



414 Nicollet Mall  
Minneapolis, MN 55401

April 12, 2024

—Via Electronic Filing—

Will Seuffert  
Executive Secretary  
Minnesota Public Utilities Commission  
121 7<sup>th</sup> Place East, Suite 350  
St. Paul, MN 55101

RE: COMPLIANCE FILING  
TRANSMISSION COST RECOVERY RIDER  
DOCKET NO. E002/M-23-467

Dear Mr. Seuffert:

Northern States Power Company, doing business as Xcel Energy, submits this letter to ensure the completeness of the record in the above referenced docket. In compliance with Order Points 9 and 10 of the Minnesota Public Utilities Commission's June 28, 2023 Order in Docket No. E002/M-21-814, the Company submitted its Advanced Metering Infrastructure (AMI) and Field Area Network (FAN) Annual Report (Report) on November 1, 2023 in Docket Nos. E002/M-21-814 and E002/M-23-\_\_\_\_. We note that at the time we submitted the Report in this Transmission Cost Recovery (TCR) Rider proceeding, the docket number was not yet assigned. Therefore, the Report does not appear in eDockets under that docket number.

For the completeness of the record, we now submit a copy of the Report so it is included on the record in the now-assigned TCR Docket No. E002/M-23-467.

We have electronically filed this document with the Minnesota Public Utilities Commission, and copies have been served on the parties on the attached service list.

Please contact Nathan Kostiuk at [nathan.c.kostiuk@xcelenergy.com](mailto:nathan.c.kostiuk@xcelenergy.com) or 612-215-4629 or contact me at [amber.r.hedlund@xcelenergy.com](mailto:amber.r.hedlund@xcelenergy.com) or 612-337-2268 if you have any questions regarding this filing.

Sincerely,

/s/

AMBER R. HEDLUND  
MANAGER, REGULATORY PROJECT MANAGEMENT

Enclosure  
cc: Service List

## CERTIFICATE OF SERVICE

I, Joshua DePauw, hereby certify that I have this day served copies of the foregoing document on the attached list of persons.

xx by depositing a true and correct copy thereof, properly enveloped with postage paid in the United States mail at Minneapolis, Minnesota

xx electronic filing

**DOCKET No. E002/M-23-467**

Dated this 12<sup>th</sup> day of April 2024

/s/

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Joshua DePauw  
Regulatory Administrator

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Ken	Smith	ken.smith@evergreenenergy.com	Ever Green Energy	305 Saint Peter St Saint Paul, MN 55102	Electronic Service	No	OFF_SL_23-467_M-23-467



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414 Nicollet Mall  
Minneapolis, MN 55401

November 1, 2023

—Via Electronic Filing—

Will Seuffert  
Executive Secretary  
Minnesota Public Utilities Commission  
121 7<sup>th</sup> Place East, Suite 350  
St. Paul, MN 55101

RE: COMPLIANCE FILING  
TRANSMISSION COST RECOVERY RIDER  
DOCKET NOS. E002/M-21-814 AND E002/M-23-\_\_\_\_\_

Dear Mr. Seuffert:

Northern States Power Company, doing business as Xcel Energy, submits to the Minnesota Public Utilities Commission this filing in the above-referenced dockets in compliance with the Commission's June 28, 2023 ORDER APPROVING RIDER RECOVERY, CAPPING COSTS, AND SETTING FILING REQUIREMENTS in Docket No. E002/M-21-814. Order Points 9 and 10 require the Company to submit an annual report of certain AGIS-related information and the metrics outlined in Attachment 1, Tables 1 and 2 of the Staff Briefing Papers-Volume 2 filed on April 26, 2023.

We have electronically filed this document with the Minnesota Public Utilities Commission and copies have been served on the parties on the attached service list. Please contact Nathan Kostiuk at [nathan.c.kostiuk@xcelenergy.com](mailto:nathan.c.kostiuk@xcelenergy.com) or 612-215-4629 or me at [amber.r.hedlund@xcelenergy.com](mailto:amber.r.hedlund@xcelenergy.com) or 612-337-2268 if you have any questions regarding this filing.

Sincerely,

/s/

AMBER HEDLUND  
MANAGER, REGULATORY PROJECT MANAGEMENT

Enclosures  
cc: Service Lists

STATE OF MINNESOTA  
BEFORE THE  
MINNESOTA PUBLIC UTILITIES COMMISSION

Katie J. Sieben	Chair
Valerie Means	Commissioner
Matthew Schuerger	Commissioner
Joseph K. Sullivan	Commissioner
John A. Tuma	Commissioner

IN THE MATTER OF XCEL ENERGY'S  
PETITION FOR APPROVAL OF THE  
TRANSMISSION COST RECOVERY RIDER  
REVENUE REQUIREMENTS FOR 2021  
AND 2022, TRACKER TRUE-UP AND  
REVISED ADJUSTMENT FACTORS

DOCKET No. E002/M-21-814

IN THE MATTER OF THE PETITION OF  
NORTHERN STATES POWER COMPANY  
FOR APPROVAL OF THE TRANSMISSION  
COST RECOVERY RIDER REVENUE  
REQUIREMENTS FOR 2023 AND 2024,  
TRACKER TRUE-UP, AND REVISED  
ADJUSTMENT FACTORS

DOCKET No. E002/M-23-\_\_\_\_

**ANNUAL REPORT**

**INTRODUCTION**

Northern States Power Company, doing business as Xcel Energy, submits this Annual Report regarding our Advanced Metering Infrastructure (AMI) and Field Area Network (FAN) projects, in compliance with Order Points 9 and 10 of the Commission's June 28, 2023 Order in Docket No. E002/M-21-814.

Order Point 9 states:

Xcel shall report the following [Advanced Grid Intelligence and Security (AGIS)] information annually, in narrative form, beginning November 1, 2023, in the instant docket and subsequent TCR proceedings:

- a. A comprehensive account of all functionalities achieved and any changes to functionality or potential future uses.

- b. The Company’s plan and scope for implementation in the upcoming year.
- c. Implementation and integration status of related information technology systems in comparison to the Company’s plans and scope.
- d. Description and explanation of any AMI or FAN functionalities that have been disabled and the number of impacted meters.
- e. Revenue-generating opportunities identified or engaged that relate to the use of AMI, FAN, or the use of associated data or distributed intelligence technologies.
- f. All entities with whom the Company shares AMI data.
- g. Any metrics derived from the quantitative benefits assumed in Xcel’s benefit-cost analysis of the AMI and FAN projects that are not represented in Attachment 1, Table 1 of Staff Briefing Papers–Volume 2 filed on April 26, 2023.
- h. An explanation of why any benefits Xcel had promised for AMI and FAN do not materialize.

Order Point 10 states:

Beginning November 1, 2023, Xcel shall file an annual report of the metrics outlined in Attachment 1, Tables 1 and 2 of Staff Briefing Papers–Volume 2 filed on April 26, 2023, in the instant docket and subsequent TCR proceedings unless otherwise directed by the Executive Secretary.

- a. For metrics for which performance may not yet be tracked, the Company must specify when it expects to be able to begin tracking performance.
- b. For any metric that the Company is unable to provide data for, the Company must explain why it is unable to do so and what efforts can be taken to obtain that data in future reports.

In the past, we have used the term “AGIS” to include Advanced Distribution Management System (ADMS) and Fault Location Isolation and Service Restoration (FLISR), AMI, and FAN. This Annual Report focuses on AMI and FAN because regular status updates for ADMS and FLISR are provided in other dockets. For ADMS, please see the Annual Report filed each January 25 pursuant to Commission

directives.<sup>1</sup> For FLISR, pursuant to Commission Order,<sup>2</sup> please see our 2023 Integrated Distribution Plan (IDP) filed November 1, 2023, in which we discuss reliability performance and provide budget information. We will also provide FLISR information in the forthcoming Service Quality annual report to be filed in April 2024, in compliance with Commission Order.

We address each component of Order Point 9 below. In compliance with Order Point 10, we provide Attachment A in live, Microsoft Excel format. This attachment provides information for the metrics outlined in Attachment 1, Tables 1 and 2 of Staff Briefing Papers–Volume 2 filed on April 26, 2023 in Docket No. E002/M-21-814. We provide contextual notes directly in Attachment A. Where we cannot provide data, we also provide an explanation, in compliance with the Order, directly in Attachment A.

For metrics we had indicated could be provided quarterly, we provide quarterly data for the first two quarters of 2023 (through June 30, 2023) where available – with the exception of AMI meter deployment, for which we provide Q3 data as well. For 2022, we provide data in aggregate, where available. Due to the timing of this report, gathering quarterly data retroactively for 2022 was impracticable.

## **I. AMI AND FAN FUNCTIONALITIES**

Order Point 9.a requires a comprehensive account of all functionalities achieved and any changes to functionality or potential future uses.

AMI is a key element of the grid modernization initiative because it provides a central source of information that interacts with many of the other components of a modern grid. The capabilities and data delivered by AMI provides customer benefits in reliability and ability for remote connection and disconnection, and enables greater customer offerings for rates, programs, and services. AMI also enhances utility planning and operational capabilities. Access to timely, accurate, and consistent AMI data will provide insights for customers to make informed decisions about their energy sources and usage of reliable and sustainable energy. The AMI meters include

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<sup>1</sup> See Order Point 7 of the Commission’s September 27, 2019 ORDER AUTHORIZING RIDER RECOVERY, SETTING RETURN ON EQUITY, AND SETTING FILING REQUIREMENTS issued in Docket No. E002/M-17-797 set the filing requirements for the ADMS Annual Report and the Commission’s May 19, 2020 NOTICE OF ADMS ANNUAL FILING DATE in Docket Nos. E002/M-17-797, E002/M-19-666, and E002/M-19-721. Our most recent ADMS Annual Report was filed on January 25, 2023 in the Docket Nos. E002/M-21-694 and E002/M-21-814.

<sup>2</sup> See Order Point 27 of the Commission’s July 17, 2023 Order in Docket No. E002/GR-21-630. The Company must report, beginning in its next Service Quality, Safety, and Reliability report due April 2024, on reliability performance for circuits equipped with FLISR. The Company must also report on the FLISR budget and provide a summary of reliability results beginning with its November 1, 2023 IDP (Docket No. E002/M-23-452).

an embedded distributed intelligence (DI) platform that has the potential to further enhance the distribution grid capabilities as well as the customer experience. Although the AMI meters are DI-capable, projects and investments to enable DI-specific functionality are separate from the AMI project. DI costs are not included in the Transmission Cost Recovery Rider. However, in the interest of a fulsome Annual Report, we include discussion of DI here. We discuss DI planned and potential future functionality in Appendix J of our 2023 IDP, filed November 1, 2023 in Docket No. E002/M-23-452.

More than 512,250 AMI meters have been installed in Minnesota as of September 30, 2023. The Company has created a variety of products, services, and capabilities that leverage AMI. Below, we provide more details on the types of products and services we offer today. We plan to continue to build and expand our portfolio of products.

As new customer products are developed, we will notify customers of the products through various channels. Table 1 shows the AMI- and DI-enabled products and services for customers, approximate availability, and end-user.



**Table 1: AMI and DI Customer-Facing Products & Services**

<b>Product / Service</b>	<b>Available</b>	<b>Target End User</b>	<b>Available before AMI</b>	<b>Enabled by AMI</b>	<b>Enhanced or Enabled by DI</b>
<i>Web Portal</i>	Current	Customer	Y	Y – Additional Information Available	Y
<i>On Demand Meter Reads</i>	Current	Customer	N	Y	N
<i>Green Button Connect My Data</i>	Current	Third Party Access (Customer and Third Party)	Y	Y – Additional Information Available	N
<i>Green Button Download My Data</i>	Current	Third Party Access (Customer)	Y	Y – Additional Information Available	N
<i>Bring-Your-Own-Device / Software Development Kit</i>	Current	Third Party Access (Third Party)	N	Y	Y
<i>Outage Notifications to Company Systems</i>	Current	Customer	N	Y	N
<i>Advanced Rates</i>	TBD	Customer	Limited	Y	N
<i>High Bill Alerts</i>	Current	Customer	N	Y	N
<i>Budget Alerts</i>	Current	Customer	N	Y	N
<i>Energy Action Days</i>	Current	Customer	Y	Y	N
<i>My Energy Connection Release 1</i>	Fall '23	Customer	N	Y	Y
<i>My Energy Connection Release 2</i>	TBD	Customer	N	Y	Y
<i>Xcel Energy Launchpad</i>	Current	Third Party Access (Customer)	N	Y	Y

We will continually innovate and iterate these offerings and incorporate new benefits and opportunities as they become available.

The following customer- and grid-facing features and functionalities are available today or will be available in the near term:

- **AMI Energy Usage Dashboard in My Energy Portal.** Within My Energy Portal linked to My Account, customers can view their 15-minute interval, hourly, daily, monthly, and yearly usage data. For Colorado customers on TOU rates, the data is broken out by TOU peak periods (off-peak, mid-peak, and on-peak); this view will also be available for Minnesota customers when TOU rates are available. Customers can toggle between kilowatt-hour usage and cost for each view. Using this presentment tool enhances the customer experience by helping customers better understand their usage patterns.
- **My Energy Connection Release 1.** My Energy Connection is a mobile application that provides customers with detailed information on their energy usage. It uses the DI-enabled Home Area Network (HAN) to display real-time energy usage, while in their home, enabling customers better take control of their usage while providing insights to energy savings and to more Xcel Energy programs that can help them accomplish their energy goals. This app is in the process of being released.
- **On Demand Meter Reads.** The On Demand Read functionality in My Account provides customers the ability to see their 15-minute interval kilowatt-hour usage for the last eight hours. The On Demand Read functionality provides customers options to experiment with turning appliances and other equipment on and off to identify their energy usage patterns.
- **Green Button Connect my Data.** Green Button Connect (GBC) is an ongoing electronic data transfer service that allows customers to share their utility data to authorized service providers. These service providers can help customers make smarter choices about their energy usage by providing tools and applications to help them find ways to save energy. Customers can sign up for GBC in the Xcel Energy My Energy Portal and select which service providers to send their data to and how long to share their data with them. GBC sends the premises' billing and usage data down to 15-minute intervals for customers with AMI meters; we note that Green Button is available to all residential customers regardless of meter type, but 15-minute interval data is only available for customers with AMI.
- **Green Button Download my Data.** Green Button Download is a one-time secure data download of a customer's energy usage to their computer. Customers can access Download My Data through the My Energy Portal and download their usage for personal records or in Green Button format to share with an energy services vendor. Customers with advanced meters can download 15-minute interval data; Green Button is available to all residential customers regardless of meter type, but 15-minute interval data is only available for customers with AMI.

- **Xcel Energy Launchpad.** Xcel Energy Launchpad allows customers to connect applications or devices developed by third parties to the AMI meters through the customer's home Wi-Fi network over the DI-enabled HAN. This permits the customer and third party to directly gather 1-second energy consumption information from the meter. Customers can enroll in Xcel Energy Launchpad through their My Account. The Xcel Energy Launchpad includes a web application that walks the customer through the connection process. As part of the application process, customers are asked to provide consent to connect the meter to their Wi-Fi network. Customers must also provide consent to connect third party devices to the meter via their Wi-Fi network and the HAN.
- **Bring Your Own Device and Software Development Kit.** Bring Your Own Device (BYOD) and gateway Software Development Kits (SDKs) allows third parties to develop hardware and software products that connect to the customer's smart meter via the HAN. Devices can be energy related (thermostats, smart appliances) or non-energy related (security systems, mobile devices). The uses vary depending upon the devices and the functionality enabled.
- **More Timely Outage Communications.** Prior to AMI deployment, customers would receive an initial outage communication in approximately 8 to 44 minutes. AMI meters reduce the time for an initial outage communication for customers with AMI meters to approximately 4 to 26 minutes. As AMI deployment continues, we expect this reduction in notification time to expand to all customers, enhancing the customer experience.
- **High Bill Alerts.** Electric customers are automatically enrolled in the High Bill Alert program. This product notifies customers halfway through the billing cycle if their bill is trending higher than historically normal allowing the customer time to adapt their energy usage or prepare financially for the additional costs. Notifications are sent via email today. In the future alerts will also be sent via the mobile application.<sup>3</sup>
- **Budget Alerts.** Budget Alerts enable customers to set a dollar threshold and be alerted if their bill is projected to exceed their set amount. Customers can sign up for Budget Alerts in the My Energy Portal and set their budget threshold. The system will check customers' bills daily between the 5th and 28th day of their billing cycle. If the projection for the current bill will be higher than their

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<sup>3</sup> High Bill Alerts were created for AMI meters, but the functionality is also available to customers with legacy Cellnet meters through use of daily usage data.

budget amount, customers will receive an email alert notifying them. In the future alerts will also be sent via the mobile application.<sup>4</sup>

- **Energy Action Days.** Energy Action Days uses digital communications and behavioral science messaging to encourage residential customers to reduce energy consumption during peak events. Participation is voluntary and there are no incentives or penalties for participation or non-participation. Customers with AMI meters receive a follow up email within a couple days of peak events, showing customers how they performed and comparing their performance to their neighbors. This feature is only available to customers with AMI meters.
- **High Impedance Detection.** This grid-facing DI-enabled capability will allow the meters to detect deteriorating or loose connections. Without those capabilities, such issues on the secondary system, which carries power from transformers to meters, might only be detected if a customer notices a problem, such as flickering lights, or when they cause outages. By proactively identifying high impedance situations, the Company can promptly dispatch crews to proactively address the issue. A significant benefit of this capability is the prevention of outages, which enhances service quality for our customers and reduces the Company's outage response costs. The Company currently has High Impedance Detection deployed on approximately 5,000 meters in Minnesota.
- **Remote Connect/Disconnect.** The Riva 4.2 meter's internal service switch can be used to remotely connect or disconnect power to a residential or small commercial customer's electric service using a command transmitted from the AMI head-end application. This capability is now available and in use. In the first half of 2023, we estimate that we have avoided over 15,000 field visits through our utilization of this capability, as shown in Attachment A.
- **Power Quality.** AMI provides power measurement and voltage data at each meter within the distribution grid, which will be used for power quality identification and investigations. This will help ensure voltage is within acceptable limits from the substation all the way to the customer's point of service. In other words, better monitoring of power quality reduces the potential for out-of-range voltages that may interfere with electronic devices in customers' homes or businesses and helps us identify and more efficiently respond to issues.
- **Outage Notifications to Company Systems.** The Riva 4.2 Meter can use its "last gasp" capabilities to send out a message to our system providing notice of an outage. It also provides notice of power restorations and can be "pinged" to

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<sup>4</sup> Budget Alerts were created for AMI meters, but the functionality is also available to customers with legacy Cellnet meters through use of daily usage data.

check on the status of service at a location. Taken together, these capabilities, which are integrated with our Network (Outage) Management System, provide the Company with quicker and more accurate information regarding outages. We can then use that information to more efficiently and quickly respond to outages, with the result that the Company will spend less responding to outages. If we know very quickly the exact homes and businesses that lost power, it is much easier to promptly dispatch crews to the appropriate locations. As noted below, while the software development is complete, capabilities are implemented in specific distribution control centers (DCCs) upon AMI meter deployment reaching approximately 30 percent penetration.

- **Theft Detection.** AMI has built-in theft detection capabilities; while meter theft/bypasses are infrequent, when they do occur they create dangers to the public and property. This capability of the new meters allows the Company to systematically become aware of these circumstances, reducing costs. Analytics capabilities for theft use cases were complete in 2022.
- **Meter Diagnostics.** AMI meters can perform and transmit meter diagnostics transmit data pertaining to the functioning of the meter and communications module.

Future functionalities enabled by AMI may include:

- **My Energy Connection Release 2.** A potential future release of My Energy Connection will focus on providing customers with appliance-specific usage and cost breakdowns. Customers will be able to access this information through the same mobile application as release one. Having detailed usage and cost by appliance will allow customers to understand where and when they are using the most energy and will provide focus for their energy savings goals.
- **Advanced Rates.** The Company has concluded a residential time of use (TOU) pilot and is currently conducting a commercial & industrial TOU pilot. We will file a proposal for a new residential TOU rate, informed by our pilot results, by the end of 2023. The Company is still in the recruitment stage of our commercial TOU rate pilot, and we will use the information gathered from that pilot to inform a future proposal.
- **EV Detection.** DI capabilities can provide the Company with insights into where EVs are located and charging patterns of customers. This information can be leveraged to support system planning, load balancing, and infrastructure upgrade efforts based on awareness of EVs being added to a customer's load profile. This grid-facing use case will also enable the Company to become aware and proactively respond to possible service quality issues and encourage customers to participate in managed charging programs. The Company is

currently in the progress of completing meter testing and will be starting a limited deployment in Minnesota to approximately 1,000 meters.

- **Location Awareness.** This grid-facing DI application could improve accuracy in outage management and notification, and improve accuracy in planning and operational modeling. The Company is in the final stages of testing the AMI meter firmware version that enables power line communication that is necessary to enable Locational Awareness. After this is complete, the Company will be starting the limited deployment in Minnesota to approximately 1,000 meters.
- **Grid Visibility Tool.** Using AMI data with GIS asset information, we are building a software tool that helps visualize grid information such as transformer and feeder loading, which can help the Company identify potential overloading issues before they cause outages or affect power quality. We have piloted this tool and are now developing it for broader use.
- **Momentary Outages.** Using AMI event data, momentary outages can be more readily identified, which can help the Company identify potential issues before they cause sustained outages or affect power quality.

Order Point 9.d requires a description and explanation of any AMI or FAN functionalities that have been disabled and the number of impacted meters.

No AMI and FAN functionalities have been disabled.

## II. 2023-2024 IMPLEMENTATION PLAN AND SCOPE

Order Point 9.b requires discussion of the Company’s plan and scope for implementation in the upcoming year.

Table 1 below provides the latest available AMI meter deployment schedule. We caveat, however, that we expect there will continue to be some uncertainty with regard to the specific meter volumes and installations through 2025 so the below should be viewed as estimates.

**Table 1: Latest Available AMI Meter Deployment Schedule**

Year	Deployment Volume
2022	128,000
2023	545,000
2024	600,000
2025	127,360

As of September 30, 2023, we have installed approximately 512,250 meters in total, or approximately 37 percent of the 1.4 million meters we plan to deploy. We plan to install 600,000 AMI meters in Minnesota in 2024, before wrapping up deployment in 2025. See Attachment A for additional historical deployment data.

Regarding FAN, as shown in Attachment A, as of June 30, 2023, we have installed approximately 43 percent of FAN devices. Because FAN deployment precedes AMI deployment by approximately six months, we plan to complete FAN deployment by the end of 2024.

Order Point 9.c requires narrative discussion of the implementation and integration status of related information technology systems in comparison to the Company's plans and scope.

The deployment of AMI has two components: Software Deployment and Meter Deployment.

The AMI project is a combination of software development and meter deployment. In terms of software development, we have completed eight of nine software waves – with the final wave currently in development and largely expected to be complete in the 2024. Software development began with the AMI head-end and other foundational capabilities and integrations with other Company systems, and has expanded over time to support additional customer rates and functionalities such as remote connect/disconnect and integration of AMI data into the outage management system in support of more timely customer outage notifications and more efficient outage response.

Table 2 below summarizes major software releases and the software capabilities that have been implemented over time.

**Table 2: AMI Software Development Summary**

<b>Pre-2022<sup>5</sup></b>	<b>2022</b>	<b>2023</b>	<b>2024 (<i>in development</i>)</b>
Head-end live with interfaces	Analytics – non-theft use cases	Electric Vehicle (EV) Rate Programs	Complex Rate Interval Billing
2019: Billing of 13,000 meters (CO) 2021: Expanded billing support for mass meter deployment	Non-critical reporting – data warehouse	Benefit Value Realization Reporting	Enhanced Metering capabilities
Event processing	My Account/ Mobile – customer on-demand	Enhanced Metering capabilities	Value/Benefits Reporting
Over The Air meter (OTA) - basic configuration	AMI-NMS Integration Rel 1 <sup>6</sup> (last gasp notifications)	AMI-NMS Integration Rel 2 <sup>7</sup> (Power out and power restored notifications)	Identify and Report Momentary Outages
Meter Data Management (MDM) – Itron Enterprise Edition (IEE) Installation and Integration	Initial HAN Functionality (SDK with code examples and working sample) <sup>8</sup>		Distribution Grid AMI User Interface
Internal Reporting	Net Metering		
Meter Installation Vendor (MIV) Integration	Polyphase metering		
My Account/Mobile – customer access to usage information	Internal Reporting		
Analytics – theft use case	Enhanced Customer Usage Viewability		
Remote connect/disconnect			
Expanded events processing capability			
Green Button Connect My Data			
Expanded Over The Air (OTA) programming and configuration use cases			
Real-time Customer Care data access			
Interval Billing			
Reporting			

<sup>5</sup> Projects completed at the end of 2021.

<sup>6</sup> While the software development is complete, the AMI-NMS Rel 1 and Rel 2 capabilities are implemented in specific distribution control centers upon AMI meter deployment reaching approximately 30 percent penetration.

<sup>7</sup> See FN 6.

<sup>8</sup> The Company implemented an SDK that allows third-parties to offer hardware or software solutions for customers to provide one-second data to third-parties.



### **III. REVENUE-GENERATING OPPORTUNITIES**

Order Point 9.e requires narrative discussion of revenue-generating opportunities identified or engaged that relate to the use of AMI, FAN, or the use of associated data or DI technologies.

The Company currently does not have plans to monetize use of data associated with AMI, FAN, or DI. That said, should the Company, in the future, seek to implement tools or use cases that would involve revenue, prior to implementation, we would seek any necessary regulatory approvals.

### **IV. AMI DATA SHARING**

Order Point 9.f requires narrative discussion of all entities with whom the Company shares AMI data.

Fulfillment of third-party data requests is reported in annual compliance filings in Docket Nos. E999/CI-12-1344 & E999/M-19-505. As reported in our March 1, 2023 report, in 2022 we received and fulfilled a total of approximately 127,000 requests for customer energy usage information. Approximately 55 percent of these requests (70,000) were in support of energy assistance for our customers. It is impracticable to attempt to distinguish data requests by meter type; further, when deployment is complete, most customer energy usage data (CEUD) will be AMI data. See our March 1, 2023 report for further information on third-party CEUD requests.

Apart from the third-party data requests reported in the above-mentioned dockets, the Company does not share AMI data with other entities. Customers may choose to share their own AMI data with third parties through GBC My Data or the Xcel Energy Launchpad.

### **V. AMI/FAN BENEFITS**

Order Point 9.g requires narrative discussion of any metrics derived from the quantitative benefits assumed in the Company's AMI and FAN cost-benefit analysis (CBA) that are not represented in Attachment 1, Table 1 of Staff Briefing Papers—Volume 2 filed on April 26, 2023.

The metrics derived from the Company's CBA but not reflected in Attachment 1, Table 1 of Staff Briefing Papers—Volume 2 filed on April 26, 2023 are:

- Reduced field trips for voltage investigations,
- Reduced outage duration,
- Avoided meter reading costs (O&M), and
- Avoided drive-by meter reading capital investment.

Regarding reduced field trips for voltage investigations, we are unable to report an actual or estimated number at this time. We are exploring the best way to track and report the number of avoided field trips for voltage investigations attributable to AMI. We anticipate we may be able to provide this information in next year's Annual Report.

Regarding reduced outage duration, we will be able to report an estimate in future Annual Reports. This tracking and reporting capability rely on newly released Network (Outage) Management System (NMS) capabilities that were deployed to distribution control centers in Fall 2023.<sup>9</sup> We also note that we provide the actual customer minutes out (CMO) from major events annually in our Service Quality report. Those results are also provided in Attachment A. (See "AMI (Other)" tab, metric #69 – CMO – major events.)

Regarding avoided meter reading costs, as we replace our legacy Cellnet meters, we are avoiding those meter reading service costs. We approximate that we have avoided approximately \$1.7 million in Cellnet AMR meter reading costs through September 30, 2023 by replacing 512,250 legacy meters with AMI meters.

Regarding avoided drive-by meter reading capital investment, we confirm that by moving forward with AMI, we have avoided capital investment in a drive-by meter reading solution. In that way, we have realized this benefit.

Order Point 9.h requires a narrative explanation of why any benefits of AMI and FAN do not materialize.

Customers realize benefits from the AMI meters upon their installation, through the granular usage information provided in My Account that helps them better understand how they are using energy, and thus can make changes to save energy. Attachment A outlines additional benefits that we, and customers, are also already realizing.

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<sup>9</sup> The NMS capabilities to leverage AMI data are implemented in specific distribution control centers upon AMI meter deployment reaching approximately 30 percent penetration. Currently, these functionalities are live in the Minnesota Metro West DCC and effective October 16, 2023, also in the Metro East DCC.

As an example of the benefits we – and our customers – are realizing, we estimate that we have avoided approximately 1 GWh of energy losses by sending remote disconnection commands to Minnesota AMI meters where there is no registered customer – preventing unbillable usage on those accounts; reducing energy losses reduces customer fuel costs. Unknown user consumption through the first half of 2023 is tracking 2.3 percent less than unknown user consumption in 2022.

Overall, we anticipate that the benefits modeled in our CBA will be realized. In our CBA model, the benefits ramped up over time or started upon full deployment of AMI meters. Economy-wide supply chain constraints have caused a delay in AMI deployment, so the benefits will accrue later than modeled, and in some cases, we believe they may be realized differently than contemplated or modeled in the CBA.

### **CONCLUSION**

AMI and FAN are already providing customers with significant value, which we expect to grow over time. We appreciate the opportunity to provide the Commission and parties with this update on AMI and FAN.

Dated: November 1, 2023

Northern States Power Company

Category		Reporting		
Table 1		Annual		
Metric	Description	2022	2023* *Through June 30, 2023	2024
1	<b>Distribution Management Efficiency</b> <b>Alternative Proposed Performance Metric: Narrative description of the Company's use of AMI data to inform</b> <i>Metric 1 note: As noted in our 9/25/23 TCR Compliance Filing, AMI provides the Company with information about the connectivity and workings of the distribution system. AMI data can be aggregated at varying levels of the distribution system including tap, transformer, and service lines amongst other distribution system equipment. The Company will be able to use this information to prioritize distribution grid improvements and more efficiently plan and design the system. When we are able to leverage AMI data in planning, the efficiency gains will be realized through engineering judgment. Given the nature of this benefit and the need for at least two full years of AMI data to inform planning, there is currently no way to quantitatively measure or monetize the value of this efficiency. We commit to providing narrative updates about our work to implement and utilize software and processes that leverage AMI data in Distribution Planning with future AMI Annual Reports.</i>	n/a	n/a	
2	<b>Outage Management Efficiency</b> <b>Alternative Proposed Performance Metric: # of canceled outage orders due to AMI, all days</b>	n/a - see note at left	n/a - see note at left	
3	<b>Avoided Meter Purchases</b> <b>Alternative Proposed Performance Metric: Meter failure rate</b>	21 Failures 143,309 Meters 0.0146 %	391 Failures 404,900 Meters 0.0966 %	
4	<b>Reduced Field and Meter O&amp;M Expenses</b> <b>Alternative Proposed Performance Metric: # of canceled outage orders due to AMI, all days</b>  <b>Percent of disconnects and reconnects done remotely (F&amp;G)</b>  <b>Alternative Proposed Performance Metric: # of canceled outage orders due to AMI, all days</b> <i>Metric 2 &amp; 4 note: The Company developed capabilities to integrate data from the AMI meters into its Network (Outage) Management System (NMS), which includes these key components: (1) automated outage notifications and restoration confirmations (power-on information), and (2) the ability to ping individual or groups of meters to check for line side power. We are building out our tracking and reporting capabilities in this area; the NMS upgrades required to track and report the number of canceled orders was deployed to control centers in Fall 2023. In future annual reports, we will be able to provide the number of canceled outage orders.</i>	n/a - see note at left  8% of disconnects, 10% of reconnects  n/a - see note at left	n/a - see note at left  62% of disconnects, 67% of reconnects  n/a - see note at left	
5	<b>Reduced Consumption on Inactive Meters</b> <b>Usage on unassigned accounts (I)</b>	89,409,303 kWh	43,661,505 kWh	
6	<b>Reduced Bad Debt Expense</b> <b>Alternative Proposed Performance Metric: # of days to complete disconnection</b>	15.4 days	12.8 days	
7	<b>Reduced Theft/Meter Tampering</b> <b>Alternative Proposed Performance Metric: # of theft/meter tampering cases completed</b>		46 cases	6 cases
8	<b>Load Flexibility Benefits</b> <b>Customer energy price savings due to time-of-use (TOU) rates (L)</b>  <b>Avoided tons of CO2 emissions due to TOU Rates (M)</b>  <b>Customer savings due to critical peak pricing (CPP) (N)</b>	n/a  n/a  n/a	n/a  n/a  n/a	

<u>Category</u>		<u>Reporting</u>					
Customer Outreach and Education		Quarterly					
Metric	Description	2022 2022 Total	2023 Q1	Q2	Q3	Q4	2023 Total
1	<b>Survey results of customer on the adequacy and clarity of communications prior to installation of advanced meters</b>	82%	84%		85%		

*Metric 1 note: Percentages reflect the proportion of survey respondents who selected 8, 9, or 10, on a scale of 1-10, when asked how satisfied they were with pre-installation communications.*

Category	Financial	Metric	Description	Reporting	
				Annual	Annual
				2022	2023 (through June 30, 2023)
			<b>Total AMI project capital spend to-date vs. total AMI project capital budget</b>		
12			AMI Project Capital Spend-to-Date	\$ 43,100,000	\$ 38,500,000
			AMI Project Capital Budget	\$ 366,300,000	\$ 366,300,000
			Percentage	12%	22%
			<b>Total FAN project capital spend to-date vs. total FAN project capital budget</b>		
13			FAN Project Capital Spend-to-Date	\$ 19,600,000	\$ 13,500,000
			FAN Project Capital Budget	\$ 98,100,000	\$ 98,100,000
			Percentage	20%	34%
			<b>Total AMI project O&amp;M spend to-date vs. total AMI project O&amp;M budget</b>		
14			AMI Project O&M Spend-to-Date	\$ 5,300,000	\$ 1,900,000
			AMI Project O&M Budget	\$ 92,900,000	\$ 92,900,000
			Percentage	6%	8%
			<b>Total FAN project O&amp;M spend to-date vs. total FAN project O&amp;M budget</b>		
15			FAN Project O&M Spend-to-Date	\$ 800,000	\$ 100,000
			FAN Project O&M Budget	\$ 6,400,000	\$ 6,400,000
			Percentage	13%	14%
16			<b>O&amp;M cost savings from avoided field visits</b>	\$ 11,524	\$ 291,303

The numbers reported are *estimates* based on the number of avoided field visits multiplied by the estimated average cost of a field visit. For 2022 and the first half of 2023, the numbers reflect truck rolls avoided from remote disconnection and reconnection only. We also expect to avoid truck rolls - and track that information - through our use through capabilities the Company developed to integrate data from the AMI meters into its Network (Outage) Management System (NMS), which includes these key components: (1) automated outage notifications and restoration confirmations (power-on information), and (2) the ability to ping individual or groups of meters to check for line side power. We are building out our tracking and reporting capabilities in this area; the NMS upgrades required to track and report the number of avoided truck rolls was deployed to control centers in Fall 2023. In future annual reports, we will be able to provide a more holistic number of avoided truck rolls and the associated estimated avoided costs.

Category		Reporting						GRAND TOTAL
Installation and Deployment		Quarterly						
Metric	Description	2022 2022 Total	Q1	Q2	2023 Q3	Q4	2023 Total (through Q2 or Q3)	
2	Number of advanced meters installed		127,991	126,835	134,129	123,208	384,172	512,163
3	Percentage of advanced meters deployed compared to planned installation		182.8%	-	-	-	70.5%	36.6%
	Planned Deployment (Annual)		70,000	n/a	n/a	n/a	545,000	1,400,350
	Actual Deployment		127,991	126,835	134,129	123,208	384,172	512,163
<p><i>Metric #3 Notes: Planned deployments are annual; therefore, the percentage shown in cell N9 reflects Q1-3 2023 actual installations compared to 2023 full-year planned deployment.</i></p>								
4	Percentage of customers with advanced meters		9.1%	18.2%	27.8%	36.6%		36.6%
	AMI Meters Installed (Cumulative)		127,991	254,826	388,955	512,163		512,163
	Planned Service Points in AMI Deployment		1,400,350	1,400,350	1,400,350	1,400,350		1,400,350
5	Percentage of FAN deployed		14.5%	27.2%	43.1%			43.1%
	FAN Deployed (cumulative)		299	560	888			888
	Total planned deployment		2,058	2,058	2,058			2,058
6	Percentage of FAN deployed compared to planned installation	<p><i>See metric #5 above. "Planned installation" reflects the total number of FAN devices planned. The planned installation number is reflected in the denominator used to calculate "percentage of FAN deployed;" therefore, metrics #5 and #6 are the same.</i></p>						
7	Number of customers electing to opt-out of AMI installation		834	843	686		1,529	2,363
<p><i>Metric #7 note: Opt-out values represent the number of customers who opted out of AMI installation in the reporting period. The numbers do not reflect customers who have opted back in to AMI or vacated the premise. We intend to evaluate this methodology and aim to present a "net" opt-out number in future reports.</i></p>								
8	Number of calls to Customer Contact Center and meter installation vendor regarding meter installation		1,027	618	534		1,152	2,179

Category		Reporting						
Installation and Deployment		Quarterly						
Metric	Description	2022 2022 Total	Q1	Q2	2023 Q3	Q4	2023 Total (through Q2 or Q3)	GRAND TOTAL
9	Number of complaints regarding AMI installation		6	11	9		20	26
10	Number of intelligent field devices enabled by the FAN  <i>Metric 10 note: For this metric we report the number of Fault Location Isolation and Service Restoration (FLISR) devices activated plus the number of AMI meters installed in the reporting period. No FLISR devices were activated in Q1 or Q2 of 2023 but we note, preliminarily, that we have activated 16 FLISR devices since June 30, 2023.</i>		127,997	126,835	134,129		260,964	388,961
11	Number of missed installation appointments		11	6	26		32	43
	Company-missed appointments		11	6	12		18	29
	Customer-missed appointments		0	0	14		14	14



Category		Reporting							GRAND TOTAL
Post-Deployment		Quarterly							
Metric	Description	2022 2022 Total	Q1 (1/1 through 3/31)	Q2 (from 4/1 through 6/30)	2023 Q3	Q4	2023 Total		
17	Percentage of customers with advanced meters that receive estimated bills		1.41%	0.50%	0.25%				
18	Total number of AMI meters used for billing (activated) <i>Metric 18 note: Numbers are cumulative</i>		127,991	254,826	388,955				
19	Percentage of customers with an advanced meter that have made a complaint of inaccurate meter readings		0.0078%	0.0004%	0.0003%				
21	Number of customers with an advanced meter with an active web portal account  <i>Metric 21 note: Numbers shown are cumulative.</i>			180,567	253,102				
			180,567 out of 278,852 64.75% Enrollment	253,102 out of 389,098 65.05% Enrollment					
22	Number of monthly, unique visits to the web portal (My Account)  <i>Metric 22 note: Customers' My Account accounts are not tied to a specific state; e.g., the customer could have multiple premises across Xcel Energy's states or a users' My Account may not be tied to a premise at all. Therefore numbers for this metric reflect unique pageviews (logins to My Account) from IP addresses in Minnesota; however, we note this data has limitations and is not likely to be a complete representation of Minnesota customers accessing My Account. Customers can access My Account from anywhere, and the prolific use of Virtual Private Networks (VPNs) further limits location accuracy. We also note that for this year's Annual Report, we provide aggregate 2022 data and quarterly data for Q1 and Q2 of 2023 because of the currently manual nature of gathering this data. We are working to automate this data gathering and reporting, and plan to include monthly data in our 2024 Annual Report.</i>	3,556,822 Unique Pageviews	876,455 Unique Pageviews	823,249 Unique Pageviews					
23	Percentage of customers with an advanced meter with Home Area Network (HAN) functionality <i>Metric 23 note: All customers with AMI have HAN functionality.</i>		100%	100%	100%				
24	Number of customers with an advanced meter with Home Area Network (HAN) functionality <i>Metric 24 note: All customers with AMI have HAN functionality; therefore, the numbers reported match the cumulative number of AMI meters installed.</i>		127,991	254,826	388,955				
25	Percent of customers with an advanced meter with Green Button Connect My Data (CMD) functionality <i>Metric 25 note: All residential customers have access to Green Button Connect My Data functionality, regardless of meter type; therefore, we report total percentage of residential customers here.</i>		89.3%	91.41%	91.43%				
26	Number of customers with an advanced meter with Green Button Connect My Data (CMD) functionality <i>Metric 26 note: All residential customers have access to Green Button Connect My Data functionality, regardless of meter type; therefore, we report total number of residential customers here.</i>		1,204,220	1,158,104	1,185,436				
27	Number of customer/account inquiries regarding AMI or time varying rates <i>Metric 27 note: Number reported includes agent-</i>		937	806	694		1,500	2,437	

Category Post-Deployment		Reporting	
		Annual	Through June 30, 2023
Metric	Description	2022	2023
20	<p><b>Survey of customer satisfaction with outage related communications</b></p> <p><i>Metric 20 note: Percentages reflect the proportion of survey respondents who selected 8, 9, or 10, on a scale of 1-10, or selected 4 or 5, on a scale of 1-5, when asked how satisfied they were with Xcel Energy's communications about a recent electrical outage.</i></p>	73%	68%
28	<p><b>Number of customers enrolled in time-varying rate programs</b></p>	0 - No AMI-enabled time-varying rate programs currently exist	
29	<p><b>Number of customers enrolled in other AMI-enabled demand management programs</b></p>	0 - No AMI-enabled demand management programs currently exist	
30	<p><b>Number of avoided truck rolls/field visits</b></p> <p><i>Metric 30 note: For 2022 and the first half of 2023, the numbers reflect truck rolls avoided from remote disconnection and reconnection only. We also expect to avoid truck rolls - and track that information - through our use through capabilities the Company developed to integrate data from the AMI meters into its Network (Outage) Management System (NMS), which includes these key components: (1) automated outage notifications and restoration confirmations (power-on information), and (2) the ability to ping individual or groups of meters to check for line side power. We are building out our tracking and reporting capabilities in this area; the NMS upgrades required to track and report the number of avoided truck rolls was deployed to control centers in Fall 2023. In future annual reports, we will be able to provide a more holistic number of avoided truck rolls.</i></p>	1,422	15,161
31	<p><b>Meter accuracy test percentage</b></p> <p><i>Metrics 31 note: Percentages reflect the weighted average accuracy.</i></p>	100.03%	100.07%
32	<p><b>Percentage of interval reads received</b></p> <p><i>The data reporting capabilities for this metric are currently under development and we expect to include this data in next year's filing. Because of the volume of raw data and the amount of processing power required to calculate this metric, preparing this information manually is not practicable.</i></p>		
33	<p><b>Number of remote meter disconnect operations</b></p>	1,178	8,652
34	<p><b>Number of remote meter connect operations</b></p> <p><i>Metrics 33 and 34 note: Numbers include remote connection/disconnection operations for credit as well as service locks and unlocks (stop/start service).</i></p>	1,092	7,491

Category		Reporting					
Customer Engagement		Quarterly					
Metric	Description	2022 2022 Total	Q1	Q2	2023	Q3	Q4
36	<p><b>Percentage of customers with advanced meter at least 30 days that are targeted with energy savings messaging</b></p> <p><i>Metric 36 note: Within 30 days of receiving their new meter, all residential and small business customers receive a communication, via email or mail depending on the customers' preference, that provides energy savings messaging.</i></p>		100%	100%		100%	
37	<p><b>Percentage of low-income customers with advanced meters at least 30 days that are targeted with energy savings messaging</b></p> <p><i>Metric 37 note: Within 30 days of receiving their new meter, all residential and small business customers receive a communication, via email or mail depending on the customers' preference, that provides energy savings messaging.</i></p>		100%	100%		100%	
42	<p><b>Number of organizational events attended where information on AMI presented, by region</b></p> <p><i>Metric 42 note: Xcel Energy participates in and hosts many events each quarter. For this metric, we report in two ways: First, we include information from our Community Relations Managers regarding AMI-specific engagements with communities. Second, we include estimates of the number of AMI-specific conversations with attendees ("customer engagements") at MN community events at which Xcel Energy had an event presence; however, we note that at these events, we do not present information on AMI specifically.</i></p>	785 estimated customer engagements at 106 total community events in 2022	Approximately 1,800 customer engagements at 33 total community events in Q1 and Q2	Approximately 1,800 customer engagements at 33 total community events in Q1 and Q2	City of Lilydale: Community Relations presented to the City Council on implementation of AMI and fielded questions to the city's facilities specifically.		
46	<p><b>Customer access to hourly or sub-hourly data</b></p> <p><i>Metric 46 note: All customers with AMI have access to hourly and subhourly data through My Account. The reported number reflects the cumulative number of customers with an AMI meter who also have a web portal account (also shown in Metric 21).</i></p>	Not available - reporting capability was built in 2023		180,567		253,102	

Category		Reporting		
Customer Engagement		Annual		
Metric	Description	2022	2023*	2024
38	<p><b>Percentage of customers aware of AMI</b></p> <p><i>Metric 38 note: Percentages reflect the proportion of survey respondents that indicate they are aware of new 'smart' electric meters that can provide customers with more detailed information about their energy usage.</i></p>		36%	41%
39	<p><b>Understanding of AMI technology and benefits</b></p> <p><i>Metric 39 note: Percentages reflect the proportion of survey respondents aware of AMI (Metric 38) who also select "somewhat agree" or "completely agree" about the statement "I understand 'smart' electric meter technology."</i></p>		48%	50%
40	<p><b>Percentage of low-income customers aware of AMI</b></p> <p><i>Metric 40 note: Percentages reflect the proportion of low-income survey respondents that indicate they are aware of new 'smart' electric meters that can provide customers with more detailed information about their energy usage. Low-income respondents are calculated using household income and number of people in household to match LIHEAP guidelines set at 150% of the federal poverty level.</i></p>		34%	35%
41	<p><b>Number of customers with advanced meters that adopt an advanced rate option (e.g. TOU ) tariff, expressed as a number and percentage by each rate</b></p>	0 - No AMI-enabled time-varying rate programs currently exist		
43	<p><b>Demand Response: percentage participation by class</b></p>	35% residential participation, 15% commercial and industrial participation	Partial year data not available	
44	<p><b>DER: percentage adoption, by class</b></p> <p><i>Metric 45 note: Data from 23-10 Annual Report, data not available by class.</i></p>	0.85% Partial year data not available		
45	<p><b>Storage: percentage adoption, by class</b></p> <p><i>Metric 45 note: Data not available by class</i></p>	0.03% Partial year data not available		
47	<p><b>Third-party service access to customer data</b></p>	The Company received and fulfilled a total of approximately 127,000 requests for customer energy usage data in 2022.	Not yet available; 2023 information will be provided March 1, 2024 in Docket Nos. E999/CI-12-1344 & E999/M-19-505.	
48	<p><b>Variety, quality, accessibility of customer data available (consistent with privacy and CEUD requirements)</b></p>	<p>Customers may access their account and usage information by logging into their customer web portal (i.e., "MyAccount") via Xcel Energy's website or through Xcel Energy's mobile application (branded as "My Xcel Energy" in the Android Play Store and the iOS App Store). Customers without AMI meters can view monthly usage and cost information for their premise in the "My Energy Portal" accessible through MyAccount. Customers with AMI meters can view 15-minute, hourly, daily, and monthly usage and cost information for their premise in the portal. Customers with AMI meters can also authorize third parties to access on the meter data using the Xcel Energy Launchpad functionality. All customers have access to the "Green Button Connection" functionality which allows them to authorize a one-time transfer or an ongoing, periodic data transfers to customer authorized third parties. Data transfers can include 1) monthly billing, usage and demand (if applicable) information, and 2) interval usage and demand (if applicable) information.</p>		

<u>Category</u>	<u>Reporting</u>
Customer-Site Asset Effectiveness	

*Customer Site Asset Effectiveness Notes:  
DER and DR-specific information is reported annually in other dockets; we provide the same information here, where available, for 2022. 2023 data is not yet available. Class-specific information is not reported elsewhere and would be overly burdensome to provide because it is a manual process.*

Metric	Description	2022	2023
<b>49</b>	<b>Demand Response: annual max MW reduction total and as a percentage of load, by class</b>	820 MW/12% of system load	

*Metric 49 note: 2023 data will be filed February 1, 2024 in Docket Nos. E002/M-20-421 and CI-17-401, data not available by class.*

<b>50</b>	<b>Demand Response: MW enrolled total and as percentage of load, by class</b>	820 MW/12% of system load	
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*Metric 50 note: The Company does not differentiate between annual max MW and MW enrolled.*

51	DER: MWh generated as percentage of sales, by class	Not available - see notes at left	
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*Metric 51 note: MWh is not currently reported and would be overly burdensome to provide.*

52	DER: MW installed as percentage of load, by class	2,056 MW/29% of system load	
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53	Storage: MWh installed energy capacity as percentage as percentage of sales, by class	Not available - see notes at left	
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*Metric 53 note: MWh is not currently reported and would be overly burdensome to provide.*

54	Storage: MW installed capacity as percentage of load, by class	1.6 MW/ 0.02% of system load	
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55	Non-Wires Alternatives (NWA): MW as percentage of (peak) load		0	0
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56	NWA: percentage of customers participating, by class		0	0
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57	NWA: savings (\$) per year		0	0
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58	Percentage of grid supporting services provided by DER vs. traditional solutions	<i>We interpret "grid-supporting services provided by DER" to be equivalent to an NWA. We do not currently have NWAs in service.</i>		
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Category AMI (Capital)		Reporting	
		Annual 2022	Through June 30, 2023 2023
Metric	Description		
59	Capex for Asset Health/Reliability, Capacity Projects (unrelated, reported elsewhere)	\$ 182,300,000	\$ 96,900,000
60	Storm related capital restoration costs (unrelated, reported elsewhere)	\$ 56,200,000	\$ 16,800,000
61	AMI meter failure rate (avoided meter purchases)	21 Failures 143,309 Meters 0.0146 %	391 Failures 404,900 Meters 0.0966 %

Category AMI (O&M)		Reporting	
		Annual	Through June 30, 2023
Metric	Description	2022	2023
62	Annual trips for damaged customer equipment		
65	Annual "OK on Arrival" field visits		
66	Annual voltage investigation field visits		
63	Annual trips for residential manual disconnection	13,051	6,832
64	Annual trips for residential manual reconnection	7,609	2,756
67	O&M for Asset Health/Reliability, Capacity Projects	\$ 5,629,000	\$ 2,239,032
68	O&M for storm related activity	\$ 7,500,000	\$ 3,600,000

We cannot currently report avoided trips for damaged customer equipment, "ok on arrival," or voltage investigations, but this capability is in progress. The Company has developed to integrate data from the AMI meters into its Network (Outage) Management System (NMS), which includes these key components: (1) automated outage notifications and restoration confirmations (power-on information), and (2) the ability to ping individual or groups of meters to check for line side power. We are building out our tracking and reporting capabilities in this area; the NMS upgrades required to track and report the number of avoided truck rolls was deployed to control centers in Fall 2023. In future annual reports, we anticipate we will be able to provide more specific numbers of avoided truck rolls.

<u>Category</u>		<u>Reporting</u>	
AMI (Other)		Annual	Through June 30, 2023
Metric	Description	2022	2023
69	<b>Customer-minutes of outage (CMO) - major events</b>	125,408,000	82,300,000
70	<b>CMO-single customer events</b>	Not available - see notes at left	
71	<b>CMO-tap level events</b>	Not available - see notes at left	
<i>Metrics 69, 70, 71 (CMO) notes: CMO major events is reported annually in the Service Quality docket (most recently Docket No. E002/M-23-73); we provide the same information here for 2022. 2023 data reflects partial year only and should be considered preliminary. Single customer events and tap level events are not reported elsewhere and would be overly burdensome to provide, and potentially misleading as reliability metrics are affected by many factors unrelated to AMI.</i>			
72	<b>Cost of consumption on inactive meters</b>	89,409,303 kWh	43,661,505 kWh
<i>Metric 72 note: For this metric we reference Table 1, Metric 5 Usage on unassigned accounts. We report usage instead of costs, which would be estimated, as rates vary between classes and change over time.</i>			
73	<b>Commodity bad-debt expense</b>	15.4 days	12.8 days
<i>Metric 73 note: For this metric we reference Table 1, Metric 6 - # of days to complete disconnection. See our September 25, 2023 compliance filing in Docket No. E002/M-21-814 for further discussion of this metric. We may be able to report bad debt expense in future Annual Reports.</i>			
74	<b>Residential demand shift from TOU rates</b>	n/a	n/a
75	<b>Medium C&amp;I demand shift from TOU rates</b>	n/a	n/a
76	<b>Residential peak demand reduction from Critical Peak Pricing</b>	n/a	n/a
77	<b>Medium C&amp;I peak demand reduction from Critical Peak Pricing</b>	n/a	n/a



## CERTIFICATE OF SERVICE

I, Ella Giefer, hereby certify that I have this day served copies of the foregoing document on the attached list of persons.

xx by depositing a true and correct copy thereof, properly enveloped with postage paid in the United States mail at Minneapolis, Minnesota

xx electronic filing

**DOCKET NO.        MISCELLANEOUS ELECTRIC SERVICE LIST**  
**E002/M-21-814**

Dated this 1<sup>st</sup> day of November 2023

/s/

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Ella Giefer  
Regulatory Administrator

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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Generic Notice	Residential Utilities Division	residential.utilities@ag.stat e.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_21-814_M-21-814
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