COMMERCE DEPARTMENT

January 29, 2025

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

RE: Comments of the Minnesota Department of Commerce
Docket No. E-999/CI-23-151

Dear Mr. Seuffert:

Attached are the comments of the Minnesota Department of Commerce (Department) in the following matter:

> 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

The Investigation was initiated by the Minnesota Public Utilities Commission (Commission) on April 28, 2023.

The Department recommends **a transition to hourly tracking and matching of energy and carbon-free credit trading**, and is available to answer any questions the Minnesota Public Utilities Commission may have.

Sincerely,

/s/ Dr. SYDNIE LIEB
Assistant Commissioner of Regulatory Analysis

SL/AZ/LN/ad
Attachment

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Acronyms and Abbreviations

AMI	advanced metering infrastructure
CFS	Carbon-free Standard
DLOL	Direct Loss of Load
DSES	Distributed Solar Energy Standard
EAC	energy attribute certificates
EETS	Eligible Energy Technology Standard
IRP	Integrated Resource Plan
IRS	Internal Revenue Service
LRR	Local Reliability Requirement
LMP	locational marginal price
LCFS	Low Carbon Fuel Standard
MISO	Midcontinent Independent System Operator
M-RETS	Midwest Renewable Energy Tracking Systems
REC	renewable energy certificate
RES	Renewable Energy Standard
SES	Solar Energy Standard

Before the Minnesota Public Utilities Commission

Comments of the Minnesota Department of Commerce

Docket No. E-999/CI-23-151

I. INTRODUCTION

The Minnesota Legislature created the carbon-free standard (CFS) with the passage of H.F. 7, which requires Minnesota electric utilities to reach 100% carbon-free electricity by 2040 and tasks the Minnesota Public Utilities Commission (Commission) with the implementation of the standard. The Commission laid out a series of proceedings to implement the standard in its July 7, 2023 *Notice of Docket Process and Timeline*,[1] and the current proceeding is the third round, which focuses on CFS compliance.[2]

Minn. Stat. § 216b.1691 subd. 2d, requires the Commission to issue orders on the criteria and standards necessary to measure CFS compliance and determine CFS compliance. The current proceeding focuses on how electric utilities will report preparedness and data required to determine achievement of the CFS standard. At face value, the measurement and achievement of the CFS concern the modification of a reporting template, however the ramifications of decisions in the current proceeding may, in some regards, be more consequential than those regarding resource eligibility. The current proceeding is fundamentally about what carbon-free electricity actually means in practice. The Commission must decide if carbon-free means clean, firm power that attempts to match real-time loads where they occur, or if carbon-free means retiring renewable energy certificates (RECs) from anywhere in the country while relying on fossil fuels for physical energy and grid reliability, or somewhere in between. What the Commission decides to measure, and how, will impact each of these issues.

II. PROCEDURAL BACKGROUND

The following procedural history outlines relevant Commission action to the current proceeding.

March 19, 2010	The Commission issues its *Order Clarifying Criteria and Standards for Determining Compliance Under Minn. Stat. § 216B.1691* in Docket No. E-999/CI-03-389.[3]

[1] Minnesota Public Utilities Commission, Notice of Docket Process and Timeline, July 7, 2023, (eDockets) 20237-197301-01 at 2, (hereinafter "Notice of Docket Process and Timeline").

[2] Minnesota Public Utilities Commission, Notice of Comment Period and Updated Timeline, October 31, 2024, (eDockets) 202410-211486-01, (hereinafter "Notice").

[3] *In the Matter of Detailing Criteria and Standards Measuring an Electric Utility's Good Faith Efforts in Meeting the Renewable Energy Objectives Under Minn. Stat. 216B. 169*, Minnesota Public Utilities Commission, Order Clarifying Criteria and Standards for Determining Compliance Under Minn. Stat. § 216B.1691, March 19, 2010, Docket No. E-999/CI-03-869, (eDockets) 20103-48177-01, (hereinafter "March 19, 2020 Order").

July 7, 2023	The Minnesota Legislature signs H.F. 7 into law, which created the CFS and amended Minn. Stat. § 216B.1691 to increase the Renewable Energy Standard (RES) to 55 percent by 2035.[4]
July 7, 2023	Commission issues its *Notice of Docket Process and Timeline* which set comment period dates for changes to RES and Solar Energy Standard (SES; Round 1), new and amended terms (Round 2), CFS compliance (Round 3), and the off ramp process (Round 4).[5]
December 6, 2023	The Commission issues its order for Round 1 of comments. The Commission orders that a hydroelectric facility greater than 100 MW and built before February 8, 2023 qualifies for compliance with the RES. The Commission also states that RECs are eligible for use in the year of generation and for four years following the year of generation.[6]
April 12, 2024	The Commission issues its order for Round 1.5 of comments.[7]
June 28, 2024	The Department submits its comments for Round 2.[8]
July 25, 2024	Midwest Renewable Energy Tracking Systems (M-RETS) submits its comments for Round 2.[9]
October 31, 2024	The Commission issues its Notice of Comment for the current proceeding.
November 7, 2024	The Commission issues its *Order Initiating New Docket and Clarifying "Environmental Justice Area"* which created the Docket No. E-999/CI-24-352 to further record development on partial compliance and the application of fuel life-cycle analysis.[10]

[4] See H.F. 7.
[5] Notice of Docket Process and Timeline.
[6] See Order Point 6. Minnesota Public Utilities Commission, Order, December 6, 2023, Docket No. E-999/CI-23-151, (eDockets) 202312-201019-01 at 9, ("hereinafter December 6, 2023 Order").
[7] Minnesota Public Utilities Commission, Order, April 12, 2024, Docket No. E-999/CI-23-151, (eDockets) 20244-205306-01, (hereinafter "April 12, 2024 Order").
[8] Minnesota Department of Commerce, Comments, June 28, 2024, Docket No. E-999/CI-23-151, (eDockets) 20246-208098-01, (hereinafter "June 28, 2024 Comments").
[9] M-RETS, Comments, Docket No. E-999/CI-23-151, (eDockets) 20247-208944-01, (hereinafter "M-RETS July 25, 2024 Comments").
[10] Minnesota Public Utilities Commission, Order Initiating New Docket And Clarifying "Environmental Justice Area," November 7, 2024, Docket No. E-999/CI-24-352, (eDockets) 202411-211701-01, (hereinafter "November 7, 2024 Order").

Topic(s) open for comment:

- When and how should utilities report preparedness for meeting upcoming CFS requirements?
- By which criteria and standards should the Commission measure an electric utility's compliance with the CFS?
- What considerations should the Commission take into account regarding the double counting of Renewable Energy Credits (RECs) to meet multiple requirements?
- How should net market purchases be counted towards CFS compliance?
- Are there other issues or concerns related to this matter?

The Minnesota Department of Commerce (Department) submits its comments in the context of multiple competing proceedings, including the newly created Docket No. E-999/CI-24-352,[11] which has implications for how partial compliance and market purchases are measured and reported for CFS compliance. In addition, the fourth round of comments concerns the "Off Ramp Process," which will discuss modifications to the Commission's March 19, 2010 Order in Docket No. E999/CI-03-869.[12] The Commission's March 19, 2010 Order also includes criteria and standards related to measurement and achievement,[13] which makes it difficult to separate relevant topics open for comment in each separate proceeding. The Department addresses overlaps with other proceedings, and describes these conflicts in relevant areas of Section III.

III. DEPARTMENT ANALYSIS

A. WHEN AND HOW SHOULD UTILITIES REPORT PREPAREDNESS FOR MEETING UPCOMING CFS REQUIREMENTS?

Per Minn. Stat. § 216B.1691 subd. 2g, utilities are not required to begin demonstrating CFS compliance until "the end of […] 2030," which means that the first CFS compliance report will be filed in 2031.

Before the first CFS compliance reports are filed, utilities will need to begin planning to meet the requirements. Utilities that meet the definition of a "utility" under Minn. Stat. § 216B.2422,[14] which requires Integrated Resource Plans (IRPs), are required to engage in long term generation planning that includes an analysis of renewable generation and the state's decarbonization goals. IRPs are the main planning tool that utilities use to determine future energy generation. Resource plans determine future resource acquisitions that will be required to demonstrate CFS compliance, and these decisions need to be made several years in advance in order to meet the 2030 CFS compliance requirement. In addition to IRPs, Minn. Stat. § 216B.1691 subd. 3(a) requires utilities to report their ability to meet CFS compliance in an IRP or a separate report at least every two years, with requirements including:

> (1) the status of the utility's renewable energy mix relative to the standard obligations;

[11] See Order Point 1. November 7, 2024 Order.
[12] Notice of Docket Process and Timeline at 2.
[13] See Section I. Issues 1, 2, and 4 and Order Points 1, 2, and 7-10. March 19, 2020 Order at 3 and 11-12.
[14] See subdivision 1(b) for the definition of a "Utility."

> (2) efforts taken to meet the standard obligations;
> (3) any obstacles encountered or anticipated in meeting the standard obligations;
> (4) potential solutions to the obstacles;

Based on these requirements, the Department concludes that Minn. Stat. § 216B.1691 clearly prescribes both the "when and how" regarding the Commission's Notice.

While CFS compliance reporting covered by utilities required to file IRPs will cover a majority of Minnesota's energy generation, the definition of an "electric utility" under Minn. Stat. § 216B.1691 subd. 1(d) is more expansive in scope compared to the definition of a "utility" under Minn. Stat. § 216B.2422 subd. 1(b). For these utilities, the Department concludes that the requirements of Minn. Stat. § 216B.1691 subd. 3(a) will be sufficient to ensure that the utilities plan to meet CFS compliance requirements.

While the manner and timing of CFS preparedness reporting are stipulated by statute, there is a need to prepare for CFS compliance ahead of the statutory requirement to ensure utilities report correctly. Utilities will need to begin tracking and reporting on a larger share of their generation mix, and will have multiple competing requirements that may all fall under the umbrella CFS accounting system. The Commission should not assume that every electric utility that files its first compliance report will get every aspect of the report correct. Allowing utilities time to build institutional knowledge and develop internal processes before the first required CFS report is due will help prevent compliance issues. Any unforeseen issues that may arise during a preparation window can be remedied by the Commission without consequence to the reporting utilities.

The Department recommends that the Commission order electric utilities to begin to report CFS compliance in 2029 for generation year 2028.

Utilities will also need a tracking system in place to ensure accurate accounting and retirement of RECs for each applicable standard, including the existing RES,[15] SES,[16] and Distributed Solar Energy Standard (DSES).[17] Minn. Stat. § 216B.1691 subd. 4(d) requires:

> "[t]he commission shall require all electric utilities to participate in a commission-approved credit-tracking system or systems. Once a credit-tracking system is in operation, the commission shall issue an order establishing protocols for trading credits."

The current tracking system administered by M-RETS is not capable of implementing the full potential range of CFS tracking requirements related to partial compliance.[18] The Commission will issue orders

[15] Statutorily defined as the "Eligible Energy Technology Standard." See Minn. Stat. § 216B.1691 subd. 2a.
[16] See Minn. Stat. § 216B.1691 subd. 2f.
[17] See Minn. Stat. § 216B.1691 subd. 2h.
[18] For example, M-RETS does not currently issue RECs based on the non-renewable share of co-fired generation with mixed renewable and non-renewable sources. See M-RETS July 25, 2024 Comments at 2. Under this system, hydrogen could be

regarding partial compliance in Docket No. E-999/CI-24-352, and therefore the REC tracking mechanisms will evolve in that proceeding. While the Department concludes the current docket is the appropriate docket to discuss regarding REC tracking, the most complex REC tracking matters pertain to life-cycle assessment inputs, partial credits, co-firing, and intermediate retirement of RECs to generate hydrogen—as well as other technologies that may arise. The final tracking mechanisms will depend on the Commission's order in Docket No. E-999/CI-24-352.

The Department recommends that any decisions regarding modifications to the existing REC tracking system be made in Docket No. E-999/CI-24-352.

It is not necessary to discuss further preparedness of the REC tracking system at this time, because the only relevant consideration is whether the system can appropriately track and retire RECs according to future Commission orders.

B. BY WHICH CRITERIA AND STANDARDS SHOULD THE COMMISSION MEASURE AN ELECTRIC UTILITY'S COMPLIANCE WITH THE CFS?

The Department understands Notice Topic 2 to pertain to Minn. Stat. § 216B.1691 subd. 2d(a) and subd. 2d(b)(1). The relevant statute states:

> **Commission order**.
> (a) The commission shall issue necessary orders detailing the criteria and standards used to: (1) measure an electric utility's efforts to meet the standards under subdivisions 2a, 2f, and 2g; and (2) determine whether the utility is achieving the standards.
> (b) In the order under paragraph (a), the commission shall include criteria and standards that: (1) protect against undesirable impacts on the reliability of the utility's system and economic impacts on the utility's ratepayers and that consider technical feasibility;

The Department addresses each of these requirements in the following subsections:

- Subd. 2d(a)(1): Section B.1 - Criteria and Standards for the Measurement of CFS Compliance
- Subd. 2d(a)(2): Section B.2 - Criteria and Standards for the Determination of CFS Achievement
- Subd. 2d(b)(1): Section B.3 - Criteria and Standards for Reliability Impacts
- Subd. 2d(b)(1): Section B.4 - Criteria and Standards for Economic Impacts
- Subd. 2d(b)(1): Section B.5 - Criteria and Standards for Technical Feasibility
- Subd. 2d(b)(2): Section B.6 - Criteria and Standards for Partial Compliance

awarded full RECs even if the fossil fuel input to generate the hydrogen was greater than the net energy output of the hydrogen.

The Department notes that Minn. Stat. § 216B.1691 subd. 2d(b)(2) pertains to criteria and standards related to partial compliance including market purchases, which will be discussed in Docket No. E-999/CI-24-352, as well as in Notice Topic 4, and are therefore not discussed in this section.

B.1. Criteria and Standards for the Measurement of CFS Compliance

B.1.1. Tracking of Electric Utility Credit Sales and Imports

Minn. Stat. § 216B.1691 subd. 2g sets a clear standard to match percentages of an electric utility's "total retail electric sales to retail customers in Minnesota" with carbon-free electricity, however the statute is silent on electric generation from CFS-ineligible generation sources such as coal and natural gas-fired generation, or the carbon-emitting fraction of energy generation from partially compliant sources.

Nothing in the CFS precludes a utility from maintaining or building additional CFS-ineligible generation, for example, in order to meet MISO capacity requirements. Such resources will be dispatched according to the MISO merit order, which penalizes higher-variable cost resources such as future carbon-free hydrogen combustion turbines, for example. Even when all Minnesota utilities achieve 100% carbon-free electricity, all generation, including CFS-ineligible generation will be dispatched by MISO to meet grid capacity needs. If sufficient carbon-free capacity does not exist at any one time, and as discussed above, there is no guarantee that carbon-free capacity will be dispatched by MISO to meet of all Minnesota's capacity needs. Instead, the likely outcome is that if utilities do not possess sufficient carbon-free capacity, or if the carbon-free capacity is too expensive to routinely dispatch in the MISO merit order, MISO will dispatch lower cost CFS-ineligible resources external to utility-owned or -operated resources to meet Minnesota's capacity needs.[19] The Department notes that, in the MISO dispatch process utilities can require MISO dispatch to occur out of economic merit order. This anomaly currently happens for some coal plants, for example.

In practice, an electric utility may happen to generate electricity to match its total retail electric sales, but may not generate sufficient carbon-free electricity to match its total retail electric sales. In any instance where an electric utility does not generate enough carbon-free electricity to match its total retail electric sales, an electric utility may need to purchase energy attribute certificates (EACs)[20] to fill in the generation gap between carbon-free generation and load.

Electric utilities must always pay for their load at the locational marginal price (LMP), but are not required to pay for EACs to match their real time load. In this example, the result is an electric utility generating or importing electricity which cannot be counted as carbon-free, even if the electricity at the time is 100% carbon-free.[21] The remainder of the time, the electric utility's CFS-ineligible power plant will be dispatched by MISO, or the electric utility will rely on the MISO grid mix, which contains a significant amount of CFS-ineligible generation. In practice, electric utilities should not be asked to

[19] Note that MISO does not recognize state borders and MISO dispatches power plants to meet total system load requirements. However, Minnesota contributes to the total MISO load.
[20] The IRS 45V tax credits for hydrogen use the term "energy attribute certificate" for RECs and other credits that can be retired to demonstrate compliance with the regulation. See 26 CFR Ch. I, Sch. A, § 1.45V-4 Paragraph (d)(2)(ii).
[21] The only scenario in which this example could occur is if MISO is 100% Carbon-free.

track CFS-ineligible generation because generation and load operate separately and exist in multi-state markets that electric utilities (and the Commission) do not control.

Instead, electric utilities should track all instances when electric utility buys or sells EACs. The quality of this information depends on the Commission's decision in the next section, regarding an hourly matching requirement. If annual EAC matching is required, then electric utilities would only need to true-up EAC generation to load once per year by the purchase or potential sale of EACs. This information would provide little indication of an electric utility's reliance on CFS-ineligible generation for grid reliability needs, because gaps and surpluses in CFS-eligible generation will cancel each other out. If hourly EAC matching is required, then electric utilities would need to true-up generation each hour, which may require sales of EACs when generation exceeds load, and purchases of EACs when EAC generation is insufficient to match load. Electric utilities would need to use demand-side data such as advanced metering infrastructure (AMI) to determine if the Minnesota share of their electric load was sufficiently matched by EACs. This information would highlight both hourly and seasonal gaps in EAC generation, which are discussed further in Section III.B.1.2.

The Department recommends that the Commission order electric utilities to all report sales and purchases of EACs at the time interval required for CFS matching.

The above requirement would not provide data on the full reliance of electricity not covered by EAC generation. Even though load data would be required to determine if EACs should be purchased or sold, electric utilities would not have to report hourly load, and therefore any gaps in EAC generation that are not covered by EACs will not be reported.[22] The Department provides a separate recommendation for the reporting of load data because the reporting of load data would impose additional reporting requirements with different benefits. The main benefit of hourly load data coupled with CFS-eligible generation data is that electric utilities would then be required to report reliance of all generation required to match load regardless of whether EACs were purchased to match load. Therefore, these data would provide the entire data set of an electric utility's reliance upon potentially CFS-ineligible generation.

The Department recommends that the Commission order electric utilities to all report hourly Minnesota retail electric sales.

The Department does not argue that the tracking of EAC purchases, sales, and total load matching should be used to determine CFS achievement, but should instead be used to help the Commission and intervenors understand the influence of potentially CFS-ineligible generation assets required to serve each electric utility's Minnesota load. The Department notes that its recommendation above can be implemented without a requirement for hourly EAC matching, as the requirement is for informational purposes only.

B.1.2. Hourly Matching

[22] Such gaps in data would occur before CFS compliance reaches 100%, or if electric utilities claim exemptions from hourly matching.

B.1.2.1 Statutory Interpretation of Hourly Matching

The CFS requires a utility to generate or procure a certain percentage of the utility's total retail electric sales to retail customers in Minnesota from a carbon-free energy technology by specified years. Minn. Stat. § 216B.1691, subd. 2g states:

> **Carbon-free standard.**
> In addition to the requirements under subdivisions 2a and 2f, each electric utility must generate or procure sufficient electricity generated from a carbon-free energy technology to provide the electric utility's retail customers in Minnesota, or the retail customers of a distribution utility to which the electric utility provides wholesale electric service, so that the electric utility generates or procures an amount of electricity from carbon-free energy technologies that is equivalent to at least the following standard percentages of the electric utility's total retail electric sales to retail customers in Minnesota by the end of the year indicated:
> (1) 2030 80 percent for public utilities; 60 percent for other electric utilities
> (2) 2035 90 percent for all electric utilities
> (3) 2040 100 percent for all electric utilities.[23]

The statute does not specify how electric sales should be tracked for purposes of CFS compliance. "Total retail electric sales" is defined by Minn. Stat. § 216B.1691, subd. 1(f), to mean "the kilowatt-hours of electricity sold in a year by an electric utility to retail customers of the electric utility or to a distribution utility for distribution to the retail customers of the distribution utility." But, sales do not take place annually— instead the MISO real-time market clears bids every five minutes.[24] The statute is clear that a utility must be in compliance with the CFS by the end of the specified years, meaning a utility cannot calculate its total retail electric sales for the year then seek to comply with the statute, because total sales and CFS compliance are ultimately determined at the same time. The most accurate representation of sales is to represent the actual sales environment with the best available data. Currently, the electric industry is moving towards an hourly-matching construct, which strikes a balance between data resolution and the feasibility of implementation. This tracking mechanism is already available in the market; for example, M-RETS offers an hourly EAC tracking service to meet sustainability goals.[25]

Notably, Minn. Stat. § 216B.1691, subd. 2d(a), provides the Commission with the authority to issue orders "detailing the criteria and standards used to [...] measure an electric utility's efforts to meet" the CFS. A requirement to use hourly matching is consistent with this grant of statutory authority, and,

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[23] Minn. Stat. § 216B.1691, subd. 2g
[24] Midcontinent Independent System Operator, *MISO Markets and Market Participation Overview*, (N.D.). Available at: https://cdn.misoenergy.org/Fact%20Sheet%20-%20MISO%20Market%20Participation%20Overview632546.pdf
[25] Midwest Renewable Energy Tracking Systems, Solutions: 24/7 Hourly Tracking, (N.D.). Available at: https://www.mrets.org/solutions/hourly-tracking/

as explained below, would lead to more accurate data and is more likely to achieve the ultimate goal of shifting energy generation to carbon-free technology.

B.1.2.2 Justification for Hourly Matching

In addition to the authority granted to the Commission under Minn. Stat. § 216B.1691, subd. 2d(a), the use of hourly matching finds support in the code of federal regulations. For example, hourly matching is set by the Internal Revenue Service (IRS) for 45V credits, which require hourly matching for hydrogen generation.[26] Like the CFS, this requirement goes into effect in 2030.[27] The IRS regulations implement hourly matching by requiring that, starting in 2030, EACs include "the date and hour (including time zone, or in UTC) in which such electricity was generated."[28] As noted above, M-RETS, the Commission-approved tracking system for RECs in Minnesota, offers hourly-tracking data, and utilities that utilize RECs to satisfy the renewable-energy standards established in Minn. Stat. § 216B.1691 are already required to include "the dates when the energy associated with the credits was generated" when filing their utility plans with the Commission.[29]

The Department relies on 45V tax credit guidance, as published on January 10, 2025,[30] throughout its comments in this section because the tax credits contemplate decarbonization in an electric grid that is not currently decarbonized. The regulations laid out by the IRS ensure that increased electric generation for decarbonization does not result in the new requirements for the dispatch of the MISO marginal unit, which is often a fossil fuel generator.[31] The Department concludes that the same logic should apply to all electric generation needed to fulfill CFS compliance requirements.

Under an hourly EAC matching system, electric utilities would sell EACs when generation exceeds sales and would purchase EACs when electric utility-owned or -operated assets do not supply a sufficient number of EACs to match the hourly total retail electric sales.

To highlight the importance of hourly tracking, it is important to discuss what CFS compliance could look like in its absence. Figure 1 shows what would be a CFS-compliant average hourly generation curve to meet the needs of flat retail sales, if sales are totaled annually. In this example, from 7:00 AM to 6:00 PM the solar system would fully supply demand and would lead to net energy exports as well

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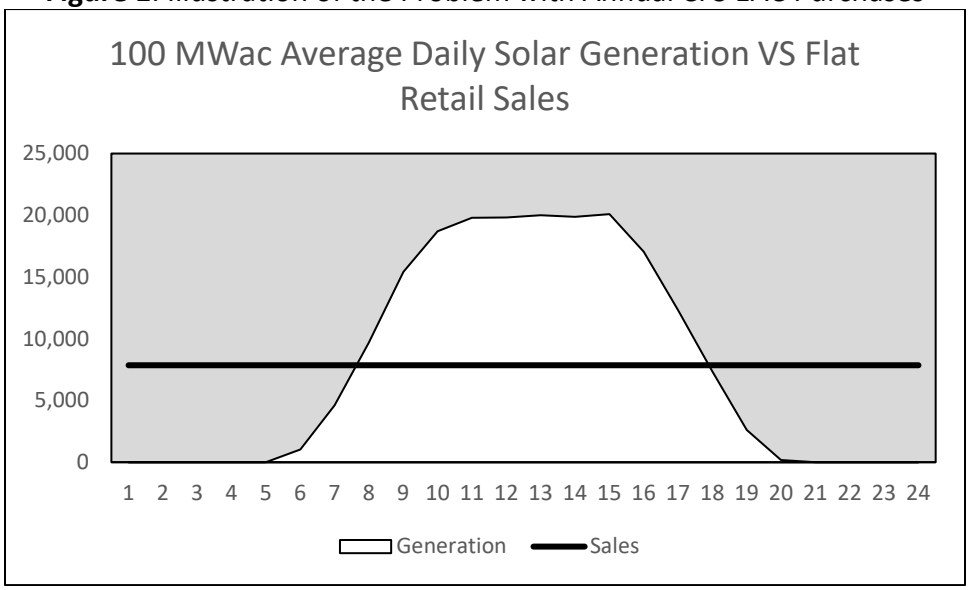
[26] 26 C.F.R. § 1.45V-4(d)(3)(ii) (2024).
[27] 26 C.F.R. § 1.45V-4(a)(2); Minn. Stat. § 216B.1691, subd. 2g.
[28] 26 C.F.R. § 1.45V-4(d)(2)(iii)(E).
[29] Minn. Stat. § 216B.1691, subd. 3(a)(9)(ii).
[30] National Archives – Federal Register, *Credit for Production of Clean Hydrogen and Energy Credit*, (January 10, 2025). Available at: https://www.federalregister.gov/documents/2025/01/10/2024-31513/credit-for-production-of-clean-hydrogen-and-energy-credit
[31] In 2024, coal and gas were the marginal unit for 78.9% of all five-minute intervals averaged over MISO North, South, and Central. Midcontinent Independent System Operator, *Market Reports – Historical Real-Time Fuel on the Margin (zip)*, (N.D.). Available at: https://www.misoenergy.org/markets-and-operations/real-time--market-data/market-reports/#nt=%2FMarketReportType%3AReal-Time%2FMarketReportName%3AHistorical%20Real-Time%20Fuel%20on%20the%20Margin%20(zip)&t=10&p=0&s=MarketReportPublished&sd=desc

as net EAC generation.[32] In the remaining 13 hours of the day, the electric utility would then rely on energy imports, but could draw down its net EACs to claim CFS compliance.

Figure 1: Illustration of the Problem with Annual CFS EAC Purchases



Source: NREL PVWatts[33]

If electric utilities attempt to generate annual EACs to fulfill their CFS obligations, this strategy could expose the utilities to increased electricity market risks. In the above example, generation would not be matched to load, and the electric utility would have increased buy-side and sell-side exposure in the MISO market, which increases ratepayer risks. The seasonal generation patterns of wind and solar may expose electric utilities to seasonal over- or under-exposure as well.[34]

Should other electric utilities attempt to meet the CFS requirements with the same resource, the cost of energy and EACs in the above example may decrease between 7:00 AM to 6:00 PM if the energy and EAC markets become oversupplied.[35] If all electric utilities rely on significant net energy exports, curtailment will be more likely, or the energy must be stored. Switching to hourly REC matching would then send appropriate price signals to build new power generation or storage that can supply EACs during hours when EAC generation cannot fully supply load.

In addition to economic concerns, hourly matching would also advance the State's environmental goals. In the above example, the remaining 13 hours of the day could be served physically on natural gas or coal power, because the net generation of EACs would be sufficient to claim that all electricity is carbon-free, even though for 13 hours of the day, an electric utility's power generation could come

[32] Note that EACs are used here to describe RECs and alternative energy credits (AECs) including nuclear and partial compliance credits.
[33] 100 MWac solar array with single axis tracking and bifacial modules without losses in Saint Paul, MN. National Renewable Energy Laboratory, NREL's PVWatts Calculator, (N.D.). Available at: https://pvwatts.nrel.gov
[34] For example, see Figure 2 in Section III.B.3.
[35] For example, see https://blog.gridstatus.io/curtailment/

from CFS-ineligible resources. It would be appropriate to argue that because Minnesota operates in a larger electric transmission network, that net renewable energy exports would offset fossil fuel generation elsewhere. However, it cannot be assumed that this scenario will always be the case. As renewable generation approaches 100% for certain hours of the day, the generation could result in curtailment of other renewable generation rather than a ramp down of fossil fuel generation and will become increasingly problematic as Minnesota approaches its 100% CFS goal. Therefore, a reliance on non-utility load to absorb excess generation should not always be assumed to result in lower carbon emissions.

The Department recommends that the Commission order hourly matching for CFS compliance for electric all electric utilities.

If the Commission decides to implement some form of hourly matching, the Commission would also need to partially rescind its December 18, 2007 Order that allowed utilities to bank EACs for a period of up to four years.[36] Even if the Commission does not decide to implement any hourly matching requirement, the Department still recommends a recission of this order to better match EAC generation to actual retail sales.

The Department recommends that the Commission rescind its order points 1 and 3 from its December 18, 2007 Order in Docket Nos. E-999/CI-04-1616 and E999/CI-03-869 and modify order point 6 of the Commission's December 6, 2023 Order in Docket E-999/CI-23-151 to remove "All renewable energy credits generated from such facilities will be eligible for use in the year of generation and for four years following the year of generation." These orders will be rescinded/modified effective January 1, 2030.

B.1.2.2 Timing of Hourly Matching Requirement

While the IRS 45V tax credits require hourly matching by 2030,[37] the Department understands that hourly matching may impose an undue burden by requiring hourly matching to begin at the same time as CFS compliance. Therefore, the Department proposes a phased approach to allow electric utilities sufficient time to include hourly matching in IRPs and to begin reporting on CFS compliance.

The Department recommends that the Commission order the following total retail electric sales matching requirements for electric utilities by the end of the year indicated:

1) ***2030: Annual matching of 80 percent for public utilities; 60 percent for other electric utilities***
2) ***2035: Hourly matching of 80 percent for public utilities; 60 percent for other electric utilities***
3) ***2040: Hourly matching of 90 percent for all electric utilities***
4) ***2045: Hourly matching of 100 percent for all electric utilities.***

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[36] *In the Matter of a Commission Investigation into a Multi-State Tracking and Trading System for Renewable Energy Credits* and *In the Matter of Detailing Criteria and Standards for Measuring an Electric Utility's Good Faith Efforts in Meeting the Renewable Energy Objectives Under Minn. Stat. §216B.1691,* Minnesota Public Utilities Commission, Order Establishing Initial Protocols for Trading Renewable Credits, December 18, 2007, Docket Nos. E-999/CI-04-1616 and E999/CI-03-869, (eDockets) 4872138.

[37] 26 CFR Ch. I, Sch. A, § 1.45V-4 Paragraph (d)(2)(iii)(E)

B.1.2.3 Inclusion of Hourly Matching in IRPs

Utilities that are required to match hourly retail sales should also be required to model hourly matching in IRPs. Requiring hourly matching constraints in IRPs will help setup electric utilities to acquire resources that best fit modeled hourly retail electric sales. This requirement will ensure that electric utilities are not overly dependent on EAC markets and any market instability that may increase the financial burden imposed upon ratepayers.

The Department recommends that the Commission order all integrated resource plans where the utility uses a capacity expansion model to incorporate hourly matching constraints in the models to demonstrate CFS compliance.

B.1.2.4 Status of EAC Markets

The Department recognizes that while tracking mechanisms exist for hourly EACs, a market trading solution currently does not yet appear to exist. Electric utilities will need to both track, buy and sell EACs to match total retail electric sales with EACs. The Granular Certificate Trading Alliance is currently working towards a market trading platform, but the platform does not appear to be active yet.[38] Even when the market becomes active, or others like it, there will still be tangible problems to solve, which include, but are not limited to:

1. When EACs are generated and sold (i.e. subsequent hour or later);
2. Eligibility for day ahead and/or real time trading;
3. True-ups if day ahead trading is required to matched with real time sales;
4. Use of day ahead, or two-day ahead load forecasts;[39]
5. Use of AMI meter data;
6. Methodology to measure real time hourly retail sales data to generate the need for hourly RECs; and
7. Potential exemptions for electric utilities who do not have AMI meter data or forecasting abilities.

The Department contends that hourly matching requirements can be enforced to a certain extent by using only utility-owned or operated resources to meet hourly matching quotas, and that EAC markets are only necessary to achieve full hourly EAC compliance. Therefore, the ongoing development of EAC markets should not be viewed as a justification to not implement hourly matching. In addition, the Department recommends that EAC matching begin ten years from now, which leaves ample room for hourly EAC markets to mature.

In the meantime, the Department concludes that monitoring of EAC market development is the most appropriate course of action.

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[38] The GC Trading Alliance, *Building the market infrastructure for time- and location-based carbon-free energy*, (N.D.). Available at: https://www.leveltenenergy.com/alliance

[39] For example, if day ahead trading is allowed, an electric utility would have to know its load requirement when day ahead trading begins, which would require the forecast be generated in the prior day.

The Department recommends that the Commission order the Department to submit an annual compliance report that outlines the status of EAC markets and provides potential options to implement hourly EAC trading for electric utilities.

The Department recommends to monitor the status of EAC markets for three years, upon which time the Commission will open a docket to determine the rules by which hourly trading of EACs will be regulated. A Commission order in 2029 will allow electric utilities five years to prepare for the hourly matching requirement that begins in generation year 2035.

The Department recommends the Commission order that a new docket be opened in 2029, which shall determine the requirements necessary to facilitate the sales and purchases of hourly EACs.

B.1.3. EAC Purchase Region

Electric utilities are currently under no obligation to ensure that EACs generated or purchased to meet the CFS actually supply Minnesota's electric needs, as power markets and EAC markets operate independently. Minn. Stat. § 216B.1691, subd. 4, states:

> (b) In lieu of generating or procuring energy directly to satisfy a standard obligation under subdivision 2a, 2f, or 2g, an electric utility may utilize renewable energy credits allowed under the program to satisfy the standard.
> (c) The commission shall facilitate the trading of renewable energy credits between states.
> (d) The commission shall require all electric utilities to participate in a commission-approved credit-tracking system or systems. Once a credit-tracking system is in operation, the commission shall issue an order establishing protocols for trading credits.

The statute clearly states that the Commission must allow for both the purchase of EACs and the trading of EACs between states, but imposes no geographic boundary upon the purchase and trading of EACs. Therefore, electric utilities could purchase annual or hourly EACs in California, Texas, Maine, or any other state or region outside of a balancing authority for which Minnesota operates within or for which MISO regularly trades with.

The electric transmission system is complex and interconnected throughout the country, but real transmission constraints have a material effect on power flows. The IRS 45V tax credit for hydrogen contemplates power flows by defining regions,[40] and then requires that electric generation used to generate hydrogen be sourced from a facility that is in the same region,[41] otherwise it shall use the regional power mix.[42] The regulation also allows for interregional transfers, provided that 1) the owner of the EAC has transmission rights outside of the region 2) the owner settles the transaction within the

[40] 26 CFR Ch. I, Sch. A, § 1.45V-4 Paragraph (d)(2)(ix)
[41] 26 CFR Ch. I, Sch. A, § 1.45V-4 Paragraph (d)(3)(iii)(A)
[42] 26 CFR Ch. I, Sch. A, § 1.45V-4 Paragraph (a)(2)

region and 3) the owner does not have any reverse transactions to counteract the sale.[43] These regulations help ensure that carbon-free power generation is realistically capable of meeting local energy needs.

The 45V regulation defines the "Midcontinent ISO (Balancing Authority): North and Central" within the "Midwest" region, and the "Midcontinent ISO (Balancing Authority): South" within the "Delta" region, which reflects power transfer constraints between the Midcontinent Independent System Operator (MISO) North/Central and South.[44] These constraints can and should be considered for the implementation of the CFS. The absence of such a requirement would enable Minnesota electric utilities to source clean power from anywhere in the country, regardless of whether the power has any chance of physically meeting state energy needs, similar to how the Low Carbon Fuel Standard (LCFS) operates.

The Department recommends that the Commission order that all EACs retired to demonstrate CFS compliance be generated within the Midwest Region, as defined by 26 CFR Ch. I, Sch. A, § 1.45V-4 Paragraph (d)(2)(ix), or meet the 45V requirements for interregional delivery, as defined by 26 CFR Ch. I, Sch. A, § 1.45V-4 Paragraph (d)(3)(iii)(B).

The Department notes that it may not always be possible to purchase RECs from the Midwest region. The Department intends to discuss appropriate off-ramps in the Round 4 comment period, but recommends regional compliance as the standard to meet before exemptions are granted.

B.1.4. Multiple EACs

Depending on decisions to be made in Docket No. E-999/CI-24-352, there a possibility that multiple EACs could be issued for each MWh of generation. Such examples could include negative emitting refuse-derived fuel, waste biomass, bioenergy with carbon capture and storage (BECCS), or any other energy technology that results in negative emissions. In addition, there is the possibility to issue multiple CFS-ineligible credits for emissions above a baseline.[45]

While the Department recommended the usage of fuel life-cycle assessment to determine partial compliance in its June 28, 2024 Comments,[46] the Department recommends here that limits would simplify the reporting of negative and positive emissions from electricity generation. Minn. Stat. § 216B.1691 subd. 4(a) states:

> The program must treat all eligible energy technology equally and shall not give more or less credit to energy based on the state where the energy was generated or the technology with which the energy was generated.

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[43] 26 CFR Ch. I, Sch. A, § 1.45V-4 Paragraph (d)(3)(iii)(B)

[44] MISO can transfer 3,000 MW from MISO North to South, which is less than 10% of MISO South's peak load. Union of Concerned Scientists, *How Transmission—Not Gas—Will Bolster Winter Grid Reliability: A Look at MISO South*, (January 6, 2025). Available at: https://blog.ucsusa.org/paul-arbaje/how-transmission-not-gas-will-bolster-winter-grid-reliability-a-look-at-miso-south/

[45] If CFS-ineligible generation is tracked for the generation of hydrogen, then coal could receive approximately double credits compared to natural gas, if natural gas is a baseline.

[46] June 28, 2024 Comments at 2.

While subdivision 4 relates to the quantification of RECs, the statute offers guidance that RECs issued under the RES should be treated equally, regardless of technology. It would be logical for the Commission to extend the applicability of Minn. Stat. § 216B.1691 subd. 4(a) to all EACs and not provide special treatment for the CFS compared to the RES.

In addition, the statutory definition of "carbon-free" provides support to set a floor for the reporting of negative emissions. Pursuant to Minn. Stat. § 216B.1691, subd. 1(b), "carbon-free" is defined as "a technology that generates electricity without emitting carbon dioxide." The definition of carbon-free does not suggest that additional credits should be issued for negative emitting technologies. Rather, electricity generation "without" emissions should be considered "carbon-free," and EACs should be issued based on the amount of carbon-free electricity that is actually generated.

The existing system to report RES and SES compliance in Docket No. E999/PR-YR-12 relies on ledgers to prove that RECs were retired in quantities sufficient to meet required standards. The Department recommends that the fundamental reporting structure be retained by limiting the number of EACs that can be generated to between zero and one EAC issued per MWh of electricity generation. The same limitation would be imposed upon the reporting of CFS-ineligible generation, should this generation be tracked in some way. Without going into details to be discussed in Docket No. E-999/CI-24-352, this limitation would decouple the fuel life-cycle analysis carbon footprint from the actual energy generation reported to meet CFS standards. Fuel life-cycle analysis would then only be used to determine if one MWh of electricity generation should receive zero-to-one EAC.

To further highlight the importance of this proposal, consider how the system would look without this limitation. If electric utilities are allowed to report multiple EACs per MWh of electricity generated, then electric utilities would be allowed to generate less than the full amount of electricity required to meet their total retail electric sales, and would by extension then have to make up for actual power needs from other sources that may not be carbon-free. The allowance of multiple EACs could make Minnesota more reliant on fossil fuels to make up for gaps in actual power needs by creating a larger gap between the amount of carbon-free electricity actually generated and utility load.

This proposal would also simplify reporting requirements. Rather than requiring that all or most electricity generation that requires a fuel life-cycle analysis report the results of the analysis in order to generate EACs, certain resources could be made exempt if they can demonstrate 100% carbon-free electricity generation, and would then not need to be formally tracked in downstream reporting processes.

The Department recommends that the Commission order EACs to only be issued in quantities of 0-1 EAC per megawatt-hour.

The Department acknowledges that the Commission may choose to decide whether this standard should apply in Docket No. E-999/CI-24-352, however given the broad nature of the recommendation, and its direct relationship to measurement and reporting, the Department presents its recommendation here.

B.2. Criteria and Standards for the Determination of CFS Achievement

B.2.1. Generation to Receive Full, Partial, or No CFS Credit

The Commission has not directly addressed the CFS eligibility of all resources and will determine the final eligibility status of all resources in Docket No. E-999/CI-24-352. The Department summarizes in Table 1 the eligibility status of the main resources under consideration for CFS eligibility:

Table 1: Summary of Power Generation Resources and Their CFS and RES Eligibility

Resource	CFS Eligible	RES/EETS Eligible
Solar	Eligible	Eligible
Wind	Eligible	Eligible
Hydropower[47]	Eligible	Eligible
Waste Biomass[48]	Partial/Full: TBD in Docket No. 24-352	Eligible
Refuse-derived fuel[49]	Partial/Full: TBD in Docket No. 24-352	Eligible
Primary Biomass[50]	Partial/Full: TBD in Docket No. 24-352	Not Eligible
Geothermal	Likely Eligible: TBD in Docket No. 24-352	Not Eligible
Nuclear	Eligible	Not Eligible
Hydrogen	Not Eligible to Full: TBD in Docket No. 24-352	Partially Eligible[51]
Coal	Not Eligible	Not Eligible
Natural Gas	Not Eligible	Not Eligible
Oil	Not Eligible	Not Eligible
Coal, Natural Gas, or Oil with Carbon Capture and Storage	Partially Eligible	Not Eligible
Energy Storage	Exempt/Partial/Full: TBD in Docket No. 24-352	Not Eligible
Co-Firing	Partial: TBD in Docket No. 24-352	Not Eligible

All of the fully eligible resources will receive one EAC per MWh of electricity generated by the resource. Decisions are still pending in Docket No. E-999/CI-24-352 for the resources identified above.

B.2.2. Reporting Mechanism

As discussed in Section III.B.1, the Department's preference is to retain the existing REC reporting structure to the greatest extent practicable, while modifying the structure to allow for new proposed reporting requirements such as sales and purchases of EACs, hourly EAC matching, and the non-issuance of multiple EACs, as well as partial compliance reporting.

The Commission's Order Point 7 in its December 6, 2023 Order provided guidance for the implementation of reporting, which stated:

[47] Hydroelectric with a capacity of: (i) less than 100 megawatts; or (ii) 100 megawatts or more, provided that the facility is in operation as of February 8, 2023. As defined by Minn. Stat. § 216B.1691 subd. 1(c)(3)
[48] Landfill gas, anaerobic digestion, wastewater. As defined by Minn. Stat. § 216B.1691 subd. 1(c)(5).
[49] Municipal solid waste as a fuel source. As defined by Minn. Stat. § 216B.1691 subd. 1(c)(5).
[50] Fuel crops such as ethanol, non-waste forest products, or any other biomass source utilized directly for electricity production.
[51] Eligible when generated from solar, wind, hydropower, waste biomass, or refuse-derived fuel.

> The Commission delegates authority to the Executive Secretary to work with the Department of Commerce and other utilities to incorporate new reporting required by H.F. 7 into the current reporting template.[52]

The Department has discussed development of the new reporting template with Commission staff; however, the final template will not be complete until after the Commission issues its order in Docket No. E-999/CI-24-352 and determines the final reporting requirements for all eligible resources.

While the Commission has not explicitly designated the annual E999/PR-YR-12 REC Retirement Docket by order to be the venue to report CFS compliance, the Department understands the above referenced Order Point 7 to make this determination. Therefore, the Department expects that future CFS compliance filings will be made in the annual E999/PR-YR-12 REC Retirement Docket.

B.2.3. Determination of CFS Achievement

The Department does not see a need for the Commission to order any additional requirements to determine that an electric utility is in compliance with the CFS. The existing reporting structure used to determine RES and SES compliance is sufficient to be adapted for the determination of CFS compliance.

B.2.4. Determination of Hourly Matching Achievement

Should the Commission decide to implement any form of the Department's recommendation for hourly matching, the Commission should also consider an order regarding the determination of how the hourly matching component of CFS compliance has been achieved.

As proposed, the Department recommends a staggered implementation schedule, whereby the CFS standards for annual retail sales occur five years before the hourly requirement for that standard begins. The Department's recommended year to begin hourly matching is 2035, wherein electric utilities will be required to retire EACs to match 90% of their annual retail sales, of which 80% of the annual retail sales must be matched with hourly EACs.

When the hourly matching requirement begins, electric utilities will need to submit proof of hourly matching compliance for all 8,760 hours in each reporting year. Until 2045, electric utilities will be allowed to match only a percentage of the total hours required for hourly matching. The simplest way to report hourly matching with an extra allowance is for electric utilities to report all EAC retirements made on an hourly basis, alongside total retail electric sales for that hour. The template would then calculate the number of hours that were matched with EACs, and would also report the total number of EACs to determine if the annual matching component was achieved. The reporting of net EAC imports and exports would not be used to determine hourly EAC achievement.

The Department recommends that the Commission order that hourly matching achievement for electric utilities be determined by the calculation of the total number of hours for which total retail electric sales are matched by EACs, as compared to the hourly matching standard for that year.

B.2.5. Auditing of Reporting

[52] December 6, 2023 Order at 9.

The implementation of the CFS will require electric utilities to increase the complexity of the current reporting requirements that electric utilities report in E999/PR-YR-12. Electric utilities will be guaranteed to retire RECs to fulfill at minimum, their RES, SES, and DSES requirements in addition to the retirement to fulfill the CFS from the same RECs. Electric utilities will need to report the retirement of more EACs than ever before, with more standards to fulfill from more sources of power generation and EAC purchases. All of these requirements subject electric utilities to an increased risk of noncompliance due to the administrative complexity of reporting to meet multiple competing standards. The Department does not conclude that compliance under all of the new and existing standards is not feasible, but rather that there should be appropriate auditing of reports to ensure the accuracy of reporting.

The Department does not know the scope or timing for an auditing process, and therefore:

The Department recommends that the Commission order auditing of all CFS compliance reports during the preparedness period, as well as the 2030 report to establish the need for further auditing in subsequent years.

B.3. Criteria and Standards for Reliability Impacts

Grid reliability is not optional, and the passage of H.F. 7 will have no impact on grid reliability. Electric utilities will be subject to the same reliability requirements that were required before the passage of H.F. 7, including the requirements stipulated by Minn. R. 7826.0500 – 0700 and the Commission's resource planning process. The CFS is anticipated to result in a greater need for capacity, particularly because it will trigger additions of wind and solar that will lose capacity accreditation with the transition to the Direct Loss of Load (DLOL) used to calculate the Local Reliability Requirement (LRR) by MISO, as illustrated in Figure 2 below.

Figure 2: Comparison of Current MISO Capacity Accreditation to the Proposed DLOL That Will be Implemented During the CFS Compliance Timeline

PY23-24	Summer		Fall		Winter		Spring	
Resource Class	Current*	Proposed	Current	Proposed	Current	Proposed	Current	Proposed
Gas	90%	88%	84%	88%	79%	66%	84%	69%
Combined Cycle	91%	90%	94%	89%	90%	74%	92%	75%
Coal	92%	91%	91%	88%	90%	73%	89%	74%
Hydro	96%	96%	94%	96%	93%	92%	97%	88%
Nuclear	95%	90%	96%	85%	95%	86%	92%	80%
Pumped Storage	99%	98%	91%	98%	94%	50%	89%	67%
Storage	95%	94%	95%	93%	95%	91%	95%	95%
Solar	45%	36%	25%	31%	6%	2%	15%	18%
Wind	18%	11%	23%	15%	40%	16%	23%	16%
Run-of-River	100%	100%	100%	100%	100%	100%	100%	100%

Source: MISO[53]

The change to MISO's capacity accreditation will include a need for more summer and winter capacity generally but the effects will be strongest for utilities with more wind and solar in their portfolio.[54] The 55% RES goal by 2035, combined with the fact that wind and solar tend to be least cost compliance additions, ensures that a significant share of each electric utility's energy supply will come from resources that will lose summer and winter capacity accreditation by the 2028/2029 MISO capacity auction.[55] The specific capacity types to be added will be determined in resource planning. This potential need for capacity additions beyond those directly needed for the RES is the main reason why the Department advocates to track CFS gaps in generation to understand how much additional CFS-ineligible generation is dispatched by MISO to meet capacity needs.

Reliability planning is primarily performed in IRPs. As discussed above, the only difference induced by H.F. 7 is the additional need for capacity with a higher share of renewable generation. For electric utilities that are required to submit IRPs, these capacity needs will be planned in IRPs. Reliability requirements will similarly not change for electric utilities that do not submit IRPs. Based on the above analysis, the Department does not see a need for the Commission to set any new standards or criteria to meet reliability needs.

B.4. Criteria and Standards for Economic Impacts

The Department notes that the Commission has a final comment process scheduled after the completion of the current proceeding to discuss the "Off Ramp Process,"[56] which allows the Commission to "Modify or Delay" a standard under Minn. Stat. § 216B.1691 subd 2b. This next proceeding will relate to the "Commission's March 19, 2010 Order in Docket No. E999/CI-03-869," which discussed both the measurement of compliance,[57] as well as the modification or delay of standards.[58]

B.4.1. General Standards

Economic impacts of the CFS will be studied in an electric utility's IRP. Minn. Stat. § 216B.2422 subd. 3 requires the Commission to consider environmental costs when approving an IRP. The statute states:

> (a) The commission shall, to the extent practicable, quantify and establish a range of environmental costs associated with each method of electricity generation. A utility shall use the values established by the commission in conjunction with other external factors, including socioeconomic costs, when evaluating and selecting resource options in all proceedings before

[53] Midcontinent Independent System Operator. *Market Redefinition: Accreditation Reform*, (February 28, 2024). Available at: https://cdn.misoenergy.org/20240228%20RASC%20Item%2005a%20Accreditation%20Presentation%20RASC-2020-4%202019-2631885.pdf
[54] Note that the reserve margin is also expected to be lower under the DLOL.
[55] Midcontinent Independent System Operator. *Market Redefinition: Accreditation Reform*, (February 28, 2024). At 5. Available at: https://cdn.misoenergy.org/20240228%20RASC%20Item%2005a%20Accreditation%20Presentation%20RASC-2020-4%202019-2631885.pdf
[56] Notice of Docket Process and Timeline at 2.
[57] See Issue 2). March 19, 2010 Order at 2.
[58] See Issue 3). March 19, 2010 Order at 2.

> the commission, including resource plan and certificate of need proceedings.
>
> (b) The commission shall provisionally adopt and apply the draft cost of greenhouse gas emissions valuations presented in the United States Environmental Protection Agency's EPA External Review Draft of Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances, released in September 2022, including the time horizon, global estimates of damages, and the full range of discount rates from 2.5 to 1.5 percent, with two percent as the central estimate. The commission shall adopt the estimates contained in the final version of the external review draft report when it becomes available.

In addition to societal costs, an IRP petition will also present the revenue requirements to understand the ratepayer impacts of different resource mixes. With requirement to reach 100% carbon-free electricity, there are significant potential ratepayer risks to reach this standard. Potential technologies to reach 100% carbon-free electricity include short- and long-duration energy storage, carbon capture and storage, and hydrogen. Both hydrogen and carbon capture and storage unambiguously add additional costs compared to bulk power generation from renewables or nuclear and unabated fossil fuel generation, respectively. Short- and long-duration energy storage have more complex cost recovery potential, but also pose risks to increase ratepayer costs.

The risk for increased costs should not be managed differently from that of existing practice. As described in Minn. Stat. § 216B.2422 subd. 3(a) and 3(b), the Social Cost of Greenhouse Gases, socioeconomic costs, and other external factors should be considered as part of the decision to approve a resource plan. However, given that the potential cost of a solution may not outweigh the risk, it is important to consider whether a given resource mix provides a higher benefit than any increased cost. In this regard, a comparison of the societal costs to the revenue requirement of any given scenario should yield a higher result as compared to the difference in revenue requirement between a CFS-eligible and a CFS-ineligible resource. While the Department does not argue that this equation should be the only consideration for a request to modify or delay a standard, it should form the basis to consider such a request. The Department concludes that a Commission order is not necessary, as the Department's recommendation is not a deviation from standard practice.

B.4.2. Hourly Standards

The Department acknowledges that a Commission order to implement hourly matching may increase ratepayer costs. When electric utility-owned or operated generation is unable to match retail sales with EACs, the utilities will have to purchase EACs on the market. As renewable resources become a larger share of MISO's fuel mix, times of low EAC generation may be coincident with more systematic shortages of EAC generation, and therefore prices may spike during these times. While the Department desires to incentivize utilities to continue to match hourly retail sales during times of higher prices in order to meet the recommended hourly matching standard, it is equally important not to subject ratepayers to undue financial burden.

The Department intends to present criteria and standards for the off-ramp process in Comment Round 4 that implement ratepayer protections, such that ratepayers are not required to pay for EACs during times of abnormally high prices, including the provenance of the EAC.

B.5. Criteria and Standards for Technical Feasibility

The Department concludes that criteria and standards regarding technical feasibility are appropriately addressed by Minn. Stat. § 216B.1691 subd. 2b and Minn. Stat. § 216B.2422. The existing integrated resource planning process is sufficient to address any issues pertaining to technical feasibility, and does not require any Commission order.

B.6. Criteria and Standards for Partial Compliance

The Department recommends that criteria and standards related to partial compliance should be determined in Docket No. E-999/CI-24-352. The necessary eligibility and calculation determinations for certain resources including hydrogen and biomass will greatly influence the measurement of these resources for CFS compliance and cannot be easily decoupled from pending record development. The reporting structures necessary to determine partial compliance must adapt to Commission orders in Docket No. E-999/CI-24-352. Any attempts to set criteria and standards in this proceeding would preclude intervenors in Docket No. E-999/CI-24-352 from fully discussing the merits of different methodologies for the measurement of partial compliance, particularly in the context of fuel life-cycle assessment. The Department articulates its reasoning for a broad determination to not issue multiple EACs in Section III.B.1.4, however this recommendation in no way limits any decision regarding the eligibility of resources or the quantification of them. This recommendation only pertains to how resources are used to determine CFS compliance.

The Department recommends that all decisions made regarding criteria and standards to measure a utility's partial compliance with the CFS be made in Docket No. E-999/CI-24-352.

C. WHAT CONSIDERATIONS SHOULD THE COMMISSION TAKE INTO ACCOUNT REGARDING THE DOUBLE COUNTING OF RENEWABLE ENERGY CREDITS (RECS) TO MEET MULTIPLE REQUIREMENTS?

The Department does not believe that special considerations are required to prevent double counting of RECs. For example, the Commission did not order any special accommodations to implement the DSES, which also contained overlapping requirements between the SES, RES, and CFS.[59] For example, M-RETS is also able to track multiple requirements within its system. The implementation of the CFS is materially similar to the implementation of the DSES regarding the double counting of EACs to meet multiple requirements, and therefore the Department does not recommend any Commission orders.

D. HOW SHOULD NET MARKET PURCHASES BE COUNTED TOWARDS CFS COMPLIANCE?

[59] See Order Point 11 and the omission of any order points regarding double counting. June 26, 2024 Order. *In the Matter of the Implementation of the New Distributed Solar Energy Standard Pursuant to 2023 Amendments to Minnesota Statutes, Section 216B.1691*, Minnesota Public Utilities Commission, Order Clarifying Implementation of Distributed Solar Energy Standard, June 26, 2024, DOCKET NO. E-002,E-015,E-017/CI-23-403, (eDockets) 20246-207978-01 at 14.

There are two competing docket topics open for discussion. The first, Notice Topic 4 of the current docket, requests comments on how net market purchases should be counted towards CFS compliance. The second, as outlined in the November 7, 2024 Order, states that the Commission will open comments about "[t]he definition and calculation of net market purchases" in a newly initiated docket (Docket No. E-999/CI-24-252).[60] The November 7, 2024 Order further elaborates:

> Pending the outcome of that [Docket No. E-999/CI-24-352] investigation, the Commission will provisionally direct utilities, in their filings under the Carbon-Free Standard and in resource plans under Minn. Stat. § 216B.2422, to do the following:
>
> - Calculate the percentage of carbon-free market purchases on an applicable regional transmission organization subregion—using annual energy fuel mix data—as practicable.
> - Calculate the percentage of carbon-free energy, when a utility purchases energy from a specified resource such as in the context of a bilateral contract or power purchase agreement, based on the percentage of carbon-free energy generated by the resource.[61]

The Department notes that the above bullet points are derived from a plain language reading of Minn. Stat. § 216B.1691 subd. 2d.(b)(ii), which requires that the Commission allow CFS partial compliance for:

> [A]n electric utility's annual purchases from a regional transmission organization net of the electric utility's sales to the regional transmission organization, but only for the percentage of annual net purchases that is carbon-free, which percentage the commission must calculate based on the regional transmission organization's systemwide annual fuel mix or an applicable subregional fuel mix.

The bifurcation of comment topics regarding the treatment of net market purchases is difficult to parse between the two competing dockets. The Department understands that the current docket should align with the other comment topics, which focus on criteria and standards used for the counting of net market purchases used to determine CFS compliance. However, there are overlapping topics between these dockets. The Department presents the subjects open for discussion of each topic in Table 2 below.

Table 2: Comparison of Net Market Purchases Comment Topics

	Docket No. E-999/CI-23-151	**Docket No. E-999/CI-24-352**
Comment Topic	How should net market purchases be counted towards CFS compliance?	The definition and calculation of net market purchases.
Reporting system for quantification	✓	**X**

[60] November 7, 2024 Order at 5-6.
[61] *Id*., at 7.

Reporting Ledger/Template	✓	✓
Criteria/Standards for resource eligibility	✓	✓
Criteria/Standards for time boundaries	✓	✓
Venue of quantification	✓	✓
Issuance of EACs	✓	X
Definition of when net market purchases occur	X	✓
Delineation of the relationship of imports and exports to net market purchases	X	✓

While it is possible to separate certain comment topics from each other, in practice the discussion about criteria and standards for the eligibility and measurement of different resources could be decided in either docket. Should these decisions be made in the current docket, similar to setting criteria and standards for partial compliance, it may again limit decisions to be made in Docket No. E-999/CI-24-352 before proper record development can take place on the more detailed analysis of how market purchases are quantified.

The Department recommends that all decisions made regarding criteria and standards to measure a utility's net market purchases be made in Docket No. E-999/CI-24-352.

With this recommendation, the Department aims to have a singular discussion about the implementation of net market purchases in Docket No. E-999/CI-24-352, with one exception.

Minn. Stat. § 216B.1691, subd. 2d.(b)(ii), when read in conjunction with other provisions of Minn. Stat. § 216B.1691, creates the possibility of double counting if not addressed by the Commission. Under Minn. Stat. § 216B.1691, subd. 2d.(b)(ii), electric utilities would report the equivalent of CFS credit retirement for CFS credits that were not purchased by the electric utility. In reality, all CFS credits have value, and will be sold to an entity that desires to claim the credit. If a utility claims partial compliance based on physical power purchases pursuant to Minn. Stat. § 216B.1691, subd. 2d.(b)(ii), but does not purchase the associated EACs, and a different utility purchases the EACs and claims compliance based on the EACs under Minn. Stat. § 216B.1691, subd. 4, it would be double counting. The entire implementation of Minn. Stat. § 216B.1691 relies on the retirement of CFS credits and not physical power purchases to establish CFS compliance. The Commission should not abandon this foundational principle of the statute to implement a second requirement that contains a conflict.

Instead, the Department recommends a solution to the problem. It is common practice for the Commission to approve resource plans that reduce electric utilities' reliance upon the MISO market, and therefore net market purchases are discouraged. Therefore, it may not be necessary in some cases for an electric utility to demonstrate CFS compliance with the fraction of its energy mix that is derived from net market purchases. If an electric utility does require net market purchases to demonstrate its CFS compliance, regardless of whether implemented as hourly or annually, the electric utility must purchase EACs equivalent to the carbon-free share of its net market purchases in order to claim the

credit. As the electric market is constantly in flux, electric utilities may not know the exact "systemwide annual fuel mix or an applicable subregional fuel mix" in the reporting year, nor know if net market purchases occurred until the generation year is over. In any event, just purchasing physical energy via MISO's energy market does not necessarily mean the utility has also purchased the renewable or environmental attributes. For this reason, electric utilities should instead be allowed to purchase EACs in the following generation year to make up for any gaps in the prior year.

The Department recommends that the Commission order:

- ***A. Net market purchases shall only be quantified for CFS compliance when the carbon-free share of the systemwide annual fuel mix or an applicable subregional fuel mix is necessary to demonstrate CFS compliance.***
- ***B. EACs must be purchased in the subsequent reporting year for the carbon-free share of the systemwide annual fuel mix or an applicable subregional fuel mix that is necessary to demonstrate CFS compliance.***

The above recommendation is statutorily permissible because it allows for partial compliance with the CFS from net market purchases as required by Minn. Stat. § 216B.1691, subd. 2d(b)(ii), but clarifies that the Commission is not required to quantify net market purchases unless a utility is relying on net market purchases to demonstrate CFS compliance. Additionally, Minn. Stat. § 216B.1691, subd. 2d, gives the Commission the authority to establish criteria and standards by which to measure compliance. The Commission can and should use that authority to harmonize the various compliance methods and ensure that double counting does not occur.

Finally, the Department notes that there is a second, smaller issue concerning double counting of net market purchases that should be considered. Every electric utility participates in the "systemwide annual fuel mix or an applicable subregional fuel mix" market, whether it be the whole of MISO or a smaller subset. Therefore, if an electric utility claims net market purchases of the fuel mix for CFS compliance, it would be claiming a fraction of its own carbon-free generation, unless this generation is subtracted from the fuel mix. While this issue will be discussed in Docket No. E-999/CI-24-352, the proposed Commission order above would also negate this double counting concern as well.

E. ARE THERE OTHER ISSUES OR CONCERNS RELATED TO THIS MATTER?

The Department notes that its recommendations made in sections B.1.2.4 *Status of EAC Markets* and B.2.5 *Auditing of Reporting* both potentially require external resources to provide technical solutions that may be beyond those currently available to the Department. The Department makes two separate recommendations that would help facilitate each recommendation independently.

The Department recommends that the Commission order the Commissioner of Commerce to seek authority from the Commissioner of Management and Budget to incur costs for specialty services to provide reports on the status of EAC markets and to propose a suite of solutions that would facilitate hourly EAC trading for electric utilities.

The Department recommends that the Commission order the Commissioner of Commerce to seek authority from the Commissioner of Management and Budget to incur costs for specialty services to provide auditing of all CFS reports for up to three years.

IV. DEPARTMENT RECOMMENDATIONS

Based on analysis of Minn. Stat. § 216B.1691 and the information in the record, the Department has prepared recommendations, which are provided below. The recommendations correspond to the subheadings of Section III above.

A. WHEN AND HOW SHOULD UTILITIES REPORT PREPAREDNESS FOR MEETING UPCOMING CFS REQUIREMENTS?

- A.1. The Department recommends that the Commission order electric utilities to begin to report CFS compliance in 2029 for generation year 2028.

- A.2. The Department recommends that any decisions regarding modifications to the existing REC tracking system be made in Docket No. E-999/CI-24-352.

B. BY WHICH CRITERIA AND STANDARDS SHOULD THE COMMISSION MEASURE AN ELECTRIC UTILITY'S COMPLIANCE WITH THE CFS?

- B.1.1.1. The Department recommends that the Commission order electric utilities to all report sales and purchases of EACs at the time interval required for CFS matching.

- B.1.1.2 The Department recommends that the Commission order electric utilities to all report hourly Minnesota retail electric sales.

- B.1.2.1.1. The Department recommends that the Commission order hourly matching for CFS compliance for electric all electric utilities.

- B.1.2.1.2. The Department recommends that the Commission rescind its order points 1 and 3 from its December 18, 2007 Order in Docket Nos. E-999/CI-04-1616 and E999/CI-03-869 and modify order point 6 of the Commission's December 6, 2023 Order in Docket E-999/CI-23-151 to remove "All renewable energy credits generated from such facilities will be eligible for use in the year of generation and for four years following the year of generation." These orders will be rescinded/modified effective January 1, 2030.

- B.1.2.2. The Department recommends that the Commission order the following total retail electric sales matching requirements for electric utilities by the end of the year indicated:
  - 2030: Annual matching of 80 percent for public utilities; 60 percent for other electric utilities
  - 2035: Hourly matching of 80 percent for public utilities; 60 percent for other electric utilities
  - 2040: Hourly matching of 90 percent for all electric utilities
  - 2045: Hourly matching of 100 percent for all electric utilities.

- B.1.2.3. The Department recommends that the Commission order all integrated resource plans where the utility uses a capacity expansion model to incorporate hourly matching constraints in the models to demonstrate CFS compliance.

- B.1.2.4.1. The Department recommends that the Commission order the Department to submit an annual compliance report that outlines the status of EAC markets and provides potential options to implement hourly EAC trading for electric utilities.

- B.1.2.4.2 The Department recommends the Commission order that a new docket be opened in 2029, which shall determine the requirements necessary to facilitate the sales and purchases of hourly EACs.

- B.1.3. The Department recommends that the Commission order that all EACs retired to demonstrate CFS compliance be generated within the Midwest Region, as defined by 26 CFR Ch. I, Sch. A, § 1.45V-4 Paragraph (d)(2)(ix), or meet the 45V requirements for interregional delivery, as defined by 26 CFR Ch. I, Sch. A, § 1.45V-4 Paragraph (d)(3)(iii)(B).

- B.1.4. The Department recommends that the Commission order EACs to only be issued in quantities of 0-1 EAC per megawatt-hour.

- B.2.4. The Department recommends that the Commission order that hourly matching achievement for electric utilities be determined by the calculation of the total number of hours for which total retail electric sales are matched by EACs, as compared to the hourly matching standard for that year.

- B.6. The Department recommends that all decisions made regarding criteria and standards to measure a utility's partial compliance with the CFS be made in Docket No. E-999/CI-24-352.

C. WHAT CONSIDERATIONS SHOULD THE COMMISSION TAKE INTO ACCOUNT REGARDING THE DOUBLE COUNTING OF RENEWABLE ENERGY CREDITS (RECS) TO MEET MULTIPLE REQUIREMENTS?

- None.

D. HOW SHOULD NET MARKET PURCHASES BE COUNTED TOWARDS CFS COMPLIANCE?

- D.1. The Department recommends that all decisions made regarding criteria and standards to measure a utility's net market purchases be made in Docket No. E-999/CI-24-352.

- D.2. The Department recommends that the Commission order:
  - Net market purchases shall only be quantified for CFS compliance when the carbon-free share of the systemwide annual fuel mix or an applicable subregional fuel mix is necessary to demonstrate CFS compliance.
  - EACs must be purchased in the subsequent reporting year for the carbon-free share of the systemwide annual fuel mix or an applicable subregional fuel mix that is necessary to demonstrate CFS compliance.

E. ARE THERE OTHER ISSUES OR CONCERNS RELATED TO THIS MATTER?

- E.1. The Department recommends that the Commission order the Commissioner of Commerce to seek authority from the Commissioner of Management and Budget to incur costs for specialty services to provide reports on the status of EAC markets and to propose a suite of solutions that would facilitate hourly EAC trading for electric utilities.

- E.2 The Department recommends that the Commission order the Commissioner of Commerce to seek authority from the Commissioner of Management and Budget to incur costs for specialty services to provide auditing of all CFS reports for up to three years

CERTIFICATE OF SERVICE

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

Minnesota Department of Commerce
Comments

Docket No. E999/CI-23-151

Dated this **29th** day of **January 2025**

/s/Sharon Ferguson

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93	Barb	Freese	bfreese@mncenter.org	Minnesota Center for Environmental Advocacy		1919 University Ave W Ste 515 Saint Paul MN, 55104-3435 United States	Electronic Service		No	23-151Official
94	Christopher	Friez	christopher.friez@nacco.com	NACCO Natural Resources/North American Coal		918 E. Divide Ave., Suite 200 Bismarck ND, 58501 United States	Electronic Service		No	23-151Official
95	Stacey	Fujii	sfujii@grenergy.com	Great River Energy		12300 Elm Creek Boulevard Maple Grove MN, 55369-4718 United States	Electronic Service		No	23-151Official
96	Jessica	Fyhrie	jfyhrie@otpco.com	Otter Tail Power Company		PO Box 496 Fergus Falls MN, 56538-0496 United States	Electronic Service		Yes	23-151Official
97	Edward	Garvey	garveyed@aol.com	Residence		32 Lawton St Saint Paul MN, 55102 United States	Electronic Service		No	23-151Official
98	Benjamin	Gerber	ben@mrets.org	Midwest Renewable Energy Tracking System		60 South Sixth Street Suite 2800 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
99	David P.	Geschwind	dp.geschwind@smmpa.org	Southern Minnesota Municipal Power Agency		500 First Avenue SW Rochester MN, 55902 United States	Electronic Service		No	23-151Official
100	Shannon	Geshick	shannon.geshick@state.mn.us	Minnesota Indian Affairs Council (MIAC)		null null, null United States	Electronic Service		No	23-151Official
101	Allen	Gleckner	gleckner@fresh-energy.org	Fresh Energy		408 St. Peter Street Ste 350 Saint Paul MN, 55102 United States	Electronic Service		No	23-151Official
102	Jenny	Glumack	jenny@mrea.org	Minnesota Rural Electric Association		11640 73rd Ave N Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
103	Julie	Goehring	julie@redriverbasincommission.org			708 70 Ave NW Moorhead MN, 56560 United States	Electronic Service		No	23-151Official
104	Todd J.	Guerrero	todd.guerrero@kutakrock.com	Kutak Rock LLP		Suite 1750 220 South Sixth Street Minneapolis MN, 55402-1425 United States	Electronic Service		No	23-151Official
105	Tessa	Haagenson	tessa.haagenson@connexusenergy.com	Connexus Energy		14601 Ramsey Blvd NW Ramsey MN, 55303 United States	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
106	Jeffrey	Haase	jhaase@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
107	Hal	Halpern	halhalpern@clpower.com	Cooperative Light & Power		1554 Hwy 2 P0 Box 69 Two Harbors MN, 55616 United States	Electronic Service		No	23-151Official
108	Jeremy	Hamilton	jhamilton@uppersiouxcommunity-nsn.gov	Upper Sioux Community		Upper Sioux Community PO Box 147 Granite Falls MN, 56241 United States	Electronic Service		No	23-151Official
109	David A.	Hansen	hansen@federatedrea.coop	Federated Rural Electric Association		77100 U.S. Highway 71 PO Box 69 Jackson MN, 56143 United States	Electronic Service		No	23-151Official
110	James	Hartson				59931 300th Street Waltham MN, 55982 United States	Paper Service		No	23-151Official
111	Amy	Hastings	amyh@uppersiouxcommunity-nsn.gov	Upper Sioux Community		5722 Travers Lane PO Box 147 Granite Falls MN, 56241 United States	Electronic Service		No	23-151Official
112	Erik	Hatlestad	erik@cureriver.org			117 1st St Montevideo MN, 56265 United States	Electronic Service		No	23-151Official
113	Kim	Havey	kim.havey@minneapolismn.gov	City of Minneapolis		350 South 5th Street, Suite 315M Minneapolis MN, 55415 United States	Electronic Service		No	23-151Official
114	Philip	Hayet	phayet@jkenn.com	J. Kennedy and Associates, Inc.		570 Colonial Park Drive Suite 305 Roswell GA, 30075-3770 United States	Electronic Service		No	23-151Official
115	Adam	Heinen	aheinen@dakotaelectric.com	Dakota Electric Association		4300 220th St W Farmington MN, 55024 United States	Electronic Service		No	23-151Official
116	Annete	Henkel	mui@mnutilityinvestors.org	Minnesota Utility Investors		413 Wacouta Street #230 St.Paul MN, 55101 United States	Electronic Service		No	23-151Official
117	Jessy	Hennesy	jessy.hennesy@avantenergy.com	Avant Energy		220 S. Sixth St. Ste 1300 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
118	Kristin	Henry	kristin.henry@sierraclub.org	Sierra Club		2101 Webster St Ste 1300 Oakland CA, 94612 United States	Electronic Service		No	23-151Official
119	Benjamin	Hertz	bhertz@bepc.com	Basin Electric Power Cooperative		1717 E Interstate Ave Bismarck ND, 58503 United States	Electronic Service		Yes	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
120	Holly	Hinman	holly.r.hinman@xcelenergy.com	Xcel Energy		414 Nicollet Mall, 7th Floor Minneapolis MN, 55401 United States	Electronic Service		No	23-151Official
121	Joe	Hoffman	ja.hoffman@smmpa.org	SMMPA		500 First Ave SW Rochester MN, 55902-3303 United States	Electronic Service		No	23-151Official
122	Michael	Hoppe	lu23@ibew23.org	Local Union 23, I.B.E.W.		445 Etna Street Ste. 61 St. Paul MN, 55106 United States	Electronic Service		No	23-151Official
123	Ronald	Horman	rhorman@redwoodelectric.com	Redwood Electric Cooperative		60 Pine Street Clements MN, 56224 United States	Electronic Service		No	23-151Official
124	Rick	Horton	rhorton@minnesotaforests.com	Minnesota Forest Industries		324 West Superior Street 903 Medical Arts Building Duluth MN, 55802 United States	Electronic Service		No	23-151Official
125	Robbie	Howe	robbie.howe@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	23-151Official
126	John	Ihle	ljihle@rrt.net	PlainStates Energy LLC		27451 S Hwy 34 Barnesville MN, 56514 United States	Electronic Service		No	23-151Official
127	Annie	Jackson	cheryl.jackson@whiteearth-nsn.gov	White Earth Nation		White Earth Tribal Headquarters 35500 Eagle View Road Ogemo MN, 56569 United States	Electronic Service		No	23-151Official
128	Faron	Jackson, Sr.	faron.jackson@llojibwe.net			190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	23-151Official
129	Casey	Jacobson	cjacobson@bepc.com	Basin Electric Power Cooperative		1717 East Interstate Avenue Bismarck ND, 58501 United States	Electronic Service		No	23-151Official
130	Justin	Jahnz	justin.jahnz@ecemn.com	East Central Energy		412 Main Ave N Braham MN, 55006 United States	Electronic Service		No	23-151Official
131	Alan	Jenkins	aj@jenkinsatlaw.com	Jenkins at Law		2950 Yellowtail Ave. Marathon FL, 33050 United States	Electronic Service		No	23-151Official
132	Nathan	Jensen	njensen@otpco.com	Otter Tail Power Company		215 S. Cascade St. Fergus Falls MN, 56537 United States	Electronic Service		No	23-151Official
133	Kevin	Jensvold	kevinj@uppersiouxcommunity-nsn.gov	Upper Sioux Community		PO Box 147 Granite Falls MN, 56241-	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						0147 United States				
134	Annette	Johnson	annette.johnson@redlakenation.org	Red Lake Nation		15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	23-151Official
135	Jody	Johnson	jody.johnson@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Rd Welch MN, 55089 United States	Electronic Service		No	23-151Official
136	Johnny	Johnson	johnny.johnson@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	23-151Official
137	Richard	Johnson	rick.johnson@lawmoss.com	Moss & Barnett		150 S. 5th Street Suite 1200 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
138	Sarah	Johnson Phillips	sjphillips@stoel.com	Stoel Rives LLP		33 South Sixth Street Suite 4200 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
139	Nate	Jones	njones@hcpd.com	Heartland Consumers Power		PO Box 248 Madison SD, 57042 United States	Electronic Service		No	23-151Official
140	Nick	Kaneski	nick.kaneski@enbridge.com	Enbridge Energy Company, Inc.		11 East Superior St Ste 125 Duluth MN, 55802 United States	Electronic Service		No	23-151Official
141	Veda	Kanitz	vmkanitz@gmail.com			null null, null United States	Electronic Service		No	23-151Official
142	Jenny	Kartes	jkartes@arrowhead.coop	Arrowhead Electric Cooperative, Inc.(P)		PO Box 39 5401 W Hwy 61 Lutsen MN, 55612 United States	Electronic Service		No	23-151Official
143	David	Kempf	dkempf@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
144	William	Kenworthy	will@votesolar.org			1 South Dearborn St Ste 2000 Chicago IL, 60603 United States	Electronic Service		No	23-151Official
145	Becky	Kern	bkern@bepc.com	Basin Electric Power Cooperative		1717 E Interstate Ave Bismarck ND, 58501 United States	Electronic Service		Yes	23-151Official
146	Samuel B.	Ketchum	sketchum@kennedy-graven.com	Kennedy & Graven, Chartered		150 S 5th St Ste 700 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
147	Nazir	Khan	nazir@mnejtable.org	Minnesota Environmental Justice Table		2720 E 22nd St Minneapolis MN, 55406 United States	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
148	Hudson	Kingston	hudson@curemn.org			PO Box 712 Ely MN, 55731 United States	Electronic Service		No	23-151Official
149	Kate	Knuth	kate.knuth@gmail.com			2347 14th Terrace NW New Brighton MN, 55112 United States	Electronic Service		No	23-151Official
150	Frank	Kohlasch	frank.kohlasch@state.mn.us		Minnesota Pollution Control Agency	520 Lafayette Rd N. St. Paul MN, 55155 United States	Electronic Service		No	23-151Official
151	Brian	Kolbinger	brian@beckertownship.org	Becker Township Board		PO Box 248 12165 Hancock St Becker MN, 55308 United States	Electronic Service		No	23-151Official
152	Seth	Koneczny	st.koneczny@smmpa.org	SMMPA		500 First Avenue, SW Rochester MN, 55902-3303 United States	Electronic Service		No	23-151Official
153	Brian	Krambeer	bkrambeer@mienergy.coop	MiEnergy Cooperative		PO Box 626 31110 Cooperative Way Rushford MN, 55971 United States	Electronic Service		No	23-151Official
154	Randy	Kramer	rlkramer89@gmail.com	Water and Soil Resources Board		42808 Co. Rd. 11 Bird Island MN, 55310 United States	Electronic Service		No	23-151Official
155	Allen	Krug	allen.krug@xcelenergy.com	Xcel Energy		414 Nicollet Mall-7th fl Minneapolis MN, 55401 United States	Electronic Service		No	23-151Official
156	Kay	Kuhlmann	teri.swanson@ci.red-wing.mn.us	City Of Red Wing		315 West Fourth Street Red Wing MN, 55066 United States	Electronic Service		No	23-151Official
157	Brenda	Kyle	bkyle@stpaulchamber.com	St. Paul Area Chamber of Commerce		401 N Robert Street Suite 150 St Paul MN, 55101 United States	Electronic Service		No	23-151Official
158	Therese	LaCanne	tlacanne@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
159	Matthew	Lacey	mlacey@grenergy.com	Great River Energy		12300 Elm Creek Boulevard Maple Grove MN, 55369-4718 United States	Electronic Service		No	23-151Official
160	Becky	Lammi	cityclerk@ci.aurora.mn.us	City of Aurora		16 W 2nd Ave N PO Box 160 Aurura MN, 55705 United States	Electronic Service		No	23-151Official
161	Carmel	Laney	carmel.laney@stoel.com	Stoel Rives LLP		33 South Sixth Street Suite 4200 Minneapolis	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						MN, 55402 United States				
162	Arthur	LaRose	arthur.larose@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	23-151Official
163	Robert L	Larsen	robert.larsen@lowersioux.com	Lower Sioux Indian Community		PO Box 308 39527 Reservation Highway 1 Morton MN, 56270 United States	Electronic Service		No	23-151Official
164	Emily	Larson	elarson@duluthmn.gov	City of Duluth		411 W 1st St Rm 403 Duluth MN, 55802 United States	Electronic Service		No	23-151Official
165	James D.	Larson	james.larson@avantenergy.com	Avant Energy Services		220 S 6th St Ste 1300 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
166	Mark	Larson	mlarson@meeker.coop	Meeker Coop Light & Power Assn		1725 Highway 12 E Ste 100 Litchfield MN, 55355 United States	Electronic Service		No	23-151Official
167	Peder	Larson	plarson@larkinhoffman.com	Larkin Hoffman Daly & Lindgren, Ltd.		8300 Norman Center Drive Suite 1000 Bloomington MN, 55437 United States	Electronic Service		No	23-151Official
168	Rachel	Leonard	rachel.leonard@ci.monticello.mn.us	City of Monticello		505 Walnut St Ste 1 Monticello MN, 55362 United States	Electronic Service		No	23-151Official
169	Dan	Lesher	dlesher@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
170	Annie	Levenson Falk	annielf@cubminnesota.org	Citizens Utility Board of Minnesota		332 Minnesota Street, Suite W1360 St. Paul MN, 55101 United States	Electronic Service		No	23-151Official
171	Jesse	Levine	jesse_levine@afandpa.org			1101 K St NW Suite 700 Washington DC, 20005 United States	Electronic Service		No	23-151Official
172	Amy	Liberkowski	amy.a.liberkowski@xcelenergy.com	Xcel Energy		414 Nicollet Mall 7th Floor Minneapolis MN, 55401-1993 United States	Electronic Service		No	23-151Official
173	Eric	Lindberg	elindberg@mncenter.org	Minnesota Center for Environmental Advocacy		1919 University Avenue West Suite 515 Saint Paul MN, 55104-3435 United States	Electronic Service		No	23-151Official
174	Eric	Lipman	eric.lipman@state.mn.us		Office of Administrative Hearings	PO Box 64620 St. Paul MN, 55164-0620 United States	Electronic Service		Yes	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
175	Michelle	Lommel	mlommel@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
176	Bob	Long	rlong@larkinhoffman.com	Larkin Hoffman (Silicon Energy)		1500 Wells Fargo Plaza 7900 Xerxes Ave S Bloomington MN, 55431 United States	Electronic Service		No	23-151Official
177	Andrea	Lovoll	alovoll@mnejtable.org	Minnesota Environmental Justice Table		2720 E 22nd St. Minneapolis MN, 55406 United States	Electronic Service		No	23-151Official
178	Nicole	Luckey	nluckey@invenergyllc.com	Invenergy LLC		1 S. Wacker Suite 1800 Chicago IL, 60606 United States	Electronic Service		No	23-151Official
179	Susan	Ludwig	sludwig@mnpower.com	Minnesota Power		30 West Superior Street Duluth MN, 55802 United States	Electronic Service		No	23-151Official
180	Robert	Lunder	robert.lunder@mdu.com	Montana-Dakota Utilities (ET)		400 N 4th St Bismark ND, 58501 United States	Electronic Service		No	23-151Official
181	Alice	Madden	alice@communitypowermn.org	Community Power		2720 E 22nd St Minneapolis MN, 55406 United States	Electronic Service		No	23-151Official
182	Scott	Magnuson	smagnuson@bpu.org	Brainerd Public Utilities		8027 Highland Scenic Rd Baxter MN, 56425 United States	Electronic Service		No	23-151Official
183	Kavita	Maini	kmaini@wi.rr.com	KM Energy Consulting, LLC		961 N Lost Woods Rd Oconomowoc WI, 53066 United States	Electronic Service		No	23-151Official
184	Emily	Marshall	emarshall@mojlaw.com	Miller O'Brien Jensen, PA		120 S. 6th Street Suite 2400 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
185	Mary	Martinka	mary.a.martinka@xcelenergy.com	Xcel Energy Inc		414 Nicollet Mall 7th Floor Minneapolis MN, 55401 United States	Electronic Service		No	23-151Official
186	Gregg	Mast	gmast@cleanenergyeconomymn.org	Clean Energy Economy Minnesota		4808 10th Avenue S Minneapolis MN, 55417 United States	Electronic Service		No	23-151Official
187	Shena	Matrious	shena.matrious@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Drive Onamia MN, 56349 United States	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
188	Daryl	Maxwell	dmaxwell@hydro.mb.ca	Manitoba Hydro		360 Portage Ave FL 16 PO Box 815, Station Main Winnipeg MB, R3C 2P4 Canada	Electronic Service		No	23-151Official
189	Tim	McCarthy	tim.mccarthy@siouxvalleyenergy.com	Sioux Valley Southwestern Electric Cooperative, Inc. d/b/a Sioux Valley Energy		null null, null United States	Electronic Service		No	23-151Official
190	Scot	McClure	scotmcclure@alliantenergy.com	Interstate Power And Light Company		4902 N Biltmore Ln PO Box 77007 Madison WI, 53707-1007 United States	Electronic Service		No	23-151Official
191	April	McCormick	aprilm@grandportage.com	Grand Portage Band of Lake Superior Chippewa		PO Box 428 Grand Portage MN, 55605 United States	Electronic Service		No	23-151Official
192	Jess	McCullough	jmccullough@mnpower.com	Minnesota Power		30 W Superior St Duluth MN, 55802 United States	Electronic Service		No	23-151Official
193	Sara G	McGrane	smcgrane@felhaber.com	Felhaber Larson		220 S 6th St Ste 2200 Minneapolis MN, 55420 United States	Electronic Service		No	23-151Official
194	Natalie	McIntire	natalie.mcintire@gmail.com	Wind on the Wires		570 Asbury St Ste 201 Saint Paul MN, 55104-1850 United States	Electronic Service		No	23-151Official
195	Harvey	McMahon	hmcmahon@otpco.com	Otter Tail Power Company		215 South Cascade Street Fergus Falls MN, 56537 United States	Electronic Service		No	23-151Official
196	Taylor	McNair	taylor@gridlab.org			668 Capp Street San Francisco CA, 94110 United States	Electronic Service		No	23-151Official
197	Ronald	Meier	rmeier@mcleodcoop.com	Mcleod Cooperative Power		3515 11th St East Glencoe MN, 55336 United States	Electronic Service		No	23-151Official
198	Melanie	Mesko Lee	melanie.lee@burnsvillemn.gov	City of Burnsville		100 Civic Center Parkway Burnsville MN, 55337-3867 United States	Electronic Service		No	23-151Official
199	Peder	Mewis	pmewis@cleangridalliance.org	Clean Grid Alliance		570 Asbury St. St. Paul MN, 55104 United States	Electronic Service		No	23-151Official
200	Joseph	Meyer	joseph.meyer@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	Bremer Tower, Suite 1400 445 Minnesota Street St Paul MN,	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						55101-2131 United States				
201	Valentina	Mgeni	valentina.mgeni@piic.org	Prairie Island Indian Community		Prairie Island Indian Community 5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	23-151Official
202	Cole W.	Miller	cole.miller@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake MN, 55372 United States	Electronic Service		No	23-151Official
203	Stacy	Miller	stacy.miller@minneapolismn.gov	City of Minneapolis		350 S. 5th Street Room M 301 Minneapolis MN, 55415 United States	Electronic Service		No	23-151Official
204	David	Moeller	dmoeller@allete.com	Minnesota Power			Electronic Service		No	23-151Official
205	Dalene	Monsebroten	dalene.monsebroten@nmpagency.com	Northern Municipal Power Agency		123 2nd St W Thief River Falls MN, 56701 United States	Electronic Service		No	23-151Official
206	Sarah	Mooradian	sarah@curemn.org	CURE		117 South 1st Street Montevideo MN, 56265 United States	Electronic Service		No	23-151Official
207	Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP		33 South Sixth St Ste 4200 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
208	Travis	Morrision	travis.morrison@boisforte-nsn.gov	Bois Forte Band of Chippewa		Bois Forte Tribal Government 5344 Lakeshore Drive Nett Lake MN, 55772 United States	Electronic Service		No	23-151Official
209	David	Morrison, Sr.	david.morrison@boisforte-nsn.gov	Bois Forte Band of Chippewa		Bois Forte Tribal Government 5344 Lakeshore Drive Nett Lake MN, 55772 United States	Electronic Service		No	23-151Official
210	Evan	Mulholland	emulholland@mncenter.org	Minnesota Center for Environmental Advocacy		1919 University Ave W Ste 515 Saint Paul MN, 55101 United States	Electronic Service		No	23-151Official
211	Alan	Muller	alan@greendel.org	Energy & Environmental Consulting		1110 West Avenue Red Wing MN, 55066 United States	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
212	Sonny	Myers	smyers@1854treatyauthority.org	1854 Treaty Authority		4428 Haines Rd Duluth MN, 55811-1524 United States	Electronic Service		No	23-151Official
213	Ben	Nelson	benn@cmpasgroup.org	CMMPA		459 South Grove Street Blue Earth MN, 56013 United States	Electronic Service		No	23-151Official
214	Carl	Nelson	cnelson@mncee.org	Center for Energy and Environment		212 3rd Ave N Ste 560 Minneapolis MN, 55401 United States	Electronic Service		No	23-151Official
215	Deb	Nelson	dnelson@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
216	David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency		220 South Sixth Street Suite 1300 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
217	Duane	Ninneman	duane@cureriver.org	Clean Up the River Environment		117 South 1st St Montevideo MN, 56265 United States	Electronic Service		No	23-151Official
218	Michael	Noble	noble@fresh-energy.org	Fresh Energy		408 Saint Peter St Ste 350 Saint Paul MN, 55102 United States	Electronic Service		No	23-151Official
219	Rolf	Nordstrom	rnordstrom@gpisd.net	Great Plains Institute		2801 21ST AVE S STE 220 Minneapolis MN, 55407-1229 United States	Electronic Service		No	23-151Official
220	Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company		200 1st Street SE PO Box 351 Cedar Rapids IA, 52406-0351 United States	Electronic Service		No	23-151Official
221	M. William	O'Brien	bobrien@mojlaw.com	Miller O'Brien Jensen, P.A.		120 S 6th St Ste 2400 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
222	Ric	O'Connell	ric@gridlab.org	GridLab		2120 University Ave Berkeley CA, 94704 United States	Electronic Service		No	23-151Official
223	Joseph	OBrien	joey.obrien@lowersioux.com			39527 Highway 1 Morton MN, 56270 United States	Electronic Service		No	23-151Official
224	Matthew	Olsen	molsen@otpco.com	Otter Tail Power Company		215 South Cascade Street Fergus Falls MN, 56537 United States	Electronic Service		No	23-151Official
225	Russell	Olson	rolson@hcpd.com	Heartland Consumers Power District		PO Box 248 Madison SD, 57042-0248 United States	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
226	Debra	Opatz	dopatz@otpco.com	Otter Tail Power Company		215 South Cascade Street Fergus Falls MN, 56537 United States	Electronic Service		No	23-151Official
227	Mikayla	Osterman	mosterman@otpco.com	Otter Tail Power Company		215 S Cascade St PO Box 496 Fergus Falls MN, 56537 United States	Electronic Service		No	23-151Official
228	Jamie	Overgaard	jovergaard@minnkota.com	Minnkota Power Cooperative, Inc.		5301 32nd Ave S Grand Forks ND, 58201 United States	Electronic Service		No	23-151Official
229	Carol A.	Overland	overland@legalectric.org	Legalectric - Overland Law Office		1110 West Avenue Red Wing MN, 55066 United States	Electronic Service		No	23-151Official
230	Gregory	Padden	gpadden@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
231	Jessica	Palmer Denig	jessica.palmer-denig@state.mn.us		Office of Administrative Hearings	600 Robert St N PO Box 64620 St. Paul MN, 55164 United States	Electronic Service		No	23-151Official
232	Marsha	Parlow	mparlow@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
233	Priti	Patel	ppatel@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369-4718 United States	Electronic Service		No	23-151Official
234	Gerad	Paul	gpaul@minnkota.com	Minnkota Power Cooperative		5301 32nd Ave S Grand Forks ND, 58201 United States	Electronic Service		No	23-151Official
235	Earl	Pendleton	earl.pendleton@lowersioux.com	Lower Sioux Indian Community		39527 Highway 1 Morton MN, 56270 United States	Electronic Service		No	23-151Official
236	Mary Beth	Peranteau	mperanteau@fredlaw.com	Fredrikson & Byron, P.A.		44 East Mifflin Street Suite 1000 Madison WI, 53703 United States	Electronic Service		No	23-151Official
237	Thom	Petersen	thom.petersen@state.mn.us		Minnesota Department of Agriculture	625 North Robert St Saint Paul MN, 55155 United States	Electronic Service		No	23-151Official
238	Luke	Peterson	luke.peterson@hpuc.com	Hibbing Public Utilities Commission		1902 Sixth Ave E Hibbing MN, 55746 United States	Electronic Service		No	23-151Official
239	Neil	Peterson	info@nclucb.org	Northern Counties Land Use Coordinating Board		null null, null United States	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
240	DONNA	PICKARD	dpickard@aladdinsolar.com	Genie Solar Support Services		1215 Lilac Lane Excelsior MN, 55331 United States	Electronic Service		No	23-151Official
241	Gordon	Pietsch	gpietsch@grenergy.com	Great River Energy		12300 Elm Creek Blvd. Maple Grove MN, 55369-4718 United States	Electronic Service		No	23-151Official
242	Joe	Plumer	joe.plumer@redlakenation.org	Red Lake Nation		15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	23-151Official
243	J.	Porter	greg.porter@nngco.com	Northern Natural Gas Company		1111 South 103rd St Omaha NE, 68124 United States	Electronic Service		No	23-151Official
244	Kevin	Pranis	kpranis@liunagroc.com	Laborers' District Council of MN and ND		81 E Little Canada Road St. Paul MN, 55117 United States	Electronic Service		No	23-151Official
245	Robert	Prescott	bob.prescott@lowersioux.com	Lower Sioux Indian Community		39527 Highway 1 Morton MN, 56270 United States	Electronic Service		No	23-151Official
246	David	Raatz	draatz@bepc.com	Basin Electric Power Cooperative		1717 East Interstate Avenue Bismarck ND, 58501 United States	Electronic Service		No	23-151Official
247	John C.	Reinhardt		Laura A. Reinhardt		3552 26th Ave S Minneapolis MN, 55406 United States	Paper Service		No	23-151Official
248	Victoria	Reinhardt	victoria.reinhardt@co.ramsey.mn.us	Partnership on Waste and Energy		Ramsey County Board Office 15 W. Kellogg Blvd., Ste. 220 St. Paul MN, 55102 United States	Electronic Service		No	23-151Official
249	Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	1400 BRM Tower 445 Minnesota St St. Paul MN, 55101-2131 United States	Electronic Service		Yes	23-151Official
250	Kevin	Reuther	kreuther@mncenter.org	MN Center for Environmental Advocacy		26 E Exchange St, Ste 206 St. Paul MN, 55101-1667 United States	Electronic Service		No	23-151Official
251	John	Richards	johnrichards@nweco.com	Northwestern Wisconsin Electric Company		104 S. Pine St. Grantsburg WI, 54840 United States	Electronic Service		No	23-151Official
252	Greg	Ridderbusch	greg.ridderbusch@connexusenergy.com	Connexus Energy		14601 Ramsey Boulevard Ramsey MN, 55303 United States	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
253	Susan	Romans	sromans@allete.com	Minnesota Power		30 West Superior Street Legal Dept Duulth MN, 55802 United States	Electronic Service		No	23-151Official
254	Stephan	Roos	stephan.roos@state.mn.us		Minnesota Department of Agriculture	625 Robert St N Saint Paul MN, 55155-2538 United States	Electronic Service		No	23-151Official
255	Alan	Roy	alan.roy@whiteearth-nsn.gov	White Earth Nation		White Earth Tribal Headquarters 35500 Eagle View Road Ogema MN, 56569 United States	Electronic Service		No	23-151Official
256	Bill	Rudnicki	bill.rudnicki@shakopeedakota.org	Shakopee Mdewakanton Sioux Community		Shakopee Mdewakanton Sioux Community 2330 Sioux Trail NW Prior Lake MN, 55372 United States	Electronic Service		No	23-151Official
257	Nathaniel	Runke	nrunke@local49.org			611 28th St. NW Rochester MN, 55901 United States	Electronic Service		No	23-151Official
258	Zachary	Ruzycki	zruzycki@grenergy.com	Great River Energy		12300 Elm Creek Boulevard Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
259	Mike	Saer	msaer@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
260	Robert K.	Sahr	bsahr@eastriver.coop	East River Electric Power Cooperative		P.O. Box 227 Madison SD, 57042 United States	Electronic Service		No	23-151Official
261	Todd	Sailer		Minnetonka Power Cooperative		5301 32nd Ave. S Grand Forks ND, 58201 United States	Paper Service		No	23-151Official
262	Miranda	Sam	miranda.sam@lowersioux.com	Lower Sioux Indian Community		39527 Reservation Highway 1 PO Box 308 Morton MN, 56270 United States	Electronic Service		No	23-151Official
263	Joseph L	Sathe	jsathe@kennedy-graven.com	Kennedy & Graven, Chartered		150 S 5th St Ste 700 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
264	Adam	Savariego	adams@uppersiouxcommunity-nsn.gov	Upper Sioux Community		5722 Travers Lane PO Box 147 Granite Falls MN, 56241 United States	Electronic Service		No	23-151Official
265	John	Saxhaug	john_saxhaug@yahoo.com			3940 Harriet Ave Minneapolis	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
						MN, 55409 United States				
266	Jean	Schafer	jeans@bepc.com	Basin Electric Power Cooperative		1717 E Interstate Ave Bismarck ND, 58501 United States	Electronic Service		No	23-151Official
267	Jeff	Schneider	jeff.schneider@ci.red-wing.mn.us	City of Red Wing		315 West 4th Street Red Wing MN, 55066 United States	Electronic Service		No	23-151Official
268	Mark	Schoennauer	markwsch@hotmail.com			607 19th St NW Apt 17 Rochester MN, 55901 United States	Electronic Service		No	23-151Official
269	Kay	Schraeder	kschraeder@minnkota.com	Minnkota Power		5301 32nd Ave S Grand Forks ND, 58201 United States	Electronic Service		No	23-151Official
270	Kathleen	Schuler	keschuler47@gmail.com			1520 10th Ave S #2 Minneapolis MN, 55404 United States	Electronic Service		No	23-151Official
271	Robert H.	Schulte	rhs@schulteassociates.com	Schulte Associates LLC		1742 Patriot Rd Northfield MN, 55057 United States	Electronic Service		No	23-151Official
272	J.P.	Schumacher	jps@mrenergy.com	Missouri River Energy Services		null null, null United States	Electronic Service		No	23-151Official
273	Kevin	Schumacher	kevin@mrets.org	Midwest Renewable Energy Tracking System		null null, null United States	Electronic Service		No	23-151Official
274	Ronald J.	Schwartau	rschwartau@noblesce.com	Nobles Electric Cooperative		22636 U.S. Hwy. 59 Worthington MN, 56187 United States	Electronic Service		No	23-151Official
275	Christine	Schwartz	regulatory.records@xcelenergy.com	Xcel Energy		414 Nicollet Mall FL 7 Minneapolis MN, 55401-1993 United States	Electronic Service		No	23-151Official
276	Douglas	Seaton	doug.seaton@umwlc.org	Upper Midwest Law Center		8421 Wayzata Blvd Ste 300 Golden Valley MN, 55426 United States	Electronic Service		No	23-151Official
277	Dean	Sedgwick	sedgwick@itascapower.com	Itasca Power Company		PO Box 455 Spring Lake MN, 56680 United States	Electronic Service		No	23-151Official
278	Jessie	Seim	jessie.seim@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Rd Welch MN, 55089 United States	Electronic Service		No	23-151Official
279	Darrell	Seki, Sr.	dseki@redlakenation.org			15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	23-151Official
280	Will	Seuffert	will.seuffert@state.mn.us		Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul MN, 55101 United States	Electronic Service		Yes	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
281	Janet	Shaddix Elling	jshaddix@janetshaddix.com	Shaddix And Associates		7400 Lyndale Ave S Ste 190 Richfield MN, 55423 United States	Electronic Service		Yes	23-151Official
282	Bria	Shea	bria.e.shea@xcelenergy.com	Xcel Energy		414 Nicollet Mall Minneapolis MN, 55401 United States	Electronic Service		No	23-151Official
283	Andrew R.	Shedlock	andrew.shedlock@kutakrock.com	Kutak Rock LLP		60 South Sixth St Ste 3400 Minneapolis MN, 55402-4018 United States	Electronic Service		No	23-151Official
284	Doug	Shoemaker	dougs@charter.net	Minnesota Renewable Energy		2928 5th Ave S Minneapolis MN, 55408 United States	Electronic Service		No	23-151Official
285	Beth	Smith	bsmith@greatermankato.com	Greater Mankato Growth		1961 Premier Dr Ste 100 Mankato MN, 56001 United States	Electronic Service		No	23-151Official
286	Joel	Smith	jsmith@mnchippewatribe.org	Minnesota Chippewa Tribe		PO Box 217 Cass Lake MN, 56633 United States	Electronic Service		No	23-151Official
287	Joshua	Smith	joshua.smith@sierraclub.org			85 Second St FL 2 San Francisco CA, 94105 United States	Electronic Service		No	23-151Official
288	Ken	Smith	ken.smith@districtenergy.com	District Energy St. Paul Inc.		76 W Kellogg Blvd St. Paul MN, 55102 United States	Electronic Service		No	23-151Official
289	Nizhoni	Smith	nizhoni.smith@lowersioux.com	Lower Sioux Indian Community		PO Box 308 39527 Reservation Highway 1 Morton MN, 56270 United States	Electronic Service		No	23-151Official
290	Trevor	Smith	trevor.smith@avantenergy.com	Avant Energy, Inc.		220 South Sixth Street Suite 1300 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
291	Roger	Smith, Sr.	rogermsmithsr@fdlrez.com			1720 Big Lake Road Cloquet MN, 55720 United States	Electronic Service		No	23-151Official
292	Beth	Soholt	bsoholt@cleangridalliance.org	Clean Grid Alliance		570 Asbury Street Suite 201 St. Paul MN, 55104 United States	Electronic Service		No	23-151Official
293	Anna	Sommer	asommer@energyfuturesgroup.com	Energy Futures Group		PO Box 692 Canton NY, 13617 United States	Electronic Service		No	23-151Official
294	Marie	Spry	mariespry@grandportage.com			PO Box 428 Grand Portage MN, 55605 United States	Electronic Service		No	23-151Official
295	Mark	Spurr	mspurr@fvbenergy.com	International District Energy		222 South Ninth St.,	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
				Association		Suite 825 Minneapolis MN, 55402 United States				
296	Wallace	St. John, Sr.	wally.stjohn@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Drive Onamia MN, 56359 United States	Electronic Service		No	23-151Official
297	LeRoy	Staples Fairbanks III	leroy.fairbanks@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	23-151Official
298	Russ	Stark	russ.stark@ci.stpaul.mn.us	City of St. Paul		Mayor's Office 15 W. Kellogg Blvd., Suite 390 Saint Paul MN, 55102 United States	Electronic Service		No	23-151Official
299	Byron E.	Starns	byron.starns@stinson.com	STINSON LLP		50 S 6th St Ste 2600 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
300	Cary	Stephenson	cstephenson@otpco.com	Otter Tail Power Company		215 South Cascade Street Fergus Falls MN, 56537 United States	Electronic Service		Yes	23-151Official
301	Mark	Strohfus	mstrohfus@grenergy.com	Great River Energy		12300 Elm Creek Boulevard Maple Grove MN, 55369-4718 United States	Electronic Service		No	23-151Official
302	James M	Strommen	jstrommen@kennedy-graven.com	Kennedy & Graven, Chartered		150 S 5th St Ste 700 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
303	Samuel	Strong	sam.strong@redlakenation.org	Red Lake Nation		15484 Migizi Drive Red Lake MN, 56671 United States	Electronic Service		No	23-151Official
304	Kent	Sulem	ksulem@mmua.org			3131 Fernbrook Ln N Ste 200 Plymouth MN, 55447-5337 United States	Electronic Service		No	23-151Official
305	Timothy	Sullivan	tsullivan@whe.org	Wright Hennepin Coop. Electric Assn.		6800 Electric Drive PO Box 330 Rockford MN, 55373 United States	Electronic Service		No	23-151Official
306	David	Sunderman	daves@benco.org	BENCO (DUPLICATE)		PO Box 8 Mankato MN, 56002-0008 United States	Electronic Service		No	23-151Official
307	Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine		225 S 6th St Ste 3500 Capella Tower Minneapolis MN, 55402-4629 United States	Electronic Service		No	23-151Official
308	Randy	Synstelien	rsynstelien@otpco.com	Otter Tail Power Company		215 S Cascade St Fergus Falls MN, 56537 United States	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
309	Camille	Tanhoff	kamip@uppersiouxcommunity-nsn.gov	Upper Sioux Community		5722 Travers Lane PO BOX 147 Granite Falls MN, 56241 United States	Electronic Service		No	23-151Official
310	Mikayala	Thompson	mmthompson@otpco.com	Otter Tail Power Company		null null, null United States	Electronic Service		No	23-151Official
311	Tim	Thompson	tthompson@lrec.coop	Lake Region Electric Cooperative		PO Box 643 1401 South Broadway Pelican Rapids MN, 56572 United States	Electronic Service		No	23-151Official
312	Stuart	Tommerdahl	stommerdahl@otpco.com	Otter Tail Power Company		215 S Cascade St PO Box 496 Fergus Falls MN, 56537 United States	Electronic Service		Yes	23-151Official
313	Pat	Treseler	pat.jcplaw@comcast.net	Paulson Law Office LTD		4445 W 77th Street Suite 224 Edina MN, 55435 United States	Electronic Service		No	23-151Official
314	Lise	Trudeau	lise.trudeau@state.mn.us		Department of Commerce	85 7th Place East Suite 500 Saint Paul MN, 55101 United States	Electronic Service		No	23-151Official
315	Caralyn	Trutna	carrie@uppersiouxcommunity-nsn.gov	Upper Sioux Community		Upper Sioux Community P.O. Box 147 Granite Falls MN, 55372 United States	Electronic Service		No	23-151Official
316	Jackie	Van Norman	jvannorman@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
317	Analeisha	Vang	avang@mnpower.com			30 W Superior St Duluth MN, 55802-2093 United States	Electronic Service		Yes	23-151Official
318	Adrian	Varga	avarga@actcommodities.com	ACT Commodities		437 Madison Ave New York City NY, 10022 United States	Electronic Service		No	23-151Official
319	Sam	Villella	sdvillella@gmail.com			10534 Alamo Street NE Blaine MN, 55449 United States	Electronic Service		No	23-151Official
320	Julie	Voeck	julie.voeck@nee.com	NextEra Energy Resources, LLC		700 Universe Blvd Juno Beach FL, 33408 United States	Electronic Service		No	23-151Official
321	Amelia	Vohs	avohs@mncenter.org	Minnesota Center for Environmental Advocacy		1919 University Avenue West Suite 515 St. Paul MN, 55104 United States	Electronic Service		Yes	23-151Official

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322	Michael	Volker	mvolker@eastriver.coop	East River Electric Power Coop		211 S. Harth Ave Madison SD, 57042 United States	Electronic Service		No	23-151Official
323	Toni	Volkmeier	toni.volkmeier@state.mn.us	MPCA		520 Lafayette Rd. N. St. Paul MN, 55155 United States	Electronic Service		No	23-151Official
324	Trent	Waite	twaite@grenergy.com			null null, null United States	Electronic Service		No	23-151Official
325	Laurance R	Waldoch	larrywaldoch@gmail.com	Attorney		2597 Parkview Dr Saint Paul MN, 55110 United States	Electronic Service		No	23-151Official
326	Greg	Wannier	greg.wannier@sierraclub.org	Sierra Club		2101 Webster St Ste 1300 Oakland CA, 94612 United States	Electronic Service		No	23-151Official
327	Roger	Warehime	roger.warehime@owatonnautilities.com	Owatonna Municipal Public Utilities - Gas		208 S Walnut Ave PO BOX 800 Owatonna MN, 55060 United States	Electronic Service		No	23-151Official
328	Cynthia	Warzecha	cynthia.warzecha@state.mn.us	Minnesota Department of Natural Resources		500 Lafayette Road Box 25 St. Paul MN, 55155-4040 United States	Electronic Service		No	23-151Official
329	Carol	Westergard	cwestergard@otpco.com	Otter Tail Power Company		215 S Cascade St Fergus Falls MN, 56537 United States	Electronic Service		No	23-151Official
330	Heather	Westra	heather.westra@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Rd Welch MN, 55089 United States	Electronic Service		No	23-151Official
331	Paul	White	paul.white@prcwind.com	Project Resources Corp./Tamarac Line LLC/Ridgewind		618 2nd Ave SE Minneapolis MN, 55414 United States	Electronic Service		No	23-151Official
332	Steve	White	steve.white@llojibwe.net	Leech Lake Band of Ojibwe		190 Sailstar Drive NW Cass Lake MN, 56633 United States	Electronic Service		No	23-151Official
333	Cody	Whitebear	cody.whitebear@piic.org	Prairie Island Indian Community		5636 Sturgeon Lake Road Welch MN, 55089 United States	Electronic Service		No	23-151Official
334	John	Williams	jwilliams@grenergy.com	Great River Energy		12300 Elm Creek Blvd Maple Grove MN, 55369 United States	Electronic Service		No	23-151Official
335	Laurie	Williams	laurie.williams@sierraclub.org	Sierra Club		Environmental Law Program 1536 Wynkoop St Ste 200 Denver CO, 80202 United States	Electronic Service		No	23-151Official

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
336	Virgil	Wind	virgil.wind@millelacsband.com	Mille Lacs Band of Ojibwe		43408 Oodena Drive Onamia MN, 56359 United States	Electronic Service		No	23-151Official
337	Joseph	Windler	jwindler@winthrop.com	Winthrop & Weinstine		225 South Sixth Street, Suite 3500 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official
338	Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company		200 First St SE Cedar Rapids IA, 52401 United States	Electronic Service		No	23-151Official
339	Sara	Wolff	sara@mnipl.org			710 Linwood Avenue St Paul MN, 55105 United States	Electronic Service		No	23-151Official
340	Tim	Wulling	t.wulling@earthlink.net			1495 Raymond Ave. Saint Paul MN, 55108 United States	Electronic Service		No	23-151Official
341	Laurie	York	laurie.york@whiteearth-nsn.gov	White Earth Reservation Business Committee		PO Box 418 White Earth MN, 56591 United States	Electronic Service		No	23-151Official
342	Kurt	Zimmerman	kwz@ibew160.org	Local Union #160, IBEW		2909 Anthony Ln St Anthony Village MN, 55418-3238 United States	Electronic Service		No	23-151Official
343	Emily	Ziring	eziring@stlouispark.org	City of St. Louis Park		5005 Minnetonka Blvd St. Louis Park MN, 55416 United States	Electronic Service		No	23-151Official
344	Patrick	Zomer	pat.zomer@lawmoss.com	Moss & Barnett PA		150 S 5th St #1200 Minneapolis MN, 55402 United States	Electronic Service		No	23-151Official