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June 5, 2025

VIA ELECTRONIC FILING

Will Seuffert, Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

Re: In the Matter of a Commission Investigation into a Fuel Life-Cycle Analysis Framework for Utility Compliance with Minnesota's Carbon-Free Standard

Dear Mr. Seuffert,

Clean Energy Economy Minnesota (CEEM) respectfully submits these reply comments for PUC Docket Number: E-999/CI-24-352. In the Matter of a Commission Investigation into a Fuel Life-Cycle Analysis Framework for Utility Compliance with Minnesota's Carbon-Free Standard.

Our mission at CEEM is to provide educational leadership, collaboration, and policy analysis that accelerates clean energy market growth and smart energy policies. We work to support and expand clean energy jobs and the economic opportunities provided by clean, reliable, and affordable energy on behalf of all Minnesotans.

Please feel free to contact us with any questions that you may have. We hope that the reply comments below provide you with useful insights.

Regards,

George Damian
Director of Government Affairs
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State of Minnesota
Before the
Public Utilities Commission

Katie Sieben	Chair
Joseph K. Sullivan	Vice-Chair
Hwikwon Ham	Commissioner
Audrey Partridge	Commissioner
John Tuma	Commissioner

In the Matter of a Commission Investigation into a Fuel Life-Cycle Analysis Framework for Utility Compliance with Minnesota's Carbon-Free Standard	CLEAN ENERGY ECONOMY MINNESOTA'S INITIAL COMMENTS PUC Docket Number: E-999/CI-24-352

INTRODUCTION

Clean Energy Economy Minnesota

Clean Energy Economy Minnesota ("CEEM") is an industry-led, nonpartisan, nonprofit organization representing the business voice of energy efficiency and clean energy in Minnesota. Our work is focused on educating Minnesotans about the economic benefits of transitioning to a clean energy economy. Our business membership comprises over 70 clean energy companies ranging from start-up businesses to Fortune 100 and 500 corporations that employ tens of thousands of Minnesotans across the state. CEEM and our members are committed to delivering a reliable, affordable, and clean energy future where all Minnesota businesses and citizens will thrive.

CEEM respectfully submits these Initial Comments in response to the Minnesota Public Utilities Commission's (the "Commission") January 22, 2024 [sic], Notice of Comment Period in the above referenced docket.

COMMENTS

CEEM appreciates the opportunity to provide Initial Comments for some of the open topics in this docket.

CEEM requests the Commission take action to establish criteria and standards necessary for utilities to calculate partial compliance with the Carbon Free Standard. Toward that end, corresponding with some topics open for comments, CEEM offers a preliminary set of recommendations for consideration by the Commission:

- Definitions of the sources of and requirements for a life-cycle analysis when interpreting the statutory definition of "carbon free" for combusted fuel generation resources without carbon capture that are considered carbon free or receiving partial credit consistent with the November 7, 2024 Order.
    - Use a source that is reliable, and provides a standardized method to compare impacts across different energy resources;
    - The source must use the quantification of environmental impacts of products and services with reliable metrics such that a comparison can be made among similar products;
    - Follow the International Organization for Standardization definitions 14040 (framework)/14044 (prescribes certain requirements and guidelines)
        - "Compilation and evaluation of the inputs, outputs, and the potential environmental impacts of a product system throughout its life cycle"
        - "Addresses the environmental aspects and potential environmental impacts throughout a product's life cycle from raw material acquisition through production, use, end-of-life treatment, recycling and final disposal"[1]
    - Consider unique and/or counterfactual circumstances.
- Definitions of the sources of and requirements for a fuel to qualify as sustainable and waste biomass.

[1] Great Plains Institute, In the Matter of a Commission Investigation into a Fuel Life-Cycle Analysis Framework for Utility Compliance with Minnesota's Carbon-Free Standard, *Overview of Life Cycle Assessment and Carbon Intensity,* April 22, 2025, Docket No. E002/CI-24-318 [hereinafter, "GPI Overview"], at 5-6.

- In the form of Woody Biomass resources, defined as:
  - from damaged and/or diseased trees; and

  - the by-product of forest management from routine maintenance, natural disasters, or hazardous fuel reduction including trees and woody plants (limbs, tops, needles, leaves, and other woody parts) grown in a forest, woodland, rangeland, or the urban & community environment.[2]

- Calculating partial compliance based on the net annual generation defined as "carbon-free."
  - Woody Biomass (damaged and/or diseased trees; the by-product of forest management from routine maintenance, natural disasters, or hazardous fuel reduction including trees and woody plants (limbs, tops, needles, leaves, and other woody parts) grown in a forest, woodland, rangeland, or the urban & community environment)) should be given full credit.

    - Full compliance and credit should be applied. The alternative to processing Woody Biomass in a controlled combustion operation is an uncontrolled open burning situation. Open burning fails to capture any energy value from the Woody Biomass. Open burning, in and of itself, has an adverse effect on air quality. Furthermore, when and where air quality is already at an unhealthy level, open burning compounds and exacerbates air quality problems.[3]

- Whether biomass, renewable natural gas, and solid waste should be eligible as fully or partially carbon-free generation resources based on a fuel life-cycle analysis.
  - Woody Biomass should be eligible as a fully carbon free generation resource.

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[2] Great Plains Institute, Cambium, In the Matter of a Commission Investigation into a Fuel Life-Cycle Analysis Framework for Utility Compliance with Minnesota's Carbon-Free Standard, *Woody Biomass Presentation - Expanding Capacity for Woody Biomass Processing in the Twin Cities Metro Area Report Summary*, May 9, 2025, Docket No. E002/CI-24-318, at 5.

[3] Minnesota Pollution Control Agency, *Air quality alert issued due to wildfire smoke through Monday, June 2, for all of Minnesota*, at https://www.pca.state.mn.us/news-and-stories/air-quality-alert-issued-due-to-wildfire-smoke-through-monday-june-2-for-all-of-minnesota, (May 30, 2025) (explaining an air quality alert and its health implications; including a statement of precaution: "**Reduce or eliminate activities that contribute to air pollution, such as outdoor burning, and use of residential wood burning devices** {Emphasis added]....").

- According to a science-based systems perspective, sustainable Woody Biomass, for instance, can play a significant role in climate mitigation by displacing fossil fuels now and supporting the evolving energy system transition,[4] including the use of combined heat and power systems to generate electricity and thermal energy.[5]

- On one hand, according to subject matter experts, "[b}urning fossil fuels releases carbon that has been locked up in the ground for millions of years. Fossil fuel emissions transfer carbon from the lithosphere to the biosphere–atmosphere system, causing temperature increases that are irreversible on timescales relevant for humans".[6]

- On the other hand, "bioenergy operates within the biosphere–atmosphere system, and burning biomass emits carbon that is part of the continuous exchange of carbon between the bio-sphere and the atmosphere."[7]

- Are there any other issues or concerns related to this matter?
  - Recognizing the need for some semblance of order and rationality with respect to Life Cycle Assessment (LCA) for various inputs, some proven assessment tool is essential in the evaluation process. Rather than reinventing the wheel for LCA tools, with some minor reservation, CEEM supports the Commission's consideration of the Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET) model.
    - GREET model is known for its useful in assessing "environmental impacts for various technologies, fuels, and energy systems".[8]

    - GREET model impact category includes biomass which includes Woody Biomass.[9]

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[4] Co-authored by National Renewable Energy Laboratory and Oak Ridge National Laboratory, *Applying a science-based systems perspective to dispel misconceptions about climate effects of forest bioenergy*, [hereinafter "Science-based"], 1211 (John Wiley & Sons Ltd.) (16 April 2021).

[5] Cambium Carbon, *Twin Cities Metro Area Emerald Ash Borer Wood Waste Study*, 15 (October 2022).

[6] *Science-based* at 1215.

[7] *Id*.

[8] *GPI Overview*, at 33.

[9] *Id*., at 49.

- GREET model system boundary includes Woody Biomass.[10]

- GREET model is considered "The gold standard for life-cycle analysis of technologies and energy systems".[11]

- GREET model evaluates electric generation technologies.[12]

- While GREET might address some of the LCA situations contemplated by the Commission, some additional research is required to determine whether GREET adequately and properly addresses certain counterfactual situations.
  - As CEEM noted, for example, open burning is increasingly being used to handle Woody Biomass. Open burning, however, contributes to air pollution and fails to recover any GHG reduction value from the Woody Biomass.

  - Using Woody Biomass in a controlled combustion process to generate electricity and/or heat, for instance, is far superior to open burning.
    - Controlled combustion can minimize harmful air pollutants while converting Woody Biomass into electricity and/or heat. Given the established science regarding the associated benefits on these points, using Woody Biomass in the controlled situation can help decarbonize the electricity and/or heating sector serving Minnesotans.

    - While GREET finds biomass used to generate electricity has a lower CI range compared to generating electricity from natural gas, CEEM is not aware of any option to model controlled combustion compared to open burning of Woody Biomass.

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[10] *Id.*, at 43.

[11] Argonne National Laboratory, Fact Sheet: *GREET: the Greenhouse Gases, Regulated Emissions, and Energy Use in Technologies Model*, May 2020, available at: https://www.anl.gov/esia/reference/greet-the-greenhouse-gases-regulated-emissions-and-energy-use-in-technologies-model (last visited June 2025).

[12] *Id.*

- Potential alternative model: the California Biomass Residue Emissions Characterization (C-BREC) model. The C-BREC "generates an emissions time-series, and reports net CO2-equivalent (CO2e) emission values for a number of bioenergy and biomaterial product uses. It quantifies the emissions associated directly with a "use" case in which biomass residuals are mobilized from the field to generate bioelectricity, against a "reference" case in which they remain onsite to be burned or left in-field. C-BREC aims to provide robust and transparent emission accounting...."[13]

CONCLUSION

CEEM appreciates the opportunity to submit these Initial Comments regarding the Fuel Life-Cycle Analysis Framework for Utility Compliance with Minnesota's Carbon-Free Standard. CEEM recommends the Commission take action to establish criteria and standards necessary for utilities to calculate partial compliance with the Carbon Free Standard and to use one or more established models as a tool by which to understand the life-cycle analysis. Taking these actions will help to fulfill the renewable, clean energy requirements for Minnesotans.

[13] Shatz Energy Research Center, *Minimizing emissions from forest residues*, C-BREC model, at https://schatzcenter.org/cbrec/ (last visited June 2025) (describing the model and providing access to a web tool).