August 30, 2017

Dr. Thomas Carpenter
Designated Federal Officer (DFO) to Science Advisory Board (SAB)
U. S. EPA
1200 Pennsylvania Ave, NW
Washington, D. C. 20004
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Re: Framework for Assessing Biogenic CO_2 Emissions from Stationary Sources (2014)

Dear Dr. Carpenter:

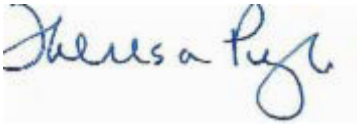
I regret that extended family obligations due to friends/family in the path of Houston's hurricane Harvey prevented me from attending and speaking before the SAB meeting. I hope that I will be able to attend future meetings to address biomass in the context of CO_2 emissions (or neutrality) on behalf of electric utility clients. Please accept this as comments reflecting the views of the many electric utilities. Utilities seek a resolution on the matter of how forest waste (timber slash) or factory/wood plant mill scrap waste is defined in order to make investment and fuels decisions. **Such biomass as fuel should be designated as CO_2 neutral**.

The Florida electric utility clients that I represent are in close physical proximity to forest waste (slash) or wood product factory waste that is a valuable fuel. Thus, the transport-related CO_2 is de minimis. These utilities are not purchasing trees but purchase forest waste or waste from the wood manufacturers. Many utilities have hoped that U. S. EPA would resolve biomass issue- determining it has no CO_2 or CO_2E impact. These biomass issues have languished at EPA for more than ten years and could be resolved more quickly by SAB, the EPA Policy Office and Office of Air Pollution. A resolution would be extremely appreciated by the electric utility sector. Further, there are other public health, air pollution and public safety merits to allowing forest waste to be removed as dead or fallen branches to remove forest floor debris and reduce fire risks across the nation. Those forest fires threaten homes, businesses and produce air pollution. Utilities don't want to enter into long-term contracts for biomass purchases or install handling equipment without knowing how EPA will define it. Resolution of this ambiguity is needed.

There is a great Confucian saying "Better a diamond with a flaw than a pebble without" and this perhaps inspired Voltaire's "don't let perfection be the enemy of the good". Most comments to SAB don't include quotes from Confucius or Voltaire. But I offer these because many in the electric utility sector and the industrial sector need this biomass issue to be resolved. You might have other complex CO_2 related issues pertaining to biomass but this one should be an easy decision. While this issue languishes before SAB and ties up other parts of the EPA, industry simply burns other more CO_2 intensive fuels. Burning biomass waste products from forestry and wood companies would have many immediate benefits such as minimizing forest fires and reducing related air pollution. I respectfully urge the SAB to separate this part of the biomass issue from peskier issues in order to accelerate fuel purchasing decisions at utilities. **Burning wood waste and forest waste biomass can surely do no harm.**

Thank you for considering these comments. I would be grateful to be allowed to speak at any future SAB meetings if the biomass issue is under discussion. Attached is a white paper from the EPA docket submitted by Florida Municipal Electric Association in May, 2017.

Sincerely,



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Issue: Designating Certain Biomass Fueled Electricity Production As Carbon Neutral for Federal Regulatory Purposes.

Background: Although many peer reviewed studies have shown that combusting biomass for electric energy production produces significantly less air pollution and GHGs when compared to the open burning of the biomass material, EPA has failed to fully recognize the environmental benefits of utilizing certain biomass fuels for electric energy production in its regulatory actions. Studies indicate that the net greenhouse gas emissions are zero and in some cases the warming potential is actually negative when combusting biomass for energy production as compared to allowing the materials to be open burned or naturally decompose. (See Tables A, B, and C in the appendix to this paper)

Electricity production in the U.S. is currently generated utilizing only a fraction of the renewable biomass available in this country. Analyses by the U.S. Department of Energy and the Union of Concerned Scientists estimate that between 680 million and one billion tons of biomass fuel could be available in a sustainable manner annually.[1] In addition, there is tremendous potential benefit in reducing wildfires by harvesting dead trees for biomass fuel in US forests.[2]

Problem: For over six years, EPA has been attempting to develop biogenic accounting factors (BAF) that would clearly establish carbon neutrality for biomass fuels. In 2011, EPA prepared the "Draft Accounting Framework for Biogenic CO_2 Emissions from Stationary Sources." In the draft framework, EPA indicated that many biogenic fuels used to power electric generating units will likely be considered carbon neutral. Also, an earlier NREL study confirmed the carbon neutral/negative status of biomass fueled generation.[3] In his letter of May 25, 2012 to Dr. Holly Stallworth of the EPA Science Advisory Board, William Hohestein of the USDA concluded *"There is minimal uncertainty that using biomass fuel to generate electricity produces significant greenhouse gas benefits."* Despite the fact that numerous studies have confirmed most biomass fuel streams are carbon neutral, EPA's Science Advisory Board (SAB) has yet to accept a final accounting framework to establish carbon neutrality for biomass fuels.

Solution: EPA should expeditiously complete and adopt a BAF for biomass fuels. In addition, EPA should establish categorical carbon neutral determinations for various biomass fuel streams previously determined by EPA to be categorical non-waste fuel pursuant to 40 CFR section 241.4. Sufficient scientific data exist to classify these non-waste fuels as carbon neutral without going through the eventual BAF process. Fuels not specifically listed should be added to the categorical list once a BAF indicating carbon neutrality is determined.

Evaluating Air Emissions from Biomass Fueled Electricity Production

Proper Evaluation of Air Emissions from Biomass Fueled Electricity Generation: With the possible increase in the use of biomass fuels, it is appropriate to consider the potential impact on air quality. Some critics erroneously compare emissions from biomass fueled generation to fossil fueled generation. The correct comparison is between emissions from open burning such as forest fires, prescribed fires, and land clearing debris burning and controlled combustion in electric generating units with modern

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[1] US Billion Ton Update: Biomass Supply for a Bio Energy and Bioproducts Industry. ORNL/TM – 2011 – 224. Oak Ridge, Tennessee; The Promise of Biomass Energy Clean Power and Fuel If Handled Right, Union of Concerned Scientists, September 2012.

[2] The U.S. Forest Service has estimated that there are over 100 million dead trees that have died since 2010 in California alone.

[3] The National Renewal Energy Laboratory (NREL) produced a report (NREL/TP-510-32575) which analyzed the use of biomass in the generation of electricity. One of the cases studied biomass that was burned in a boiler in a controlled manner instead of being landfilled or allowed to decompose in the field. Burning biomass in the boiler avoided the production of methane, which has a greenhouse warming potential over 21 times that of CO_2. The study showed a negative Greenhouse Warming Potential (GWP) of -410 g CO_2-equivalent/kWh of electricity produced.

combustion controls and flue gas clean-up devices. Due to superior combustion and air pollution control systems employed by biomass to energy facilities, the emissions of traditional air pollutants, air toxics and greenhouse gases are a fraction of that from open burning of the similar materials as seen in the tables below.

Table 1. Comparison of Traditional Air Pollutant Emissions from Biomass Energy and Open Burning				
Air Emission lb/ton of Biomass	**CO**	**NO_X**	**$PM_{2.5}$**	**VOCs**
Biomass Energy Production	**1.36464**	**1.19406**	**0.26**	**0.15**
Open Burning	**153.2**	**3.6**	**10.8**	**8**

Source: AP – 42, Table 13. 1-2 1996; Emission limits for GREC biomass to energy facility.

Table 2. Comparison of Dioxin Emissions from Modern Biomass Energy Facility and Open Burning	
	Dioxin Emissions lb/ton of Biomass Combusted
Biomass Energy Production	**7.2753×10^{-10}**
Open Burning	**3.98157×10^{-8}**

Source: inventory of sources and environmental releases of dioxin like compounds in the United States for 1987, 1995, and 2000. US EPA, November 2006; Emission limits for GREC biomass to energy facility.

Table 3. Comparison of GHG Emissions from Biomass Energy and Opening Burning		
	CH_4	**N_2O**
Biomass Energy Source	**lb/ton**	**lb/ton**
Agriculture Byproducts	**0.58**	**0.08**
Wood residuals	**0.28**	**0.14**
Open Burning Forest Slash	**11.4**	**8.3**

Source: EPA AP 42 – Table 1.6 – 3, 1996; EPA Emission Factors for Greenhouse Gas Inventories Updated April 4, 2014.

Biomass fueled Electricity Production does not increase air pollution but rather decreases it by reducing uncontrolled open burning of biomass materials.

Source: Excerpt from FMEA Comments to EPA regarding Evaluation of Existing Regulations Consistent with Executive Order 13777, EPA-HQ-OA-2017-0190, May 11, 2017.