

Staff Briefing Papers

Meeting Date	January 16, 2025	Agenda Item **1
Company	All Electric Utilities	
Docket No.	E-999/23-151	
	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	
Issues	Should the Commission reopen, reconsider, and/or clarify its November 7, 2024 Order Initiating New Docket and Clarifying “Environmental Justice Area”?	
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✓ Relevant Documents	Date
Minnesota Public Utilities Commission – Order Initiating New Docket and Clarifying “Environmental Justice Area”	November 7, 2024
Clean Energy Organizations — Petition for Clarification and Reconsideration, including Attachments A and B	November 27, 2024
LIUNA Minnesota and North Dakota—Reply Comments of LIUNA Minnesota and North Dakota	December 9, 2024
CURE—Answer to Petition for Clarification and Reconsideration, including Attachments A and B	December 9, 2024
Xcel Energy—Answer to Petition for Clarification and Reconsideration	December 9, 2024
Hibbing Public Utilities - Letter	December 13, 2024

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The attached materials are work papers of the Commission Staff. They are intended for use by the Public Utilities Commission and are based upon information already in the record unless noted otherwise.

BACKGROUND

House File 7 became effective on February 7, 2023, amending Minn. Stat. § 216B.1691, the Renewable Energy Objectives statute. The amendments introduced the state's Carbon-Free Standard ("CFS"). To provide guidance concerning the CFS, the Minnesota Public Utilities Commission ("Commission") opened Docket No. E-999/CI-23-151, *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* ("CFS Docket").

The Commission issued a Notice of Comment in the CFS Docket on November 8, 2023, which requested comment from interested parties on how the Commission should define carbon free, how the Commission should consider partial compliance with respect to the CFS statute, and what considerations the Commission should make when operationalizing the definition of environmental justice areas.

Numerous parties submitted comments in response to this Notice of Comment, including the Minnesota Center for Environmental Advocacy and Sierra Club (collectively, "Clean Energy Organizations" or "CEOs"), who submitted initial comments on June 28, 2024, and reply comments on July 24, 2024.

The Commission met on September 26, 2024, to discuss the topics listed in the Notice of Comment.

On November 7, 2024, the Commission released its *Order Initiating New Docket and Clarifying Environmental Justice Area* in the CFS Docket ("November 7 Order"). Among other things, the November 7 Order delegated authority to the Executive Secretary to initiate a new proceeding to develop a lifecycle analysis framework for complex fuels such as biomass, renewable natural gas, and solid waste as they relate to the CFS.

The November 7 Order was also filed as the inaugural document in the newly initiated proceeding, Docket No. 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* ("LCA Docket").

On November 27, 2024, the Clean Energy Organizations filed with the Commission a Petition for Clarification and Reconsideration ("Petition") in the CFS Docket. In its Petition, the CEOs sought clarification and reconsideration of the Commission's November 7 Order relating to the treatment of electricity generation fueled by biomass, municipal solid waste ("solid waste"), and fossil fuel generation with carbon capture and sequestration/storage ("CCS").

On December 9, 2024, LIUNA Minnesota and North Dakota ("LIUNA"), CURE, and Xcel Energy ("Xcel") filed Answers to the CEOs' Petition.

On December 13, 2024, Hibbing Public Utilities filed a letter in response to data discussed in

CURE's Answer to the Petition.

Staff note that CEOs filed the Petition pursuant to Minn. Stat. § 216B.27 and Minn. Rules 7829.3000, stating that the statute authorizes the Commission to reverse, change, modify, or suspend its Order if it "is in any respect unlawful or unreasonable."¹ The CEOs also cite the Commission's October 7, 2019 Order in Docket No. E-002/M-18-643, stating that the Commission generally reviews reconsideration petitions to determine whether the petition "(i) raises new issues, (ii) points to new and relevant evidence, (iii) exposes errors or ambiguities in the underlying order, or (iv) otherwise persuades the Commission that it should rethink its decision."²

As described in these briefing papers, the decision before the Commission is whether to narrow the scope of the proceeding in the LCA Docket based on the points raised in CEOs' Petition and CURE's Answer.

DISCUSSION

I. SUMMARY OF PETITION

The CEOs' Petition contains two components: a Request for Clarification and a Request for Reconsideration.

The CEOs seek clarification on the following questions:³

1. Has the Commission decided that a generating facility burning biomass or solid waste could be considered carbon-free, either fully or partially, based on how its emissions compare to the greenhouse gas emissions of alternative waste management methods?
2. Has the Commission decided that a generating facility burning biomass or solid waste could be considered carbon-free, either fully or partially, based on the "carbon neutrality" of biomass fuels or the biomass component of solid waste?
3. Has the Commission decided that, in calculating partial compliance for a fossil fuel facility with carbon capture and sequestration, it will exclude indirect carbon dioxide emissions and focus solely on direct emissions?

The CEOs ask the Commission to state whether it has decided on these issues (**Decision Options 2-4**), and if the Commission has decided in the affirmative, requests that the Commission

¹ Petition, Page 3.

² Petition, Page 3, citing Commission's October 7, 2019 Order Denying Reconsideration, Denying Stay, and Approving Compliance Filings, In the Matter of Xcel's Petition for Approval of Electric Vehicle Pilot Programs, Docket No. E-002/M-18-643.

³ Petition, Page 2

reconsider its position on all three topics.⁴ The CEOs further request that even if the Commission has not decided on these issues—instead intending to resolve them through further record development in the LCA Docket—that the Commission instead reconsider and resolve the issues now.⁵

Regarding the first two questions, the CEOs argue that the plain language of the statute does not permit the Commission to consider the burning of biomass and solid waste to be considered carbon-free.⁶ The CEOs further state that the consideration of biomass and solid waste in the CFS framework undermines state climate and waste goals, harms human health, and creates administrative complexity and regulatory uncertainty. Regarding the third question, the CEOs argue that indirect emissions associated with generation resources, or plants, with CCS can be substantial and that ignoring indirect emissions is incompatible with both the legislative intent of the CFS and inconsistent with the November 7 Order’s treatment of hydrogen co-firing plants.⁷

The CEOs thus ask the Commission to reconsider its November 7 Order and issue the following findings:⁸ (**Decision Options 7A-C**)

1. When determining whether generating technologies that burn waste biomass or solid waste are fully or partially carbon-free under the CFS statute, the Commission will base its determination on the generating technology’s own carbon-dioxide emissions. The Commission will not consider how those emissions would compare to the emissions from alternative methods for managing the waste the facilities burn.
2. When determining whether generating technologies are fully or partially carbon-free under the CFS statute, the Commission will treat carbon dioxide that derives from biomass sources the same as carbon dioxide that derives from fossil fuel sources. The statutory definition of carbon-free does not differentiate between these two sources of carbon dioxide, nor does the CFS statute authorize the Commission to analyze whether a fuel might be considered “carbon neutral.”
3. The Commission will determine partial compliance for carbon-emitting plants with carbon capture and storage by estimating how much total carbon dioxide emissions (including both direct and indirect emissions) per MWh are reduced by the CCS, and applying that percentage to the output of the generation resource employing CCS to determine its carbon-free generation.

⁴ Petition, Page 2

⁵ Petition, Page 2

⁶ Petition, Page 2

⁷ Petition, Page 2

⁸ Petition, Pages 51-52.

II. REQUEST FOR CLARIFICATION

The CEOs believe the Commission reached a final decision on the three issues discussed below at the September 26, 2024 agenda meeting, but read the November 7, 2024 Order as postponing a final decision on these issues until the record is developed in the LCA Docket.⁹ As such, the first component of the CEOs' Petition is to clarify *whether* the Commission has required the use of the following analyses in the LCA Docket.

A. Comparative Waste Management Analysis

The CEOs state that the Commission's November 7 Order requests comments in the LCA Docket about how to calculate "partial compliance by generators burning waste material based on a fuel cumulative life-cycle basis considering the greenhouse gas benefits relative to alternative waste management methods."^{10,11} The CEOs specify that a "comparative waste management analysis" is an analysis that would compare the emissions of burning waste to alternatives such as landfilling or simply leaving biomass waste in the forest. The CEOs state that it is not clear whether, in the LCA Docket, the Commission has already decided that a comparative waste management analysis *must* be used, or if the merits of using a comparative waste management will be debated after further record development.¹²

B. Carbon Neutrality

The CEOs also request clarification on the Commission's stance concerning a "carbon neutrality analysis" when determining whether a technology is fully or partially carbon-free.¹³ The CEOs specify that a carbon neutrality analysis is an analysis that would treat the burning of biomass as distinct from the burning of fossil fuels, with the assumption that the burning of biomass is a "carbon neutral" activity.¹⁴ They note that although the Commission did not use the term "carbon neutrality analysis" in its Order, the Commission did use the terms "life-cycle analysis," "fuel life-cycle analysis," "fuel cumulative life-cycle basis," and "sustainable and waste biomass," all of which the CEOs understand to imply the use of a carbon neutrality analysis.¹⁵ The CEOs state that it is not clear whether, in the LCA Docket, the Commission has already decided that a carbon neutrality analysis *must* be used, or whether the merits of using a carbon

⁹ Petition, Page 4.

¹⁰ Petition, Page 5, referencing page 7 of the November 7 Order.

¹¹ Staff notes that a Request for Comment has yet to be issued in the LCA Docket; the November 7 Order stated that the Commission *intends to* solicit comment on this and other topics.

¹² Petition, Page 5.

¹³ Petition, Page 5.

¹⁴ Petition, Page 5.

¹⁵ Petition, Page 5.

neutrality analysis will be debated after further record development.¹⁶

C. Partial Compliance for Fossil Fuels with Carbon Capture and Storage/Sequestration

The CEOs further request clarification on whether the Commission has decided to exclude indirect emissions when determining the amount of partial credit given to generation from plants with CCS.¹⁷ In the context of generation with CCS, the CEOs define “direct” emissions as “those occurring at the power plant itself” and “indirect” emissions as “those occurring elsewhere but attributable to the CCS.”¹⁸ The CEOs note that while the Commission’s November 7 Order states that it will invite comments on *direct* emissions reductions due to CCS, that Order is silent on indirect emissions due to CCS. The CEOs therefore state it is not clear whether the Commission has already decided that, in the LCA Docket, indirect emissions be excluded from the CCS analysis, or whether the merits of incorporating indirect emissions will be debated after further record development.¹⁹

The Commission can deny the Petition for Clarification with **Decision Option 1**. If the Commission finds that it did intend to make final decisions on the above issues, it can clarify reasons for including a comparison of alternative waste management methods, how burning biomass or solid waste could be considered carbon-free, and why indirect carbon dioxide emissions from CCS may not be considered with **Decision Option 5**.

III. REQUEST FOR RECONSIDERATION

The second component of the CEOs’ Petition comprises a request that the Commission reconsider its positions on the three issues described above, regardless of the Commission’s decisions on the requested clarifications.

A. Comparative Waste Management Analysis

The CEOs argue that a comparative waste management analysis is illegal under the CFS law and, therefore, it would be a waste of time and resources to more fully develop the record on these issues.²⁰ The CEOs argue that instead, the Commission should decide now that a comparative waste management analysis should not be used.²¹ (**Decision Option 7A**) CEOs’ arguments are summarized in the following sections.

¹⁶ Petition, Pages 5-6.

¹⁷ Petition, Page 6.

¹⁸ Petition, Page 6.

¹⁹ Petition, Page 6.

²⁰ Petition, Pages 7-8.

²¹ Petition, Page 8.

1. The Commission lacks statutory authority

CEOs state that the Commission lacks statutory authority to use comparative waste analysis to determine whether a technology is carbon-free, arguing that the law defines “carbon-free” solely based on a generating technology’s own carbon dioxide emissions.²² Therefore, the standard for whether a generating technology is carbon-free is whether it generates electricity “without emitting carbon dioxide,” and therefore the technology’s emissions should be compared to zero, not to the emissions of any other technology or an alternative form of waste disposal. Because generation resources using solid waste and biomass emit carbon dioxide, CEOs argue these resources would not meet the statutory definition of carbon-free so should be excluded from any compliance with the CFS.²³

CEOs acknowledge that the partial compliance provision in the CFS statute “introduces ambiguity into the CFS law” because facilities that emit some carbon emissions for partial compliance would not meet the statutory definition of carbon-free.²⁴ However, CEOs argue the legislative history shows that facilities burning solid waste and biomass were not considered carbon-free, either fully or partially.²⁵ CEOs cite legislative discussions during Minnesota House and Senate hearings on House File 7 demonstrating that legislators understood generation from solid waste and biomass plants would not count towards the CFS,²⁶ whereas cofiring with green hydrogen and generation with partial CCS were highlighted as emerging technologies that could be considered for partial compliance. CEOs argue that legislative history and intent should be used to resolve cases of statutory ambiguity.²⁷

Finally, CEOs state that if the Legislature intended for the Commission to undertake an extensive analysis on a subject outside its typical purview, such as a comparative waste analysis, it would have included language to this effect similar to the criteria indicated in statute for beneficial electrification.²⁸

2. Using the comparative waste-management analysis undermines state climate and waste management goals

CEOs argue that the comparative waste management analysis assumes a lack of progress in

²² Petition, Page 10.

²³ Petition, Page 11.

²⁴ Petition, Page 11.

²⁵ Petition, Pages 13-16.

²⁶ Petition, Page 13.

²⁷ Petition, Pages 16-19.

²⁸ Petition, Page 19. Minn. Stat. § 216B.1691, subd. 2b(a)(10).

waste management, and that this is incompatible with the statewide all-sector “net zero” greenhouse gas emissions by 2050 goal established in Minn. Stat. § 216H.02, which includes waste management method scrutiny.²⁹ CEOs highlight examples of state and federal efforts to change landfilling and incineration practices, reduce landfill methane emissions, and expand waste reduction and reuse, waste recycling, and composting.³⁰

CEOs also argue that the Commission cannot reasonably assume that unburned solid waste will have higher emissions through landfilling, or that there are not lower-emitting options for disposing of biomass than burning biomass.³¹ CEOs state that rejecting the use of a comparative waste management analysis is unlikely to result in the closing of existing solid waste and biomass facilities,³² highlighting that the CFS statute does not mandate the closure of any solid waste or biomass plants, other market options are available for new and existing plants outside energy sales to Minnesota utilities subject to the CFS, and utilities have flexibility to meet the CFS requirements without the current two percent of generation in the state provided by biomass and solid waste resources.³³

In addition, CEOs state that adopting the comparative waste management analysis could incentivize growth of new facilities with high carbon emissions.³⁴ CEOs argue that new biomass facilities will “inevitably increase the grid’s carbon emissions per MWh,” adding that Minnesota Power has indicated plans to propose a new woody biomass facility and that the state’s forest products industry “is aggressively seeking new markets.”³⁵ CEOs point to the controversial practice of converting coal plants to wood-burning plants in Europe, and recent statements from the scientific community against the policy.³⁶

3. Adopting the comparative waste management analysis violates the statutory instruction to interpret the CFS law in a way that maximizes reductions in air pollution, especially in environmental justice areas

The CEOs argue that because burning waste and biomass emits health-impacting pollutants that disproportionately affect environmental justice communities, allowing the emissions from

²⁹ Petition, Page 20.

³⁰ Petition, Page 21.

³¹ Petition, Page 22-23.

³² Petition, Page 24.

³³ Petition, Page 24.

³⁴ Petition, Page 25.

³⁵ Petition, Pages 25-26.

³⁶ Petition, Page 27.

these plants to count towards the CFS would be contrary to subdivision 9 of the CFS statute.³⁷ CEOs provide specific examples and studies of solid waste and biomass facilities emitting higher amounts of specific air pollutants than coal plants, including a comparison of the Hibbard waste biomass plant in Duluth, MN, with Minnesota Power’s Boswell coal plant.³⁸

4. Allowing the comparative waste management analysis would be administratively burdensome and overly complex

CEOs state they “are not aware of *any* existing life-cycle analysis protocols that utilize a comparative waste-management analysis,” meaning the Commission would have to create and develop these analysis protocols.³⁹ The CEOs note the following steps that would be required in such an analysis, and provide detail on each step in the Petition:⁴⁰

- a. Estimating carbon emissions from burning many different types of waste.
- b. Estimating non-carbon air emissions from burning waste streams, especially in EJAs.
- c. Estimating comparative landfill emissions.
- d. Estimating comparative emissions from recycling, composting, waste reduction, and other waste management measures.
- e. Predicting the alternative pathways the waste would be likely to follow if not burned and in what percentage.
- f. Predicting how changing policies, practices, and technologies will affect emissions from each waste-burning facility and each waste management alternative.
- g. Weighing immediate carbon emissions from waste burning against the delayed emissions from other forms of waste management.

B. Carbon Neutrality

Like the comparative waste management analysis, the CEOs argue that a carbon neutrality analysis is illegal under the CFS law so it would be a waste of time and resources to develop the record more fully on these issues.⁴¹ The CEOs argue that instead the Commission should decide now that a carbon neutrality analysis should not be used.⁴² **(Decision Option 7B)** CEOs’ arguments are summarized in the following sections.

³⁷ Petition, Page 28. Subdivision 9 states, in part, “Reasonable actions the commission must take and benefits that must be maximized include but are not limited to...ensuring that statewide air emissions are reduced, particularly in environmental justice areas.”

³⁸ Petition, Page 29.

³⁹ Petition, Page 31.

⁴⁰ Petition, Pages 32-34.

⁴¹ Petition, Pages 7-8.

⁴² Petition, Page 8.

1. The Commission lacks the statutory authority to implement a carbon neutrality analysis

CEOs cite dictionary and statutory definitions of “emit” and “emission” to argue that the CFS statute’s definition of “carbon-free” cannot be cyclical in nature, meaning it “focuses solely on carbon dioxide coming out of a generating technology” and does not consider when the carbon dioxide was absorbed from the atmosphere. Therefore, the statute does not require or authorize the Commission to consider carbon dioxide absorption, as this is the opposite of carbon dioxide emission.⁴³

2. Using a carbon neutrality analysis assumes woody biomass plants and solid waste plants are carbon neutral

The CEOs argue that these types of plants are not carbon neutral because woody biomass plants emit more carbon dioxide per MWh than coal or natural gas. CEOs cite an analysis of 21 biomass-burning facilities in California with carbon dioxide emission rates twice as high as coal plants and four times higher than natural gas plants on average.⁴⁴ CEOs also argue that solid waste plants emit more carbon dioxide per MWh than coal or natural gas, and much of this carbon dioxide comes from fossil sources through plastics and synthetics in the waste stream.⁴⁵

Regarding biomass, CEOs state it takes many decades for forests to reabsorb the carbon dioxide emitted by biomass plants, on a timeframe that is incompatible with Minnesota’s statutory goal of net zero greenhouse gas emissions by 2050.⁴⁶ CEOs provide two studies showing timelines of 45-75 years and 90 years of forest regrowth to make biomass climate neutral compared to a coal plant.⁴⁷

Lastly, CEOs state that the presumption of “carbon neutrality” comes from assuming carbon offsets due to future forest growth, but that utilities are not doing anything, nor are required to do anything, to ensure that growth. CEOs also state that despite the current state of Minnesota’s forest as a carbon sink, meaning they absorb more carbon than they emit, the changing state of the world’s climate could mean more severe droughts, insect infestations, and fires in the future that put the state’s forests at higher risk. Furthermore, CEOs argue that determining how Minnesota’s forests contribute to meeting the statewide all-sector emission goals is not within the Commission’s statutory authority to decide.⁴⁸

⁴³ Petition, Pages 35-36.

⁴⁴ Petition, Pages 37-38.

⁴⁵ Petition, Page 40.

⁴⁶ Petition, Page 38-39.

⁴⁷ Petition, Page 39.

⁴⁸ Petition, Pages 41-44.

3. Adopting a carbon neutrality analysis for solid waste and biomass resources violates the statutory instruction to interpret the CFS law in a way that maximizes reductions in air pollution, especially in environmental justice areas

As with the comparative waste management analysis, CEOs argue that because burning waste and biomass emits health-impacting pollutants that disproportionately affect environmental justice communities, allowing the emissions from these plants to count towards the CFS would be contrary to the CFS statute.⁴⁹

4. Allowing the carbon neutrality analysis would create an administrative burden and require the use of complex analyses for future CFS compliance questions related to biomass

Like the comparative waste management analysis, CEOs note the following steps that would be required to conduct a carbon neutrality analysis, and provide more detail for each step in the Petition:⁵⁰

- a. Estimating the carbon content and emissions for each form of biomass under consideration.
- b. Estimating the non-carbon air emissions from the waste stream, especially in EJAs.
- c. Determining whether the biomass is truly waste or includes trees harvested for the purpose of energy production.
- d. Predicting whether and to what extent forest regrowth will be enhanced to compensate for the woody biomass being burned.
- e. Considering the carbon dioxide emissions from the production and use of the woody biomass.
- f. Determining when and whether utilities can claim credit for future forest growth.
- g. Weighing certain and immediate carbon emissions against speculative and delayed carbon absorption.
- h. Determining forest “sustainability” for carbon sequestration purposes.

C. Partial Compliance for Fossil Fuels with Carbon Capture and Storage/Sequestration

The CEOs recommend that partial compliance for fossil fuels with CCS should include both direct and indirect emissions (**Decision Option 7C**), rather than just direct emissions as stated in the November 7 Order, to be consistent with the Commission’s treatment of hydrogen co-firing plants. CEOs argue that the Commission has not provided a basis for excluding indirect

⁴⁹ Petition, Page 44.

⁵⁰ Petition, Pages 45-47.

emissions associated with CCS, and that the original decision option on this issue at the September 26, 2024 hearing included both direct and indirect emissions.⁵¹ CEOs' specific arguments are summarized below.

1. CCS plants can have substantial indirect emissions that should be considered when determining a facility's percentage of carbon-free emissions

The CEOs note that both upstream emissions associated with powering a CCS plant and downstream emissions associated with carbon capture for Enhanced Oil Recovery (EOR), as opposed to permanent sequestration, can be significant contributors to CCS plant emissions.⁵² The CEOs cited Minnkota's Project Tundra proposal as an example of upstream emissions due to powering a CCS plant, and quoted discussions regarding EOR on the Minnesota House floor as legislative history to support inclusion of downstream emissions.⁵³

2. CCS plants should be treated consistently with hydrogen co-firing plants

CEOs cite the Commission's inclusion of indirect emissions for hydrogen co-firing plants in the November 7 Order, and quote Minnesota House discussions as legislative history to support inclusion of indirect emissions to ensure hydrogen production is carbon-free. CEOs argue that considering indirect emissions from CCS would "demonstrate a fair and consistent application of the partial compliance provision across competing technologies."⁵⁴ Because projects with CCS and hydrogen co-firing have not yet been considered by the Commission, CEOs state "it would be sufficient to establish now the general principle that significant and ascertainable indirect emissions related to both hydrogen co-firing and CCS *will* be considered in future partial-credit determinations."⁵⁵

In addition to recommending that the Commission consider indirect emissions from CCS in the LCA Docket, CEOs also recommend avoiding the term "life-cycle analysis" or clearly state that life-cycle analysis "will not be used to *exclude* any of a technology's direct carbon dioxide emissions."⁵⁶ CEOs emphasize that the term should mean an analysis to estimate both the direct and indirect carbon dioxide emissions of a facility seeking to meet the partial compliance provision. **(Decision Option 7D)**

⁵¹ Petition, Pages 47-48.

⁵² Petition, Pages 49-50.

⁵³ Petition, Pages 49-50.

⁵⁴ Petition, Pages 50-51.

⁵⁵ Petition, Pages 52-53.

⁵⁶ Petition, Page 53.

IV. COMMENTER ANSWERS AND RESPONSES

CURE

On December 9, 2024, CURE filed an Answer in support of the CEO's Petition.⁵⁷ CURE argues that by clarifying that burning biomass and waste is not "carbon free" under the statutory definition, the Commission will save time and resources.⁵⁸ CURE also echoes CEOs in stating that the statute does not define "carbon free" as "carbon neutral" based on a lifecycle analysis.⁵⁹

CURE supports the overall request of the Petition and many of the points made by the CEOs, including that burning solid waste and biomass emits more carbon than fossil fuels on a per-MWh basis. CURE also provides additional, and in some cases divergent, reasons and positions beyond what was stated in the Petition.

CURE argues that Minnesota's biomass plants are more polluting than the CEO's Petition states, and the Commission should assess their repeated violations of pollution standards and impacts to nearby environmental justice communities. CURE cites air quality permit violations for several non-carbon emissions at biomass plants in Hibbing and Virginia, MN, both of which were formerly coal plants, noting "high priority violations" at the Hibbing plant over the last three years.⁶⁰

CURE also expresses concerns about the potential for Minnesota Power's Boswell coal plant to be converted into a biomass plant, citing the significant size of the plant (585MW) compared to the Hibbing and Virginia plants, and the potential to burn "used wood products" which CURE states could include products containing arsenic, copper, and toxic amounts of metals and other chemicals. CURE also notes the proximity of the Boswell plant to the Leech Lake Band of Ojibwe's reserved lands which constitute an environmental justice community.⁶¹

CURE also states that CCS applied to energy generation has not met design expectations, and the Commission would need to assess plant breakdown rate in addition to indirect emissions due to EOR to assess partial compliance.⁶² CURE cites evidence associated with the Texas-based Petra Nova CCS facility, which CURE states is the only coal plant with CCS operating in the

⁵⁷ CURE at 2 and 10.

⁵⁸ CURE at 2.

⁵⁹ CURE at 2.

⁶⁰ CURE, Pages 3-4.

⁶¹ CURE, Pages 5-6.

⁶² CURE at 6.

U.S. today.⁶³ CURE cites analysis suggesting the facility’s capture rate was “substantially lower” than the rate it anticipated, and highlights that the Petra Nova plant is powered by a natural gas facility with no CCS that, when accounted for, lowers the overall emission reductions of the facility. In addition, CURE notes that the facility experienced significant downtime due to technical difficulties and states that the Petra Nova facility uses carbon capture for EOR, which extracts oil that would otherwise not have been accessible. CURE uses this example to emphasize the level of monitoring and evaluation, and corresponding staff and expertise, that would be required by the Commission if CCS technologies were allowed for partial compliance under the CFS.⁶⁴

Finally, CURE recommends the Commission assess hydrogen in its own docket (**Decision Option 8**), not within the same docket as biomass and waste incineration, arguing this would better enable parties to adequately address emerging and complex issues related to hydrogen co-firing and meet the deadlines associated with the LCA Docket.⁶⁵ CURE states there is a high amount of uncertainty regarding hydrogen use in the electric sector, and no Minnesota utility has indicated development of a hydrogen co-firing proposal for an upcoming resource plan or certificate of need proceeding.⁶⁶ CURE cites evidence that hydrogen might have more complex health impacts than is currently understood on the record, particularly regarding non-carbon emissions that impact public health and environmental justice communities.⁶⁷

LIUNA

On December 9, 2024, LIUNA filed an Answer opposing the CEOs’ Petition and recommending that the Commission deny the Petition.⁶⁸ (**Decision Option 6**) LIUNA argues that the CEOs failed to identify any aspect of the November 7 Order that is unlawful or unreasonable, and stated “the Order sets in motion a process to ensure that Minnesota’s Carbon-Free Standard is implemented in a manner that is consistent with both the law and the science through means of life-cycle analysis where appropriate.”⁶⁹ LIUNA further states that the CEOs cite no statutory requirement that should compel the Commission to “ignore the science and jump to conclusions,” but that CEOs’ main argument is that resolving the issues now would avoid delay and administrative burden, which falls short of the statutory test for reconsideration.⁷⁰ LIUNA also takes exception to the CEOs’ characterization of the Commission “disregarding” emissions

⁶³ CURE, Pages 7-8.

⁶⁴ CURE, Pages 7-8.

⁶⁵ CURE at 9.

⁶⁶ CURE at 9.

⁶⁷ CURE at 10.

⁶⁸ LIUNA at 1.

⁶⁹ LIUNA at 1.

⁷⁰ LIUNA at 1.

of biomass and waste facilities in its efforts to further develop the record on life-cycle analysis.⁷¹ LIUNA concludes that, ultimately, the CEOs did not provide any new evidence in the record to support reconsideration, nor did it find evidence of legal error by the Commission.⁷²

XCEL ENERGY

On December 9, 2024, Xcel filed an Answer recommending denial of the Petition.⁷³ Xcel agrees with the CEOs on the factors the Commission should weigh when considering requests for reconsideration, but ultimately concludes that the Commission's November 7 Order appropriately balanced several competing interests and priorities and was based on a thorough analysis of the record.⁷⁴ Xcel also argues the following in favor of denying the Petition:

1. The November 7 Order is clear that further record development is required.⁷⁵
2. Reconsideration of substantive issues in the proceeding may prejudice other parties against engagement in the docket. To ensure continued discussion and broad stakeholder engagement, the Commission should proceed with further analysis in the new docket.⁷⁶

HIBBING PUBLIC UTILITIES

Hibbing Public Utilities (HPU) filed a letter on December 13, 2024, responding to CURE's assertion of violations at HPU facilities. HPU states that the cited information is neither representative of HPU's operating conditions nor is the information accurately represented.⁷⁷ HPU states that although HPU had two exceedances during a 2023 set of performance tests, retests found that all requirements were in compliance with permitted limits.⁷⁸ HPU also notes that CURE cited EPA data, which contains errors that have been reported by HPU to EPA.⁷⁹ HPU states that currently it is not in violation of any of its operating parameters.⁸⁰

⁷¹ LIUNA at 1.

⁷² LIUNA at 2.

⁷³ Xcel at 1.

⁷⁴ Xcel at 1.

⁷⁵ Xcel at 1-2.

⁷⁶ Xcel at 2.

⁷⁷ Hibbing Public Utilities (HPU) at 1.

⁷⁸ HPU at 1.

⁷⁹ HPU at 1.

⁸⁰ HPU at 1.

V. STAFF ANALYSIS

The Commission’s November 7 Order made an explicit decision authorizing the Executive Secretary to pursue additional proceedings regarding the new statutory CFS term “partial compliance” in Docket No. E-999/CI-24-352, the LCA Docket.⁸¹ The Order also stated that the Commission “will invite commenters to consider clarifications” (emphasis added) on a number of issues related to the calculation and determination of partial compliance as it pertains to the CFS goals set forth in statute.⁸² At the time these briefing papers were filed, a Notice of Comment Period has not been issued in the LCA Docket. Therefore, the decision before the Commission, as stated by CEOs,⁸³ is whether to narrow the scope of the LCA Docket proceeding based on the points raised in the CEOs’ Petition and CURE’s Answer, which the Commission can do with **Decision Options 7A-D** and **Decision Option 8**.

Staff notes that the portions of the November 7 Order at issue in the Petition were formed by decision options developed, proposed, and supported by the Minnesota Pollution Control Agency (“MPCA”) and Minnesota Department of Commerce (“Department”), namely decision options 3, 14, 16, and 17 as follows:

3 (Department Modified):

Delegate authority to the Executive Secretary to commence record development in the current proceeding or a new docket with a Commission decision by December 31, 2025, on the following:

- a. To define 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;
- b. To define sources of and requirements for sustainable and waste biomass;
- c. Adopt the recommendations from the Partnership on Waste and Energy’s Reply Comments, identified in Appendix 2 of the Briefing Papers, regarding the scope of this proceeding; and
- d. Develop an accounting methodology to consider generation discharged from short, medium, and long duration storage assets.

14 (Department Modified):

Clarify that partial compliance for fossil fuel generation with carbon capture and sequestration/storage is calculated by estimating what *total* direct carbon dioxide emissions per MWh are reduced by the CCS, and applying that percentage to the

⁸¹ November 7 Order, Pages 4 and 9.

⁸² November 7 Order, Pages 5-7.

⁸³ Petition, Page 52.

output of the generation resource employing CCS to determine its carbon-free generation.

16 (MPCA Modified):

Clarify that biomass, renewable natural gas, and solid waste are eligible as fully or partially carbon free resources based on a fuel life-cycle basis for biomass, renewable natural gas, and solid waste.

17 (MPCA Modified):

Clarify that partial compliance is calculated based on a fuel cumulative life-cycle basis considering greenhouse gas benefits relative to alternative waste management methods to be determined in a second docket.

Commissioner Sullivan’s full motion, which was unanimously approved by the Commission, is included as Attachment A to these briefing papers. Staff note that decision options 14, 16, and 17 were listed under headers titled “further record development” in the Revised Decision Options 2.0 document filed by Staff on September 25, 2024, in the CFS Docket.

In addition, Staff believes it may be helpful to highlight the discussion at the September 26, 2024, agenda meeting when Commissioners were considering the above decision options around the creation and scope of what became the LCA Docket. Commissioners sought guidance from the Department regarding its vision for the LCA Docket and the Department responded as follows:

The Department’s language in 3 is intentionally meant to be for combusted fuels receiving partial or full carbon-free compliance credit, and that should include things like hydrogen, biomass, renewable natural gas, solid waste, but we intentionally left this sufficiently open-ended if stakeholders wanted to also introduce things like green ammonia, synthetic methane. We didn’t want to restrict the fuels that should be considered for life-cycle analysis in the event that utilities want to bring forward things in that docket that we may not have thought of and called out explicitly.

...

The intention is to make sure that...a, b, c, and d [of decision option 3] need to be discussed in a separate docket, and 16 and 17 are meant to clarify that we do intend to discuss biomass and waste in [that docket], and RNG, as discussed in these decision options.⁸⁴

⁸⁴ Commission September 26, 2024 agenda meeting, statements of Department representative Dr. Sydnie Lieb from 1:48:10-1:49:08 and 1:49:49-1:50:14. Recording of the meeting can be found at https://minnesotapuc.granicus.com/player/clip/2424?view_id=2&redirect=true

To Staff, this discussion suggests that the Department's and the Commission's vision for the LCA Docket is to discuss a wide variety of issues related to the calculation of partial compliance, including the topics raised by CEOs in the Petition.

DECISION OPTIONS

Petition for Clarification

1. Deny the Petition for Clarification of the November 7, 2024 Order.
2. Clarify that the Commission's November 7, 2024 Order [does or does not] constitute a decision that a generating facility burning biomass or solid waste could be considered carbon-free, either fully or partially, based on how its emissions compare to the greenhouse gas emissions of alternative waste management methods.
3. Clarify that the Commission's November 7, 2024 Order [does or does not] constitute a decision that a generating facility burning biomass or solid waste could be considered carbon-free, either fully or partially, based on the "carbon neutrality" of biomass fuels or the biomass component of solid waste.
4. Clarify that the Commission's November 7, 2024 Order [does or does not] constitute a decision that, in calculating partial compliance for a fossil fuel facility with carbon capture and sequestration, the Commission will exclude indirect carbon dioxide emissions and focus solely on direct emissions.

If the Commission determines that it made final decisions on Decision Options 2-4, it can clarify reasons for those decisions, if needed, with Decision Option 5.

5. Clarify the Commission's reasons for including a comparison of alternative waste management methods, how burning biomass or solid waste could be considered carbon-free, and why indirect carbon dioxide emissions from CCS may not be considered. *(provided by Staff)*

Petition for Reconsideration

6. Deny the CEOs' petition for reconsideration of the November 7, 2024 Order. (LIUNA, Xcel)
7. Grant the CEOs' petition for reconsideration of the November 7, 2024 Order, and issue the following findings to narrow the scope of the proceeding in Docket No. E999/CI-24-352: (CEOs, CURE)
 - A. When determining whether generating technologies that burn waste biomass or

solid waste are fully or partially carbon-free under the CFS statute, the Commission will base its determination on the generating technology's own carbon-dioxide emissions. The Commission will not consider how those emissions would compare to the emissions from alternative methods for managing the waste the facilities burn.

- B. When determining whether generating technologies are fully or partially carbon-free under the CFS statute, the Commission will treat carbon dioxide that derives from biomass sources the same as carbon dioxide that derives from fossil fuel sources. The statutory definition of carbon-free does not differentiate between these two sources of carbon dioxide, nor does the CFS statute authorize the Commission to analyze whether a fuel might be considered "carbon neutral."
- C. The Commission will determine partial compliance for carbon-emitting plants with carbon capture and storage by estimating how much *total* carbon dioxide emissions (including both direct and indirect emissions) per MWh are reduced by the CCS, and applying the percentage to the output of the generation resource employing CCS to determine its carbon-free generation.

If the Commission chooses Decision Option 7C, CEOs request that it also choose Decision Option 7D if the Commission continues using the term "life-cycle analysis" related to partial compliance.

- D. Clarify that the term "life-cycle analysis" from the November 7, 2024 Order does not exclude any of a technology's direct carbon dioxide emissions, and is intended to mean an analysis that allows the Commission to accurately estimate both the direct and indirect carbon dioxide emissions of a facility seeking to establish that some percentage of its generation is carbon-free under the partial compliance provision.
8. Delegate authority to the Executive Secretary to open a new docket to examine the carbon impacts and environmental justice considerations of using hydrogen as a resource in Minnesota's electric generation sector. (CURE)

ATTACHMENT A

Commissioner Sullivan's motion from the Commission's September 26, 2024 agenda meeting on Docket No. E999/CI-23-151.

Clarifying the Statutory Definition of Carbon-Free

Further Record Development

3 (Department Modified):

Delegate authority to the Executive Secretary to commence record development in the current proceeding or a new docket with a Commission decision by December 31, 2025 on the following:

- a. To define 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;
- b. To define sources of and requirements for sustainable and waste biomass;
- c. Adopt the recommendations from the Partnership on Waste and Energy's Reply Comments, identified in Appendix 2 of the Briefing Papers, regarding the scope of this proceeding; and
- d. Develop and accounting methodology to consider generation discharged from short, medium, and long duration storage assets.

Clarifying the Partial Compliance Calculation for Generation Resources

Direct Emissions

9 (Department Modified)

Clarify that partial compliance is calculated based on the net annual generation defined as "carbon-free"

Further Record Development

14 (Department Modified)

Clarify that partial compliance for fossil fuel generation with carbon capture and sequestration/storage is calculated by estimating what *total* direct carbon dioxide emissions per MWh are reduced by the CCS, and applying that percentage to the output of the generation resource employing CCS to determine its carbon-free generation.

15

Clarify that partial compliance for hydrogen co-firing generation is calculated by estimating the direct and indirect emissions of the generation resource per MWh with hydrogen cofiring and comparing it to what its carbon dioxide/MWh would be if it only burned natural gas. The percentage reduction in carbon dioxide/MWh resulting from the hydrogen co-firing resource is the carbon-free percentage.

16 (MPCA Modified)

Clarify that biomass, renewable natural gas, and solid waste are eligible as fully or partially carbon free generation resources based on a fuel life-cycle basis for biomass, renewable natural gas, and solid waste.

17 (MPCA Modified)

Clarify that partial compliance is calculated based on a fuel cumulative life-cycle basis considering greenhouse gas benefits relative to alternative waste management methods to be determined in a second docket.

Clarifying Partial Compliance for Wholesale Market Purchases

Net Annual Purchases

19

Continue to develop the record on the definition and calculation of net market purchases.

Systemwide or Subregional

21

Require utilities to base the percentage of carbon-free market purchases on an applicable subregional annual fuel mix as practicable.

Data Sources

22A.

Require utilities participating in MISO to use MISO's energy fuel mix data.

Clarifying the Definition of Environmental Justice Area

28

Clarify that, for the purposes of Minn. Stat. § 216B.1691, subd. 1(e), "environmental justice areas" is interpreted at either the census tract or Tribal boundary level.

Additional Considerations

34 (Department New)

When the utility's purchase is from a specified resource, such as a bilateral contract or PPA, then the utility should apply the purchase in the percentage of carbon-free accordingly.