American Forest & Paper Association

AMERICAN WOOD COUNCIL

David K. Paylor, Director, Virginia Department of Environmental Quality
Michael G. Dowd, Director, Air and Renewable Energy Division
Virginia Department of Environmental Quality
1111 E. Main Street
Richmond, VA 23219

March 28, 2018

Dear Director Paylor and Director Dowd:

The American Forest & Paper Association (AF&PA) and the American Wood Council (AWC) respectfully provide comments to the Air Pollution Board regarding the Commonwealth of Virginia's proposed "Regulation for Emissions Trading" for the CO_2 Budget Trading Program (the "regulation") and its treatment of biogenic carbon dioxide (CO_2) emissions from forest biomass.

Who We Are

AF&PA serves to advance a sustainable U.S. pulp, paper, packaging, tissue and wood products manufacturing industry through fact-based public policy and marketplace advocacy. AF&PA member companies make products essential for everyday life from renewable and recyclable resources and are committed to continuous improvement through the industry's sustainability initiative - *Better Practices, Better Planet 2020*. The forest products industry accounts for approximately four percent of the total U.S. manufacturing GDP, manufactures over $200 billion in products annually, and employs approximately 900,000 men and women. The industry meets a payroll of approximately $50 billion annually and is among the top 10 manufacturing sector employers in 45 states.

AWC is the voice of North American wood products manufacturing, an industry that provides approximately 400,000 men and women in the United States with family-wage jobs. AWC represents 86 percent of the structural wood products industry, and members make products that are essential to everyday life from a renewable resource that absorbs and sequesters carbon. Staff experts develop state-of-the-art engineering data, technology, and standards for wood products to assure their safe and efficient design, as well as provide information on wood design, green building, and environmental regulations. AWC also advocates for balanced government policies that affect wood products.

What We Know

AF&PA and AWC do not support the Commonwealth of Virginia joining RGGI because it would raise electric power and natural gas prices and consequently place Virginia-based businesses at a competitive disadvantage. However, if the Commonwealth does join RGGI, we urge that the following two-pronged principle be incorporated into the regulation:

> ***Emissions from the combustion of any forest-derived biomass shall not be considered a greenhouse gas if:***
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> ***(1) timberland carbon stocks, based on United States Forest Service Forest Inventory and Analysis data for the United States South Region, are stable or increasing relative to the 2005 carbon stocks assessment for this region; or***
>
> ***(2) the forest-derived biomass is from forest products manufacturing residuals, harvest residues, or waste-derived feedstocks, including used wood products.***

The first prong reflects that the harvesting of wood for energy does not contribute to net carbon emissions in cases where the harvesting, measured over a broad region, is offset by wood growth and associated carbon sequestration. Data compiled by the U.S. Forest Service and analyzed by the National Council for Air and Stream Improvement (NCASI) indicate that carbon stocks in trees on timberland across the US South have steadily increased from 4.9 billion in 2005[1] to 5.6 billion tons in 2016, an increase of about 14.5%. The fact that forest carbon stocks continue to increase shows that biogenic CO_2 from biomass removed from the forest is more than offset by removals of CO_2 from the atmosphere by growing forests.

In addition, the most recent data from the U.S. Forest Service indicate that timberlands in Virginia, the U.S. South, and the entire U.S. have highly positive net growth/removal ratios, showing that U.S. forestry is more than sustainable. The 2016 data demonstrate that the growth/removal ratios for timberlands in Virginia, the U.S. South, and the entire U.S. are 2.29, 1.76, and 1.94, respectively.[2] In other words, Virginia's timberlands are growing more than twice as much wood as is harvested, while timberlands in the South grow 76 percent more wood than is harvested.

As AF&PA/AWC pointed out in our previous comments to the Department of Environmental Quality (December 18, 2017), the most significant pressure on U.S.

[1] The Paris Agreement and the Obama Administration's Clean Power Plan both used 2005 as the baseline year.

[2] Review Draft, Forest Resources of the United States, 2017, A Technical Document Supporting the Forest Service Update of the 2010 RPA Assessment, Table 36, p. 93. Net growth represents growth minus mortality.

forests is the conversion of forests to non-forest uses, including development.[3] By contrast, strong markets for wood help to preserve forests by providing an incentive not to convert land to other uses and to invest in forest management practices that keep forests healthy. A 2014 *Journal of Forestry* article concluded that "[t]he demand for wood keeps land in forest, provides incentives for expanding forests and improving forest productivity, and supports investments in sustainable forest management that can help offset the forest carbon impacts of increased demand."[4] A U.S. Department of State report, based on Environmental Protection Agency (EPA) and U.S. Department of Agriculture (USDA) analysis, shows that strong demand for forest products will increase forest carbon stocks through ongoing landowner investment.[5] (See section 2 of the Addendum to these comments for additional support.)

The second prong of the principle – i.e., that wood residuals, residues and bio-wastes are inherently carbon neutral -- is based on the fact that emissions from forest products manufacturing residuals, harvest residues, or waste-derived feedstocks would eventually wind up in the atmosphere even if not used for energy production. In fact, the landfilling of these feedstocks can result in methane emissions, which have a 25 times greater warming effect than carbon dioxide.

A study by NCASI found that there are substantial greenhouse gas reduction benefits in using forest products manufacturing residuals for energy in the pulp, paper, packaging and wood products industry. Accounting for fossil fuel displacement and avoided emissions associated with disposal, the use of biomass residuals each year avoids the emission of approximately 181 million metric tons of CO_2e.[6] According to AF&PA/AWC calculations, this is equivalent to removing about 35 million cars from the road.

An article in the Journal of Forestry noted that ". . . if mill residues were not used for energy, most of these materials. . . would be wastes that would be either incinerated, in which case the atmosphere would see the same biogenic CO_2 emissions as if the material had been burned for energy, or disposed in landfills . . . [in which case] the net impact of burning for energy on biogenic emissions, in terms of warming (i.e., CO_2

[3] See U.S. Department of Agriculture, USDA Integrated Projections for Agriculture and Forest Sector Land Use, Land Use Changes, and GHG Emissions and Removals (Jan. 2016), Table 14, p. 21.
[4] Reid Miner, Robert Abt, et al., "Forest Carbon Accounting Considerations in U.S. Bioenergy Policy," Journal of Forestry (Nov. 2014), p. 594.
[5] 2016 Second Biennial Report of the United States of America Under the United Nations Framework Convention on Climate Change (Dec. 2015), p. 33.
[6] "Greenhouse Gas And Fossil Fuel Reduction Benefits of Using Biomass Manufacturing Residuals for Energy Production in Forest Products Facilities," NACASI Technical Bulleting NO. 106, Revised August 2014. http://ncasi.org/Downloads/Download.ashx?id=9603 See also, Caroline Gaudreault and Reid Miner, *Temporal Aspects in Evaluating the Greenhouse Gas Mitigation Benefits of Using Residues from Forest Products Manufacturing Facilities for Energy Production*. Journal of Industrial Ecology (Dec. 2015), pp. 1,004-05

equivalents), can actually be less than zero because of the warming potency of the methane generated in landfills."[7]

Thus, the combustion of wood residuals and biowastes to generate energy reduces rather than increases net CO_2 emissions, and the burning of wood waste for energy should be viewed as categorically carbon neutral.

AF&PA and AWC also urge that the following principle be reflected in the regulation:

> ***Forest biomass, including forest products manufacturing residuals, should categorically be treated as carbon-neutral whether or not it is co-fired with fossil fuel.***

The carbon profile of biomass is not altered in any way simply because it is co-fired with other fuels; in other words, it is the characteristics of the biomass feedstock, not the characteristics of the power generation process or facility, that support treatment of biomass as carbon neutral.

Making such a distinction is not scientifically supportable and is arbitrary given that the biomass portion of the fuel mix has the same physical and lifecycle characteristics regardless of whether it is co-fired with nine percent fossil fuel, 11 percent fossil fuel, or 90 percent fossil fuel. It is the biomass portion of the fuel mix alone that should be evaluated for net carbon emissions, and if carbon neutral as described in these comments, should not be subject to the regulation.

Furthermore, it is imperative that the regulation not be expanded beyond its current focus on utilities to also cover industrial boilers. There are several reasons to retain the exemption for industrial boilers. First, the Governor's Executive Directive 11, "Reducing Carbon Dioxide Emissions ***from the Electric Power Sector*** and Growing Virginia's Clean Energy Economy" (May 16, 2017), which launched this regulation, pertains exclusively to controlling CO_2 emissions from "***electric power facilities***." (Emphasis added). Likewise, Governor McAuliffe's Executive Order 57 (June 28, 2016) directed the Secretary of Natural Resources to convene a Work Group to study and recommend methods to reduce CO_2 emissions from "***electric power generation facilities***." (Emphasis added). Second, the Economic Impact Assessment, the charge given to the Regulatory Advisory Panel, the emissions and economic modeling conducted by DEQ and its consultants, and DEQ's written and oral information leading up to and supporting the proposal indicated that the regulation applied only to the electric power sector. Indeed, covering only utilities is consistent with the intent and scope of the existing RGGI program, and RGGI allowance prices are based on the marginal cost to reduce GHG emissions from the utility sector and do not reflect the capability of industrial sources to reduce emissions. Unlike the electric power sector, industrial facilities must

[7] Reid Miner, Robert Abt, et al., "Forest Carbon Accounting Considerations in U.S. Bioenergy Policy," Journal of Forestry (Aug. 29, 2014), page 601.

compete in a highly competitive global marketplace and do not have the comparable ability to pass on increased compliance costs to customers. Accordingly, it would be arbitrary and capricious, a violation of due process, and fundamentally unfair for the final rule to include other emission sources, such as industrial boilers.

Finally, to support a strong economy in the Commonwealth of Virginia, we also urge that the state retain the issuance of free allowances rather than conduct auctions, which would significantly drive up compliance costs, thus harming the households and businesses served by the state's power grid.

In the attached Addendum to these comments, we have compiled additional studies and information that support our comments.

We appreciate your careful consideration of these comments. We look forward to continuing our work with the Commonwealth of Virginia on this important issue. If you have any questions, please do not hesitate to contact Paul Noe, Vice President, Public Policy ((202) 463-2700, Paul_Noe@afandpa.org) or Fara Klein, Manager, Government Affairs ((202) 463-2700 or Fara_Klein@afandpa.org).

Respectfully submitted,

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ADDENDUM

1. **The science supporting the carbon benefits of renewable forest biomass is well established.**
   a. One hundred nationally recognized forest scientists sent a letter to EPA stating the long-term carbon benefits of forest bioenergy.[8]
   b. Linda A. Joyce (U.S. Forest Service), Steven W. Running (U. of Montana), et al., Climate Change Impacts in the United States: The Third National Climate Assessment, Ch. 7: Forests, U.S. Global Change Research Program, doi:10.7930/J0Z60KZC (2014) ("Forest biomass energy could be one component of an overall bioenergy strategy to reduce emissions of carbon from fossil fuels, while also improving water quality, and maintaining lands for timber production as an alternative to other socioeconomic options.") (p. 182)
   c. Dr. Bruce Lippke, Professor Emeritus, University of Washington School of Forest Resources, et al., Letter to Congress from Forest Scientists (July 20, 2010) ("equating biogenic carbon emissions with fossil fuel emissions . . . is not consistent with good science and, if not corrected, could stop the development of new emission reducing biomass energy facilities. It also could encourage existing biomass energy facilities to convert to fossil fuels or cease producing renewable energy. This is counter to our country's renewable energy and climate mitigation goals.")

2. **Strong demand for forest products and forest-derived bioenergy creates incentives for forest landowners to keep lands forested and to increase the productivity of forests that capture CO_2 from the atmosphere.**
   a. The most significant deforestation threat in the U.S. is forest conversion.[9]
   b. Strong markets encourage forest owners to invest in forest management practices that keep forests healthy. "A key to accelerating forest growth and regeneration is to create strong markets for biomass that will stimulate investments. Farmers and forest land owners, as with all business owners, respond to markets and invest in strategies to produce more and earn more when facing increasing demand."[10]

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[8] National Association of University Forest Resource Programs (NAUFRP) Letter of Transmittal to EPA including Science Fundamentals of Forest Biomass Carbon Accounting, November 6, 2014.

[9] See USDA Integrated Projections for Agriculture and Forest Sector Land Use, Land Use Changes, and GHG Emissions and Removals (USDA, January 2016), Table 14, p. 21.

[10] Robert Johansson, Chief Economist, USDA – June 2015 blog, www.usda.gov/media/blog/2015/06/8/study-finds-increasing-wood-pellet-demand-boosts-forest-growth-reduces); see also report of U.S. Department of State, based on EPA and USDA analysis: 2016 Second Biennial Report of the United States of America Under the United Nations Framework Convention on Climate Change (Dec. 2015).

Also see Lubowski, et al., 2008. What drives land-use change in the United States? A national analysis of landowner decisions. Land Econ. 84:529 –550; *See also* Jefferies, H. M. and Leslie, T. (2017) "Historical Perspective on the Relationship between Demand and Forest Productivity in the US South." Charlotte, North Carolina, USA: Forest2Market, Inc.

Daigenault, et al., 2012. Economic approach to assess the forest carbon implications of biomass energy. Environ. Sci. Technol. 46:5664 –5671

3. **Renewable bioenergy from forests is part of the U.S. and global energy solution.**
   a. The carbon benefits of biomass are recognized by the EPA, USDA, the European Union, and the UN's Intergovernmental Panel on Climate Change[11].

4. **There is strong consensus that the use of forest products manufacturing residuals for bioenergy is carbon neutral.**
   a. "[T]he use of biomass residues from forest products manufacturing, including black liquor, to produce energy in the U.S. forest products industry for 1 year avoids, over a 100-year period, 181 million t CO_2-eq/yr. The avoided disposal of the forest products manufacturing residues alone (i.e., ignoring [fossil fuels] substitution and chemical recovery benefits) results in a GHG benefit of approximately 5 million t CO_2-eq/yr.")[12]
   b. "[I]f mill residues were not used for energy, most of these materials . . . would be wastes that would be either incinerated, in which case the atmosphere would see the same biogenic CO_2 emissions as if the material had been burned for energy, or disposed in landfills . . . [in which case] the net impact of burning for energy on biogenic emissions, in terms of warming (i.e., CO2 equivalents), can actually be less than zero because of the warming potency of the methane generated in landfills.")[13]
   c. U.S. Environmental Protection Agency, Memorandum from Janet G. McCabe, Acting Assistant Administrator, Office of Air and Radiation, to Air Division Directors, Regions 1-10 (Nov. 19, 2014) ("Information considered in preparing the second draft of the Framework, including the [Science Advisory Board] peer review and stakeholder input, supports the finding that use of waste-derived feedstocks and certain forest-derived feedstocks are likely to have minimal or no net atmospheric contributions of biogenic CO2 emissions, or even reduce such impacts, when compared with an alternative fate of disposal.") (p. 2)

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[11] *See* 74 Fed. Reg. at 66,539 n.41 and 66,540; Inventory of U.S. Greenhouse Gas Emissions and Sinks (April 2009) p. 2-5 Table 2-1 n. b and p. 3-1 (excluding biogenic CO2 emissions based on principles of carbon neutrality). The 2009 Inventory states at page 3-1: "Carbon dioxide emissions from [combustion of biomass and biomass-based fuels] are not included in national emissions totals because biomass fuels are of biogenic origin. It is assumed that the C released during consumption of biomass is recycled.

IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme, Institute for Global Environmental Strategies, Hayama, Kanagawa, Japan: IPCC National Greenhouse Gas Inventories Programme (2006); Commission Regulation (EU) No. 601/2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council, Article 38.2 (The emission factor of biomass shall be zero."), *available at* http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:181:0030:0104:EN:PDF.

[12] Caroline Gaudreault and Reid Miner, Temporal Aspects in Evaluating the Greenhouse Gas Mitigation Benefits of Using Residues from Forest Products Manufacturing Facilities for Energy Production. Journal of Industrial Ecology (Dec. 2015), at 1,004-05.

[13] Reid Miner, Robert Abt, et al., "Forest Carbon Accounting Considerations in U.S. Bioenergy Policy," Journal of Forestry (Aug. 29, 2014).

d. U.S. Environmental Protection Agency, *Draft Framework for Assessing Biogenic CO_2 Emissions from Stationary Sources* (Nov. 19, 2014) ("The information in this appendix, including example calculations of alternative fate-related biogenic emissions, supports that a 0 or negative [biogenic] assessment factor for black liquor may be reasonable.") (Appendix D, p. D-22); (calculating negative biogenic assessment factors for black liquor and stating that "avoided emissions associated with disposal of black liquor as compared with the current management practice (burning for energy and chemical recovery in a recovery furnace) resulted in hypothetical example [biogenic assessment factors] BAFs ranging from different negative values to 0, depending on the treatment method.") (Appendix D, p. D-31).
e. Dr. Timothy Searchinger and Ralph Heimlich "Avoiding Bioenergy Competition for Food Crops and Land." World Resources Institute (2015) (listing "black liquor from paper making" as "advisable" sources of biomass energy use) (p. 22 and Table 3, p. 24).
f. Dr. Timothy Searchinger, Dr. Steven Hamburg, et al., "Fixing a Critical Climate Accounting Error," Science (Oct. 22, 2009) ("Instead of an assumption that all biomass offsets energy emissions, biomass should receive credit to the extent its use results . . . from the use of residues or biowastes.")
g. National Council for Air and Stream Improvement, Greenhouse Gas And Fossil Fuel Reduction Benefits of Using Biomass Manufacturing Residuals for Energy Production in Forest Products Facilities, Technical Bulletin No. 1016 (Revised Aug. 2014) (". . . each year's use of manufacturing residuals, including black liquor, in the U.S. forest products industry avoids the eventual release of approximately 181 million tonnes of CO_2E.")
h. Caroline Gaudreault and Reid Miner, *Temporal Aspects in Evaluating the Greenhouse Gas Mitigation Benefits of Using Residues from Forest Products Manufacturing Facilities for Energy Production*. Journal of Industrial Ecology (Dec. 2015), at 1,004-05 ("[The ongoing use of manufacturing residues for energy in the forest products industry has been yielding net benefits for many years. . . . [T]he use of biomass residues from forest products manufacturing, including black liquor, to produce energy in the U.S. forest products industry for 1 year avoids, over a 100-year period, 181 million t CO_2-eq/yr. The avoided disposal of the forest products manufacturing residues alone (i.e., ignoring [fossil fuels] substitution and chemical recovery benefits) results in a GHG benefit of approximately 5 million t CO_2-eq/yr.")
i. Reid Miner, Robert Abt, et al., "Forest Carbon Accounting Considerations in U.S. Bioenergy Policy," Journal of Forestry (Aug. 29, 2014) (". . . if mill residues were not used for energy, most of these materials. . . would be wastes that would be either incinerated, in which case the atmosphere would see the same biogenic CO_2 emissions as if the material had been burned for energy, or disposed in landfills . . . [in which case] the net impact of burning for energy on biogenic emissions, in terms of warming (i.e., CO2 equivalents), can actually be less than zero because of the warming potency of the methane generated in landfills.")
j. Linda A. Joyce (U.S. Forest Service), Steven W. Running (U. of Montana), et al., Climate Change Impacts in the United States: The Third National Climate

Assessment, Ch. 7: Forests, U.S. Global Change Research Program, doi:10.7930/J0Z60KZC (2014) ("Forest biomass energy could be one component of an overall bioenergy strategy to reduce emissions of carbon from fossil fuels, while also improving water quality, and maintaining lands for timber production as an alternative to other socioeconomic options.") (p. 182)

k. U.S. Environmental Protection Agency, Accounting Framework for Biogenic CO_2 Emissions From Stationary Sources (Sept. 2011) ("For residues from [pulp and paper] mills . . . the assumption is that if not burned for energy at this plant, the feedstock would have been burned or decayed elsewhere, with or without energy production, resulting in the same level of emissions. Thus, burning it for energy is avoiding the same emissions elsewhere . . .") (pp.99-100).

l. Dr. Roger A. Sedjo, Resources for the Future, "Carbon Neutrality and Bioenergy: A Zero-Sum Game?" RFF DP 11-15 (April 2011) (noting that both sides in the carbon neutrality debate [see two letters below] recognize that "some biomass, such as dead wood and forest debris, can constructively be used for bioenergy, since it will otherwise release carbon through natural decomposition . . . thus no net emissions result from its use as energy") (p. 3)

m. Dr. Bruce Lippke, Professor Emeritus, University of Washington School of Forest Resources, et al., Letter to Congress from Forest Scientists (July 20, 2010) ("equating biogenic carbon emissions with fossil fuel emissions . . . is not consistent with good science and, if not corrected, could stop the development of new emission reducing biomass energy facilities. It also could encourage existing biomass energy facilities to convert to fossil fuels or cease producing renewable energy. This is counter to our country's renewable energy and climate mitigation goals.")

n. Dr. William H. Schlesinger, Member, National Academy of Sciences, et al., Letter to Congress from Scientists (May 17, 2010) ("Bioenergy can reduce atmospheric carbon dioxide if . . . bioenergy can use some vegetative residues that would otherwise decompose and release carbon to the atmosphere rapidly.")