November 24, 2021

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Connecticut Department of Energy & Environmental Protection
Energy & Technology Policy
10 Franklin Square
New Britain, CT 06051

By electronic submission to *DEEP.EnergyBureau@ct.gov*

Re: Accounting for Greenhouse Gas Emissions from the Electricity Sector

Dear Mr. Malmrose,

The Partnership for Policy Integrity (PFPI) appreciates this opportunity to offer technical and legal comments on the Department's proposed revisions to its methodology for accounting greenhouse gas (GHG) emissions from the electric sector. Our comments focus on the Department's proposal to discontinue including CO_2 emissions in its electric sector GHG inventory.

PFPI has long taken an interest in the carbon accounting for bioenergy and was instrumental in the 2012 Massachusetts rule-making that recognized the carbon emissions from forest biomass energy, which resulted in the removal of large-scale biomass electricity plants from the Massachusetts Renewable Portfolio Standard (RPS). PFPI is currently working internationally on the issue of bioenergy carbon accounting, particularly in Europe.

Wood-burning biomass power plants, which contributed 20% of the renewable energy in the New England power grid last year,[1] have CO_2 stack emissions that are 50% higher than coal plants per MWH.[2] The decision to count or not count these emissions is therefore consequential.

PFPI recommends that the state continue to track and report the CO_2 emissions from bioenergy in its GHG inventory. We explain our reasoning below, in the section titled "Recommendations." We also provide addenda that rebut common arguments for biomass carbon neutrality, and a brief history of the treatment of biomass emissions at EPA.

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[1] https://www.iso-ne.com/about/key-stats/resource-mix/

[2] *See Generally* Partnership for Policy Integrity, *Trees, Trash, and Toxics: How Biomass Energy Has Become the New Coal* (Apr. 2014), at 39, *available at:* https://www.pfpi.net/wp-content/uploads/2014/04/PFPI-Biomass-is-the-New-Coal-April-2-2014.pdf.

Context for these comments

The science is clear that avoiding catastrophic climate change will require not only drastic reductions in emissions, but also an increase in carbon uptake from the atmosphere. This goal is enshrined in the Paris Agreement, which calls for a "a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century,"[3] and also by the Biden Administration goals of 100 percent carbon pollution-free electricity by 2035[4] and net zero emissions economy-wide by 2050.[5] Since it is extremely unlikely that technological solutions for carbon storage will be deployed and upscaled, the most realistic way to increase carbon uptake is in the land sector (i.e. "nature-based" solutions). Land sector carbon uptake is dominated by forest carbon uptake, and forests, particularly in New England, are relatively young and thus capable of sequestering and storing a lot more carbon. This makes how inventories count bioenergy emissions extremely important, since in general, policies that incentivize burning forest biomass for energy and reward this as a "zero carbon" climate solution actively undermine the goal of storing more carbon in forests.

Before moving on to PFPI's recommendations, it is important to clarify what seems to be a point of confusion at DEEP, relating to the treatment of biomass emissions under the international carbon reporting protocol set by the IPCC. In its online public meeting about the proposed rulemaking, DEEP staff stated that international carbon reporting protocols treat bioenergy as carbon neutral, with one of the slides stating "*Internationally, CO_2 emissions from biomass combustion are not counted against emissions goals – under the reasoning that equivalent CO_2 was sequestered while the fuel's feedstock was growing.*"

This is *not* correct. Biomass is not considered "carbon neutral" under international carbon reporting protocols, as we discuss below and in more detail in the attached addenda, and how recently biomass carbon was sequestered is irrelevant to the impact bioenergy emissions have on atmospheric CO_2. An equivalent amount of CO_2 emissions from fossil fuel combustion and wood combustion will have the same exact impact on the atmosphere. It is relevant to *net* emissions over time, i.e. how soon biomass feedstocks can regrow, but the elements of time and regrowth are not included in IPCC reporting protocols (to which the slide is presumably referring when it speaks of international approaches to carbon accounting).

Under the IPCC's carbon reporting protocol, carbon losses associated with biomass harvesting are reported in the land sector. Thus to avoid "double counting," biomass is treated as having zero carbon emissions in the energy sector. As explained in the *Journal of Energy Policy*:[6]

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[3] UNFCCC Paris Agreement (2015), Article 4, *available at* https://unfccc.int/sites/default/files/english_paris_agreement.pdf

[4] https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/

[5] https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/23/fact-sheet-president-bidens-leaders-summit-on-climate/

[6] Haberl et al, Correcting a fundamental error in greenhouse gas accounting related to bioenergy, at 21

> *"The assumption that all biomass is carbon-neutral results from a misapplication of the original guidance provided for the national-level carbon accounting under the United Nations Framework Convention on Climate Change (UNFCC). Under the UNFCCC accounting rules, countries report their emissions from energy use and from land-use change separately. For example, if a hectare of forest is cleared and the wood [is] used for bioenergy, the carbon lost from the forest is counted as a land-use emission. To avoid double-counting, the rules therefore allow countries to ignore the same carbon when it is released after combustion. This accounting principle does not assume that biomass is carbon-neutral, but rather that emissions can be reported in the land-use sector. This accounting system is complete and accurate because emissions are reported from both land and energy sectors worldwide."*

Recognizing that counting bioenergy as having "zero" emissions in the energy sector could be misinterpreted as evidence for instantaneous biomass "carbon neutrality" (meaning there is no net impact on atmospheric CO_2 because emissions are immediately offset), the IPCC warns "*the approach of not including bioenergy emissions in the Energy Sector total should not be interpreted as a conclusion about the sustainability or carbon neutrality of bioenergy*" [7] (emphasis added).

Recommendations

As explained above, there is a vast difference between counting biomass energy as having zero emissions, and counting it as being "carbon neutral," i.e. actually having net zero emissions. (For additional discussion of biomass carbon accounting, see addenda). For the purposes of maintaining an accurate inventory of emissions associated with the power sector, Connecticut must continue to include CO_2 emissions from combustion of biogenic fuels.

In adopting a consumption-based methodology, DEEP has elected to move to what appears to be a more accurate approach for GHG reporting in the electricity sector, calculating emissions associated with the electricity the state consumes, even if it is generated outside of the state. This approach already diverges from the carbon accounting approach of other states and, if combined with data from other states that rely on the generation approach, for instance as part of a national inventory, would inevitably lead to double-counting emissions. Nonetheless, the approach has merit for a stand-alone inventory for the purpose of implementing the Global Warming Solutions Act (GWSA), as long as it is applied consistently to all sources of generation. Accordingly, just as Connecticut takes responsibility for emissions from, for example, natural gas-fired generation produced outside of state lines, it logically follows that it should also take responsibility for emissions of wood-fired generation outside state lines because biomass generation assuredly results in emissions (even if those emissions are reported in the land sector of states that provide fuel to the biomass power plants, rather than the energy sector). Likewise, DEEP should count emissions from wood harvested inside state lines in its electric sector GHG inventory, even understanding that these

[7] FAQ Q2-10, According to the IPCC Guidelines CO_2 Emissions from the combustion of biomass are reported as zero in the Energy sector. Do the IPCC Guidelines consider biomass used for energy to be carbon neutral?, available at: https://www.ipcc-nggip.iges.or.jp/faq/faq.html

emissions will be "double counted" in the state-wide all-sector inventory to the extent that forest harvesting affects net flux from Connecticut's land carbon sink.[8]

DEEP's proposal to treat biomass energy as having zero CO_2 emissions would reduce the precision of the state's GHG inventory and undermine the state's ability to meet the emissions reduction mandate of the GWSA. Only by fully counting the carbon emissions from the power sector can the state measure its progress in reducing emissions and take corrective action as needed to strengthen and improve policies. An error in treating bioenergy emissions as zero could be significantly amplified in future years as the state and nation move toward more electrification in the heating/cooling and transportation sectors.

We appreciate that Connecticut has recognized that biomass power is over-resourced in its RPS and has taken steps, pursuant to the GWSA, to curtail further growth in biomass power by gradually reducing the value of renewable energy credits for biomass plants and landfill gas facilities in the Class 1 RPS. However, the findings of the most recent GHG Report indicate that the State is still not on track to meet the reduction goals. We note also that Connecticut's goal does not match the ambition that climate science now says is necessary to avoid dangerous warming, or to otherwise be in line with the federal objective from the Biden Administration of achieving a carbon pollution-free electricity sector by 2035. We therefore encourage DEEP to take additional measures to ramp down the state's reliance on biomass energy in the RPS by accelerating the phasedown of the value of biomass RECs, leading to *real* CO_2 emissions reductions.

Thank you for this opportunity to comment.

Sincerely,

Dr. Mary S. Booth
Director

Luke May
Staff Attorney

Attachments:

Addendum I: Common misconceptions used to justify treatment as carbon neutral
Addendum II: Treatment of biomass emissions at EPA

[8] We further note that if DEEP wants to truly take responsibility for emissions from the power it consumes, the inventory should also include other emissions associated with power generation. For instance, gas fracked in Pennsylvania but burned in New York to make electricity that Connecticut consumes is associated with fugitive methane emissions that, to the extent they are reported at all, are probably assigned to Pennsylvania. However, Connecticut is contributing to demand for gas, and thus shares responsibility for those fugitive emissions just as much as it shares responsibility for the CO_2 coming out the power plant's smokestack.

Addendum I: Common misconceptions used to justify treatment as carbon neutral

Biomass would have decayed "anyway," resulting in GHG emissions.

Forest and mill residue feedstocks that are combusted for energy are often treated as having negligible, or zero, net carbon emissions. It is assumed that the "alternative fate" of these materials is that they would have decomposed and emitted CO_2. however, to be a true "waste" or "residue" that would have decayed anyway, the feedstock materials must be sourced from processes completely unrelated to biomass production, and must likewise not have any other potential uses. For instance, sawdust from sawmills is often cited as being a waste residue. Yet, sawdust is actually a very useful product in its own right, and can be re-purposed for particleboard creation, animal bedding, or mulch.[9]

For forestry residues (tops and limbs left over after sawtimber harvesting), cumulative emissions from combusting these materials will always exceed emissions from a counterfactual situation in which residues are left to decompose at the logging site. The cumulative net emissions (i.e., the additional CO_2 added to the atmosphere attributed to combusting biomass residues for energy) is the difference between smokestack emissions, and emissions from decomposition. Biomass combustion adds CO_2 to the atmosphere right away, while decomposition takes years or decades.[10]

"Sustainably" harvested wood results in carbon neutral biomass

Biomass industry proponents argue that if logging and other biomass harvesting is "sustainable," then biomass emissions are *ipso facto* carbon neutral. Fundamentally, the concept of "sustainable" harvesting provides that logging removals not exceed forest growth; in other words, in a sustainable forest, total carbon stocks should remain constant or continue to grow even after any removal occurs. However, while sustainable forest management is a valid approach when it is properly implemented for the purposes of providing a continuing supply of wood, it is not a proxy for carbon neutrality.

The IPCC warns that "the *IPCC Guidelines do not automatically consider or assume biomass used for energy as 'carbon neutral,' even in cases where the biomass is thought to be produced sustainably,*"[11] meaning harvesting is maintained at levels lower than forest growth. There is no getting around the fact that burning wood emits carbon, and just because forests are showing net growth, it is not legitimate to "appropriate" forest carbon uptake that was already occurring anyway as an "offset" for combustion emissions. Stated alternatively, *offsetting necessarily requires additionality*, or as the IPCC puts it elsewhere, "The combustion of biomass generates gross GHG emissions roughly equivalent to the combustion of

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[9] Partnership for Policy Integrity, *Paper Tiger: Why the EU's RED II Biomass Sustainability Criteria Fail Forests and the Climate* (2020), at 26, *available at:* http://eubiomasscase.org/wp-content/uploads/2020/07/RED-II-biomass-Paper-Tiger-July-6-2020.pdf. (Hereinafter "PFPI RED Report").

[10] Booth, M. S. (2018). "Not carbon neutral: Assessing the net emissions impact of residues burned for bioenergy." Environmental Research Letters 13(3): 035001.

[11] Ibid.

fossil fuels. *If bioenergy production is to generate a net reduction in emissions, it must do so by offsetting those emissions through increased net carbon uptake of biota and soils*."[12] (emphasis added).

Treating the concepts of "sustainable forestry" and "carbon neutrality" as interchangeable essentially substitutes space and time (i.e. forest carbon uptake that occurs elsewhere in the forest cannot logically "instantaneously" offset emissions from logging and biomass combustion). In fact, it can take multiple decades for forests to regrow and offset emissions after logging.[13]

Additionally, the argument that sustainable biomass is carbon neutral is also fundamentally incompatible with the accounting convention discussed above (*i.e.* counting biomass as zero emissions in the energy sector because associated emissions are recorded in the land sector). Either there are emissions which must be recorded in the land sector, or biomass that is "sustainably harvested" offer instantaneous carbon neutrality benefits and therefore have zero net emissions; but both cannot be true, because those concepts are logically inconsistent.

Addendum II: Treatment of biomass emissions at EPA

Regarding whether biogenic CO_2 differs from fossil CO_2, EPA has had a mixed record. The Court of Appeals for the District of Columbia Circuit specifically held that "biogenic" emissions should not be treated any differently than fossil emissions under the Clean Air Act. After *Massachusetts v. EPA*, which determined that greenhouse gases are regulable under the Clean Air Act as a "pollutant," EPA decided to postpone the regulation of biogenic emissions under its main statutory programs while it underwent extensive evaluations of potential regulatory proposals (the decision to postpone regulation of biogenic emissions was known as the "Deferral Rule"). The D.C. Court of Appeals concluded that EPA failed to justify the "Deferral Rule" based on administrative law doctrines, in *Center for Biological Diversity v. EPA*, 772 F.3d 401 (D.C. Cir. 2013). The majority opinion in *CBD v EPA* found that "the atmosphere makes no distinction between carbon dioxide emitted by biogenic and fossil-fuel sources," and that EPA "nowhere offers an interpretation of the Clean Air Act that would allow the agency to treat biogenic carbon dioxide differently." *Id.* at 406; 410.

Then D.C. Court of Appeals Judge Kavanaugh (now Supreme Court Justice) issued a concurrence, agreeing that "[t]here is zero basis in the text of the Clean Air Act for EPA to distinguish biogenic carbon dioxide from other sources of carbon dioxide that EPA is required (under our precedent) to regulate." *Id.* at 412. He noted further that "there is no basis in the statute for distinguishing biogenic carbon dioxide from other forms of carbon dioxide." *Id* at 412.

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[12] IPCC, 2014: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Eds Edenhofer, O., et al). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Page 877 at https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_full.pdf

[13] *See* PFPI RED Report, Appendix I References at 51.

EPA publishes the US reporting on GHG emissions to the UNFCCC and follows the IPCC reporting protocol of counting bioenergy as zero in the energy sector. However, the treatment of biomass CO_2 at the Agency with regard to domestic policy has had an interesting ride.

After the Supreme Court decided *Massachusetts v. EPA,* which determined that greenhouse gases are regulable under the Clean Air Act as a "pollutant," the Environmental Protection Agency (EPA) convened a Science Advisory Board (SAB) to assist in rulemaking relating to the New Source Review and Title V programs of the Clean Air Act.[14] The SAB established a method to calculate a "Biogenic Accounting Factor" ("BAF"), which adjusted emissions based on the relative additive or negative carbon qualities of certain feedstocks. The critical finding of the initial 2012 SAB Report is that:

> *"[C]arbon neutrality cannot be assumed for all biomass energy a priori. There are circumstances in which biomass is grown, harvested and combusted in a carbon neutral fashion but carbon neutrality is not an appropriate a priori assumption; it is a conclusion that should be reached only after considering a particular feedstock's production and consumption cycle."*

Various political maneuverings have resulted in Congressional legislation mandating that EPA treat biomass as "carbon neutral."[15] However, proposed regulations have mainly ignored this. In 2019, the Trump EPA repealed and replaced the Obama EPA's "Clean Power Plan" with its "Affordable Clean Energy Rule" (ACE). The ACE Rule has since been vacated by the D.C Court of appeals,[16] and the vacatur is currently being reviewed by the Supreme Court.[17] However, with regard to the specific issue of biomass emissions accounting, the D.C Court of Appeals did not overturn that aspect of the ACE Rule; therefore, the regulatory reasoning provided in the ACE Rule is still valid, with respect to the treatment of biomass emissions.

In the ACE Rule, EPA determined that biomass combustion was not a "best system of emission reduction" under CAA § 111(d), and likewise that biomass combustion could not be utilized as a compliance measure because:

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[14] EPA's "tailoring rule" would have postponed regulation of emissions from biogenic sources, to allow for further evaluation of the issue.

[15] See, e.g., https://www.pfpi.net/thank-you-president-obama-for-recognizing-biomass-isnt-carbon-neutral

[16] *American Lung Association v. EPA,* 985 F.3d 914 (D.C. Cir. 2021), *available at:* http://climatecasechart.com/climate-change-litigation/wp-content/uploads/sites/16/case-documents/2021/20210119_docket-19-1140_opinion.pdf. The main issue examined in *ALA v EPA* was whether Section 111(d) of the Clean Air Act allowed for a concept known as "generation shifting." Generation shifting required states to decarbonize their electric sectors through shifting from fossil intensive energy portfolios to renewable portfolios. The Trump EPA argued that the Obama EPA's Clean Power Plan was unambiguously precluded by statute, because "generation shifting" could not be considered a "best system of emission reduction" (BSER), under Section 111(d) of the Clean Air Act. A "emission limitation," as defined by Section 302(k) of the Clean Air Act requires that the emission limitation be "quantitative" in nature. The Trump EPA argued that the BSER must apply "at or to" a facility, and that a BSER could not apply generally to a fleet or class of facilities. The D.C. Court of Appeals in *ALA v EPA* disagreed with the reasoning offered by the Trump EPA in its repeal of the Clean Power Plan; however, as noted above, the Court did not disagree with the reasoning that biomass co-firing was barred as a compliance mechanism.

[17] https://www.supremecourt.gov/qp/20-01530qp.pdf

"[A]ny potential CO_2 emissions reductions associated with biomass utilization at a designated facility relies on accounting for activities not applied at and largely not under the control of that source, including consideration of offsite terrestrial carbon effects during biomass fuel growth, which are not a measure of emissions performance at the level of the individual designated facility. Use of biomass in affected units is therefore not consistent with the plain meaning of "standard of performance" and cannot be considered as part of the BSER." [18]

[18] 84 Fed. Reg. at 32,546.