

June 6, 2016

The Honorable Ronald Lee Wyden  
221 Dirksen Senate Office Bldg.  
Washington, D.C., 20510

The Honorable Jeffrey Alan Merkley  
313 Hart Senate Office Building  
Washington, DC 20510

Dear Senators Wyden and Merkley:

As well respected scientists who have studied and widely published the effects of management and natural disturbance on forests and the carbon cycle, we write to express our deep concerns with the following language that appears in the US House and Senate appropriation bills:

*“The Administrator of the Environmental Protection Agency shall base agency policies and actions regarding air emissions from forest biomass including, but not limited to, air emissions from facilities that combust forest biomass for energy, on the principle that forest biomass emissions do not increase overall carbon dioxide accumulations in the atmosphere when USDA Forest Inventory and Analysis data show that forest carbon stocks in the U.S. are stable or increasing on a national scale, or when forest biomass is derived from mill residuals, harvest residuals or forest management activities. Such policies and actions shall not pre-empt existing authorities of States to determine how to utilize biomass as a renewable energy source and shall not inhibit States’ authority to apply the same policies to forest biomass as other renewable fuels in implementing Federal law.”*

The bills’ language may be an attempt to provide a simple solution, however, it is very likely to be extremely counterproductive to the goal of reducing greenhouse gas emissions to the atmosphere.

The bills’ assumption that emissions do not increase atmospheric concentrations when forest carbon stocks are stable or increasing is clearly not true scientifically. It ignores the cause and effect basis of modern science. Even if forest carbon stocks are increasing, the use of forest biomass energy can reduce the rate at which forest carbon is increasing. Conservation of mass, a law of physics, means that atmospheric carbon would have to become higher as a result of this action than would have occurred otherwise. One cannot legislate that the laws of physics cease to exist, as this legislation suggests.

The first sentence also implies that as long as emissions are considered over a large enough area there would be no impact. This essentially is the “solution to pollution is dilution” under another guise. Moving the basis of assessment to a regional level (i.e., the Senate version) provides less dilution than the national level (the House version), but the overall thinking is exactly the same: reduce the effect until there is no cause. Here, the “dilution” is done by including more area with forests in regions that are not impacted by bioenergy harvest. This dilution does not change the fact that carbon removal from forests both reduces the current stock (that took decades to

centuries to accumulate) and the potential future stock. If the overall stock is reduced, then carbon emissions from the forest sector are higher (see Figure 1).

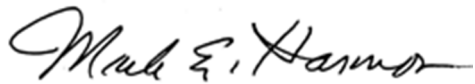
The use of USDA Forest Inventory (FIA) data appears sensible and we are sure it will play a role in any system that assesses the impact of forest harvest for biomass energy. We have used these data in some of our studies, which helped us to understand their limitations. Attempts to determine time trends from FIA data, especially subtle ones, are fraught with problems. There are instances in which that data have given misleading trends that we know do not exist (e.g., no increase in dead tree carbon after fires, a result that one can visibly see for decades). This is because until recent decades, the FIA used spatial sampling, and in some regions moved subplots out of disturbed areas into forested area that looked like the rest of the plot, hiding the effect of disturbances. Although recent measurements have involved the resampling of a percentage of the total number of plots annually, the time between remeasurement on each plot is 5 to 10 years. Assessments before that point involve a confounding of spatial differences with temporal ones. The fact that individual plots are only measured every 5 to 10 years means that a complete remeasurement of all the plots, the only way to clearly determine a temporal effect, takes far longer. One could only determine biomass energy harvest's effects on forests 10 to 20 years after implementation, at which point major negative effects may have already occurred. We fail to see how that would be helpful in guiding policy.

There are two other issues of concern if FIA data are the only source of information. First, FIA sampling is strongest at the regional to national level, but below that level the density of plots is variable depending on location. For example, even for major fires (e.g., the Biscuit Fire) FIA plots had to be supplemented with additional measurements to characterize changes. We question the likelihood FIA will provide an adequate sampling of forests impacted by biomass energy harvests. Inadequate sampling means that actual changes may go undetected. Second, a strength of an FIA-based system is that it is derived from field measurements, but that is also its weakness. That is because it is retrospective: there are no future inventories we can draw on now. Without ecosystem process modeling of possible future growing conditions (climate, soil fertility), one would not even be able to anticipate let alone mitigate against negative consequences to atmospheric carbon. We do not see how solely using a historic dataset is helpful in guiding policy.

Reference to logging residues, milling waste, and forest management activities in the quote above is problematical because it legislatively defies the conservation of mass law, a key building block of science for over 250 years. For example, it states that losses from harvest residuals do not contribute to atmosphere carbon. That is incorrect. How is it possible to take a store of carbon, burn it and not add it to the atmosphere? Mill waste is often used to generate energy, however, some is also used to create solid products such as particle board. If this milling waste is burned instead would this not add carbon to the atmosphere? If dead trees were salvaged and used for biomass energy, this draft legislation implies that no carbon would be added to the atmosphere. Again, this is not true. About 10-20% of the current national aboveground forest carbon stock is in dead trees, and burning this material could result in a major addition of carbon to the atmosphere. This would not reduce carbon emissions and it would not help mitigate climate change.

In summary, we understand that setting a policy regarding forest biomass emissions has been challenging. We also understand our nation must respond more quickly and aggressively to the factors driving climate change. But large-scale bioenergy production from harvesting forests is not necessarily going to reduce emissions. Thus, we strongly urge you to avoid the temptation of creating a simplistic, fast solution that violates the most basic principles of science. Instead we encourage you to seek out sound scientific expertise on this problem. Indeed, the US EPA already has such a process in place and we urge you to allow this process of methods development and review to achieve a sound science-based and viable policy for the forest carbon sector.

Sincerely yours,



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