produce diminishing returns in improved accuracy. After reviewing the revised *Report*, it is clear that the Panel has addressed some of these suggestions and has made efforts to reduce the complexity in its recommendations. However, on the whole NAFO remains concerned that the recommendations still are so complex that, if adopted, they unfortunately would have the perverse effect of discouraging or foreclosing the development of biomass energy due to the high transaction costs of compliance.

By applying the principles described above and focusing on the pragmatic realities of the forestry and biomass energy sectors, NAFO believes that it is possible to develop a simple and straightforward approach to accounting for biogenic $CO_2$ emissions from woody biomass that can be efficiently and effectively implemented. As described below, such an approach would be based on three threshold determinations, as informed by scientific theory and an understanding of the forestry and biomass industry sectors: (1) the adoption of a national scale; (2) a reference point baseline; and (3) a 100-year time scale. Once these three principles are adopted, the *Report*'s conclusions will properly inform EPA on appropriate and scientifically sound

[2] *See* National Alliance of Forest Owners' Comments to the Science Advisory Board Biogenic Carbon Emissions Panel (Jan. 25, 2012) (NAFO January SAB Panel Comments), *available at* http://yosemite.epa.gov/sab/SABPRODUCT.NSF/MeetingCal/1DB6AEA2DF05DE7E8525793B0065B76E?OpenDocument.

alternatives, including the option of a categorical exclusion for biogenic $CO_2$ emissions. While a conclusion on how to treat biogenic emissions in a regulatory regime ultimately entails some policy choices for EPA, this recommended approach will enable EPA to make sure decisions based on the strongest possible scientific and technical considerations and, for that reason, should be included in the Panel's recommendations to EPA.

## A. Biogenic $CO_2$ Regulations Must Be Based on a National Scale

Before an accounting methodology can be developed, there are a number of threshold issues which must be resolved, including the appropriate spatial scale for regulations. A national scale is the only alternative identified by EPA and the Panel that is supported by science, consistent with actual U.S. forest management practices, and practical to implement. While the ultimate selection of a spatial scale may entail policy considerations, the strong scientific and technical support for a national scale warrants its inclusion in the Panel's recommendations to EPA.

### 1. A Broad Spatial Scale is Required to Reflect Domestic Forest Management Practices

In order to properly reflect the way in which forests are managed and biomass feedstocks are produced, the Panel must recommend and EPA adopt a broad spatial scale. Because the goal of forest management is to produce a continuous supply of forest products, it is fundamentally inconsistent with forestry practices to isolate a single stand and arbitrarily choose a starting point for the carbon cycle. By choosing to start the carbon cycle at the time of planting or harvest such an approach creates an arbitrary carbon credit or debt.[3] While it is theoretically valid to view the carbon cycle in a linear fashion, tracking the movement of a single carbon atom or the carbon stocks on a single plot of land, this approach is inconsistent with the way that forests are managed in the United States. Thus, even if the stand-based accounting principles included in Walker (2010) and Biomass Energy Resource Center (2012) are scientifically valid in an abstract sense, *see* Report at 11, they should not be incorporated into an accounting

[3] *See* National Alliance of Forest Owners' Comments on "Deferral for CO2 emissions from Bioenergy and Other Biogenic Sources under the Prevention of Significant Deterioration and Title V Programs: Proposed Rule" (May 5, 2011) at 21 (NAFO Deferral Rule Comments) (submitted as Attachment 1 to NAFO October SAB Panel Comments).

framework as their primary assumptions are at odds with the established practices of the forestry sector as a whole.

Forest owners and managers do not treat each stand independently, but instead develop broad management plans at a landscape level. These plans are designed to produce diverse age classes and a constant supply of harvestable forest products over an extended period of time. As a result, the processes of $CO_2$ emission and sequestration occur simultaneously within the landscape.[4] Therefore, as NAFO has previously explained, the emissions associated with harvesting are offset on a continuous basis by regeneration that is occurring on the many other stands that are not harvested and forest stocks remain stable.[5] By focusing on the simultaneous emissions and regeneration, it is also apparent that a broad spatial scale is consistent with the science of the carbon cycle. While the carbon cycle is often viewed linearly, focusing on the growth, harvest, and regeneration of a single tree or stand, it can also be viewed in a single temporal plane as emissions and regeneration take place in different portions of a single, managed landscape. Thus adopting a broad spatial scale would be consistent with both the science of the carbon cycle and domestic forest management practices.

In the same manner, the forest products industries – including biomass energy – are integrated at a national level as individual producers also obtain supplies from a vast and ever-changing array of forest owners and suppliers.[6] Moreover, the producers compete with each other in the marketplace making it impossible to isolate impacts on small spatial scales. Indeed, as the Panel noted, a national scale is necessary to model forestry markets and the economic behavior of landowners. *Report* at 32-35. Thus, individual forest owners continually respond to market signals that are sent at national or even global scales, and shift their plans in anticipation of and response to new market demands. While geographic constraints may fix the location of forests and biomass energy facilities, the markets that they serve are unconstrained and treat all

---

[4] Jim Boyer *et al.*, Carbon 101: Understanding the Carbon Cycle and the Forest Carbon Debate 5-7 (Dovetail Partners, Jan. 2012) (submitted to the Panel, Jan. 27, 2012), *available at* http://www.dovetailinc.org/reportsview/2012/responsible-materials/pjim-bowyerp/carbon-101.
[5] NAFO Deferral Rule Comments at 20.
[6] *See* National Alliance of Forest Owners' Comments on Call for Information: Information on Greenhouse Gas Emissions Associated with Bioenergy and Other Biogenic Sources; 75 Fed. Reg. 41173 (July 15, 2010)" at 24-25 & n.45 (NAFO Call for Information Comments) (submitted as Attachment 2 to NAFO October SAB Panel Comments).

forest owners and suppliers equally. Thus, both market demands and the response from forest owners is best captured at a national scale. Indeed, this relationship can be readily observed in historical data as forest owners have repeatedly responded to new market demands, increasing national forest carbon stocks in the process.[7] Thus, the nature of forest products markets also requires that biogenic $CO_2$ emissions be considered on the broadest scale possible.

2. A National Scale is the Most Appropriate Choice Among Broad Scales

A national scale is clearly superior from a technical standpoint among other options such as a broad landscape-based spatial scale. First, a national scale responds most closely to the global nature of climate change and EPA's regulatory authority under the Clean Air Act to implement air policies at a national level. Thus, it avoids the problems of scale sensitivity and domestic leakage that plague regional approaches. *See Report* at 6. It also has the advantage of treating all biomass facilities equally and allowing market forces to dictate their location based on considerations such as supply, demand, and market efficiency. Second, a national scale will prove the most practical, predictable, and least burdensome approach to implement. As EPA and NAFO have noted, data from the U.S. Forest Service's Forest Inventory and Analysis (FIA) program and other sources are readily available and can be incorporated into a regulatory framework at little cost to EPA or the regulated entities. *Framework* at 31-32.[8] Thus adopting a national scale would serve the important purpose of reducing complexity and transaction costs and thereby promote climate-beneficial biomass energy.

The application of a national scale is also consistent with the Panel's own recommendations in its discussion of alternatives. The Panel's endorsement of the development of default BAFs for feedstock categories as an alternative to facility-specific BAFs would necessarily be applied at a national level. *Report* at 45. While the necessity of distinguishing among feedstocks is addressed below, the Panel's inclusion of this alternative shows that a national, rather than facility-based, approach to

[7] As Boyer *et al.* (2012) explain, domestic timber production increased by more than 50 percent from 1950 to 2010, while forest carbon stocks also increased. Boyer *et al* (2012) at 10.

[8] *See also*, National Alliance of Forest Owners' Comments to the Science Advisory Board Biogenic Carbon Emissions Panel (Dec. 21, 2011) (NAFO December SAB Panel Comments) at 4, *available at* http://yosemite.epa.gov/sab/SABPRODUCT.NSF/MeetingCal/1DB6AEA2DF05DE7E8525793B0065B76E?OpenDocument..

accounting for biogenic $CO_2$ emissions is consistent with scientific theory and would be appropriate in practice.

While EPA might consider the alternative of incorporating a broad spatial scale by adopting a facility-based fuelshed approach, this does not withstand close scrutiny of sound science or pragmatic forest management considerations. As NAFO has previously explained, while a facility-based approach would theoretically allow EPA to treat each biomass facility independently for attribution purposes, such an approach would prove technically and practically infeasible. First, applying such an approach at the landscape level would be technically infeasible as individual facilities have overlapping fuelsheds and obtain feedstocks from a vast and constantly changing array of landowners.[9] Thus there is no way to distinguish between facility fuelsheds based on geography. The only alterative would then be a complex stand-based chain-of-custody approach, but such an approach would prove practically infeasible due to the high transaction costs.[10]

While the selection of a spatial scale ultimately entails some policy considerations by EPA, such policy decisions must be supported by reliable, credible, and sound scientific conclusions. Under that standard, it is not a choice where all options are equal. As the Panel recognizes, a national scale offers a number of important benefits that could ensure that the final regulations adopted by EPA can be successfully implemented. Having noted the shortcomings in EPA's proposed regional scale, *Report* at 26-27, the Panel should likewise assess the alternative choices and inform EPA of its conclusions. NAFO is confident that, if the Panel were to do so, a national scale approach would emerge as the only alternative that is fully supported by scientific and technical considerations and capable of efficient implementation.

### B. A Reference Point Baseline Must Be Adopted Because No Other Alternative Is Capable of Implementation

One of the most challenging issues related to the development of an accounting framework for biogenic $CO_2$ emissions is the selection of a baseline. After considering several alternatives, EPA selected a reference point baseline because it provided "a straightforward way to assess an individual stationary source's emissions using existing

[9] NAFO Deferral Rule Comments at 21.
[10] NAFO January SAB Panel Comments at 13-14.

data." *Framework* at 42. NAFO supports this conclusion as a sound policy decision. In contrast, the Panel has proposed an anticipated future baseline that seeks to isolate the positive impact of biomass energy and determine what would have happened in the absence of additional biomass energy demand. Despite its theoretical logic, the Panel's attempt to describe such an approach only confirms the inherent complexity associated with anticipatory future baselines and demonstrates why EPA's straightforward and accurate approach must be applied.

As NAFO has noted in previous comments to the Panel, it is virtually impossible to isolate the impact of biomass energy and determine what would have happened without demand for biomass energy.[11] In reality, biomass energy is a small segment of the forestry sector and is intimately related to other forest products in both time and space. First, in most cases, biomass is not produced and harvested as a separate product for energy production. Instead, the forestry residues and milling residuals that are combusted for energy represent co-products that are produced alongside more valuable primary products. Indeed, even when roundwood is harvested and used directly for biomass energy, it is harvested as part of a thinning process that is designed to improve the quality of the remaining trees that will be harvested later for other, more valuable forest products.[12] It is simply not economical to grow and harvest mature trees for energy.[13] Instead, biomass co-products provide incremental economic value to the forest owner producing subtle, yet important, market signals that encourage biomass production and increase forest carbon stocks. As a result of this close relationship between forest products and the long time frames over which forest rotations occur, there is no simple and straightforward way to strip out biomass energy demand and determine what would have happened in its absence.

As the Panel is well aware, developing an anticipated future baseline is a daunting, although ultimately unnecessary, task. The approach described in the revised *Report*, which seeks to "combine the economic behavior of landowners with the associated dynamics of forest management and growth while allowing for competing uses of land for forestry, agriculture, and other activities," *Report* at 33, is a marked

[11] NAFO January SAB Panel Comments at 14-15.
[12] NAFO January SAB Panel Comments at 8.
[13] NAFO Deferral Rule Comments at 26 & n.69.

improvement over the approach described in the initial report. Importantly, this approach seeks to account for the decision-making processes of forest owners and reflects the anticipatory nature of investments in forests. *Report* at 34-35.[14] By doing so, it moves closer to identifying and attempting to account for all of the factors that can influence forest management decisions and the quantity of forest carbon stocks.

But even the inclusion of anticipatory investments and other market forces is not enough to produce a comprehensive model of the impact of biomass energy. As the *Report* notes elsewhere, the purpose of an accounting methodology is to account for the changes that "the atmosphere sees" as a result of biogenic $CO_2$ emissions from stationary sources. *E.g.*, *Report* at 15. But as currently formulated, the Panel's anticipated future baseline only considers what the forest sees, as it focuses solely on "changes in forest stocks." *Id.* at 2.3. This ignores the primary climate benefit of biomass energy – the displacement of fossil fuel emissions.[15] Thus, the assertion that "a reduction in the rate of increase of carbon stocks is equivalent to an increase in emissions," *id.* at 4, is incorrect. A reduction in the rate of increase in carbon stocks that results in a reduction in fossil fuel emissions could actually reduce total emissions. In other words, the anticipated future baseline described by the Panel, which is already hopelessly complex, must either become even more complex in order to accurately reflect what "the atmosphere sees" or remain fundamentally flawed for failing to fully capture the carbon cycle associated with forest-based biomass energy.

Further, the adoption of an anticipated future baseline would raise significant legal concerns and add uncertainty to the implementation process. By requiring forest owners to continue to increase forest carbon stocks at current rates, applying an anticipated future baseline to stationary source regulations would transform what is a voluntary, climate-friendly practice into a mandatory duty. If such a regulatory program were in place the baseline could also be applied elsewhere, for example in carbon offset programs. If these regulatory programs make carbon sequestration a mandatory duty for forest owners, they could present regulatory takings issues. Thus, the potential legal

[14] *See also* NAFO January SAB Panel Comments at 14-15.
[15] Boyer *et al.* (2012) at 9; NAFO December SAB Panel Comments at 2-3.

concerns associated with an anticipated future baseline would add further uncertainty and make implementation even more difficult.

In light of this complexity, and ultimately the uncertainty surrounding these future projections, *see Report* at 35-36, it was certainly appropriate for EPA to propose a reference point baseline. While it cannot entirely isolate the impact of biomass energy, a reference point baseline does describe what "the atmosphere sees" as a result of the forestry sector as a whole. As EPA recognized in the *Framework*, as long as forest carbon stocks are stable or increasing, the atmosphere does not see any increase in $CO_2$ concentrations as a result of the forestry sector. *Framework* at 25-26.[16] Indeed, when fossil fuel displacement and long-term storage in forest products are considered, the atmosphere is likely to see a reduction in $CO_2$ concentrations when forest carbon stocks remain stable.[17]

This is not to say that the predictive models referenced by the Panel have no purpose, but only that they are too complex, uncertain, unmanageable, and inaccurate in their current form to be included as a part of a regulatory program. Given these concerns over implementation, the Panel should support EPA's conclusion that a reference point baseline is appropriate and instead recommend ways that EPA can use these predictive models to monitor forest carbon stocks and perhaps refine its regulatory approach over time.[18]

### C. The Climate Impact of Biogenic $CO_2$ Emissions Must Be Assessed on a Policy-Relevant 100-Year Time Scale

Finally, as the Panel appropriately recognizes, the selection of a time scale is an important policy decision that will have a significant effect on the final regulations adopted by EPA. But, despite the Panel's clear preference for a 100-year time scale *see Report* at 10-13, it declines to make a recommendation, asserting instead that the choice of time scales is a policy decision that must be resolved by EPA, *Report* at 44.

---

[16] *See also* Roger A Sedjo, Carbon Neutrality and Bioenergy: A Zero-Sum Game?, Resources for the Future Discussion Paper 6 (April 2011), *available at* http://www.rff.org/documents/RFF-DP-11-15.pdf.

[17] *See* NAFO Call for Information Comments at 7-8. As NAFO has previously explained, domestic forests have long been considered carbon sinks due to increasing forest carbon stocks and this trend is expected to continue in the future. *See generally*, NAFO Deferral Rule Comments; NAFO Call for Information Comments; National Alliance of Forest Owners Comments on "Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule (NAFO Tailoring Rule Comments) (submitted as Attachment 3 to NAFO October SAB Panel Comments).

[18] *See* NAFO January SAB Panel Comments at 13, 15.

While there are certainly tradeoffs between different time scales, sound science reflecting pragmatic considerations squarely favors a 100-year time scale. While other time scales may also be scientifically correct, *Report* at 11, only a 100-year time scale is consistent with EPA's regulatory goals, domestic forestry practices, and the administration's mandate promoting climate-beneficial renewable energy.

First, a 100-year time scale is consistent with EPA's regulatory goals for biogenic $CO_2$ emissions. EPA decided to defer regulation of biogenic $CO_2$ emissions, in part, to "conduct a study of the science surrounding biogenic $CO_2$ emissions and their role in the carbon cycle." 76 Fed. Reg. 43,490, 43,499 (July 20, 2011). Further, to understand how biogenic $CO_2$ emissions affect the climate, the time scale must help explain what "the atmosphere sees" as a result biogenic $CO_2$ emissions. A 100-year time scale can answer these questions. First, as the Panel notes, climate modeling studies have demonstrated that "the peak warming in response to greenhouse gas emissions is primarily sensitive to cumulative greenhouse gas emissions over a period of roughly 100 years, and is relatively insensitive to the emissions pathway within that timeframe." *Report* at 11. Thus adopting a 100-year time scale will allow EPA to consider the biogenic carbon cycle over time periods that are relevant to the global climate system. In contrast, as the Panel notes, shorter time periods such as those relied upon by Walker (2010) and others, focus on irrelevant intermediate time scales and do not provide an appropriate analysis of the biogenic carbon cycle because these intermediate effects prove transient and disappear over longer time scales. *Report* at 11.[19]

Second, a 100-year time scale is consistent with the manner in which forestry is practiced in the United States. As the *Report* notes "it is important to consider the turnover times of different biogenic feedstocks in justifying how they are incorporated into the framework." *Report* at 10. Although, as described above, the forest carbon cycle is best considered spatially on a landscape scale, it is nevertheless instructive to also consider it in a linear fashion for purposes of conducting a thorough scientific review. While in theory it would be possible to adopt a different time scale for each feedstock corresponding to its turnover time, such an approach is unnecessary as few,

[19] *See also* NAFO January SAB Panel Comments at 9.

if any, forests are managed with turnover times longer than 100 years. Thus by adopting a 100 year time scale, EPA would simplify the regulations while ensuring that, for any given feedstock, the landscape would have turned over at least once during the relevant time period and avoid the potential for short-term, transient carbon fluxes that could skew the analysis of the carbon cycle. In contrast, if a shorter time period – on the order of 30 to 50 years – were adopted, some feedstocks may not undergo a complete turnover during the study period. Thus, a 100 year time scale offers a simple, uniform approach to carbon accounting that is consistent with forestry practices.

Third, adoption of a 100-year time scale will provide appropriate incentives for biomass energy that are consistent with the administration's commitment to promoting renewable fuels, such as biomass.[20] As the Panel recognizes, the climate benefits of biomass, as compared to fossil fuels, become more pronounced as time scales increase. *Report* at 13. In other words, as NAFO has explained, the climate benefits of biomass energy continue to grow over time as each successive rotation used for biomass displaces more fossil fuels.[21] While a time scale of 100 years is likely sufficient to create the incentives needed to promote biomass energy, shorter time frames may have the perverse effect of discouraging biomass energy due to the differences in energy produced by equivalent amounts of biomass and fossil fuels. Thus, adopting a shorter time frame that discourages biomass energy produces the wrong kind of tradeoffs as it would lock in the continued combustion of fossil fuels in lieu of biomass, despite the recognized long term benefits biomass offers.

### D. Recommendations for a Regulatory Approach to Biogenic $CO_2$ Emissions

In the event that a national scale, reference point baseline, and 100-year time scale are adopted, EPA can develop a scientifically accurate, predictable, and straightforward regulatory framework for woody biomass. First, within this framework, a categorical exclusion can be implemented as a practical matter because domestic forest management practices and sound science demonstrate that biomass energy will not

---

[20] *See, e.g.*, President Barack Obama, *Remarks by the President on America's Energy Security*, March 30, 2011, *available at* http://www.whitehouse.gov/the-press-office/2011/03/30/remarks-president-americas-energy-security; Letter from President Barack Obama to Governors John Hoeven and Chet Culver (May 27, 2009), *available at* *http://governorsbiofuelscoalition.org/?page_id=461*; President Barack Obama, Memorandum for the Secretary of Agriculture, the Secretary of Energy, and the Administrator of the Environmental Protection Agency, 74 Fed. Reg. 21,531-32 (May 5, 2009).

[21] NAFO December SAB Panel Comments at 2-3.

result in a net increase in atmospheric $CO_2$ concentrations on a policy-relevant spatial or temporal scale. Second, the continued applicability of the categorical exclusion will depend solely on the continued use of sustainable forestry practices, which can be monitored on a continuous basis through the comparison of carbon stocks over time.

1. A Categorical Exclusion is Appropriate as a Practical Matter as Woody Biomass Feedstocks Do Not Increase Net Atmospheric $CO_2$ Concentrations

When considered in the context of a national spatial scale and 100-year time scale, the scientific conclusions in the *Report* fully support a categorical exclusion for biogenic $CO_2$ emissions from woody biomass, even if such position cannot be accepted *a priori*. As NAFO noted in its previous comments, the Panel must rigorously test and apply the best science to determine the climate impacts of biogenic $CO_2$ emissions, but must do so with the goal of producing an accounting framework that is simple to implement and provides reasonable certainty to EPA and stakeholders. As NAFO previously observed, this can be accomplished by using sophisticated scientific models to confirm broadly applicable regulatory approaches.[22] Indeed, the Panel has already started down this path by endorsing feedstock-based BAF values as an alternative to facility-specific BAFs. However, this recommendation does not go far enough. Taken to its logical conclusion, it supports a categorical exclusion for woody biomass as all feedstocks derived from woody biomass would have a BAF of zero.

First, when the carbon cycle is applied on a national spatial scale, a categorical exclusion is warranted because carbon stocks are stable and are expected to remain so for many years to come. Unless and until carbon stocks decline on a national scale, there will be no net biogenic $CO_2$ emissions from woody biomass because emissions will be balanced by carbon sequestration on a regular and continuous basis.[23] As the Panel is aware, projecting forest carbon stocks far into the future is fraught with uncertainty, but even the most conservative models suggest that domestic forests will

[22] NAFO January SAB Panel Comments at 7-8.

[23] Sedjo (2011) at 6; Jim Boyer *et al*., Life Cycle Impacts of Forest Management and Bioenergy Production 1-13 (Dovetail Partners July 2011), *available at* http://www.dovetailinc.org/files/DovetailCABioenergy0711.pdf; Bruce Lipke, *et al.*, Life cycle impacts of forest management & wood utilization on carbon mitigation: knowns and unknowns, Carbon Management 2(3) 303-333 (2011), *available at* http://www.future-science.com/doi/pdf/10.4155.cmt.11.24.; *see also* NAFO December SAB Panel Comments at 2; NAFO Deferral Rule Comments at 2-5; NAFO Call for Information Comments at 9-10.

remain a net carbon sink for decades into the future.[24] Since the near-term trajectory of forest carbon stocks remains positive, it makes no sense to incorporate complex regulatory processes to address hypothetical concerns about events that may happen decades into the future. A more prudent approach is to incorporate a monitoring program, as described below, so that EPA can , if necessary, modify its regulatory approach in the future.[25]

Second, the Panel's own analyses based on a time path of decay or recovery confirm that biomass energy will not increase net atmospheric $CO_2$ concentrations over the relevant temporal and spatial scales. As discussed above, peak warming is insensitive to short-term carbon fluxes that occur on time scales shorter than 100 years. *Report* at 10-13. Thus, the question that the Panel, and ultimately EPA must answer is which, if any, biomass feedstocks that are used (or are expected to be used) for biomass energy will increase atmospheric $CO_2$ concentrations over time scales that exceed 100 years. There are none.

In this *Report* the Panel reverses course and asserts that forestry residues are not "anyway emissions" when combusted for energy because they do not decompose instantaneously. Instead, the Panel asserts that forestry residue emissions must be modeled through a complicated process that estimates a time path of decay. *Report* at 18-20 & App'x A. Even if the Panel's approach were accepted in theory, it is simply irrelevant when considered on an appropriate time scale. Regardless of the type of forestry residue considered, these models show that decomposition would be nearly complete after 100 years. Thus emissions from forestry residues are "anyway emissions" on a 100-year time scale, and there is no net increase in atmospheric $CO_2$ concentrations as a result of the combustion of these feedstocks. As a result, a categorical exclusion for forestry residues is warranted.

---

[24] Further, as NAFO has previously explained, a regulatory approach that promotes biomass energy is likely to increase, rather than decrease forest stocks by creating incentives for individual landowners to maintain or even increase forested acres. NAFO Deferral Rule Comments at 3-4; NAFO December SAB Panel Comments at 2.

[25] Even if domestic forests were to become a net carbon source, the appropriate regulatory response is far from certain. For example, to the extent that the change is attributable to stochastic events such as fires and disease or increased urbanization, EPA may conclude that it need not alter its approach to regulating bioenergy.

By the same token, the scientific models endorsed by the Panel for evaluating the time path of recovery for long-recovery feedstocks confirms that these products will produce no net change in atmospheric $CO_2$ concentrations on policy-relevant time scales. Here, the Panel relies primarily on Cherubini (2012) and the $GTP_{bio}$ factor.[26] As the Panel notes, under Cherubini's model this factor initially increases after harvest, but for all feedstocks used in biomass energy, it will return to zero within 100 years. *Report* at 11-13. Thus, these models confirm that the biomass feedstocks that are currently used (or expected to be used in the future) will have no affect on peak warming and, on policy relevant time scales, will not alter what "the atmosphere sees." Because there are few, if any, commercial forests managed on time scales longer than 100 years, all woody biomass would have a BAF of zero, meaning that a categorical exclusion would also be warranted for long-recovery feedstocks.

Thus, contrary to the Panel's current recommendations, which would require the application of a time path of decay or recovery for all woody biomass, *Report* at 11, 18-20, 44 a categorical exclusion can be applied instead. This demonstrates a fundamental flaw in the Panel's recommendations, which is not supported by the content of the *Report*. In the *Report*, the Panel appropriately recognizes that the relevance of these time path functions is dependant on the time scale, and that concepts such as carbon debt are not relevant when long time scales are considered. *Report* at 11. Thus, while these concepts, without doubt, are valuable tools for understanding the carbon cycle and the impact of biogenic $CO_2$ emissions on net atmospheric $CO_2$ concentrations, there is no *a priori* basis for including them in a final regulatory framework as the Panel suggests. Instead, as NAFO has previously suggested, these models can simply be used to confirm that, under all circumstances and for all feedstocks, biomass energy does not increase atmospheric $CO_2$ concentrations.[27] While NAFO urges the Panel to replace its current recommendations with a categorical exclusion for woody biomass, the Panel should, at a minimum, note

[26] As the Panel has noted elsewhere, the application of stand-based accounting methodologies – including those proposed by Cherubini *et al.* (2012) – are inconsistent with domestic forestry practices and produce arbitrary results because they ignore the relationship between harvested and regenerating stands in the larger landscape. *See Report* at 11 (criticizing carbon debt concept). Thus, while the concept of carbon debt may be scientifically valid in the abstract, it should not be applied to domestic forestry practices.

[27] NAFO January SAB Panel Comments at 7-8.

that its recommendations to incorporate time paths of decay and recovery are in fact scale dependant and provide alternative recommendations that can be incorporated if EPA chooses to adopt a longer time scale.

2. A Continuous Monitoring Program Can Be Used to Ensure that Forest Carbon Stocks Remain Stable Over Time

While a categorical exclusion is supported by the science included in the Panel's *Report*, it is also based upon the fact that forest carbon stocks are – and will continue to be – stable or increasing.[28] Given the critical role that sustainable forestry practices play in supporting a categorical exclusion, it would be appropriate to include a monitoring component into a regulatory framework to ensure that current trends continue. This is what EPA proposed by requiring short-term comparisons of carbon stocks over time. *Framework* at 25-26.

Contrary to the Panel's assertions, continuous monitoring using, for example, annual FIA data is not inconsistent with the adoption of a 100-year time scale as the two time frames address different issues. The 100-year time scale addresses the relevant time period over which emissions should be considered. But the assumption that there will be no net increase in atmospheric $CO_2$ concentrations is implicitly dependant on the fact that the forests under consideration will be managed sustainably. Indeed, the Panel recognizes this in its alternative proposal for a certification program based on carbon neutrality and "sustainability" principles. *Report* at 7, 45-47.[29] Thus, even under a 100-year time scale, a monitoring approach is needed to ensure that forestry is practiced sustainably and that harvested stands are regenerated.

While the monitoring approach included in EPA's *Framework* is national in scale and cannot establish stand-based linkages, that is not necessary to demonstrate sustainability over time. A national scale approach that incorporates annual FIA data offers a practical and cost effective method to ensure that forestry is practiced

[28] *See generally*, NAFO Deferral Rule Comments; NAFO Call for Information Comments; NAFO Tailoring Rule Comments.

[29] While the Panel's revised certification proposal appropriately responded to NAFO's concerns, s*ee* NAFO January SAB Panel Comments at 12, by focusing on carbon neutrality rather than existing certification programs that are focused on other environmental co-benefits, a certification program will still prove complex and difficult to implement. First, a significant portion of private forests are owned by small landowners for whom certification can be prohibitively expensive. Moreover, applying a certification program at the landowner level will create significant administrative and recordkeeping challenges for the biomass energy facilities that will be subject to the regulations.

sustainably *in the aggregate*. While small changes can take place on the stand level as individual owners make management changes, a national scale monitoring system will ensure that, as a whole, forestry is practiced sustainably and that there is no net increase in atmospheric $CO_2$ concentrations as a result of biogenic emissions from woody biomass. By including such a monitoring system, EPA can implement a categorical exclusion with the assurance that it can take further regulatory action if the factual circumstances supporting a categorical exclusion change.

## Conclusion

NAFO continues to support EPA's decision to seek an independent peer review of its proposed accounting methodology for biogenic $CO_2$ emissions and applauds the Panel's efforts to assess this complex field. We urge the Panel to keep implementation at the forefront as it formulates its recommendations and hope that our comments will assist the Panel in identifying means to simplify its final recommendations to EPA. NAFO is standing by to provide further information or answer any questions that the Panel may have.

Respectfully Submitted,
David P. Tenny
President and CEO
National Alliance of Forest Owners