extracted from:
https://www.pfpi.net/the-scammy-whammy-world-of-the-bioeconomy-a-warning-to-regulators

Most bioenergy, whether derived from liquid biofuels or solid biomass, is treated as "carbon neutral." However, there are now a large number of studies demonstrating that the net carbon impacts of bioenergy can be significant. Regarding forest biomass, despite claims that bioenergy is "low carbon" or "carbon neutral," wood burning power plants emit more carbon dioxide per unit of electricity than fossil fueled plants. Cutting forests and burning the wood for fuel incurs a large carbon debt – that is, terrestrial carbon that is released to the atmosphere, which must be "paid back" by forest regrowth for any semblance of "carbon neutrality." Proponents of bioenergy have often relied on the idea that such regrowth will render bioenergy carbon neutral. The problem is, growing forests takes a long time. Several peer reviewed studies[4] and scientific bodies, including recently for instance the European Academies Science Advisory Council,[5] have concluded that burning trees for fuel increases net emissions relative to fossil fuels for decades to more than a century, meaning that biomass power plants worsen atmospheric carbon dioxide loading in the 12-year-timeframe specified by the Intergovernmental Panel on Climate Change as critical for reducing emissions.[6] A multiyear EPA task force concluded this year that burning wood can have significant net emissions,[7] but even before the panel had completed its work, Maine Senators Susan Collins and Angus King, both strong biomass boosters, shoehorned a rider into a 2018 congressional appropriations bill that forces the EPA to treat forest biomass as carbon-neutral.

There are examples of responsible policymaking: a study commissioned by the State of Massachusetts determined that net emissions from biomass power plants would be significant enough over decades to undermine state-mandated efforts to reduce greenhouse gas emissions from the power sector. Massachusetts consequently ended renewable energy subsidies for utility-scale wood-burning power plants in 2012.[8] The District of Columbia enacted a similar law in 2015.[9]

Another argument used to justify claims of biomass energy "carbon neutrality" is that if mill or forestry residues are used as fuel or pellet feedstock (i.e., treetops and branches left over from logging operations), emissions from combustion are no greater than the emissions from letting the material decompose, rendering the material effectively carbon neutral. However, even under industry best-case scenarios where no new trees are cut for fuel, and only forestry wastes are used, burning biomass has significant net emissions that persist for decades.[10]

A third argument made in support of bioenergy is that as long as forests are growing more wood than is being cut, and are thus harvested "sustainably," burning any of that wood has zero net emissions. This is the concept that underpins the Collins rider in the Appropriations bill. By this logic, even as the biomass industry cuts more trees, it must claim offsetting carbon uptake in an ever-increasing area of forests elsewhere to neutralize those emissions. But this notion quickly bumps up against the reality that the amount of carbon locked up in forests is decreasing globally according to a recent study;[11] there is no instantaneous regrowth that is compensating for all the supposedly sustainable harvesting. (The correct accounting approach, in fact, recognizes that forest carbon uptake is *already* counted as offsetting a portion of existing fossil-fuel emissions;

the biomass industry's claim seeks to double-count that benefit.)

4) Searchinger, T., et al. 2009. Fixing a critical climate accounting error. Science 326: 527-528 (demonstrating the theoretical impossibility for biopower emissions to be carbon neutral where forests are cut for fuel.

Walker, T., et al. Massachusetts Biomass Sustainability and Carbon Policy Study: Report to the Commonwealth of Massachusetts Department of Energy. Manomet Center for Conservation Sciences. 2010.

Colnes, A., et al. 2012. Biomass supply and carbon accounting for Southeastern Forests. Biomass Energy Resource Center, Montpelier, VT (concluding that even under seemingly favorable conditions at fast-growing pine plantations, it would take 30–50 years for biopower emissions to be drawn down to a level comparable to net emissions from fossil fuels).

Mitchell, S., et al. 2012. Carbon debt and carbon sequestration parity in forest bioenergy production. GCB Bioenergy (2012) doi:10.1111/j.1757-1707.2012.01173.x. (determining 24 that under a wide variety of land use histories and harvesting regimes in the United States, forests store more carbon than using them for energy "saves.").

McKechnie, J. et al. 2011. Forest bioenergy or forest carbon? Assessing trade-offs in greenhouse gas mitigation with wood-based fuels. Environmental Science and Technology, 45: 789-795. (for all scenarios compared, biopower from forest wood reduced forest carbon and increased atmospheric CO2 emissions).)

5) https://easac.eu/fileadmin/PDF_s/reports_statements/Carbon_Neutrality/EASAC_commentary_on_Carbon_Neutrality_15_June_2018.pdf (visited Oct. 21, 2019).)

6) (IPCC ref)

7) U.S. Environmental Protection Agency. Science Advisory Board Review of Framework for Assessing Biogenic CO2 Emissions from Stationary Sources (March 5, 2019). At https://yosemite.epa.gov/sab/sabproduct.nsf/0/B86C81BACFAF9735852583B4005B3318/$File/EPA-SAB-19-002+.pdf (visited Oct. 21, 2019).)

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10) Domke, G. M., et al (2012). "Carbon emissions associated with the procurement and utilization of forest harvest residues for energy, northern Minnesota, USA." Biomass and Bioenergy 36: 141-150;

Laganière, J., et al (2017). "Range and uncertainties in estimating delays in greenhouse gas mitigation potential of forest bioenergy sourced from Canadian forests." GCB Bioenergy 9(2): 358-369;

Walker, T., et al (2013). “Carbon Accounting for Woody Biomass from Massachusetts (USA) Managed Forests: A Framework for Determining the Temporal Impacts of Wood Biomass Energy on Atmospheric Greenhouse Gas Levels.” Journal of Sustainable Forestry 32(1-2): 130-158;

Mary S. Booth. Not Carbon Neutral: Assessing the Net Emissions Impact of Residues Burned for Bioenergy. Environmental Research Letters, Vol. 13, No. 3 (February 21, 2018).)

11) Food and Agriculture Organization of the United Nations. Global Forest Resources Assessment 2015: How are the World’s Forests Changing?) At http://www.fao.org/3/a-i4793e.pdf (visited Oct. 21, 2019).