DATE

The Honorable Janet Yellin
Secretary of the Treasury
1500 Pennsylvania Avenue, NW
Washington, D.C. 20220

The Honorable Jennifer Granholm
Secretary of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

The Honorable Brenda Mallory
Chair of the Council on Environmental Quality
730 Jackson Place, NW
Washington, D.C. 20503

Dear Secretary Yellin, Secretary Granholm, and Chair Mallory,

We write today to urge you to finalize regulations that clean energy incentives in the Inflation Reduction Act (IRA) to ensure that they fulfill their objectives, as stated by President Biden, to "combat the climate crisis" and "[p]ut and do not incentivize forest biopower. Relevant provisions of the Inflation Reduction Act (IRA) to accomplish these objectives include the Clean Electricity Production Tax Credit (Section 45Y), the Clean Electricity Investment Credit (Section 48E), the Clean Hydrogen Production Credit (Section 45 V), and the Qualifying Advanced Energy Project Credit (Section 48C).

Proponents of the forest biomass power industry are interested in receiving benefits from these programs. However, as we detail below, power plants that burn forest biomass as fuel (i.e., forest biopower) do not meet the criteria in these provisions of the IRA and therefore cannot be considered eligible for these programs.

Net Emissions from Forest Biomass for Power Exceed Statutory Thresholds for Tax Credit Eligibility

Peer-reviewed literature demonstrates that in the "vast majority" of cases, forest biomass for energy creates a "carbon debt," meaning a net emissions increase to the atmosphere.[ii] Moreover, non-biogenic upstream emissions such as emissions from fuel transportation and processing are substantial and carbon capture cannot fix this fundamental problem. Therefore, net carbon emissions resulting from forest biomass burned to produce electricity—even when accounting for purported land-based mitigating factors such as forest regrowth—can exceed those from fossil fuels and persist in the atmosphere well beyond the statutory period of eligibility.

Even if biogenic emissions from the smokestack of a plant producing hydrogen or electricity were fully captured in a BioEnergy Carbon Capture and Sequestration (BECCS) project, the emissions remain net positive because BECCS captures only a fraction of total lifecycle

emissions from forest biopower. Lifecycle emissions include much more than just smokestack emissions. The uncapturable, non-biogenic emissions involved with logging, transporting, processing, and drying the fuel remain significant and can amount to several hundred grams of CO2*e* per kWh, depending upon the feedstock and the production process.[iii]

Taken in sum, total net emissions from forest biomass for energy production—even when used in conjunction with carbon capture[iv]—cannot meet the statutory requirements under the IRA.[v] Accordingly, the Treasury Department must classify power plants that burn forest biomass as ineligible for credits under Section 45Y, 48E, 45V, and 48C.[vi]

Environmental Justice Concerns Related to Biomass

Environmental justice concerns must also be highlighted in the discussion of forest biomass for energy production. Wood pellet production facilities are often located in low-income and marginalized communities in the southeastern United States, which disproportionately bear the environmental and health impacts of this industry.[vii] Communities face increased air pollution, loss of green space, and negative health outcomes linked to the emissions generated by biomass operations. These findings underscore the need to prioritize equitable energy policies that protect vulnerable populations from the adverse effects of forest biomass energy production, rather than incentivizing practices that could exacerbate existing inequities.

Carbon Neutrality: The GREET Argonne Forest Residue Module is Wholly Insufficient for Determining Carbon Emissions from Energy Production Facilities.

In 2021, Argonne National Laboratory developed a forest bioelectricity module as an expansion to the GREET model that purports to "enable regionalized, life-cycle analysis of forest residues to bio-electricity pathways," with an accompanying study of greenhouse gas emissions of electricity generated from forest residues. However, the supporting study (and therefore the Argonne Forest Residue Module as a whole) depends on the authors' arbitrary assumption that the combustion of forest residues is carbon neutral.[viii]

Any claim of *de facto* carbon neutrality rests on the flawed assumption that the biogenic carbon released through the combustion of forest biomass is inherently and immediately offset by forest growth or other biogenic processes. This assumption violates fundamental principles of biogenic carbon accounting, is rejected in the established peer-reviewed science, and has been characterized as "scientifically indefensible" by the U.S. EPA's Science Advisory Board convened expressly to assess the issue of biogenic emissions from biomass energy production—because it fails to account for the extent and timing of any anticipated biogenic mitigation using counterfactual analysis.[ix]

Moreover, the Argonne Forest Residue Module study does not cite any scientific source for its assumption. It cites only one non-scientific document to support its claim of carbon neutrality: the Trump administration's 2018 statement of agency intent regarding bioenergy issued by then-EPA Administrator Scott Pruitt (herein "the Statement"). The Statement is an unsigned, undated, non-binding statement that acknowledges it *"does not represent a final agency action," "is not a*

scientific determination," and *"does not revise or amend any scientific determinations that EPA has previously made."*[x]

The Statement is plainly *not* established "policy adopted" as characterized by the Argonne Forest Residue Module's citation. More importantly, given the Statement's extensive shortcomings listed above, it cannot be a basis for—let alone the sole determinant of—agency analysis that underlies climate policy rulemaking. The decision in the Argonne Forest Residue Module to exclude biogenic emissions and to rely on an unmaterialized Trump-era policy vision as the sole basis for this exclusion is arbitrary, unscientific, and counter to the statutory requirements under the IRA. Moreover, it frustrates the emissions reduction goals of the Biden administration.

Purported Wildfire Emissions: Claims of Reductions in Wildfire Emissions are Unfounded and Must be Rejected

Industry proponents claim that lifecycle accounting, as mandated under the IRA statute, should include estimated reductions in wildfire emissions that purportedly would result from logging and vegetation removal from forests, known as thinning, if those products were used to generate biomass feedstocks for energy production. The Biden Administration must reject this proposition on its face. Policymakers cannot assume with any degree of confidence that thinning of a particular forested area to remove fuel loads will result in a reduction of greenhouse gas emissions from that area, for two reasons combined: (i) the efficacy of thinning is highly uncertain; and (ii) the likelihood that a thinned area will experience a high-intensity fire is negligible.

Research regarding commercial thinning and fire severity is highly variable and there is abundant scientific evidence which contradicts thinning as an effective strategy to curb wildfires. Some studies have reported somewhat lower overall severity in commercially thinned forests, and others have reported mostly higher fire severity with commercial thinning.[xi] Thinning emits about three times more carbon into the atmosphere than wildfire alone without thinning.[xii] Further, numerous studies find that thinning exacerbates wildfire behavior and effects.[xiii] Even setting aside the efficacy of thinning itself, science has found that the likelihood of a treated stand, post-treatment, encountering a fire is negligible.

The government's own scientists acknowledge the lack of scientific basis for assuming that thinning will reduce fire risks. Scientists from the U.S. Forest Service have concluded:

> *"Thinned forests have more open conditions, which are associated with higher temperatures, lower relative humidity, higher wind speeds, and increasing fire intensity. Furthermore, live and dead fuels in young forest or thinned stands with dense saplings or shrub understory will be drier, making ignition and high heat more likely, and the rate of spread higher because of the relative lack of wind breaks provided by closed canopies with large trees."*[xiv]

Under the statute, the Department of the Treasury and the Department of Energy must support their emissions reductions findings with a high degree of confidence. The owner/operator of the production facility receiving the tax credit would have to be able to warrant and verify that CO2

from wildfires will be reduced in the area sourcing the forest "feedstock," which would require predicting unpredictable, uncertain, and highly unlikely events, and therefore on its face amounts to an unfounded proposition not able to meet standards set forth in tax regulations.

In conclusion, because burning of forest biomass cannot meet the criteria in the IRA for clean energy, we therefore urge the Biden Administration to ensure that it is not made eligible for any clean energy incentives in the Inflation Reduction Act (IRA).

Thank you for your consideration.

Sincerely,

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[i] The White House, "BY THE NUMBERS: The Inflation Reduction Act," August 15, 2002, https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/15/by-the-numbers-the-inflation-reduction-act/

[ii] We focus exclusively on forest-derived biomass, meaning woody vegetation, including trees and parts of trees, removed directly from a forest.

[iii] Mirjam Röder et al., "How Certain Are Greenhouse Gas Reductions from Bioenergy? Life Cycle Assessment and Uncertainty of Analysis of Wood Pellet-to-Electricity Supply Chains from Forest Residues," 79 Biomass & Bioenergy 50, 50–63 (2015), https://www.sciencedirect.com/science/article/pii/S0961953415001166 (calculating emissions intensity of wood pellets made from forestry residues as ranging from 132 g CO2e per kWh to more than 800 g CO2e per kWh, depending on fuel used for drying and storage time); Mirjam Röder et al., "Understanding the Timing and Variation of Greenhouse Gas Emissions of Forest Bioenergy Systems," 121 Biomass & Bioenergy 99, App. A.10 (2019), https://ars.els-cdn.com/content/image/1-s2.0-S0961953418303532-mmc1.pdf (concluding that emissions from site establishment, mid-rotation fertilization, harvest, processing, and land transport amount to approximately 150 kg CO2e per MWh); Drax Group plc, Annual Report and Accounts (2022), https://www.drax.com/wp-content/uploads/2023/03/Drax_AR2022_single_pages.final_.pdf (reporting average supply chain emissions ranging from 96 kg CO2e per MWh to 131 kg CO2e per MWh, approximately 41 percent of which relates to international shipping and trade); Samira García-Freites et al., "The Greenhouse Gas Removal Potential of Bioenergy with Carbon Capture and Storage (BECCS) to Support the UK's Net-Zero Emission Target," 151 Biomass & Bioenergy 9 (2021), https://www.sciencedirect.com/science/article/pii/S0961953421002002 (estimating emissions from production and transport as 237 kg CO2e per MWh for wood pellets made from sawmill residues and 40 kg CO2e per MWh for wood pellets made from coppiced willow trees).

[iv] Direct biogenic stack emissions from burning forest-derived fuels for electricity can range from approximately 1,456 g CO2e per kilowatt hour ("kWh") to 1,523 g CO2e per kWh, and while the emissions vary based upon the moisture content of the fuel, they exceed those from coal-fired plants. They typically remain in the atmosphere for decades to centuries depending upon the feedstock, well past timeframes to address the worst impacts of climate change and beyond the statutory eligibility timeframes. Longwen Ou & Hao Cai, Energy Systems Div., Argonne National Laboratory, "Update of Emission Factors of Greenhouse Gases and Criteria Air Pollutants, and Generation Efficiencies of the U.S. Electricity Generation Sector" (2020); Richard Birdsey et al., "Climate, Economic, and Environmental Impacts of Producing Wood for Bioenergy," 13 Env't Rsch. Letters 5 (2018) ("Wood has a lower

energy content than fossil fuels, and wood burning is generally associated with higher CO2 emissions per unit of energy produced."). *See also*: Niclas Scott Bentsen, "Carbon Debt and Payback Time–Lost in the Forest?," 73 Renewable & Sustainable Energy Rev. 1211–17 (2017); Thomas Buchholz et al., "A Global Meta-Analysis of Forest Bioenergy Greenhouse Gas Emission Accounting Studies," 8 Global Change Biology - Bioenergy 281–89 (2016), https://onlinelibrary.wiley.com/doi/epdf/10.1111/gcbb.12245

[v] 26 U.S.C. § 45Y(b)(1)(B)

[vi]Natural Resources Defense Council. Comments on the proposed rule implementing the Clean Hydrogen Production Credit under Section 45V. Comment ID: IRS-2023-0066-29690, https://www.regulations.gov/comment/IRS-2023-0066-29690

[vii]Koester, S., & Davis, C. (2018). "Siting of Wood Pellet Production Facilities in Environmental Justice Communities in the Southeastern United States." *Environmental Justice*, 11(2), 64-70. https://doi.org/10.1089/env.2017.0025

[viii] Argonne National Laboratory, supra note iv

[ix] "SAB review of Framework for Assessing Biogenic CO2 Emissions from Stationary Sources (2014)," March 5, 2019.

[x] U.S. Environmental Protection Agency, "EPA's Treatment of Biogenic Carbon Dioxide (CO2) Emissions from Stationary Sources That Use Forest Biomass for Energy Production," (2018), https://www.epa.gov/sites/default/files/2018-04/documents/biomass_policy_statement_2018_04_23.pdf

[xi] Hanson, C.T. Is "Fuel Reduction" Justified as Fire Management in Spotted Owl Habitat? *Birds* 2: 395-403 (2021). For example, Omi finds that "fundamental questions related to efficacy [of treatments] remain, especially linkage to treatment objectives as affected by fire behavior, treatment intensity and values at risk." Omi, P.N. Theory and Practice of Wildland Fuels Management. *Curr Forestry Rep* **1**, 100–117 (2015). https://doi.org/10.1007/s40725-015-0013-9; Taylor et al. state that such treatments could actually exacerbate fires: "mechanical thinning has been proposed as a way to reduce fire severity," but "in some cases, thinning can lead to elevated fire severity." Taylor et al., What are the associations between thinning and fire severity? *Austral Ecology* (2021); Rhodes and Baker find that "treatments are not universally effective when fire affects treated areas. Factors influencing effectiveness include forest type, fire weather, and treatment method." Fire Probability, Fuel Treatment Effectiveness and Ecological Tradeoffs in Western U.S. Public Forests, *The Open Forest Science Journal* 1, 1-7 (2008).

[xii] Campbell et al. (2011), "Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions?," *Frontiers in Ecology and the Environment*, https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1890/110057

[xiii]See: John Muir Project, "Fuel Reduction" Logging Increases Wildfire Intensity and Puts Communities at Greater Risk," https://johnmuirproject.org/wp-content/uploads/2024/09/JMP-fact-sheet-thinning-and-fire-23Sept24.pdf

[xiv] Lesmeister, D. B., S. G. Sovern, R. J. Davis, D. M. Bell, M. J. Gregory, and J. C. Vogeler. 2019. Mixed-severity wildfire and habitat of an old-forest obligate. Ecosphere 10(4):e02696. 10.1002/ecs2.2696