PARTNERSHIP ON WASTE & ENERGY
Hennepin | Ramsey | Washington

June 5, 2025

Consumer Affairs Office
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul MN 55101

Re: In the Matter of a Commission Investigation into a Fuel Life-Cycle Analysis Framework for Utility Compliance with Minnesota's Carbon-Free Standard, Docket No. E-999/CI-24-352

Dear Members of the Public Utilities Commission,

The Partnership on Waste and Energy (Partnership) is a Joint Powers Board consisting of Hennepin, Ramsey and Washington counties, formed to address waste management and energy issues. The Partnership seeks to end waste, promote renewable energy and enhance the health and resiliency of the communities we serve while advancing equity and responding to the challenges of a changing climate.

The Partnership appreciates the opportunity to submit comments in response to questions posed by the Commission in its Notice of Comment Period issued January 22, 2025 as the Commission considers the use of a fuel life-cycle analysis framework related to compliance with Minnesota's carbon-free standard established in Minn. Stat. §216B.1691.

1. **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 carbon free or receiving partial credit consistent with this order.**

The Partnership reiterates its reply comments in Docket No. E-999/CI-23-151[1] conveying agreement with the Department of Commerce, the Minnesota Pollution Control Agency (MPCA), and other commenters that the Commission take a bigger picture view of greenhouse gas (GHG) emissions and emissions accounting, not a narrow view of CO2 emissions only at the point of electricity generation, when defining "carbon-free." The Partnership also reiterates its agreement with the MPCA's recommendation that the Commission consider net emissions from CO2-emitting fuels and production technologies that accounts for emissions from alternative methods that would be used to handle materials, absent energy recovery, and that the Commission consider cumulative emissions over time and not just direct emissions at the point of generation.[2]

[1] Partnership on Waste and Energy reply comments, MPUC Docket No. E-999/CI-23-151, July 24, 2024, page 1. Included as Attachment A for convenience.
[2] *Id.*

The Commission's examination in this docket of life-cycle analysis as a tool to assess the global warming potential from the combustion of fuel resources against that posed by alternative fates of those materials reflects these principles and can inform how "carbon-free" can be defined to establish compliance with Minn. Stat. §216B.1691. The Partnership suggests that the ultimate goal of this examination and the subsequent decisions of the Commission must be to assure an overall reduction in economy-wide GHG emissions, the overarching policy imperative driving the adoption of the carbon-free standard. The definition of "carbon-free" and its application in determining compliance with the standard must avoid shifting emissions from one sector of the economy to another in ways that increase overall cumulative emissions, exacerbate their total global warming potential and result in greater harm to the climate. The Partnership recommends that the Commission consider the following factors in examining how life-cycle analysis can achieve that purpose, specifically with regards to the use of mixed municipal solid waste (MSW) and wood waste from urban or community tree management (urban wood waste)[3] as fuels combusted for electricity production.

1) Limiting the scope of the life-cycle analysis to comparative GHG emissions and global warming potential.
2) Adopting standardized methods for evaluating the global warming potential of cumulative lifecycle emissions from the use of these wastes for electricity production compared to the alternative pathway of waste management, informed by the principles of ISO standards 14040 and 14044.
3) Adapting established life-cycle models or tools to fit the comparative analysis required by the aforementioned standardized methods as appropriate to the waste material and fuel production process, while allowing for advances in life-cycle analysis modeling and tools over time to produce more accurate results in subsequent analyses. Examples of these models and tools include the U.S. Department of Energy's GREET (Greenhouse gases, Regulated Emissions, and Energy use in Technologies) model, U.S. Environmental Protection Agency's WARM (Waste Reduction Model), EPA's LandGEM (Landfill Gas Emissions Model), the California Biomass Residue Emissions Characterization model (C-BREC) and others.
4) Establishing landfilling of MSW and open burning of urban wood waste as the respective alternative management methods to combustion of these fuels for electricity production for the comparative life-cycle analyses of cumulative GHG emissions and global warming potential.
5) Determining that a lower net cumulative GHG emissions and global warming potential finding from a cumulative life-cycle analysis of the use of MSW or urban wood waste as a fuel for electricity production fully qualifies the waste for carbon-free status when implementing the carbon-free standard.
6) Establishing the point at which the waste material is generated and requires some kind of management as the initial step of the life-cycle analysis system boundary.

[3] Partnership on Waste and Energy comments, MPUC Docket No. E-999/CI-23-151, June 28, 2024, page 4, examples of urban wood waste include waste from continuously emerging insect and disease damage to trees, trees damaged in storms, tree maintenance, fire prevention activities, and land clearing for development. Included as Attachment B for convenience.

7) Accounting for GHG offsets resulting from the recycling or other beneficial use of components found in the MSW that is being processed for use or otherwise used as a fuel, as well as accounting for carbon neutrality factors in the analysis.

2. Definitions of the sources of and requirements for a fuel to qualify as sustainable and waste biomass.

With respect to solid wastes and specifically MSW and urban wood waste, these wastes by statutory definition are not deliberately generated or created for use as a fuel feedstock, but are by-products of the functions of society, and in the case of urban wood waste, also the result of natural forces such as pests, disease and storm damage, and by statute require some type of management or disposal on an on-going basis, irrespective of the opportunities for or need for energy production. The findings of life-cycle analyses described above, comparing the cumulative GHG emissions and global warming potential of the use of the waste for electricity production with the correlating alternative management method, should be relied upon as these wastes are assessed for qualifications as sustainable and waste biomass.

3. The Partnership on Waste and Energy's recommendations regarding the scope of the new docket.

The Partnership maintains its recommendations offered in reply comments in Docket 23-151 regarding the scope of a separate docket[4] (now Docket 24-352), and emphasizes the importance of this docket facilitating a full life-cycle carbon accounting of energy resources, processes and technologies in a comprehensive manner, including cumulative life-cycle emissions, without resulting in a shift of GHG emissions from the electricity sector to other sectors in an economy-wide GHG accounting context.

4. 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.

The Partnership restates its support[5] of an energy system that includes the full range of technologies enabling solutions to multiple policy goals, including the nexus between climate, waste and energy policy, and the necessity that the Commission's actions in Docket 23-151, and now this Docket, support renewables and the various technology and feedstock applications that serve multiple policy goals, and to do so in ways that produce overall optimum protection for the environment and climate. The findings of properly constructed cumulative fuel life-cycle analyses, such as recommended earlier in these comments, can and should guide determinations of the eligibility of various forms of biomass and solid waste as fully or partially carbon-free generation resources, in particular MSW and urban wood waste, and including renewable natural gas produced from wastes, based on the relative impacts of these feedstocks and generation technologies in achieving overall reductions in GHG emissions and climate impacts due to diversion from landfills, open burning or other waste disposal methods.

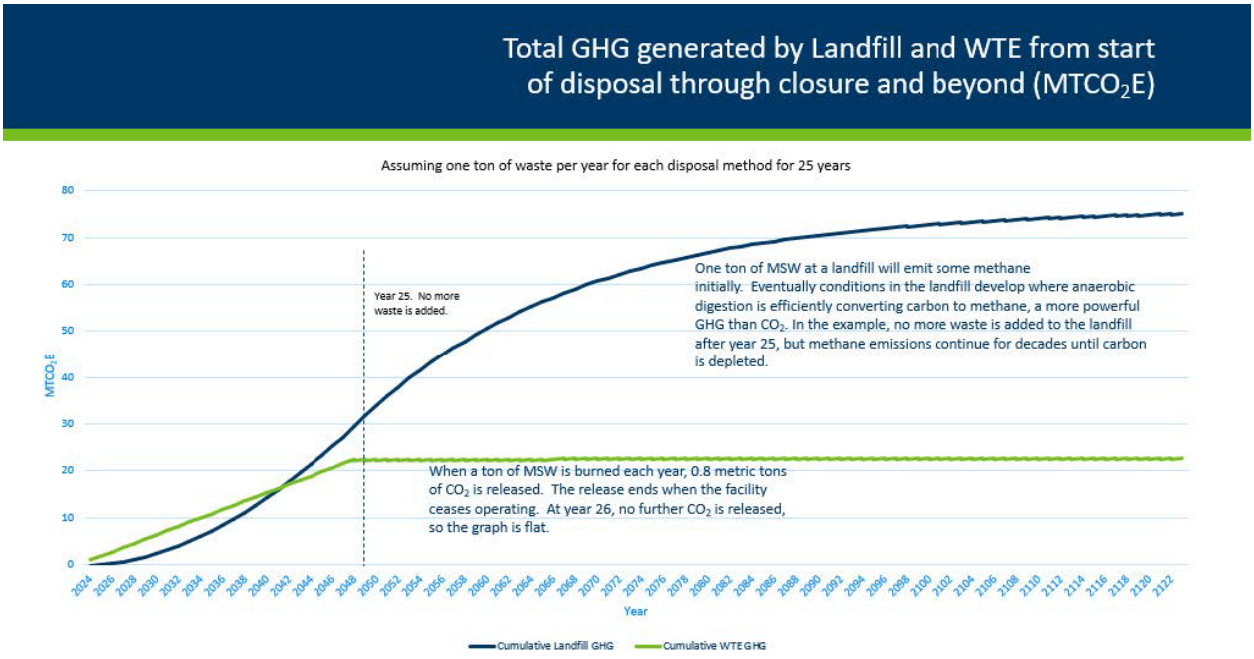
[4] Partnership on Waste and Energy reply comments, MPUC Docket No. E-999/CI-23-151, July 24, 2024, page 2-3.
[5] Partnership on Waste and Energy comments, MPUC Docket No. E-999/CI-23-151, June 28, 2024, page 1.

5. Calculating partial compliance by generators burning waste materials based on a fuel cumulative life-cycle basis considering greenhouse gas benefits relative to alternative waste management methods.

The relative global warming potential findings from properly constructed cumulative fuel life-cycle analyses, such as recommended earlier in these comments, should be relied upon to calculate full or partial compliance. Those analyses should compare combustion or other use of waste materials to produce electricity against the current and most likely alternative waste management method for a particular waste stream or waste material, absent its use as a fuel for electricity generation. This would include, as noted earlier in these comments, landfilling of MSW and open burning of urban wood waste as the respective alternative management methods for those waste streams or materials.

The criticality of relying on a cumulative life-cycle basis for calculating compliance, rather than a static view from CO2 emissions at the point of generation, can be seen from the graph presented by the MPCA in its comments in Docket 23-151,[6] reproduced here.

Figure 1: Cumulative emissions over time of waste-to-energy compared to landfilling



This graph shows that the combustion of MSW to produce energy versus landfilling, the most likely alternative management method, produces GHG emissions on vastly different time scales. To quote the MPCA's comments in that docket:

> "While combusting waste to produce energy produces emissions at the time of producing the energy, a landfill produces emissions over several decades. The MPCA knows from experience with the Closed Landfill Program that once waste goes into a landfill, that waste's emissions from biological decomposition cannot be fully captured or sealed from

[6] Minnesota Pollution Control Agency comments, MPUC Docket No. E-999/CI-23-151, June 28, 2024, page 5.

> the environment over long time spans. In contrast, waste sent to a waste-to-energy (WTE) plant is combusted in a tightly controlled operation, leaving ash without a GHG tail. Research and analysis by the MPCA (See Figure 1) has shown that the cumulative emissions over time from landfilling MSW produces greater cumulative emissions than burning that waste to produce energy. That is, the current methods of disposing of MSW clearly show that WTE plants produce less GHGs from each ton of waste, compared to landfills, over the full-time scale needing consideration. Landfills continue to emit GHG from the breakdown of organics for decades after gas controls are abandoned."[7]

This example highlights the importance of assessing the global warming potential from all GHGs emitted from the use of wastes in generating electricity and the alternative management pathways, and not just CO2 emissions at the point of electricity generation, in recognizing the value of these fuels in achieving the overarching policy imperative driving the adoption of the carbon-free standard—to assure an overall reduction in economy-wide GHG emissions—and not shifting emissions from one sector of the economy to another in ways that increase overall cumulative emissions, exacerbate their total global warming potential and result in greater harm to the climate. In particular, the methane released from a unit quantity of MSW sent to a landfill is a far more potent GHG with more significant impact on the climate, particularly in the first 20 years of methane's release,[8] than the CO2 that is released from combustion of the equivalent quantity MSW for electricity.

In closing, the Partnership appreciates the Commission's investigation into a fuel life-cycle analysis framework for compliance with the carbon-free standard and looks forward to continued engagement in further proceedings under this docket.

Sincerely,

Commissioner Fran Miron, Washington County
Chair, Partnership on Waste and Energy

cc: Commissioner Debbie Goettel, Hennepin County
Commissioner Mary Jo McGuire, Ramsey County

[7] *Id.* at page 4.
[8] U.N. Environment Programme, Facts About Methane, https://www.unep.org/explore-topics/energy/facts-about-methane

ATTACHMENT A

PARTNERSHIP ON WASTE & ENERGY
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June 28, 2024

Consumer Affairs Office
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul MN 55101

Re: In the Matter of an Investigation into Implementing Changes to the Renewable Energy Standard and the Newly Created Carbon Free Standard under Minn. Stat. § 216B.1691, Docket No. E-999/CI-23-151

Dear Members of the Public Utilities Commission,

The Partnership on Waste and Energy (Partnership) is a joint powers board consisting of Hennepin, Ramsey and Washington counties, formed to address waste management and energy issues. The Partnership seeks to end waste, promote renewable energy and enhance the health and resiliency of the communities we serve while advancing equity and responding to the challenges of a changing climate.

The Partnership appreciates the opportunity to submit comments in response to questions posed by the Commission in its Notice of Comment Period issued November 8, 2023, to inform Commission decisions to clarify the terms "carbon-free" and "partial compliance" that were recently added to Minn. Stat. §216B.1691.

The Partnership supports an energy system that includes the full range of technologies enabling solutions to multiple policy goals, including the nexus between climate, waste and energy policy. It is critical that the Commission's actions in this docket do not exclude renewables that serve multiple policy goals in Minnesota. Instead, decisions should accommodate various technology and feedstock applications that combine to produce overall optimum protection for the environment and the climate. If the beneficial roles of biomass are not addressed, this will have significant adverse effects including the likely increase in greenhouse gas emissions and climate impacts from greater landfilling of biomass. The beneficial roles of biomass that need to be incorporated include wood waste and municipal solid waste (MSW) in clarifying the definition of "carbon-free". Lastly, biomass electricity generation is both renewable and dispatchable – something that should not be dismissed in assuring a reliable energy mix for our future.

1. How should the Commission define carbon free? Are any clarifications necessary regarding what resources should be considered carbon free?

Reducing climate impacts from greenhouse gas emissions is the ultimate policy driver behind the passage of Minnesota Session Laws, 2023, Regular Session Chapter 7 and amending Minn. Stat. §216B.1691. The "carbon-free" electricity standard created in this legislation is one strategy to achieve that outcome. Determining how to define "carbon-free" to implement the standard must factor in more than the direct stack emissions from a power plant, or the result would undermine efforts to minimize climate impacts from greenhouse gasses.

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The Commission must take a bigger picture view of emissions accounting by considering net emissions, rather than only gross emissions, from energy production. Cumulative emissions over time must be considered, rather than only the direct emissions at a given point in time. This will set up sound strategies for assessing the "carbon-free" nature of generation systems and yield stronger climate protection as intended in the legislation passed in 2023.

Carbon equivalency—normalizing the global warming potential of different GHGs using carbon dioxide as the base unit—also needs to be considered as "carbon-free" energy resources are identified in implementing the standard, and not exclusively carbon dioxide emissions. A carbon equivalency approach would take into account the range of GHG emissions resulting from diverse policy and energy generation choices and their relative impact on the climate crisis. Most directly applicable to the Partnership's comments is the climate change impact of methane emissions relative to carbon dioxide from the landfilling of MSW. Methane is responsible for 1/3 of the warming impacts being experienced right now.[1] Methane is a "short lived climate forcer," making it a particularly destructive GHG. Methane has more than 80 times the warming power over the first 20 years after it reaches the atmosphere compared to carbon dioxide.[2] We are at a critical tipping point in blunting the trajectory of climate change, and prioritizing methane emission reduction will have more impact on near-term warming than reducing carbon dioxide emissions.

An example of the value of considering net emissions, cumulative emissions and carbon equivalency for a more sound assessment of the qualification of an energy source as "carbon-free" is with the use of MSW to generate electricity. A ton of waste produces a certain level of carbon dioxide at the time of combustion for energy generation, whereas the cumulative emissions of methane from landfilling that same ton of waste has a far greater climate impact. The overall short-term and long-term GHG and climate impacts from landfilling are better accounted for and acknowledged in this approach.

An overly narrow interpretation of what qualifies to meet the carbon-free standard in Minn. Stat. §216B.1691 would result in redirection of waste from waste-to-energy facilities to landfills in Minnesota. The direct result would be greater global warming and worsening climate impacts in Minnesota over the coming decades. The Commission has an opportunity to consider a longer-term, cumulative perspective in crafting the methodology for compliance with the standard. The full climate impacts presented by various resources and energy technologies, and the trade-offs involved with closing off certain resources and technologies, must be accounted for in any new regulations.

a. Provide examples of resources that would fit any proposed definition of carbon free, including any requested clarifications.

Ultimately there are, and will be for the foreseeable future, any number of waste or biomass resources that could be used for electricity generation. The Partnership supports a robust, inclusive determination of what qualifies as "carbon free" under the standard. This will result in a determination that allows these resources to be put to the highest and best use for the greatest

[1] U.S. Methane Emissions Reduction Action Plan, https://www.whitehouse.gov/wp-content/uploads/2021/11/US-Methane-Emissions-Reduction-Action-Plan-1.pdf

[2] U.N. Environment Programme, Facts About Methane, https://www.unep.org/explore-topics/energy/facts-about-methane

climate, environmental and social benefit. This approach will support multiple important state policy goals, preserving overall electrical system reliability by providing renewable base load or dispatchable generation and avoiding adverse unintended climate consequences from ruling them out. The Partnership focuses this part of the comment on the two existing primary resources currently serving the three member counties.

Municipal Solid Waste. Municipal solid waste (MSW) as a feedstock for electricity production can and should be accommodated in how the use of resources are defined to meet the carbon-free standard. This includes MSW processed in resource recovery facilities through mass-burn or refuse-derived fuel technologies, organic materials separated from MSW and processed to create renewable natural gas that is used to create electricity, or other biofuels derived from MSW and used to generate electricity.

The highest priority waste management goal in statute is to prevent waste, a directive that Minnesota counties, including those in the Partnership, take very seriously. While we all work towards that goal, decisions must be made to determine how best to manage the waste that our communities will continue to create, and how to recognize the resource value of discarded materials. Regulatory, policy and economic structures dictate how those decisions are made, and which management systems are built and sustained. Further, these decisions ultimately will have significant impacts on the state's GHG emissions and ability to manage risks to the climate.

Reduction, reuse and recycling are the most preferable alternatives from an overall GHG emissions perspective. Waste remaining after reuse or recycling will be placed in a landfill if it is not used to create energy. If such resources are not included in the new definition of "carbon free," the unavoidable outcome will be increased climate impacts from GHGs due to the release of methane from waste decomposing in landfills. It is important to note that there is significant difficulty collecting methane/landfill gas near open and active areas of a MSW landfill meaning methane is continually being released to the atmosphere in those areas.

The federal government has acknowledged the critical importance of methane emission reductions. They are also committed to a range of initiatives across various sectors of the economy to reduce billions of tons of methane emissions through the U.S. Methane Emissions Reduction Action Plan (Action Plan) (2021).[3] The Action Plan in turn will support the country's contribution to the U.N. Global Methane Pledge to reduce overall global methane emissions 30% below 2020 levels by 2030.[4]

The U.S. EPA attributes 17% of all methane emissions in the U.S. to landfills,[5] and importantly, reducing emissions from landfills is one of the four main components of the Action Plan. Decisions by states and local governments that keep waste out of landfills make important contributions to success in reaching national and global methane reduction goals. Decisions about electricity production that focus only on reducing or eliminating carbon dioxide emissions will result in waste that should be used for energy production being landfilled instead,

[3] U.S. Methane Emissions Reduction Action Plan, https://www.whitehouse.gov/wp-content/uploads/2021/11/US-Methane-Emissions-Reduction-Action-Plan-1.pdf

[4] https://www.iea.org/reports/global-methane-tracker-2022/the-global-methane-pledge

[5] U.S. Methane Emissions Reduction Action Plan, https://www.whitehouse.gov/wp-content/uploads/2021/11/US-Methane-Emissions-Reduction-Action-Plan-1.pdf

magnifying the near-term climate impacts from waste. That is a trade-off that is not necessary and should be avoided.

Diverting waste from methane-producing landfills to energy production also plays an important role in achieving the state's goal in the Minnesota Climate Action Framework (2022) of net-zero emissions by 2050.[6] Creating electricity from MSW does not contribute to methane emissions. These factors need to be prioritized in evaluating the eligibility of MSW as a resource for generating electricity in compliance with the carbon-free standard in Minn. Stat. §216B.1691.

Wood Waste. Likewise, wood waste and woody biomass as a feedstock for electricity production can and should be included as resources that are defined to meet the carbon-free standard. This includes wood waste and woody biomass from continuously emerging insect and disease damage to trees, trees damaged in storms, tree maintenance, fire prevention activities, land clearing for development and wood product residuals.

Similar to the management of MSW, key policy decisions, such as which resources fit the definition of carbon free, are critical factors in determining whether or not wood waste is managed in ways that provide more or less climate benefit. While there are efforts underway to turn more wood waste into products, there are still and will continue to be hundreds of thousands of tons of wood annually in the Twin Cities Metro Area alone that have to be managed as waste. Wood waste is already being used to produce electricity throughout the state, and this renewable resource will continue to be generated for the foreseeable future. If wood waste is not used to produce electricity, much of it is likely to be open burned with negative climate, environmental and human health impacts.

A recent filing to the PUC by Xcel Energy presented updated findings of a societal cost-benefit analysis required by the PUC to assist in decisions on an electrification option at District Energy's St. Paul Cogeneration facility and continuing a Power Purchase Agreement between Xcel and St. Paul Cogeneration.[7] The findings documented significant societal savings due to reduced net GHG emissions using carbon-neutral wood waste rather than natural gas at the St. Paul Cogeneration's facility. Further, the study found that if the facility ceased using wood as a biomass energy source, by far the largest societal cost would be dramatic increases in particulate pollution. This increase in particulate pollution would be a result of open burning being the most likely alternative management method for hundreds of thousands of tons of wood waste each year. The resulting impacts to climate and public health present another example of the need for more than a simple carbon dioxide-only focus in defining "carbon-free" resources. Again, determinations of what is "carbon -free" need to include overall environment- and climate-protective outcomes in the implementation of the standard in §216B.1691.

2. How should the Commission consider partial compliance with respect to Minn. Stat. §216B.1691 Subd. 2d.(b), including both subpoints i and ii?

As Minnesota continues to transition away from fossil fuel sources of electricity, it is critical to assure adequate base load electricity production, including from resources that qualify as carbon-free. MSW and wood waste are prime examples of resources that are currently used to provide

[6] Minnesota Climate Action Framework (2021), https://climate.state.mn.us/sites/climate-action/files/Climate%20Action%20Framework.pdf

[7] Compliance Filing, Xcel Energy, MPUC Docket No. E002/M-21-509, March 29, 2024, E-Docket ID No. 20243-204801-01.

base load electricity in support of system reliability and to promote climate protection. Clarifying that these two renewable resources fit in the definition of "carbon-free" under the standard supports the viability of those facilities that use MSW and wood waste to produce base load electricity. This is an important consideration and in keeping with the legislative direction to the Commission in Minn. Stat. §216B.1691 Subd. 2d.(b) to "protect against the undesirable impacts on the reliability of the utility's system…"

Waste processing facilities that remove metals, plastics, and other recyclable materials prior to combustion also create offsets to the carbon dioxide impacts of generating electricity. The recovery of these recyclable materials for use in manufacturing reduces carbon emissions compared to using newly harvested or mined resources. This additional net reduction in GHG emissions from recycling recovered material must also be accounted for in considering the net carbon impacts of the electricity generated from waste that is processed at these facilities.

3. What considerations should the Commission make when operationalizing the definition of "environmental justice areas" as defined in Minn. Stat §216B.1691 Subd. 1(e)?

a. Considerations could include, for example, geographic specification of an "area" to census block, census track, or zip code.

The Partnership encourages the Commission to be consistent with the current statutory definitions that designate the census tract as the geographic basis of an environmental justice area (e.g., Minn. Stat. §115A.03, Subd. 10b.; §116.065, Subd. 1(e); Minnesota Session Laws, 2023, Regular Session Chapter 60, Article 8, Sec. 5).

We urge the Commission to take this information into consideration when weighing its decisions on clarifying the terms "carbon-free," "partial compliance" and "environmental justice areas" as it implements changes to the Renewable Energy Standard and the newly created carbon-free standard under Minn. Stat. §216B.1691.

Sincerely,

Victoria A. Reinhardt

Commissioner Victoria A. Reinhardt, Ramsey County
Chair, Partnership on Waste and Energy

cc: Commissioner Debbie Goettel, Hennepin County
Commissioner Fran Miron, Washington County

ATTACHMENT B

PARTNERSHIP ON WASTE & ENERGY
Hennepin | Ramsey | Washington

July 24, 2024

Consumer Affairs Office
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul MN 55101

Re: In the Matter of an Investigation into Implementing Changes to the Renewable Energy Standard and the Newly Created Carbon Free Standard under Minn. Stat. § 216B.1691, Docket No. E-999/CI-23-151 (reply comments)

Dear Members of the Public Utilities Commission,

The Partnership on Waste and Energy (Partnership) is a Joint Powers Board consisting of Hennepin, Ramsey and Washington counties, formed to address waste management and energy issues. The Partnership seeks to end waste, promote renewable energy and enhance the health and resiliency of the communities we serve while advancing equity and responding to the challenges of a changing climate.

The Partnership submitted comments on June 28, 2024, in response to questions posed by the Commission in its Notice of Comment Period issued November 8, 2023. The Partnership appreciates the opportunity to submit reply comments as the Commission weighs decisions on clarifying the terms "carbon-free" and "partial compliance" that were recently added to Minn. Stat. §216B.1691.

Lifecycle Impacts and a Broader View of GHG Emissions

The Partnership agrees with the Department of Commerce's Division of Energy Resources (DOC DER), the Minnesota Pollution Control Agency (MPCA), and other commenters that the Commission take a bigger picture view of GHG emissions and emissions accounting, not a narrow view of CO2 emissions only at the point of generation. Focusing only on CO2 ignores other carbon emissions, including those from methane, that have as much or more climate impact as CO2. The Partnership also agrees with DOC DER that carbon-free resources should include fully non-emitting of CO2 and partially non-emitting resources at the point of electricity generation.

The Partnership similarly agrees with the MPCA's recommendation that the Commission consider net emissions from CO2-emitting energy production technologies in a way that accounts for emissions from alternative methods that would be used to handle materials, absent energy recovery. This is most relevant for technologies that use biomass, including waste materials. The Partnership also agrees with the MPCA that the Commission should consider cumulative emissions over time and not just direct emissions at the point of generation. These principles are key to a lifecycle view of emissions.

An example of application of these two principles articulated by MPCA is found in the agency's reference to generation of methane from organic material if it is landfilled. Our previous

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comments highlighted how methane is a much more potent contributor to the climate crisis that must be recognized in pursuit of reducing CO2 emissions from electricity production. Ignoring this reality will merely transfer GHG emissions from one sector of the economy to another one and likely result in overall higher GHG emissions impact on the climate.

The Partnership agrees with the DOC DER's recommendation—consistent with MPCA's recommendations—that determination of carbon-free resources should consider net carbon emissions on a fuel lifecycle basis. We also agree with DOC DER's statement that such an approach is consistent with the statute's definition of "eligible technologies" in Minn. Stat. § 216B.1691, subd. 1(c) which includes resources such as biomass. As a participant in the Commission's recent proceedings regarding implementation of the Natural Gas Innovation Act, the Partnership likewise agrees with the DOC DER's observation that there is precedent for consideration of carbon emissions on a lifecycle basis in the emissions accounting methodology under the implementation of the Natural Gas Innovation Act.

Creating a Process to Account for Lifecycle Emissions

The Partnership encourages the Commission to create a robust process to clarify how various resources and technologies fit in the definition of "carbon-free." That process should use a lifecycle approach to evaluate all resources, including the beneficial role of biomass.

The Partnership interprets the recommendation by DOC DER to initiate a separate docket "to define sources of and requirements for sustainable and waste biomass" as an approach for developing a lifecycle framework to assess certain resources. We note that the recommendation left room for much interpretation on the full purpose, scope of included resources, docket process and interactive relationship of a separate docket to the current docket. In light of this uncertainty, the Partnership presents several recommendations.

- A clear case should be established that resolving the aforementioned questions in a separate docket, rather than in the current docket, would lead to better decisions to advance the overall public interest.
- The scope of "sustainable and waste biomass" that a separate docket may address needs to be defined—e.g., which resources, processes and technologies would be included.
- A full lifecycle carbon accounting of all energy resources, processes and technologies should be conducted in a comprehensive manner, whether in a single docket or more than one docket.
- A separate docket, should there be one, must have a clear connection to and integration with the present docket in order to preserve the overall integrity of decisions made regarding the carbon-free standard and related statutes. If a separate docket were to proceed, the Partnership recommends that a determination first be made within the current docket that the following fuels fit in a definition of carbon-free, so a separate docket may then further articulate any applicable requirements that may be needed regarding the carbon-free qualifications of those fuels.
    - Wood waste and woody biomass from continuously emerging insect and disease damage to trees, trees damaged in storms, tree maintenance, fire prevention activities, land clearing for development and wood product residuals.

- MSW processed in resource recovery facilities through mass-burn or refuse-derived fuel technologies, organic materials separated from MSW and processed to create renewable natural gas that is used to create electricity, and other biofuels derived from MSW and used to generate electricity.

The use of a lifecycle framework and GHG accounting approach as proposed by DOC DER should:

- Cover all resources, whether fully non-emitting or partially non-emitting of CO2.
- Cover direct and indirect GHG emissions, using a consistent approach for framing or creating boundaries of analysis.
- Be capable of determining carbon-free status and assessing partial compliance with a carbon-free standard.
- Prevent decisions that shift GHG emissions from the electricity sector to other sectors in an economy-wide GHG accounting context.

The Partnership encourages the Commission to proceed in a way that solves for the challenges of examining all resources and generation processes under consideration. A whole-systems approach is needed to cohesively arrive at solutions that produce overall optimum protection for the environment and the climate.

The Partnership reiterates its earlier comment supporting an energy system that includes the full range of technologies enabling solutions to multiple policy goals, including the nexus between climate, waste and energy policy, and encourages the Commission's decisions sustain such an energy system. We urge the Commission to take the comments presented here into consideration as it makes its decisions regarding the Renewable Energy Standard and the newly created carbon-free standard under Minn. Stat. §216B.1691.

Sincerely,

Victoria A. Reinhardt

Commissioner Victoria A. Reinhardt, Ramsey County
Chair, Partnership on Waste and Energy

cc: Commissioner Debbie Goettel, Hennepin County
Commissioner Fran Miron, Washington County