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October 31, 2023

—Via Electronic Filing—

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

RE: DISTRIBUTION SYSTEM – HOSTING CAPACITY PROGRAM REPORT
DOCKET NO. E002/M-23-___

Dear Mr. Seuffert:

Northern States Power Company, doing business as Xcel Energy (the Company), submits this Hosting Capacity Program Report to the Minnesota Public Utilities Commission (Commission) in compliance with Minn. Stat. § 216B.2425, subd. 8, ongoing requirements from the Commission's July 31, 2020 Order in Docket No. E002/M-19-685[1] (July 2020 Order), the Commission's November 9, 2021 Order in Docket No. E002/M-20-812[2] (November 2022 Order), and the Commission's most recent September 15, 2023 Order in Docket No. E002/M-22-574 (September 2023 Order).[3,4]

This year's Hosting Capacity Program Report continues to provide an analysis for generation hosting capacity (Gen-HCA), and also provides our second analysis for load hosting capacity (Load-HCA). The Gen-HCA 2023 Feeder Summary Results (Attachment B) and Load-HCA 2023 Feeder Summary Results (Attachment D) of our November 2023 Hosting Capacity Analysis (HCA) do not publicly provide the peak substation transformer load or peak feeder load data. We have marked this information as non-public, protected data, and provide a detailed explanation and justification for this treatment in the 2023 Hosting Capacity Program Report, Section II, and in Attachment A – 2023 Hosting Capacity Analysis Report, Section III.

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[1] Docket No. E002/M-19-685, *In the Matter of Xcel Energy's 2019 Hosting Capacity Analysis Report*, ORDER ACCEPTING REPORT AND SETTING FURTHER REQUIREMENTS, July 31, 2020 (hereafter referred as the July 2020 Order).

[2] Docket No. E002/M-20-812, *In the Matter of Xcel Energy 2020 Hosting Capacity Report Under Minn. Stat. 216B.2425, Subd. 8*, ORDER ACCEPTING REPORT, REQUIRING STAKEHOLDER WORKSHOPS, AND SETTING ADDITIONAL REQUIREMENTS, November 9, 2021 (hereafter referred as the September 2021 Order).

[3] Docket No. E002/M-22-574, *In the Matter of Xcel Energy's 2022 Hosting Capacity Report Under Minn. Stat. 216B.2425, Subd. 8*, ORDER ACCEPTING HOSTING CAPACITY REPORT AND ESTABLISHING ADDITIONAL REQUIREMENTS, September 15, 2023 (hereafter referred as the September 2022 Order).

[4] The Commission's September 9, 2022, Order in Docket No. E002/M-21-767 contained no additional requirements.

Please note that we are filing this report a day early on October 31, 2023, due to the expected heavy volume of eDockets submission on November 1, 2023. For the avoidance of doubt, we intend to continue filing our Hosting Capacity Analysis quarterly reports on the first business day of the month for which those reports are due (February, May, August, and November).

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 or contact me at amber.r.hedlund@xcelenergy.com if you have any questions regarding this filing.

Sincerely,

/s/

AMBER R. HEDLUND
MANAGER, REGULATORY PROJECT MANAGEMENT

Enclosures
cc: Service List

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STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

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

IN THE MATTER OF THE XCEL ENERGY
2023 HOSTING CAPACITY REPORT UNDER
MINN. STAT. § 216B.2425, SUBD. 8

DOCKET NO. E002/M-23-___

HOSTING CAPACITY PROGRAM REPORT

INTRODUCTION

Northern States Power Company, doing business as Xcel Energy (the Company), submits this Hosting Capacity Program Report to the Minnesota Public Utilities Commission (Commission) in compliance with Minn. Stat. § 216B.2425, subd. 8, ongoing requirements from the Commission's July 31, 2020 Order in Docket No. E002/M-19-685[1] (July 2020 Order), the Commission's November 9, 2021 Order in Docket No. E002/M-20-812[2] (November 2022 Order), and the Commission's most recent September 15, 2023 Order in Docket No. E002/M-22-574 (September 2023 Order).[3,4]

Our 2023 Hosting Capacity Analysis Report (Attachment A) provides a detailed description of the tools and methodology used for the November 2023 Hosting

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[2] Docket No. E002/M-20-812, *In the Matter of Xcel Energy 2020 Hosting Capacity Report Under Minn. Stat. 216B.2425, Subd. 8*, ORDER ACCEPTING REPORT, REQUIRING STAKEHOLDER WORKSHOPS, AND SETTING ADDITIONAL REQUIREMENTS, November 9, 2021 (hereafter referred as the November 2021 Order).

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[4] The Commission's September 9, 2022, Order in Docket No. E002/M-21-767 contained no additional requirements.

Capacity Analysis (HCA) and covers any changes made since our last annual filing in November 2022. Over time, we have made significant efforts to improve the value of the HCA so that it is a useful tool for identifying potential areas of opportunity for distributed energy resources (DER) interconnection on the primary system. For this 2023 filing, we continue to provide an analysis for both generation (Gen-HCA) and load (Load-HCA). We conducted the first Load-HCA in 2022 and provided the results in the November 2022 HCA filing.

The Company has made some changes to the 2023 HCA methodology, including a DRIVE[5] version update, an addition to the Technical Planning Standard (TPS) constraining metric[6] that shows the available hosting capacity only up to the TPS value, (TPS Capacity Utilization, Gen-HCA only), a corresponding addition to the Native Loading Standard (NLS), Native Capacity Utilization (Load-HCA only), and a new criterion for updating the feeder models beginning with the February 2024 update. While Attachment A discusses the methodologies and results for the Gen-HCA and Load-HCA in more detail, we also provide a summary in Section I of this Hosting Capacity Program Summary.

When publishing the HCA results, we continue to protect certain sensitive information to maintain the security of our grid and the privacy and security of our customers. Given the ongoing proceeding in Docket Nos. E002/M-19-685 and E999/CI-20-800 (Grid Security Docket),[7] as well as recent heightened geopolitical and domestic tensions, we have not made any changes to our approach. Because of grid security concerns, we have decided not to publish a Heat Map or Feeder Nodal Results for the Load-HCA. We evaluated the Heat Map and Feeder Nodal Results internally for grid security threats and found that a Load-HCA heat map of the nodal data would provide a clearer picture of system vulnerabilities than the Gen-HCA heat map. Additionally, we have determined that there is little to no benefit to sharing information beyond the currently available Load-HCA Feeder Summary Results. The Load-HCA results, used in conjunction with the Gen-HCA heat map, should suffice for nearly every application for interconnecting load resources, as we shared and demonstrated with stakeholders during our 2023 Load-HCA results workshop. We advised stakeholders that we would not be including a heat map or nodal results as part of a Load-HCA during our Load-HCA workshop and received no pushback. These issues are discussed further in Section II.

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[5] Distribution Resource Integration and Value Estimation (DRIVE) tool.

[6] Previously referred to as Limiting Criteria.

[7] Docket No. E002/M-19-685, *In the Matter of Xcel Energy's 2019 Hosting Capacity Analysis Report* and Docket No. E999/CI-20-800, *In the Matter of a Commission Investigation on Grid and Customer Security Issues Related to Public Display or Access to Electric Distribution Grid Data.*

The Company held three stakeholder workshops in 2023. The first on January 20, 2023, provided an overview of the interconnection tools and information available to developers and best practices for using them. The second on June 22, 2023, was an overview of the Load-HCA results, discussing what the Gen-HCA and Load-HCA results indicate and how the results should be used. The third workshop on October 2, 2023, focused on the potential benefits of the Fast Track Supplemental Review Screen (FTSRS) use case and requested input from potential users on how they would value those benefits. More details on all three workshops can be found in Section III: Stakeholder Engagement.

Order Point 6 of the Commission's September 2023 Order directed the Company to provide information on actual historical and future estimated costs related to the HCA and to indicate where these costs are recovered. We discuss and provide this information in Section IV: Hosting Capacity Program Costs.

The Commission's September 2023 Order directed the Company to pursue one of the potential future HCA use cases discussed in our 2022 filing – Monthly Updates. To do this, the Company is also implementing certain Foundational Improvements, which are necessary to implement the Monthly Updates. Section V: Future HCA Use Cases Development Roadmap provides an update on the Foundational Improvements and Monthly Updates.

With regard to whether the Company should pursue integrating the HCA with the FTSRS use case under the Minnesota Distributed Energy Resources Interconnection Process (MN DIP), the Commission decided a more robust cost-benefit analysis (CBA) was needed, including potential benefits to developers derived from consultations with external stakeholders. Additional information on our work with external stakeholders and the forthcoming CBA can be found in Sections III.C and V.C.

In Attachment E, we outline our Compliance with the ongoing requirements from the Commission's July 2020 Order, November 2021 Order, and new requirements from the September 2023 Order.

Additionally, in the July 20, 2023, Agenda Meeting to discuss the Company's 2022 HCA Report, the Commission requested the Company provide information about our secondary system and explain what data we have available regarding these assets in our 2023 HCA Program Report. This information can be found in Attachment F.

We include with this filing the following:

- **2023 Hosting Capacity Program Summary** (this document)
    - This document contains an overall summary of the entire Hosting Capacity Program, including HCA methodology, analysis results, and any changes to them. This document also includes all related discussions on stakeholder engagement, grid security concerns, non-public treatment of data, and future HCA use cases.
- **Attachment A** – 2023 Hosting Capacity Analysis Report
    - This attachment contains the complete methodology used for Gen-HCA and Load-HCA, including tools and software, process steps, constraining metric and thresholds, assumptions, and quality assurance. Attachment A also includes both the Gen- and Load-HCA summary results, with a discussion on intended usage and how the results should be interpreted.
- **Attachment B** – Gen-HCA 2023 Feeder Summary Results
    - This attachment includes the Feeder Summary results for the Gen-HCA in tabular format.
- **Attachment C** – Gen-HCA 2023 Feeder Nodal Results
    - This attachment includes the detailed feeder results from the nodal analysis. Previously referred to as the "sub-feeder results."
- **Attachment D** – Load-HCA 2023 Feeder Summary Results
    - This attachment includes the Feeder Summary results for the Load-HCA in tabular format.
- **Attachment E** – Compliance Matrix
    - This attachment describes compliance with ongoing requirements from the Commission's July 2020, November 2021, and September 2023 Orders.
- **Attachment F** – Secondary System Data
    - This attachment discusses the information available on the Company's secondary system.

I. NOVEMBER 2023 HOSTING CAPACITY ANALYSIS REPORT OVERVIEW

Attachment A – 2023 Hosting Capacity Analysis Report describes in detail the tools and methodology used for the November 2023 HCA, covers any changes made since our last annual filing in November 2022, and summarizes the results. We provide an overview of these topics below.

A. Notable Changes to 2023 HCA Methodology

The Company has made the following changes to the 2023 HCA methodology, including a DRIVE version update, an addition to the TPS and the NLS constraining metrics, and a new criterion for updating the feeder models.

- **DRIVE[8] Version Upgrade:** The Electric Power Research Institute (EPRI) released an update to the DRIVE tool – version 4.2.0 – which the Company acquired in January 2023, and has used for the HCA since the February 2023, update. This version provides a simplified user interface view and minor efficiency improvements.
- **TPS Capacity Utilization (Gen-HCA):** This constraining metric accounts for the remaining capacity on a feeder based on the TPS and will reduce instances where the HCA map shows more capacity than is otherwise available. In other words, the available hosting capacity is shown only up to the remaining TPS value. Utilization of this metric began with the November 1, 2023, Gen-HCA update.
- **Native Capacity Utilization (Load-HCA):** This new constraining metric accounts for the remaining capacity on a feeder based on the rated capacity and demand. If a DRIVE result shows more hosting capacity than is allowable via the rated capacity for a feeder, then the remaining available rated capacity is used as the hosting capacity value for the feeder. This ensures that there is no overstatement of available capacity for demand on a feeder.
- **Feeder NLS (Load-HCA):** Feeder NLS was previously used as an explicit constraining metric, meaning it was included with DRIVE results when

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[8] Distribution Resource Integration and Value Estimation (DRIVE) tool.

determining the overall hosting capacity on a feeder. Feeder NLS will no longer show as a typical constraining metric, but rather as a separate column in the Load-HCA results, which will indicate to customers when an upgrade project may be required for interconnection on certain feeders. Native Capacity Utilization, discussed above, will now be used as a constraining metric alongside other constraining metrics assessed by DRIVE.

- **Feeder Capacity Rating:** Beginning with the February 2024 quarterly update, we will also update a feeder model if there has been a change in the feeder's normal rated capacity since the last quarterly HCA update.

Additionally, EPRI has changed its DRIVE tool terminology to use the term "constraining metric" instead of the previously used term "limiting criterion." We have made the corresponding change in this November 2023 filing to be consistent with EPRI terminology.

B. Summary of the November 2023 HCA Methodology

As previously discussed, for this November 2023 HCA filing, the Company performed an analysis for generation and load – Gen-HCA and Load-HCA. Both versions have different schedules aligning around the November 1 filing requirement, with the Gen-HCA being updated and filed quarterly and the Load-HCA being updated for the present filing.

The Gen-HCA full report is filed annually on the first business day of November, and we continue to provide quarterly updates to provide more timely and relevant results for developers. Due to the intensive manual process of performing the HCA, more frequent updates are not possible with our current tools and resourcing; however, the Foundational Improvements we are currently implementing will allow the Company to move towards monthly updates. The current cadence of quarterly updates coincides with the first business day of February, May, August, and November, to align with the November 1, filing requirement specified by the Commission. Each quarterly update period has a cutoff date for updated data three months prior to each filing. For example, the February 1 update has a data cutoff date of November 1. This means that the analysis uses the distribution system characteristics and data available as of November 1. This practice will continue for the 2023-2024 update cycle as we continue working on the Foundational Improvements and the implementation of Monthly Updates, which we expect to occur in 2025.

The Load-HCA included in this November 2023 filing is the second Load-HCA the Company has performed. Being that the November 2020 Order did not require annual Load-HCAs, and we have not been further ordered to continue these updates, we intend this to be the Company's final Load-HCA, unless otherwise ordered. The Company's process for determining hosting capacity for both the Gen and Load-HCA is summarized in the following steps, and remains largely unchanged from our 2022 Hosting Capacity Analysis Report. These steps are 1) Determine Feeder Models to Update, 2) Develop Feeder Models, 3) Perform Analysis with DRIVE, 4) Compile and Review Results for Accuracy, and 5) Apply Additional Constraining metrics.

When we are determining which feeder models to update, we select any feeder that meets one of the following criteria:

- Aggregate load change of 500 kW or more.
- Aggregate DER generation change of 100 kW or greater.
- Other significant changes (known large capacity projects, feeder reconfigurations, load transfers, and similar).
- [New for 2024] Change in the feeder's rated capacity.
- At least one update per feeder in each annual reporting cycle.

Each quarterly Gen-HCA update takes three months to process and aims to provide updates to approximately 25 percent of our distribution feeders; however, this varies due to the feeder update requirements explained further in Attachment A, Section II.A.1.

Feeder models are developed by importing extracted asset data from the Company's Geospatial Information System (GIS) into the Synergi Electric modeling software. At this point, a series of cleanup steps are performed, including specifying head-end voltages and source impedances, burial depths on underground cable, height of overhead conductor, and equipment settings for capacitors, reclosers, and regulators. The power factor and other relevant settings for each DER are also confirmed and corrected as necessary. Once the model accurately reflects the feeder configuration, each feeder's forecasted peak loading scenario is allocated to the model and a load-flow performed. Any exceptions or errors are flagged for engineer investigation and correction.

Following successful model creation, the Synergi model must be converted to a format capable of being processed by DRIVE. During this conversion step, DRIVE confirms and records the load-flow provided by the peak loading scenario present in the Synergi model. DRIVE also performs a second load-flow for the daytime minimum loading (DML) scenario.

Once the model has been successfully converted, it is analyzed by DRIVE with the various settings specific to Gen-HCA and Load-HCA. DRIVE assesses each feeder model by adding an incremental amount of a future resource to each node in a model, while checking against the selected constraining metric thresholds for violations to determine the amount of the future resource that specific location can accommodate. We have continued to use a 100-kW increment for the future resource in the analysis.

DRIVE v4.2.0 provides 16 evaluation metrics that determine the hosting capacity limits (constraining metric[9]) on a given piece of equipment. The most notable difference between the Gen-HCA and Load-HCA is in the constraining metric used to determine available hosting capacity; the Gen-HCA continues to use seven metrics, while the Load-HCA uses only four. Table 1 shows the constraining metrics used by the Company for each type of HCA.

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[9] EPRI has changed its DRIVE tool terminology, using "constraining metric" instead of the previously used term "limiting criterion." We have made the corresponding change in this November 2023 filing to be consistent with EPRI terminology.

Table 1 – Constraining Metrics Used for Each HCA Type

Metrics	Gen-HCA	Load-HCA
Primary Over-Voltage	✓	
Primary Under-Voltage		✓
Primary Voltage Deviation	✓	✓
Regulator Voltage Deviation	✓	✓
Thermal Discharging	✓	
Thermal Charging		✓
Additional Element Fault Current	✓	
Breaker Relay Reduction of Reach	✓	
Unintentional Islanding[10]	✓	

As a general principle, the Company attempts to align the metric thresholds used in DRIVE with those used in the interconnection studies. In 2019, a value of 100 percent was used for the Unintentional Islanding threshold, which was changed to 80 percent[11] in 2021, to align with current interconnection studies. Similarly, a 20 percent threshold for the Additional Element Fault Current was used to align with the interconnection studies.

Additionally, we continued to use a 10 percent threshold for the Breaker Relay Reduction of Reach. The Reverse Power-flow metric continues to be replaced by the Unintentional Islanding metric.

Besides the constraining metrics assessed with DRIVE, the Company also applies four additional criteria when determining available hosting capacity: the Feeder TPS and TPS Capacity Utilization are applicable only to the Gen-HCA, while the Feeder NLS and Native Capacity Utilization are applicable only to the Load-HCA. The Feeder TPS was applied for the first time in the May 2022 quarterly Gen-HCA and the Feeder NLS was applied in the November 2022 Load-HCA. The TPS Capacity

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[10] Reverse power-flow was mistakenly included as a constraining metric on slide 9 of our first Load-HCA workshop in 2022. Reverse power-flow is not called out as a separate criterion and is instead included as part of the Unintentional Islanding analysis. There is currently no Company standard or limitation on reverse power-flow other than for preventing Unintentional Islanding.

[11] Unintentional Islanding threshold of 80% was implemented with the Minnesota Distribution Interconnection Process (MN DIP) criteria 3.4.5.2 stating that voltage supervisory reclosing (VSR) is required if the DER to load ratio is greater than or equal to 80%.

Utilization and the Native Capacity Utilization are applied for the first time in this November 2023 update. The Feeder TPS, TPS Capacity Utilization, Feeder NLS, and Native Capacity Utilization are described in more detail in Attachment A, Section II.A.5.

A series of quality assurance protocols are performed throughout the HCA process to ensure results are as accurate as possible. These steps include: (1) running model clean-up scripts in Synergi, (2) resolving any flagged Synergi exceptions, (3) resolving any flags during conversion from Synergi to DRIVE, and (4) comparing DRIVE results to previous HCA results to investigate any large deviations in available hosting capacity or number of threshold violations. All flagged items and any unexpected changes in results are investigated by engineers and corrected, if necessary.

C. Results for Gen-HCA

For the Gen-HCA, each quarter's results from the 2023 hosting capacity reporting period are summarized in Table 2. As mentioned above, the data used in each quarterly analysis is collected up to when the analysis begins – the data cutoff date – at which point no new data is accepted.

Table 2 – Gen-HCA 2023 Results Summary

Item	Feb 2023	May 2023	Aug 2023	Nov 2023 (Current)
Data cutoff date	10/31/2022	1/31/2023	5/31/2023	7/31/2023
Number of feeders included in the annual analysis	1,053	1,053	1,053	1,053
Percent of feeders updated[12]	26%	20%	35%	24%
Feeders with zero maximum hosting capacity, and	148	148	130	114
- those with at least 1 MW of existing DER[13]	103	103	91	76

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[12] Some feeders with heavy DER activity were updated more than once between the November 2022 and November 2023 HCA filings, which is why the percent of feeders updated is greater than 100 percent.

[13] We note that DRIVE considers potential DER in increments of 100 kW on three-phase sections, which means that even if a feeder shows zero hosting capacity, the actual available capacity may be something between zero and 100 kW. Therefore, additional small-scale DER may not be prohibitive.

Number of feeders with actual Daytime Minimum Load	907	907	937	934
Number of feeders with VSR[14] installed	111	111	111	117

The November 2023 update provides refreshed results for 24 percent of our feeders. The number of feeders with zero maximum hosting capacity decreased from 130 to 114; this is a decrease of 16 feeders with available hosting capacity since the August 2023 quarterly update. Out of the 114 feeders that have zero maximum hosting capacity, 45 feeders had no capacity due to the Feeder TPS, which has not changed since the August 2023 update.

Table 3 provides a summary of how many feeders are limited by each constraining metric for minimum and maximum hosting capacity values.

Table 3 – Number of Feeders Limited by Each Metric for Min and Max Hosting Capacity (Generation)

Constraining metric	# Feeders Min HC	# Feeders Max HC
Primary Over-Voltage	192	63
Primary Voltage Deviation	0	0
Regulator Voltage Deviation	0	0
Thermal Discharging	428	10
Additional Element Fault Current	1	1
Breaker Relay Reduction of Reach	9	77
Unintentional Islanding	374	840
Feeder Technical Planning Standard	45	45
TPS Capacity Utilization[15]	4	17

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[14] Voltage Supervisory Reclosing.

[15] TPS Capacity Utilization was used for the first time as part of this November 1, 2023, update and thus only reflects 24 percent of the feeders. Values can be expected to increase until all feeders have been modeled by November 2024.

While the Commission has established a long-term goal to integrate, replace, or augment portions of the interconnection process with the HCA, the Gen-HCA results cannot be used in lieu of engineering studies or for approving interconnection requests. Rather, they are intended to be an initial indication of how much additional DER might be able to be interconnected on a given feeder.

We provide two sets of tabular results for the November 2023 Gen-HCA: Feeder Summary Results (Attachment B) and Feeder Nodal Results (Attachment C). Attachment C includes all constraining metric violations by feeder segment. We also provide a heat map that is prepared by using the two sets of tabular results and contains the data from the Feeder Summary Results in a pop-up data box. The tabular results and heat map are available at our website https://mn.my.xcelenergy.com/s/renewable/developers/interconnection, under *Before Interconnecting*. Figure 1 and Figure 2 below show an example of the heat map and a pop-up box.

Figure 1 – View of the Gen-HCA Heat Map

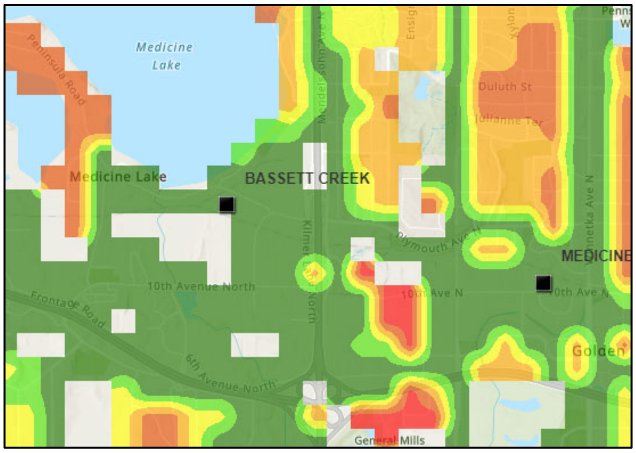
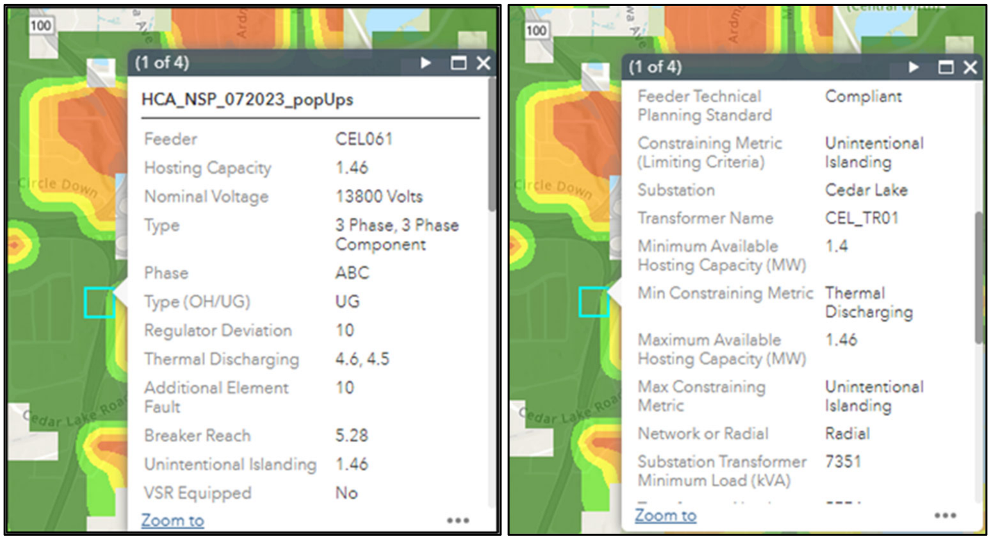

Medicine Lake
Peninsula Road
Medicine Lake
BASSETT CREEK
Mendelssohn Ave N
Ensign
Xylon
Duluth St
Julianne Ter
Penn
W
Plymouth Ave N
MEDICINE
Winnetka Ave N
Kilmer Lane North
10th Avenue North
10th Ave N
10th Ave N
Frontage Road
6th Avenue North
Golden
General Mills

Figure 2 – View of the Heat Map Pop-up Data



HCA_NSP_072023_popUps

Feeder	CEL061
Hosting Capacity	1.46
Nominal Voltage	13800 Volts
Type	3 Phase, 3 Phase Component
Phase	ABC
Type (OH/UG)	UG
Regulator Deviation	10
Thermal Discharging	4.6, 4.5
Additional Element Fault	10
Breaker Reach	5.28
Unintentional Islanding	1.46
VSR Equipped	No

Feeder Technical Planning Standard	Compliant
Constraining Metric (Limiting Criteria)	Unintentional Islanding
Substation	Cedar Lake
Transformer Name	CEL_TR01
Minimum Available Hosting Capacity (MW)	1.4
Min Constraining Metric	Thermal Discharging
Maximum Available Hosting Capacity (MW)	1.46
Max Constraining Metric	Unintentional Islanding
Network or Radial	Radial
Substation Transformer Minimum Load (kVA)	7351

D. Results for Load-HCA

This November 2023 HCA filing represents the second time that the Company has performed a Load-HCA. The analysis was conducted on the same feeder set that was used for the Gen-HCA. Models, which were created for the Gen-HCA during the 2022-2023 hosting capacity reporting cycle, were also utilized to perform the Load-HCA. Table 4 provides a summary of the Load-HCA results.

Table 4 – Load-HCA 2023 Results Summary

Item	Nov 2022	Nov 2023
Data cutoff date	7/31/2022	7/31/2023
Number of feeders included in the analysis	1,052	1,052
Percent of feeders updated	100%	100%
Feeders with zero maximum hosting capacity	178	182

The Load-HCA was performed on 1,052 of the 1,053 feeders that were modeled for the Gen-HCA due to a complication with CHE065, which will be included in a possible future update. The number of feeders with zero maximum hosting capacity is 182; with 67 feeders limited by the Native Capacity Utilization, 70 feeders limited by Primary Under-Voltage, and 43 feeders limited by Thermal Charging. We note that feeders limited by the Native Capacity Utilization metric would be already at 100 percent of their thermal rating and are currently unable to accept new load without a required project.

Table 5 provides a summary of how many feeders are limited by each constraining metric for minimum and maximum hosting capacity values.

Table 5 – Number of Feeders Limited by Each Metric for Min and Max Hosting Capacity (Load)

Constraining Metric	# Feeders Min HC	# Feeders Max HC
Primary Under-Voltage	104	80
Primary Voltage Deviation	0	0
Regulator Voltage Deviation	2	1
Thermal Charging	865	662
Native Capacity Utilization	104	80

Additionally, all feeders are subject to the separate NLS metric and are provided to inform developers of when projects should be expected; there are 67 feeders listed as "Exceeded," 302 listed as "Over-Utilized," and 683 as "Compliant." Depending on the size of interconnection, projects may still be required, this is to provide an early indication prior to knowing the requested installation size.

For the Load-HCA, we provide only the tabular results – Feeder Summary Results in Attachment D. These are also available at our website https://mn.my.xcelenergy.com/s/renewable/developers/interconnection, under *Before Interconnecting*. The Company chooses not to publish the Feeder Nodal Results or a heat map for the Load-HCA due to grid security and customer privacy, confidentiality, and security concerns and because there is no requirement to include these as part of a Load-HCA. We believe the map and nodal results would provide a much clearer picture of loading conditions and system vulnerabilities than the respective data sets for the Gen-HCA. We discuss grid security and customer security and confidentiality concerns in more detail below.

II. GRID SECURITY AND CUSTOMER SECURITY AND CONFIDENTIALITY CONSIDERATIONS

Given the ongoing proceeding in the Grid Security Docket (Docket No. E999/CI-20-800), as well as continued heightened geopolitical risks and an increase in domestic threats to critical infrastructure (CI), we have not made any changes to our approach with respect to grid security or customer security and confidentiality concerns in the November 2023 HCA. We continue to treat highly sensitive information as not-public.

The global and national security landscape has remained escalated since we submitted our previous annual HCA report in November 2022. Our Comments and Reply Comments filed in the Grid Security Docket on October 18, 2022, and November 17, 2022, respectively, discuss the physical and cyber risks related to our nation's distribution infrastructure from Russia, China, and other foreign adversaries, who are motivated to seek and steal protected grid data. In these filings, the Company also reiterated our commitment to solar development in Minnesota, as demonstrated by the disproportionate amount of cumulative installed solar capacity and DER interconnections when compared to other Minnesota utilities.

Closer to home, there have been increases in physical attacks on CI, including attacks in North Carolina, Oregon, and Washington state, which left hundreds of thousands of people without power in the middle of winter and required high monetary costs to rectify. These kinds of attacks are an increasing threat, and rose 77 percent in 2022, according to the U.S. Department of Energy (DOE). The main perpetrators of these kinds of attacks are Domestic Violent Extremists (DVEs), who want to disrupt and dismantle modern society, and see the energy system as a lynchpin. If certain types of data, such as unblurred heat maps, were available either publicly or in a portal, these bad actors could look to exploit these resources to help design their attacks.

As we have explained in past filings, we take our responsibility to protect the data we maintain to provide our customers with reliable and safe service very seriously, which is why we are discerning about the information we release publicly or to third parties. Considering the increase in threats from foreign and domestic bad actors~~,~~ it is imperative that third parties only be granted access to sensitive data after demonstrating that their use of the data will be in the public interest. Additionally, as we have pointed out in the past with respect to data or information, once released by the utility, the Commission will have no jurisdiction over third parties and the utilities lose any ability to control the use, sale, or other dissemination of this information. We maintain that it is necessary to avoid revealing details that would provide bad actors, such as foreign adversaries or DVEs, with the information needed to plan an attack for maximum impact (e.g., peak load, equipment capacities, number of customers, how critical infrastructure is connected to the grid, unblurred heat maps, etc.), and it is necessary to avoid providing bad actors with a roadmap on how to use certain information to carry out an attack or where to focus on attack.

Increased security threats have spurred action and responses at both the state and federal level to protect the nation's power grid. Several agencies and organizations have initiated proceedings to address these escalated geopolitical changes. While this work is still ongoing on several fronts, the main takeaway is that the distribution grid is no longer viewed solely as a state issue, but part of national critical infrastructure under the auspice of federal organizations. In our November 2022 HCA Program Report we provided a list of various state and federal initiatives aimed at examining and increasing the security of the nation's electric grid. We have updated that list with progress that has been made on certain initiatives and new activities:

1. The Minnesota Public Utilities Commission's forthcoming cybersecurity guidance to utilities about the potential requirement to annually certify self-assessment completion and compliance with core cybersecurity best practices, as directed under Governor Walz's Executive Order 22-20 (EO 22-20).
2. The National Renewable Energy Laboratory (NREL)'s report to Congress (as required by the Infrastructure Investment and Jobs Act (IIJA)) on how to protect the distribution system from cyber threats.
3. The DOE and the National Association of Regulatory Utility Commissioners (NARUC)'s forthcoming guidance on how state commissions can balance distribution system security and distributed energy resource integration, which is expected to be made public in November 2023.
4. The U.S. Department of Homeland Security (DHS)'s Transportation Security Administration (TSA)'s Security Directives that are meant to mitigate the ongoing cybersecurity threat to pipeline systems, which is applicable to Xcel Energy's system and was renewed and revised on July 27, 2023. It is effective until July 27, 2024.
5. DHS's Cybersecurity & Infrastructure Security Agency's (CISA) sector-specific cybersecurity baseline performance goals, which could serve as a model that states can adopt to develop mandatory cybersecurity requirements.

6. Potential federal legislation establishing uniform baseline cybersecurity standards at the distribution-level, which reflects a policy priority of the White House's National Security Council (NSC).
7. Based on the DHS performance goals mentioned in point number 5, the DOE is currently working on sector specific performance goals. These are expected by the end of 2023. DOE and NARUC are developing distribution system cyber security baselines that public utilities commissions could use to regulate distribution systems. These are also expected by the end of 2023.
8. The U.S. Government Accountability Office (GAO) Report to Congressional Addressees, publicly published October 5, 2023. Found that the nation's 16 CI sectors – including the electric sector – rely on electronic systems to provide essential services. The report states that federal entities have key roles in helping protect these sectors, and that there is an urgent need for them to cooperate with CI owners and operators on cyber threat information sharing efforts that will help address increasingly frequent and sophisticated cyber threats.
9. The National Association of State Energy Officials (NASEO) and NARUC released User Guide for CATSS[16] Tools. This guide provides State Energy Offices and public utility commissions with actionable information on cybersecurity for solar power and supports state cybersecurity enhancements for solar and other distributed energy resources.
10. The NERC Reliability and Security Technical Committee (RTSC) approved the *White Paper: Privacy and Security Impacts of DER and DER Aggregators* in September 2023. The paper explores the technical aspects of security controls that are available for DERs and DER aggregators and an overview of the security posture of the distribution landscape. Additionally, the paper addresses privacy concerns related to the confidentiality of user data for DER owners, as this information could be targeted by malicious actors.

The Commission's June 7, 2023, ORDER ESTABLISHING WORK GROUP in the Grid Security Docket concluded that additional record development was necessary to gain perspective from grid- and cyber-security experts and other important stakeholders, such as local and national authorities charged with protecting CI, customer representatives, consumer advocates, law enforcement, and other relevant security stakeholders. Accordingly, the Commission established a Work Group to have more information to adequately balance disclosure risks with the benefits of increased data access. The Commission anticipates that it will consider the additional record and comments within 18 months from the June 7, 2023, Order.

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[16] The Cybersecurity Advisory Team for State Solar (CATSS) is a project implemented by NASEO and NARUC to mitigate cybersecurity risks and consequences in solar energy developments.

A. Excluded Feeders

Attachment E to our 2020 HCA Report included a detailed discussion, evaluation, and justification for each grid and customer privacy and security concern, including customer energy usage data. We also provided a description and basis for withholding any information, as directed by the Commission's July 2020 Order. We have not made any changes to our approach with respect to grid security and customer security and confidentiality concerns in the November 2023 HCA.

In the November 2023 HCA we have continued to: (1) remove certain feeders from the heat map to protect critical infrastructure, (2) protect customer confidentiality and security by applying the 15/15 standard, (3) treat the peak substation transformer load and peak feeder load data as non-public in the tabular results, and (4) blur exact feeder lines in the Gen-HCA heat map. We briefly discuss each of these security and confidentiality concerns in turn below. More detailed descriptions and discussion are available in Attachment E of our 2020 HCA Report, which we incorporate here by reference.[17]

Certain feeders are not shown on the heat map to align with protecting Critical Infrastructure Sectors (CIS) as identified by the DHS. CISA, part of the DHS structure, has identified 16 CIS whose assets, systems, and networks are considered vital to the United States.[18] Showing this information on the heat map would make it easier to identify actual customer points of interconnection and create further CIS concerns. We have excluded those feeders from the heat map that have critical infrastructure, including critical energy infrastructure, hospitals, data centers, and public gathering centers on them. We note, however, that the data for these feeders is available in the publicized tabular results (except for peak load information).

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[17] See, https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId={10578B75-0000-C012-9162-10967BD5AFEB}&documentTitle=202011-167961-01.

[18] These sectors are: Chemical, Commercial Facilities, Communications, Critical Manufacturing, Dams, Defense Industrial Base, Emergency Services, Energy, Financial Services, Food and Agriculture, Government Facilities, Healthcare and Public Health, Information Technology, Nuclear Reactors Materials and Waste, Transportation Systems, and Water and Wastewater Systems. See https://www.cisa.gov/critical-infrastructure-sectors.

Like prior hosting capacity reports, we excluded feeders serving fewer than 15 premises – which is the same threshold we apply to requests for aggregated Customer Energy Usage Data (CEUD) – as feeders with such low density may provide insights into those customer locations or energy usage which could compromise customer confidentiality and/or customer energy security. We also identified feeders where the load of one customer was 15 percent or more than the total load on a feeder, again, with the rationale that public disclosure of these feeders could compromise customer confidentiality and security.[19] Feeders that fell under this 15/15 aggregation standard were excluded from the heat map, but were included in the publicized tabular results.

The Feeder Summary Results in tabular format do not publicly provide the peak substation transformer load or peak feeder load data, and this data is also excluded from the heat map. We have consistently protected peak load information as non-public for both customer privacy and grid and customer security reasons. Publicly displaying peak load or maximum capacity information for our system components would allow potential bad actors to target our facilities for maximum impact and disruption. Therefore, we provide this information in a non-public version of the tabular results, consistent with our prior approach.

Consistent with our prior Hosting Capacity Heat Maps, for the public Gen-HCA heat map we have excluded 115 feeders out of the total 1,053 feeders[20] included in the November 2023 HCA, applying the security and privacy considerations discussed above; however, we provide data for these feeders in the tabular results. The tabular results provide no indication of which feeders fall under CIS categories or which are subject to privacy concerns.

B. Heat Maps

Consistent with our prior reports, we are providing a heat map with blurred feeder lines for the Gen-HCA. The Company is continuing this practice because an unblurred map would clearly lay out the electrical connectivity configuration of the electric distribution systems by providing the locations of Company's major load centers and the facilities servicing those load centers. This unrestricted dissemination of information would render the grid unnecessarily vulnerable. The increased threat of cyber and physical attacks from foreign adversaries and DVEs should be mitigated by not publicly displaying the exact feeder line locations in the HCA map throughout our service territory.

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[19] The 15/15 standard is discussed in more detail in *In the Matter of a Commission Inquiry into Privacy Policies of Rate-Regulated Energy Utilities* (Docket No. E, G999/CI-12-1344). Consistent with the Commission's January 19, 2017 Order in that docket, the Company filed its aggregation and release policies on February 10, 2017 and further explained the 15/15 standard in that filing.

[20] Excludes network feeders.

For similar security reasons, the Company is not publishing a heat map for the Load-HCA with this filing, as we believe it would be inappropriate to do so until a decision has been reached in the Grid Security Docket. Additionally, a heat map is not a requirement for a Load-HCA. We believe this is an appropriate course of action, as the Load-HCA heat map – while like the one for Gen-HCA – provides a much clearer picture of loading conditions and system vulnerabilities, and therefore presents an unwarranted security risk. For similar reasons, we are also not publishing the Feeder Nodal Results for Load-HCA.

III. STAKEHOLDER ENGAGEMENT

For several years, the Company has engaged with stakeholders who are interested in either monitoring the development of, or informing interconnections with, the results from the Hosting Capacity Program. In 2019 and 2020, the Company organized a series of stakeholder workshops to discuss the methodology, process steps, assumptions, and constraining metrics for generation HCA. The stakeholders provided myriad helpful suggestions regarding the HCA process and the presentation of results, many of which have been incorporated into the Hosting Capacity Program. These improvements over the past four years include the following:

- Quarterly update cadence,
- Set criteria for updating feeder models,
- Nodal tabular results by feeder segment (Feeder Nodal Results),
- Adding a unique identifier for each feeder segment,
- Pop-up feature on the heat map,
- Notes field on the tabular results,
- All constraining metric violations listed on tabular results and heat map,
- Listing the data cutoff date (most recent date when the data was updated),

- New data in results (e.g., transformer name, feeder and transformer minimum loading, presence of Load Tap Changer, network or radial feeder),
- Lowering the DER generation threshold that triggers a feeder model update from 500 kW to 100 kW,
- Noting if voltage supervisory reclosing (VSR) is installed,
- Noting if the actual Daytime Minimum Load (DML) value is used,
- Noting if the feeder or substation is constrained,
- Noting if the substation is owned by another utility than Xcel Energy.

In 2022, the Company held additional stakeholder workshops on potential future Gen-HCA use cases, as well as a workshop series on Load-HCA. In 2023, we hosted three stakeholder workshops, which we detail below: the HCA Best Practices/Application Tutorial Workshop, the Load-HCA Workshop, and the Fast Track Supplemental Review Screen Benefits Workshop.

A. HCA Best Practices/Application Tutorial Workshop

Through the course of the Potential Gen-HCA Futures workshop series we offered in 2022, as well as comments submitted in the Grid Security Docket regarding the usefulness of the HCA, it became apparent that some stakeholders lacked knowledge about what tools we offer to assist the interconnection process and how to use them. Therefore, in our November 1, 2022, HCA Program Report we committed to hosting a workshop that would focus on best practices for utilizing the HCA results and how to use other information and tools the Company provides.

On Friday, January 20, 2023, the Company hosted a workshop to share information with developers about the tools and resources that are available to assist with the interconnection process. The purpose of the workshop was to raise awareness of the tools and data the Company provides for interconnections and educate developers and other users about effectively using these tools and data. The workshop covered the evolution of the HCA, interconnection tools and resources and how and when to use them, and a walk-through of each tool process. Participants also had ample opportunity to ask questions about the tools and interconnection process.

The tools and processes covered in this workshop included the Hosting Capacity Map, Monthly DER Queue Report, the Pre-Application Data Process, the Initial Review Screen, Supplemental Review Screens, and the Interconnection Study Process. We emphasized that each of these tools and processes are a single part of the overall interconnection process, and best practice for developers seeking interconnection is to consult the Hosting Capacity Map and the Monthly DER Queue Report to glean insight into what capacity and wait-times might be like before proceeding with the Pre-Application Data Report. This is important because the Hosting Capacity Map is a snapshot in time and many feeders are constrained or have reached their DER hosting capacity (often due to the large number of community solar gardens that have interconnected to the system). Utilizing these resources will help speed up the interconnection process.

During this workshop, the Company committed to answering questions posed by participants that needed input from Subject Matter Experts who were not able to participate in the workshop by making a filing in the docket. These questions and our answers to them were included as an attachment to our March 7, 2023, Letter in Docket No. E002/M-22-574, also announcing that a recording of the workshop was available on the Company's website and on YouTube at https://www.youtube.com/watch?v=OFDuZLGBGjk.

B. Load-HCA Workshop

On June 22, 2022, and July 26, 2022, the Company held workshops to discuss the Load-HCA. The purpose of this workshop series was to introduce and describe the methodology the Company was planning to use for the Load-HCA. The definition, process, assumptions, and DRIVE metrics for the Load-HCA were presented and compared to the Gen-HCA. The Company engaged stakeholders to solicit input on the Load-HCA, especially regarding the different use cases. The Company also provided an explanation about what the Gen-HCA and Load-HCA results indicate and how the results should be used.

In our November 1, 2022, HCA Program Report, the Company committed to host a third Load-HCA workshop to review the process, our results, and what we learned with stakeholders. We hosted this workshop on September 7, 2023. We presented the Load-HCA tabular results and shared best practices for utilizing them in conjunction with the Gen-HCA results and other valuable interconnection tools and resources. Participants also had ample time to ask questions.

A recording of this workshop has been uploaded to YouTube and can be accessed at the following link: https://youtu.be/DL9ydsya150?si=CRFoSLH9QbfKLZV8.

C. Fast Track Supplemental Review Screen Benefits Workshop

Order Point 4 of the Commission's September 2023 Order directed the Company to provide a more robust CBA for the FTSRS use case, and indicated that the analysis should include potential benefits to developers derived from consultations with external stakeholders. Additionally, we were also asked by the Commission to devise a way where the users of the FTSRS would pay for its development. On October 2, 2023, the Company hosted an FTSRS use case workshop. The intent of the workshop was to discuss the potential benefits of the FTSRS use case and to obtain input from potential uses on how they would value those benefits for use in a CBA. We invited individuals who were subscribed to our interested parties list, ensuring that critical participants were included in that distribution. We also consulted with MnSEIA prior to the workshop to maximize stakeholder participation.

The workshop provided participants with a brief overview of the FTSRS use case and the Company's plan for implementing a user-pays recovery plan, providing several opportunities for participants to ask questions and offer input. We then used Microsoft Teams polling features to ask participants questions in an effort to obtain information about their willingness to pay and perceived monetary value of the FTSRS use case to developers. The questions had also been sent to all registered participants a week prior to the workshop so they could come prepared with responses. Additionally, as some registrants did not make the workshop, and since many workshop participants did not respond to the polling questions, we sent a survey to all registered participants after the workshop to give them an opportunity to have their opinions considered in the CBA. This additional survey was open for one week.

Five workshop participants responded to at least one of the poll questions during the workshop. Zero additional responses were obtained from the distribution of the survey, post-workshop. This level of participation suggests there is not much interest on behalf of developers in the FTSRS use case. Due to the timing of the September 2023 Order and the workshop, we will be submitting the CBA as a supplement to this November 1, 2023, filing. However, we provide preliminary results in Section V.B of this filing.

A recording of the workshop – which includes the questions we asked participants – can be found online at the following link:
https://www.youtube.com/watch?v=FSduIKD5diw.

IV. HOSTING CAPACITY PROGRAM COSTS

As required by Ordering Point 6.a of the September 2023 Order, we provide the historic costs and the future estimated costs for the Hosting Capacity Program below. The historic costs include estimated internal expenditures as well as actual external consulting costs. We note that while the Commission has requested that we provide all actual historical expenditures, we do not have internal cost centers specifically for the hosting capacity-related work, and as such we can only estimate the internal labor used to conduct the HCA.

A. Historic Costs

As we are not currently collecting the actual internal labor costs associated with the Hosting Capacity Program, we have provided all known actual expenses (such as the acquisition of DRIVE) and actual external consultant costs where possible, and estimated those costs for which we do not have the known actual cost.

Table 6 – Estimated Historic Spend on the Hosting Capacity Program Since Inception

Year	Internal Labor	External Labor	Support (Regulatory and Legal)	Other Expenses	Total
2016	$ 146,000	$ 0	$ 44,000	$ 260,000	$ 450,000
2017	$ 150,000	$ 0	$ 39,000	$ 10,000	$ 199,000
2018	$ 150,000	$ 0	$ 39,000	$ 60,000	$ 249,000
2019	$ 150,000	$ 0	$ 44,000	$ 10,000	$ 204,000
2020	$ 150,000	$ 0	$ 54,000	$ 10,000	$ 214,000
2021	$ 125,000	$ 50,000	$ 39,000	$ 10,000	$ 224,000
2022	$ 179,000	$ 105,000	$ 60,000	$ 10,000	$ 354,000
2023	$ 183,000	$ 97,000	$ 49,000	$ 10,000	$ 339,000

Labor rates used to calculate costs were based on the specific job category of those individuals who currently work on the Hosting Capacity Program, including Engineering, Consultant Engineering, Legal, and Regulatory.

The costs in the above table were calculated as follows:

- **Internal Labor:** this includes the estimated costs associated with one Engineer and one Geospatial Specialist to process the results and generate the Gen-HCA heat map.
- **External Labor:** this includes the actual costs attributed to our consulting engineer firm assisting with the HCA, which we began utilizing for HCA in 2021.
- **Support:** this includes the known or estimated amount of time spent by the Company's Regulatory, Legal, and Engineering staff for hosting stakeholder workshops, responding to information requests, preparing quarterly updates, and preparing annual filings and the associated hearings.
- **Other Expenses:** this includes actual expenses for acquiring DRIVE (one time in 2016) and the cost to participate in EPRI's User Group dedicated to improving DRIVE (annual). There was also an additional cost in 2018 to perform a separate study, required by the Commission, for investigating feeders with zero available hosting capacity.

B. Future Costs

This section provides the estimated future costs for the quarterly HCA process for 2024 and the future estimated HCA costs of the monthly updates process, which we expect to start implementing in 2025.

Table 7 – Estimated Future Spend on the Hosting Capacity Program (Quarterly Updates Only)

Year	Internal Labor	External Labor	Support (Regulatory and Legal)	Other Expenses	Total
2024	$ 141,000	$ 102,000	$ 44,000	$ 10,000	$ 297,000

Table 7 above shows the estimated future spend in 2024 for the current quarterly process.

The goal for monthly updates, which should be implemented in 2025, is to provide updates for 100 percent of our feeders each month. Table 8 below shows the estimated future costs for the monthly HCA update cadence. We are only showing internal labor as it is our goal to bring processing monthly updates in-house. If there are any changes to this plan, we will note that in subsequent HCA reports.

Table 8 – Estimated Future Spend on the Hosting Capacity Program (Monthly Updates)[21]

Year	Internal Labor	Support (Regulatory and Legal)	Other Expenses[22]	Total[23]
2025	$ 861,000	$ 44,000	$ 10,000	$ 915,000
2026	$ 861,000	$ 44,000	$ 10,000	$ 915,000
2027	$ 861,000	$ 44,000	$ 10,000	$ 915,000
2028	$ 861,000	$ 44,000	$ 10,000	$ 915,000

The difference between Table 7 and Table 8 is that the quarterly process would update all 1,053 feeders at least once each year, while the monthly process would update all 1,053 feeders every month (a total of 12,660 feeder updates, one update per feeder per month). Monthly updates would require nearly 10,000 hours of engineering and geospatial labor annually versus the current 4,300 hours under the quarterly process but would provide more frequent system-wide updates for users of the HCA, and therefore a more up-to-date snapshot in time of the available hosting capacity on our system.

Additional information regarding our cost recovery of the incremental costs associated with Hosting Capacity can be found in the Company's upcoming Transmission Cost Recovery.

V. FUTURE HCA USE CASES DEVELOPMENT ROADMAP

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[21] Dollar amounts do not reflect inflation.

[22] See explanation of what is included in Other Expenses in Section IV.A.

[23] Dollar amounts do reflect both the Gen-HCA and the Load-HCA, provided that the Commission require further Load-HCA updates. If the Load-HCA is not a requirement, then $210,000 can be removed from each annual Total in Table 7.

The Company's objective for the HCA has traditionally aligned with Minn. Stat. § 216B.2425, subd. 8 and past Commission Orders, which stated that the HCA serve as a "starting point" for interconnection applications.[24] In its July 2020 Order, the Commission directed the Company to examine several potential future use cases for the HCA, including the monthly update frequency we have mentioned and ways to integrate the HCA with the MN DIP. We discussed these future use cases as part of our 2020 HCA Report, where we outlined a potential path to achieve monthly updates and use HCA information in certain parts of MN DIP, as well as the investments that would be necessary for the Company to go in that direction. The Commission's November 2021 Order directed the Company to continue the development of future use cases. The Commission's September 2023 Order directed the Company to "pursue implementation of the Monthly Updates use case" and to conduct further cost-benefit analysis for the FTSRS use case in coordination with stakeholders.

As described in our 2022 Hosting Capacity Program Report, we have already begun working on the necessary steps to achieve the Monthly Updates use case which requires the Foundational Improvements that were also discussed in our 2022 report. We have also completed a modeling software Request for Proposals (RFP) and have decided on a move away from DNV's Synergi Electric tool over to Eaton's CYME modeling tools. We provide more information about this RFP in our forthcoming TCR Rider Petition. Implementation of the Foundational Improvements and the new software is scheduled to occur in 2024. Based on the schedule for these Foundational Improvements, which must be complete before monthly updates can begin, we currently expect to begin conducting monthly HCA updates in 2025.

Below, we provide updates on the implementation timeline for the Foundational Improvements, the Monthly Updates, a preview of the FTSRS use case CBA, and an update on the re-evaluation of HCA modeling software. We also include a discussion of a conceptual potential evolution of the HCA.

A. Updated Foundational Improvements and Monthly Updates Timeline

As we stated in our 2022 HCA filing, implementing any of the future HCA use cases requires the same Foundational Improvements to the tools and systems that are used to produce the HCA. The Company is in the process of implementing these Foundational Improvements, and are on track to have them completed by late 2024, as indicated in the updated timeline below. We note that even though we are changing our primary modeling tool we can implement each of the Foundational Improvements as part of the CYME implementation process in coordination with Eaton.

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[24] Docket No. E002/M-15-962, *In the Matter of Xcel Energy's 2015 Biennial Distribution-Grid-Modernization Report*, Order Setting Additional Requirements for Xcel's 2017 Hosting Capacity Report, August 1, 2017, Order Point 1.

The Company is also pursuing implementation of the Monthly Updates use case, as directed in the Commission's September 2023 Order.

As with the Foundational Improvements, the Company is also pursuing this use case in our Colorado service territory, as recently required by the Colorado Public Utilities Commission.

Below is the updated implementation timeline for the Foundational Improvements and Monthly Updates, which includes steps for developing a data validation plan. The Company still intends to begin working towards implementing the Monthly Updates in 2025, and has set up the implementation of the Foundational Improvements accordingly. However, as the Foundational Improvements are a prerequisite for the implementation of the Monthly Updates, the timing of the Monthly Updates implementation will depend on the successful completion of the Foundational Improvements. We will have a better understanding of the Monthly Updates timeline when the Foundational Improvements are in place. Based on our current expectations for implementing the Foundational Improvements and Monthly Updates, we will solicit feedback from stakeholders on our data validation plan for HCA results in mid to late 2024. We plan to present our proposal in the 2024 Hosting Capacity Program Report, with the first reporting of the data validation occurring in our 2025 Hosting Capacity Program Report. As a determination on the FTSRS use case has not yet been made, we have removed the FTSRS use case from the Implementation Timeline below. However, we note that the estimated time to implement the FTSRS use case would be about a year from project initiation.

Late 2023

- Continue design and implementation of Eaton's Cyme modeling tool.
- Continue Foundational Improvement design around new modeling tool.

Mid 2024

- Begin hiring additional support staff necessary for Feeder Model Database to allow adequate training time
- Begin hiring additional support staff to support Monthly HCA updates

Mid to Late 2024

- Test Foundational Improvements and Cyme implementation
- Host Stakeholder Workshops on Data Validation and Monthly Update plans

Late 2024

- Report on development progress and any potential delays to Commission
- Report on proposed Data Validation and Monthly Update plans as part of our 2024 Hosting Capacity report

2025

- Begin Working Towards Monthly Updates
- Report on Data Validation and Monthly Update results in annual report.

B. FTSRS Use Case

As discussed in Section III.C. above, Order Point 4 of the Commission's September 2023 Order directed the Company to "provide a more robust cost-benefit analysis for the FTSRS use case," and that "this analysis should include benefits to developers derived from consultations with external stakeholders and whether Xcel could gain monetary savings by using internal labor to conduct the FTSRS." Due to the timing of the September 2023 Order, the CBA is not included in this November 1, 2023, filing, but we will be submitting it to the docket when it is ready. However, we offer preliminary results from our stakeholder engagement efforts.

As noted in Section III.C, during and after our workshop to discuss and obtain input on the benefits of the FTSRS to developers, we conducted a survey designed to collect information about developers' willingness to pay and their perceived monetary value of the FTSRS use case. The questions can be found below.

1. *How many DER applications, on average, does your organization submit on an annual basis to Xcel Energy in MN? (this information will remain publicly anonymous)*
2. *Of those DER applications submitted, how many go through the supplemental review screen? (this information will remain publicly anonymous)*
3. *How much more in application fees would your organization be willing to pay per application if results were achieved **10** business days faster (than the normal turnaround time of 30 business days)? Check the highest amount you would be willing to pay in addition to the standard application fee of $200.*
    - *$0 (total $200)*
    - *$50 (total $250)*
    - *$100 (total $300)*
    - *$250 (total $450)*
    - *$500 (total $700)*
    - *$1,000 (total $1,200)*
    - *$1,500 (total $1,700)*
4. *How much more in application fees would your organization be willing to pay per application if results were achieved **5** business days faster (than the normal turnaround time of 30 business days)? Check the highest amount you would be willing to pay in addition to the standard application fee of $200.*
    - *$0 (total $200)*
    - *$50 (total $250)*
    - *$100 (total $300)*
    - *$250 (total $450)*
    - *$500 (total $700)*
    - *$1,000 (total $1,200)*
    - *$1,500 (total $1,700)*
5. *What would the cost savings* **per application** *be to your organization if Xcel Energy completed the review process* ***10*** *business days faster? (this information will remain publicly anonymous)*

6. *What would the cost savings* ***per application*** *be to your organization if Xcel Energy completed the review process* ***5*** *business days faster? (this information will remain publicly anonymous)*

In total, five developers responded to the survey, and their anonymized answers are shown in Table 9 below. This level of participation suggests that most developers are not interested in the FTSRS use case. Additionally, five responses are not statistically significant, and the results show a large range in developers' perceived value and willingness to pay for up to 30 percent reduction in processing times; however, the Company will still consider them in our CBA, which will be filed in this docket as soon as it is available.

Table 9 – FTSRS Developer Survey Responses

Question	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Respondent No. 1	30	3	$50 (total $250)	$100 (total $300)	x	x
Respondent No. 2	150	15	$0 (total $200)	$0 (total $200)	x	I don't know how to monetize these changes.
Respondent No. 3	50	10	$250 (total $450)	$100 (total $300)	x	x
Respondent No. 4	12	1	$250 (total $450)	$100 (total $300)	250	100
Respondent No. 5	x	x	x	$0 (total $200)	x	x

1. *Proposed Cost Recovery Plan for FTSRS Use Case*

As was discussed during the 2023 Commission Hearing, we are providing a plan for FTSRS use case cost recovery that does not come from the larger rate base. As the beneficiaries of the FTSRS use case are the applicants for MN DIP related interconnections, this proposal would shift the costs to those same applicants.

First, we considered the $1.42 million cost of the FTSRS use case and compared several return-periods in Table 10, based on the total number of applications subject to Supplemental Review Screens in the time from October 2021 through September 2022 (1,068), as described in our 2022 Hosting Capacity Program Summary.

Table 10 – Additional Cost per Application by Return Period

Return Period	Additional Cost per Application
3 Years	$443.20
4 Years	$332.40
5 Years	$265.92
6 Years	$221.60
7 Years	$189.94
8 Years	$166.20
9 Years	$147.73

These initial numbers do not include the current $200.00 fee associated with the supplemental review screen that would remain to cover labor expenses. These numbers were used in the survey that we gave workshop attendees.

Second, we considered an appropriate recovery period, and determined that this would be between five to seven years, based on typical software depreciation. This means that developers would need to pay an additional fee between $189.94 and $265.92 per supplemental review. The Company is exploring if the FTSRS use case would be applicable and useable in other jurisdictions, which could help to bring down the cost per application. More information about this will be provided in our final CBA. Additionally, we will include an analysis on whether the Company could gain monetary savings by using internal labor to conduct the FTSRS use case instead of contract labor.

C. Dynamic Hosting Capacity

HCA is one of several valuable resources available for guiding customer and DER developer interconnection decisions. However, the pace and needs of DER interconnections on the distribution system should also be considered in the future. We have already taken steps in this direction as we have been updating the HCA map on our website on a quarterly basis and are now in the process of moving to implement the Monthly Updates use case.

The next step in the HCA progression will be to explore how to potentially incorporate 8,760 time-series analysis in the HCA. The inclusion of 8,760 data could possibly provide insight into both hosting capacity constraints as well as how much of the year those constraints are present. The modeling functionality for performing 8,760 time series analysis in the HCA is still nascent and conceptual, but the work we are currently doing with Foundational Improvements and moving to Monthly Updates would support this effort.

Our long-term vision for the HCA is to move toward dynamic analysis, in which HCA updates for individual feeders are queued, processed, and results posted to the map on a near real-time basis when update triggers are indicated in our source systems. This will require continued improvement of input data, as well as significant improvement and automation of modeling processes. However, this aspirational goal would eliminate most process lag and ensure that the data shown on the hosting capacity map is as up to date as possible.

The Company would like to note that while we are exploring this potential progression of the hosting capacity program, we are not aware of any utility that has implemented or is pursuing or exploring real-time HCA updates, as the technologies to accomplish this are unknown. Therefore, we have no examples we can draw-upon for guidance on how to achieve this aspiration, nor do we have any indication of what it may cost in terms of time and money, even if real time updates do prove to be technically feasible. We will look into the feasibility of this use case and discuss this at a future stakeholder workshop.

CONCLUSION

The Company appreciates the opportunity to provide the Commission with this update on our HCA Program. The November 2023 HCA provides detailed information to assist in identifying available locations and constraints for DER interconnection and new load, while balancing the need to protect our grid's security and our customer's privacy and security from bad actors. We have provided an update on the implementation of the Monthly Update cadence and corresponding Foundational Improvements, which we are currently on track to implement in 2025.

We also previewed the forthcoming CBA on the FTSRS use case, which will incorporate the limited feedback received from developers, and provided a plan for how the beneficiaries of the FTSRS use case would pay for its implementation, rather than our customers. Finally, we provided a look at our aspirational, long-term conceptual vision for the HCA to keep it useful and relevant as technologies and demands evolve. We look forward to discussing the November 2023 HCA with the Commission and our stakeholders to further improve the usefulness of the HCA.

2023 HOSTING CAPACITY ANALYSIS REPORT

Xcel Energy
November 1, 2023

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INTRODUCTION

Xcel Energy (the Company) filed our first report on hosting capacity in December 2016, and has filed subsequent reports annually on November 1. Beginning in August 2021, the Company implemented a quarterly update cycle for the hosting capacity analysis (HCA). In 2021, Minnesota Public Utilities Commission (Commission) also directed the Company to provide a load HCA by November 2022,[1] which we first provided in 2022, and again provide as part of this 2023 filing. This document aims to explain the methodology that is used for both the generation (Gen-HCA) and load (Load-HCA) hosting capacity analyses, and how the methodology is implemented to produce the results shared in Section III. Additionally, the intended usage of each analysis and information on how to apply for interconnection are provided with each set of results.

The Company has made the following changes to the 2023 HCA methodology, including a DRIVE version update, an addition to the Technical Planning Standard (TPS) and the Native Loading Standard (NLS) constraining metrics, and a new criterion for updating the feeder models.

- **DRIVE[2] Version Upgrade:** The Electric Power Research Institute (EPRI) released an update to the DRIVE tool – version 4.2.0 – which the Company acquired in January 2023, and has used for the HCA since the February 2023, update. This version provides a simplified user interface view and minor efficiency improvements.
- **TPS Capacity Utilization (Gen-HCA):** This constraining metric accounts for the remaining capacity on a feeder based on the TPS and will reduce instances where the HCA map shows more capacity than is otherwise available. In other words, the available hosting capacity is shown only up to the remaining TPS value. Utilization of this metric began with the November 1, 2023, Gen-HCA update.
- **Native Capacity Utilization (Load-HCA):** This new constraining metric accounts for the remaining capacity on a feeder based on the rated capacity and

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[1] Docket No. E002/M-20-812, *In the Matter of Xcel Energy 2020 Hosting Capacity Report Under Minn. Stat. §216B.2425, Subd. 8*, ORDER ACCEPTING REPORT, REQUIRING STAKEHOLDER WORKSHOPS, AND SETTING ADDITIONAL REQUIREMENTS, November 9, 2021, Order Point 4.

[2] Distribution Resource Integration and Value Estimation (DRIVE) tool.

demand. If a DRIVE result shows more hosting capacity than is allowable via the rated capacity for a feeder, then the remaining available rated capacity is used as the hosting capacity value for the feeder. This ensures that there is no overstatement of available capacity for demand on a feeder.

- **Feeder NLS (Load-HCA):** Feeder NLS was previously used as an explicit constraining metric, meaning it was included with DRIVE results when determining the overall hosting capacity on a feeder. Feeder NLS will no longer show as a typical constraining metric, but rather as a separate column in the Load-HCA results, which will indicate to customers when an upgrade project may be required for interconnection on certain feeders. Native Capacity Utilization, discussed above, will now be used as a constraining metric alongside other constraining metrics assessed by DRIVE.
- **Feeder Capacity Rating:** Beginning with the February 2024 quarterly update, we will also update a feeder model if there has been a change in the feeder's normal rated capacity since the last quarterly HCA update.

Additionally, EPRI has changed its DRIVE tool terminology to use a term "constraining metric" instead of the previously used term "limiting criterion." We have made the corresponding change in this November 2023 filing to be consistent with EPRI terminology.

The November 2023 update provides refreshed results for 24 percent of our feeders. The number of feeders with zero maximum hosting capacity decreased from 130 to 114; this is a decrease of 16 feeders since August 2023. Additionally, 45 feeders have zero maximum hosting capacity when considering the Feeder TPS, which has not changed since the August 2023 update. The Gen-HCA results are based on the characteristics and topology of each distribution feeder at the time of the data cutoff date for each feeder, which was July 31, 2023, for the November 2023 quarterly update.

The Load-HCA was performed on 1,052 of the 1,053 feeders modeled for the Gen-HCA. The number of feeders with zero maximum hosting capacity is 182; with 67 feeders limited by the feeder Native Capacity Utilization, 70 limited by Primary Under-Voltage, and 43 limited by Thermal Charging. We note that feeders limited by the NLS criterion would be already at 100 percent of their thermal rating and are currently unable to accept new load. The data cutoff date for the Load-HCA was also July 31, 2023.

This document will provide a more detailed discussion of the results of the Gen-HCA and Load-HCA, as well as industry trends in hosting capacity, terms, and tools; the Company's methodology for conducting the analyses; and common mitigations to resolve the lack of available hosting capacity.

I. INDUSTRY TRENDS, DEFINING HOSTING CAPACITY, AND THE TOOLS USED

A. Industry Trends in Hosting Capacity

In recent years, the rapidly changing distribution system landscape has resulted in utilities experiencing an increase in applications for interconnecting DERs. This increasing number, as well as the growing complexity of DER interconnection applications, is leading utilities to examine the sustainability of existing practices. Until recently, it has been a mostly manual effort to retrieve, verify, and analyze DER interconnection application data. Facing this new magnitude of DER interconnection applications, utilities are exploring opportunities to better manage their DER interconnection processes by leveraging new tools and technology, enabling procedural transparency, and recognizing evolving technical standards more fully. HCA is one tool in the industry-wide effort to streamline and expedite the interconnection process, particularly among those utilities that are experiencing a strong demand for DER. The rapidly changing distribution system landscape and increasing demand for DER has prompted utilities to respond to challenges such as grid information security concerns, developing DER markets, and hosting capacity for load.

Grid security has become a concern with hosting capacity as some utilities have employed website-based hosting capacity maps and pre-application reports – especially if they have higher saturation of DER on their systems, or if public policies require such tools. Additionally, utilities that provide hosting capacity information generally provide it at the feeder level, although current trends suggest some utilities are beginning to provide node-level maps with additional (pre-application) data available through the map, which adds more risk. As the Company discussed in the grid information security proceeding in Docket Nos. E002/M-19-685 and E999/CI-

20-800 (Grid Security Docket),[3] many of these utilities employ protective protocols such as requiring user registration or undergoing a Non-Disclosure Agreement (NDA) process to access detailed hosting capacity information. Given the ongoing proceeding in the Grid Security Docket, as well as continued heightened geopolitical risks and an increase in domestic threats to critical infrastructure (CI), we have not made any changes to our approach with respect to grid security or customer security and confidentiality concerns in the November 2023 HCA. We continue to treat some highly sensitive information as non-public.

Another challenge utilities are addressing is the development of DER markets. In states with developing DER markets, some utilities are including highlighted grid locations on the HCA maps where non-wires alternative (NWA) request for proposals have been issued, potential locations for adding electric vehicle (EV) charging stations, and indicators for "no go" areas or feeders where new projects are not feasible due to system limitations. Recently, hosting capacity for load has seen a growing interest, as grid-tied batteries and EV charging become more common. The Company performed its first load-HCA for the November 2022 update, and has performed another Load-HCA for the November 2023 update.

B. Hosting Capacity Definitions

As we mentioned previously, the November 2023 HCA report includes two separate analyses: an HCA for generation (Gen-HCA) and an HCA for load (Load-HCA). The Gen-HCA is the analysis the Company has performed since 2016. The Load-HCA is a newer analysis, which was directed by the Commission in its November 9, 2021, Order in Docket No. E002/M-20-812. Given the expansion and evolution of the hosting capacity program, we would like to take this opportunity to define the various terms and pieces that now compose the Company's HCA filing.

- **Hosting Capacity** is the amount of load or generation that can be accommodated on the existing system without adversely affecting power quality or reliability under existing control configurations and without requiring infrastructure upgrades.

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[3] Docket No. E002/M-19-685, *In the Matter of Xcel Energy's 2019 Hosting Capacity Analysis Report* and Docket No. E999/CI-20-800, *In the Matter of a Commission Investigation on Grid and Customer Security Issues Related to Public Display or Access to Electric Distribution Grid Data.*

- **Hosting Capacity Analysis (HCA)** is the process by which a utility can identify the amount of available hosting capacity on their distribution system at various locations with the intent of interconnecting new load or generation facilities. As mentioned above, the November 2023 HCA report includes two separate analyses: one for generation and one for load. While the methodology for both analyses are generally similar, they use different constraining metrics and calculate separate results.
- **Gen-HCA** refers to the analysis performed specifically for siting new generation-based DERs, such as photovoltaic (PV), wind, or batteries (discharging only).
- **Load-HCA** refers to the analysis performed specifically for siting new or additional load, such as a new or expanding customer load, batteries (charging only), or EV fast charging stations.

As a note, the Company's definition of DER continues to be aligned with IEEE 1547-2018 and the Minnesota Distributed Energy Resources Interconnection Process (MN DIP). DER is defined as:

> Sources and groups of sources of electric power that are not directly connected to a bulk electric system. DER includes both generators and energy storage technologies capable of exporting active power to an electric power system (EPS). An interconnection system or a supplemental DER device that is necessary for compliance with this standard is part of a DER.

C. Software for Creating Feeder Models

An HCA is performed by analyzing models of the electric distribution system. The Company currently uses DNV's (Det Norske Veritas) Synergi Electric modeling software to create feeder models.

Synergi offers a suite of features, including an HCA module. The Company previously investigated Synergi's HCA capabilities and determined that the functionality did not meet the same quality as EPRI's DRIVE software for HCA. We have continued to monitor Synergi's development of the HCA suite and, while it has improved, the Company still believes that DRIVE is the best tool available to us to conduct the HCA.

D. Distribution Resource Integration and Value Estimation (DRIVE)

DRIVE was developed by EPRI to automate and streamline the HCA process and has been used by the Company since we began performing the HCA in 2016. The DRIVE tool incorporates years of knowledge from HCAs conducted by EPRI to screen for voltage, thermal, and protection impacts from potential DER or load additions. As DRIVE has expanded its reach, industry and stakeholder collaboration has been beneficial in creating consistency with the DRIVE application and methodologies. EPRI's ongoing engagement with the DRIVE Users Group has resulted in DRIVE evolving to be more streamlined and produce more efficient, accurate results.

Recent versions of the DRIVE tool have seen the added capability to also analyze the load characteristics of newer forms of DER, including battery storage and EVs. These load hosting capacity results could be used to identify areas with greater potential for siting EV charging stations, new buildings that are heated electrically, or other loads associated with beneficial electrification.

Generally, there are four main methods to analyze hosting capacity in the industry today: Stochastic, Streamlined, Iterative, and Hybrid. EPRI has conducted several evaluations on the different hosting capacity methods, which all reached parallel conclusions. First, EPRI recognized that hosting capacity methods are continuously evolving and improving as new technologies become available. Second, EPRI found that all hosting capacity methods provide similar, accurate results. However, EPRI concluded that a Hybrid method – such as DRIVE – would be the most successful method moving forward.[4]

Table 1 below summarizes the four main hosting capacity methods. Exelon Corporation companies, such as Potomac Electric Power Company (Pepco) and Commonwealth Edison (ComEd), have used the Stochastic method while the California utilities have used both the Iterative and Streamlined methods.

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[4] *Impact Factors, Methods, and Considerations for Calculating and Applying Hosting Capacity.* January 31, 2018, pages xi-xii, 5-2. https://www.epri.com/#/pages/product/3002011009/?lang=en-US.

Table 1 – Four Main Methods to Analyze Hosting Capacity

Method	Industry Adoption	Recommended Use Case
Stochastic	Pepco, ComEd	+Enabling planning +Informing the public
Iterative	SCE, SDG&E	+Assisting with Interconnection +Informing the public
Streamlined	PG&E	+Enabling Planning +Informing the public
Hybrid - DRIVE	>27 utilities worldwide (including Xcel, NY)	+Enabling Planning +Assisting with Interconnection +Informing the public

As described in more detail below, the Company continues to believe that DRIVE is the right tool to conduct the HCA. As a hybrid method, DRIVE has several benefits, including speed of processing, accuracy of results, and multiple-use cases. Another advantage is the ability to participate in further tool development and modification. Additionally, DRIVE's continued growth in popularity has enhanced consistency in hosting capacity analyses across the industry.

The Company continues to use DRIVE's Centralized methodology, which assesses DER at specific locations along each feeder by adding incremental DER at each node to determine the amount of DER that specific location can accommodate before encountering constraining metric thresholds. The results of this nodal analysis are often rolled-up to sections that reflect a range of hosting capacity that can be accommodated between the nodal points that were studied. When an HCA uses the Centralized methodology, the results show location-specific hosting capacity values/amounts of DER that can be accommodated at each location (node or sub-feeder section).[5] The Centralized method was agreed to be the best choice by both the Company and stakeholders during the Company's June 2020 Workshop series.[6]

Use of the Centralized method affects the hosting capacity results by generally showing a larger maximum hosting capacity and smaller minimum hosting capacity than the Distributed method. The Centralized method considers all DER installations assuming interconnection on three-phase lines, which generally have more capacity and better align with the types of DER installations we experience on our system. The smaller minimum hosting capacity that results from this method is due to the concentration at specific locations, which has the tendency to affect the overvoltage and thermal violation thresholds a little more than distributing the load across the feeder. Consequently, that concentration also unmasks the potential to add more generation at ideal locations on the feeder (maximum hosting capacity).

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[5] DRIVE considers potential DER in increments of 100 kW on three-phase sections, which means that even if a feeder shows zero hosting capacity, the actual available hosting capacity may be something between zero and 100 kW. Therefore, additional small-scale DER may not be prohibitive.

[6] Xcel Energy, Renewable Developers Interconnection, Hosting Capacity Workshop Materials, https://mn.my.xcelenergy.com/s/renewable/developers/interconnection.

The Company used DRIVE v4.2.0 for the November 2023 HCA filing, we have used this version since the February 2023 HCA update.

II. NOVEMBER 2023 HCA METHODOLOGY

This section details the methodology used by the Company to perform the HCA for the November 2023 hosting capacity update. We will discuss the different steps of the HCA process as well as analysis settings, constraining metrics, and assumptions.

A. HCA Process Overview

As previously discussed, for this November 2023 HCA filing, the Company performed an analysis for generation and load – Gen-HCA and Load-HCA. Both versions have different schedules aligning around the November filing date, with the Gen-HCA filed annually and updated quarterly and the Load-HCA being filed annually.

The Gen-HCA full report is filed annually on the first business day of November, and we continue to conduct quarterly updates to provide more timely and relevant results for developers. Due to the intensive manual process for performing the HCA, more frequent updates are not possible with our current tools and resourcing. Quarterly Gen-HCA updates coincide with the first business day of February, May, August, and November, to align with the November 1 filing requirement specified by the Commission. Each quarterly update period has a cutoff date for updated data that is three months prior to each filing; for example, a February 1 update has a data cutoff of November 1. This means that the analysis uses the distribution system characteristics and data available as of November 1. This practice will continue for the 2023-2024 update cycle as we continue working on the Foundational

Improvements and implementation of the Monthly Update use case, which is expected to occur in 2025.

It is the Company's interpretation of the initial Order from November 9, 2021,[7] that the Commission required the Company to provide the Load-HCA only in the 2022 HCA. We have provided it again in this HCA. Unless the Commission requires the Company to provide the Load-HCA in future HCA filings, this will be the last iteration of the Load-HCA.

The Company's process for determining hosting capacity is summarized in the following steps for both the Gen-HCA and Load-HCA. These steps are 1) Determine Feeder Models to Update, 2) Develop Feeder Models, 3) Perform Analysis with DRIVE, 4) Compile and Review Results for Accuracy, and 5) Apply Additional Constraining Metrics.

1. Determine Feeder Models to Update

Currently, the HCA is an intensively manual process requiring significant engineering oversight. Due to the manual nature of this process, it is unrealistic to update each of the 1,053 feeders that are relevant to the HCA during each update cycle. To address this issue, a set of criteria was developed in coordination with stakeholders at the Company's June 2020 Workshop series to help prioritize which feeders are updated each cycle. We have since added additional feeder update criteria, and provide the complete criteria list below.

For the Gen-HCA, which is updated quarterly, the following criteria are used:

1) Change in aggregate load of 500 kVA or greater.
    a. Feeders are updated if there are identified load changes of 500 kVA or greater that are either in-service or expected to be in-service within one year of each analysis cycle's data cutoff date.
2) Change in aggregate DER generation of 100 kW or greater.

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[7] Docket No. E002/M-20-812, *In the Matter of Xcel Energy 2020 Hosting Capacity Report Under Minn. Stat. §216B.2425, Subd. 8*, ORDER ACCEPTING REPORT, REQUIRING STAKEHOLDER WORKSHOPS, AND SETTING ADDITIONAL REQUIREMENTS, November 9, 2021, Order Point 4.

    a. Feeders are updated if new DER installations amounting to 100 kW or greater on a feeder are approved and officially in-service as of each analysis cycle's data cutoff date.

3) Significant changes due to large capacity projects, feeder reconfigurations, load transfers, or similar changes.
    a. Feeders are updated if there are new projects that either affect the capacity or physical configuration of the feeder, identified to be in-service or expected to be in-service within the study window (between data cutoff and quarterly updates).
4) [New for 2024] Change in a feeder's normal capacity rating.
    a. Going forward, feeders will be updated when the normal rated capacity has been modified.
5) Each feeder updated at least once per annual reporting cycle.
    a. Feeders that do not meet selection criteria 1-4 above will be updated once for each 12-month period.

Currently, there is not a regular update cycle for the Load-HCA. Therefore, this report includes an analysis on all the same feeders as for the Gen-HCA. As stated above, unless the Commission Orders the Company to continue providing the Load-HCA, this will be the last iteration of the Load-HCA.

2. Develop Feeder Models

Feeder models are developed by importing extracted asset data from the Company's Geospatial Information System (GIS) into the Synergi Electric modeling software. At this point, a series of cleanup steps are performed, including specifying head-end voltages and source impedances, burial depths on underground cable, height of overhead conductor, and equipment settings for capacitors, reclosers, and regulators. The power factor and other relevant settings for each DER are also confirmed and corrected as necessary. The models contain only those DERs which have a signed interconnection agreement (IA) and are fully in-service by the data cutoff date for each analysis cycle. DERs that are in queue are not included in the analysis as the queue creates too much variability, because many projects enter and exit the queue during the analysis period. Instead, a monthly DER queue report is provided as a separate resource on the Company's website.[8]

Once the model accurately reflects the primary feeder configuration, each feeder's forecasted peak loading scenario is allocated to the model and a load-flow performed. After a load-flow analysis is performed, some "out of bounds" exceptions may exist and can include high or low voltages, overloads, model connection issues, etc. These exceptions are flagged for engineer investigation and correction.

If errors persist in any of the models, the engineers will work to find the source of the issue(s), including consulting other system maps and diagrams, performing visual inspections in the field, and communicating with Synergi's developer for assistance with any software issues.

3. *Perform Analysis with DRIVE*

Following successful model creation, the Synergi model must be converted to a format capable of being processed by DRIVE. EPRI includes this conversion package with the DRIVE software, known as DRIVE-MAI. During this conversion step, DRIVE confirms and records the load-flow provided by the peak loading scenario present in the Synergi model. DRIVE also performs a second load-flow for the daytime minimum loading (DML) scenario by using an off-peak scaling factor, which, when available, is the actual DML ratio based on telemetry data. In this November 2023 HCA update, actual DML ratio was used for 192 of the 252 feeders that were modeled. If the actual DML ratio is not available, the DML ratio used is an assumed 20 percent[9] of the forecasted peak demand as discussed further in-depth in Section II-B Assumptions. The conversion process can sometimes result in errors which are then flagged and corrected by an engineer.

Once the model has been successfully converted, it is analyzed by DRIVE with the various settings specific to each style of HCA: Load or Generation. DRIVE assesses each feeder model by adding an incremental amount of a future resource to each node in a model while checking against the selected constraining metric thresholds for violations to determine the amount of the future resource that specific location can accommodate. The future resource characteristics, analysis settings, and criteria thresholds used by the Company are detailed below. Table 2 provides the characteristics used for the future resources and Table 3 provides the analysis settings used in DRIVE.

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[8] https://mn.my.xcelenergy.com/s/renewable/developers/interconnection

[9] Internal reviews of real daytime minimum to peak load ratios indicate the 20% is appropriate and representative of our distribution system.

Table 2 – Future Resource Characteristics in DRIVE

Future Resource Characteristics	Gen-HCA	Load-HCA
Fault Current Magnitude	1.2 pu	0.1 pu
Output Change for Voltage Deviation	100%	100%
Output Change for Over/Under Voltage	100%	100%
Power Factor (Positive is inductive from resource's perspective)	0.95	–0.90
Volt-var Control	Off	Off
Grid Interface	Inverter	Machine
Location for Hosting Capacity Assessment	Full	Full
Distribution for Hosting Capacity Assessment	Non-Uniform	Non-Uniform

Table 3 – Analysis Settings Used in DRIVE

Analysis Settings	Gen-HCA	Load-HCA
Future Resource Minimum Penetration Increment	0.1 MW	0.1 MW
Future Resource Maximum Penetration Increment	1 MW	10 MW
Consider Existing DER Generation	Yes	No
Consider Existing DER Charging	No	Yes
Tap Regulators in Over/Under Voltage Analysis	Non-optimal	Non-optimal
Load Level(s)	Forecasted Peak and historic min	Forecasted Peak and historic min

The settings and values used in Tables 2 and 3 describe the future resource characteristics and how they are applied in the model. The 95 percent power factor used for the Gen-HCA was chosen with stakeholder input during the June 2020 Workshop series. The future resource maximum penetration increment is set to align with the Community Solar Garden (CSG) program's current limit of one MW per application for the Gen-HCA. Setting the future resource minimum penetration increment to the default value of 100 kW, which is also the lower limit in the program, allows for more granular results at each node, and was deemed appropriate at the June 2020 Workshop series.

The "DER Generation" and "DER Charging" analysis settings each consider the effect of existing DERs in the feeder models. DER Generation includes any existing DERs that provide an energy source to the distribution system including PV, wind, and batteries (discharge only). DER Charging includes any existing DERs that have load characteristics such as batteries (when charging). The Gen-HCA does not consider load-based DERs at this time, but the Company continues to monitor the development and adoption of these DERs and will evolve as necessary when the effects of installed storage on the system becomes more impactful. The Load-HCA does not consider existing DER generation to account for worst case scenarios, which also aligns with Company policy[10] regarding system operation during contingency conditions. By doing this, we maintain alignment with our planning practices by indicating the amount of available hosting capacity from the perspective of native loading, so as to not unintentionally overload equipment.

The Tap Regulators in Over/Under-voltage Analysis setting adjusts the voltage within the regulation zones to the bandwidth of the regulator when considering over/under-voltage analysis. This could result in slightly less hosting capacity for instances where regulators are installed.

DRIVE provides 16 evaluation criteria (constraining metrics[11]) that determine the hosting capacity limits on a given piece of equipment as indicated in Table 5. DRIVE v.3.2 introduced two new metrics, Voltage Unbalance and Feeder Head Power Factor, however, we did not use them in this analysis. The Company used seven metrics for the Gen-HCA and four metrics for the Load-HCA, as indicated in Table 4. The constraining metrics are placed in broader categories of voltage, power-flow, protection, and power quality and reliability. Voltage is checked at each location on the feeder. Power-flow is checked at the breaker, recloser, regulator, and feeder head. Protection is checked at the breaker, recloser, sectionalizer, and feeder head. The power quality and reliability metrics are not used for either HCA type, as they are not part of our interconnection process.

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[10] Per the Minnesota Distributed Energy Resource Interconnection Agreement (MN DIA) Attachment 5, Section 8.3 – "The Area EPS Operator may, in its sole discretion, disconnect the DER during abnormal system conditions or contingency operations.

[11] Recent DRIVE updates have changed the "limiting criteria" terminology to now be "constraining metric(s)." As such, we have updated our terminology to reflect these changes.

Table 4 – Constraining Metrics Used for Each HCA Type

Criteria	Gen-HCA	Load-HCA
Primary Over-Voltage	✓	
Primary Under-Voltage		✓
Primary Voltage Deviation	✓	✓
Regulator Voltage Deviation	✓	✓
Thermal Discharging	✓	
Thermal Charging		✓
Additional Element Fault Current	✓	
Breaker Relay Reduction of Reach	✓	
Unintentional Islanding[12]	✓	

Table 5 – Constraining Metrics Assessed by DRIVE

	Criteria	Description	Threshold	Basis
Voltage	Primary Under/ Over-Voltage	Voltage exceeds nominal voltage by threshold	95 / 105%	ANSI C84.1 Range A – maintain quality of service to customers
	Primary Voltage Deviation	Change in Voltage from no DER to full DER in aggregate	5%	MN Tariff Section 10, Sheet No. 146 – maintain power quality for customers
	Regulator Voltage Deviation	Change in bandwidth from no DER output to full DER output at a regulated node	50%	Prevent reliability and power quality issues by avoiding excessive regulator operations
	Voltage Unbalance	Phase imbalance at any location not to exceed	Not used	Metric not used in interconnection process
Power-flow	Thermal Charging/ Discharging	Element rating	100%	Continue reliable customer service by staying within the normal ratings of existing elements
	Feeder Head Power Factor	Lower threshold for power factor at the feeder head	Not used	Metric not used in interconnection process

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[12] Reverse Power-flow was mistakenly included as a limiting criterion on slide 9 of our first Load-HCA workshop in 2022. Reverse Power-flow is not called out as a separate criterion and is instead included as part of the Unintentional Islanding analysis. There is currently no Company standard or limitation on Reverse Power-flow other than for preventing Unintentional Islanding.

Table 5 – Constraining Metrics Assessed by DRIVE (Continued)

	Criteria	Description	Threshold	Basis
Protection	Additional Element Fault Current	Deviation in feeder fault currents	20%	Based on worst case scenarios from internal studies – maintain customer reliability
	Breaker Relay Reduction of Reach	Deviation in breaker fault current	10%	Based on worst case scenarios from internal studies – maintain customer reliability
	Reverse Power-flow	Element minimum loading	Not used	Metric replaced by Unintentional Islanding
	Unintentional Islanding	Element minimum loading	80%	Metric is applied on all large three- phase protective devices where islanding can occur
	Sympathetic Breaker Tripping	Breaker zero sequence current due to an upstream fault	Not used	For the analysis method used (Large Centralized), the metric does not affect the hosting capacity
	Ground Fault Overvoltage (3V0)	Power flow through substation not to be reduced by more than a percentage of minimum load power flow	Not used	Metric not currently used in the Minnesota interconnection process
PQ & Reliability	Flicker	Determines when the Short-Term Flicker Perceptibility value on the feeder is equal to this value	Not used	Metric does not align with interconnection process
	Operational Flexibility	Maintain ability to reconfigure feeders	Not used	Metric not used in interconnection process

As a general principle, the Company attempts to align the thresholds used in DRIVE with those used in the interconnection studies. In 2019, a value of 100 percent was used for the Unintentional Islanding threshold which was changed to 80 percent[13] in 2021 to align with current interconnection studies. Similarly, a 20% threshold for the Additional Element Fault Current was used to align with the interconnection studies. Additionally, we continued to use a 10 percent threshold for the Breaker Relay

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[13] Unintentional Islanding threshold of 80% was implemented with the MN DIP criteria 3.4.5.2 stating that voltage supervisory reclosing (VSR) is required if the DER to load ratio is greater than or equal to 80%.

Reduction of Reach. The Reverse Power-flow metric continues to be replaced by the Unintentional Islanding metric.

4. *Compile and Review Results for Accuracy*

After finalizing the feeder models, DRIVE is used to perform the hosting capacity technical analysis. A series of quality assurance protocols are performed throughout the analysis process to ensure results are as accurate as possible. These steps include (1) running model clean-up scripts in Synergi, (2) resolving any flagged Synergi exceptions, (3) resolving any flags during conversion from Synergi to DRIVE, and (4) comparing DRIVE results to previous HCA results to investigate any large deviations in available hosting capacity or number of threshold violations. All flagged items and any unexpected changes in results are investigated by engineers and corrected, if necessary.

The DRIVE assessment does not account for feeders with voltage supervisory reclosing (VSR) and applies all the evaluation criteria to every feeder. When the nodal results are being reviewed, a filter is applied for each feeder with VSR to ignore the unintentional islanding result as a limiting metric. In this November 2023 HCA update, a total of 112 feeders have installed VSR.

5. *Apply Additional Constraining Metrics*

Beyond the constraining metrics assessed with DRIVE, the Company also applies two additional criteria when determining available hosting capacity for either Gen or Load-HCA: for generation they are Feeder TPS and TPS Capacity Utilization, and for load they are Feeder Native Loading Standard (NLS) and Native Capacity Utilization.

1) Feeder TPS
    a. Applicable to the Gen-HCA only.
    b. The feeder TPS will allow installed DERs to provide a net power-flow up to 80 percent of the limiting equipment's thermal rating, which could be either at the substation transformer or feeder level. Net flows include DM), since the DML effectively offsets the amount of generation observed at the limiting element at the feeder head-end. The TPS is DML plus 80 percent of the equipment rating of either the substation

transformer or feeder. Further details can be found in the "Engineering Practice: Technical Planning Standard" available on the Company's website.[14]

2) [New for November 2023] TPS Capacity Utilization:
    a. Applicable to Gen-HCA only.
    b. This new constraining metric accounts for the remaining capacity on a feeder based on the TPS. If a DRIVE result shows more hosting capacity than is allowable via the TPS, the remaining TPS capacity is used as the hosting capacity value for that feeder. This will reduce those instances where the HCA map shows more capacity than is otherwise available.

3) Feeder NLS
    a. Applicable to the Load-HCA only.
    b. This constraining metric will not show as a typical constraining metric, but rather as a separate column in the Load-HCA results which will indicate to customers when projects may be required on certain feeders. The feeder native loading standard was developed in alignment with Distribution System Planning's feeder loading guidelines to minimize the risk of overloads on the system. Native load is the amount of demand on a feeder without any DER generation operating. This represents a worst-case scenario by accounting for abnormal configurations and contingency conditions where available DER may be offline and ensuring that the future resource will not surpass equipment ratings. The NLS is 75 percent of the feeder's thermal rating. Distribution System Planning will allow load to be installed on the feeder up to 100 percent of the feeder's thermal rating limit, but if the load exceeds the NLS, then a capacity mitigation will be required to reduce the loading below 75 percent. The current state of each feeder with respect to the NLS is listed in the results as "Compliant", "Over-Utilized", and "Exceeded."

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[14] Xcel Energy, "DER Interconnection Engineering Practice-Technical Planning Standard", 2021, https://www.xcelenergy.com/staticfiles/xe-responsive/Working%20With%20Us/Renewable%20Developers/Engineering%20Practice-DER%20Technical%20Planning%20Limit_March%201.pdf

Over-Utilized feeders are those feeders that are currently experiencing native peak loads greater than 75 percent of the feeder's thermal rating but less than 100 percent of the feeder's thermal rating. Exceeded feeders are those feeders that are currently experiencing native peak loads greater than the feeder's thermal rating.

c. Compliant feeders indicate that interconnection is possible without an upgrade project requirement (depending on size of interconnection).
d. Over-Utilized feeders indicate that interconnection may be possible prior to the in-servicing of a required upgrade project.
e. Exceeded feeders indicate that an upgrade project is required prior to interconnection.
f. This practice continues to be in alignment with Distribution System Planning's risk analysis methodology where a feeder experiencing an outage causes DER to trip offline, resulting in a native load value.

4) [New for November 2023] Native Capacity Utilization
    a. Applicable to the Load-HCA only.
    b. This new constraining metric accounts for the remaining capacity on a feeder based on the rated capacity and demand. If a DRIVE result shows more hosting capacity than is allowable via the full rated capacity of a feeder, then the remaining available rated capacity is used as the hosting capacity value for the feeder. This ensures that there is no overstatement of available capacity for demand on a feeder.

B. Assumptions

The following assumptions are relevant to each HCA type.

DATA – Although it is assumed that the feeder-specific data from GIS is correct, in some instances, modifications are made to the data following verification. The primary data validation takes place while creating models in Synergi as discussed above. The load-allocation process prioritizes using actual customer usage information when available. When it is not available, load is allocated by the connected kVA on each feeder segment provided by GIS data. Both the customer usage data and connected kVA methods of load-allocation can result in exceptions, including, but not limited to high or low voltage, connectivity issues, and overloads.

For all these exceptions, an engineer verifies whether they exist by reviewing all the data used for the offending model by consulting GIS, feeder maps, customer data quality, and more. When data modifications are necessary, they typically include conductor changes or modifying equipment settings.

SECONDARY CONDUCTORS – Secondary conductors connect from service transformers to the customer service entrance. The characteristics of secondary conductors combined with a high level of DER can lead to high voltage conditions on the customer premise. This has the potential to trigger conductor upgrades for interconnection of small residential or commercial DER systems. Since detailed secondary or low-voltage conductor information is not recorded in GIS, the Company is unable to account for the impacts beyond the medium-voltage (i.e., primary) distribution system. However, a three volt drop across the secondary conductors and transformers has been traditionally assumed to ensure compliance with ANSI C84.1.[15]

CONDUCTOR SPACING – Conductor spacing, or the distance between lines, impacts the electrical characteristics of distribution lines. In the Synergi impedance model, the conductor spacing was assumed as the same for each voltage class. While this is not true of the entire distribution system, most of the Company's distribution system is at 13.8 kV, and this standard is used as the default. There are other configurations on the system, but most of those were constructed more than 30 years ago, and good historical information regarding their conductor spacing is often unavailable.

CAPACITORS – For modeling purposes, it is important to know the state of every capacitor bank. However, the state of every capacitor bank is unknown at any point in time, because the on/off status of each capacitor bank is not recorded along with load. Consequently, each capacitor bank's switched state is controlled by Synergi when performing initial load-allocation. The state of the capacitor banks is driven by voltage, not by the peak hour. If an over-voltage condition is witnessed during a load-flow, Synergi will automatically switch off the capacitor in the analysis, just as would happen in the field. Therefore, the hour of the peak condition is irrelevant regarding the capacitor status. For off-peak load analysis, DRIVE has a feature that switches off the capacitor banks where possible to mimic that condition more closely.

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[15] See discussion in the Company's May 5, 2017 Reply Comments in Docket No. E002/M-15-962, *In the Matter of Xcel Energy's 2015 Biennial Distribution Grid Modernization Report.*

FEEDER TOPOLOGY – The distribution system is constantly changing, and feeders are frequently reconfigured as a normal course of business. Every attempt is made to have the model reflect the real-world system but ultimately, this analysis is a point-in-time snapshot of hosting capacity, as of the cut-off date of each analysis, which is approximately three months prior to each update deadline.

HEAD-END VOLTAGE – The voltage at each of the feeder head-ends are set to 125V volts on a 120V volt base. This corresponds to 104% of each feeder's nominal voltage. While actual voltage at each substation may vary due to variables (e.g., transmission voltage, substation transformer characteristics, etc.), the assumed head-end voltage is a realistic scenario as it aligns with the Company's design guidelines.

DISTRIBUTED GENERATION OUTPUT – an output value of 100 percent of nameplate generation for each modeled DER was assumed for both peak loading and daytime minimum loading conditions.

LOADING LEVELS – Each feeder model is populated with a non-coincident peak native load forecast and corresponding power factor information that was scaled down to the associated DML percentage by the DRIVE tool. These feeder peak loads could be for any time of the day and are not in relation to any type of load curve. The source of the peak and minimum load data was the Company's Supervisory Control and Data Acquisition (SCADA) system. If SCADA data was not available, the peak load was taken from the Company's manual monthly peak substation reading process and an assumed power factor was selected by the engineer who modeled the system. Power factors are assumed independently for each feeder based on engineering judgement with values anywhere between 0.90 and 1.00 being used. Like the interconnection study process, 20 percent of peak demand is used for calculating DML on feeders that do not have SCADA enabled. This 20% value is used because of a National Renewable Energy Laboratory (NREL) paper[16], and has also been compared to nearly 150 feeders where SCADA data was available and where interconnection requests have been submitted, which concluded that it is representative of the distribution system.

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[16] "Updating Interconnection Screens for PV System Integration." The file can be found online by navigating to: https://www.nrel.gov/docs/fy12osti/54063.pdf

Additionally, the use of native loading on a feeder is appropriate and follows our current planning processes. Should changing our process to the initial Planned Net Loading methodology discussed in the Integrated Distribution Plan (IDP) be the best course of action, we will look to align the HCA with this process, as appropriate.

LOAD-ALLOCATION – Load is allocated on a section-by-section basis and based on the combination of appropriate load curves by customer type and customer energy usage. These are the only load curves used in the current process. When available, demand data from primary-metered customers is also used. These factors are inputs to the Customer Management Module used within Synergi to allocate the peak load. When not available, the previous method of allocating by service transformer sizes is used (e.g., connected kVA). There is potential to further improve load-allocation method with the capabilities of the Advanced Metering Infrastructure (AMI).

EXCLUDED FEEDERS – Excluded from the study are 49 feeders serving low voltage networks located in the downtown Minneapolis and St. Paul areas. These feeders are not detailed in the GIS system and have not previously been modeled.[17] Also excluded are a handful of other feeders that are served by the Company either due to being owned by other utilities/customers or that are dedicated to an individual customer and not available for any other use.

C. Quality Assurance and Accuracy Assessment

There are a series of quality assurance protocols throughout the HCA process to ensure results are as accurate as possible. This includes the following steps:

1) Executing model clean-up scripts in Synergi when developing feeder models. This script corrects known GIS data issues as well as applies many commonly used equipment settings. This ensures consistency in feeder modeling for each subsequent model and for each unique feeder.
2) Reviewing Synergi load-flows for any exceptions that may exist and verifying them by comparing to historic demand recordings and forecast demands.

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[17] The special operating characteristics of secondary networks and processes to interconnect distributed generation is documented in "NSPM Network Connected PV Recommended Practice Based on Evaluation of Industry Practices, Standards and Experience" revision 2, dated June 17, 2014. System Planning and Strategy (NSPM) and Electric Distribution System Performance (EDSP) https://www.xcelenergy.com/staticfiles/xe/Corporate/Corporate%20PDFs/NSPM_PVNetwork_06_17_2014_Final_R2.pdf

3) Responding to any flags generated by the DRIVE-MAI conversion process or the DRIVE analysis itself. The DRIVE process also considers the DML condition which can also reveal previously undiscovered errors. If an error is discovered during this step, then the engineer proceeds to re-check the model in Synergi before attempting another DRIVE run.
4) The DRIVE results are compared with prior analysis results to check for any large deviations in constraining metric values or thresholds. Any deviations greater than 500 kW are flagged for review and an engineer determines if the new value is appropriate. For example, if additional DERs were added to the feeder it would be expected that the available hosting capacity would decrease by an amount relative to the DER generation added with all other conditions unchanged. Any unexpected results are then flagged, and the models are reviewed again for accuracy.

Beyond the Company's own validation and quality assurance, EPRI also routinely compares the DRIVE tool with other software such as Cyme, Synergi, and OpenDSS, and validates the results with detailed studies.

A recent report by the Interstate Renewable Energy Council (IREC) and NREL identified best practices for validating HCA results.[18] We note that the quality assurance steps described above are similar to several best practices identified in that report. As the development of the hosting capacity program continues and the Foundational Improvements are implemented, as discussed in more detail in Section V of the Hosting Capacity Program Summary, our current data validation methods will need to be re-evaluated based on the final implementation of the improvements.

III. RESULTS OF THE HOSTING CAPACITY ANALYSIS

A. Gen-HCA

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[18] Data Validation for Hosting Capacity Analyses, April 14, 2022. https://irecusa.org/resources/hosting-capacity-analysis-data-validation/ .

The Gen-HCA results are intended to be used by third-party developers and customers who want to interconnect DERs – which provide an energy source to the local distribution system – such as PV, wind, and batteries (discharge mode only).[19]

The Gen-HCA is best suited for siting resources that would interconnect directly to the mid-voltage[20] primary feeder circuits served from a substation, as commonly seen in the CSG program. As the analysis does not model or account for the low-voltage[21] secondary circuits,[22] it is least suited for siting future resources connected to secondary circuits, which are most commonly smaller installations located on residential or commercial rooftops.

The methodology used for the 2023 analysis provides a high-level estimate of available hosting capacity. It should be used as a preliminary indicator only and in conjunction with other resources, such as the Company's public DER queue report. Due to the variable nature of the distribution system and the DER interconnection queue, the Company cannot guarantee that any hosting capacity results will still be valid by the time an interconnection application is submitted and subsequent screens or studies are performed. All DER interconnection requests are reviewed under the MN DIP which determines whether the future resource can interconnect. The MN DIP process also determines if any mitigations are required to accommodate the proposed future resource.

1. *2023 Hosting Capacity Results for Generation*

The Gen-HCA results are provided on the Company's website[23] for hosting capacity in multiple formats, including this report, a heat map, and tabular results.

The summary results from each quarterly update in the 2023 HCA cycle are provided in Table 6 below.

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[19] Currently, the Gen-HCA methodology does not account for DERs with both generation and load characteristics.

[20] Mid-voltage range refers to the primary voltage seen on distribution feeders and can range between 4.16-34.5 kV.

[21] Low-voltage range refers to the secondary voltage seen on secondary circuits and can range between 0.12-4.16 kV.

[22] Secondary circuits are those between the point of interconnection and a service transformer. Service transformers step the voltage down from mid-voltage to low-voltage. Secondary circuits on any given feeder can number in the thousands and cannot be modeled with the current methodology and resources available.

[23] https://mn.my.xcelenergy.com/s/renewable/developers/interconnection

Table 6 – Gen-HCA 2023 Results Summary

Item	Feb 2023	May 2023	Aug 2023	Nov 2023 (Current)
Data cutoff date	10/31/2022	1/31/2023	5/31/2023	7/31/2023
Number of feeders included in the analysis	1,053	1,053	1,053	1,053
Percent of feeders updated	26%	20%	35%	24%
Feeders with zero maximum hosting capacity, and	148	148	130	114
- those with at least 1 MW of existing DER[24]	103	103	91	76
Number of feeders with actual Daytime Minimum Load	907	907	937	934
Number of feeders with VSR[25] **installed**	111	111	111	117

The November 2023 update provides refreshed results for 24 percent of our feeders. The number of feeders with zero maximum hosting capacity decreased from 130 to 114; this is a decrease of 16 feeders since August 2023. Additionally, 45 feeders have zero maximum hosting capacity when considering the Feeder TPS, which has not changed since the August 2023 update.

Below, we provide a summary of how many feeders are limited by each metric for both minimum and maximum hosting capacity values.

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[24] We note that DRIVE considers potential DER in increments of 100 kW on three-phase sections, which means that even if a feeder shows zero hosting capacity, the actual available capacity may be something between zero and 100 kW. Therefore, additional small-scale DER may not be prohibitive.

[25] Voltage Supervisory Reclosing.

Table 7 – Number of Feeders Limited by Each Metric for Min and Max Hosting Capacity (Generation)

Constraining Metric	# Feeders Min HC	# Feeders Max HC
Primary Over-Voltage	192	63
Primary Voltage Deviation	0	0
Regulator Voltage Deviation	0	0
Thermal Discharging	428	10
Additional Element Fault Current	1	1
Breaker Relay Reduction of Reach	9	77
Unintentional Islanding	374	840
Feeder Technical Planning Standard	45	45
TPS Capacity Utilization[26]	4	17

2. *How to Interpret the Results*

Each set of results presents the discrete hosting capacity of individual feeders without analysis of the cumulative effects of DER additions to substations or the transmission system. As DER penetration increases, system constraints are likely to limit hosting capacity in various geographical areas. For instance, a substation may have three feeders with 3 MW of available capacity on each – but the substation or transmission systems may not have 9 MW of available capacity. As a result, the HCA is not a holistic system view, but rather a snapshot of the capabilities of individual feeders as they are positioned at the time of our analysis. Even then, if studies show that connecting additional DER will result in reverse power flow at the substation transformer, they may be subject to transmission system impact studies.

Additionally, the heat map and tabular results provide the amount of hosting capacity available without considering any mitigations. Therefore, even if a feeder shows low hosting capacity, it is possible that mitigations could allow higher levels of DER to be interconnected if there is also adequate capacity at the substation. However, an interconnection study would need to be completed by an engineer to determine whether mitigation would increase available capacity.

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[26] TPS Capacity Utilization was used for the first time as part of this November 1 update and thus only reflects 24 percent of the feeders. Values can be expected to increase until all feeders have been modeled by November 2024.

Finally, the HCA is a snapshot in time and reflects installed DER generation and feeder topology at the time of the analysis. The HCA does not account for DER projects that are in the interconnection queue.

1) Tabular Results – Gen-HCA-2023-Feeder-Summary-Results.xlsx[27]

This file contains the summarized results for each feeder and is updated with each quarterly cycle. This file also provides the source of the pop-up data provided on the heat map. Table 8 details and defines the information contained in the Gen-HCA 2023 Feeder Summary Results (Attachment B).

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[27] Available for download at https://mn.my.xcelenergy.com/s/renewable/developers/interconnection

Table 8 – Information Contained in the Gen-HCA 2023 Feeder Summary Results

Feeder Summary Data Points	Description
Substation	Name of the associated substation.
Transformer	Name of the associated transformer.
Feeder	Name of the feeder that was studied.
Minimum Hosting Capacity (MW)	Indicates the maximum amount of generation that can be accommodated at the most restrictive point on the three-phase primary feeder circuit.
Minimum Constraining Metric	Indicates which of the constraining metric is causing the Minimum Hosting Capacity value.
Maximum Hosting Capacity (MW)	Indicates the maximum amount of generation that can be accommodated at the least restrictive point on the three-phase primary feeder circuit.
Maximum Constraining Metric	Indicates which of the constraining metric is causing the Maximum Hosting Capacity value.
Feeder Technical Planning Standard	Indicates whether the feeder has exceeded the maximum allowable amount of DER using “Compliant”, “Over-Utilized” and “Exceeded” as values.
Transformer Forecasted Peak Load (kVA)	Non-Public. Indicates the forecasted demand on the substation transformer.
Transformer Daytime Minimum Load (kVA)	Indicates the minimum demand on the substation transformer using historic SCADA readings between daytime hours 10:00-16:00.
Transformer Absolute Minimum Load (kVA)	Indicates the minimum demand on the substation transformer using historic SCADA readings for daily hours 00:00-23:59.
Feeder Forecasted Peak Load (kVA)	Non-Public. Indicates the forecasted demand on the feeder.
Feeder Daytime Minimum Load (kVA)	Indicates the minimum demand on the feeder using historic SCADA readings between daytime hours 10:00-16:00.
Feeder Absolute Minimum Load (kVA)	Indicates the minimum demand on the feeder using historic SCADA readings for daily hours 00:00-23:59.
Actual Daytime Minimum Load	Indicates whether the daytime minimum load was a real, historic value or if it was calculated due to absence of SCADA data.
LTC or Regulator	Indicates whether the feeder’s voltage regulation is provided by the Transformer’s Load Tap Changer (LTC) or with regulators.
VSR Equipped	Indicates whether the feeder has the necessary equipment installed to allow for Voltage Supervisory Reclosing (VSR).
Network or Radial	Indicates whether the feeder is a radial or part of a network.

Table 8 – Information Contained in the Gen-HCA 2023 Feeder Summary Results (Continued)

Feeder Summary Data Points	Description
Transformer Installed DG (kVA)	Indicates the amount of distributed generation installed on the substation transformer at the time of the data cutoff.
Transformer Queued DG (kVA)	Indicates the amount of distributed generation that was in queue on the substation transformer at the time of the data cutoff.
Feeder Installed DG (kVA)	Indicates the amount of distributed generation installed on the feeder at the time of the data cutoff.
Feeder Queued DG (kVA)	Indicates the amount of distributed generation that was in queue on the feeder at the time of the data cutoff.
Data Cutoff	Indicates the date that data collection stopped for the latest quarterly update performed.
Latest Quarterly Update	Indicates the most recent data publication period for the feeder.
Notes	Provides information as needed, such as calling out VSR presence, whether the substation or transformer is owned by a separate entity, or if the feeder was newly constructed.

2) Tabular Results - Gen-HCA-2023-Feeder-Nodal-Results.xlsx[28]

This file contains the nodal results for each feeder and is updated each quarterly cycle. This file also provides the source of the heat map data. Table 9 details and defines the information contained in the Gen-HCA 2023 Feeder Nodal Results (Attachment C).

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[28] Available for download at https://mn.my.xcelenergy.com/s/renewable/developers/interconnection

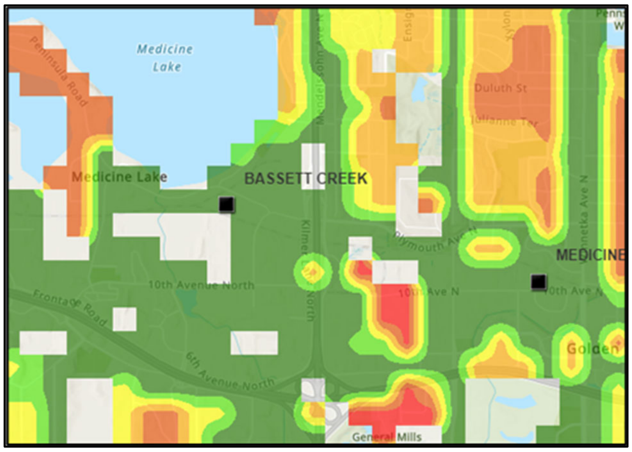
Table 9 – Information Contained in the Gen-HCA 2023 Feeder Nodal Results

Feeder Summary Data Points	Description
Feeder	Name of the feeder that was studied.
Node ID	An easy to read, unique number for each separate node.
Node	The identifier used for each node as part of the heat map development.
Primary Over-Voltage	Indicates the amount of generation that can be accommodated at a particular node before a violation occurs. The value ranges from 0-10 MW.
Primary Voltage Deviation	Indicates the amount of generation that can be accommodated at a particular node before a violation occurs. The value ranges from 0-10 MW.
Regulator Deviation	Indicates the amount of generation that can be accommodated at a particular node before a violation occurs. The value ranges from 0-10 MW.
Thermal Discharging	Indicates the amount of generation that can be accommodated at a particular node before a violation occurs. The value ranges from 0-10 MW.
Element Fault	Indicates the amount of generation that can be accommodated at a particular node before a violation occurs. The value ranges from 0-10 MW.
Breaker Reach	Indicates the amount of generation that can be accommodated at a particular node before a violation occurs. The value ranges from 0-10 MW.
Unintentional Islanding	Indicates the amount of generation that can be accommodated at a particular node before a violation occurs. The value ranges from 0-10 MW.
VSR	Indicates whether VSR is present and if so, then the unintentional islanding limit is ignored for the feeder.
Feeder Technical Planning Standard	Indicates whether the feeder has exceeded the maximum allowable amount of DER using "Compliant" and "Exceeded" as values. If exceeded, then the hosting capacity value is zeroed out and the constraining metric is noted as such.
Hosting Capacity	Indicates the minimum available hosting capacity for each individual node. All values are used for determining the heat map colors while only the results on three-phase nodes are used in the feeder summary tabular results.
Constraining Metric	Indicates which of the constraining metrics is affecting the available hosting capacity.
Data Cutoff	Indicates the date that data collection stopped for the latest quarterly update performed.
Latest Quarterly Update	Indicates the most recent data publication period for the feeder.

3. *Gen-HCA Heat Map*[29]

Consistent with past updates, a heat map is provided to accompany the tabular results and supply a more visual indication of available hosting capacity. The heat map is generated using the two sets of tabular results described previously and contains the data from the Feeder Summary Results in the pop-up data boxes, which appear when clicking on a map location. An example of the heat map and a pop-up can be seen in Figure 1 and Figure 2 below. The color gradient used to depict levels of available hosting capacity is also shown in Figure 3. As of the May 2022 quarterly update, the heat map includes all the constraining metric results in the pop-up data.

Figure 1 – View of the Gen-HCA Heat Map


Medicine Lake
Peninsula Road
Medicine Lake
BASSETT CREEK
Duluth St
Plymouth Ave N
MEDICINE
10th Avenue North
10th Ave N
10th Ave N
Frontage Road
6th Avenue North
Golden
General Mills

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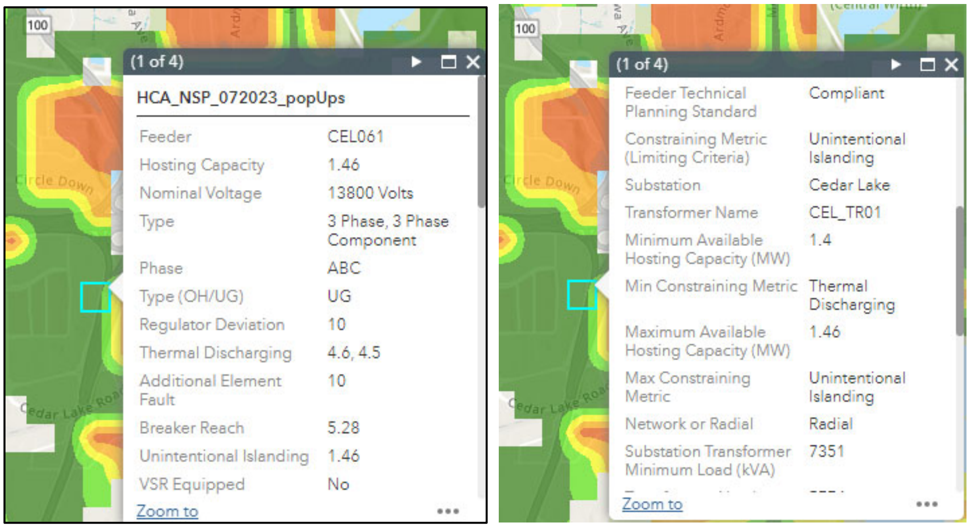
[29] Available to view at https://mn.my.xcelenergy.com/s/renewable/developers/interconnection

Figure 2 – View of the Heat Map Pop-up Data

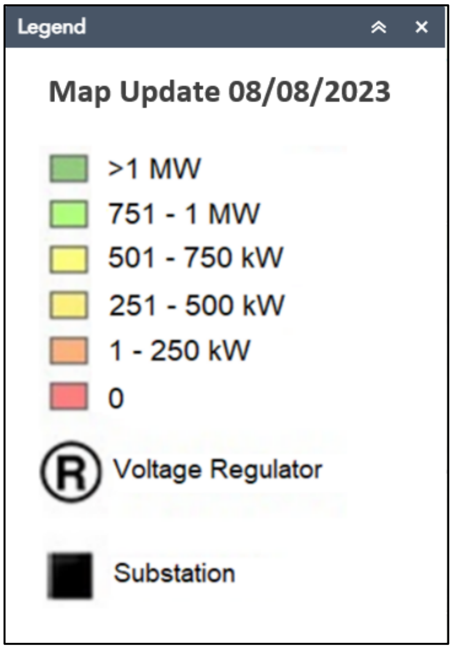


HCA_NSP_072023_popUps

Feeder	CEL061
Hosting Capacity	1.46
Nominal Voltage	13800 Volts
Type	3 Phase, 3 Phase Component
Phase	ABC
Type (OH/UG)	UG
Regulator Deviation	10
Thermal Discharging	4.6, 4.5
Additional Element Fault	10
Breaker Reach	5.28
Unintentional Islanding	1.46
VSR Equipped	No

Feeder Technical Planning Standard	Compliant
Constraining Metric (Limiting Criteria)	Unintentional Islanding
Substation	Cedar Lake
Transformer Name	CEL_TR01
Minimum Available Hosting Capacity (MW)	1.4
Min Constraining Metric	Thermal Discharging
Maximum Available Hosting Capacity (MW)	1.46
Max Constraining Metric	Unintentional Islanding
Network or Radial	Radial
Substation Transformer Minimum Load (kVA)	7351

Figure 3 – Legend Used in the Gen-HCA Heat Map



Legend

Map Update 08/08/2023

🟩 >1 MW
🟩 751 - 1 MW
🟨 501 - 750 kW
🟨 251 - 500 kW
🟧 1 - 250 kW
🟥 0
Ⓡ Voltage Regulator
■ Substation

4. *Applying for Interconnection and Next Steps*

Interconnecting new DERs to the electric distribution system follows the MN DIP for interconnection, using the Company's application portal available on our public website. Once received, applications undergo the required technical reviews and studies in the following order:[30] Completeness Review, Initial Review, Supplemental Review, System Impact Study, Facilities Study, and then Permission to Operate. For more information regarding the Company's DER interconnection process, please refer to Docket Nos. E999/CI-16-521 and E, G002/M-12-383.[31]

The results from an HCA can be used to augment the technical review in the interconnection process, such as the Supplemental Review screen, but it cannot replace a detailed System Impact Study. "Defining a Roadmap for Integrating Hosting Capacity in the Interconnection Process,"[32] a whitepaper prepared by EPRI to assist Xcel Energy in analyzing potential future HCA Use Cases, provides additional details on industry efforts to utilize hosting capacity analysis to streamline the interconnection process.

After consulting the HCA results available (as detailed above), developers and other users are recommended to use progressively more detailed tools to assess the viability of the potential DER site. More detailed and site-specific information on hosting capacity is available on the Company's website[33] and available in the following forms:

- **Public DER Interconnection Queue** – The queue is updated monthly as a snapshot in time and includes any DER generation that has been deemed complete in the Completeness Review Stage, has been assigned a queue position, and is being processed in the interconnection queue. Users may utilize the queue report to learn the number and size of DER interconnection applications that would be ahead of them in the processing queue based on the feeder and substation they would connect to as determined from the HCA.
- **Pre-Application Data Report (PADR)** – Users may request a PADR for the interconnection location of interest to further identify characteristics of the circuit that may impact hosting capacity prior to submitting a full interconnection application.

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[30] Not every application goes through each of these steps.

[31] Docket No. E999/CI-16-521, *In the Matter of Updating Generic Standards for Utility Tariffs for Interconnection and Operation of Distributed Generation Facilities Under Minn. Stat. §216B.1611* and Docket No. E,G002/M-12-383, *In the Matter of the Petition of Northern States Power Company d/b/a Xcel Energy for Approval of Amendments to its Natural Gas and Electric Service Quality Tariffs.*

[32] The report is available free from EPRI and can be accessed from the following link: https://www.epri.com/research/products/000000003002020010. *Defining a Roadmap for Integrating Hosting Capacity in the Interconnection Process*, October 28, 2020.

[33] https://mn.my.xcelenergy.com/s/renewable/developers/interconnection

- **DER Interconnection Application** – Users must submit an interconnection application for the DER project to interconnect to the Company's electric distribution system, which will initiate a screening and/or study process. A completed interconnection application is the mechanism for how a project enters the queue and begins the process for attaining an interconnection agreement. The outcome of screening or studies will identify any system impacts and mitigation costs to interconnect the proposed DER.

Additional information that can help identify constrained feeders and substations is available in the public DER interconnection queue. The list of these feeders and substations can be found as an additional tab at the bottom of the public queue spreadsheet, labeled as "Known Capacity Constraints." This tool differs from the hosting capacity results, as it is based solely on thermal capacities and DER penetrations that are updated monthly.

The "Known Capacity Constraints" tool provides a list of substations with DER interconnection capacity levels ≥80% + DML of the transformer rating, and a list of feeders with DER interconnection capacity levels ≥80% + DML of the feeder's rating. Substations and feeders with this level of DER capacity have a higher probability of requiring significant system upgrades for new interconnection applications. Such projects also have an increased risk of requiring a more costly in-depth study (Phase 2 Study) to receive full capacity. Also included in this list are substations and feeders where Xcel Energy has already issued a Phase 2 Study notification. Any new interconnection applications for the substations and feeders on the list should expect to receive a Phase 2 Study notification.

The Company has also publicly posted additional information on CSGs in the interconnection queue, including interconnection customer name, feeder name, currently expected in-service date, and indicative interconnection cost. Although this information was originally mainly intended to help anticipate future planned outages by providing more transparency about the extent and timing of upcoming interconnection work, it also provides useful information for developers who are planning new projects and searching for suitable DER locations.

As previously stated, the results provided by the Gen-HCA are for the primary circuit and do not reflect the available hosting capacity on any secondary circuit. The

Company does not recommend using the results to inform secondary interconnections (e.g., rooftop solar), but if developers choose to use the results in this manner, we recommend that they keep the following in mind before doing so:

- The Gen-HCA results provide information for the feeder's primary circuit only. There may be further constraints on the feeder's secondary circuit, but these are neither modeled nor analyzed in the HCA.
- If the desired location's nearby feeder shows available hosting capacity at or above the amount desired, then the primary circuit would likely be able to accommodate the new installation overall.
- For existing facilities:[34] During the technical screenings and after applying them, the secondary circuit serving the facility may be found to be inadequate and require upgrades.
- For new facilities:[35] Several new facilities would typically require installation of a new secondary circuit, which could be designed, at the expense of the interconnection customer, with the DER resource and load profiles in mind. For a single new facility, it is possible that a secondary circuit that is capable of servicing the facility may already exist, or that a new secondary circuit would need to be installed.

5. *Errata Notice*

We note that over the last year some issues have occurred when processing the heat map or posting results. In 2023 we had two instances where information was missing from either just the heat map or both the heat map and tabular results. Notably, feeders MPK064 and MPK071 were missing from both the heat map and the tabular results in the August 2023 update. This has been rectified as of this November 1, 2023, update.

B. Load-HCA

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[34] Existing facilities such as existing housing or commercial structures currently served by an existing secondary circuit.

[35] New facilities such as new housing or commercial developments that are planned with DERs in mind.

The Load-HCA results are intended to be used by third-party developers and customers who want to interconnect new or additional load, such as a new or expanding customer load, batteries (charging only), or EV fast charging stations.[36]

The Load-HCA is best suited for siting future resources which interconnect directly to the mid-voltage[37] primary feeder circuits served from a substation, as commonly seen with larger commercial and industrial facilities. As the analysis does not model or account for the low-voltage[38] secondary circuits[39], it is least suited for siting future facilities connected to secondary circuits, which are most commonly smaller, individual installations such as a single home or small business on an existing secondary circuit.

While using the analysis results to inform small, individual facility interconnections on the secondary system is strongly discouraged, larger developments such as a new residential neighborhood, shopping center, or industrial park could utilize the analysis results to inform interconnection. Even though larger developments would result in many facilities interconnecting to a secondary system, they will typically have a new secondary circuit installed. As the new secondary circuit would interconnect to the primary circuit, the analysis results could be used to inform large site developments.

1. *2023 Hosting Capacity Results for Load*

This November 1 HCA filing represents the second time that the Company has performed a Load-HCA. The analysis was conducted on the same feeder set as was used for the Gen-HCA. Models, which were created for the Gen-HCA during the 2022-2023 HC reporting cycle, were also utilized to perform the Load-HCA. Table 10 provides a summary of the November 2023 Load-HCA results.

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[36] Currently, the Load-HCA methodology does not account for DERs with both generation and load characteristics.

[37] Mid-voltage range refers to the primary voltage seen on distribution feeders and can range between 4.16-34.5 kV.

[38] Low-voltage range refers to the secondary voltage seen on secondary circuits and can range between 0.12-4.16 kV.

[39] Secondary circuits are those between the point of interconnection and a service transformer. Service transformers step the voltage down from mid-voltage to low-voltage. Secondary circuits on any given feeder can number in the thousands and cannot be modeled with the current methodology and resources available.

Table 10 – Load-HCA 2023 Results Summary

Item	Nov 2022	Nov 2023
Data cutoff date	7/31/2022	7/31/2023
Number of feeders included in the analysis	1,052	1,052
Percent of feeders updated	100%	100%
Feeders with zero maximum hosting capacity	178	182

The Load-HCA was performed on 1,052 of the 1,053 feeders modeled for the Gen-HCA due to a complication with feeder CHE065, which will be included in a possible future update.

In the Load-HCA, the number of feeders with zero maximum hosting capacity is 182; with 67 feeders limited by the feeder Native Capacity Utilization, 70 limited by Primary Under-Voltage, and 43 limited by Thermal Charging. Again, we note that feeders limited by the Native Capacity Utilization metric at 0 available hosting capacity would be already at 100 percent of their thermal rating and are currently unable to accept new load without a required project.

The results provided in Table 11 indicate the number of feeders whose available minimum and maximum available hosting capacity is limited by each metric.

Table 11 – Number of Feeders Limited by Each Metric for Min and Max Hosting Capacity (Load)

Constraining Metric	# Feeders Min HC	# Feeders Max HC
Primary Under-Voltage	104	80
Primary Voltage Deviation	0	0
Regulator Voltage Deviation	2	1
Thermal Charging	865	662
Native Capacity Utilization	81	309

Additionally, all feeders are subject to the separate NLS metric and are provided to inform developers of when projects should be expected; there are 67 feeders listed as “Exceeded,” 302 listed as “Over-Utilized,” and 683 as “Compliant.” Depending on the size of interconnection, projects may still be required, this is to provide an early indication prior to knowing the requested installation size.

2. *How to Interpret the Results*

Each set of results presents the discrete hosting capacity of individual feeders without analysis of the cumulative effects of load additions to substations or the transmission system. As load penetration increases, system constraints are likely to limit hosting capacity in various geographical areas. For instance, a substation may have three feeders with 3 MW of available capacity on each – but the substation or transmission systems may not have 9 MW of available capacity. As a result, the HCA is not a holistic system view, but rather a snapshot of the capabilities of individual feeders as they are positioned at the time of our analysis.

Additionally, the tabular results provide the amount of hosting capacity available without considering any mitigations. Therefore, even if a feeder shows low hosting capacity, it is possible that mitigations could allow higher levels of load to be interconnected if there is also adequate capacity at the substation. However, an interconnection study would need to be completed by an engineer to determine whether mitigation would increase available capacity.

Finally, the HCA is a snapshot in time and reflects the peak load scenarios and feeder topology at the time of the analysis. The HCA does not account for any installed or queued DER projects due to the NLS, which aligns with current planning practices for feeder loading and risk analysis.

1) Tabular Results – Load-HCA-2023-Feeder-Summary-Results.xlsx[40]

This file contains the summarized results for each feeder and is updated with each quarterly cycle. This file also provides the source of the pop-up data provided on the heat map. Table 12 below details and defines the information reported in the Load-HCA 2023 Feeder Summary Results (Attachment D).

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[40] Available for download at https://mn.my.xcelenergy.com/s/renewable/developers/interconnection

Table 12 – Information Contained in the Load-HCA 2023 Feeder Summary Results

Feeder Summary Data Points	Description
Substation	Name of the associated substation.
Transformer	Name of the associated transformer.
Feeder	Name of the feeder that was studied.
Minimum Hosting Capacity (MW)	Indicates the maximum amount of load that can be accommodated at the most restrictive point on the three-phase primary feeder circuit.
Minimum Constraining Metric	Indicates which of the constraining metric is causing the Minimum Hosting Capacity value.
Maximum Hosting Capacity (MW)	Indicates the maximum amount of load that can be accommodated at the least restrictive point on the three-phase primary feeder circuit.
Maximum Constraining Metric	Indicates which of the constraining metric is causing the Maximum Hosting Capacity value.
Feeder Native Loading Standard	Indicates the overall loading status of a feeder using "Compliant", "Over-Utilized", and "Exceeded" as values.
Transformer Forecasted Peak Load (kVA)	Non-Public. Indicates the forecasted demand on the substation transformer.
Feeder Forecasted Peak Load (kVA)	Non-Public. Indicates the forecasted demand on the feeder.
LTC or Regulator	Indicates whether the feeder's voltage regulation is provided by the Transformer's Load Tap Changer (LTC) or with regulators.
Data Cutoff	Indicates the date that data collection stopped for the latest quarterly update performed.
Latest Quarterly Update	Indicates the most recent data publication period for the feeder.
Notes	Provides information as needed, such as calling out whether the substation or transformer is owned by a separate entity or if the feeder was newly constructed.

2) Load-HCA Heat Map

The Company is not publishing a heat map for the Load-HCA, as it is not required for Load-HCA and we believe it is inappropriate to file one until the matter is further addressed as part of the Grid Security Docket. We believe that a Load-HCA heat map – while similar to the heat map for Gen-HCA – provides a much clearer picture of loading conditions and system vulnerabilities and thus presents an unwarranted security risk to Minnesota citizens. It would be prudent to further evaluate a test map for threats to grid security before a decision is made on providing a publicized heat map.

3) Tabular Results - Load-HCA-2023-Feeder-Nodal-Results.xlsx

The Company is not submitting a file detailing the individual nodal results for the Load-HCA, as it is not a requirement for a Load-HCA, and we believe it is inappropriate to file these results until the matter is further addressed as part of the Grid Security Docket.

3. Applying for Interconnection and Next Steps

Interconnecting new load, with no generation characteristics, varies based on the amount and type of proposed load but generally follows the following steps. To begin the process, a developer makes a request for interconnection through our Builder's Call Line, local account managers, our Economic Development team, or our website. Once the request has been submitted, it is sent to our engineering teams who review the provided details about the facility and load characteristics before studying the impacts to the system. Depending on the amount and type of load being added, the engineering review could require a simple capacity check or something as in-depth as a detailed system impact study, like those performed for DER interconnections. Due to the variable nature of the distribution system, the Company cannot guarantee that any hosting capacity results will still be valid by the time a request for interconnection is submitted.

There are multiple ways to request new interconnections for load depending on the nature of the load being added. The following are several website links that can be used to begin:

- Residential Customers:
    - https://mn.my.xcelenergy.com/s/moving/new-residential-customer
- Business Customers:
    - https://mn.my.xcelenergy.com/s/moving/new-business-customer
- Transmission:
    - https://www.transmission.xcelenergy.com/Interconnections
- Developers:
    - https://mn.my.xcelenergy.com/s/partner-resources/build-remodel

Additionally, more information on interconnection can be found at the following links:

- Economic Development:
    - https://www.economicdevelopment.xcelenergy.com/

IV. COMMON MITIGATIONS TO RESOLVE LACK OF AVAILABLE HOSTING CAPACITY

This section discusses common distribution system upgrades that may be necessary for interconnecting additional generation-based DERs, load-based DERs, or other load sources to the distribution grid. The most efficient and effective mitigation is dependent on the type(s) of constraints on each individual feeder in relation to a particular facility's electrical characteristics. Therefore, we discuss below, at a high-level, various constraint conditions and the type of mitigations that might be necessary to alleviate them.

A. Resolving Lack of Available Generation Hosting Capacity

To the extent a feeder has constraints, we identify the primary constraint in the Feeder Summary Results and in the heat map pop-up. The Feeder Nodal Results provide all criteria threshold violations for each line segment. Table 13 below shows the potential mitigations that could be implemented to increase generation hosting capacity for the most common constraints. The specifics of each feeder and DER interconnection proposal are instrumental in determining the most appropriate and lowest cost mitigation for that specific situation. The mitigations can vary in degree from straightforward to complex. Therefore, a detailed engineering study is needed to determine the optimal solution for each DER interconnection.

Table 13 – Potential Mitigations to Increase Generation Hosting Capacity for Common Constraints

Category	Impacts	Mitigation
Voltage	Over-voltage	Adjust DER power factor setting, reconductor
	Voltage Deviation	Adjust DER power factor setting, reconductor
	Equipment Voltage Deviation	Adjust DER power factor setting, adjust voltage regulation equipment settings (if applicable), or reconductor
Loading	Thermal Limits	Reconductor, replace equipment
Protection	Additional Element Fault Current	Adjust relay settings, replace relays, replace protective equipment
	Breaker Relay Reduction of Reach	Adjust relay settings, replace relays, move or replace protective equipment
	Sympathetic Breaker Relay Tripping	Adjust relay settings, replace relays, move or replace protective equipment
	Unintentional Islanding	Installation of Voltage Supervisory Reclosing

In terms of mitigating constraints for generation, the Company's standard approach is to first study interconnection using low-cost options, such as adjusting the DER power factor, before considering higher-cost options, such as reconductoring. However, specific characteristics of the feeder determine the effectiveness of certain mitigations (such as using a non-unity fixed power factor for the DER), and those mitigations may differ depending on the installation's location. Accordingly, attempting to pre--identify absolute mitigations that would increase the hosting capacity of each feeder is unlikely to match the specific needs of a particular DER installation.

NREL has prepared a technical report[41] that further outlines costs and methods to increase hosting capacity on feeders in the United States. Some of the key takeaways from that report include:

- Feeder characteristics, distribution of DER, and size of DER can all create significant variability in hosting capacity and distribution upgrade costs.

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[41] See *The Cost of Distribution System Upgrades to Accommodate Increasing Penetrations of Distributed Photovoltaic Systems on Real Feeders in the United States*. NREL. April 2018. https://www.nrel.gov/docs/fy18osti/70710.pdf

- In general, voltage constraints are less expensive to mitigate due to the ability to adjust inverter settings.
- Thermal overloads are generally more expensive to mitigate.
- Upgrade costs can be minimized by guiding DER to better locations.

These findings align with the potential mitigation strategies used by the Company and further reiterate the fact that a detailed interconnection study is needed to provide more specific mitigation alternatives for a proposed DER project on a specific feeder.

We would like to note that we have included a placeholder estimate in the five-year budget, starting in 2025, totaling $190 million, for proactive system upgrades to increase DER hosting capacity. More information can be found in our Appendix D of our 2023 Integrated Distribution Plan.

B. Resolving Lack of Available Load Hosting Capacity

To the extent a feeder has constraints, we identify the primary constraint in the Feeder Summary Results. Table 14 below shows the potential mitigations that could be implemented to increase load hosting capacity for the most common constraints. The specifics of each feeder and interconnection proposal are instrumental in determining the most appropriate and lowest cost mitigation for that specific situation. The mitigations can vary in degree from straightforward to complex. Therefore, a detailed engineering study may be needed to determine the optimal solution for each load interconnection.

Table 14 – Potential Mitigations to Increase Load Hosting Capacity for Common Constraints

Category	Impacts	Mitigation
Voltage	Under-voltage	Reconductor, adjust regulator settings, replace equipment, install new regulators or capacitors, load transfer[42]
	Voltage Deviation	Reconductor, install capacitors, reconductor, load transfer*

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[42] Load transfers can also be valid mitigation options for resolving constraints; however, they can create constraints on adjacent feeders, and are therefore rarely used to increase available capacity on a feeder.

	Regulator Voltage Deviation	Adjust voltage regulation equipment settings (if applicable), or reconductor, load transfer*
Loading	Thermal Limits	Reconductor, replace equipment, install new feeder, load transfer*

In terms of mitigating constraints for load, the Company's standard approach is to first study interconnection using low-cost options, such as adjusting equipment settings, before considering higher-cost options, such as reconductoring. However, specific characteristics of the feeder determine the effectiveness of certain mitigations, and those mitigations may differ depending on the installation's location. Attempting to pre-identify specific mitigations that would increase the hosting capacity of each feeder is unlikely to match the unique needs of a particular installation.

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Technical Planning Standard	Substation Transformer Forecasted Peak Load (kVA)	Substation Transformer Minimum Load (kVA)	Transformer Absolute Min (kVA)	Feeder Forecasted Peak Load (kVA)	Feeder Daytime Minimum Load (kVA)	Feeder Absolute Min (kVA)	Actual Daytime Minimum Load	LTC or Regulator	VSR Equipped	Network or Radial	Substation Transformer Installed DG (kW)	Substation Transformer Queued DG (kW)	Feeder Installed DG (kW)	Feeder Queued DG (kW)	Data Cutoff	Latest Quarterly Update	Notes
Newport - 150	Afton	AFT_TR01	AFT314	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	16,919	12,492	[redacted]	8,509	7,184	Yes	LTC	No	Radial	1,719	2,841	1,144	2,624	7/31/2022	Nov-22	
Newport - 150	Afton	AFT_TR01	AFT315	0.1	Thermal Discharging	0.64	Unintentional Islanding	Compliant	[redacted]	16,919	12,492	[redacted]	6,440	6,440	Yes	LTC	No	Radial	1,719	2,841	575	217	7/31/2022	Nov-22	
Newport - 150	Afton	AFT_TR02	AFT321	0.2	Thermal Discharging	0.97	Breaker Reach	Compliant	[redacted]	13,515	9,867	[redacted]	8,737	6,790	Yes	LTC	No	Radial	1,669	3,600	1,417	455	7/31/2022	Nov-22	
Newport - 150	Afton	AFT_TR02	AFT322	2.2	Thermal Discharging	2.77	Unintentional Islanding	Compliant	[redacted]	13,515	9,867	[redacted]	3,940	3,089	Yes	LTC	No	Radial	1,669	3,600	252	3,145	7/31/2022	Nov-22	
White Bear Lake - 156	Arden Hills	AHI_TR01	AHI021	0.5	Thermal Discharging	1.2	Breaker Reach	Compliant	[redacted]	5,697	5,062	[redacted]	1,882	1,882	Yes	None	No	Radial	1,036	1,014	142	16	4/30/2023	Aug-23	
White Bear Lake - 156	Arden Hills	AHI_TR01	AHI022	0.19	Unintentional Islanding	1.61	Unintentional Islanding	Compliant	[redacted]	5,697	5,062	[redacted]	1,867	1,867	Yes	None	No	Radial	1,036	1,014	287	39	4/30/2023	Aug-23	
White Bear Lake - 156	Arden Hills	AHI_TR01	AHI024	0.3	Thermal Discharging	2.02	Unintentional Islanding	Compliant	[redacted]	5,697	5,062	[redacted]	2,156	2,156	Yes	None	No	Radial	1,036	1,014	363	580	4/30/2023	Aug-23	
White Bear Lake - 156	Arden Hills	AHI_TR01	AHI025	0.8	Thermal Discharging	2.15	Unintentional Islanding	Compliant	[redacted]	5,697	5,062	[redacted]	2,295	2,295	Yes	None	No	Radial	1,036	1,014	244	379	4/30/2023	Aug-23	
White Bear Lake - 156	Arden HIlls	AHI_TR02	AHI063	0.03	Unintentional Islanding	2.12	Unintentional Islanding	Compliant	[redacted]	4,792	4,223	[redacted]	2,265	2,265	Yes	None	No	Radial	190	28	190	28	4/30/2023	Aug-23	
Edina - 143	Airport	AIR_TR01	AIR060	0.1	Primary Over-Voltage	0.92	Unintentional Islanding	Compliant	[redacted]	8,389	8,389	[redacted]	1,020	1,020	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Airport	AIR_TR01	AIR061	1.26	Unintentional Islanding	1.26	Unintentional Islanding	Compliant	[redacted]	8,389	8,389	[redacted]	1,334	1,334	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Airport	AIR_TR01	AIR069	0.6	Primary Over-Voltage	0.61	Unintentional Islanding	Compliant	[redacted]	8,389	8,389	[redacted]	632	632	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Airport	AIR_TR02	AIR072	1.37	Unintentional Islanding	1.37	Unintentional Islanding	Compliant	[redacted]	8,271	8,271	[redacted]	1,432	1,432	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Airport	AIR_TR02	AIR073	0.4	Thermal Discharging	0.82	Unintentional Islanding	Compliant	[redacted]	8,271	8,271	[redacted]	900	900	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Airport	AIR_TR02	AIR074	0.1	Thermal Discharging	4.25	Unintentional Islanding	Compliant	[redacted]	8,271	8,271	[redacted]	4,505	4,505	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Airport	AIR_TR02	AIR077	1.1	Primary Over-Voltage	2.21	Unintentional Islanding	Compliant	[redacted]	8,271	8,271	[redacted]	2,319	2,319	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Airport	AIR_TR02	AIR078	0.77	Unintentional Islanding	0.77	Unintentional Islanding	Compliant	[redacted]	8,271	8,271	[redacted]	849	849	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Airport	AIR_TR02	AIR079	1.4	Thermal Discharging	1.73	Unintentional Islanding	Compliant	[redacted]	8,271	8,271	[redacted]	1,828	1,828	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Airport	AIR_TR01	AIR62X	0.08	Unintentional Islanding	0.08	Unintentional Islanding	Compliant	[redacted]	8,389	8,389	[redacted]	100	100	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Northwest - 154	Albany	ALB_TR02	ALB021	0	Unintentional Islanding	1.3	Unintentional Islanding	Compliant	[redacted]	2,106	1,008	[redacted]	1,463	1,463	Yes	None	No	Radial	13,252	5,000	2,098	1,000	4/30/2023	Aug-23	
Northwest - 154	Albany	ALB_TR02	ALB022	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	2,106	1,008	[redacted]	988	988	Yes	None	Yes	Radial	13,252	5,000	1,154	4,000	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Albany	ALB_TR02	ALB023	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	2,106	1,008	[redacted]	129	129	Yes	None	Yes	Radial	13,252	5,000	10,000	0	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minneapolis - 141	Aldrich	ALD_TR02	ALD072	0.5	Thermal Discharging	1.55	Unintentional Islanding	Compliant	[redacted]	7,174	6,406	[redacted]	2,100	2,100	Yes	LTC	No	Radial	653	106	167	29	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR02	ALD073	0.5	Thermal Discharging	0.76	Unintentional Islanding	Compliant	[redacted]	7,174	6,406	[redacted]	1,603	1,603	Yes	LTC	No	Radial	653	106	204	19	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR02	ALD075	0.19	Unintentional Islanding	0.19	Unintentional Islanding	Compliant	[redacted]	7,174	6,406	[redacted]	200	200	Yes	LTC	No	Radial	653	106	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR02	ALD076	0.5	Thermal Discharging	1.65	Unintentional Islanding	Compliant	[redacted]	7,174	6,406	[redacted]	2,648	2,648	Yes	LTC	No	Radial	653	106	282	58	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR03	ALD081	0.51	Unintentional Islanding	0.51	Unintentional Islanding	Compliant	[redacted]	15,396	12,671	[redacted]	630	630	Yes	LTC	No	Radial	1,350	262	6	0	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR03	ALD082	0.9	Thermal Discharging	1.42	Unintentional Islanding	Compliant	[redacted]	15,396	12,671	[redacted]	1,924	1,924	Yes	LTC	No	Radial	1,350	262	267	71	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR03	ALD083	0.03	Unintentional Islanding	0.39	Breaker Reach	Compliant	[redacted]	15,396	12,671	[redacted]	1,811	1,811	Yes	LTC	No	Radial	1,350	262	183	14	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR03	ALD084	0.9	Thermal Discharging	1.03	Unintentional Islanding	Compliant	[redacted]	15,396	12,671	[redacted]	1,612	1,612	Yes	LTC	No	Radial	1,350	262	241	118	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR03	ALD085	0.07	Unintentional Islanding	1.7	Unintentional Islanding	Compliant	[redacted]	15,396	12,671	[redacted]	2,645	2,645	Yes	LTC	No	Radial	1,350	262	285	52	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR03	ALD086	0.6	Primary Over-Voltage	2.75	Unintentional Islanding	Compliant	[redacted]	15,396	12,671	[redacted]	3,590	3,590	Yes	LTC	No	Radial	1,350	262	35	0	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR03	ALD087	0.65	Unintentional Islanding	0.65	Unintentional Islanding	Compliant	[redacted]	15,396	12,671	[redacted]	800	800	Yes	LTC	No	Radial	1,350	262	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR03	ALD088	1.4	Thermal Discharging	1.54	Unintentional Islanding	Compliant	[redacted]	15,396	12,671	[redacted]	2,256	2,256	Yes	LTC	No	Radial	1,350	262	333	7	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR04	ALD091	0.74	Unintentional Islanding	0.74	Unintentional Islanding	Compliant	[redacted]	16,476	14,126	[redacted]	1,105	1,105	Yes	LTC	No	Radial	2,175	416	34	38	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR04	ALD092	0.9	Thermal Discharging	3.33	Unintentional Islanding	Compliant	[redacted]	16,476	14,126	[redacted]	4,768	4,768	Yes	LTC	No	Radial	2,175	416	132	43	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR04	ALD093	0.32	Unintentional Islanding	0.32	Unintentional Islanding	Compliant	[redacted]	16,476	14,126	[redacted]	539	539	Yes	LTC	No	Radial	2,175	416	30	11	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR04	ALD094	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	16,476	14,126	[redacted]	1,243	1,243	Yes	LTC	No	Radial	2,175	416	1,175	0	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR04	ALD095	0.9	Thermal Discharging	1.37	Unintentional Islanding	Compliant	[redacted]	16,476	14,126	[redacted]	2,002	2,002	Yes	LTC	No	Radial	2,175	416	119	11	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR04	ALD096	0.4	Thermal Discharging	1.55	Unintentional Islanding	Compliant	[redacted]	16,476	14,126	[redacted]	1,817	1,817	Yes	LTC	No	Radial	2,175	416	300	0	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR04	ALD097	0.9	Thermal Discharging	1.54	Unintentional Islanding	Compliant	[redacted]	16,476	14,126	[redacted]	2,435	2,435	Yes	LTC	No	Radial	2,175	416	262	313	10/31/2022	Feb-23	
Minneapolis - 141	Aldrich	ALD_TR04	ALD098	0.5	Thermal Discharging	1.36	Unintentional Islanding	Compliant	[redacted]	16,476	14,126	[redacted]	1,965	1,965	Yes	LTC	No	Radial	2,175	416	123	0	10/31/2022	Feb-23	
Newport - 150	Air Lake	ALK_TR01	ALK063	0.9	Thermal Discharging	2.04	Unintentional Islanding	Compliant	[redacted]	7,287	6,142	[redacted]	2,426	2,426	Yes	LTC	No	Radial	939	105	176	58	4/30/2023	Aug-23	
Newport - 150	Air Lake	ALK_TR01	ALK064	0.5	Unintentional Islanding	1.49	Unintentional Islanding	Compliant	[redacted]	7,287	6,142	[redacted]	1,964	1,964	Yes	LTC	No	Radial	939	105	470	9	4/30/2023	Aug-23	
Newport - 150	Air Lake	ALK_TR01	ALK067	1.3	Thermal Discharging	2.27	Unintentional Islanding	Compliant	[redacted]	7,287	6,142	[redacted]	2,520	2,520	Yes	LTC	No	Radial	939	105	293	38	4/30/2023	Aug-23	
Newport - 150	Air Lake	ALK_TR02	ALK072	0.7	Thermal Discharging	3.28	Unintentional Islanding	Compliant	[redacted]	6,178	5,367	[redacted]	3,446	3,446	Yes	LTC	No	Radial	2,202	51	1,602	51	4/30/2023	Aug-23	
Newport - 150	Air Lake	ALK_TR02	ALK073	0.97	Unintentional Islanding	0.97	Unintentional Islanding	Compliant	[redacted]	6,178	5,367	[redacted]	1,377	1,377	Yes	LTC	No	Radial	2,202	51	600	0	4/30/2023	Aug-23	
Southeast - 144	Altura	ALT_TR01	ALT021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	1,828	1,081	[redacted]	1,828	1,828	No	None	Yes	Radial	6,147	1,199	6,147	1,199	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Annandale	ANN_TR01	ANN021	0.3	Primary Over-Voltage	7.6	Breaker Reach	Compliant	[redacted]	2,098	2,098	[redacted]	2,098	2,098	No	None	Yes	Radial	7,303	95	7,303	95	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minneapolis - 141	Apache	APA_TR01	APA061	0.9	Thermal Discharging	1.57	Unintentional Islanding	Compliant	[redacted]	8,968	8,431	[redacted]	2,179	2,179	Yes	LTC	No	Radial	645	217	65	16	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR01	APA064	0.9	Unintentional Islanding	0.9	Unintentional Islanding	Compliant	[redacted]	8,968	8,431	[redacted]	1,274	1,274	Yes	LTC	No	Radial	645	217	104	87	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR01	APA065	0.9	Thermal Discharging	1.64	Unintentional Islanding	Compliant	[redacted]	8,968	8,431	[redacted]	2,193	2,193	Yes	LTC	No	Radial	645	217	46	33	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR01	APA067	0.9	Thermal Discharging	1.34	Unintentional Islanding	Compliant	[redacted]	8,968	8,431	[redacted]	1,871	1,871	Yes	LTC	No	Radial	645	217	229	19	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR01	APA068	0.5	Thermal Discharging	0.85	Unintentional Islanding	Compliant	[redacted]	8,968	8,431	[redacted]	1,219	1,219	Yes	LTC	No	Radial	645	217	134	23	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR01	APA069	0.62	Unintentional Islanding	0.62	Unintentional Islanding	Compliant	[redacted]	8,968	8,431	[redacted]	870	870	Yes	LTC	No	Radial	645	217	67	39	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR02	APA071	0.08	Unintentional Islanding	1.56	Unintentional Islanding	Compliant	[redacted]	17,906	16,302	[redacted]	2,329	2,329	Yes	LTC	No	Radial	1,752	578	228	22	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR02	APA072	0.9	Thermal Discharging	1.47	Unintentional Islanding	Compliant	[redacted]	17,906	16,302	[redacted]	1,999	1,999	Yes	LTC	No	Radial	1,752	578	103	0	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR02	APA073	0.9	Thermal Discharging	1.49	Unintentional Islanding	Compliant	[redacted]	17,906	16,302	[redacted]	1,968	1,968	Yes	LTC	No	Radial	1,752	578	85	10	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR02	APA074	0.9	Thermal Discharging	2.36	Unintentional Islanding	Compliant	[redacted]	17,906	16,302	[redacted]	2,936	2,936	Yes	LTC	No	Radial	1,752	578	12	15	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR02	APA075	0.9	Thermal Discharging	1.6	Unintentional Islanding	Compliant	[redacted]	17,906	16,302	[redacted]	2,343	2,343	Yes	LTC	No	Radial	1,752	578	410	86	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR02	APA076	0.36	Unintentional Islanding	1.28	Unintentional Islanding	Compliant	[redacted]	17,906	16,302	[redacted]	1,817	1,817	Yes	LTC	No	Radial	1,752	578	288	98	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR02	APA077	0.95	Unintentional Islanding	0.95	Unintentional Islanding	Compliant	[redacted]	17,906	16,302	[redacted]	1,511	1,511	Yes	LTC	No	Radial	1,752	578	322	25	1/31/2023	May-23	
Minneapolis - 141	Apache	APA_TR02	APA078	0	Unintentional Islanding	1.47	Unintentional Islanding	Compliant	[redacted]	17,906	16,302	[redacted]	1,911	1,911	Yes	LTC	No	Radial	1,752	578	304	322	1/31/2023	May-23	
Northwest - 154	Atwater	ATW_TR01	ATW061	0.1	Primary Over-Voltage	4.1	TPS Capacity Utilization	Compliant	[redacted]	1,696	1,696	[redacted]	1,004	1,004	No	Bus Reg - Sub	Yes	Radial	6,016	2,021	6,000	2,000	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Atwater	ATW_TR01	ATW062	0.2	Breaker Reach	0.65	Breaker Reach	Compliant	[redacted]	1,696	1,696	[redacted]	1,437	1,437	No	Bus Reg - Sub	Yes	Radial	6,016	2,021	16	21	10/31/2022	Feb-23	
Northwest - 154	Avon	AVN_TR01	AVN021	0.3	Thermal Discharging	4.1	Thermal Discharging	Compliant	[redacted]	774	774	[redacted]	774	774	Yes	None	Yes	Radial	5,243	2,000	5,243	2,000	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
North Dakota - 146	Averill	AVR_TR01	AVR081	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	1,670	0	[redacted]	1,670	1,670	No	None	No	Radial	5,000	6,999	5,000	6,999	4/30/2023	Aug-23	
White Bear Lake - 156	Birch	BCH_TR01	BCH311	0.94	Unintentional Islanding	0.94	Unintentional Islanding	Compliant	[redacted]	1,118	1,105	[redacted]	1,118	1,118	Yes	None	No	Radial	166	66	166	66	4/30/2023	Aug-23	
St Paul - 151	Battle Creek	BCK_TR01	BCK061	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	5,313	5,313	[redacted]	9,582	9,582	Yes	LTC	No	Radial	0	0	0	0	10/31/2022	Feb-23	
St Paul - 151	Battle Creek	BCK_TR01	BCK062	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	5,313	5,313	[redacted]	0	0	Yes	LTC	No	Radial	0	0	0	0	10/31/2022	Feb-23	
St Paul - 151	Battle Creek	BCK_TR02	BCK071	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	4,534	4,534	[redacted]	0	0	No	LTC	No	Radial	0	0	0	0	10/31/2022	Feb-23	
St Paul - 151	Battle Creek	BCK_TR02	BCK073	1.05	Unintentional Islanding	1.05	Unintentional Islanding	Compliant	[redacted]	4,534	4,534	[redacted]	1,360	1,360	Yes	LTC	No	Radial	0	0	0	0	10/31/2022	Feb-23	
St Paul - 151	Battle Creek	BCK_TR02	BCK074	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	4,534	4,534	[redacted]	6,150	6,150	Yes	LTC	No	Radial	0	0	0	0	10/31/2022	Feb-23	
St Paul - 151	Battle Creek	BCK_TR02	BCK72X	0.15	Unintentional Islanding	0.15	Unintentional Islanding	Compliant	[redacted]	0	0	[redacted]	0	0	0	0	No	Radial	0	0	0	0	10/31/2022	Feb-23	
Maple Grove - 147	Basset Creek	BCR_TR01	BCR061	0.9	Thermal Discharging	2.2	Unintentional Islanding	Compliant	[redacted]	10,830	8,797	[redacted]	2,335	2,335	Yes	LTC	No	Radial	1,043	21	36	0	4/30/2023	Aug-23	
Maple Grove - 147	Basset Creek	BCR_TR01	BCR062	0.9	Thermal Discharging	3.08	Unintentional Islanding	Compliant	[redacted]	10,830	8,797	[redacted]	3,036	3,036	Yes	LTC	No	Radial	1,043	21	940	0	4/30/2023	Aug-23	
Maple Grove - 147	Basset Creek	BCR_TR01	BCR063	0.9	Thermal Discharging	4.2	Unintentional Islanding	Compliant	[redacted]	10,830	8,797	[redacted]	4,418	4,418	Yes	LTC	No	Radial	1,043	21	67	21	4/30/2023	Aug-23	
Maple Grove - 147	Basset Creek	BCR_TR02	BCR081	0.84	Unintentional Islanding	0.84	Unintentional Islanding	Compliant	[redacted]	4,722	3,812	[redacted]	900	900	Yes	LTC	No	Radial	87	41	44	11	4/30/2023	Aug-23	
Maple Grove - 147	Basset Creek	BCR_TR02	BCR082	0.19	Unintentional Islanding	1.38	Unintentional Islanding	Compliant	[redacted]	4,722	3,812	[redacted]	1,404	1,404	Yes	LTC	No	Radial	87	41	29	24	4/30/2023	Aug-23	
Maple Grove - 147	Basset Creek	BCR_TR02	BCR083	1	Primary Over-Voltage	1.84	Unintentional Islanding	Compliant	[redacted]	4,722	3,812	[redacted]	1,910	1,910	Yes	LTC	No	Radial	87	41	14	6	4/30/2023	Aug-23	
Northwest - 154	Belgrade	BEG_TR01	BEG001	0	Additional Element Fault	0	Additional Element Fault	Compliant	[redacted]	315	315	[redacted]	315	315	No	None	No	Radial	720	0	720	0	7/31/2022	Nov-22	
Southeast - 144	Belle Plaine	BEL_TR01	BEL061	0.1	Thermal Discharging	1.63	Unintentional Islanding	Compliant	[redacted]	2,527	2,527	[redacted]	2,163	2,163	Yes	None	No	Radial	9,195	1,065	1,221	1,055	10/31/2022	Feb-23	
Southeast - 144	Belle Plaine	BEL_TR01	BEL062	0.1	Thermal Discharging	6.14	Breaker Reach	Compliant	[redacted]	2,527	2,527	[redacted]	328	328	Yes	None	Yes	Radial	9,195	1,065	7,974	10	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Buffalo Lake	BFL_TR01	BFL021	0.2	Thermal Discharging	3.64	Breaker Reach	Compliant	[redacted]	571	571	[redacted]	571	571	Yes	None	Yes	Radial	2,000	3,000	2,000	3,000	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Bird Island	BIS_TR02	BIS001	0	TPS Capacity Utilization	0	TPS Capacity Utilization	Compliant	[redacted]	394	394	[redacted]	394	394	No	None	Yes	Radial	2,051	2,024	2,051	2,024	4/30/2022	Aug-23	
Minnetonka - 142	Bluff Creek	BLC_TR01	BLC061	1.2	Primary Over-Voltage	1.22	Unintentional Islanding	Compliant	[redacted]	12,205	10,380	[redacted]	1,542	1,542	Yes	LTC	No	Radial	173	89	9	0	10/31/2022	Feb-23	
Minnetonka - 142	Bluff Creek	BLC_TR01	BLC062	0.9	Thermal Discharging	2	Unintentional Islanding	Compliant	[redacted]	12,205	10,380	[redacted]	2,604	2,604	Yes	LTC	No	Radial	173	89	125	83	10/31/2022	Feb-23	
Minnetonka - 142	Bluff Creek	BLC_TR01	BLC063	1.2	Primary Over-Voltage	2.17	Unintentional Islanding	Compliant	[redacted]	12,205	10,380	[redacted]	2,772	2,772	Yes	LTC	No	Radial	173	89	39	6	10/31/2022	Feb-23	
Minnetonka - 142	Bluff Creek	BLC_TR01	BLC071	1.4	Thermal Discharging	2.07	Unintentional Islanding	Compliant	[redacted]	12,205	10,380	[redacted]	2,613	2,613	Yes	LTC	No	Radial	173	89	0	0	10/31/2022	Feb-23	
Minnetonka - 142	Bluff Creek	BLC_TR01	BLC072	0.7	Primary Over-Voltage	0.78	Unintentional Islanding	Compliant	[redacted]	12,205	10,380	[redacted]	983	983	Yes	LTC	No	Radial	173	89	0	0	10/31/2022	Feb-23	
Northwest - 154	Blue Heron	BLH_TR01	BLH061	0.3	Thermal Discharging	9.37	Breaker Reach	Compliant	[redacted]	1,789	1,789	[redacted]	1,432	1,432	No	LTC	Yes	Radial	3,026	2,000	3,019	2,000	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Blue Heron	BLH_TR01	BLH062	0.3	Unintentional Islanding	0.3	Unintentional Islanding	Compliant	[redacted]	1,789	1,789	[redacted]	67	67	No	LTC	No	Radial	3,026	2,000	7	0	4/30/2023	Aug-23	
Edina - 143	Blue Lake	BLL_TR01	BLL062	0.9	Unintentional Islanding	0.9	Unintentional Islanding	Compliant	[redacted]	6,301	6,301	[redacted]	949	949	Yes	None	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Blue Lake	BLL_TR01	BLL063	0.3	Thermal Discharging	4.52	Unintentional Islanding	Compliant	[redacted]	6,301	6,301	[redacted]	4,777	4,777	Yes	None	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Blue Lake	BLL_TR01	BLL064	0.05	Unintentional Islanding	0.05	Unintentional Islanding	Compliant	[redacted]	6,301	6,301	[redacted]	59	59	Yes	None	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Blue Lake	BLL_TR02	BLL071	0.3	Primary Over-Voltage	5.1	Breaker Reach	Compliant	[redacted]	1,748	1,748	[redacted]	813	813	Yes	None	Yes	Radial	3,000	0	3,000	0	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Edina - 143	Blue Lake	BLL_TR02	BLL072	0.1	Thermal Discharging	3.55	Unintentional Islanding	Compliant	[redacted]	1,748	1,748	[redacted]	3,595	3,595	Yes	None	No	Radial	3,000	0	0	0	4/30/2023	Aug-23	
Northwest - 154	Brooten	BRO_TR01	BRO021	0.2	Thermal Discharging	4.94	Breaker Reach	Compliant	[redacted]	988	988	[redacted]	988	988	No	None	Yes	Radial	7,071	0	7,071	0	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Maple Grove - 147	Brooklyn Park	BRP_TR01	BRP061	0.7	Unintentional Islanding	0.7	Unintentional Islanding	Compliant	[redacted]	3,300	3,129	[redacted]	864	864	Yes	LTC	No	Radial	1,293	30	53	26	4/30/2023	Aug-23	
Maple Grove - 147	Brooklyn Park	BRP_TR01	BRP062	0.9	Thermal Discharging	1.49	Unintentional Islanding	Compliant	[redacted]	3,300	3,129	[redacted]	2,040	2,040	Yes	LTC	No	Radial	1,293	30	1,192	0	4/30/2023	Aug-23	
Maple Grove - 147	Brooklyn Park	BRP_TR01	BRP063	0.9	Thermal Discharging	1.22	Unintentional Islanding	Compliant	[redacted]	3,300	3,129	[redacted]	1,304	1,304	Yes	LTC	No	Radial	1,293	30	48	4	4/30/2023	Aug-23	
Maple Grove - 147	Brooklyn Park	BRP_TR02	BRP071	0.8	Primary Over-Voltage	1.5	Unintentional Islanding	Compliant	[redacted]	5,857	4,459	[redacted]	1,703	1,703	Yes	LTC	No	Radial	283	13	76	6	4/30/2023	Aug-23	
Maple Grove - 147	Brooklyn Park	BRP_TR02	BRP072	0.9	Thermal Discharging	1.27	Unintentional Islanding	Compliant	[redacted]	5,857	4,459	[redacted]	1,603	1,603	Yes	LTC	No	Radial	283	13	167	7	4/30/2023	Aug-23	
Maple Grove - 147	Brooklyn Park	BRP_TR02	BRP073	0.22	Unintentional Islanding	1.96	Unintentional Islanding	Compliant	[redacted]	5,857	4,459	[redacted]	2,220	2,220	Yes	LTC	No	Radial	283	13	40	0	4/30/2023	Aug-23	
Northwest - 154	Brownton	BRW_TR01	BRW001	0.08	Unintentional Islanding	0.08	Unintentional Islanding	Compliant	[redacted]	86	86	[redacted]	86	86	No	None	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Southeast - 144	Butterfield	BTF_TR01	BTF001	0.02	Unintentional Islanding	0.02	Unintentional Islanding	Compliant	[redacted]	429	429	[redacted]	381	381	No	0	No	Radial	300	0	300	0	7/31/2022	Nov-22	
Southeast - 144	Burnside	BUR_TR01	BUR022	0.75	Unintentional Islanding	1.34	Unintentional Islanding	Compliant	[redacted]	3,767	3,187	[redacted]	1,821	1,821	Yes	LTC	No	Radial	96	0	96	0	10/31/2022	Feb-23	
Southeast - 144	Burnside	BUR_TR01	BUR023	0.39	Unintentional Islanding	1.45	Unintentional Islanding	Compliant	[redacted]	3,767	3,187	[redacted]	1,921	1,921	Yes	LTC	No	Radial	96	0	0	0	10/31/2022	Feb-23	
Southeast - 144	Burnside	BUR_TR02	BUR032	0.7	Thermal Discharging	5.69	Breaker Reach	Compliant	[redacted]	1,906	1,420	[redacted]	1,906	1,906	Yes	LTC	Yes	Radial	9,454	0	9,454	0	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
White Bear Lake - 156	Baytown	BYT_TR01	BYT061	0.25	Unintentional Islanding	2.7	Unintentional Islanding	Compliant	[redacted]	2,927	2,040	[redacted]	2,816	2,816	Yes	LTC	No	Radial	195	58	195	58	4/30/2023	Aug-23	
White Bear Lake - 156	Baytown	BYT_TR02	BYT071	0.86	Unintentional Islanding	1.64	Unintentional Islanding	Compliant	[redacted]	4,710	3,962	[redacted]	1,700	1,700	Yes	LTC	No	Radial	188	78	86	7	4/30/2023	Aug-23	
White Bear Lake - 156	Baytown	BYT_TR02	BYT072	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	4,710	3,962	[redacted]	2,807	2,807	Yes	LTC	No	Radial	188	78	102	71	4/30/2023	Aug-23	
Southeast - 144	Cannon Falls	CAF_TR01	CAF021	0.48	Unintentional Islanding	0.48	Unintentional Islanding	Compliant	[redacted]	1,126	1,126	[redacted]	540	540	No	LTC	No	Radial	6	0	6	0	4/30/2023	Aug-23	
Southeast - 144	Cannon Falls	CAF_TR01	CAF022	0.3	Thermal Discharging	0.52	Unintentional Islanding	Compliant	[redacted]	1,126	1,126	[redacted]	585	585	No	LTC	No	Radial	6	0	0	0	4/30/2023	Aug-23	
Newport - 150	Cedarvale	CDV_TR01	CDV061	0.29	Unintentional Islanding	0.29	Unintentional Islanding	Compliant	[redacted]	3,219	2,890	[redacted]	306	306	Yes	None	No	Radial	37	117	0	99	4/30/2023	Aug-23	
Newport - 150	Cedarvale	CDV_TR01	CDV062	1.1	Unintentional Islanding	1.1	Unintentional Islanding	Compliant	[redacted]	3,219	2,890	[redacted]	1,171	1,171	Yes	None	No	Radial	37	117	0	0	4/30/2023	Aug-23	
Newport - 150	Cedarvale	CDV_TR01	CDV063	0.06	Unintentional Islanding	0.82	Unintentional Islanding	Compliant	[redacted]	3,219	2,890	[redacted]	887	887	Yes	None	No	Radial	37	117	37	18	4/30/2023	Aug-23	
Newport - 150	Cedarvale	CDV_TR02	CDV071	0.9	Thermal Discharging	2.37	Unintentional Islanding	Compliant	[redacted]	6,984	6,361	[redacted]	2,488	2,488	Yes	None	No	Radial	978	0	750	0	4/30/2023	Aug-23	
Newport - 150	Cedarvale	CDV_TR02	CDV072	0.5	Thermal Discharging	2.43	Unintentional Islanding	Compliant	[redacted]	6,984	6,361	[redacted]	2,729	2,729	Yes	None	No	Radial	978	0	228	0	4/30/2023	Aug-23	
Minneapolis - 141	Cedar Lake	CEL_TR01	CEL061	0.8	Primary Over-Voltage	1.3	Unintentional Islanding	Compliant	[redacted]	7,351	5,774	[redacted]	1,848	1,620	Yes	LTC	No	Radial	882	64	4	0	7/31/2022	Nov-22	
Minneapolis - 141	Cedar Lake	CEL_TR01	CEL062	0.96	Unintentional Islanding	0.96	Unintentional Islanding	Compliant	[redacted]	7,351	5,774	[redacted]	1,305	1,223	Yes	LTC	No	Radial	882	64	111	8	7/31/2022	Nov-22	
Minneapolis - 141	Cedar Lake	CEL_TR01	CEL063	0.53	Unintentional Islanding	0.53	Unintentional Islanding	Compliant	[redacted]	7,351	5,774	[redacted]	753	716	Yes	LTC	No	Radial	882	64	0	0	7/31/2022	Nov-22	
Minneapolis - 141	Cedar Lake	CEL_TR01	CEL064	0.9	Thermal Discharging	1.12	Unintentional Islanding	Compliant	[redacted]	7,351	5,774	[redacted]	1,716	1,404	Yes	LTC	No	Radial	882	64	681	26	7/31/2022	Nov-22	
Minneapolis - 141	Cedar Lake	CEL_TR01	CEL066	0.2	Unintentional Islanding	0.87	Unintentional Islanding	Compliant	[redacted]	7,351	5,774	[redacted]	1,231	918	Yes	LTC	No	Radial	882	64	86	30	7/31/2022	Nov-22	
Minneapolis - 141	Cedar Lake	CEL_TR02	CEL071	1.3	Primary Over-Voltage	1.67	Unintentional Islanding	Compliant	[redacted]	4,942	4,161	[redacted]	2,304	2,111	Yes	LTC	No	Radial	122	5	16	0	7/31/2022	Nov-22	
Minneapolis - 141	Cedar Lake	CEL_TR02	CEL072	0.79	Unintentional Islanding	0.79	Unintentional Islanding	Compliant	[redacted]	4,942	4,161	[redacted]	1,127	945	Yes	LTC	No	Radial	122	5	72	0	7/31/2022	Nov-22	
Minneapolis - 141	Cedar Lake	CEL_TR02	CEL075	0.68	Unintentional Islanding	0.68	Unintentional Islanding	Compliant	[redacted]	4,942	4,161	[redacted]	982	742	Yes	LTC	No	Radial	122	5	34	5	7/31/2022	Nov-22	
Newport - 150	Cottage Grove	CGR_TR01	CGR061	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	15,106	13,179	[redacted]	2,918	2,918	Yes	LTC	Yes	Radial	15,527	99	1,238	45	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades. Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Newport - 150	Cottage Grove	CGR_TR01	CGR062	0.9	Thermal Discharging	3.3	Primary Over-Voltage	Compliant	[redacted]	15,106	13,179	[redacted]	4,501	4,501	Yes	LTC	No	Radial	15,527	99	10	0	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	Cottage Grove	CGR_TR01	CGR063	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	15,106	13,179	[redacted]	1,695	1,695	Yes	LTC	Yes	Radial	15,527	99	14,204	11	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades. Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Newport - 150	Cottage Grove	CGR_TR01	CGR064	0.9	Thermal Discharging	2.12	Unintentional Islanding	Compliant	[redacted]	15,106	13,179	[redacted]	2,729	2,729	Yes	LTC	No	Radial	15,527	99	75	43	10/31/2022	Feb-23	
Newport - 150	Cottage Grove	CGR_TR02	CGR071	0.87	Unintentional Islanding	0.87	Unintentional Islanding	Compliant	[redacted]	6,305	6,305	[redacted]	1,304	1,304	Yes	LTC	No	Radial	676	339	312	209	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	Cottage Grove	CGR_TR02	CGR072	0.9	Thermal Discharging	2.65	Unintentional Islanding	Compliant	[redacted]	6,305	6,305	[redacted]	3,622	3,622	Yes	LTC	No	Radial	676	339	299	130	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	Cottage Grove	CGR_TR02	CGR073	2.94	Unintentional Islanding	2.94	Unintentional Islanding	Compliant	[redacted]	6,305	6,305	[redacted]	3,920	3,920	Yes	LTC	No	Radial	676	339	0	0	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	Cottage Grove	CGR_TR02	CGR074	0.9	Thermal Discharging	1.17	Unintentional Islanding	Compliant	[redacted]	6,305	6,305	[redacted]	1,703	1,703	Yes	LTC	No	Radial	676	339	65	0	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	Chemolite	CHE_TR01	CHE062	0.98	Unintentional Islanding	0.98	Unintentional Islanding	Compliant	[redacted]	7,424	5,224	[redacted]	1,063	1,063	Yes	LTC	No	Radial	1,449	191	0	0	4/30/2023	Aug-23	
Newport - 150	Chemolite	CHE_TR01	CHE063	1.1	Primary Over-Voltage	3.15	Unintentional Islanding	Compliant	[redacted]	7,424	5,224	[redacted]	3,236	3,236	Yes	LTC	No	Radial	1,449	191	780	8	4/30/2023	Aug-23	
Newport - 150	Chemolite	CHE_TR01	CHE064	0.5	Thermal Discharging	1.65	Unintentional Islanding	Compliant	[redacted]	7,424	5,224	[redacted]	1,868	1,868	Yes	LTC	No	Radial	1,449	191	543	89	4/30/2023	Aug-23	
Newport - 150	Chemolite	CHE_TR01	CHE065	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	7,424	5,224	[redacted]	0	0	Yes	LTC	No	Radial	1,449	191	126	94	4/30/2023	Aug-23	
Newport - 150	Chemolite	CHE_TR02	CHE075	0.6	Thermal Discharging	1.85	Breaker Reach	Compliant	[redacted]	5,955	5,955	[redacted]	1,980	1,980	Yes	LTC	Yes	Radial	5,310	138	5,089	36	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Newport - 150	Chemolite	CHE_TR02	CHE076	0.5	Thermal Discharging	1.99	Unintentional Islanding	Compliant	[redacted]	5,955	5,955	[redacted]	2,102	2,102	Yes	LTC	No	Radial	5,310	138	221	102	4/30/2023	Aug-23	
White Bear Lake - 156	Chisago County	CHI_TR02	CHI311	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	1,759	1,759	[redacted]	1,759	1,759	Yes	LTC	Yes	Radial	34,881	5,000	34,881	5,000	4/30/2023	Aug-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades. Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Clarks Grove	CKG_TR01	CKG041	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	360	360	[redacted]	360	360	No	None	No	Radial	2,334	0	2,334	0	4/30/2023	Aug-23	
Northwest - 154	Clara City	CLC_TR01	CLC022	0	Unintentional Islanding	0.4	Unintentional Islanding	Compliant	[redacted]	561	561	[redacted]	561	561	Yes	LTC	No	Radial	2,005	990	2,005	990	1/31/2023	May-23	
Northwest - 154	Clara City	CLC_TR02	CLC221	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	2,821	2,116	[redacted]	2,821	2,821	Yes	None	Yes	Radial	6,133	7,025	6,133	7,025	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Maple Grove - 147	Coon Creek	CNC_TR01	CNC061	1.63	Unintentional Islanding	1.63	Unintentional Islanding	Compliant	[redacted]	7,211	6,476	[redacted]	2,146	2,146	Yes	LTC	No	Radial	1,451	16	733	0	10/31/2022	Feb-23	
Maple Grove - 147	Coon Creek	CNC_TR01	CNC062	1.3	Thermal Discharging	1.51	Unintentional Islanding	Compliant	[redacted]	7,211	6,476	[redacted]	2,257	2,257	Yes	LTC	No	Radial	1,451	16	658	0	10/31/2022	Feb-23	
Maple Grove - 147	Coon Creek	CNC_TR01	CNC063	0.9	Thermal Discharging	1.59	Unintentional Islanding	Compliant	[redacted]	7,211	6,476	[redacted]	2,093	2,093	Yes	LTC	No	Radial	1,451	16	60	16	10/31/2022	Feb-23	
Maple Grove - 147	Coon Creek	CNC_TR02	CNC071	0.9	Thermal Discharging	1.5	Unintentional Islanding	Compliant	[redacted]	7,315	5,963	[redacted]	2,003	2,003	Yes	LTC	No	Radial	447	19	64	0	10/31/2022	Feb-23	
Maple Grove - 147	Coon Creek	CNC_TR02	CNC072	1.4	Thermal Discharging	2.04	Unintentional Islanding	Compliant	[redacted]	7,315	5,963	[redacted]	2,699	2,699	Yes	LTC	No	Radial	447	19	323	12	10/31/2022	Feb-23	
Maple Grove - 147	Coon Creek	CNC_TR02	CNC073	0.9	Thermal Discharging	1.34	Unintentional Islanding	Compliant	[redacted]	7,315	5,963	[redacted]	1,784	1,784	Yes	LTC	No	Radial	447	19	60	7	10/31/2022	Feb-23	
Northwest - 154	Cokato	COK_TR01	COK061	0	Unintentional Islanding	1	Unintentional Islanding	Compliant	[redacted]	1,293	1,293	[redacted]	1,293	1,293	No	LTC	No	Radial	6,013	4,067	6,013	4,067	10/31/2022	Feb-23	
Southeast - 144	Crystal Foods	CRF_TR01	CRF061	0.15	Unintentional Islanding	0.15	Unintentional Islanding	Compliant	[redacted]	2,025	1,838	[redacted]	200	200	Yes	None	No	Radial	0	987	0	0	10/31/2022	Feb-23	
Southeast - 144	Crystal Foods	CRF_TR01	CRF062	0.2	Thermal Discharging	1.13	Unintentional Islanding	Compliant	[redacted]	2,025	1,838	[redacted]	1,709	1,709	Yes	None	No	Radial	0	987	0	987	10/31/2022	Feb-23	
Maple Grove - 147	Crooked Lake	CRL_TR01	CRL027	0.02	Unintentional Islanding	2.6	Unintentional Islanding	Compliant	[redacted]	14,711	12,739	[redacted]	3,308	2,562	Yes	LTC	No	Radial	98	67	22	31	7/31/2022	Nov-22	
Maple Grove - 147	Crooked Lake	CRL_TR02	CRL031	0.1	Thermal Discharging	1.07	Unintentional Islanding	Compliant	[redacted]	6,100	4,045	[redacted]	1,513	922	Yes	LTC	No	Radial	135	244	65	207	7/31/2022	Nov-22	
Maple Grove - 147	Crooked Lake	CRL_TR02	CRL033	0.2	Thermal Discharging	1.29	Unintentional Islanding	Compliant	[redacted]	6,100	4,045	[redacted]	1,800	1,400	Yes	LTC	No	Radial	135	244	70	37	7/31/2022	Nov-22	
Maple Grove - 147	Crooked Lake	CRL_TR01	CRL065	0.7	Unintentional Islanding	0.7	Unintentional Islanding	Compliant	[redacted]	14,711	12,739	[redacted]	1,000	900	Yes	LTC	No	Radial	98	67	76	36	7/31/2022	Nov-22	
Southeast - 144	Castle Rock	CSR_TR01	CSR001	0.1	Primary Over-Voltage	0.5	Thermal Discharging	Compliant	[redacted]	100	100	[redacted]	80	80	No	None	No	Radial	5	0	5	0	4/30/2023	Aug-23	
Southeast - 144	Cannon Falls Transmission	CTF_TR01	CTF021	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	3,769	3,769	[redacted]	1,488	1,488	Yes	LTC	No	Radial	11,119	30	11,079	30	10/31/2022	Feb-23	
Southeast - 144	Cannon Falls Transmission	CTF_TR01	CTF022	0.19	Unintentional Islanding	1.87	Unintentional Islanding	Compliant	[redacted]	3,769	3,769	[redacted]	2,271	2,271	Yes	LTC	No	Radial	11,119	30	40	0	10/31/2022	Feb-23	
Southeast - 144	Credit River	CTR_TR01	CTR021	0.17	Unintentional Islanding	1.26	Unintentional Islanding	Compliant	[redacted]	2,274	1,685	[redacted]	1,357	1,357	Yes	LTC	No	Radial	118	20	108	20	4/30/2023	Aug-23	
Southeast - 144	Credit River	CTR_TR01	CTR022	0.83	Unintentional Islanding	0.83	Unintentional Islanding	Compliant	[redacted]	2,274	1,685	[redacted]	872	872	Yes	LTC	No	Radial	118	20	10	0	4/30/2023	Aug-23	
Southeast - 144	Credit River	CTR_TR02	CTR031	0.6	Primary Over-Voltage	3.16	Unintentional Islanding	Compliant	[redacted]	3,397	2,524	[redacted]	3,282	3,282	Yes	None	No	Radial	292	80	292	80	4/30/2023	Aug-23	
Northwest - 154	Danube	DAN_TR01	DAN021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	141	141	[redacted]	141	141	Yes	None	No	Radial	3,000	3,000	3,000	3,000	1/31/2023	May-23	
Northwest - 154	Dassel	DAS_TR01	DAS061	0.1	Primary Over-Voltage	5.21	Breaker Reach	Compliant	[redacted]	696	696	[redacted]	696	696	No	None	Yes	Radial	2,072	21	2,072	21	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
St Paul - 151	Daytons Bluff	DBL_TR01	DBL060	0.9	Thermal Discharging	1.67	Unintentional Islanding	Compliant	[redacted]	13,276	11,610	[redacted]	2,280	2,280	Yes	LTC	No	Radial	1,118	348	89	10	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR01	DBL061	0.5	Thermal Discharging	1.39	Unintentional Islanding	Compliant	[redacted]	13,276	11,610	[redacted]	1,746	1,746	Yes	LTC	No	Radial	1,118	348	0	0	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR01	DBL062	0.4	Thermal Discharging	0.68	Unintentional Islanding	Compliant	[redacted]	13,276	11,610	[redacted]	900	900	Yes	LTC	No	Radial	1,118	348	0	0	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR01	DBL063	0.35	Unintentional Islanding	1.47	Unintentional Islanding	Compliant	[redacted]	13,276	11,610	[redacted]	1,897	1,897	Yes	LTC	No	Radial	1,118	348	88	12	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR01	DBL064	0.15	Unintentional Islanding	0.15	Unintentional Islanding	Compliant	[redacted]	13,276	11,610	[redacted]	223	223	Yes	LTC	No	Radial	1,118	348	580	40	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR01	DBL065	0.9	Thermal Discharging	1.2	Unintentional Islanding	Compliant	[redacted]	13,276	11,610	[redacted]	1,649	1,649	Yes	LTC	No	Radial	1,118	348	83	10	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR01	DBL066	0.1	Primary Over-Voltage	0.51	Unintentional Islanding	Compliant	[redacted]	13,276	11,610	[redacted]	806	806	Yes	LTC	No	Radial	1,118	348	68	10	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR01	DBL067	0.06	Unintentional Islanding	2	Unintentional Islanding	Compliant	[redacted]	13,276	11,610	[redacted]	2,596	2,596	Yes	LTC	No	Radial	1,118	348	51	193	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR01	DBL068	0.24	Unintentional Islanding	1.82	Unintentional Islanding	Compliant	[redacted]	13,276	11,610	[redacted]	2,408	2,408	Yes	LTC	No	Radial	1,118	348	159	38	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR01	DBL069	0.6	Thermal Discharging	2.35	Unintentional Islanding	Compliant	[redacted]	13,276	11,610	[redacted]	3,214	3,214	Yes	LTC	No	Radial	1,118	348	0	35	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR02	DBL072	0.05	Unintentional Islanding	0.05	Unintentional Islanding	Compliant	[redacted]	12,836	9,543	[redacted]	91	91	Yes	LTC	No	Radial	1,250	21	0	0	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR02	DBL073	0.5	Thermal Discharging	1.01	Unintentional Islanding	Compliant	[redacted]	12,836	9,543	[redacted]	1,414	1,414	Yes	LTC	No	Radial	1,250	21	1,103	10	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR02	DBL074	0.9	Thermal Discharging	1.46	Unintentional Islanding	Compliant	[redacted]	12,836	9,543	[redacted]	1,942	1,942	Yes	LTC	No	Radial	1,250	21	147	11	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR03	DBL081	0.9	Thermal Discharging	1.44	Unintentional Islanding	Compliant	[redacted]	12,356	11,055	[redacted]	1,803	1,803	Yes	LTC	No	Radial	231	35	18	35	1/31/2023	May-23	
St Paul - 151	Daytons Bluff	DBL_TR03	DBL082	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	12,356	11,055	[redacted]	549	549	Yes	LTC	No	Radial	231	35	213	0	1/31/2023	May-23	
Northwest - 154	Douglas County	DGC_TR03	DGC061	0.6	Primary Over-Voltage	5.53	Breaker Reach	Compliant	[redacted]	1,082	762	[redacted]	1,082	1,082	Yes	None	Yes	Radial	8,501	0	8,501	0	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minnetonka - 142	Dahlgren	DHL_TR01	DHL061	0.3	Thermal Discharging	1.07	Unintentional Islanding	Compliant	[redacted]	1,400	1,100	[redacted]	1,400	1,400	Yes	None	No	Radial	149	35	149	35	10/31/2022	Feb-23	
Minnetonka - 142	Delano	DLO_TR01	DLO021	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	60	60	[redacted]	60	60	No	None	No	Radial	61	22	61	22	10/31/2022	Feb-23	
Southeast - 144	Dundas	DND_TR01	DND061	0.1	Thermal Discharging	1.02	Unintentional Islanding	Compliant	[redacted]	2,912	2,625	[redacted]	1,649	1,649	Yes	None	No	Radial	501	15	501	15	10/31/2022	Feb-23	
Southeast - 144	Dundas	DND_TR01	DND062	0.2	Thermal Discharging	6.9	Breaker Reach	Compliant	[redacted]	2,912	2,625	[redacted]	1,077	1,077	Yes	None	Yes	Radial	501	15	0	0	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Dundas	DND_TR02	DND071	0.2	Primary Over-Voltage	4.32	Breaker Reach	Compliant	[redacted]	2,648	2,214	[redacted]	2,532	2,532	Yes	None	Yes	Radial	12,878	1,057	5,186	1,057	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Dundas	DND_TR02	DND072	0.04	Unintentional Islanding	1.12	Unintentional Islanding	Compliant	[redacted]	2,648	2,214	[redacted]	1,443	1,443	No	None	No	Radial	12,878	1,057	7,692	0	10/31/2022	Feb-23	
Southeast - 144	Dodge Center	DOC_TR02	DOC021	0.3	Thermal Discharging	2.18	Unintentional Islanding	Compliant	[redacted]	2,366	2,283	[redacted]	2,366	2,366	Yes	None	No	Radial	64	80	64	80	4/30/2023	Aug-23	
Southeast - 144	Dodge Center	DOC_TR03	DOC031	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	1,113	1,113	[redacted]	1,113	1,113	Yes	None	Yes	Radial	13,285	7	13,285	7	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Dodge Center	DOC_TR01	DOC211	0	Unintentional Islanding	1.26	Unintentional Islanding	Compliant	[redacted]	1,689	1,498	[redacted]	1,689	1,689	Yes	None	No	Radial	6,324	38	6,324	38	10/31/2022	Feb-23	
Minnetonka - 142	Deephaven	DPN_TR01	DPN061	0.5	Unintentional Islanding	0.5	Unintentional Islanding	Compliant	[redacted]	6,494	4,966	[redacted]	660	660	Yes	LTC	No	Radial	922	53	41	19	10/31/2022	Feb-23	
Minnetonka - 142	Deephaven	DPN_TR01	DPN062	0.66	Unintentional Islanding	0.66	Unintentional Islanding	Compliant	[redacted]	6,494	4,966	[redacted]	2,002	2,002	Yes	LTC	No	Radial	922	53	815	26	10/31/2022	Feb-23	
Minnetonka - 142	Deephaven	DPN_TR01	DPN063	0.9	Thermal Discharging	1.52	Unintentional Islanding	Compliant	[redacted]	6,494	4,966	[redacted]	1,958	1,958	Yes	LTC	No	Radial	922	53	66	8	10/31/2022	Feb-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Technical Planning Standard	Substation Transformer Forecasted Peak Load (kVA)	Substation Transformer Minimum Load (kVA)	Transformer Absolute Min (kVA)	Feeder Forecasted Peak Load (kVA)	Feeder Daytime Minimum Load (kVA)	Feeder Absolute Min (kVA)	Actual Daytime Minimum Load	LTC or Regulator	VSR Equipped	Network or Radial	Substation Transformer Installed DG (kW)	Substation Transformer Queued DG (kW)	Feeder Installed DG (kW)	Feeder Queued DG (kW)	Data Cutoff	Latest Quarterly Update	Notes
Minnetonka - 142	Deephaven	DPN_TR02	DPN071	0.9	Thermal Discharging	1.1	Unintentional Islanding	Compliant	[redacted]	6,666	5,024	[redacted]	1,520	1,520	Yes	LTC	No	Radial	347	68	79	29	10/31/2022	Feb-23	
Minnetonka - 142	Deephaven	DPN_TR02	DPN072	0.08	Unintentional Islanding	0.83	Unintentional Islanding	Compliant	[redacted]	6,666	5,024	[redacted]	1,213	1,213	Yes	LTC	No	Radial	347	68	227	39	10/31/2022	Feb-23	
Minnetonka - 142	Deephaven	DPN_TR02	DPN073	0.9	Thermal Discharging	1.83	Unintentional Islanding	Compliant	[redacted]	6,666	5,024	[redacted]	2,539	2,539	Yes	LTC	No	Radial	347	68	41	0	10/31/2022	Feb-23	
Edina - 143	East Bloomington	EBL_TR01	EBL062	2.64	Unintentional Islanding	2.64	Unintentional Islanding	Compliant	[redacted]	11,971	9,597	[redacted]	2,675	2,675	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR01	EBL064	3.16	Unintentional Islanding	3.16	Unintentional Islanding	Compliant	[redacted]	11,971	9,597	[redacted]	3,220	3,220	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR01	EBL065	0.39	Unintentional Islanding	0.39	Unintentional Islanding	Compliant	[redacted]	11,971	9,597	[redacted]	400	400	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR01	EBL066	2.4	Unintentional Islanding	2.4	Unintentional Islanding	Compliant	[redacted]	11,971	9,597	[redacted]	2,640	2,640	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR01	EBL067	0.49	Unintentional Islanding	0.49	Unintentional Islanding	Compliant	[redacted]	11,971	9,597	[redacted]	510	510	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR02	EBL071	1.5	Thermal Discharging	2.34	Unintentional Islanding	Compliant	[redacted]	9,048	7,481	[redacted]	2,377	2,377	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR02	EBL072	1.1	Primary Over-Voltage	1.12	Unintentional Islanding	Compliant	[redacted]	9,048	7,481	[redacted]	1,118	1,118	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR02	EBL073	0.42	Unintentional Islanding	0.42	Unintentional Islanding	Compliant	[redacted]	9,048	7,481	[redacted]	600	600	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR02	EBL074	2.85	Unintentional Islanding	2.85	Unintentional Islanding	Compliant	[redacted]	9,048	7,481	[redacted]	2,781	2,781	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR02	EBL075	0.67	Unintentional Islanding	0.67	Unintentional Islanding	Compliant	[redacted]	9,048	7,481	[redacted]	632	632	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR02	EBL076	0.31	Unintentional Islanding	0.31	Unintentional Islanding	Compliant	[redacted]	9,048	7,481	[redacted]	316	316	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR02	EBL077	0.64	Unintentional Islanding	0.64	Unintentional Islanding	Compliant	[redacted]	9,048	7,481	[redacted]	608	608	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR03	EBL081	0.64	Unintentional Islanding	0.64	Unintentional Islanding	Compliant	[redacted]	8,485	8,386	[redacted]	671	671	Yes	LTC	No	Radial	1,145	19	1,000	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR03	EBL082	0.5	Primary Over-Voltage	1.53	Unintentional Islanding	Compliant	[redacted]	8,485	8,386	[redacted]	1,530	1,530	Yes	LTC	No	Radial	1,145	19	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR03	EBL083	2.26	Unintentional Islanding	2.26	Unintentional Islanding	Compliant	[redacted]	8,485	8,386	[redacted]	2,214	2,214	Yes	LTC	No	Radial	1,145	19	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR03	EBL084	0.05	Unintentional Islanding	1.44	Unintentional Islanding	Compliant	[redacted]	8,485	8,386	[redacted]	1,603	1,603	Yes	LTC	No	Radial	1,145	19	145	19	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR03	EBL085	0.6	Unintentional Islanding	0.6	Unintentional Islanding	Compliant	[redacted]	8,485	8,386	[redacted]	608	608	Yes	LTC	No	Radial	1,145	19	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR03	EBL086	3.9	Primary Over-Voltage	4.08	Unintentional Islanding	Compliant	[redacted]	8,485	8,386	[redacted]	4,012	4,012	Yes	LTC	No	Radial	1,145	19	0	0	4/30/2023	Aug-23	
Edina - 143	East Bloomington	EBL_TR03	EBL087	0.87	Unintentional Islanding	0.87	Unintentional Islanding	Compliant	[redacted]	8,485	8,386	[redacted]	860	860	Yes	LTC	No	Radial	1,145	19	0	0	4/30/2023	Aug-23	
Maple Grove - 147	Elm Creek	ECK_TR01	ECK061	1.1	Thermal Discharging	1.34	Unintentional Islanding	Compliant	[redacted]	7,101	5,201	[redacted]	1,811	1,811	Yes	LTC	No	Radial	983	130	642	24	10/31/2022	Feb-23	
Maple Grove - 147	Elm Creek	ECK_TR01	ECK062	0.7	Primary Over-Voltage	1.46	Unintentional Islanding	Compliant	[redacted]	7,101	5,201	[redacted]	1,910	1,910	Yes	LTC	No	Radial	983	130	134	68	10/31/2022	Feb-23	
Maple Grove - 147	Elm Creek	ECK_TR01	ECK063	1	Thermal Discharging	2.08	Unintentional Islanding	Compliant	[redacted]	7,101	5,201	[redacted]	2,907	2,907	Yes	LTC	No	Radial	983	130	207	38	10/31/2022	Feb-23	
Maple Grove - 147	Elm Creek	ECK_TR03	ECK081	0.76	Unintentional Islanding	0.76	Unintentional Islanding	Compliant	[redacted]	3,114	2,110	[redacted]	1,000	1,000	Yes	LTC	No	Radial	502	36	35	0	10/31/2022	Feb-23	
Maple Grove - 147	Elm Creek	ECK_TR03	ECK082	1.1	Thermal Discharging	1.55	Unintentional Islanding	Compliant	[redacted]	3,114	2,110	[redacted]	2,000	2,000	Yes	LTC	No	Radial	502	36	467	36	10/31/2022	Feb-23	
Maple Grove - 147	Elm Creek	ECK_TR02	ECK321	0.3	Primary Over-Voltage	2.04	Breaker Reach	Compliant	[redacted]	16,032	13,379	[redacted]	9,359	9,359	Yes	LTC	No	Radial	1,411	153	361	67	10/31/2022	Feb-23	
Maple Grove - 147	Elm Creek	ECK_TR02	ECK322	0.2	Primary Over-Voltage	0.39	Breaker Reach	Compliant	[redacted]	16,032	13,379	[redacted]	7,831	7,831	Yes	LTC	No	Radial	1,411	153	1,050	86	10/31/2022	Feb-23	
Maple Grove - 147	Elm Creek	ECK_TR04	ECK341	2.78	Unintentional Islanding	2.78	Unintentional Islanding	Compliant	[redacted]	0	0	[redacted]	0	0	Yes	LTC	No	Radial	15	60	15	60	10/31/2022	Feb-23	
Edina - 143	Edina	EDA_TR01	EDA061	0.83	Unintentional Islanding	0.83	Unintentional Islanding	Compliant	[redacted]	15,789	11,474	[redacted]	1,304	1,304	Yes	LTC	No	Radial	759	199	156	18	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR01	EDA062	1.64	Unintentional Islanding	1.64	Unintentional Islanding	Compliant	[redacted]	15,789	11,474	[redacted]	2,309	2,309	Yes	LTC	No	Radial	759	199	0	0	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR01	EDA065	1.5	Thermal Discharging	1.9	Unintentional Islanding	Compliant	[redacted]	15,789	11,474	[redacted]	2,435	2,435	Yes	LTC	No	Radial	759	199	53	18	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR01	EDA066	1.4	Thermal Discharging	1.72	Unintentional Islanding	Compliant	[redacted]	15,789	11,474	[redacted]	2,184	2,184	Yes	LTC	No	Radial	759	199	0	99	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR01	EDA067	0.1	Unintentional Islanding	0.55	Breaker Reach	Compliant	[redacted]	15,789	11,474	[redacted]	3,140	3,140	Yes	LTC	No	Radial	759	199	201	64	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR01	EDA068	0.9	Thermal Discharging	0.91	Unintentional Islanding	Compliant	[redacted]	15,789	11,474	[redacted]	1,487	1,487	Yes	LTC	No	Radial	759	199	349	0	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR01	EDA069	1.26	Unintentional Islanding	1.26	Unintentional Islanding	Compliant	[redacted]	15,789	11,474	[redacted]	1,630	1,630	Yes	LTC	No	Radial	759	199	0	0	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR02	EDA071	0.6	Unintentional Islanding	0.6	Unintentional Islanding	Compliant	[redacted]	15,496	12,070	[redacted]	1,300	1,300	Yes	LTC	No	Radial	891	107	32	9	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR02	EDA072	1.4	Thermal Discharging	1.51	Unintentional Islanding	Compliant	[redacted]	15,496	12,070	[redacted]	1,942	1,942	Yes	LTC	No	Radial	891	107	111	6	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR02	EDA073	0.16	Unintentional Islanding	2	Unintentional Islanding	Compliant	[redacted]	15,496	12,070	[redacted]	2,596	2,596	Yes	LTC	No	Radial	891	107	161	46	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR02	EDA074	0.9	Thermal Discharging	1.07	Unintentional Islanding	Compliant	[redacted]	15,496	12,070	[redacted]	1,432	1,432	Yes	LTC	No	Radial	891	107	85	21	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR02	EDA075	1.4	Thermal Discharging	1.72	Unintentional Islanding	Compliant	[redacted]	15,496	12,070	[redacted]	2,202	2,202	Yes	LTC	No	Radial	891	107	170	25	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR02	EDA076	0.5	Unintentional Islanding	0.5	Unintentional Islanding	Compliant	[redacted]	15,496	12,070	[redacted]	700	700	Yes	LTC	No	Radial	891	107	0	0	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR02	EDA077	0.68	Unintentional Islanding	0.68	Unintentional Islanding	Compliant	[redacted]	15,496	12,070	[redacted]	900	900	Yes	LTC	No	Radial	891	107	36	0	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR02	EDA078	0.9	Thermal Discharging	0.98	Unintentional Islanding	Compliant	[redacted]	15,496	12,070	[redacted]	1,237	1,237	Yes	LTC	No	Radial	891	107	236	0	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR02	EDA079	1.32	Unintentional Islanding	1.32	Unintentional Islanding	Compliant	[redacted]	15,496	12,070	[redacted]	1,772	1,772	Yes	LTC	No	Radial	891	107	60	0	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR03	EDA081	0.5	Thermal Discharging	1.53	Unintentional Islanding	Compliant	[redacted]	12,565	11,330	[redacted]	1,900	1,900	Yes	LTC	No	Radial	855	99	26	27	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR03	EDA082	1.27	Unintentional Islanding	1.27	Unintentional Islanding	Compliant	[redacted]	12,565	11,330	[redacted]	1,603	1,603	Yes	LTC	No	Radial	855	99	80	0	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR03	EDA083	0.96	Unintentional Islanding	0.96	Unintentional Islanding	Compliant	[redacted]	12,565	11,330	[redacted]	1,208	1,208	Yes	LTC	No	Radial	855	99	0	0	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR03	EDA084	0.9	Thermal Discharging	1.4	Unintentional Islanding	Compliant	[redacted]	12,565	11,330	[redacted]	1,800	1,800	Yes	LTC	No	Radial	855	99	120	25	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR03	EDA085	1.7	Primary Over-Voltage	8.05	Breaker Reach	Compliant	[redacted]	12,565	11,330	[redacted]	312	312	Yes	LTC	Yes	Radial	855	99	556	0	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Edina - 143	Edina	EDA_TR03	EDA087	0.28	Unintentional Islanding	1.6	Unintentional Islanding	Compliant	[redacted]	12,565	11,330	[redacted]	2,088	2,088	Yes	LTC	No	Radial	855	99	25	0	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR03	EDA088	0.9	Thermal Discharging	1.16	Unintentional Islanding	Compliant	[redacted]	12,565	11,330	[redacted]	1,503	1,503	Yes	LTC	No	Radial	855	99	4	8	1/31/2023	May-23	
Edina - 143	Edina	EDA_TR03	EDA089	0.9	Thermal Discharging	1.33	Unintentional Islanding	Compliant	[redacted]	12,565	11,330	[redacted]	1,649	1,649	Yes	LTC	No	Radial	855	99	44	39	1/31/2023	May-23	
Edina - 143	Eden Prairie	EDP_TR01	EDP062	1.4	Thermal Discharging	1.88	Unintentional Islanding	Compliant	[redacted]	8,023	6,140	[redacted]	2,596	2,195	Yes	LTC	No	Radial	161	28	0	0	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR01	EDP063	0.96	Unintentional Islanding	0.96	Unintentional Islanding	Compliant	[redacted]	8,023	6,140	[redacted]	1,304	1,304	Yes	LTC	No	Radial	161	28	0	0	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR01	EDP071	0.59	Unintentional Islanding	0.59	Unintentional Islanding	Compliant	[redacted]	8,023	6,140	[redacted]	806	700	Yes	LTC	No	Radial	161	28	0	0	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR01	EDP072	0.52	Unintentional Islanding	0.52	Unintentional Islanding	Compliant	[redacted]	8,023	6,140	[redacted]	707	707	Yes	LTC	No	Radial	161	28	10	0	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR01	EDP073	1.3	Thermal Discharging	1.62	Unintentional Islanding	Compliant	[redacted]	8,023	6,140	[redacted]	2,414	2,000	Yes	LTC	No	Radial	161	28	151	28	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR03	EDP081	3.1	Primary Over-Voltage	10	Primary Over-Voltage	Compliant	[redacted]	5,504	4,152	[redacted]	100	100	Yes	LTC	Yes	Radial	262	1,800	100	0	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR03	EDP082	0.65	Unintentional Islanding	0.65	Unintentional Islanding	Compliant	[redacted]	5,504	4,152	[redacted]	1,005	1,005	Yes	LTC	No	Radial	262	1,800	46	1,800	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR03	EDP083	1.12	Unintentional Islanding	1.12	Unintentional Islanding	Compliant	[redacted]	5,504	4,152	[redacted]	1,612	1,603	Yes	LTC	No	Radial	262	1,800	116	0	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR03	EDP084	0.41	Unintentional Islanding	0.41	Unintentional Islanding	Compliant	[redacted]	5,504	4,152	[redacted]	539	500	Yes	LTC	No	Radial	262	1,800	0	0	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR03	EDP085	1	Unintentional Islanding	1	Unintentional Islanding	Compliant	[redacted]	5,504	4,152	[redacted]	1,334	1,170	Yes	LTC	No	Radial	262	1,800	0	0	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR04	EDP091	0.91	Unintentional Islanding	0.91	Unintentional Islanding	Compliant	[redacted]	8,023	6,140	[redacted]	1,304	900	Yes	LTC	No	Radial	429	1,680	17	0	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR04	EDP092	1.4	Thermal Discharging	2.08	Unintentional Islanding	Compliant	[redacted]	8,023	6,140	[redacted]	2,828	2,625	Yes	LTC	No	Radial	429	1,680	29	0	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR04	EDP093	1.25	Unintentional Islanding	1.25	Unintentional Islanding	Compliant	[redacted]	8,023	6,140	[redacted]	1,712	1,217	Yes	LTC	No	Radial	429	1,680	0	0	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR04	EDP094	1.07	Unintentional Islanding	1.07	Unintentional Islanding	Compliant	[redacted]	8,023	6,140	[redacted]	1,500	1,500	Yes	LTC	No	Radial	429	1,680	0	0	7/31/2022	Nov-22	
Edina - 143	Eden Prairie	EDP_TR04	EDP095	0.82	Unintentional Islanding	0.82	Unintentional Islanding	Compliant	[redacted]	8,023	6,140	[redacted]	1,204	1,204	Yes	LTC	No	Radial	429	1,680	383	1,680	7/31/2022	Nov-22	
Southeast - 144	Eagle Lake	EGL_TR01	EGL021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	1,122	1,122	[redacted]	641	641	No	None	Yes	Radial	6,280	38	6,267	0	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Eagle Lake	EGL_TR01	EGL022	0.3	Thermal Discharging	0.51	Unintentional Islanding	Compliant	[redacted]	1,122	1,122	[redacted]	671	671	No	None	No	Radial	6,280	38	13	38	10/31/2022	Feb-23	
Southeast - 144	Elko	EKO_TR01	EKO021	0	Unintentional Islanding	0.71	Unintentional Islanding	Compliant	[redacted]	0	0	[redacted]	1,039	1,039	Yes	0	No	Radial	973	130	973	130	1/31/2023	May-23	Substation owned by Foreign Utility. Contractual obligations may reduce capacity and increase interconnection timelines
Minneapolis - 141	Elliot Park	ELP_TR01	ELP061	0.9	Thermal Discharging	2.01	Unintentional Islanding	Compliant	[redacted]	11,941	10,551	[redacted]	2,586	2,586	Yes	LTC	No	Radial	93	41	0	0	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR01	ELP062	0.5	Thermal Discharging	2.72	Unintentional Islanding	Compliant	[redacted]	11,941	10,551	[redacted]	3,701	3,701	Yes	LTC	No	Radial	93	41	93	41	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR01	ELP063	0.9	Thermal Discharging	1.85	Unintentional Islanding	Compliant	[redacted]	11,941	10,551	[redacted]	2,402	2,402	Yes	LTC	No	Radial	93	41	0	0	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR02	ELP071	0.23	Unintentional Islanding	0.23	Unintentional Islanding	Compliant	[redacted]	11,761	10,431	[redacted]	305	305	Yes	LTC	No	Radial	633	240	0	0	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR02	ELP072	1.03	Unintentional Islanding	1.03	Unintentional Islanding	Compliant	[redacted]	11,761	10,431	[redacted]	1,455	1,455	Yes	LTC	No	Radial	633	240	0	240	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR02	ELP073	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	11,761	10,431	[redacted]	383	383	Yes	LTC	No	Radial	633	240	600	0	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR02	ELP074	0.44	Unintentional Islanding	0.44	Unintentional Islanding	Compliant	[redacted]	11,761	10,431	[redacted]	655	655	Yes	LTC	No	Radial	633	240	0	0	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR02	ELP075	0.8	Thermal Discharging	1.04	Unintentional Islanding	Compliant	[redacted]	11,761	10,431	[redacted]	1,348	1,348	Yes	LTC	No	Radial	633	240	33	0	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR03	ELP081	2.26	Unintentional Islanding	2.26	Unintentional Islanding	Compliant	[redacted]	12,106	10,721	[redacted]	2,992	2,992	Yes	LTC	No	Radial	9,483	16,117	0	16,000	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR03	ELP082	0.9	Thermal Discharging	2.31	Unintentional Islanding	Compliant	[redacted]	12,106	10,721	[redacted]	3,089	3,089	Yes	LTC	No	Radial	9,483	16,117	40	0	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR03	ELP083	0.27	Unintentional Islanding	0.27	Unintentional Islanding	Compliant	[redacted]	12,106	10,721	[redacted]	479	479	Yes	LTC	No	Radial	9,483	16,117	0	0	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR03	ELP084	0.9	Thermal Discharging	2.48	Unintentional Islanding	Compliant	[redacted]	12,106	10,721	[redacted]	3,644	3,644	Yes	LTC	No	Radial	9,483	16,117	107	117	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR03	ELP085	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	12,106	10,721	[redacted]	0	0	Yes	LTC	No	Radial	9,483	16,117	9,176	0	1/31/2023	May-23	
Minneapolis - 141	Elliot Park	ELP_TR03	ELP86X	1.79	Unintentional Islanding	1.79	Unintentional Islanding	Compliant	[redacted]	12,106	10,721	[redacted]	2,346	2,346	Yes	LTC	No	Radial	9,483	16,117	160	0	1/31/2023	May-23	
Southeast - 144	Essig	ESG_TR01	ESG001	0.1	Primary Over-Voltage	0.5	Thermal Discharging	Compliant	[redacted]	54	54	[redacted]	63	63	No	Bus Reg - Sub	No	Radial	0	0	0	0	7/31/2022	Nov-22	
Southeast - 144	Eastwood	ESW_TR01	ESW061	0.3	Thermal Discharging	2.04	Unintentional Islanding	Compliant	[redacted]	7,541	6,784	[redacted]	2,843	2,169	Yes	LTC	No	Radial	726	986	70	986	7/31/2022	Nov-22	
Southeast - 144	Eastwood	ESW_TR01	ESW062	0.12	Unintentional Islanding	2.09	Unintentional Islanding	Compliant	[redacted]	7,541	6,784	[redacted]	3,060	2,652	Yes	LTC	No	Radial	726	986	56	0	7/31/2022	Nov-22	
Southeast - 144	Eastwood	ESW_TR01	ESW063	0.84	Unintentional Islanding	0.84	Unintentional Islanding	Compliant	[redacted]	7,541	6,784	[redacted]	1,143	1,143	Yes	LTC	No	Radial	726	986	600	0	7/31/2022	Nov-22	
Southeast - 144	Eastwood	ESW_TR02	ESW071	0.9	Thermal Discharging	1.11	Unintentional Islanding	Compliant	[redacted]	11,975	11,975	[redacted]	1,546	1,227	Yes	LTC	No	Radial	6,582	1,000	0	0	7/31/2022	Nov-22	
Southeast - 144	Eastwood	ESW_TR02	ESW072	0.5	Thermal Discharging	1.56	Unintentional Islanding	Compliant	[redacted]	11,975	11,975	[redacted]	2,247	1,924	Yes	LTC	No	Radial	6,582	1,000	40	0	7/31/2022	Nov-22	
Southeast - 144	Eastwood	ESW_TR02	ESW073	0.3	Thermal Discharging	5	TPS Capacity Utilization	Compliant	[redacted]	11,975	11,975	[redacted]	1,425	866	Yes	LTC	Yes	Radial	6,582	1,000	6,542	1,000	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Eastwood	ESW_TR03	ESW081	0.9	Thermal Discharging	1.09	Unintentional Islanding	Compliant	[redacted]	4,600	3,500	[redacted]	1,600	1,200	Yes	LTC	No	Radial	583	0	63	0	7/31/2022	Nov-22	
Southeast - 144	Eastwood	ESW_TR03	ESW082	1.1	Primary Over-Voltage	1.78	Unintentional Islanding	Compliant	[redacted]	4,600	3,500	[redacted]	2,602	2,102	Yes	LTC	No	Radial	583	0	520	0	7/31/2022	Nov-22	
Southeast - 144	East Winona	EWI_TR01	EWI022	0.4	Thermal Discharging	1.69	Unintentional Islanding	Compliant	[redacted]	1,879	1,879	[redacted]	1,819	1,819	No	LTC	No	Radial	37	0	37	0	4/30/2023	Aug-23	
Minnetonka - 142	Excelsior	EXC_TR01	EXC061	1	Thermal Discharging	2.1	Unintentional Islanding	Compliant	[redacted]	4,804	3,787	[redacted]	2,234	2,234	Yes	None	No	Radial	263	35	99	13	4/30/2023	Aug-23	
Minnetonka - 142	Excelsior	EXC_TR01	EXC062	0.9	Thermal Discharging	1.94	Unintentional Islanding	Compliant	[redacted]	4,804	3,787	[redacted]	2,055	2,055	Yes	None	No	Radial	263	35	164	22	4/30/2023	Aug-23	
Southeast - 144	Faribault	FAB_TR02	FAB061	0.5	Thermal Discharging	1.29	Unintentional Islanding	Compliant	[redacted]	1,746	1,746	[redacted]	1,676	1,676	Yes	LTC	No	Radial	3,084	5	21	5	10/31/2022	Feb-23	
Southeast - 144	Faribault	FAB_TR02	FAB063	0.2	Primary Over-Voltage	7.96	Breaker Reach	Exceeded	[redacted]	1,746	1,746	[redacted]	2,507	2,507	Yes	LTC	Yes	Radial	3,084	5	3,063	0	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Faribault	FAB_TR01	FAB071	0.2	Thermal Discharging	1.53	Unintentional Islanding	Compliant	[redacted]	3,517	2,941	[redacted]	1,931	1,931	Yes	None	No	Radial	167	0	149	0	10/31/2022	Feb-23	
Southeast - 144	Faribault	FAB_TR01	FAB073	0.23	Unintentional Islanding	0.98	Unintentional Islanding	Compliant	[redacted]	3,517	2,941	[redacted]	1,334	1,334	Yes	None	No	Radial	167	0	18	0	10/31/2022	Feb-23	
Southeast - 144	Fair Park	FAP_TR01	FAP061	0.3	Thermal Discharging	4.6	Thermal Discharging	Compliant	[redacted]	1,065	705	[redacted]	1,065	1,065	Yes	LTC	Yes	Radial	5,721	1,112	5,679	1,094	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Fair Park	FAP_TR01	FAP062	0.03	Unintentional Islanding	0.95	Unintentional Islanding	Compliant	[redacted]	1,065	705	[redacted]	0	0	No	LTC	No	Radial	5,721	1,112	42	18	10/31/2022	Feb-23	
Southeast - 144	Fair Park	FAP_TR02	FAP071	0.3	Thermal Discharging	2	Unintentional Islanding	Compliant	[redacted]	2,843	2,546	[redacted]	2,640	2,640	Yes	Bus Reg - Sub	No	Radial	0	0	0	0	10/31/2022	Feb-23	
Northwest - 154	Fiesta City	FIC_TR01	FIC021	0.1	Primary Over-Voltage	4.87	Breaker Reach	Compliant	[redacted]	1,852	1,689	[redacted]	646	646	Yes	LTC	Yes	Radial	5,050	615	4,014	0	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Fiesta City	FIC_TR01	FIC022	0.8	Thermal Discharging	1.08	Unintentional Islanding	Compliant	[redacted]	1,852	1,689	[redacted]	1,466	1,466	Yes	LTC	No	Radial	5,050	615	1,036	615	1/31/2023	May-23	
Northwest - 154	Fiesta City	FIC_TR02	FIC031	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	1,414	1,200	[redacted]	1,513	1,513	Yes	LTC	No	Radial	11	1,999	11	1,999	1/31/2023	May-23	
Northwest - 154	Franklin	FRA_TR07	FRA001	0.1	Primary Over-Voltage	0.22	Unintentional Islanding	Compliant	[redacted]	240	240	[redacted]	240	240	No	None	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Northwest - 154	Franklin	FRA_TR04	FRA211	0.24	Unintentional Islanding	0.24	Unintentional Islanding	Compliant	[redacted]	327	327	[redacted]	327	327	No	None	No	Radial	2,003	2,000	2,003	2,000	1/31/2023	May-23	
Newport - 150	Farmington	FRM_TR01	FRM061	0.3	Primary Over-Voltage	0.81	Unintentional Islanding	Compliant	[redacted]	2,236	2,236	[redacted]	858	858	Yes	LTC	No	Radial	10,867	30	740	0	4/30/2023	Aug-23	
Newport - 150	Farmington	FRM_TR01	FRM062	1	Thermal Discharging	4.58	Breaker Reach	Compliant	[redacted]	2,236	2,236	[redacted]	1,455	1,455	Yes	LTC	Yes	Radial	10,867	30	10,127	30	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Newport - 150	Farmington	FRM_TR02	FRM071	0.6	Thermal Discharging	7.77	Breaker Reach	Compliant	[redacted]	2,892	2,523	[redacted]	2,447	2,447	Yes	LTC	Yes	Radial	6,181	135	6,181	135	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Frontenac	FRO_TR01	FRO021	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	563	563	[redacted]	563	563	No	None	Yes	Radial	5,041	0	5,041	0	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	First Lake	FSL_TR01	FSL311	0.1	Primary Over-Voltage	7	Thermal Discharging	Compliant	[redacted]	12,314	12,002	[redacted]	5,601	5,601	Yes	LTC	Yes	Radial	11,809	395	11,315	255	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	First Lake	FSL_TR01	FSL312	0.2	Thermal Discharging	0.72	Breaker Reach	Compliant	[redacted]	12,314	12,002	[redacted]	7,434	7,434	Yes	LTC	No	Radial	11,809	395	494	140	4/30/2023	Aug-23	
Minneapolis - 141	Fifth Street	FST_TR01	FST067	0.36	Unintentional Islanding	0.36	Unintentional Islanding	Compliant	[redacted]	11,756	10,036	[redacted]	486	486	Yes	LTC	No	Radial	0	0	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Fifth Street	FST_TR01	FST068	0.53	Unintentional Islanding	0.53	Unintentional Islanding	Compliant	[redacted]	11,756	10,036	[redacted]	834	834	Yes	LTC	No	Radial	0	0	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Fifth Street	FST_TR02	FST077	1.11	Unintentional Islanding	1.11	Unintentional Islanding	Compliant	[redacted]	14,500	12,394	[redacted]	1,404	1,404	Yes	LTC	No	Radial	32	0	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Fifth Street	FST_TR02	FST078	1.07	Unintentional Islanding	1.07	Unintentional Islanding	Compliant	[redacted]	14,500	12,394	[redacted]	1,432	1,432	Yes	LTC	No	Radial	32	0	32	0	10/31/2022	Feb-23	
Minneapolis - 141	Fifth Street	FST_TR03	FST085	0.21	Unintentional Islanding	0.21	Unintentional Islanding	Compliant	[redacted]	14,225	12,743	[redacted]	316	316	Yes	LTC	No	Radial	0	0	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Fifth Street	FST_TR03	FST086	0.37	Unintentional Islanding	0.37	Unintentional Islanding	Compliant	[redacted]	14,225	12,743	[redacted]	548	548	Yes	LTC	No	Radial	0	0	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Fifth Street	FST_TR04	FST087	1.3	Unintentional Islanding	1.3	Unintentional Islanding	Compliant	[redacted]	12,320	11,353	[redacted]	2,010	2,010	Yes	LTC	No	Radial	0	0	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Fifth Street	FST_TR04	FST088	0.15	Unintentional Islanding	0.15	Unintentional Islanding	Compliant	[redacted]	12,320	11,353	[redacted]	223	223	Yes	LTC	No	Radial	0	0	0	0	10/31/2022	Feb-23	
Southeast - 144	Gaylord	GAY_TR01	GAY001	0.1	Primary Over-Voltage	0.17	Unintentional Islanding	Compliant	[redacted]	749	749	[redacted]	244	244	No	None	No	Radial	3,989	2,964	8	4	1/31/2023	May-23	
Southeast - 144	Gaylord	GAY_TR01	GAY002	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	749	749	[redacted]	487	487	No	None	Yes	Radial	3,989	2,964	3,981	2,960	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Gaylord	GAY_TR01	GAY003	0.2	Primary Over-Voltage	0.22	Unintentional Islanding	Compliant	[redacted]	749	749	[redacted]	298	298	No	None	No	Radial	3,989	2,964	0	0	1/31/2023	May-23	
Maple Grove - 147	Greenfield	GFD_TR01	GFD021	0.5	Thermal Discharging	3.68	Breaker Reach	Compliant	[redacted]	1,280	1,280	[redacted]	772	772	Yes	None	Yes	Radial	10,158	17	10,038	17	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Maple Grove - 147	Greenfield	GFD_TR01	GFD022	0.3	Thermal Discharging	0.36	Unintentional Islanding	Compliant	[redacted]	1,280	1,280	[redacted]	604	604	Yes	None	No	Radial	10,158	17	120	0	10/31/2022	Feb-23	
Southeast - 144	Gibbon	GIB_TR01	GIB021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	439	439	[redacted]	439	439	No	None	Yes	Radial	3,370	740	3,370	740	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Glenwood	GLD_TR01	GLD021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	3,045	2,354	[redacted]	3,045	3,045	Yes	None	Yes	Radial	14,106	0	14,106	0	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Glenwood	GLD_TR02	GLD031	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	1,204	900	[redacted]	1,204	1,204	Yes	None	No	Radial	2	0	2	0	4/30/2023	Aug-23	
White Bear Lake - 156	Goose Lake	GLK_TR01	GLK061	0.06	Unintentional Islanding	3.07	Unintentional Islanding	Compliant	[redacted]	12,001	9,910	[redacted]	3,228	3,228	Yes	LTC	No	Radial	881	448	120	21	4/30/2023	Aug-23	
White Bear Lake - 156	Goose Lake	GLK_TR01	GLK062	0.26	Unintentional Islanding	2.45	Unintentional Islanding	Compliant	[redacted]	12,001	9,910	[redacted]	2,500	2,500	Yes	LTC	No	Radial	881	448	200	18	4/30/2023	Aug-23	
White Bear Lake - 156	Goose Lake	GLK_TR01	GLK063	0.29	Unintentional Islanding	1.93	Unintentional Islanding	Compliant	[redacted]	12,001	9,910	[redacted]	2,059	2,059	Yes	LTC	No	Radial	881	448	331	317	4/30/2023	Aug-23	
White Bear Lake - 156	Goose Lake	GLK_TR01	GLK064	0.14	Unintentional Islanding	2	Unintentional Islanding	Compliant	[redacted]	12,001	9,910	[redacted]	2,102	2,102	Yes	LTC	No	Radial	881	448	139	41	4/30/2023	Aug-23	
White Bear Lake - 156	Goose Lake	GLK_TR01	GLK065	0.17	Primary Over-Voltage	1.06	Unintentional Islanding	Compliant	[redacted]	12,001	9,910	[redacted]	1,140	1,140	Yes	LTC	No	Radial	881	448	91	51	4/30/2023	Aug-23	
White Bear Lake - 156	Goose Lake	GLK_TR02	GLK071	0.37	Unintentional Islanding	3.32	Unintentional Islanding	Compliant	[redacted]	10,296	7,985	[redacted]	3,298	3,298	Yes	LTC	No	Radial	1,054	342	187	17	4/30/2023	Aug-23	
White Bear Lake - 156	Goose Lake	GLK_TR02	GLK072	0.9	Thermal Discharging	2.8	Unintentional Islanding	Compliant	[redacted]	10,296	7,985	[redacted]	3,008	3,008	Yes	LTC	No	Radial	1,054	342	108	7	4/30/2023	Aug-23	
White Bear Lake - 156	Goose Lake	GLK_TR02	GLK073	0.6	Thermal Discharging	2.3	Unintentional Islanding	Compliant	[redacted]	10,296	7,985	[redacted]	2,371	2,371	Yes	LTC	No	Radial	1,054	342	560	229	4/30/2023	Aug-23	
White Bear Lake - 156	Goose Lake	GLK_TR02	GLK074	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	10,296	7,985	[redacted]	2,159	2,159	Yes	LTC	No	Radial	1,054	342	199	89	4/30/2023	Aug-23	
Minnetonka - 142	Glen Lake	GNL_TR01	GNL061	1.27	Unintentional Islanding	1.27	Unintentional Islanding	Compliant	[redacted]	5,314	3,433	[redacted]	1,055	1,055	Yes	None	No	Radial	445	46	10	0	4/30/2023	Aug-23	
Minnetonka - 142	Glen Lake	GNL_TR01	GNL062	1	Primary Over-Voltage	1.94	Unintentional Islanding	Compliant	[redacted]	5,314	3,433	[redacted]	1,767	1,767	Yes	None	No	Radial	445	46	324	22	4/30/2023	Aug-23	
Minnetonka - 142	Glen Lake	GNL_TR01	GNL063	0.9	Primary Over-Voltage	2.41	Unintentional Islanding	Compliant	[redacted]	5,314	3,433	[redacted]	1,812	1,812	Yes	None	No	Radial	445	46	111	24	4/30/2023	Aug-23	
Minnetonka - 142	Glen Lake	GNL_TR02	GNL071	1.47	Unintentional Islanding	1.47	Unintentional Islanding	Compliant	[redacted]	4,916	4,559	[redacted]	1,382	1,382	Yes	None	No	Radial	641	60	104	19	4/30/2023	Aug-23	
Minnetonka - 142	Glen Lake	GNL_TR02	GNL072	1.2	Primary Over-Voltage	2.62	Unintentional Islanding	Compliant	[redacted]	4,916	4,559	[redacted]	2,536	2,536	Yes	None	No	Radial	641	60	266	28	4/30/2023	Aug-23	
Minnetonka - 142	Glen Lake	GNL_TR02	GNL073	1.32	Unintentional Islanding	1.32	Unintentional Islanding	Compliant	[redacted]	4,916	4,559	[redacted]	1,276	1,276	Yes	None	No	Radial	641	60	271	13	4/30/2023	Aug-23	
Minneapolis - 141	Gopher	GPH_TR01	GPH061	0.9	Thermal Discharging	1.52	Unintentional Islanding	Compliant	[redacted]	5,921	5,135	[redacted]	2,171	1,890	Yes	LTC	No	Radial	153	93	111	93	7/31/2022	Nov-22	
Minneapolis - 141	Gopher	GPH_TR01	GPH062	0.9	Thermal Discharging	2.68	Unintentional Islanding	Compliant	[redacted]	5,921	5,135	[redacted]	3,687	3,035	Yes	LTC	No	Radial	153	93	42	0	7/31/2022	Nov-22	
Minneapolis - 141	Gopher	GPH_TR01	GPH068	3.37	Unintentional Islanding	3.37	Unintentional Islanding	Compliant	[redacted]	5,921	5,135	[redacted]	4,454	4,087	Yes	LTC	No	Radial	153	93	0	0	7/31/2022	Nov-22	
Minneapolis - 141	Gopher	GPH_TR01	GPH069	0.78	Unintentional Islanding	0.78	Unintentional Islanding	Compliant	[redacted]	5,921	5,135	[redacted]	1,042	913	Yes	LTC	No	Radial	153	93	0	0	7/31/2022	Nov-22	
Minneapolis - 141	Gopher	GPH_TR02	GPH073	0.81	Unintentional Islanding	0.81	Unintentional Islanding	Compliant	[redacted]	3,172	2,169	[redacted]	1,158	974	Yes	LTC	No	Radial	36	33	36	0	7/31/2022	Nov-22	
Minneapolis - 141	Gopher	GPH_TR02	GPH074	0.84	Unintentional Islanding	0.84	Unintentional Islanding	Compliant	[redacted]	3,172	2,169	[redacted]	1,094	1,094	No	LTC	No	Radial	36	33	0	33	7/31/2022	Nov-22	
Minneapolis - 141	Gopher	GPH_TR02	GPH075	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	3,172	2,169	[redacted]	0	0	No	LTC	No	Radial	36	33	0	0	7/31/2022	Nov-22	
Minneapolis - 141	Gopher	GPH_TR02	GPH079	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	3,172	2,169	[redacted]	0	0	No	LTC	No	Radial	36	33	0	0	7/31/2022	Nov-22	
Northwest - 154	Granite City	GRC_TR01	GRC062	0	Unintentional Islanding	1.1	Unintentional Islanding	Compliant	[redacted]	5,783	4,998	[redacted]	2,040	2,040	Yes	None	No	Radial	836	77	619	67	10/31/2022	Feb-23	
Northwest - 154	Granite City	GRC_TR01	GRC063	0.7	Thermal Discharging	1.89	Unintentional Islanding	Compliant	[redacted]	5,783	4,998	[redacted]	2,648	2,648	Yes	None	No	Radial	836	77	217	10	10/31/2022	Feb-23	
Northwest - 154	Granite City	GRC_TR02	GRC073	0.2	Breaker Reach	1.17	Unintentional Islanding	Compliant	[redacted]	2,335	1,400	[redacted]	2,335	2,335	Yes	None	No	Radial	43	0	43	0	10/31/2022	Feb-23	
Northwest - 154	Granite City	GRC_TR03	GRC311	0.4	Primary Over-Voltage	10	Primary Over-Voltage	Compliant	[redacted]	13,337	10,278	[redacted]	2,107	2,107	Yes	LTC	Yes	Radial	9,978	207	5,794	31	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Granite City	GRC_TR03	GRC312	0.5	Thermal Discharging	10	Primary Over-Voltage	Compliant	[redacted]	13,337	10,278	[redacted]	4,101	4,101	Yes	LTC	Yes	Radial	9,978	207	4,107	114	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Granite City	GRC_TR03	GRC313	0.1	Thermal Discharging	1.17	Breaker Reach	Compliant	[redacted]	13,337	10,278	[redacted]	2,702	2,702	Yes	LTC	No	Radial	9,978	207	77	62	10/31/2022	Feb-23	
Southeast - 144	Green Isle	GRI_TR01	GRI001	0	Unintentional Islanding	0.17	Unintentional Islanding	Compliant	[redacted]	228	228	[redacted]	222	222	No	LTC	No	Radial	1,034	23	1,034	23	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minnetonka - 142	Gleason Lake	GSL_TR07	GSL061	0.8	Unintentional Islanding	0.8	Unintentional Islanding	Compliant	[redacted]	5,045	4,179	[redacted]	946	946	Yes	LTC	No	Radial	145	26	31	26	4/30/2023	Aug-23	
Minnetonka - 142	Gleason Lake	GSL_TR07	GSL064	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	5,045	4,179	[redacted]	0	0	Yes	LTC	No	Radial	145	26	60	0	4/30/2023	Aug-23	
Minnetonka - 142	Gleason Lake	GSL_TR07	GSL065	0.6	Thermal Discharging	1.64	Unintentional Islanding	Compliant	[redacted]	5,045	4,179	[redacted]	1,612	1,612	Yes	LTC	No	Radial	145	26	54	0	4/30/2023	Aug-23	
Minnetonka - 142	Gleason Lake	GSL_TR08	GSL074	0.36	Unintentional Islanding	2.33	Unintentional Islanding	Compliant	[redacted]	9,457	6,966	[redacted]	2,518	2,518	Yes	LTC	No	Radial	238	695	74	78	4/30/2023	Aug-23	
Minnetonka - 142	Gleason Lake	GSL_TR08	GSL075	0.9	Thermal Discharging	2.44	Unintentional Islanding	Compliant	[redacted]	9,457	6,966	[redacted]	2,532	2,532	Yes	LTC	No	Radial	238	695	30	172	4/30/2023	Aug-23	
Minnetonka - 142	Gleason Lake	GSL_TR08	GSL076	1.2	Thermal Discharging	1.89	Unintentional Islanding	Compliant	[redacted]	9,457	6,966	[redacted]	1,900	1,900	Yes	LTC	No	Radial	238	695	103	445	4/30/2023	Aug-23	
Minnetonka - 142	Gleason Lake	GSL_TR08	GSL079	0.5	Thermal Discharging	1.68	Unintentional Islanding	Compliant	[redacted]	9,457	6,966	[redacted]	1,903	1,903	Yes	LTC	No	Radial	238	695	31	0	4/30/2023	Aug-23	
Minnetonka - 142	Gleason Lake	GSL_TR04	GSL341	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	7,486	7,486	[redacted]	6,268	6,268	Yes	LTC	No	Radial	509	67	372	67	4/30/2023	Aug-23	
Minnetonka - 142	Gleason Lake	GSL_TR04	GSL342	1.6	Thermal Discharging	5.87	Unintentional Islanding	Compliant	[redacted]	7,486	7,486	[redacted]	6,022	6,022	Yes	LTC	No	Radial	509	67	137	0	4/30/2023	Aug-23	
Southeast - 144	Goodview	GVW_TR01	GVW021	0.05	Unintentional Islanding	1.22	Unintentional Islanding	Compliant	[redacted]	6,546	5,117	[redacted]	1,866	1,482	Yes	LTC	No	Radial	316	30	78	30	7/31/2022	Nov-22	
Southeast - 144	Goodview	GVW_TR01	GVW022	0.2	Thermal Discharging	1.4	Unintentional Islanding	Compliant	[redacted]	6,546	5,117	[redacted]	1,869	1,684	Yes	LTC	No	Radial	316	30	87	0	7/31/2022	Nov-22	
Southeast - 144	Goodview	GVW_TR01	GVW023	0.2	Thermal Discharging	1.25	Unintentional Islanding	Compliant	[redacted]	6,546	5,117	[redacted]	1,846	1,835	No	LTC	No	Radial	316	30	151	0	7/31/2022	Nov-22	
Southeast - 144	Goodview	GVW_TR02	GVW031	0.4	Thermal Discharging	3.8	TPS Capacity Utilization	Compliant	[redacted]	2,668	893	[redacted]	1,144	1,757	No	LTC	Yes	Radial	6,444	1,003	6,361	1,003	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Goodview	GVW_TR02	GVW032	0.07	Unintentional Islanding	1.25	Unintentional Islanding	Compliant	[redacted]	2,668	893	[redacted]	1,797	2,200	No	LTC	No	Radial	6,444	1,003	83	0	7/31/2022	Nov-22	
South Dakota - 152	Hadley	HAD_TR01	HAD021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	397	0	[redacted]	78	78	Yes	None	No	Radial	2,011	7,000	1,003	3,000	1/31/2023	May-23	
South Dakota - 152	Hadley	HAD_TR01	HAD022	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	397	0	[redacted]	320	320	Yes	None	Yes	Radial	2,011	7,000	1,008	4,000	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Newport - 150	Hastings	HAS_TR01	HAS021	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	5,354	4,186	[redacted]	1,473	1,473	Yes	LTC	Yes	Radial	4,767	112	4,704	86	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Newport - 150	Hastings	HAS_TR01	HAS022	0.3	Thermal Discharging	1.27	Breaker Reach	Compliant	[redacted]	5,354	4,186	[redacted]	2,602	2,602	Yes	LTC	No	Radial	4,767	112	63	26	4/30/2023	Aug-23	
Newport - 150	Hastings	HAS_TR01	HAS023	0.3	Thermal Discharging	3.52	Unintentional Islanding	Compliant	[redacted]	5,354	4,186	[redacted]	3,701	3,701	Yes	LTC	No	Radial	4,767	112	0	0	4/30/2023	Aug-23	
Newport - 150	Hastings	HAS_TR02	HAS031	0.8	Thermal Discharging	0.9	Unintentional Islanding	Compliant	[redacted]	1,998	1,290	[redacted]	1,020	1,020	Yes	LTC	No	Radial	48	4	23	0	4/30/2023	Aug-23	
Newport - 150	Hastings	HAS_TR02	HAS032	0.17	Unintentional Islanding	1.19	Unintentional Islanding	Compliant	[redacted]	1,998	1,290	[redacted]	1,217	1,217	Yes	LTC	No	Radial	48	4	21	0	4/30/2023	Aug-23	
Newport - 150	Hastings	HAS_TR02	HAS033	0.63	Unintentional Islanding	0.63	Unintentional Islanding	Compliant	[redacted]	1,998	1,290	[redacted]	707	707	Yes	LTC	No	Radial	48	4	4	4	4/30/2023	Aug-23	
Northwest - 154	Hector	HEC_TR01	HEC001	0.1	Thermal Discharging	2.4	Primary Over-Voltage	Compliant	[redacted]	584	584	[redacted]	584	584	No	None	Yes	Radial	3,003	0	3,003	0	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Henderson	HEN_TR01	HEN021	0.1	Primary Over-Voltage	0.3	Unintentional Islanding	Compliant	[redacted]	342	342	[redacted]	365	365	No	None	No	Radial	17	8	17	8	4/30/2023	Aug-23	
Maple Grove - 147	Hollydale	HOL_TR01	HOL061	0.9	Thermal Discharging	1.74	Unintentional Islanding	Compliant	[redacted]	3,015	3,015	[redacted]	2,169	2,169	Yes	LTC	No	Radial	207	420	116	0	4/30/2023	Aug-23	
Maple Grove - 147	Hollydale	HOL_TR01	HOL062	1	Primary Over-Voltage	1.72	Unintentional Islanding	Compliant	[redacted]	3,015	3,015	[redacted]	1,823	1,823	Yes	LTC	No	Radial	207	420	91	420	4/30/2023	Aug-23	
Maple Grove - 147	Hollydale	HOL_TR02	HOL071	0.9	Thermal Discharging	1.16	Unintentional Islanding	Compliant	[redacted]	3,320	3,320	[redacted]	1,378	1,378	Yes	LTC	No	Radial	330	206	173	186	4/30/2023	Aug-23	
Maple Grove - 147	Hollydale	HOL_TR02	HOL072	1.1	Primary Over-Voltage	1.32	Unintentional Islanding	Compliant	[redacted]	3,320	3,320	[redacted]	1,531	1,531	Yes	LTC	No	Radial	330	206	94	10	4/30/2023	Aug-23	
Maple Grove - 147	Hollydale	HOL_TR02	HOL073	0.84	Unintentional Islanding	0.84	Unintentional Islanding	Compliant	[redacted]	3,320	3,320	[redacted]	980	980	Yes	LTC	No	Radial	330	206	63	10	4/30/2023	Aug-23	
Northwest - 154	Howard Lake	HOW_TR01	HOW061	0	Unintentional Islanding	1.14	Unintentional Islanding	Compliant	[redacted]	1,482	1,482	[redacted]	1,482	1,482	No	None	No	Radial	259	1,000	259	1,000	4/30/2023	Aug-23	
Northwest - 154	Hassan	HSN_TR01	HSN311	0.23	Primary Over-Voltage	3.07	Unintentional Islanding	Compliant	[redacted]	12,302	11,439	[redacted]	4,841	4,597	Yes	LTC	No	Radial	1,593	3,806	407	1,311	7/31/2022	Nov-22	
Northwest - 154	Hassan	HSN_TR01	HSN312	0	Unintentional Islanding	5.19	Unintentional Islanding	Compliant	[redacted]	12,302	11,439	[redacted]	7,190	6,977	Yes	LTC	No	Radial	1,593	3,806	1,186	2,495	7/31/2022	Nov-22	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Technical Planning Standard	Substation Transformer Forecasted Peak Load (kVA)	Substation Transformer Minimum Load (kVA)	Transformer Absolute Min (kVA)	Feeder Forecasted Peak Load (kVA)	Feeder Daytime Minimum Load (kVA)	Feeder Absolute Min (kVA)	Actual Daytime Minimum Load	LTC or Regulator	VSR Equipped	Network or Radial	Substation Transformer Installed DG (kW)	Substation Transformer Queued DG (kW)	Feeder Installed DG (kW)	Feeder Queued DG (kW)	Data Cutoff	Latest Quarterly Update	Notes
Northwest - 154	Hassan	HSN_TR02	HSN321	0	Unintentional Islanding	3.29	Unintentional Islanding	Compliant	[redacted]	13,877	13,061	[redacted]	4,495	4,495	Yes	LTC	No	Radial	5,508	820	5,298	605	7/31/2022	Nov-22	
Northwest - 154	Hassan	HSN_TR02	HSN322	1.4	Thermal Discharging	4.97	Unintentional Islanding	Compliant	[redacted]	13,877	13,061	[redacted]	7,001	6,946	Yes	LTC	No	Radial	5,508	820	210	215	7/31/2022	Nov-22	
White Bear Lake - 156	Hugo	HUG_TR01	HUG311	0.1	Primary Over-Voltage	0.99	Breaker Reach	Compliant	[redacted]	13,497	10,435	[redacted]	4,550	4,550	Yes	LTC	No	Radial	937	724	455	577	4/30/2023	Aug-23	
White Bear Lake - 156	Hugo	HUG_TR01	HUG312	0.3	Thermal Discharging	1.35	Breaker Reach	Compliant	[redacted]	13,497	10,435	[redacted]	6,160	6,160	Yes	LTC	No	Radial	937	724	482	147	4/30/2023	Aug-23	
White Bear Lake - 156	Hugo	HUG_TR02	HUG321	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	11,258	10,294	[redacted]	5,921	5,921	Yes	LTC	Yes	Radial	15,324	4,347	15,159	3,331	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
White Bear Lake - 156	Hugo	HUG_TR02	HUG322	2.3	Primary Over-Voltage	4.56	Unintentional Islanding	Compliant	[redacted]	11,258	10,294	[redacted]	4,812	4,812	Yes	LTC	No	Radial	15,324	4,347	165	1,016	4/30/2023	Aug-23	
Minneapolis - 141	Hiawatha West	HWW_TR01	HWW061	0.11	Unintentional Islanding	1	Breaker Reach	Compliant	[redacted]	4,748	3,785	[redacted]	2,263	2,263	Yes	LTC	No	Radial	1,056	40	746	0	10/31/2022	Feb-23	
Minneapolis - 141	Hiawatha West	HWW_TR01	HWW062	0	Unintentional Islanding	1.49	Unintentional Islanding	Compliant	[redacted]	4,748	3,785	[redacted]	2,138	2,138	Yes	LTC	No	Radial	1,056	40	310	40	10/31/2022	Feb-23	
Minneapolis - 141	Hiawatha West	HWW_TR02	HWW071	0.15	Unintentional Islanding	2.53	Unintentional Islanding	Compliant	[redacted]	13,240	12,309	[redacted]	3,059	3,059	Yes	LTC	No	Radial	1,751	288	36	101	10/31/2022	Feb-23	
Minneapolis - 141	Hiawatha West	HWW_TR02	HWW072	0.5	Thermal Discharging	1.33	Unintentional Islanding	Compliant	[redacted]	13,240	12,309	[redacted]	1,726	1,726	Yes	LTC	No	Radial	1,751	288	295	27	10/31/2022	Feb-23	
Minneapolis - 141	Hiawatha West	HWW_TR02	HWW073	0.29	Unintentional Islanding	1.81	Unintentional Islanding	Compliant	[redacted]	13,240	12,309	[redacted]	2,532	2,532	Yes	LTC	No	Radial	1,751	288	486	72	10/31/2022	Feb-23	
Minneapolis - 141	Hiawatha West	HWW_TR02	HWW074	0.9	Thermal Discharging	0.94	Unintentional Islanding	Compliant	[redacted]	13,240	12,309	[redacted]	1,503	1,503	Yes	LTC	No	Radial	1,751	288	399	67	10/31/2022	Feb-23	
Minneapolis - 141	Hiawatha West	HWW_TR02	HWW075	0.8	Primary Over-Voltage	3.08	Unintentional Islanding	Compliant	[redacted]	13,240	12,309	[redacted]	4,043	4,043	Yes	LTC	No	Radial	1,751	288	535	21	10/31/2022	Feb-23	
Edina - 143	Hyland Lake	HYL_TR01	HYL061	0.7	Unintentional Islanding	1.06	Unintentional Islanding	Compliant	[redacted]	13,054	10,842	[redacted]	1,503	1,503	Yes	LTC	No	Radial	1,102	140	342	36	10/31/2022	Feb-23	
Edina - 143	Hyland Lake	HYL_TR01	HYL062	0.9	Thermal Discharging	1.49	Unintentional Islanding	Compliant	[redacted]	13,054	10,842	[redacted]	1,897	1,897	Yes	LTC	No	Radial	1,102	140	66	0	10/31/2022	Feb-23	
Edina - 143	Hyland Lake	HYL_TR01	HYL063	0.8	Primary Over-Voltage	1.8	Unintentional Islanding	Compliant	[redacted]	13,054	10,842	[redacted]	2,332	2,332	Yes	LTC	No	Radial	1,102	140	424	68	10/31/2022	Feb-23	
Edina - 143	Hyland Lake	HYL_TR01	HYL064	1.1	Thermal Discharging	2.62	Unintentional Islanding	Compliant	[redacted]	13,054	10,842	[redacted]	3,256	3,256	Yes	LTC	No	Radial	1,102	140	105	36	10/31/2022	Feb-23	
Edina - 143	Hyland Lake	HYL_TR01	HYL065	1.4	Thermal Discharging	3.56	Unintentional Islanding	Compliant	[redacted]	13,054	10,842	[redacted]	4,600	4,600	Yes	LTC	No	Radial	1,102	140	165	0	10/31/2022	Feb-23	
Edina - 143	Hyland Lake	HYL_TR02	HYL071	0.07	Unintentional Islanding	0.07	Unintentional Islanding	Compliant	[redacted]	9,001	7,201	[redacted]	100	100	Yes	LTC	No	Radial	527	273	45	0	10/31/2022	Feb-23	
Edina - 143	Hyland Lake	HYL_TR02	HYL072	1.1	Primary Over-Voltage	1.87	Unintentional Islanding	Compliant	[redacted]	9,001	7,201	[redacted]	2,354	2,354	Yes	LTC	No	Radial	527	273	45	0	10/31/2022	Feb-23	
Edina - 143	Hyland Lake	HYL_TR02	HYL073	0.34	Unintentional Islanding	1.58	Unintentional Islanding	Compliant	[redacted]	9,001	7,201	[redacted]	2,022	2,022	Yes	LTC	No	Radial	527	273	194	31	10/31/2022	Feb-23	
Edina - 143	Hyland Lake	HYL_TR02	HYL074	0.6	Thermal Discharging	1.7	Unintentional Islanding	Compliant	[redacted]	9,001	7,201	[redacted]	2,100	2,100	Yes	LTC	No	Radial	527	273	110	211	10/31/2022	Feb-23	
Edina - 143	Hyland Lake	HYL_TR02	HYL075	1.5	Thermal Discharging	1.55	Unintentional Islanding	Compliant	[redacted]	9,001	7,201	[redacted]	2,000	2,000	Yes	LTC	No	Radial	527	273	133	31	10/31/2022	Feb-23	
Minneapolis - 141	Indiana	IDA_TR01	IDA061	0.47	Unintentional Islanding	0.47	Unintentional Islanding	Compliant	[redacted]	7,036	5,360	[redacted]	576	576	Yes	LTC	No	Radial	237	83	36	4	10/31/2022	Feb-23	
Minneapolis - 141	Indiana	IDA_TR01	IDA062	0.9	Thermal Discharging	0.94	Unintentional Islanding	Compliant	[redacted]	7,036	5,360	[redacted]	1,230	1,230	Yes	LTC	No	Radial	237	83	57	9	10/31/2022	Feb-23	
Minneapolis - 141	Indiana	IDA_TR01	IDA063	0.9	Thermal Discharging	1.77	Unintentional Islanding	Compliant	[redacted]	7,036	5,360	[redacted]	2,364	2,364	Yes	LTC	No	Radial	237	83	40	6	10/31/2022	Feb-23	
Minneapolis - 141	Indiana	IDA_TR01	IDA064	0.9	Thermal Discharging	1.16	Unintentional Islanding	Compliant	[redacted]	7,036	5,360	[redacted]	1,464	1,464	Yes	LTC	No	Radial	237	83	104	64	10/31/2022	Feb-23	
Minneapolis - 141	Indiana	IDA_TR02	IDA071	1.11	Unintentional Islanding	1.11	Unintentional Islanding	Compliant	[redacted]	7,822	6,130	[redacted]	1,371	1,371	Yes	LTC	No	Radial	630	167	43	8	10/31/2022	Feb-23	
Minneapolis - 141	Indiana	IDA_TR02	IDA072	0.9	Thermal Discharging	1.57	Unintentional Islanding	Compliant	[redacted]	7,822	6,130	[redacted]	1,975	1,975	Yes	LTC	No	Radial	630	167	149	50	10/31/2022	Feb-23	
Minneapolis - 141	Indiana	IDA_TR02	IDA073	0.14	Unintentional Islanding	1.63	Unintentional Islanding	Compliant	[redacted]	7,822	6,130	[redacted]	2,300	2,300	Yes	LTC	No	Radial	630	167	389	103	10/31/2022	Feb-23	
Minneapolis - 141	Indiana	IDA_TR02	IDA074	0.8	Thermal Discharging	2.1	Unintentional Islanding	Compliant	[redacted]	7,822	6,130	[redacted]	2,792	2,792	Yes	LTC	No	Radial	630	167	49	6	10/31/2022	Feb-23	
Southeast - 144	Jordan	JOR_TR01	JOR021	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	1,979	1,979	[redacted]	838	838	No	None	Yes	Radial	10,434	9	1,128	9	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Jordan	JOR_TR01	JOR022	0.3	Primary Over-Voltage	6	Thermal Discharging	Compliant	[redacted]	1,979	1,979	[redacted]	3,197	3,197	No	None	Yes	Radial	10,434	9	9,306	0	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Kasson	KAN_TR01	KAN022	1	Thermal Discharging	4	TPS Capacity Utilization	Compliant	[redacted]	1,244	1,244	[redacted]	992	992	No	None	Yes	Radial	6,064	1,000	6,064	1,000	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Kasson	KAN_TR02	KAN031	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	2,456	2,456	[redacted]	2,288	2,288	No	None	Yes	Radial	9,233	7,186	9,233	7,186	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Kenyon	KEN_TR01	KEN021	0.15	Unintentional Islanding	0.15	Unintentional Islanding	Compliant	[redacted]	283	283	[redacted]	219	219	No	Bus Reg - Sub	No	Radial	2,844	0	8	0	7/31/2022	Nov-22	
Southeast - 144	Kenyon	KEN_TR01	KEN022	0.3	Thermal Discharging	2.7	TPS Capacity Utilization	Compliant	[redacted]	283	283	[redacted]	102	102	No	Bus Reg - Sub	Yes	Radial	2,844	0	2,836	0	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Kimball	KIM_TR01	KIM021	0.22	Unintentional Islanding	0.22	Unintentional Islanding	Compliant	[redacted]	548	548	[redacted]	548	548	No	None	No	Radial	51	0	51	0	4/30/2023	Aug-23	
Newport - 150	Kegan Lake	KLK_TR01	KLK061	0.9	Thermal Discharging	1.7	Unintentional Islanding	Compliant	[redacted]	1,811	1,404	[redacted]	1,811	1,811	Yes	LTC	No	Radial	23	0	23	0	4/30/2023	Aug-23	
White Bear Lake - 156	Kohlman Lake	KOL_TR01	KOL061	0.58	Unintentional Islanding	0.58	Unintentional Islanding	Compliant	[redacted]	8,683	7,637	[redacted]	659	659	Yes	LTC	No	Radial	602	85	184	31	4/30/2023	Aug-23	
White Bear Lake - 156	Kohlman Lake	KOL_TR01	KOL062	0.73	Unintentional Islanding	0.73	Unintentional Islanding	Compliant	[redacted]	8,683	7,637	[redacted]	831	831	Yes	LTC	No	Radial	602	85	60	15	4/30/2023	Aug-23	
White Bear Lake - 156	Kohlman Lake	KOL_TR01	KOL063	0.9	Unintentional Islanding	0.9	Unintentional Islanding	Compliant	[redacted]	8,683	7,637	[redacted]	1,007	1,007	Yes	LTC	No	Radial	602	85	19	6	4/30/2023	Aug-23	
White Bear Lake - 156	Kohlman Lake	KOL_TR01	KOL064	0.42	Unintentional Islanding	0.42	Unintentional Islanding	Compliant	[redacted]	8,683	7,637	[redacted]	459	459	Yes	LTC	No	Radial	602	85	40	0	4/30/2023	Aug-23	
White Bear Lake - 156	Kohlman Lake	KOL_TR01	KOL065	0.61	Unintentional Islanding	0.61	Unintentional Islanding	Compliant	[redacted]	8,683	7,637	[redacted]	816	816	Yes	LTC	No	Radial	602	85	299	33	4/30/2023	Aug-23	
White Bear Lake - 156	Kohlman Lake	KOL_TR02	KOL071	1	Thermal Discharging	1.4	Unintentional Islanding	Compliant	[redacted]	5,409	4,342	[redacted]	1,613	1,613	Yes	LTC	No	Radial	400	52	203	0	4/30/2023	Aug-23	
White Bear Lake - 156	Kohlman Lake	KOL_TR02	KOL073	0.6	Thermal Discharging	1.41	Unintentional Islanding	Compliant	[redacted]	5,409	4,342	[redacted]	1,530	1,530	Yes	LTC	No	Radial	400	52	171	52	4/30/2023	Aug-23	
White Bear Lake - 156	Kohlman Lake	KOL_TR02	KOL074	0.9	Thermal Discharging	1.98	Unintentional Islanding	Compliant	[redacted]	5,409	4,342	[redacted]	2,121	2,121	Yes	LTC	No	Radial	400	52	26	0	4/30/2023	Aug-23	
Minnetonka - 142	Lake Bavaria	LAB_TR01	LAB311	0.2	Primary Over-Voltage	1.06	Unintentional Islanding	Compliant	[redacted]	6,958	5,217	[redacted]	2,943	2,943	Yes	LTC	No	Radial	267	53	111	29	4/30/2023	Aug-23	
Minnetonka - 142	Lake Bavaria	LAB_TR01	LAB312	0.16	Unintentional Islanding	1.15	Unintentional Islanding	Compliant	[redacted]	6,958	5,217	[redacted]	3,276	3,276	Yes	LTC	No	Radial	267	53	156	24	4/30/2023	Aug-23	
Southeast - 144	La Crescent	LAC_TR01	LAC062	0.1	Thermal Discharging	5.36	Breaker Reach	Compliant	[redacted]	2,389	2,389	[redacted]	1,527	1,527	No	LTC	Yes	Radial	5,833	38	5,497	32	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	La Crescent	LAC_TR01	LAC063	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	2,389	2,389	[redacted]	1,168	1,168	No	LTC	No	Radial	5,833	38	336	6	10/31/2022	Feb-23	
Southeast - 144	Lake Emily	LAE_TR01	LAE061	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	884	725	[redacted]	884	884	Yes	None	Yes	Radial	10,638	0	10,638	0	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Lafayette	LAF_TR01	LAF001	0	Unintentional Islanding	0.24	Unintentional Islanding	Compliant	[redacted]	247	247	[redacted]	252	252	No	None	No	Radial	1,000	367	1,000	367	4/30/2023	Aug-23	
Southeast - 144	Lake City	LAK_TR02	LAK032	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	0	0	[redacted]	399	399	No	None	No	Radial	152	2,038	152	2,038	7/31/2022	Nov-22	Substation owned by Foreign Utility. Contractual obligations may reduce capacity and increase interconnection timelines
Northwest - 154	Lake Pulaski	LAP_TR03	LAP311	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	5,238	4,267	[redacted]	5,515	4,679	Yes	LTC	No	Radial	28,780	3,156	28,780	3,156	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
South Dakota - 152	Lake Yankton	LAY_TR03	LAY061	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	767	626	[redacted]	767	626	Yes	None	Yes	Radial	1,007	8,014	1,007	8,014	7/31/2022	Nov-22	
White Bear Lake - 156	Lawrence Creek	LCR_TR01	LCR311	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	2,110	1,603	[redacted]	2,110	2,110	Yes	LTC	Yes	Radial	29,781	2,800	29,781	2,800	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
White Bear Lake - 156	Lexington	LEX_TR01	LEX061	0.6	Thermal Discharging	1.9	Unintentional Islanding	Compliant	[redacted]	10,100	9,220	[redacted]	2,379	2,379	Yes	LTC	No	Radial	3,785	193	653	193	4/30/2023	Aug-23	
White Bear Lake - 156	Lexington	LEX_TR01	LEX062	1.39	Unintentional Islanding	1.39	Unintentional Islanding	Compliant	[redacted]	10,100	9,220	[redacted]	1,456	1,456	Yes	LTC	No	Radial	3,785	193	0	0	4/30/2023	Aug-23	
White Bear Lake - 156	Lexington	LEX_TR01	LEX063	1.5	Thermal Discharging	1.53	Unintentional Islanding	Compliant	[redacted]	10,100	9,220	[redacted]	1,676	1,676	Yes	LTC	No	Radial	3,785	193	75	0	4/30/2023	Aug-23	
White Bear Lake - 156	Lexington	LEX_TR01	LEX064	0.83	Unintentional Islanding	2.08	Unintentional Islanding	Compliant	[redacted]	10,100	9,220	[redacted]	2,062	2,062	Yes	LTC	No	Radial	3,785	193	3,050	0	4/30/2023	Aug-23	
White Bear Lake - 156	Lexington	LEX_TR01	LEX065	0.31	Unintentional Islanding	0.85	Unintentional Islanding	Compliant	[redacted]	10,100	9,220	[redacted]	831	831	No	LTC	No	Radial	3,785	193	7	0	4/30/2023	Aug-23	
White Bear Lake - 156	Lexington	LEX_TR02	LEX071	0	Unintentional Islanding	2.33	Unintentional Islanding	Compliant	[redacted]	8,563	6,049	[redacted]	2,441	2,441	Yes	LTC	No	Radial	434	431	84	15	4/30/2023	Aug-23	
White Bear Lake - 156	Lexington	LEX_TR02	LEX072	0.78	Unintentional Islanding	0.78	Unintentional Islanding	Compliant	[redacted]	8,563	6,049	[redacted]	755	755	Yes	LTC	No	Radial	434	431	0	0	4/30/2023	Aug-23	
White Bear Lake - 156	Lexington	LEX_TR02	LEX073	0.75	Unintentional Islanding	0.75	Unintentional Islanding	Compliant	[redacted]	8,563	6,049	[redacted]	825	825	Yes	LTC	No	Radial	434	431	56	0	4/30/2023	Aug-23	
White Bear Lake - 156	Lexington	LEX_TR02	LEX074	0.04	Unintentional Islanding	2.31	Unintentional Islanding	Compliant	[redacted]	8,563	6,049	[redacted]	2,195	2,195	Yes	LTC	No	Radial	434	431	143	384	4/30/2023	Aug-23	
White Bear Lake - 156	Lexington	LEX_TR02	LEX075	0.9	Thermal Discharging	1.75	Unintentional Islanding	Compliant	[redacted]	8,563	6,049	[redacted]	1,825	1,825	Yes	LTC	No	Radial	434	431	151	32	4/30/2023	Aug-23	
White Bear Lake - 156	Lexington	LEX_TR03	LEX331	0.1	Thermal Discharging	0.27	Breaker Reach	Compliant	[redacted]	20,676	16,532	[redacted]	6,963	6,963	Yes	LTC	No	Radial	2,356	1,681	79	531	4/30/2023	Aug-23	
White Bear Lake - 156	Lexington	LEX_TR03	LEX332	1.5	Thermal Discharging	6.63	Unintentional Islanding	Compliant	[redacted]	20,676	16,532	[redacted]	7,218	7,218	Yes	LTC	No	Radial	2,356	1,681	1,989	142	4/30/2023	Aug-23	
White Bear Lake - 156	Lexington	LEX_TR03	LEX333	0.14	Unintentional Islanding	1.29	Breaker Reach	Compliant	[redacted]	20,676	16,532	[redacted]	5,957	5,957	Yes	LTC	No	Radial	2,356	1,681	288	1,008	4/30/2023	Aug-23	
Northwest - 154	Lake Lillian	LIL_TR01	LIL021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	494	494	[redacted]	494	494	No	None	No	Radial	3,019	1,000	3,019	1,000	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
White Bear Lake - 156	Lindstrom	LIN_TR01	LIN022	0.5	Thermal Discharging	6.01	Breaker Reach	Compliant	[redacted]	728	728	[redacted]	865	865	Yes	LTC	Yes	Radial	3,197	34	3,197	34	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
White Bear Lake - 156	Lindstrom	LIN_TR02	LIN031	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	2,846	2,683	[redacted]	2,625	2,625	Yes	LTC	No	Radial	1,293	102	1,293	102	10/31/2022	Feb-23	
White Bear Lake - 156	Long Lake	LLK_TR01	LLK061	0.4	Primary Over-Voltage	1.74	Breaker Reach	Compliant	[redacted]	4,348	3,302	[redacted]	1,942	1,942	Yes	None	No	Radial	167	112	167	112	4/30/2023	Aug-23	
White Bear Lake - 156	Long Lake	LLK_TR01	LLK063	0.9	Thermal Discharging	1.88	Unintentional Islanding	Compliant	[redacted]	4,348	3,302	[redacted]	2,040	2,040	Yes	None	No	Radial	167	112	0	0	4/30/2023	Aug-23	
White Bear Lake - 156	Long Lake	LLK_TR02	LLK071	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	5,902	4,776	[redacted]	2,625	2,625	Yes	LTC	No	Radial	432	125	328	75	4/30/2023	Aug-23	
White Bear Lake - 156	Long Lake	LLK_TR02	LLK072	1.1	Thermal Discharging	2.43	Unintentional Islanding	Compliant	[redacted]	5,902	4,776	[redacted]	2,844	2,844	Yes	LTC	No	Radial	432	125	104	50	4/30/2023	Aug-23	
Northwest - 154	Linn Street	LNS_TR01	LNS021	0.57	Unintentional Islanding	0.57	Unintentional Islanding	Compliant	[redacted]	752	835	[redacted]	804	804	No	None	No	Radial	7	0	7	0	7/31/2022	Nov-22	
Northwest - 154	Linn Street	LNS_TR01	LNS022	0.02	Unintentional Islanding	0.02	Unintentional Islanding	Compliant	[redacted]	752	835	[redacted]	31	31	No	None	No	Radial	7	0	0	0	7/31/2022	Nov-22	
Northwest - 154	Linn Street	LNS_TR02	LNS032	0.47	Unintentional Islanding	0.47	Unintentional Islanding	Compliant	[redacted]	1,165	1,460	[redacted]	678	678	No	None	No	Radial	136	0	83	0	7/31/2022	Nov-22	
Northwest - 154	Linn Street	LNS_TR02	LNS033	0.54	Unintentional Islanding	0.54	Unintentional Islanding	Compliant	[redacted]	1,165	1,460	[redacted]	782	782	No	None	No	Radial	136	0	53	0	7/31/2022	Nov-22	
Newport - 150	Lone Oak	LOK_TR01	LOK061	0.72	Unintentional Islanding	0.72	Unintentional Islanding	Compliant	[redacted]	6,493	5,135	[redacted]	1,071	1,071	Yes	LTC	No	Radial	291	272	112	214	7/31/2022	Nov-22	
Newport - 150	Lone Oak	LOK_TR01	LOK062	0.5	Thermal Discharging	2.57	Unintentional Islanding	Compliant	[redacted]	6,493	5,135	[redacted]	3,667	2,983	Yes	LTC	No	Radial	291	272	179	58	7/31/2022	Nov-22	
Newport - 150	Lone Oak	LOK_TR01	LOK063	0.95	Unintentional Islanding	0.95	Unintentional Islanding	Compliant	[redacted]	6,493	5,135	[redacted]	1,273	1,204	Yes	LTC	No	Radial	291	272	0	0	7/31/2022	Nov-22	
Newport - 150	Lone Oak	LOK_TR02	LOK081	0.9	Thermal Discharging	2.71	Unintentional Islanding	Compliant	[redacted]	16,448	14,345	[redacted]	3,759	3,493	Yes	LTC	No	Radial	1,325	208	100	6	7/31/2022	Nov-22	
Newport - 150	Lone Oak	LOK_TR02	LOK082	0.9	Thermal Discharging	1.33	Unintentional Islanding	Compliant	[redacted]	16,448	14,345	[redacted]	1,746	1,616	Yes	LTC	No	Radial	1,325	208	6	5	7/31/2022	Nov-22	
Newport - 150	Lone Oak	LOK_TR02	LOK083	0.8	Primary Over-Voltage	1.45	Unintentional Islanding	Compliant	[redacted]	16,448	14,345	[redacted]	2,121	2,121	Yes	LTC	No	Radial	1,325	208	244	0	7/31/2022	Nov-22	
Newport - 150	Lone Oak	LOK_TR02	LOK091	1.29	Unintentional Islanding	1.29	Unintentional Islanding	Compliant	[redacted]	16,448	14,345	[redacted]	1,718	1,612	Yes	LTC	No	Radial	1,325	208	73	0	7/31/2022	Nov-22	
Newport - 150	Lone Oak	LOK_TR02	LOK092	1.4	Primary Over-Voltage	2.2	Unintentional Islanding	Compliant	[redacted]	16,448	14,345	[redacted]	3,126	3,126	Yes	LTC	No	Radial	1,325	208	49	0	7/31/2022	Nov-22	
Newport - 150	Lone Oak	LOK_TR02	LOK093	0.4	Breaker Reach	1.31	Breaker Reach	Compliant	[redacted]	16,448	14,345	[redacted]	2,600	2,460	Yes	LTC	No	Radial	1,325	208	853	197	7/31/2022	Nov-22	
Northwest - 154	Lowry	LOW_TR01	LOW021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	879	879	[redacted]	879	879	Yes	None	Yes	Radial	10,056	1,000	10,056	1,000	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minnetonka - 142	Lester Prairie	LSP_TR01	LSP021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	1,722	1,722	[redacted]	1,033	1,033	No	None	Yes	Radial	8,678	999	8,121	999	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minnetonka - 142	Lester Prairie	LSP_TR01	LSP022	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	1,722	1,722	[redacted]	449	449	No	None	No	Radial	8,678	1,008	557	0	10/31/2022	Feb-23	
Northwest - 154	Maple Lake	MAP_TR01	MAP061	0.05	Breaker Reach	0.08	Breaker Reach	Compliant	[redacted]	796	796	[redacted]	796	796	No	None	No	Radial	530	0	530	0	7/31/2022	Nov-22	
Southeast - 144	Mazeppa	MAZ_TR01	MAZ021	0	Unintentional Islanding	0.31	Unintentional Islanding	Compliant	[redacted]	477	477	[redacted]	477	477	No	None	No	Radial	2,065	3,000	2,065	3,000	7/31/2022	Nov-22	
Southeast - 144	Medford Junction	MDF_TR01	MDF021	0.5	Primary Over-Voltage	3.33	Breaker Reach	Compliant	[redacted]	996	996	[redacted]	645	645	No	None	Yes	Radial	5,035	1,000	5,035	1,000	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minneapolis - 141	Midtown	MDT_TR01	MDT061	0.8	Thermal Discharging	1.7	Unintentional Islanding	Compliant	[redacted]	14,282	12,015	[redacted]	2,223	2,223	Yes	LTC	No	Radial	496	8,057	47	8,000	10/31/2022	Feb-23	
Minneapolis - 141	Midtown	MDT_TR01	MDT062	0.9	Thermal Discharging	1.55	Unintentional Islanding	Compliant	[redacted]	14,282	12,015	[redacted]	2,099	2,099	Yes	LTC	No	Radial	496	8,057	399	57	10/31/2022	Feb-23	
Minneapolis - 141	Midtown	MDT_TR01	MDT067	0.9	Thermal Discharging	2.19	Unintentional Islanding	Compliant	[redacted]	14,282	12,015	[redacted]	3,150	3,150	Yes	LTC	No	Radial	496	8,057	50	0	10/31/2022	Feb-23	
Minneapolis - 141	Midtown	MDT_TR02	MDT071	0.3	Thermal Discharging	1.35	Breaker Reach	Compliant	[redacted]	0	12,015	[redacted]	3,543	3,543	Yes	LTC	No	Radial	436	1,055	224	80	10/31/2022	Feb-23	
Minneapolis - 141	Midtown	MDT_TR02	MDT073	0.9	Thermal Discharging	1.13	Unintentional Islanding	Compliant	[redacted]	0	12,015	[redacted]	1,508	1,508	Yes	LTC	No	Radial	436	1,055	58	4	10/31/2022	Feb-23	
Minneapolis - 141	Midtown	MDT_TR02	MDT074	0.9	Thermal Discharging	1.08	Unintentional Islanding	Compliant	[redacted]	0	12,015	[redacted]	1,509	1,509	Yes	LTC	No	Radial	436	1,055	108	43	10/31/2022	Feb-23	
Minneapolis - 141	Midtown	MDT_TR02	MDT077	0	Unintentional Islanding	0.59	Unintentional Islanding	Compliant	[redacted]	0	12,015	[redacted]	764	764	Yes	LTC	No	Radial	436	1,055	46	928	10/31/2022	Feb-23	
Northwest - 154	Meire Grove	MEI_TR01	MEI021	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	314	314	[redacted]	314	314	No	None	No	Radial	1,338	1,000	1,338	1,000	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Meeker REA	MEK_TR01	MEK021	0.04	Unintentional Islanding	0.04	Unintentional Islanding	Compliant	[redacted]	95	95	[redacted]	95	95	No	Bus Reg - Sub	No	Radial	34	0	34	0	7/31/2022	Nov-22	Substation owned by Foreign Utility. Contractual obligations may reduce capacity and increase interconnection timelines
Minneapolis - 141	Medicine Lake	MEL_TR01	MEL061	0.5	Unintentional Islanding	0.5	Unintentional Islanding	Compliant	[redacted]	12,378	10,369	[redacted]	1,167	1,167	Yes	LTC	No	Radial	1,169	226	407	150	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR01	MEL062	0.9	Thermal Discharging	1.18	Unintentional Islanding	Compliant	[redacted]	12,378	10,369	[redacted]	1,611	1,611	Yes	LTC	No	Radial	1,169	226	137	28	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR01	MEL063	0.02	Unintentional Islanding	0.02	Unintentional Islanding	Compliant	[redacted]	12,378	10,369	[redacted]	203	203	Yes	LTC	No	Radial	1,169	226	148	0	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR01	MEL064	0.8	Thermal Discharging	1.54	Unintentional Islanding	Compliant	[redacted]	12,378	10,369	[redacted]	2,087	2,087	Yes	LTC	No	Radial	1,169	226	122	0	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR01	MEL065	0.6	Unintentional Islanding	0.6	Unintentional Islanding	Compliant	[redacted]	12,378	10,369	[redacted]	777	777	Yes	LTC	No	Radial	1,169	226	26	10	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR01	MEL066	0.42	Unintentional Islanding	0.42	Unintentional Islanding	Compliant	[redacted]	12,378	10,369	[redacted]	542	542	Yes	LTC	No	Radial	1,169	226	0	0	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR01	MEL067	0.9	Thermal Discharging	1.27	Unintentional Islanding	Compliant	[redacted]	12,378	10,369	[redacted]	1,697	1,697	Yes	LTC	No	Radial	1,169	226	55	11	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR01	MEL068	0.8	Thermal Discharging	1.18	Unintentional Islanding	Compliant	[redacted]	12,378	10,369	[redacted]	1,682	1,682	Yes	LTC	No	Radial	1,169	226	231	10	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR01	MEL069	0.18	Unintentional Islanding	1.34	Unintentional Islanding	Compliant	[redacted]	12,378	10,369	[redacted]	2,482	2,482	Yes	LTC	No	Radial	1,169	226	43	17	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR02	MEL071	0.19	Unintentional Islanding	1.08	Unintentional Islanding	Compliant	[redacted]	18,942	16,284	[redacted]	1,405	1,405	Yes	LTC	No	Radial	1,035	824	10	0	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR02	MEL072	0.08	Unintentional Islanding	1.81	Unintentional Islanding	Compliant	[redacted]	18,942	16,284	[redacted]	2,385	2,385	Yes	LTC	No	Radial	1,035	824	55	8	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR02	MEL073	0.9	Thermal Discharging	1.62	Unintentional Islanding	Compliant	[redacted]	18,942	16,284	[redacted]	2,256	2,256	Yes	LTC	No	Radial	1,035	824	358	0	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR02	MEL074	0.9	Thermal Discharging	1.87	Unintentional Islanding	Compliant	[redacted]	18,942	16,284	[redacted]	2,010	2,010	Yes	LTC	No	Radial	1,035	824	366	772	4/30/2023	Aug-23	
Minneapolis - 141	Medicine Lake	MEL_TR02	MEL075	0.9	Thermal Discharging	1.78	Unintentional Islanding	Compliant	[redacted]	18,942	16,284	[redacted]	2,218	2,218	Yes	LTC	No	Radial	1,035	824	36	0	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR02	MEL076	1.2	Unintentional Islanding	1.2	Unintentional Islanding	Compliant	[redacted]	18,942	16,284	[redacted]	1,724	1,724	Yes	LTC	No	Radial	1,035	824	0	0	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR02	MEL077	0.9	Thermal Discharging	1.22	Unintentional Islanding	Compliant	[redacted]	18,942	16,284	[redacted]	1,630	1,630	Yes	LTC	No	Radial	1,035	824	75	0	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR02	MEL078	0.9	Thermal Discharging	1.36	Unintentional Islanding	Compliant	[redacted]	18,942	16,284	[redacted]	1,852	1,852	Yes	LTC	No	Radial	1,035	824	128	44	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR02	MEL079	0.94	Unintentional Islanding	0.94	Unintentional Islanding	Compliant	[redacted]	18,942	16,284	[redacted]	1,301	1,301	Yes	LTC	No	Radial	1,035	824	7	0	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR03	MEL081	0.9	Thermal Discharging	1.19	Unintentional Islanding	Compliant	[redacted]	9,466	7,988	[redacted]	1,659	1,659	Yes	LTC	No	Radial	829	2,593	91	9	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR03	MEL082	0.9	Thermal Discharging	1.36	Unintentional Islanding	Compliant	[redacted]	9,466	7,988	[redacted]	1,670	1,670	Yes	LTC	No	Radial	829	2,593	57	0	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR03	MEL083	0.9	Thermal Discharging	1.7	Unintentional Islanding	Compliant	[redacted]	9,466	7,988	[redacted]	2,029	2,029	Yes	LTC	No	Radial	829	2,593	0	0	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR03	MEL087	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	9,466	7,988	[redacted]	665	665	Yes	LTC	No	Radial	829	2,593	353	27	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR03	MEL088	0.52	Unintentional Islanding	0.52	Unintentional Islanding	Compliant	[redacted]	9,466	7,988	[redacted]	1,071	1,071	Yes	LTC	No	Radial	829	2,593	177	521	1/31/2023	May-23	
Minneapolis - 141	Medicine Lake	MEL_TR03	MEL089	1.4	Thermal Discharging	1.58	Unintentional Islanding	Compliant	[redacted]	9,466	7,988	[redacted]	2,087	2,087	Yes	LTC	No	Radial	829	2,593	151	2,036	1/31/2023	May-23	
Northwest - 154	Morgan	MGN_TR01	MGN211	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	1,421	1,421	[redacted]	1,421	1,421	No	None	Yes	Radial	8,871	0	8,871	0	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Mayhew Lake	MHW_TR01	MHW311	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	7,319	3,041	[redacted]	5,087	2,412	Yes	LTC	Yes	Radial	35,258	18,891	18,829	18,847	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Mayhew Lake	MHW_TR01	MHW312	0.4	Primary Over-Voltage	10	Primary Over-Voltage	Compliant	[redacted]	7,319	3,041	[redacted]	2,735	511	Yes	LTC	Yes	Radial	35,258	18,891	16,429	44	7/31/2022	Nov-22	
Minnetonka - 142	Mound	MND_TR01	MND061	0.5	Thermal Discharging	0.99	Unintentional Islanding	Compliant	[redacted]	6,738	5,217	[redacted]	1,357	979	Yes	LTC	No	Radial	355	163	59	39	7/31/2022	Nov-22	
Minnetonka - 142	Mound	MND_TR01	MND062	0.24	Unintentional Islanding	2.39	Unintentional Islanding	Compliant	[redacted]	6,738	5,217	[redacted]	3,205	2,386	Yes	LTC	No	Radial	355	163	71	91	7/31/2022	Nov-22	
Minnetonka - 142	Mound	MND_TR01	MND063	0.09	Unintentional Islanding	1.38	Unintentional Islanding	Compliant	[redacted]	6,738	5,217	[redacted]	2,064	1,519	Yes	LTC	No	Radial	355	163	225	33	7/31/2022	Nov-22	
Minnetonka - 142	Mound	MND_TR02	MND071	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	4,850	3,904	[redacted]	1,902	1,223	Yes	LTC	No	Radial	130	20	38	0	7/31/2022	Nov-22	
Minnetonka - 142	Mound	MND_TR02	MND072	0.38	Unintentional Islanding	2.03	Unintentional Islanding	Compliant	[redacted]	4,850	3,904	[redacted]	2,754	2,144	Yes	LTC	No	Radial	130	20	92	20	7/31/2022	Nov-22	
Southeast - 144	Minnesota Lake	MNL_TR01	MNL001	0.1	Thermal Discharging	0.2	TPS Capacity Utilization	Compliant	[redacted]	336	336	[redacted]	294	294	No	Bus Reg - Sub	Yes	Radial	1,840	0	1,840	0	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Minnesota Valley	MNV_TR07	MNV211	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	600	600	[redacted]	600	600	Yes	Bus Reg - Sub	Yes	Radial	4,006	4,015	4,006	4,015	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minneapolis - 141	Moore Lake	MOL_TR01	MOL061	0.6	Thermal Discharging	2.54	Unintentional Islanding	Compliant	[redacted]	18,440	14,867	[redacted]	2,631	2,631	Yes	LTC	No	Radial	718	116	109	71	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR01	MOL062	1.5	Thermal Discharging	2.37	Unintentional Islanding	Compliant	[redacted]	18,440	14,867	[redacted]	2,302	2,302	Yes	LTC	No	Radial	718	116	86	0	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR01	MOL063	0.6	Thermal Discharging	2.89	Unintentional Islanding	Compliant	[redacted]	18,440	14,867	[redacted]	2,891	2,891	Yes	LTC	No	Radial	718	116	30	0	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR01	MOL064	0.7	Primary Over-Voltage	2.16	Unintentional Islanding	Compliant	[redacted]	18,440	14,867	[redacted]	2,148	2,148	Yes	LTC	No	Radial	718	116	74	0	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR01	MOL065	0.9	Thermal Discharging	1.67	Unintentional Islanding	Compliant	[redacted]	18,440	14,867	[redacted]	1,782	1,782	Yes	LTC	No	Radial	718	116	39	0	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR01	MOL066	0	Unintentional Islanding	2.44	Unintentional Islanding	Compliant	[redacted]	18,440	14,867	[redacted]	2,701	2,701	Yes	LTC	No	Radial	718	116	55	18	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR01	MOL067	0.6	Thermal Discharging	1.12	Unintentional Islanding	Compliant	[redacted]	18,440	14,867	[redacted]	1,191	1,191	Yes	LTC	No	Radial	718	116	135	0	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR01	MOL068	0.2	Primary Over-Voltage	1.37	Breaker Reach	Compliant	[redacted]	18,440	14,867	[redacted]	1,414	1,414	Yes	LTC	No	Radial	718	116	184	27	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR01	MOL069	0.24	Unintentional Islanding	0.24	Unintentional Islanding	Compliant	[redacted]	18,440	14,867	[redacted]	293	293	Yes	LTC	No	Radial	718	116	6	0	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR02	MOL071	0.9	Thermal Discharging	1.16	Unintentional Islanding	Compliant	[redacted]	15,315	13,243	[redacted]	1,245	1,245	Yes	LTC	No	Radial	2,799	114	434	0	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR02	MOL072	0	Unintentional Islanding	1.67	Unintentional Islanding	Compliant	[redacted]	15,315	13,243	[redacted]	1,795	1,795	Yes	LTC	No	Radial	2,799	114	190	9	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR02	MOL073	0.8	Primary Over-Voltage	1.43	Unintentional Islanding	Compliant	[redacted]	15,315	13,243	[redacted]	2,114	2,114	Yes	LTC	No	Radial	2,799	114	943	39	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR02	MOL074	0.42	Unintentional Islanding	1.48	Unintentional Islanding	Compliant	[redacted]	15,315	13,243	[redacted]	1,603	1,603	Yes	LTC	No	Radial	2,799	114	5	0	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR02	MOL076	0.9	Thermal Discharging	2.68	Unintentional Islanding	Compliant	[redacted]	15,315	13,243	[redacted]	2,788	2,788	Yes	LTC	No	Radial	2,799	114	16	7	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR02	MOL077	0.8	Primary Over-Voltage	1.1	Unintentional Islanding	Compliant	[redacted]	15,315	13,243	[redacted]	1,161	1,161	Yes	LTC	No	Radial	2,799	114	908	0	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR02	MOL078	0.9	Thermal Discharging	2.18	Unintentional Islanding	Compliant	[redacted]	15,315	13,243	[redacted]	2,258	2,258	Yes	LTC	No	Radial	2,799	114	240	45	4/30/2023	Aug-23	
Minneapolis - 141	Moore Lake	MOL_TR02	MOL079	0.6	Primary Over-Voltage	1.44	Unintentional Islanding	Compliant	[redacted]	15,315	13,243	[redacted]	1,610	1,610	Yes	LTC	No	Radial	2,799	114	63	14	4/30/2023	Aug-23	
St Paul - 151	Merriam Park	MPK_TR01	MPK061	2.63	Unintentional Islanding	2.63	Unintentional Islanding	Compliant	[redacted]	12,506	12,506	[redacted]	3,448	3,448	Yes	LTC	No	Radial	1,529	831	0	0	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR01	MPK062	0.9	Thermal Discharging	1.04	Unintentional Islanding	Compliant	[redacted]	12,506	12,506	[redacted]	1,334	1,334	Yes	LTC	No	Radial	1,529	831	113	65	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR01	MPK063	0.5	Thermal Discharging	2.05	Unintentional Islanding	Compliant	[redacted]	12,506	12,506	[redacted]	2,912	2,625	Yes	LTC	No	Radial	1,420	851	353	94	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR01	MPK064	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	12,506	12,506	[redacted]	1,444	1,444	Yes	LTC	No	Radial	1,529	831	94	100	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR01	MPK065	0.6	Thermal Discharging	1.52	Unintentional Islanding	Compliant	[redacted]	12,506	12,506	[redacted]	2,062	2,062	Yes	LTC	No	Radial	1,529	831	582	63	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR01	MPK066	0.79	Unintentional Islanding	0.79	Unintentional Islanding	Compliant	[redacted]	12,506	12,506	[redacted]	1,000	1,000	Yes	LTC	No	Radial	1,529	831	0	0	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR01	MPK067	0.8	Thermal Discharging	1.17	Unintentional Islanding	Compliant	[redacted]	12,506	12,506	[redacted]	1,600	1,600	Yes	LTC	No	Radial	1,529	831	35	0	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR01	MPK068	0.3	Breaker Reach	0.9	Breaker Reach	Compliant	[redacted]	12,506	12,506	[redacted]	2,638	2,638	Yes	LTC	No	Radial	1,420	851	300	515	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR02	MPK071	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Compliant	[redacted]	10,716	7,981	[redacted]	998	998	Yes	LTC	No	Radial	10,225	330	9,179	59	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR02	MPK072	1.92	Unintentional Islanding	1.92	Unintentional Islanding	Compliant	[redacted]	10,716	7,981	[redacted]	2,773	2,773	Yes	LTC	No	Radial	10,225	330	0	0	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR02	MPK073	0.6	Unintentional Islanding	0.6	Unintentional Islanding	Compliant	[redacted]	10,716	7,981	[redacted]	900	900	Yes	LTC	No	Radial	10,159	375	14	5	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR02	MPK074	1	Thermal Discharging	1.17	Unintentional Islanding	Compliant	[redacted]	10,716	7,981	[redacted]	1,654	1,654	Yes	LTC	No	Radial	10,225	330	342	101	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR02	MPK075	0.81	Unintentional Islanding	0.81	Unintentional Islanding	Compliant	[redacted]	10,716	7,981	[redacted]	1,500	1,500	Yes	LTC	No	Radial	10,225	330	487	40	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR02	MPK076	1.15	Unintentional Islanding	1.15	Unintentional Islanding	Compliant	[redacted]	10,716	7,981	[redacted]	1,565	1,565	Yes	LTC	No	Radial	10,225	330	75	85	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR02	MPK077	1.4	Thermal Discharging	2.19	Unintentional Islanding	Compliant	[redacted]	10,716	7,981	[redacted]	2,693	2,693	Yes	LTC	No	Radial	10,225	330	49	0	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR02	MPK078	0.1	Primary Over-Voltage	0.66	Breaker Reach	Compliant	[redacted]	10,716	7,981	[redacted]	3,132	3,132	Yes	LTC	No	Radial	10,225	330	79	40	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR03	MPK081	1.55	Unintentional Islanding	1.55	Unintentional Islanding	Compliant	[redacted]	13,603	11,204	[redacted]	2,335	2,335	Yes	LTC	No	Radial	1,439	339	0	0	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR03	MPK082	0.4	Primary Over-Voltage	0.73	Breaker Reach	Compliant	[redacted]	13,603	11,204	[redacted]	1,900	1,900	Yes	LTC	No	Radial	1,439	339	255	43	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR03	MPK083	0.32	Breaker Reach	0.39	Breaker Reach	Compliant	[redacted]	13,603	11,204	[redacted]	2,723	2,723	Yes	LTC	No	Radial	1,439	339	187	146	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR03	MPK084	0.2	Primary Over-Voltage	1.03	Unintentional Islanding	Compliant	[redacted]	13,603	11,204	[redacted]	1,431	1,431	Yes	LTC	No	Radial	1,439	339	142	31	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR03	MPK085	0.9	Thermal Discharging	1.1	Unintentional Islanding	Compliant	[redacted]	13,603	11,204	[redacted]	1,612	1,612	Yes	LTC	No	Radial	1,439	339	421	57	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR03	MPK086	0.57	Unintentional Islanding	0.57	Unintentional Islanding	Compliant	[redacted]	13,603	11,204	[redacted]	800	800	Yes	LTC	No	Radial	1,439	339	129	6	1/31/2023	May-23	
St Paul - 151	Merriam Park	MPK_TR03	MPK087	0.9	Thermal Discharging	1.84	Unintentional Islanding	Compliant	[redacted]	13,603	11,204	[redacted]	2,550	2,550	Yes	LTC	No	Radial	1,439	339	305	56	1/31/2023	May-23	
Southeast - 144	Mapleton	MPN_TR01	MPN081	0.4	Thermal Discharging	4.16	Breaker Reach	Exceeded	[redacted]	982	982	[redacted]	973	973	No	None	Yes	Radial	7,620	0	7,620	0	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Meriden	MRN_TR01	MRN021	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	464	464	[redacted]	368	368	No	None	Yes	Radial	3,474	0	3,474	0	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minneapolis - 141	Main Street	MST_TR01	MST063	1.3	Unintentional Islanding	1.3	Unintentional Islanding	Compliant	[redacted]	5,080	4,119	[redacted]	0	0	Yes	LTC	No	Radial	1,198	6	0	0	1/31/2023	May-23	
Minneapolis - 141	Main Street	MST_TR01	MST064	0.04	Unintentional Islanding	0.04	Unintentional Islanding	Compliant	[redacted]	5,080	4,119	[redacted]	0	0	Yes	LTC	No	Radial	1,198	6	0	0	1/31/2023	May-23	
Minneapolis - 141	Main Street	MST_TR01	MST066	0.9	Thermal Discharging	1.65	Unintentional Islanding	Compliant	[redacted]	5,080	4,119	[redacted]	2,206	2,206	Yes	LTC	No	Radial	1,198	6	92	0	1/31/2023	May-23	
Minneapolis - 141	Main Street	MST_TR01	MST068	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	5,080	4,119	[redacted]	1,077	1,077	Yes	LTC	No	Radial	1,198	6	848	0	1/31/2023	May-23	
Minneapolis - 141	Main Street	MST_TR01	MST069	0.83	Unintentional Islanding	0.83	Unintentional Islanding	Compliant	[redacted]	5,080	4,119	[redacted]	1,176	1,176	Yes	LTC	No	Radial	1,198	6	62	0	1/31/2023	May-23	
Minneapolis - 141	Main Street	MST_TR02	MST070	0.9	Thermal Discharging	2.16	Unintentional Islanding	Compliant	[redacted]	11,417	9,500	[redacted]	3,108	3,108	Yes	LTC	No	Radial	901	85	68	4	1/31/2023	May-23	
Minneapolis - 141	Main Street	MST_TR02	MST071	0.9	Thermal Discharging	2.43	Unintentional Islanding	Compliant	[redacted]	11,417	9,500	[redacted]	3,311	3,311	Yes	LTC	No	Radial	901	85	251	16	1/31/2023	May-23	
Minneapolis - 141	Main Street	MST_TR02	MST074	0.15	Unintentional Islanding	0.15	Unintentional Islanding	Compliant	[redacted]	11,417	9,500	[redacted]	190	190	Yes	LTC	No	Radial	901	85	0	0	1/31/2023	May-23	
Minneapolis - 141	Main Street	MST_TR02	MST075	0.9	Thermal Discharging	2.34	Unintentional Islanding	Compliant	[redacted]	11,417	9,500	[redacted]	3,332	3,332	Yes	LTC	No	Radial	901	85	478	42	1/31/2023	May-23	
Minneapolis - 141	Main Street	MST_TR02	MST076	0.4	Primary Over-Voltage	0.57	Unintentional Islanding	Compliant	[redacted]	11,417	9,500	[redacted]	936	936	Yes	LTC	No	Radial	901	85	104	23	1/31/2023	May-23	
Minneapolis - 141	Main Street	MST_TR01	MST080	0.1	Primary Over-Voltage	0.51	Breaker Reach	Compliant	[redacted]	5,080	4,119	[redacted]	1,605	1,605	Yes	LTC	No	Radial	1,198	6	196	6	1/31/2023	May-23	
Northwest - 154	Montrose	MTR_TR01	MTR021	0	Unintentional Islanding	1.05	Unintentional Islanding	Compliant	[redacted]	1,478	1,478	[redacted]	1,478	1,478	No	None	No	Radial	8,602	92	8,602	92	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Montevideo	MTV_TR01	MTV001	0.1	Primary Over-Voltage	0.19	Unintentional Islanding	Compliant	[redacted]	836	929	[redacted]	225	225	No	None	No	Radial	40	0	30	0	4/30/2023	Aug-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Technical Planning Standard	Substation Transformer Forecasted Peak Load (kVA)	Substation Transformer Minimum Load (kVA)	Transformer Absolute Min (kVA)	Feeder Forecasted Peak Load (kVA)	Feeder Daytime Minimum Load (kVA)	Feeder Absolute Min (kVA)	Actual Daytime Minimum Load	LTC or Regulator	VSR Equipped	Network or Radial	Substation Transformer Installed DG (kW)	Substation Transformer Queued DG (kW)	Feeder Installed DG (kW)	Feeder Queued DG (kW)	Data Cutoff	Latest Quarterly Update	Notes
Northwest - 154	Montevideo	MTV_TR01	MTV002	0.29	Unintentional Islanding	0.29	Unintentional Islanding	Compliant	[redacted]	836	929	[redacted]	330	330	No	None	No	Radial	40	0	6	0	4/30/2023	Aug-23	
Northwest - 154	Montevideo	MTV_TR01	MTV003	0.36	Unintentional Islanding	0.36	Unintentional Islanding	Compliant	[redacted]	836	929	[redacted]	375	375	No	None	No	Radial	40	0	4	0	4/30/2023	Aug-23	
Northwest - 154	Montevideo	MTV_TR02	MTV021	0.1	Primary Over-Voltage	3	Thermal Discharging	Compliant	[redacted]	1,558	1,320	[redacted]	200	200	Yes	LTC	Yes	Radial	6,117	903	1,077	0	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Montevideo	MTV_TR02	MTV022	0.5	Thermal Discharging	3.78	Breaker Reach	Compliant	[redacted]	1,558	1,320	[redacted]	914	914	Yes	LTC	Yes	Radial	6,117	903	5,040	903	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Morristown	MTW_TR01	MTW021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	554	554	[redacted]	553	553	No	None	Yes	Radial	5,972	0	5,972	0	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Maynard	MYN_TR01	MYN021	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	516	516	[redacted]	516	516	No	None	Yes	Radial	2,000	1,000	2,000	1,000	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Nerstrand	NER_TR01	NER021	0.2	Primary Over-Voltage	2.5	TPS Capacity Utilization	Compliant	[redacted]	0	0	[redacted]	341	341	No	None	Yes	Radial	3,099	0	3,099	0	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Edina - 143	Nine Mile Creek	NMC_TR01	NMC063	4.7	Thermal Discharging	7.6	Unintentional Islanding	Compliant	[redacted]	10,839	10,839	[redacted]	4,259	4,259	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Nine Mile Creek	NMC_TR01	NMC064	5.21	Unintentional Islanding	5.21	Unintentional Islanding	Compliant	[redacted]	10,839	10,839	[redacted]	5,328	5,328	Yes	LTC	No	Radial	0	0	0	0	4/30/2023	Aug-23	
Edina - 143	Nine Mile Creek	NMC_TR02	NMC082	0.14	Unintentional Islanding	2.19	Unintentional Islanding	Compliant	[redacted]	9,403	8,122	[redacted]	2,369	2,369	Yes	LTC	No	Radial	274	147	71	11	4/30/2023	Aug-23	
Edina - 143	Nine Mile Creek	NMC_TR02	NMC083	1	Thermal Discharging	1.78	Unintentional Islanding	Compliant	[redacted]	9,403	8,122	[redacted]	2,033	2,033	Yes	LTC	No	Radial	274	147	138	16	4/30/2023	Aug-23	
Edina - 143	Nine Mile Creek	NMC_TR02	NMC092	0.9	Thermal Discharging	2.15	Unintentional Islanding	Compliant	[redacted]	9,403	8,122	[redacted]	2,441	2,441	Yes	LTC	No	Radial	274	147	54	120	4/30/2023	Aug-23	
Edina - 143	Nine Mile Creek	NMC_TR02	NMC093	1.4	Primary Over-Voltage	2.11	Unintentional Islanding	Compliant	[redacted]	9,403	8,122	[redacted]	2,339	2,339	Yes	LTC	No	Radial	274	147	11	0	4/30/2023	Aug-23	
Southeast - 144	Northfield	NOF_TR01	NOF061	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	7,058	0	[redacted]	1,101	1,101	Yes	LTC	Yes	Radial	16,713	0	16,713	0	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Northfield	NOF_TR01	NOF062	0.7	Thermal Discharging	1	Unintentional Islanding	Compliant	[redacted]	7,058	0	[redacted]	1,307	1,307	Yes	LTC	No	Radial	16,713	0	0	0	1/31/2023	May-23	
Southeast - 144	Northfield	NOF_TR02	NOF071	0.5	Thermal Discharging	10	Primary Over-Voltage	Compliant	[redacted]	6,163	4,003	[redacted]	3,260	3,260	Yes	LTC	Yes	Radial	11,756	5,144	8,878	5,051	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Northfield	NOF_TR02	NOF072	0	Unintentional Islanding	1.03	Unintentional Islanding	Compliant	[redacted]	6,163	4,003	[redacted]	1,913	1,913	Yes	LTC	No	Radial	11,756	5,144	1,148	93	1/31/2023	May-23	
Southeast - 144	Northfield	NOF_TR02	NOF073	0.47	Unintentional Islanding	0.47	Unintentional Islanding	Compliant	[redacted]	6,163	4,003	[redacted]	680	680	Yes	LTC	No	Radial	11,756	5,144	1,730	0	1/31/2023	May-23	
White Bear Lake - 156	Oakdale	OAD_TR01	OAD061	0.9	Thermal Discharging	2.25	Unintentional Islanding	Compliant	[redacted]	7,746	5,607	[redacted]	2,280	2,280	Yes	LTC	No	Radial	589	106	70	32	4/30/2023	Aug-23	
White Bear Lake - 156	Oakdale	OAD_TR01	OAD062	1.01	Unintentional Islanding	1.01	Unintentional Islanding	Compliant	[redacted]	7,746	5,607	[redacted]	1,020	1,020	Yes	LTC	No	Radial	589	106	12	0	4/30/2023	Aug-23	
White Bear Lake - 156	Oakdale	OAD_TR01	OAD063	0.9	Thermal Discharging	1.86	Unintentional Islanding	Compliant	[redacted]	7,746	5,607	[redacted]	1,838	1,838	Yes	LTC	No	Radial	589	106	79	67	4/30/2023	Aug-23	
White Bear Lake - 156	Oakdale	OAD_TR01	OAD064	0.86	Unintentional Islanding	0.86	Unintentional Islanding	Compliant	[redacted]	7,746	5,607	[redacted]	906	906	Yes	LTC	No	Radial	589	106	145	7	4/30/2023	Aug-23	
White Bear Lake - 156	Oakdale	OAD_TR01	OAD065	0.3	Thermal Discharging	1.62	Unintentional Islanding	Compliant	[redacted]	7,746	5,607	[redacted]	1,834	1,834	Yes	LTC	No	Radial	589	106	283	0	4/30/2023	Aug-23	
White Bear Lake - 156	Oakdale	OAD_TR02	OAD071	0.6	Thermal Discharging	2.08	Unintentional Islanding	Compliant	[redacted]	3,269	474	[redacted]	2,022	2,022	Yes	LTC	No	Radial	1,025	635	91	140	4/30/2023	Aug-23	
White Bear Lake - 156	Oakdale	OAD_TR02	OAD072	0.7	Thermal Discharging	2.28	Unintentional Islanding	Compliant	[redacted]	3,269	474	[redacted]	2,400	2,400	Yes	LTC	No	Radial	1,025	635	110	30	4/30/2023	Aug-23	
White Bear Lake - 156	Oakdale	OAD_TR02	OAD073	0.9	Thermal Discharging	1.67	Unintentional Islanding	Compliant	[redacted]	3,269	474	[redacted]	1,811	1,811	Yes	LTC	No	Radial	1,025	635	94	52	4/30/2023	Aug-23	
White Bear Lake - 156	Oakdale	OAD_TR02	OAD074	0.8	Thermal Discharging	1.46	Unintentional Islanding	Compliant	[redacted]	3,269	474	[redacted]	1,649	1,649	Yes	LTC	No	Radial	1,025	635	267	21	4/30/2023	Aug-23	
White Bear Lake - 156	Oakdale	OAD_TR02	OAD075	0.56	Unintentional Islanding	2.42	Unintentional Islanding	Compliant	[redacted]	3,269	474	[redacted]	2,493	2,493	Yes	LTC	No	Radial	1,025	635	463	392	4/30/2023	Aug-23	
White Bear Lake - 156	Oak Park	OPK_TR07	OPK065	0.4	Thermal Discharging	0.9	Breaker Reach	Compliant	[redacted]	7,203	5,346	[redacted]	1,947	1,868	Yes	LTC	No	Radial	57	39	49	32	7/31/2022	Nov-22	
White Bear Lake - 156	Oak Park	OPK_TR07	OPK066	0.64	Unintentional Islanding	0.64	Unintentional Islanding	Compliant	[redacted]	7,203	5,346	[redacted]	849	781	Yes	LTC	No	Radial	57	39	0	0	7/31/2022	Nov-22	
White Bear Lake - 156	Oak Park	OPK_TR07	OPK067	0.04	Unintentional Islanding	1.06	Unintentional Islanding	Compliant	[redacted]	7,203	5,346	[redacted]	1,500	1,500	Yes	LTC	No	Radial	57	39	8	7	7/31/2022	Nov-22	
White Bear Lake - 156	Oak Park	OPK_TR08	OPK071	0.45	Unintentional Islanding	0.45	Unintentional Islanding	Compliant	[redacted]	7,443	5,224	[redacted]	695	572	Yes	LTC	No	Radial	845	295	72	0	7/31/2022	Nov-22	
White Bear Lake - 156	Oak Park	OPK_TR08	OPK072	0.9	Thermal Discharging	1.14	Unintentional Islanding	Compliant	[redacted]	7,443	5,224	[redacted]	1,655	1,389	Yes	LTC	No	Radial	845	295	20	6	7/31/2022	Nov-22	
White Bear Lake - 156	Oak Park	OPK_TR08	OPK073	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	7,443	5,224	[redacted]	1,800	1,402	Yes	LTC	No	Radial	845	295	426	90	7/31/2022	Nov-22	
White Bear Lake - 156	Oak Park	OPK_TR08	OPK074	1.4	Unintentional Islanding	1.4	Unintentional Islanding	Compliant	[redacted]	7,443	5,224	[redacted]	1,924	1,417	Yes	LTC	No	Radial	845	295	0	0	7/31/2022	Nov-22	
White Bear Lake - 156	Oak Park	OPK_TR08	OPK075	0.65	Unintentional Islanding	0.65	Unintentional Islanding	Compliant	[redacted]	7,443	5,224	[redacted]	854	854	Yes	LTC	No	Radial	845	295	0	0	7/31/2022	Nov-22	
White Bear Lake - 156	Oak Park	OPK_TR08	OPK077	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	7,443	5,224	[redacted]	2,657	2,083	Yes	LTC	No	Radial	845	295	327	199	7/31/2022	Nov-22	
Minnetonka - 142	Orono	ORO_TR01	ORO061	0.5	Thermal Discharging	1.2	Unintentional Islanding	Compliant	[redacted]	0	0	[redacted]	2,040	1,612	Yes	LTC	No	Radial	986	0	279	0	7/31/2022	Nov-22	
Minnetonka - 142	Orono	ORO_TR01	ORO062	0.8	Thermal Discharging	1.91	Unintentional Islanding	Compliant	[redacted]	0	0	[redacted]	3,354	2,720	Yes	LTC	No	Radial	986	0	707	0	7/31/2022	Nov-22	
Maple Grove - 147	Osseo	OSS_TR01	OSS061	0.9	Thermal Discharging	2.25	Unintentional Islanding	Compliant	[redacted]	13,287	11,833	[redacted]	2,309	2,309	Yes	LTC	No	Radial	499	414	54	0	4/30/2023	Aug-23	
Maple Grove - 147	Osseo	OSS_TR01	OSS062	0.9	Thermal Discharging	2.58	Unintentional Islanding	Compliant	[redacted]	13,287	11,833	[redacted]	2,729	2,729	Yes	LTC	No	Radial	499	414	75	5	4/30/2023	Aug-23	
Maple Grove - 147	Osseo	OSS_TR01	OSS063	0.5	Unintentional Islanding	0.75	Unintentional Islanding	Compliant	[redacted]	13,287	11,833	[redacted]	922	922	Yes	LTC	No	Radial	499	414	78	5	4/30/2023	Aug-23	
Maple Grove - 147	Osseo	OSS_TR01	OSS064	0.6	Thermal Discharging	1.38	Unintentional Islanding	Compliant	[redacted]	13,287	11,833	[redacted]	1,860	1,860	Yes	LTC	No	Radial	499	414	124	180	4/30/2023	Aug-23	
Maple Grove - 147	Osseo	OSS_TR01	OSS065	1.5	Thermal Discharging	2.25	Unintentional Islanding	Compliant	[redacted]	13,287	11,833	[redacted]	2,596	2,596	Yes	LTC	No	Radial	499	414	90	224	4/30/2023	Aug-23	
Maple Grove - 147	Osseo	OSS_TR01	OSS066	1.6	Thermal Discharging	1.97	Unintentional Islanding	Compliant	[redacted]	13,287	11,833	[redacted]	2,022	2,022	Yes	LTC	No	Radial	499	414	78	0	4/30/2023	Aug-23	
Maple Grove - 147	Osseo	OSS_TR02	OSS071	0.9	Thermal Discharging	1.85	Unintentional Islanding	Compliant	[redacted]	10,828	9,182	[redacted]	2,040	2,040	Yes	LTC	No	Radial	2,305	1,279	337	85	4/30/2023	Aug-23	
Maple Grove - 147	Osseo	OSS_TR02	OSS072	0.36	Unintentional Islanding	0.36	Unintentional Islanding	Compliant	[redacted]	10,828	9,182	[redacted]	762	762	Yes	LTC	No	Radial	2,305	1,279	789	0	4/30/2023	Aug-23	
Maple Grove - 147	Osseo	OSS_TR02	OSS073	0.6	Primary Over-Voltage	1.81	Unintentional Islanding	Compliant	[redacted]	10,828	9,182	[redacted]	2,002	2,002	Yes	LTC	No	Radial	2,305	1,279	1,100	1,178	4/30/2023	Aug-23	
Maple Grove - 147	Osseo	OSS_TR02	OSS074	0.63	Unintentional Islanding	0.63	Unintentional Islanding	Compliant	[redacted]	10,828	9,182	[redacted]	632	632	Yes	LTC	No	Radial	2,305	1,279	0	0	4/30/2023	Aug-23	
Maple Grove - 147	Osseo	OSS_TR02	OSS075	1.4	Primary Over-Voltage	1.44	Unintentional Islanding	Compliant	[redacted]	10,828	9,182	[redacted]	1,417	1,417	Yes	LTC	No	Radial	2,305	1,279	36	0	4/30/2023	Aug-23	
Maple Grove - 147	Osseo	OSS_TR02	OSS076	1.1	Thermal Discharging	1.18	Unintentional Islanding	Compliant	[redacted]	10,828	9,182	[redacted]	1,204	1,204	Yes	LTC	No	Radial	2,305	1,279	31	6	4/30/2023	Aug-23	
Maple Grove - 147	Osseo	OSS_TR02	OSS077	0.9	Thermal Discharging	1.97	Unintentional Islanding	Compliant	[redacted]	10,828	9,182	[redacted]	2,040	2,040	Yes	LTC	No	Radial	2,305	1,279	12	10	4/30/2023	Aug-23	
Northwest - 154	Paynesville Transmission	PAT_TR04	PAT312	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	6,447	4,639	[redacted]	6,447	6,447	Yes	LTC	No	Radial	4,141	6,189	4,141	6,189	4/30/2023	Aug-23	
Northwest - 154	Paynesville Transmission	PAT_TR03	PAT313	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	4,068	4,363	[redacted]	2,131	2,131	Yes	LTC	Yes	Radial	18,959	1,000	18,063	1,000	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Paynesville Transmission	PAT_TR03	PAT314	0.1	Primary Over-Voltage	0.97	Unintentional Islanding	Compliant	[redacted]	4,068	4,363	[redacted]	1,030	1,030	Yes	LTC	No	Radial	18,959	1,000	896	0	4/30/2023	Aug-23	
Newport - 150	Pine Bend	PBE_TR03	PBE061	0.5	Thermal Discharging	1.19	Unintentional Islanding	Compliant	[redacted]	0	0	[redacted]	1,578	1,578	Yes	None	No	Radial	1,261	51	1,261	51	10/31/2022	Feb-23	
Southeast - 144	Pine Island	PIL_TR01	PIL021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	940	940	[redacted]	940	940	No	Fdr Reg - Sub	Yes	Radial	8,748	9	8,748	9	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Pine Island	PIL_TR02	PIL022	0	Unintentional Islanding	0.86	Unintentional Islanding	Compliant	[redacted]	1,392	1,392	[redacted]	1,378	1,378	No	Fdr Reg - Sub	No	Radial	171	0	171	0	7/31/2022	Nov-22	
South Dakota - 152	Pipestone	PIP_TR01	PIP061	0.5	Thermal Discharging	1.37	Unintentional Islanding	Compliant	[redacted]	3,200	2,200	[redacted]	1,910	1,414	Yes	Bus Reg - Sub	No	Radial	1,151	6,015	28	4,015	7/31/2022	Nov-22	
South Dakota - 152	Pipestone	PIP_TR01	PIP062	0.5	Thermal Discharging	6.51	Breaker Reach	Compliant	[redacted]	3,200	2,200	[redacted]	1,118	762	Yes	Bus Reg - Sub	Yes	Radial	1,151	6,015	1,123	2,000	7/31/2022	Nov-22	
South Dakota - 152	Pipestone	PIP_TR03	PIP090	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	479	453	[redacted]	479	317	Yes	None	Yes	Radial	8,172	29	8,172	29	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Maple Grove - 147	Parkers Lake	PKL_TR01	PKL061	1	Thermal Discharging	1.98	Unintentional Islanding	Compliant	[redacted]	10,017	8,860	[redacted]	1,912	1,912	Yes	LTC	No	Radial	2,322	341	0	0	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR01	PKL062	0.7	Unintentional Islanding	0.7	Unintentional Islanding	Compliant	[redacted]	10,017	8,860	[redacted]	806	806	Yes	LTC	No	Radial	2,322	341	1,308	300	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR01	PKL063	0.8	Primary Over-Voltage	1.1	Unintentional Islanding	Compliant	[redacted]	10,017	8,860	[redacted]	1,152	1,152	Yes	LTC	No	Radial	2,322	341	21	13	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR01	PKL064	1.2	Primary Over-Voltage	1.4	Unintentional Islanding	Compliant	[redacted]	10,017	8,860	[redacted]	1,414	1,414	Yes	LTC	No	Radial	2,322	341	41	8	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR01	PKL065	1.2	Primary Over-Voltage	2.15	Unintentional Islanding	Compliant	[redacted]	10,017	8,860	[redacted]	2,202	2,202	Yes	LTC	No	Radial	2,322	341	932	10	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR01	PKL066	0.74	Unintentional Islanding	0.74	Unintentional Islanding	Compliant	[redacted]	10,017	8,860	[redacted]	800	800	Yes	LTC	No	Radial	2,322	341	20	10	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR02	PKL071	0.9	Thermal Discharging	1.8	Unintentional Islanding	Compliant	[redacted]	5,662	5,662	[redacted]	2,100	2,100	Yes	LTC	No	Radial	403	80	314	80	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR02	PKL072	0.9	Thermal Discharging	1.29	Unintentional Islanding	Compliant	[redacted]	5,662	5,662	[redacted]	1,334	1,334	Yes	LTC	No	Radial	403	80	60	0	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR02	PKL073	0.83	Unintentional Islanding	0.83	Unintentional Islanding	Compliant	[redacted]	5,662	5,662	[redacted]	947	947	Yes	LTC	No	Radial	403	80	5	0	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR02	PKL074	0.7	Primary Over-Voltage	1.11	Unintentional Islanding	Compliant	[redacted]	5,662	5,662	[redacted]	1,273	1,273	Yes	LTC	No	Radial	403	80	4	0	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR02	PKL075	0.76	Unintentional Islanding	0.76	Unintentional Islanding	Compliant	[redacted]	5,662	5,662	[redacted]	860	860	Yes	LTC	No	Radial	403	80	20	0	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR03	PKL081	0.89	Unintentional Islanding	0.89	Unintentional Islanding	Compliant	[redacted]	5,520	5,520	[redacted]	960	960	Yes	LTC	No	Radial	1,104	44	173	3	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR03	PKL082	1.4	Primary Over-Voltage	1.5	Unintentional Islanding	Compliant	[redacted]	5,520	5,520	[redacted]	1,621	1,621	Yes	LTC	No	Radial	1,104	44	17	11	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR03	PKL083	1.19	Unintentional Islanding	1.19	Unintentional Islanding	Compliant	[redacted]	5,520	5,520	[redacted]	1,240	1,240	Yes	LTC	No	Radial	1,104	44	47	0	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR03	PKL084	0.73	Unintentional Islanding	0.73	Unintentional Islanding	Compliant	[redacted]	5,520	5,520	[redacted]	720	720	Yes	LTC	No	Radial	1,104	44	625	0	4/30/2023	Aug-23	
Maple Grove - 147	Parkers Lake	PKL_TR03	PKL085	0.4	Primary Over-Voltage	1.92	Unintentional Islanding	Compliant	[redacted]	5,520	5,520	[redacted]	2,122	2,122	Yes	LTC	No	Radial	1,104	44	242	30	4/30/2023	Aug-23	
Minnetonka - 142	Plato	PLA_TR01	PLA022	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	2,693	2,617	[redacted]	510	510	Yes	None	Yes	Radial	6,077	1,000	6,077	0	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minnetonka - 142	Plato	PLA_TR01	PLA023	0.51	Unintentional Islanding	1.54	Unintentional Islanding	Compliant	[redacted]	2,693	2,617	[redacted]	1,478	1,478	No	None	No	Radial	6,077	1,000	0	1,000	4/30/2023	Aug-23	
St Paul - 151	Prior	PRR_TR01	PRR061	0.3	Thermal Discharging	1.36	Unintentional Islanding	Compliant	[redacted]	4,061	3,821	[redacted]	2,084	2,084	Yes	LTC	No	Radial	1,201	4	376	0	10/31/2022	Feb-23	
St Paul - 151	Prior	PRR_TR01	PRR062	0.62	Unintentional Islanding	0.62	Unintentional Islanding	Compliant	[redacted]	4,061	3,821	[redacted]	883	883	Yes	LTC	No	Radial	1,201	4	704	4	10/31/2022	Feb-23	
St Paul - 151	Prior	PRR_TR01	PRR063	0.63	Unintentional Islanding	0.63	Unintentional Islanding	Compliant	[redacted]	4,061	3,821	[redacted]	931	931	Yes	LTC	No	Radial	1,201	4	121	0	10/31/2022	Feb-23	
White Bear Lake - 156	Ramsey	RAM_TR01	RAM061	0.9	Thermal Discharging	0.93	Unintentional Islanding	Compliant	[redacted]	7,765	6,127	[redacted]	1,300	1,300	Yes	None	No	Radial	458	67	54	0	7/31/2022	Nov-22	
White Bear Lake - 156	Ramsey	RAM_TR01	RAM062	0.08	Unintentional Islanding	0.78	Unintentional Islanding	Compliant	[redacted]	7,765	6,127	[redacted]	1,237	949	Yes	None	No	Radial	458	67	157	26	7/31/2022	Nov-22	
White Bear Lake - 156	Ramsey	RAM_TR01	RAM063	0.34	Unintentional Islanding	2.06	Unintentional Islanding	Compliant	[redacted]	7,765	6,127	[redacted]	2,843	2,566	Yes	None	No	Radial	458	67	21	4	7/31/2022	Nov-22	
White Bear Lake - 156	Ramsey	RAM_TR01	RAM064	0.9	Thermal Discharging	1.48	Unintentional Islanding	Compliant	[redacted]	7,765	6,127	[redacted]	2,209	1,628	Yes	None	No	Radial	458	67	226	37	7/31/2022	Nov-22	
White Bear Lake - 156	Ramsey	RAM_TR02	RAM071	0.9	Thermal Discharging	1.83	Unintentional Islanding	Compliant	[redacted]	9,355	7,211	[redacted]	2,693	2,147	Yes	None	No	Radial	884	495	204	68	7/31/2022	Nov-22	
White Bear Lake - 156	Ramsey	RAM_TR02	RAM072	0.12	Unintentional Islanding	1.24	Unintentional Islanding	Compliant	[redacted]	9,355	7,211	[redacted]	1,931	1,628	Yes	None	No	Radial	884	495	124	360	7/31/2022	Nov-22	
White Bear Lake - 156	Ramsey	RAM_TR02	RAM073	0.9	Thermal Discharging	1.23	Unintentional Islanding	Compliant	[redacted]	9,355	7,211	[redacted]	2,110	1,530	Yes	None	No	Radial	884	495	418	31	7/31/2022	Nov-22	
White Bear Lake - 156	Ramsey	RAM_TR02	RAM077	0.11	Unintentional Islanding	2.03	Unintentional Islanding	Compliant	[redacted]	9,355	7,211	[redacted]	2,970	2,001	Yes	None	No	Radial	884	495	138	36	7/31/2022	Nov-22	
Southeast - 144	Rapidan	RAP_TR01	RAP081	0.1	Thermal Discharging	1.28	Breaker Reach	Compliant	[redacted]	474	474	[redacted]	474	474	No	Fdr Reg - Sub	Yes	Radial	2,258	1,734	2,258	1,734	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Richmond	RCH_TR01	RCH061	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	626	625	[redacted]	625	625	No	None	Yes	Radial	5,032	0	5,032	0	7/31/2022	Nov-22	
North Dakota - 145	Red River	RED_TR02	RED091	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	20,412	15,787	[redacted]	5,200	5,200	Yes	LTC	No	Radial	89	5,035	89	5,035	10/31/2022	Feb-23	
Southeast - 144	Red Wing	REW_TR01	REW021	0.02	Unintentional Islanding	0.46	Unintentional Islanding	Compliant	[redacted]	4,103	3,473	[redacted]	670	608	Yes	None	No	Radial	5,061	3,049	37	36	7/31/2022	Nov-22	
Southeast - 144	Red Wing	REW_TR01	REW022	0.53	Unintentional Islanding	0.53	Unintentional Islanding	Compliant	[redacted]	4,103	3,473	[redacted]	825	632	Yes	None	No	Radial	5,061	3,049	73	0	7/31/2022	Nov-22	
Southeast - 144	Red Wing	REW_TR01	REW023	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	4,103	3,473	[redacted]	1,649	846	Yes	None	Yes	Radial	5,061	3,049	4,951	3,013	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Red Wing	REW_TR02	REW031	0.8	Thermal Discharging	1.37	Unintentional Islanding	Compliant	[redacted]	4,855	3,785	[redacted]	2,025	1,746	Yes	None	No	Radial	232	32	105	10	7/31/2022	Nov-22	
Southeast - 144	Red Wing	REW_TR02	REW032	0.47	Unintentional Islanding	0.47	Unintentional Islanding	Compliant	[redacted]	4,855	3,785	[redacted]	700	600	Yes	None	No	Radial	232	32	24	7	7/31/2022	Nov-22	
Southeast - 144	Red Wing	REW_TR02	REW033	0.57	Unintentional Islanding	0.57	Unintentional Islanding	Compliant	[redacted]	4,855	3,785	[redacted]	906	707	Yes	None	No	Radial	232	32	103	15	7/31/2022	Nov-22	
Minneapolis - 141	Riverside	RIV_TR01	RIV061	0.9	Thermal Discharging	0.91	Unintentional Islanding	Compliant	[redacted]	7,703	7,703	[redacted]	1,321	1,321	Yes	LTC	No	Radial	2,365	199	132	0	10/31/2022	Feb-23	
Minneapolis - 141	Riverside	RIV_TR01	RIV062	0.9	Thermal Discharging	1.2	Unintentional Islanding	Compliant	[redacted]	7,703	7,703	[redacted]	1,844	1,844	Yes	LTC	No	Radial	2,365	199	366	0	10/31/2022	Feb-23	
Minneapolis - 141	Riverside	RIV_TR01	RIV063	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	7,703	7,703	[redacted]	1,465	1,465	Yes	LTC	No	Radial	2,365	199	1,856	194	10/31/2022	Feb-23	
Minneapolis - 141	Riverside	RIV_TR01	RIV064	0.9	Thermal Discharging	1.22	Unintentional Islanding	Compliant	[redacted]	7,703	7,703	[redacted]	1,477	1,477	Yes	LTC	No	Radial	2,365	199	11	5	10/31/2022	Feb-23	
Minneapolis - 141	Riverside	RIV_TR01	RIV065	0.2	Unintentional Islanding	0.2	Unintentional Islanding	Compliant	[redacted]	7,703	7,703	[redacted]	252	252	Yes	LTC	No	Radial	2,365	199	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Riverside	RIV_TR01	RIV066	0.06	Unintentional Islanding	0.06	Unintentional Islanding	Compliant	[redacted]	7,703	7,703	[redacted]	1,061	1,061	Yes	LTC	No	Radial	2,365	199	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Riverside	RIV_TR02	RIV071	0.62	Unintentional Islanding	0.62	Unintentional Islanding	Compliant	[redacted]	6,471	6,217	[redacted]	741	741	Yes	LTC	No	Radial	702	156	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Riverside	RIV_TR02	RIV072	0.12	Unintentional Islanding	0.12	Unintentional Islanding	Compliant	[redacted]	6,471	6,217	[redacted]	186	186	Yes	LTC	No	Radial	702	156	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Riverside	RIV_TR02	RIV073	0.3	Unintentional Islanding	0.3	Unintentional Islanding	Compliant	[redacted]	6,471	6,217	[redacted]	1,052	1,052	Yes	LTC	No	Radial	702	156	654	156	10/31/2022	Feb-23	
Minneapolis - 141	Riverside	RIV_TR02	RIV074	0.1	Unintentional Islanding	0.1	Unintentional Islanding	Compliant	[redacted]	6,471	6,217	[redacted]	124	124	Yes	LTC	No	Radial	702	156	0	0	10/31/2022	Feb-23	
Minneapolis - 141	Riverside	RIV_TR02	RIV075	0.9	Unintentional Islanding	0.9	Unintentional Islanding	Compliant	[redacted]	6,471	6,217	[redacted]	1,120	1,120	Yes	LTC	No	Radial	702	156	6	0	10/31/2022	Feb-23	
Minneapolis - 141	Riverside	RIV_TR02	RIV076	0.9	Thermal Discharging	1.34	Unintentional Islanding	Compliant	[redacted]	6,471	6,217	[redacted]	1,778	1,778	Yes	LTC	No	Radial	702	156	42	0	10/31/2022	Feb-23	
Newport - 150	Rogers Lake	RLK_TR01	RLK064	0.7	Primary Over-Voltage	1.16	Unintentional Islanding	Compliant	[redacted]	11,700	10,800	[redacted]	1,503	1,503	Yes	LTC	No	Radial	1,266	77	130	0	1/31/2023	May-23	
Newport - 150	Rogers Lake	RLK_TR01	RLK065	0.8	Thermal Discharging	1.5	Unintentional Islanding	Compliant	[redacted]	11,700	10,800	[redacted]	2,354	2,354	Yes	LTC	No	Radial	1,266	77	515	0	1/31/2023	May-23	
Newport - 150	Rogers Lake	RLK_TR01	RLK066	0.8	Thermal Discharging	1.66	Unintentional Islanding	Compliant	[redacted]	11,700	10,800	[redacted]	2,309	2,309	Yes	LTC	No	Radial	1,266	77	175	34	1/31/2023	May-23	
Newport - 150	Rogers Lake	RLK_TR01	RLK068	1.6	Primary Over-Voltage	2.07	Unintentional Islanding	Compliant	[redacted]	11,700	10,800	[redacted]	2,668	2,668	Yes	LTC	No	Radial	1,266	77	0	0	1/31/2023	May-23	
Newport - 150	Rogers Lake	RLK_TR01	RLK069	0.6	Thermal Discharging	1.42	Unintentional Islanding	Compliant	[redacted]	11,700	10,800	[redacted]	2,120	2,120	Yes	LTC	No	Radial	1,266	77	446	43	1/31/2023	May-23	
Newport - 150	Rogers Lake	RLK_TR02	RLK071	0.01	Unintentional Islanding	2.07	Unintentional Islanding	Compliant	[redacted]	9,323	7,794	[redacted]	2,886	2,886	Yes	LTC	No	Radial	758	170	267	90	1/31/2023	May-23	
Newport - 150	Rogers Lake	RLK_TR02	RLK072	0.77	Unintentional Islanding	0.77	Unintentional Islanding	Compliant	[redacted]	9,323	7,794	[redacted]	1,100	1,100	Yes	LTC	No	Radial	758	170	105	51	1/31/2023	May-23	
Newport - 150	Rogers Lake	RLK_TR02	RLK073	0.9	Thermal Discharging	2.04	Unintentional Islanding	Compliant	[redacted]	9,323	7,794	[redacted]	2,843	2,843	Yes	LTC	No	Radial	758	170	120	29	1/31/2023	May-23	
Newport - 150	Rogers Lake	RLK_TR02	RLK079	0.9	Thermal Discharging	1.93	Unintentional Islanding	Compliant	[redacted]	9,323	7,794	[redacted]	2,452	2,452	Yes	LTC	No	Radial	758	170	266	0	1/31/2023	May-23	
Newport - 150	Rosemount	RMT_TR01	RMT311	0.2	Primary Over-Voltage	10	Primary Over-Voltage	Compliant	[redacted]	6,468	6,468	[redacted]	1,701	450	No	LTC	Yes	Radial	14,546	3,581	12,500	2,875	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Newport - 150	Rosemount	RMT_TR01	RMT321	0	Breaker Reach	0.46	Unintentional Islanding	Compliant	[redacted]	6,468	6,468	[redacted]	6,678	0	Yes	LTC	No	Radial	14,546	3,581	2,046	706	7/31/2022	Nov-22	
Northwest - 154	Renville	RNV_TR01	RNV021	0.8	Thermal Discharging	4.03	Breaker Reach	Compliant	[redacted]	368	368	[redacted]	368	368	No	Bus Reg - Sub	Yes	Radial	4,128	1,000	4,128	1,000	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
South Dakota - 152	Rock River	ROC_TR01	ROC090	0	Unintentional Islanding	0.01	Unintentional Islanding	Compliant	[redacted]	763	551	[redacted]	133	133	Yes	Bus Reg - Sub	No	Radial	8,757	0	6,757	0	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
South Dakota - 152	Rock River	ROC_TR01	ROC091	0.2	Thermal Discharging	6	TPS Capacity Utilization	Compliant	[redacted]	763	551	[redacted]	855	331	Yes	Bus Reg - Sub	Yes	Radial	8,757	0	2,000	0	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
St Paul - 151	Rose Place	RPL_TR01	RPL061	0.9	Thermal Discharging	1.49	Unintentional Islanding	Compliant	[redacted]	8,324	7,519	[redacted]	2,150	2,150	Yes	LTC	No	Radial	1,671	45	531	0	10/31/2022	Feb-23	
St Paul - 151	Rose Place	RPL_TR01	RPL062	0.41	Unintentional Islanding	0.41	Unintentional Islanding	Compliant	[redacted]	8,324	7,519	[redacted]	541	541	Yes	LTC	No	Radial	1,671	45	0	0	10/31/2022	Feb-23	
St Paul - 151	Rose Place	RPL_TR01	RPL063	0.9	Thermal Discharging	2.2	Unintentional Islanding	Compliant	[redacted]	8,324	7,519	[redacted]	2,988	2,988	Yes	LTC	No	Radial	1,671	45	233	19	10/31/2022	Feb-23	
St Paul - 151	Rose Place	RPL_TR01	RPL064	0.9	Thermal Discharging	0.92	Unintentional Islanding	Compliant	[redacted]	8,324	7,519	[redacted]	2,546	2,546	Yes	LTC	No	Radial	1,671	45	907	26	10/31/2022	Feb-23	
St Paul - 151	Rose Place	RPL_TR02	RPL071	0.9	Thermal Discharging	2.54	Unintentional Islanding	Compliant	[redacted]	9,849	8,760	[redacted]	3,364	3,364	Yes	LTC	No	Radial	241	36	56	0	10/31/2022	Feb-23	
St Paul - 151	Rose Place	RPL_TR02	RPL072	0.12	Unintentional Islanding	0.79	Unintentional Islanding	Compliant	[redacted]	9,849	8,760	[redacted]	1,170	1,170	Yes	LTC	No	Radial	241	36	0	0	10/31/2022	Feb-23	
St Paul - 151	Rose Place	RPL_TR02	RPL073	0.9	Thermal Discharging	1.48	Unintentional Islanding	Compliant	[redacted]	9,849	8,760	[redacted]	1,939	1,939	Yes	LTC	No	Radial	241	36	0	0	10/31/2022	Feb-23	
St Paul - 151	Rose Place	RPL_TR02	RPL074	0.9	Thermal Discharging	2.12	Unintentional Islanding	Compliant	[redacted]	9,849	8,760	[redacted]	2,807	2,807	Yes	LTC	No	Radial	241	36	131	36	10/31/2022	Feb-23	
St Paul - 151	Rose Place	RPL_TR02	RPL075	0.54	Unintentional Islanding	0.54	Unintentional Islanding	Compliant	[redacted]	9,849	8,760	[redacted]	771	771	Yes	LTC	No	Radial	241	36	54	0	10/31/2022	Feb-23	
Newport - 150	Raptor	RPO_TR01	RPO311	0.2	Thermal Discharging	1.22	Breaker Reach	Compliant	[redacted]	0	0	[redacted]	0	0	Yes	LTC	No	Radial	1,022	567	263	366	7/31/2022	Nov-22	Newly constructed
Newport - 150	Raptor	RPO_TR01	RPO312	1.54	Unintentional Islanding	1.54	Unintentional Islanding	Compliant	[redacted]	0	0	[redacted]	0	0	Yes	LTC	No	Radial	1,022	567	759	201	7/31/2022	Nov-22	Newly constructed
Newport - 150	Red Rock	RRK_TR01	RRK061	0.66	Unintentional Islanding	0.66	Unintentional Islanding	Compliant	[redacted]	9,900	8,933	[redacted]	1,131	1,131	Yes	None	No	Radial	3,418	250	0	0	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	Red Rock	RRK_TR01	RRK062	1.4	Thermal Discharging	3.81	Unintentional Islanding	Compliant	[redacted]	9,900	8,933	[redacted]	4,888	4,888	Yes	None	No	Radial	3,418	250	0	80	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	Red Rock	RRK_TR01	RRK063	0.5	Thermal Discharging	2.44	Unintentional Islanding	Compliant	[redacted]	9,900	8,933	[redacted]	3,002	3,002	Yes	None	No	Radial	3,418	250	40	50	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	Red Rock	RRK_TR01	RRK064	0.9	Thermal Discharging	4.63	Breaker Reach	Compliant	[redacted]	9,900	8,933	[redacted]	1,300	1,300	Yes	None	Yes	Radial	3,418	250	3,378	120	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades. Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Newport - 150	Red Rock	RRK_TR02	RRK071	1.4	Thermal Discharging	4.87	Unintentional Islanding	Compliant	[redacted]	7,934	7,400	[redacted]	6,214	6,214	Yes	None	No	Radial	0	0	0	0	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	Red Rock	RRK_TR02	RRK072	1.04	Unintentional Islanding	1.04	Unintentional Islanding	Compliant	[redacted]	7,934	7,400	[redacted]	1,300	1,300	Yes	None	No	Radial	0	0	0	0	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	Red Rock	RRK_TR03	RRK081	4.07	Unintentional Islanding	4.07	Unintentional Islanding	Compliant	[redacted]	7,924	7,924	[redacted]	5,295	5,295	Yes	None	No	Radial	217	38	0	0	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	Red Rock	RRK_TR03	RRK082	0.07	Unintentional Islanding	0.73	Unintentional Islanding	Compliant	[redacted]	7,924	7,924	[redacted]	1,020	1,020	Yes	None	No	Radial	217	38	217	38	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	Red Rock	RRK_TR03	RRK083	0.35	Unintentional Islanding	1.46	Unintentional Islanding	Compliant	[redacted]	7,924	7,924	[redacted]	1,990	1,990	Yes	None	No	Radial	217	38	0	0	10/31/2022	Feb-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Northwest - 154	Rich Spring	RSP_TR01	RSP061	0	Unintentional Islanding	0.72	Breaker Reach	Compliant	[redacted]	1,153	1,059	[redacted]	1,153	1,153	No	None	No	Radial	986	0	986	0	4/30/2023	Aug-23	
Newport - 150	Rich Valley	RVA_TR01	RVA061	0.6	Primary Over-Voltage	2.48	Unintentional Islanding	Compliant	[redacted]	8,040	7,396	[redacted]	2,650	2,650	Yes	LTC	No	Radial	286	115	226	35	4/30/2023	Aug-23	
Newport - 150	Rich Valley	RVA_TR01	RVA062	0.1	Primary Over-Voltage	0.69	Breaker Reach	Compliant	[redacted]	8,040	7,396	[redacted]	3,201	3,201	Yes	LTC	No	Radial	286	115	60	80	4/30/2023	Aug-23	
Newport - 150	Rich Valley	RVA_TR01	RVA063	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	8,040	7,396	[redacted]	0	0	No	LTC	No	Radial	286	115	0	0	4/30/2023	Aug-23	
Edina - 143	Riverwood	RWD_TR01	RWD061	0.5	Thermal Discharging	1.2	Unintentional Islanding	Compliant	[redacted]	5,293	4,430	[redacted]	1,252	1,252	Yes	LTC	No	Radial	375	22	8	0	4/30/2023	Aug-23	
Edina - 143	Riverwood	RWD_TR01	RWD062	0.9	Thermal Discharging	1.66	Unintentional Islanding	Compliant	[redacted]	5,293	4,430	[redacted]	1,860	1,860	Yes	LTC	No	Radial	375	22	144	7	4/30/2023	Aug-23	
Edina - 143	Riverwood	RWD_TR01	RWD063	1.2	Primary Over-Voltage	1.7	Unintentional Islanding	Compliant	[redacted]	5,293	4,430	[redacted]	1,982	1,982	Yes	LTC	No	Radial	375	22	223	15	4/30/2023	Aug-23	
Edina - 143	Riverwood	RWD_TR02	RWD081	0.18	Unintentional Islanding	0.85	Unintentional Islanding	Compliant	[redacted]	2,294	2,006	[redacted]	970	970	Yes	LTC	No	Radial	238	21	121	21	4/30/2023	Aug-23	
Edina - 143	Riverwood	RWD_TR02	RWD082	0.5	Thermal Discharging	1.08	Unintentional Islanding	Compliant	[redacted]	2,294	2,006	[redacted]	1,268	1,268	Yes	LTC	No	Radial	238	21	117	0	4/30/2023	Aug-23	
Northwest - 154	Sauk River	SAK_TR01	SAK311	0.1	Primary Over-Voltage	10	Primary Over-Voltage	Compliant	[redacted]	2,361	2,361	[redacted]	4,807	4,807	Yes	LTC	Yes	Radial	15,115	2,073	1,125	67	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Sauk River	SAK_TR01	SAK312	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	2,361	2,361	[redacted]	266	266	Yes	LTC	No	Radial	15,115	2,073	13,990	2,006	4/30/2023	Aug-23	
Northwest - 154	Sauk River	SAK_TR02	SAK321	0.4	Primary Over-Voltage	2.3	Unintentional Islanding	Compliant	[redacted]	4,701	3,905	[redacted]	4,701	4,701	Yes	0	No	Radial	653	22	653	22	4/30/2023	Aug-23	
Edina - 143	Savage	SAV_TR01	SAV063	0.38	Unintentional Islanding	2.58	Unintentional Islanding	Compliant	[redacted]	3,391	2,025	[redacted]	2,643	2,643	Yes	None	No	Radial	5,233	59	137	46	4/30/2023	Aug-23	
Edina - 143	Savage	SAV_TR01	SAV067	0.7	Thermal Discharging	2.51	Unintentional Islanding	Compliant	[redacted]	3,391	2,025	[redacted]	2,579	2,579	Yes	None	No	Radial	5,233	59	167	0	4/30/2023	Aug-23	
Edina - 143	Savage	SAV_TR01	SAV069	0	Unintentional Islanding	0.26	Unintentional Islanding	Compliant	[redacted]	3,391	2,025	[redacted]	323	323	Yes	None	No	Radial	5,233	59	4,929	13	4/30/2023	Aug-23	
Edina - 143	Savage	SAV_TR02	SAV071	1	Thermal Discharging	2.74	Unintentional Islanding	Compliant	[redacted]	4,177	3,008	[redacted]	2,848	2,848	Yes	LTC	No	Radial	130	12	40	8	4/30/2023	Aug-23	
Edina - 143	Savage	SAV_TR02	SAV072	0.9	Thermal Discharging	0.97	Unintentional Islanding	Compliant	[redacted]	4,177	3,008	[redacted]	1,019	1,019	Yes	LTC	No	Radial	130	12	0	0	4/30/2023	Aug-23	
Edina - 143	Savage	SAV_TR02	SAV073	0.72	Unintentional Islanding	0.72	Unintentional Islanding	Compliant	[redacted]	4,177	3,008	[redacted]	820	820	Yes	LTC	No	Radial	130	12	90	4	4/30/2023	Aug-23	
White Bear Lake - 156	Scandia	SCA_TR01	SCA021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	2,259	2,259	[redacted]	2,259	2,259	No	None	No	Radial	15,404	11	15,404	11	4/30/2023	Aug-23	
Northwest - 154	Sacred Heart	SCH_TR01	SCH001	0.1	Unintentional Islanding	0.1	Unintentional Islanding	Compliant	[redacted]	388	408	[redacted]	150	150	No	None	No	Radial	4,062	1,880	0	0	10/31/2022	Feb-23	
Northwest - 154	Sacred Heart	SCH_TR01	SCH211	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	388	408	[redacted]	258	258	No	None	Yes	Radial	4,062	1,880	4,062	1,880	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	St Cloud	SCL_TR01	SCL311	0.2	Primary Over-Voltage	1.8	Breaker Reach	Compliant	[redacted]	18,511	13,092	[redacted]	3,637	3,637	Yes	LTC	No	Radial	897	72	32	22	10/31/2022	Feb-23	
Northwest - 154	St Cloud	SCL_TR01	SCL312	0.4	Primary Over-Voltage	1.06	Breaker Reach	Compliant	[redacted]	18,511	13,092	[redacted]	5,708	4,200	Yes	LTC	No	Radial	900	90	339	25	7/31/2022	Nov-22	
Northwest - 154	St Cloud	SCL_TR01	SCL313	0	Unintentional Islanding	1.29	Unintentional Islanding	Compliant	[redacted]	18,511	13,092	[redacted]	7,041	6,454	Yes	LTC	No	Radial	900	90	540	48	7/31/2022	Nov-22	
Northwest - 154	St Cloud	SCL_TR02	SCL322	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	3,645	2,494	[redacted]	3,378	3,378	Yes	LTC	Yes	Radial	36,342	414	36,200	414	7/31/2022	Nov-22	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades. Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	St Cloud	SCL_TR02	SCL323	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	3,645	2,494	[redacted]	3,423	3,007	Yes	LTC	No	Radial	36,342	414	142	0	7/31/2022	Nov-22	
Northwest - 154	Salida Crossing	SDX_TR02	SDX311	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	2,365	1,724	[redacted]	1,002	307	Yes	LTC	Yes	Radial	13,836	9,381	13,094	8,999	1/31/2023	May-23	
Northwest - 154	Salida Crossing	SDX_TR02	SDX312	0.3	Thermal Discharging	1.06	Unintentional Islanding	Compliant	[redacted]	2,365	1,724	[redacted]	1,710	1,478	Yes	LTC	No	Radial	13,836	9,381	742	382	1/31/2023	May-23	
Northwest - 154	Salida Crossing	SDX_TR02	SDX313	1.89	Unintentional Islanding	1.89	Unintentional Islanding	Compliant	[redacted]	2,365	1,724	[redacted]	2,485	2,485	Yes	LTC	No	Radial	13,836	9,381	0	0	1/31/2023	May-23	
Northwest - 154	Sedan	SED_TR01	SED061	0.3	TPS Capacity Utilization	0.3	TPS Capacity Utilization	Compliant	[redacted]	52	52	[redacted]	52	52	No	Bus Reg - Sub	No	Radial	14	0	14	0	7/31/2022	Nov-22	
St Paul - 151	Shepard	SHP_TR01	SHP061	0.78	Unintentional Islanding	0.78	Unintentional Islanding	Compliant	[redacted]	3,469	2,886	[redacted]	1,138	906	Yes	LTC	No	Radial	328	83	167	56	7/31/2022	Nov-22	
St Paul - 151	Shepard	SHP_TR01	SHP062	0.5	Thermal Discharging	2.05	Unintentional Islanding	Compliant	[redacted]	3,469	2,886	[redacted]	2,844	2,088	Yes	LTC	No	Radial	328	83	161	27	7/31/2022	Nov-22	
St Paul - 151	Shepard	SHP_TR01	SHP063	0.9	Thermal Discharging	0.91	Unintentional Islanding	Compliant	[redacted]	3,469	2,886	[redacted]	1,273	1,131	Yes	LTC	No	Radial	328	83	0	0	7/31/2022	Nov-22	
St Paul - 151	Shepard	SHP_TR02	SHP071	0.9	Thermal Discharging	1.51	Unintentional Islanding	Compliant	[redacted]	3,469	2,886	[redacted]	2,151	1,803	Yes	LTC	No	Radial	163	135	25	44	7/31/2022	Nov-22	
St Paul - 151	Shepard	SHP_TR02	SHP072	0.3	Thermal Discharging	0.76	Unintentional Islanding	Compliant	[redacted]	3,469	2,886	[redacted]	1,200	1,005	Yes	LTC	No	Radial	163	135	138	91	7/31/2022	Nov-22	
Southeast - 144	Sibley Park	SIP_TR01	SIP061	0.16	Unintentional Islanding	1.15	Breaker Reach	Compliant	[redacted]	12,391	11,309	[redacted]	2,153	1,970	Yes	LTC	No	Radial	10,080	80	69	80	7/31/2022	Nov-22	
Southeast - 144	Sibley Park	SIP_TR01	SIP062	9.5	TPS Capacity Utilization	9.5	TPS Capacity Utilization	Compliant	[redacted]	12,391	11,309	[redacted]	7,529	7,382	Yes	LTC	Yes	Radial	10,080	80	10,000	0	7/31/2022	Nov-22	
Southeast - 144	Sibley Park	SIP_TR01	SIP063	0.5	Thermal Discharging	1.66	Unintentional Islanding	Compliant	[redacted]	12,391	11,309	[redacted]	2,436	2,037	Yes	LTC	No	Radial	10,080	80	11	0	7/31/2022	Nov-22	
Southeast - 144	Sibley Park	SIP_TR02	SIP071	0.2	Thermal Discharging	1.83	Unintentional Islanding	Compliant	[redacted]	6,353	5,168	[redacted]	2,551	2,143	Yes	LTC	No	Radial	220	1,018	27	10	7/31/2022	Nov-22	
Southeast - 144	Sibley Park	SIP_TR02	SIP072	0.5	Primary Over-Voltage	1.37	Unintentional Islanding	Compliant	[redacted]	6,353	5,168	[redacted]	2,169	1,649	Yes	LTC	No	Radial	220	1,018	86	0	7/31/2022	Nov-22	
Southeast - 144	Sibley Park	SIP_TR02	SIP073	0.1	Thermal Discharging	1.42	Unintentional Islanding	Compliant	[redacted]	6,353	5,168	[redacted]	2,053	1,773	Yes	LTC	No	Radial	220	1,018	107	1,008	7/31/2022	Nov-22	
Northwest - 154	St Johns	SJO_TR01	SJO001	0.23	Unintentional Islanding	0.23	Unintentional Islanding	Compliant	[redacted]	500	500	[redacted]	500	500	No	Bus Reg - Sub	No	Radial	582	0	582	0	7/31/2022	Nov-22	
Minneapolis - 141	St Louis Park	SLP_TR04	SLP071	0.5	Thermal Discharging	1.9	Unintentional Islanding	Compliant	[redacted]	11,909	8,788	[redacted]	2,418	2,418	Yes	LTC	No	Radial	954	163	85	33	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR04	SLP072	0.09	Unintentional Islanding	1.79	Unintentional Islanding	Compliant	[redacted]	11,909	8,788	[redacted]	2,298	2,298	Yes	LTC	No	Radial	954	163	83	21	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR04	SLP073	0.21	Unintentional Islanding	2.28	Unintentional Islanding	Compliant	[redacted]	11,909	8,788	[redacted]	3,025	3,025	Yes	LTC	No	Radial	954	163	271	15	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR04	SLP074	0.3	Thermal Discharging	1.08	Breaker Reach	Compliant	[redacted]	11,909	8,788	[redacted]	2,724	2,724	Yes	LTC	No	Radial	954	163	285	21	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR04	SLP075	0.5	Thermal Discharging	1.61	Unintentional Islanding	Compliant	[redacted]	11,909	8,788	[redacted]	2,182	2,182	Yes	LTC	No	Radial	954	163	122	11	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR04	SLP076	0.9	Thermal Discharging	1.86	Unintentional Islanding	Compliant	[redacted]	11,909	8,788	[redacted]	2,339	2,339	Yes	LTC	No	Radial	954	163	81	44	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR04	SLP077	0.9	Thermal Discharging	1.28	Unintentional Islanding	Compliant	[redacted]	11,909	8,788	[redacted]	1,752	1,752	Yes	LTC	No	Radial	954	163	27	18	1/31/2023	May-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Technical Planning Standard	Substation Transformer Forecasted Peak Load (kVA)	Substation Transformer Minimum Load (kVA)	Transformer Absolute Min (kVA)	Feeder Forecasted Peak Load (kVA)	Feeder Daytime Minimum Load (kVA)	Feeder Absolute Min (kVA)	Actual Daytime Minimum Load	LTC or Regulator	VSR Equipped	Network or Radial	Substation Transformer Installed DG (kW)	Substation Transformer Queued DG (kW)	Feeder Installed DG (kW)	Feeder Queued DG (kW)	Data Cutoff	Latest Quarterly Update	Notes
Minneapolis - 141	St Louis Park	SLP_TR05	SLP081	0.9	Thermal Discharging	0.91	Unintentional Islanding	Compliant	[redacted]	15,862	11,727	[redacted]	1,305	1,305	Yes	LTC	No	Radial	1,303	467	99	208	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR05	SLP082	0.9	Thermal Discharging	1.74	Unintentional Islanding	Compliant	[redacted]	15,862	11,727	[redacted]	2,669	1,943	Yes	LTC	No	Radial	1,211	455	365	33	7/31/2022	Nov-22	
Minneapolis - 141	St Louis Park	SLP_TR05	SLP083	0.9	Thermal Discharging	1.43	Unintentional Islanding	Compliant	[redacted]	15,862	11,727	[redacted]	2,006	2,006	Yes	LTC	No	Radial	1,303	467	222	56	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR05	SLP084	0.9	Thermal Discharging	1.06	Unintentional Islanding	Compliant	[redacted]	15,862	11,727	[redacted]	1,487	1,487	Yes	LTC	No	Radial	1,303	467	352	92	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR05	SLP085	1.1	Unintentional Islanding	1.65	Unintentional Islanding	Compliant	[redacted]	15,862	11,727	[redacted]	2,203	2,203	Yes	LTC	No	Radial	1,303	467	123	14	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR05	SLP086	0.9	Thermal Discharging	2.21	Unintentional Islanding	Compliant	[redacted]	15,862	11,727	[redacted]	2,786	2,786	Yes	LTC	No	Radial	1,303	467	64	52	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR05	SLP087	0.9	Thermal Discharging	1.21	Unintentional Islanding	Compliant	[redacted]	15,862	11,727	[redacted]	1,494	1,494	Yes	LTC	No	Radial	1,303	467	70	15	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR06	SLP091	0.82	Unintentional Islanding	0.82	Unintentional Islanding	Compliant	[redacted]	13,532	11,762	[redacted]	1,114	1,114	Yes	LTC	No	Radial	1,667	509	3	3	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR06	SLP092	0.9	Thermal Discharging	1.98	Unintentional Islanding	Compliant	[redacted]	13,532	11,762	[redacted]	2,639	2,639	Yes	LTC	No	Radial	1,667	509	825	97	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR06	SLP093	0.9	Thermal Discharging	1.6	Unintentional Islanding	Compliant	[redacted]	13,532	11,762	[redacted]	2,584	2,584	Yes	LTC	No	Radial	1,667	509	73	360	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR06	SLP094	0.9	Thermal Discharging	1.39	Unintentional Islanding	Compliant	[redacted]	13,532	11,762	[redacted]	1,867	1,867	Yes	LTC	No	Radial	1,667	509	110	0	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR06	SLP095	0.51	Unintentional Islanding	1.13	Unintentional Islanding	Compliant	[redacted]	13,532	11,762	[redacted]	1,682	1,682	Yes	LTC	No	Radial	1,667	509	62	22	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR06	SLP096	0.9	Thermal Discharging	2.36	Unintentional Islanding	Compliant	[redacted]	13,532	11,762	[redacted]	3,054	3,054	Yes	LTC	No	Radial	1,667	509	516	9	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR06	SLP097	0.5	Thermal Discharging	1.44	Unintentional Islanding	Compliant	[redacted]	13,532	11,762	[redacted]	1,956	1,956	Yes	LTC	No	Radial	1,667	509	78	18	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR02	SLP321	0.3	Primary Over-Voltage	1.56	Breaker Reach	Compliant	[redacted]	8,048	6,622	[redacted]	3,976	3,976	Yes	LTC	No	Radial	233	53	141	8	1/31/2023	May-23	
Minneapolis - 141	St Louis Park	SLP_TR02	SLP322	0.4	Primary Over-Voltage	1.16	Breaker Reach	Compliant	[redacted]	8,048	6,622	[redacted]	6,286	6,286	Yes	LTC	No	Radial	233	53	92	45	1/31/2023	May-23	
South Dakota - 152	Slayton West	SLW_TR01	SLW061	0.5	Thermal Discharging	7.47	Breaker Reach	Compliant	[redacted]	1,447	1,447	[redacted]	914	914	Yes	Bus Reg - Sub	Yes	Radial	2,722	3,511	2,692	2,512	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
South Dakota - 152	Slayton West	SLW_TR01	SLW062	0.61	Unintentional Islanding	0.61	Unintentional Islanding	Compliant	[redacted]	1,447	1,447	[redacted]	940	940	Yes	Bus Reg - Sub	No	Radial	2,722	3,511	30	999	10/31/2022	Feb-23	
Southeast - 144	Summit Avenue	SMT_TR01	SMT061	0.18	Unintentional Islanding	1.93	Unintentional Islanding	Compliant	[redacted]	14,760	12,943	[redacted]	2,554	2,518	Yes	LTC	No	Radial	4,915	5,936	790	0	7/31/2022	Nov-22	
Southeast - 144	Summit Avenue	SMT_TR01	SMT062	0.04	Unintentional Islanding	0.66	Breaker Reach	Compliant	[redacted]	14,760	12,943	[redacted]	2,408	2,408	Yes	LTC	No	Radial	4,915	5,936	0	0	7/31/2022	Nov-22	
Southeast - 144	Summit Avenue	SMT_TR01	SMT063	0.33	Unintentional Islanding	1.15	Unintentional Islanding	Compliant	[redacted]	14,760	12,943	[redacted]	1,571	1,293	Yes	LTC	No	Radial	4,915	5,936	20	924	7/31/2022	Nov-22	
Southeast - 144	Summit Avenue	SMT_TR01	SMT071	1.4	Thermal Discharging	3.53	Unintentional Islanding	Compliant	[redacted]	14,760	12,943	[redacted]	4,730	4,730	Yes	LTC	No	Radial	4,915	5,936	18	0	7/31/2022	Nov-22	
Southeast - 144	Summit Avenue	SMT_TR01	SMT072	0.1	Thermal Discharging	3.2	TPS Capacity Utilization	Compliant	[redacted]	14,760	12,943	[redacted]	1,159	747	Yes	LTC	Yes	Radial	4,915	5,936	4,087	5,012	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Summit Avenue	SMT_TR02	SMT081	0.9	Thermal Discharging	2	Unintentional Islanding	Compliant	[redacted]	8,101	2,576	[redacted]	2,710	2,535	Yes	LTC	No	Radial	8,040	4,068	0	17	7/31/2022	Nov-22	
Southeast - 144	Summit Avenue	SMT_TR02	SMT082	0.2	Primary Over-Voltage	2	TPS Capacity Utilization	Compliant	[redacted]	8,101	2,576	[redacted]	1,044	879	Yes	LTC	Yes	Radial	8,040	4,068	6,142	4,040	7/31/2022	Nov-22	
Southeast - 144	Summit Avenue	SMT_TR02	SMT091	0.4	Thermal Discharging	1.63	Unintentional Islanding	Compliant	[redacted]	8,101	2,576	[redacted]	2,501	2,324	Yes	LTC	No	Radial	8,040	4,068	158	11	7/31/2022	Nov-22	
Southeast - 144	Summit Avenue	SMT_TR02	SMT092	0.4	Thermal Discharging	6.7	Thermal Discharging	Compliant	[redacted]	8,101	2,576	[redacted]	126	126	Yes	LTC	Yes	Radial	8,040	4,068	1,740	0	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	South Haven	SOH_TR01	SOH001	0.1	Primary Over-Voltage	0.7	Thermal Discharging	Compliant	[redacted]	105	105	[redacted]	105	105	No	Bus Reg - Sub	No	Radial	8	23	8	23	7/31/2022	Nov-22	
Minneapolis - 141	Southtown	SOU_TR01	SOU061	0.8	Primary Over-Voltage	0.96	Unintentional Islanding	Compliant	[redacted]	10,281	8,594	[redacted]	1,074	1,074	Yes	LTC	No	Radial	1,487	259	127	14	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR01	SOU063	0	Unintentional Islanding	2.77	Unintentional Islanding	Compliant	[redacted]	10,281	8,594	[redacted]	3,176	3,176	Yes	LTC	No	Radial	1,487	259	384	47	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR01	SOU064	1.7	Primary Over-Voltage	2.83	Unintentional Islanding	Compliant	[redacted]	10,281	8,594	[redacted]	2,746	2,746	Yes	LTC	No	Radial	1,487	259	320	50	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR01	SOU065	1.5	Thermal Discharging	2.14	Unintentional Islanding	Compliant	[redacted]	10,281	8,594	[redacted]	2,337	2,337	Yes	LTC	No	Radial	1,487	259	262	70	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR01	SOU066	0.82	Unintentional Islanding	0.82	Unintentional Islanding	Compliant	[redacted]	10,281	8,594	[redacted]	1,062	1,062	Yes	LTC	No	Radial	1,487	259	193	6	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR01	SOU069	0.27	Unintentional Islanding	1.19	Unintentional Islanding	Compliant	[redacted]	10,281	8,594	[redacted]	1,334	1,334	Yes	LTC	No	Radial	1,487	259	201	72	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR02	SOU072	0.9	Thermal Discharging	2.06	Unintentional Islanding	Compliant	[redacted]	11,318	9,009	[redacted]	2,532	2,532	Yes	LTC	No	Radial	1,598	340	285	78	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR02	SOU073	0.83	Unintentional Islanding	0.83	Unintentional Islanding	Compliant	[redacted]	11,318	9,009	[redacted]	1,020	1,020	Yes	LTC	No	Radial	1,598	340	132	14	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR02	SOU075	0.9	Thermal Discharging	2.67	Unintentional Islanding	Compliant	[redacted]	11,318	9,009	[redacted]	2,927	2,927	Yes	LTC	No	Radial	1,598	340	227	7	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR02	SOU076	0.99	Unintentional Islanding	0.99	Unintentional Islanding	Compliant	[redacted]	11,318	9,009	[redacted]	1,200	1,200	Yes	LTC	No	Radial	1,598	340	162	20	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR02	SOU077	0.6	Thermal Discharging	2.3	Unintentional Islanding	Compliant	[redacted]	11,318	9,009	[redacted]	2,517	2,517	Yes	LTC	No	Radial	1,598	340	370	130	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR02	SOU078	0.6	Thermal Discharging	0.76	Unintentional Islanding	Compliant	[redacted]	11,318	9,009	[redacted]	849	849	Yes	LTC	No	Radial	1,598	340	27	16	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR02	SOU079	0.9	Thermal Discharging	1.32	Unintentional Islanding	Compliant	[redacted]	11,318	9,009	[redacted]	1,754	1,754	Yes	LTC	No	Radial	1,598	340	395	75	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR03	SOU081	0.9	Thermal Discharging	0.92	Unintentional Islanding	Compliant	[redacted]	12,631	10,617	[redacted]	1,096	1,096	Yes	LTC	No	Radial	1,581	615	195	55	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR03	SOU082	0.9	Thermal Discharging	2.53	Unintentional Islanding	Compliant	[redacted]	12,631	10,617	[redacted]	2,821	2,821	Yes	LTC	No	Radial	1,581	615	173	74	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR03	SOU083	0.5	Thermal Discharging	1.29	Unintentional Islanding	Compliant	[redacted]	12,631	10,617	[redacted]	1,456	1,456	Yes	LTC	No	Radial	1,581	615	283	84	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR03	SOU084	0.32	Unintentional Islanding	0.32	Unintentional Islanding	Compliant	[redacted]	12,631	10,617	[redacted]	391	391	Yes	LTC	No	Radial	1,581	615	104	69	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR03	SOU085	0.9	Thermal Discharging	2.77	Unintentional Islanding	Compliant	[redacted]	12,631	10,617	[redacted]	2,775	2,775	Yes	LTC	No	Radial	1,581	615	76	40	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR03	SOU086	0.9	Thermal Discharging	2.14	Unintentional Islanding	Compliant	[redacted]	12,631	10,617	[redacted]	2,648	2,648	Yes	LTC	No	Radial	1,581	615	252	175	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR03	SOU087	0.9	Primary Over-Voltage	1.03	Unintentional Islanding	Compliant	[redacted]	12,631	10,617	[redacted]	1,304	1,304	Yes	LTC	No	Radial	1,581	615	312	39	4/30/2023	Aug-23	
Minneapolis - 141	Southtown	SOU_TR03	SOU088	0.2	Thermal Discharging	1.07	Unintentional Islanding	Compliant	[redacted]	12,631	10,617	[redacted]	1,171	1,171	Yes	LTC	No	Radial	1,581	615	186	79	4/30/2023	Aug-23	
South Dakota - 152	Southridge	SRD_TR01	SRD211	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	1,073	1,073	[redacted]	1,073	1,073	Yes	None	No	Radial	5,400	1,000	5,400	1,000	4/30/2023	Aug-23	
Northwest - 154	St Joseph	STO_TR01	STO001	0.43	Unintentional Islanding	0.43	Unintentional Islanding	Compliant	[redacted]	1,073	1,130	[redacted]	592	592	No	None	No	Radial	68	47	0	0	7/31/2022	Nov-22	
Northwest - 154	St Joseph	STO_TR01	STO002	0.1	Thermal Discharging	0.32	Unintentional Islanding	Compliant	[redacted]	1,073	1,130	[redacted]	538	538	No	None	No	Radial	68	47	68	47	7/31/2022	Nov-22	
Northwest - 154	Stewart	STW_TR01	STW021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	358	294	[redacted]	249	249	Yes	None	Yes	Radial	4,000	1,000	4,000	1,000	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Newport - 150	Stockyards	STY_TR01	STY061	0.8	Thermal Discharging	1.78	Unintentional Islanding	Compliant	[redacted]	10,114	9,362	[redacted]	2,586	2,121	Yes	LTC	No	Radial	1,862	2,104	150	30	7/31/2022	Nov-22	
Newport - 150	Stockyards	STY_TR01	STY062	0.9	Thermal Discharging	1.6	Unintentional Islanding	Compliant	[redacted]	10,114	9,362	[redacted]	2,502	1,902	Yes	LTC	No	Radial	1,862	2,104	100	34	7/31/2022	Nov-22	
Newport - 150	Stockyards	STY_TR01	STY063	0.5	Thermal Discharging	1.09	Unintentional Islanding	Compliant	[redacted]	10,114	9,362	[redacted]	1,709	1,709	Yes	LTC	No	Radial	1,862	2,104	1,347	170	7/31/2022	Nov-22	
Newport - 150	Stockyards	STY_TR01	STY065	0.7	Thermal Discharging	1.98	Unintentional Islanding	Compliant	[redacted]	10,114	9,362	[redacted]	2,925	2,529	Yes	LTC	No	Radial	1,862	2,104	265	1,870	7/31/2022	Nov-22	
Newport - 150	Stockyards	STY_TR02	STY071	0.9	Thermal Discharging	2.79	Unintentional Islanding	Compliant	[redacted]	10,283	8,551	[redacted]	3,864	3,036	Yes	LTC	No	Radial	305	175	46	46	7/31/2022	Nov-22	
Newport - 150	Stockyards	STY_TR02	STY072	0.07	Unintentional Islanding	1.28	Unintentional Islanding	Compliant	[redacted]	10,283	8,551	[redacted]	1,903	1,513	Yes	LTC	No	Radial	305	175	84	60	7/31/2022	Nov-22	
Newport - 150	Stockyards	STY_TR02	STY073	0.2	Unintentional Islanding	1.43	Unintentional Islanding	Compliant	[redacted]	10,283	8,551	[redacted]	2,283	1,803	Yes	LTC	No	Radial	305	175	67	13	7/31/2022	Nov-22	
Newport - 150	Stockyards	STY_TR02	STY075	0.9	Thermal Discharging	1.06	Unintentional Islanding	Compliant	[redacted]	10,283	8,551	[redacted]	1,726	1,404	Yes	LTC	No	Radial	305	175	108	56	7/31/2022	Nov-22	
Southeast - 144	Swan Lake	SWN_TR01	SWN021	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	1,042	1,042	[redacted]	446	446	No	None	No	Radial	12,108	720	86	0	4/30/2022	Aug-23	
Southeast - 144	Swan Lake	SWN_TR01	SWN022	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	1,042	1,042	[redacted]	703	703	No	None	No	Radial	12,108	720	12,022	720	4/30/2022	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minneapolis - 141	Terminal	TER_TR01	TER061	0.9	Thermal Discharging	1.24	Unintentional Islanding	Compliant	[redacted]	14,122	13,755	[redacted]	2,062	2,062	Yes	LTC	No	Radial	1,971	1,162	647	1,151	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR01	TER062	0.8	Thermal Discharging	1.62	Unintentional Islanding	Compliant	[redacted]	14,122	13,755	[redacted]	2,335	2,335	Yes	LTC	No	Radial	1,971	1,162	217	11	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR01	TER063	0.8	Thermal Discharging	2.04	Unintentional Islanding	Compliant	[redacted]	14,122	13,755	[redacted]	2,617	2,617	Yes	LTC	No	Radial	1,971	1,162	83	0	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR01	TER064	0.9	Thermal Discharging	1.41	Unintentional Islanding	Compliant	[redacted]	14,122	13,755	[redacted]	1,814	1,814	Yes	LTC	No	Radial	1,971	1,162	0	0	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR01	TER065	0.4	Thermal Discharging	1.35	Unintentional Islanding	Compliant	[redacted]	14,122	13,755	[redacted]	1,772	1,772	Yes	LTC	No	Radial	1,971	1,162	10	0	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR01	TER066	0.9	Thermal Discharging	2.06	Unintentional Islanding	Compliant	[redacted]	14,122	13,755	[redacted]	2,769	2,769	Yes	LTC	No	Radial	1,971	1,162	1,014	0	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR02	TER071	0.9	Thermal Discharging	1.32	Unintentional Islanding	Compliant	[redacted]	7,027	6,574	[redacted]	1,924	1,924	Yes	LTC	No	Radial	1,405	219	219	60	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR02	TER072	0.76	Unintentional Islanding	0.76	Unintentional Islanding	Compliant	[redacted]	7,027	6,574	[redacted]	1,065	1,065	Yes	LTC	No	Radial	1,405	219	0	0	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR02	TER073	0.9	Thermal Discharging	1	Unintentional Islanding	Compliant	[redacted]	7,027	6,574	[redacted]	1,372	1,372	Yes	LTC	No	Radial	1,405	219	125	0	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR02	TER074	1.56	Unintentional Islanding	1.56	Unintentional Islanding	Compliant	[redacted]	7,027	6,574	[redacted]	1,891	1,891	Yes	LTC	No	Radial	1,405	219	0	0	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR02	TER075	0.9	Thermal Discharging	0.99	Unintentional Islanding	Compliant	[redacted]	7,027	6,574	[redacted]	1,375	1,375	Yes	LTC	No	Radial	1,405	219	1,061	159	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR02	TER076	0	Thermal Discharging	0.11	Unintentional Islanding	Compliant	[redacted]	7,027	6,574	[redacted]	382	382	Yes	LTC	No	Radial	1,405	219	0	0	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR03	TER081	0.9	Thermal Discharging	1.34	Unintentional Islanding	Compliant	[redacted]	10,062	9,163	[redacted]	2,019	2,019	Yes	LTC	No	Radial	1,365	137	595	17	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR03	TER082	0.9	Thermal Discharging	1.68	Unintentional Islanding	Compliant	[redacted]	10,062	9,163	[redacted]	2,331	2,331	Yes	LTC	No	Radial	1,365	137	45	0	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR03	TER083	0.5	Thermal Discharging	0.55	Unintentional Islanding	Compliant	[redacted]	10,062	9,163	[redacted]	741	741	Yes	LTC	No	Radial	1,365	137	315	120	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR03	TER084	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	10,062	9,163	[redacted]	121	121	Yes	LTC	No	Radial	1,365	137	0	0	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR03	TER085	0.9	Thermal Discharging	2.95	Unintentional Islanding	Compliant	[redacted]	10,062	9,163	[redacted]	3,761	3,761	Yes	LTC	No	Radial	1,365	137	0	0	1/31/2023	May-23	
Minneapolis - 141	Terminal	TER_TR03	TER086	1.28	Unintentional Islanding	1.28	Unintentional Islanding	Compliant	[redacted]	10,062	9,163	[redacted]	2,312	2,312	Yes	LTC	No	Radial	1,365	137	410	0	1/31/2023	May-23	
White Bear Lake - 156	Tanners Lake	TLK_TR01	TLK023	1.02	Unintentional Islanding	1.02	Unintentional Islanding	Compliant	[redacted]	17,627	14,592	[redacted]	1,485	1,485	No	LTC	No	Radial	864	79	0	0	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR02	TLK032	1.08	Unintentional Islanding	1.08	Unintentional Islanding	Compliant	[redacted]	15,993	13,751	[redacted]	1,574	1,574	No	LTC	No	Radial	284	27	0	0	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR02	TLK034	0.91	Unintentional Islanding	0.91	Unintentional Islanding	Compliant	[redacted]	15,993	13,751	[redacted]	1,362	1,362	No	LTC	No	Radial	284	27	0	0	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR01	TLK061	0.9	Thermal Discharging	2.11	Unintentional Islanding	Compliant	[redacted]	17,627	14,592	[redacted]	2,998	2,566	Yes	LTC	No	Radial	864	79	78	21	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR01	TLK062	0.9	Thermal Discharging	1.6	Unintentional Islanding	Compliant	[redacted]	17,627	14,592	[redacted]	2,305	2,305	Yes	LTC	No	Radial	864	79	192	0	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR01	TLK064	0.9	Thermal Discharging	1.1	Unintentional Islanding	Compliant	[redacted]	17,627	14,592	[redacted]	2,029	1,601	Yes	LTC	No	Radial	864	79	448	14	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR01	TLK065	0.66	Unintentional Islanding	0.66	Unintentional Islanding	Compliant	[redacted]	17,627	14,592	[redacted]	874	874	No	LTC	No	Radial	864	79	0	0	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR01	TLK066	0.5	Thermal Discharging	1.55	Unintentional Islanding	Compliant	[redacted]	17,627	14,592	[redacted]	2,389	1,919	Yes	LTC	No	Radial	864	79	23	0	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR01	TLK067	0.5	Thermal Discharging	1.64	Unintentional Islanding	Compliant	[redacted]	17,627	14,592	[redacted]	2,343	1,884	Yes	LTC	No	Radial	864	79	123	44	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR02	TLK071	0.77	Unintentional Islanding	0.77	Unintentional Islanding	Compliant	[redacted]	15,993	13,751	[redacted]	1,163	990	Yes	LTC	No	Radial	284	27	123	3	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR02	TLK073	0.86	Unintentional Islanding	0.86	Unintentional Islanding	Compliant	[redacted]	15,993	13,751	[redacted]	1,257	1,121	Yes	LTC	No	Radial	284	27	56	4	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR02	TLK075	0.9	Thermal Discharging	1.53	Unintentional Islanding	Compliant	[redacted]	15,993	13,751	[redacted]	2,200	1,920	Yes	LTC	No	Radial	284	27	17	4	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR02	TLK076	0.48	Unintentional Islanding	0.48	Unintentional Islanding	Compliant	[redacted]	15,993	13,751	[redacted]	642	642	No	LTC	No	Radial	284	27	0	0	7/31/2022	Nov-22	
White Bear Lake - 156	Tanners Lake	TLK_TR02	TLK077	0	Unintentional Islanding	2.79	Unintentional Islanding	Compliant	[redacted]	15,993	13,751	[redacted]	3,877	3,050	Yes	LTC	No	Radial	284	27	88	16	7/31/2022	Nov-22	
South Dakota - 152	Tracy	TRA_TR01	TRA001	0.2	Unintentional Islanding	0.2	Unintentional Islanding	Compliant	[redacted]	442	0	[redacted]	248	248	Yes	None	No	Radial	8	0	0	0	1/31/2023	May-23	
South Dakota - 152	Tracy	TRA_TR01	TRA002	0.14	Unintentional Islanding	0.14	Unintentional Islanding	Compliant	[redacted]	442	0	[redacted]	194	194	Yes	None	No	Radial	8	0	8	0	1/31/2023	May-23	
South Dakota - 152	Tracy Switching Station	TSS_TR01	TSS061	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	1,016	821	[redacted]	1,016	1,016	Yes	None	Yes	Radial	5,256	325	5,256	325	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Maple Grove - 147	Twin Lakes	TWL_TR01	TWL061	1.1	Primary Over-Voltage	1.54	Unintentional Islanding	Compliant	[redacted]	18,260	15,068	[redacted]	1,628	1,628	Yes	LTC	No	Radial	1,615	688	120	0	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR01	TWL062	0.9	Thermal Discharging	1.53	Unintentional Islanding	Compliant	[redacted]	18,260	15,068	[redacted]	1,603	1,603	Yes	LTC	No	Radial	1,615	688	115	39	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR01	TWL063	1.3	Primary Over-Voltage	1.77	Unintentional Islanding	Compliant	[redacted]	18,260	15,068	[redacted]	1,844	1,844	Yes	LTC	No	Radial	1,615	688	153	49	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR01	TWL064	0.9	Thermal Discharging	1.64	Unintentional Islanding	Compliant	[redacted]	18,260	15,068	[redacted]	1,749	1,749	Yes	LTC	No	Radial	1,615	688	48	17	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR01	TWL065	0.9	Thermal Discharging	2.25	Unintentional Islanding	Compliant	[redacted]	18,260	15,068	[redacted]	2,631	2,631	Yes	LTC	No	Radial	1,615	688	163	3	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR01	TWL066	0.53	Unintentional Islanding	1.44	Unintentional Islanding	Compliant	[redacted]	18,260	15,068	[redacted]	1,530	1,530	Yes	LTC	No	Radial	1,615	688	171	22	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR01	TWL067	0.9	Thermal Discharging	1.48	Unintentional Islanding	Compliant	[redacted]	18,260	15,068	[redacted]	1,600	1,600	Yes	LTC	No	Radial	1,615	688	27	6	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR01	TWL068	0.5	Thermal Discharging	1.79	Unintentional Islanding	Compliant	[redacted]	18,260	15,068	[redacted]	1,910	1,910	Yes	LTC	No	Radial	1,615	688	136	552	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR01	TWL069	0.8	Primary Over-Voltage	1.36	Unintentional Islanding	Compliant	[redacted]	18,260	15,068	[redacted]	1,600	1,600	Yes	LTC	No	Radial	1,615	688	682	0	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR02	TWL071	0.9	Thermal Discharging	2.66	Unintentional Islanding	Compliant	[redacted]	18,559	14,843	[redacted]	2,668	2,668	Yes	LTC	No	Radial	882	304	63	0	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR02	TWL072	0.9	Thermal Discharging	2.51	Unintentional Islanding	Compliant	[redacted]	18,559	14,843	[redacted]	2,746	2,746	Yes	LTC	No	Radial	882	304	104	0	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR02	TWL073	0.61	Unintentional Islanding	0.61	Unintentional Islanding	Compliant	[redacted]	18,559	14,843	[redacted]	707	707	Yes	LTC	No	Radial	882	304	41	0	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR02	TWL074	0.9	Thermal Discharging	1.4	Unintentional Islanding	Compliant	[redacted]	18,559	14,843	[redacted]	1,603	1,603	Yes	LTC	No	Radial	882	304	210	15	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR02	TWL075	0.71	Unintentional Islanding	0.71	Unintentional Islanding	Compliant	[redacted]	18,559	14,843	[redacted]	800	800	Yes	LTC	No	Radial	882	304	99	14	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR02	TWL076	0.8	Thermal Discharging	1.89	Unintentional Islanding	Compliant	[redacted]	18,559	14,843	[redacted]	2,110	2,110	Yes	LTC	No	Radial	882	304	89	0	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR02	TWL077	0.81	Unintentional Islanding	0.81	Unintentional Islanding	Compliant	[redacted]	18,559	14,843	[redacted]	806	806	Yes	LTC	No	Radial	882	304	0	0	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR02	TWL078	0.6	Thermal Discharging	1.49	Unintentional Islanding	Compliant	[redacted]	18,559	14,843	[redacted]	1,700	1,700	Yes	LTC	No	Radial	882	304	71	0	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR02	TWL079	0.9	Thermal Discharging	3.84	Unintentional Islanding	Compliant	[redacted]	18,559	14,843	[redacted]	3,536	3,536	Yes	LTC	No	Radial	882	304	205	275	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR03	TWL081	0.7	Primary Over-Voltage	2.38	Unintentional Islanding	Compliant	[redacted]	7,479	6,964	[redacted]	2,500	2,500	Yes	LTC	No	Radial	395	344	91	4	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR03	TWL082	0.6	Thermal Discharging	1.95	Unintentional Islanding	Compliant	[redacted]	7,479	6,964	[redacted]	1,924	1,924	Yes	LTC	No	Radial	395	344	106	328	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR03	TWL083	1	Primary Over-Voltage	1.64	Unintentional Islanding	Compliant	[redacted]	7,479	6,964	[redacted]	1,703	1,703	Yes	LTC	No	Radial	395	344	141	8	4/30/2023	Aug-23	
Maple Grove - 147	Twin Lakes	TWL_TR03	TWL089	0.9	Thermal Discharging	1.54	Unintentional Islanding	Compliant	[redacted]	7,479	6,964	[redacted]	1,622	1,622	Yes	LTC	No	Radial	395	344	57	4	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR01	UPP061	1.3	Primary Over-Voltage	2.14	Unintentional Islanding	Compliant	[redacted]	19,268	17,057	[redacted]	2,005	2,005	Yes	LTC	No	Radial	2,718	369	2,000	0	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR01	UPP062	2.4	Primary Over-Voltage	4.48	Unintentional Islanding	Compliant	[redacted]	19,268	17,057	[redacted]	3,222	3,222	Yes	LTC	No	Radial	2,718	369	197	120	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR01	UPP063	0.4	Primary Over-Voltage	1.04	Breaker Reach	Compliant	[redacted]	19,268	17,057	[redacted]	2,374	2,374	Yes	LTC	No	Radial	2,718	369	318	210	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR01	UPP064	1.9	Primary Over-Voltage	2.23	Unintentional Islanding	Compliant	[redacted]	19,268	17,057	[redacted]	2,189	2,189	Yes	LTC	No	Radial	2,718	369	0	0	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR01	UPP065	1.44	Unintentional Islanding	1.44	Unintentional Islanding	Compliant	[redacted]	19,268	17,057	[redacted]	681	681	Yes	LTC	No	Radial	2,718	369	0	0	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR01	UPP066	1.2	Primary Over-Voltage	1.62	Unintentional Islanding	Compliant	[redacted]	19,268	17,057	[redacted]	1,962	1,962	Yes	LTC	No	Radial	2,718	369	142	33	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR01	UPP067	2.08	Unintentional Islanding	2.08	Unintentional Islanding	Compliant	[redacted]	19,268	17,057	[redacted]	1,920	1,920	Yes	LTC	No	Radial	2,718	369	0	0	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR01	UPP068	1.2	Primary Over-Voltage	1.77	Unintentional Islanding	Compliant	[redacted]	19,268	17,057	[redacted]	1,408	1,408	Yes	LTC	No	Radial	2,718	369	61	6	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR01	UPP069	0.4	Unintentional Islanding	0.4	Unintentional Islanding	Compliant	[redacted]	19,268	17,057	[redacted]	600	600	Yes	LTC	No	Radial	2,718	369	0	0	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR03	UPP081	1.7	Primary Over-Voltage	2.56	Unintentional Islanding	Compliant	[redacted]	18,843	16,105	[redacted]	1,924	1,924	Yes	LTC	No	Radial	859	354	12	4	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR03	UPP082	1.6	Primary Over-Voltage	3.03	Unintentional Islanding	Compliant	[redacted]	18,843	16,105	[redacted]	2,794	2,794	Yes	LTC	No	Radial	859	354	318	101	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR03	UPP083	1.1	Primary Over-Voltage	1.42	Unintentional Islanding	Compliant	[redacted]	18,843	16,105	[redacted]	1,287	1,287	Yes	LTC	No	Radial	859	354	34	40	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR03	UPP084	0.3	Unintentional Islanding	3.22	Unintentional Islanding	Compliant	[redacted]	18,843	16,105	[redacted]	2,980	2,980	Yes	LTC	No	Radial	859	354	232	91	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR03	UPP085	1.9	Primary Over-Voltage	3.23	Unintentional Islanding	Compliant	[redacted]	18,843	16,105	[redacted]	2,330	2,330	Yes	LTC	No	Radial	859	354	158	27	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR03	UPP086	1.78	Unintentional Islanding	1.78	Unintentional Islanding	Compliant	[redacted]	18,843	16,105	[redacted]	1,625	1,625	Yes	LTC	No	Radial	859	354	101	24	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR03	UPP088	2.5	Primary Over-Voltage	5.26	Unintentional Islanding	Compliant	[redacted]	18,843	16,105	[redacted]	3,606	3,606	Yes	LTC	No	Radial	859	354	0	0	4/30/2023	Aug-23	
St Paul - 151	Upper Levee	UPP_TR03	UPP089	0.9	Primary Over-Voltage	2.8	Unintentional Islanding	Compliant	[redacted]	18,843	16,105	[redacted]	2,316	2,316	Yes	LTC	No	Radial	859	354	4	67	4/30/2023	Aug-23	
Southeast - 144	Veseli	VES_TR01	VES021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	998	613	[redacted]	998	998	Yes	None	No	Radial	9,028	9	9,028	9	10/31/2022	Feb-23	
Northwest - 154	Villard	VIL_TR01	VIL021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	189	189	[redacted]	189	189	No	None	No	Radial	2,010	1,021	2,010	1,021	10/31/2022	Feb-23	
Edina - 143	Viking	VKG_TR01	VKG061	1.2	Primary Over-Voltage	1.21	Unintentional Islanding	Compliant	[redacted]	7,524	6,576	[redacted]	1,414	1,414	Yes	LTC	No	Radial	187	270	60	14	4/30/2023	Aug-23	
Edina - 143	Viking	VKG_TR01	VKG065	0.9	Thermal Discharging	1.89	Unintentional Islanding	Compliant	[redacted]	7,524	6,576	[redacted]	2,057	2,057	Yes	LTC	No	Radial	187	270	31	240	4/30/2023	Aug-23	
Edina - 143	Viking	VKG_TR01	VKG071	1.35	Unintentional Islanding	1.35	Unintentional Islanding	Compliant	[redacted]	7,524	6,576	[redacted]	1,458	1,458	Yes	LTC	No	Radial	187	270	0	0	4/30/2023	Aug-23	
Edina - 143	Viking	VKG_TR01	VKG072	0.4	Primary Over-Voltage	2.23	Unintentional Islanding	Compliant	[redacted]	7,524	6,576	[redacted]	2,442	2,442	Yes	LTC	No	Radial	187	270	96	16	4/30/2023	Aug-23	
Newport - 150	Vermillion River	VMR_TR03	VMR061	0.9	Thermal Discharging	5.99	Breaker Reach	Compliant	[redacted]	3,545	3,373	[redacted]	353	353	Yes	LTC	Yes	Radial	7,497	117	7,054	12	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Newport - 150	Vermillion River	VMR_TR03	VMR062	1.31	Unintentional Islanding	1.31	Unintentional Islanding	Compliant	[redacted]	3,545	3,373	[redacted]	1,710	1,710	Yes	LTC	No	Radial	7,497	117	398	105	1/31/2023	May-23	
Newport - 150	Vermillion River	VMR_TR03	VMR063	0.93	Unintentional Islanding	0.93	Unintentional Islanding	Compliant	[redacted]	3,545	3,373	[redacted]	1,229	1,229	Yes	LTC	No	Radial	7,497	117	45	0	1/31/2023	May-23	
Southeast - 144	Wabasha	WAB_TR01	WAB021	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	909	909	[redacted]	903	903	No	None	No	Radial	384	57	384	57	10/31/2022	Feb-23	
Southeast - 144	Wabasha	WAB_TR02	WAB031	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	1,914	1,914	[redacted]	1,895	1,895	No	LTC	Yes	Radial	7,748	6,014	7,748	6,014	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Wakefield	WAK_TR02	WAK321	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	2,907	2,496	[redacted]	2,141	2,141	Yes	LTC	Yes	Radial	5,059	0	5,059	0	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Waseca	WAS_TR02	WAS081	0	Breaker Reach	3.2	Primary Over-Voltage	Compliant	[redacted]	987	987	[redacted]	987	987	Yes	None	Yes	Radial	10,000	0	10,000	0	4/30/2022	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Waseca	WAS_TR04	WAS091	1.1	Thermal Discharging	9.9	Primary Over-Voltage	Compliant	[redacted]	5,335	3,945	[redacted]	1,970	1,829	Yes	LTC	Yes	Radial	20,407	15,067	3,996	4,000	4/30/2022	Aug-23	
Southeast - 144	Waseca	WAS_TR04	WAS092	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	5,335	3,945	[redacted]	2,838	1,752	Yes	LTC	Yes	Radial	20,407	15,067	16,411	11,067	4/30/2022	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Waseca	WAS_TR03	WAS231	0	Unintentional Islanding	0	Unintentional Islanding	Compliant	[redacted]	762	500	[redacted]	700	500	Yes	LTC	No	Radial	0	0	0	0	4/30/2022	Aug-23	
Southeast - 144	Waterville	WAT_TR03	WAT021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	938	722	[redacted]	938	938	Yes	None	Yes	Radial	3,093	560	3,093	560	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Waterville	WAT_TR01	WAT081	0	Primary Over-Voltage	0	Primary Over-Voltage	Exceeded	[redacted]	2,617	1,925	[redacted]	2,617	2,617	Yes	None	No	Radial	11,257	1,002	11,257	1,002	10/31/2022	Feb-23	
Southeast - 144	Waterville	WAT_TR02	WAT221	0	Unintentional Islanding	0.68	Unintentional Islanding	Compliant	[redacted]	1,200	0	[redacted]	1,200	1,200	Yes	None	No	Radial	5,000	3,840	5,000	3,840	10/31/2022	Feb-23	
Northwest - 154	Waverly	WAV_TR01	WAV021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	764	764	[redacted]	764	764	No	None	No	Radial	5,100	6	5,100	6	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Newport - 150	Williams Brothers	WBP_TR03	WBP061	1.5	Primary Over-Voltage	3.49	Unintentional Islanding	Compliant	[redacted]	5,806	5,122	[redacted]	4,748	4,748	Yes	LTC	No	Radial	30	0	30	0	10/31/2022	Feb-23	
Newport - 150	Williams Brothers	WBP_TR03	WBP062	0.8	Primary Over-Voltage	0.85	Unintentional Islanding	Compliant	[redacted]	5,806	5,122	[redacted]	1,124	1,124	No	LTC	No	Radial	30	0	0	0	10/31/2022	Feb-23	
Maple Grove - 147	West Coon Rapids	WCR_TR03	WCR061	0.85	Unintentional Islanding	0.85	Unintentional Islanding	Compliant	[redacted]	5,072	4,205	[redacted]	1,157	857	Yes	0	No	Radial	265	77	53	15	7/31/2022	Nov-22	
Maple Grove - 147	West Coon Rapids	WCR_TR03	WCR062	0.9	Primary Over-Voltage	1.53	Unintentional Islanding	Compliant	[redacted]	5,072	4,205	[redacted]	2,084	1,595	Yes	0	No	Radial	265	77	73	32	7/31/2022	Nov-22	
Maple Grove - 147	West Coon Rapids	WCR_TR03	WCR063	0.9	Thermal Discharging	1.75	Unintentional Islanding	Compliant	[redacted]	5,072	4,205	[redacted]	2,391	1,780	Yes	0	No	Radial	265	77	139	30	7/31/2022	Nov-22	
Maple Grove - 147	West Coon Rapids	WCR_TR01	WCR311	3.6	Thermal Discharging	4.58	Unintentional Islanding	Compliant	[redacted]	12,181	9,831	[redacted]	5,964	5,300	Yes	LTC	No	Radial	235	129	235	129	7/31/2022	Nov-22	
Maple Grove - 147	West Coon Rapids	WCR_TR02	WCR321	0.3	Thermal Discharging	1.22	Breaker Reach	Compliant	[redacted]	15,715	13,297	[redacted]	8,452	7,209	Yes	LTC	No	Radial	1,391	430	920	147	7/31/2022	Nov-22	
Maple Grove - 147	West Coon Rapids	WCR_TR02	WCR322	0.5	Primary Over-Voltage	4.6	Breaker Reach	Compliant	[redacted]	15,715	13,297	[redacted]	9,518	6,658	Yes	LTC	No	Radial	1,391	430	471	283	7/31/2022	Nov-22	
Minnetonka - 142	Waconia	WCS_TR01	WCS062	0.71	Unintentional Islanding	0.71	Unintentional Islanding	Compliant	[redacted]	2,341	2,321	[redacted]	1,020	806	Yes	Bus Reg - Sub	No	Radial	9,291	73	46	12	7/31/2022	Nov-22	
Minnetonka - 142	Waconia	WCS_TR01	WCS064	0.6	Primary Over-Voltage	4.2	TPS Capacity Utilization	Compliant	[redacted]	2,341	2,321	[redacted]	1,602	980	Yes	Bus Reg - Sub	Yes	Radial	9,291	73	9,245	61	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minnetonka - 142	Waconia	WCS_TR02	WCS071	0.9	Thermal Discharging	1.46	Unintentional Islanding	Compliant	[redacted]	3,566	3,184	[redacted]	2,085	1,761	Yes	0	No	Radial	3,184	1,042	39	22	7/31/2022	Nov-22	
Minnetonka - 142	Waconia	WCS_TR02	WCS072	0.5	Thermal Discharging	2.8	Primary Over-Voltage	Compliant	[redacted]	3,566	3,184	[redacted]	1,108	874	Yes	0	Yes	Radial	3,184	1,042	3,145	1,020	7/31/2022	Nov-22	
Newport - 150	Woodbury	WDY_TR01	WDY311	0.2	Primary Over-Voltage	1.13	Breaker Reach	Compliant	[redacted]	13,866	10,992	[redacted]	3,562	2,797	Yes	LTC	No	Radial	722	284	332	149	7/31/2022	Nov-22	
Newport - 150	Woodbury	WDY_TR01	WDY312	2.2	Thermal Discharging	7.51	Unintentional Islanding	Compliant	[redacted]	13,866	10,992	[redacted]	10,055	7,900	Yes	LTC	No	Radial	722	284	390	135	7/31/2022	Nov-22	
Newport - 150	Woodbury	WDY_TR02	WDY321	0.9	Thermal Discharging	3.03	Unintentional Islanding	Compliant	[redacted]	10,599	8,721	[redacted]	4,072	3,324	Yes	LTC	No	Radial	426	131	147	98	7/31/2022	Nov-22	
Newport - 150	Woodbury	WDY_TR02	WDY322	3.36	Unintentional Islanding	3.36	Unintentional Islanding	Compliant	[redacted]	10,599	8,721	[redacted]	6,378	5,399	Yes	LTC	No	Radial	426	131	279	33	7/31/2022	Nov-22	
Southeast - 144	West Byron	WEB_TR01	WEB021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	1,996	1,857	[redacted]	1,996	1,996	Yes	None	Yes	Radial	11,363	5	11,363	5	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	West Faribault	WEF_TR07	WEF061	0.2	Thermal Discharging	1.74	Unintentional Islanding	Compliant	[redacted]	1,942	1,628	[redacted]	1,942	1,942	Yes	None	No	Radial	32	3	32	3	4/30/2023	Aug-23	
Southeast - 144	West Faribault	WEF_TR03	WEF071	0	Unintentional Islanding	1.32	Unintentional Islanding	Compliant	[redacted]	1,469	671	[redacted]	1,469	1,469	Yes	None	No	Radial	7,792	1,047	7,792	1,047	4/30/2023	Aug-23	Known capacity constraints: Capacity could be significantly impacted without substantial system upgrades
Newport - 150	West Hastings	WEH_TR01	WEH021	0.5	Primary Over-Voltage	1.28	Unintentional Islanding	Compliant	[redacted]	4,085	3,055	[redacted]	1,987	1,401	Yes	LTC	No	Radial	78	45	42	34	7/31/2022	Nov-22	
Newport - 150	West Hastings	WEH_TR01	WEH022	0.8	Thermal Discharging	1.24	Unintentional Islanding	Compliant	[redacted]	4,085	3,055	[redacted]	1,881	1,523	Yes	LTC	No	Radial	78	45	36	11	7/31/2022	Nov-22	
Southeast - 144	Wells Creek	WEL_TR01	WEL021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	520	520	[redacted]	520	520	No	None	Yes	Radial	4,109	1,099	4,109	1,099	1/31/2023	May-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
St Paul - 151	Western	WES_TR01	WES061	0.5	Thermal Discharging	1.67	Unintentional Islanding	Compliant	[redacted]	13,753	10,375	[redacted]	2,200	2,200	Yes	LTC	No	Radial	1,021	141	76	14	10/31/2022	Feb-23	
St Paul - 151	Western	WES_TR01	WES062	0.8	Thermal Discharging	1.3	Unintentional Islanding	Compliant	[redacted]	13,753	10,375	[redacted]	2,062	2,062	Yes	LTC	No	Radial	1,021	141	244	24	10/31/2022	Feb-23	
St Paul - 151	Western	WES_TR01	WES063	0.3	Primary Over-Voltage	0.99	Breaker Reach	Compliant	[redacted]	13,753	10,375	[redacted]	1,942	1,942	Yes	LTC	No	Radial	1,021	141	248	47	10/31/2022	Feb-23	
St Paul - 151	Western	WES_TR01	WES064	0.8	Thermal Discharging	2.79	Unintentional Islanding	Compliant	[redacted]	13,753	10,375	[redacted]	3,376	3,376	Yes	LTC	No	Radial	1,021	141	241	56	10/31/2022	Feb-23	
St Paul - 151	Western	WES_TR01	WES065	0.9	Thermal Discharging	2.12	Unintentional Islanding	Compliant	[redacted]	13,753	10,375	[redacted]	2,830	2,830	Yes	LTC	No	Radial	1,021	141	212	0	10/31/2022	Feb-23	
St Paul - 151	Western	WES_TR02	WES071	0.9	Thermal Discharging	1.31	Unintentional Islanding	Compliant	[redacted]	14,109	14,109	[redacted]	1,811	1,811	Yes	LTC	No	Radial	1,044	321	57	13	10/31/2022	Feb-23	
St Paul - 151	Western	WES_TR02	WES072	0.8	Thermal Discharging	1.79	Unintentional Islanding	Compliant	[redacted]	14,109	14,109	[redacted]	2,154	2,154	Yes	LTC	No	Radial	1,044	321	137	6	10/31/2022	Feb-23	
St Paul - 151	Western	WES_TR02	WES073	0	Unintentional Islanding	1.86	Unintentional Islanding	Compliant	[redacted]	14,109	14,109	[redacted]	2,408	2,408	Yes	LTC	No	Radial	1,044	321	236	79	10/31/2022	Feb-23	
St Paul - 151	Western	WES_TR02	WES074	0	Unintentional Islanding	1.67	Unintentional Islanding	Compliant	[redacted]	14,109	14,109	[redacted]	2,550	2,550	Yes	LTC	No	Radial	1,044	321	334	187	10/31/2022	Feb-23	
St Paul - 151	Western	WES_TR02	WES075	0.85	Unintentional Islanding	1.75	Unintentional Islanding	Compliant	[redacted]	14,109	14,109	[redacted]	2,256	2,256	Yes	LTC	No	Radial	1,044	321	115	12	10/31/2022	Feb-23	
St Paul - 151	Western	WES_TR02	WES076	0.9	Thermal Discharging	1.62	Unintentional Islanding	Compliant	[redacted]	14,109	14,109	[redacted]	1,924	1,924	Yes	LTC	No	Radial	1,044	321	165	24	10/31/2022	Feb-23	
Edina - 143	Wilson	WIL_TR03	WIL071	0.9	Thermal Discharging	1.89	Unintentional Islanding	Compliant	[redacted]	18,668	13,810	[redacted]	2,094	2,094	Yes	LTC	No	Radial	1,764	390	114	4	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR03	WIL072	0.9	Thermal Discharging	2.43	Unintentional Islanding	Compliant	[redacted]	18,668	13,810	[redacted]	2,771	2,771	Yes	LTC	No	Radial	1,764	390	255	0	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR03	WIL073	1.3	Primary Over-Voltage	1.98	Unintentional Islanding	Compliant	[redacted]	18,668	13,810	[redacted]	2,222	2,222	Yes	LTC	No	Radial	1,764	390	151	88	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR03	WIL074	0.9	Thermal Discharging	1.35	Unintentional Islanding	Compliant	[redacted]	18,668	13,810	[redacted]	1,582	1,582	Yes	LTC	No	Radial	1,764	390	68	240	4/30/2023	Aug-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Technical Planning Standard	Substation Transformer Forecasted Peak Load (kVA)	Substation Transformer Minimum Load (kVA)	Transformer Absolute Min (kVA)	Feeder Forecasted Peak Load (kVA)	Feeder Daytime Minimum Load (kVA)	Feeder Absolute Min (kVA)	Actual Daytime Minimum Load	LTC or Regulator	VSR Equipped	Network or Radial	Substation Transformer Installed DG (kW)	Substation Transformer Queued DG (kW)	Feeder Installed DG (kW)	Feeder Queued DG (kW)	Data Cutoff	Latest Quarterly Update	Notes
Edina - 143	Wilson	WIL_TR03	WIL075	0.9	Thermal Discharging	1.09	Unintentional Islanding	Compliant	[redacted]	18,668	13,810	[redacted]	1,302	1,302	Yes	LTC	No	Radial	1,764	390	568	0	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR03	WIL076	0.3	Thermal Discharging	2.06	Unintentional Islanding	Compliant	[redacted]	18,668	13,810	[redacted]	2,264	2,264	Yes	LTC	No	Radial	1,764	390	109	0	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR03	WIL077	0	Unintentional Islanding	1.38	Unintentional Islanding	Compliant	[redacted]	18,668	13,810	[redacted]	1,549	1,549	Yes	LTC	No	Radial	1,764	390	81	0	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR03	WIL078	0.9	Thermal Discharging	1.58	Unintentional Islanding	Compliant	[redacted]	18,668	13,810	[redacted]	1,757	1,757	Yes	LTC	No	Radial	1,764	390	64	28	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR03	WIL079	0.8	Primary Over-Voltage	1.58	Unintentional Islanding	Compliant	[redacted]	18,668	13,810	[redacted]	2,087	2,087	Yes	LTC	No	Radial	1,764	390	354	30	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR04	WIL081	1	Thermal Discharging	1.68	Unintentional Islanding	Compliant	[redacted]	18,254	14,463	[redacted]	1,954	1,954	Yes	LTC	No	Radial	1,615	757	105	11	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR04	WIL082	0.8	Thermal Discharging	1.4	Unintentional Islanding	Compliant	[redacted]	18,254	14,463	[redacted]	1,768	1,768	Yes	LTC	No	Radial	1,615	757	207	37	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR04	WIL083	0.6	Primary Over-Voltage	0.68	Unintentional Islanding	Compliant	[redacted]	18,254	14,463	[redacted]	1,092	1,092	Yes	LTC	No	Radial	1,615	757	47	0	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR04	WIL084	0.6	Thermal Discharging	1.1	Unintentional Islanding	Compliant	[redacted]	18,254	14,463	[redacted]	1,202	1,202	Yes	LTC	No	Radial	1,615	757	46	17	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR04	WIL085	0.9	Thermal Discharging	2.83	Unintentional Islanding	Compliant	[redacted]	18,254	14,463	[redacted]	3,203	3,203	Yes	LTC	No	Radial	1,615	757	425	15	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR04	WIL086	0.03	Unintentional Islanding	0.96	Unintentional Islanding	Compliant	[redacted]	18,254	14,463	[redacted]	2,675	2,675	Yes	LTC	No	Radial	1,615	757	108	0	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR04	WIL087	0.9	Thermal Discharging	1.62	Unintentional Islanding	Compliant	[redacted]	18,254	14,463	[redacted]	1,809	1,809	Yes	LTC	No	Radial	1,615	757	30	0	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR04	WIL088	0.5	Thermal Discharging	0.63	Unintentional Islanding	Compliant	[redacted]	18,254	14,463	[redacted]	694	694	Yes	LTC	No	Radial	1,615	757	400	266	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR04	WIL089	0.9	Thermal Discharging	2.33	Unintentional Islanding	Compliant	[redacted]	18,254	14,463	[redacted]	2,563	2,563	Yes	LTC	No	Radial	1,615	757	247	411	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR05	WIL091	0.9	Thermal Discharging	1.28	Unintentional Islanding	Compliant	[redacted]	13,801	12,211	[redacted]	1,449	1,449	Yes	LTC	No	Radial	2,668	138	382	31	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR05	WIL092	0.9	Thermal Discharging	1.5	Unintentional Islanding	Compliant	[redacted]	13,801	12,211	[redacted]	1,706	1,706	Yes	LTC	No	Radial	2,668	138	183	12	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR05	WIL093	0.9	Thermal Discharging	1.32	Unintentional Islanding	Compliant	[redacted]	13,801	12,211	[redacted]	1,451	1,451	Yes	LTC	No	Radial	2,668	138	999	47	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR05	WIL094	0.59	Unintentional Islanding	0.59	Unintentional Islanding	Compliant	[redacted]	13,801	12,211	[redacted]	647	647	Yes	LTC	No	Radial	2,668	138	0	0	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR05	WIL095	1.5	Thermal Discharging	1.76	Unintentional Islanding	Compliant	[redacted]	13,801	12,211	[redacted]	1,911	1,911	Yes	LTC	No	Radial	2,668	138	100	0	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR05	WIL096	0.9	Thermal Discharging	1.32	Unintentional Islanding	Compliant	[redacted]	13,801	12,211	[redacted]	1,529	1,529	Yes	LTC	No	Radial	2,668	138	695	0	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR05	WIL097	0.5	Thermal Discharging	1.71	Unintentional Islanding	Compliant	[redacted]	13,801	12,211	[redacted]	1,895	1,895	Yes	LTC	No	Radial	2,668	138	155	12	4/30/2023	Aug-23	
Edina - 143	Wilson	WIL_TR05	WIL098	0.9	Thermal Discharging	2.18	Unintentional Islanding	Compliant	[redacted]	13,801	12,211	[redacted]	2,349	2,349	Yes	LTC	No	Radial	2,668	138	154	36	4/30/2023	Aug-23	
Southeast - 144	Winona	WIN_TR01	WIN021	0.01	Unintentional Islanding	0.42	Unintentional Islanding	Compliant	[redacted]	4,052	3,289	[redacted]	600	600	Yes	LTC	No	Radial	409	188	8	8	10/31/2022	Feb-23	
Southeast - 144	Winona	WIN_TR01	WIN022	0.1	Thermal Discharging	0.38	Unintentional Islanding	Compliant	[redacted]	4,052	3,289	[redacted]	510	510	Yes	LTC	No	Radial	409	188	179	167	10/31/2022	Feb-23	
Southeast - 144	Winona	WIN_TR01	WIN023	0.2	Thermal Discharging	1.34	Unintentional Islanding	Compliant	[redacted]	4,052	3,289	[redacted]	1,780	1,780	Yes	LTC	No	Radial	409	188	222	13	10/31/2022	Feb-23	
Southeast - 144	Winona	WIN_TR02	WIN032	0.8	Thermal Discharging	1.94	Unintentional Islanding	Compliant	[redacted]	7,002	6,450	[redacted]	2,302	2,302	Yes	LTC	No	Radial	108	881	18	10	10/31/2022	Feb-23	
Southeast - 144	Winona	WIN_TR02	WIN033	0.1	Thermal Discharging	0.92	Unintentional Islanding	Compliant	[redacted]	7,002	6,450	[redacted]	1,155	1,155	Yes	LTC	No	Radial	108	881	84	871	10/31/2022	Feb-23	
Southeast - 144	Winona	WIN_TR02	WIN034	0.6	Thermal Discharging	2.05	Unintentional Islanding	Compliant	[redacted]	7,002	6,450	[redacted]	2,508	2,508	Yes	LTC	No	Radial	108	881	6	0	10/31/2022	Feb-23	
Southeast - 144	Winona	WIN_TR03	WIN041	0.07	Unintentional Islanding	0.07	Unintentional Islanding	Compliant	[redacted]	4,916	3,401	[redacted]	100	100	Yes	LTC	No	Radial	253	36	0	0	10/31/2022	Feb-23	
Southeast - 144	Winona	WIN_TR03	WIN042	0.1	Thermal Discharging	1.57	Unintentional Islanding	Compliant	[redacted]	4,916	3,401	[redacted]	2,088	2,088	Yes	LTC	No	Radial	253	36	51	5	10/31/2022	Feb-23	
Southeast - 144	Winona	WIN_TR03	WIN043	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	4,916	3,401	[redacted]	2,236	2,236	Yes	LTC	No	Radial	253	36	202	31	10/31/2022	Feb-23	
Northwest - 154	Watkins	WKN_TR01	WKN001	0	Unintentional Islanding	0.2	Unintentional Islanding	Compliant	[redacted]	330	330	[redacted]	330	330	No	None	No	Radial	845	1,023	845	1,023	10/31/2022	Feb-23	
Northwest - 154	Wobegon Trail	WOB_TR01	WOB021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	418	341	[redacted]	117	117	Yes	None	Yes	Radial	6,024	50	6,024	50	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Northwest - 154	Wobegon Trail	WOB_TR01	WOB022	0.2	Primary Over-Voltage	0.26	Unintentional Islanding	Compliant	[redacted]	418	341	[redacted]	400	400	Yes	None	No	Radial	6,024	50	0	0	10/31/2022	Feb-23	
Minneapolis - 141	West River Road	WRR_TR01	WRR061	0.8	Thermal Discharging	0.89	Unintentional Islanding	Compliant	[redacted]	7,741	7,020	[redacted]	1,245	1,245	Yes	LTC	No	Radial	249	84	45	0	10/31/2022	Feb-23	
Minneapolis - 141	West River Road	WRR_TR01	WRR064	0.9	Thermal Discharging	1.92	Unintentional Islanding	Compliant	[redacted]	7,741	7,020	[redacted]	2,751	2,751	Yes	LTC	No	Radial	249	84	204	84	10/31/2022	Feb-23	
Minneapolis - 141	West River Road	WRR_TR02	WRR074	1.4	Thermal Discharging	1.96	Unintentional Islanding	Compliant	[redacted]	9,410	8,817	[redacted]	2,797	2,797	Yes	LTC	No	Radial	871	88	0	0	10/31/2022	Feb-23	
Minneapolis - 141	West River Road	WRR_TR02	WRR075	0.9	Thermal Discharging	1.74	Unintentional Islanding	Compliant	[redacted]	9,410	8,817	[redacted]	2,579	2,579	Yes	LTC	No	Radial	871	88	871	88	10/31/2022	Feb-23	
Minneapolis - 141	West River Road	WRR_TR03	WRR081	1.35	Unintentional Islanding	1.35	Unintentional Islanding	Compliant	[redacted]	7,800	7,105	[redacted]	2,030	2,030	Yes	LTC	No	Radial	225	160	29	160	10/31/2022	Feb-23	
Minneapolis - 141	West River Road	WRR_TR03	WRR084	0.8	Thermal Discharging	1.6	Unintentional Islanding	Compliant	[redacted]	7,800	7,105	[redacted]	2,153	2,153	Yes	LTC	No	Radial	225	160	73	0	10/31/2022	Feb-23	
Minneapolis - 141	West River Road	WRR_TR03	WRR085	0.04	Unintentional Islanding	0.46	Unintentional Islanding	Compliant	[redacted]	7,800	7,105	[redacted]	802	802	Yes	LTC	No	Radial	225	160	123	0	10/31/2022	Feb-23	
Minnetonka - 142	Winsted	WSD_TR01	WSD061	0.4	Thermal Discharging	0.7	TPS Capacity Utilization	Compliant	[redacted]	1,300	1,300	[redacted]	965	965	No	Fdr Reg - Sub	Yes	Radial	8,012	2,000	8,012	2,000	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Edina - 143	Westgate	WSG_TR03	WSG061	1.11	Unintentional Islanding	1.11	Unintentional Islanding	Compliant	[redacted]	11,454	9,521	[redacted]	1,676	1,300	Yes	LTC	No	Radial	1,439	477	129	51	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR03	WSG062	0.17	Unintentional Islanding	0.62	Unintentional Islanding	Compliant	[redacted]	11,454	9,521	[redacted]	1,223	1,105	Yes	LTC	No	Radial	1,439	477	140	0	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR03	WSG063	0.9	Primary Over-Voltage	1.16	Unintentional Islanding	Compliant	[redacted]	11,454	9,521	[redacted]	1,800	1,300	Yes	LTC	No	Radial	1,439	477	389	30	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR03	WSG064	0.9	Primary Over-Voltage	1.51	Unintentional Islanding	Compliant	[redacted]	11,454	9,521	[redacted]	2,332	2,126	Yes	LTC	No	Radial	1,439	477	73	16	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR03	WSG065	1	Primary Over-Voltage	1.23	Unintentional Islanding	Compliant	[redacted]	11,454	9,521	[redacted]	1,924	1,800	Yes	LTC	No	Radial	1,439	477	562	325	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR03	WSG066	0.7	Primary Over-Voltage	1.09	Unintentional Islanding	Compliant	[redacted]	11,454	9,521	[redacted]	1,746	1,360	Yes	LTC	No	Radial	1,439	477	146	55	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR04	WSG071	1	Primary Over-Voltage	1.53	Unintentional Islanding	Compliant	[redacted]	10,494	8,110	[redacted]	2,319	1,700	Yes	LTC	No	Radial	1,520	221	237	17	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR04	WSG072	0.38	Unintentional Islanding	0.38	Unintentional Islanding	Compliant	[redacted]	10,494	8,110	[redacted]	500	500	Yes	LTC	No	Radial	1,520	221	380	0	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR04	WSG073	0.37	Unintentional Islanding	0.37	Unintentional Islanding	Compliant	[redacted]	10,494	8,110	[redacted]	500	412	Yes	LTC	No	Radial	1,520	221	0	150	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR04	WSG074	0.7	Primary Over-Voltage	1.77	Unintentional Islanding	Compliant	[redacted]	10,494	8,110	[redacted]	2,532	2,354	Yes	LTC	No	Radial	1,520	221	50	0	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR04	WSG075	0.85	Unintentional Islanding	0.85	Unintentional Islanding	Compliant	[redacted]	10,494	8,110	[redacted]	1,844	1,530	Yes	LTC	No	Radial	1,520	221	667	0	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR04	WSG076	0.6	Primary Over-Voltage	1.08	Unintentional Islanding	Compliant	[redacted]	10,494	8,110	[redacted]	1,552	1,265	Yes	LTC	No	Radial	1,520	221	186	54	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR05	WSG351	0.32	Unintentional Islanding	0.32	Unintentional Islanding	Compliant	[redacted]	4,161	3,209	[redacted]	535	379	Yes	LTC	No	Radial	624	1,192	290	0	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR05	WSG352	0.2	Primary Over-Voltage	0.96	Breaker Reach	Compliant	[redacted]	4,161	3,209	[redacted]	2,651	1,535	Yes	LTC	No	Radial	624	1,192	334	1,192	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR06	WSG361	0.3	Thermal Discharging	1.3	Breaker Reach	Compliant	[redacted]	15,044	12,739	[redacted]	8,523	6,385	Yes	LTC	No	Radial	615	261	385	221	7/31/2022	Nov-22	
Edina - 143	Westgate	WSG_TR06	WSG362	0.9	Thermal Discharging	2.43	Unintentional Islanding	Compliant	[redacted]	15,044	12,739	[redacted]	3,501	3,501	Yes	LTC	No	Radial	615	261	230	40	7/31/2022	Nov-22	
Northwest - 154	Westport	WSP_TR01	WSP021	0.4	TPS Capacity Utilization	0.4	TPS Capacity Utilization	Compliant	[redacted]	69	69	[redacted]	69	69	No	Bus Reg - Sub	No	Radial	0	0	0	0	7/31/2022	Nov-22	
Northwest - 154	West Union	WSU_TR01	WSU021	0.02	Unintentional Islanding	0.2	Thermal Discharging	Compliant	[redacted]	29	29	[redacted]	29	29	No	0	No	Radial	0	0	0	0	7/31/2022	Nov-22	Substation owned by Foreign Utility. Contractual obligations may reduce capacity and increase interconnection timelines
Northwest - 154	Watab River	WTB_TR01	WTB021	0.5	Thermal Discharging	3.3	TPS Capacity Utilization	Compliant	[redacted]	359	359	[redacted]	359	359	No	None	Yes	Radial	7,053	28	7,053	28	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minnetonka - 142	Watertown	WTN_TR01	WTN061	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	1,525	1,525	[redacted]	646	646	No	None	Yes	Radial	5,238	1,056	5,157	15	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minnetonka - 142	Watertown	WTN_TR01	WTN062	0.1	Primary Over-Voltage	8.59	Breaker Reach	Compliant	[redacted]	1,525	1,525	[redacted]	975	975	No	None	Yes	Radial	5,238	1,056	81	1,041	7/31/2022	Nov-22	
Minnetonka - 142	West Waconia	WWK_TR01	WWK311	0	Breaker Reach	10	Primary Over-Voltage	Compliant	[redacted]	5,197	4,835	[redacted]	5,197	5,197	Yes	LTC	Yes	Radial	17,153	110	17,153	110	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minnetonka - 142	West Waconia	WWK_TR02	WWK321	0.1	Primary Over-Voltage	6.3	Primary Over-Voltage	Compliant	[redacted]	1,826	1,826	[redacted]	1,826	1,826	Yes	LTC	Yes	Radial	7,189	32	7,189	32	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
White Bear Lake - 156	Wyoming	WYO_TR01	WYO021	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	3,616	3,384	[redacted]	2,698	2,074	Yes	LTC	No	Radial	5,205	46	151	36	7/31/2022	Nov-22	
White Bear Lake - 156	Wyoming	WYO_TR01	WYO022	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	3,616	3,384	[redacted]	1,357	1,139	Yes	LTC	Yes	Radial	5,205	46	5,054	10	7/31/2022	Nov-22	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
White Bear Lake - 156	Wyoming	WYO_TR02	WYO031	0.8	Thermal Discharging	1.53	Unintentional Islanding	Compliant	[redacted]	6,767	5,694	[redacted]	2,264	1,720	Yes	LTC	No	Radial	1,027	55	207	16	7/31/2022	Nov-22	
White Bear Lake - 156	Wyoming	WYO_TR02	WYO032	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	6,767	5,694	[redacted]	2,117	1,689	Yes	LTC	No	Radial	1,027	55	520	39	7/31/2022	Nov-22	
White Bear Lake - 156	Wyoming	WYO_TR02	WYO033	0.26	Unintentional Islanding	1.48	Unintentional Islanding	Compliant	[redacted]	6,767	5,694	[redacted]	2,371	2,249	Yes	LTC	No	Radial	1,027	55	300	0	7/31/2022	Nov-22	
Northwest - 154	Crossroads	XRD_TR01	XRD061	1.4	Thermal Discharging	1.47	Unintentional Islanding	Compliant	[redacted]	5,675	4,684	[redacted]	1,921	1,921	Yes	LTC	No	Radial	125	64	33	6	10/31/2022	Feb-23	
Northwest - 154	Crossroads	XRD_TR01	XRD062	0.9	Thermal Discharging	1.42	Unintentional Islanding	Compliant	[redacted]	5,675	4,684	[redacted]	1,825	1,825	Yes	LTC	No	Radial	125	64	92	34	10/31/2022	Feb-23	
Northwest - 154	Crossroads	XRD_TR01	XRD063	0.9	Thermal Discharging	1.23	Unintentional Islanding	Compliant	[redacted]	5,675	4,684	[redacted]	1,703	1,703	Yes	LTC	No	Radial	125	64	0	24	10/31/2022	Feb-23	
Northwest - 154	Crossroads	XRD_TR02	XRD075	0.64	Unintentional Islanding	0.64	Unintentional Islanding	Compliant	[redacted]	6,207	4,884	[redacted]	900	900	Yes	LTC	No	Radial	227	0	72	0	10/31/2022	Feb-23	
Northwest - 154	Crossroads	XRD_TR02	XRD076	0.05	Unintentional Islanding	0.64	Breaker Reach	Compliant	[redacted]	6,207	4,884	[redacted]	2,648	2,648	Yes	LTC	No	Radial	227	0	101	0	10/31/2022	Feb-23	
Northwest - 154	Crossroads	XRD_TR02	XRD077	0.9	Thermal Discharging	1.61	Unintentional Islanding	Compliant	[redacted]	6,207	4,884	[redacted]	2,062	2,062	Yes	LTC	No	Radial	227	0	54	0	10/31/2022	Feb-23	
Minnetonka - 142	Young America	YAM_TR01	YAM021	0.8	Thermal Discharging	4.2	Breaker Reach	Compliant	[redacted]	1,163	414	[redacted]	1,163	1,163	Yes	None	Yes	Radial	4,985	20	4,985	20	10/31/2022	Feb-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Minnetonka - 142	Young America	YAM_TR02	YAM031	0	Primary Over-Voltage	0	Primary Over-Voltage	Compliant	[redacted]	1,168	1,009	[redacted]	1,168	1,168	Yes	None	No	Radial	266	2,032	266	2,032	10/31/2022	Feb-23	
Northwest - 154	Yellow Medicine	YLM_TR01	YLM211	0	Unintentional Islanding	0.29	Breaker Reach	Compliant	[redacted]	1,423	1,423	[redacted]	1,076	1,076	No	None	No	Radial	2,100	3,384	1,076	1,384	10/31/2022	Feb-23	
Northwest - 154	Yellow Medicine	YLM_TR01	YLM212	0.07	Primary Over-Voltage	0.22	Unintentional Islanding	Compliant	[redacted]	1,423	1,423	[redacted]	422	422	No	None	No	Radial	2,100	3,384	1,024	2,000	10/31/2022	Feb-23	
Southeast - 144	Zumbro Falls	ZUF_TR01	ZUF021	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	745	745	[redacted]	737	737	No	Bus Reg - Sub	No	Radial	5,107	10	5,107	10	7/31/2022	Nov-22	
Southeast - 144	Zumbrota	ZUM_TR01	ZUM021	0.4	Thermal Discharging	3.31	Breaker Reach	Compliant	[redacted]	1,085	935	[redacted]	1,837	1,837	Yes	None	Yes	Radial	15,151	550	2,062	0	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation
Southeast - 144	Zumbrota	ZUM_TR01	ZUM022	0	TPS exceeded by DER with Interconnection Agreement	0	TPS exceeded by DER with Interconnection Agreement	Exceeded	[redacted]	1,085	935	[redacted]	1,119	1,119	Yes	None	No	Radial	15,151	550	13,089	550	4/30/2023	Aug-23	Feeder has Voltage Supervisory Reclosing (VSR) at the substation

Due to file size, Attachment C: Gen-HCA 2023 Feeder Nodal Results is being submitted in five separate files:

- **Part 1 – Pages 1-3,566**
- **Part 2 – Pages 3,567-7,144**
- **Part 3 – Pages 7,145-10,715**
- **Part 4 – Pages 10,716-11,283**

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Native Loading Standard	Substation Transformer Forecasted Peak Load (kVA)	Feeder Forecasted Peak Load (kVA)	LTC or Regulator	Data Cutoff	Latest Quarterly Update	Notes
Newport - 150	Afton	AFT TR01	AFT314	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Afton	AFT TR01	AFT315	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Afton	AFT TR02	AFT321	0.0	Thermal Charging	1.9	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Afton	AFT TR02	AFT322	1.9	Thermal Charging	20.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Arden Hills	AHI TR01	AHI021	0.0	Thermal Charging	1.7	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Arden Hills	AHI TR01	AHI022	0.4	Thermal Charging	1.7	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Arden Hills	AHI TR01	AHI024	0.1	Thermal Charging	5.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Arden Hills	AHI TR01	AHI025	0.3	Thermal Charging	2.3	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Arden HIlls	AHI TR02	AHI063	0.0	Thermal Charging	2.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Edina - 143	Airport	AIR TR01	AIR060	0.1	Thermal Charging	0.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Airport	AIR TR01	AIR061	1.1	Thermal Charging	4.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Airport	AIR TR01	AIR069	0.0	Thermal Charging	3.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Airport	AIR TR02	AIR072	0.0	Thermal Charging	3.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Airport	AIR TR02	AIR073	0.4	Thermal Charging	4.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Airport	AIR TR02	AIR074	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Airport	AIR TR02	AIR077	0.0	Thermal Charging	1.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Airport	AIR TR02	AIR078	3.6	Thermal Charging	7.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Airport	AIR TR02	AIR079	1.1	Thermal Charging	1.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Airport	AIR TR01	AIR62X	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Albany	ALB TR02	ALB021	0.1	Thermal Charging	0.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Albany	ALB TR02	ALB022	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Albany	ALB TR02	ALB023	0.5	Thermal Charging	6.7	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR02	ALD072	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR02	ALD073	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR02	ALD075	2.2	Thermal Charging	2.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR02	ALD076	0.4	Thermal Charging	4.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR03	ALD081	1.3	Thermal Charging	5.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR03	ALD082	0.4	Thermal Charging	1.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR03	ALD083	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR03	ALD084	0.0	Thermal Charging	2.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR03	ALD085	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR03	ALD086	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR03	ALD087	2.5	Thermal Charging	2.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR03	ALD088	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR04	ALD091	0.0	Thermal Charging	2.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR04	ALD092	0.0	Thermal Charging	7.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR04	ALD093	0.3	Thermal Charging	6.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR04	ALD094	0.0	Thermal Charging	1.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR04	ALD095	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR04	ALD096	0.4	Thermal Charging	1.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR04	ALD097	0.0	Thermal Charging	2.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Aldrich	ALD TR04	ALD098	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Air Lake	ALK TR01	ALK063	0.0	Thermal Charging	1.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Air Lake	ALK TR01	ALK064	0.0	Thermal Charging	4.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Air Lake	ALK TR01	ALK067	0.0	Thermal Charging	6.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Air Lake	ALK TR02	ALK072	0.0	Thermal Charging	1.5	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Air Lake	ALK TR02	ALK073	0.6	Thermal Charging	3.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Altura	ALT TR01	ALT021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Annandale	ANN TR01	ANN021	0.1	Thermal Charging	1.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR01	APA061	0.6	Thermal Charging	1.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR01	APA064	0.6	Thermal Charging	2.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR01	APA065	0.0	Thermal Charging	2.1	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR01	APA067	0.0	Thermal Charging	1.2	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR01	APA068	0.0	Thermal Charging	3.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR01	APA069	2.1	Thermal Charging	4.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR02	APA071	0.1	Thermal Charging	2.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR02	APA072	0.7	Thermal Charging	1.8	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR02	APA073	0.3	Thermal Charging	3.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR02	APA074	0.5	Thermal Charging	1.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR02	APA075	0.4	Thermal Charging	2.2	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR02	APA076	0.3	Thermal Charging	2.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR02	APA077	0.5	Thermal Charging	1.2	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Apache	APA TR02	APA078	0.4	Thermal Charging	2.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Atwater	ATW TR01	ATW061	0.2	Thermal Charging	10.2	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Northwest - 154	Atwater	ATW TR01	ATW062	0.0	Thermal Charging	6.3	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Northwest - 154	Avon	AVN TR01	AVN021	0.0	Thermal Charging	3.5	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
North Dakota -	Averill	AVR TR01	AVR081	0.1	Thermal Charging	15.7	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Birch	BCH TR01	BCH311	0.0	Thermal Charging	6.2	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
St Paul - 151	Battle Creek	BCK TR01	BCK061	15.0	Primary Under-Voltage	15.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Battle Creek	BCK TR01	BCK062	15.0	Primary Under-Voltage	15.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Battle Creek	BCK TR02	BCK071	15.0	Primary Under-Voltage	15.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Battle Creek	BCK TR02	BCK073	1.2	Thermal Charging	8.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Battle Creek	BCK TR02	BCK074	15.0	Primary Under-Voltage	15.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Battle Creek	BCK TR02	BCK72X	0.0	Thermal Charging	10.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Basset Creek	BCR TR01	BCR061	0.8	Thermal Charging	1.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Basset Creek	BCR TR01	BCR062	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Basset Creek	BCR TR01	BCR063	0.0	Thermal Charging	1.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Basset Creek	BCR TR02	BCR081	2.9	Thermal Charging	7.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Basset Creek	BCR TR02	BCR082	0.0	Thermal Charging	4.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Basset Creek	BCR TR02	BCR083	0.7	Thermal Charging	7.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Belgrade	BEG TR01	BEG001	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Belle Plaine	BEL TR01	BEL061	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Belle Plaine	BEL TR01	BEL062	0.0	Thermal Charging	4.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Buffalo Lake	BFL TR01	BFL021	0.3	Thermal Charging	3.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Bird Island	BIS TR02	BIS001	0.2	Thermal Charging	0.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Bluff Creek	BLC TR01	BLC061	1.7	Thermal Charging	8.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Bluff Creek	BLC TR01	BLC062	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Bluff Creek	BLC TR01	BLC063	0.3	Thermal Charging	5.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Bluff Creek	BLC TR01	BLC071	0.2	Thermal Charging	5.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Bluff Creek	BLC TR01	BLC072	1.9	Thermal Charging	8.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Blue Heron	BLH TR01	BLH061	0.0	Thermal Charging	1.4	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Blue Heron	BLH TR01	BLH062	1.2	Thermal Charging	8.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Blue Lake	BLL TR01	BLL062	0.0	Thermal Charging	8.5	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Edina - 143	Blue Lake	BLL TR01	BLL063	0.0	Thermal Charging	5.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Edina - 143	Blue Lake	BLL TR01	BLL064	4.1	Thermal Charging	7.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Edina - 143	Blue Lake	BLL TR02	BLL071	0.0	Thermal Charging	0.4	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Native Loading Standard	Substation Transformer Forecasted Peak Load (kVA)	Feeder Forecasted Peak Load (kVA)	LTC or Regulator	Data Cutoff	Latest Quarterly Update	Notes
Edina - 143	Blue Lake	BLL TR02	BLL072	0.0	Thermal Charging	4.5	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Brooten	BRO TR01	BRO021	0.0	Thermal Charging	2.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Maple Grove - 1	Brooklyn Park	BRP TR01	BRP061	0.0	Thermal Charging	4.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Brooklyn Park	BRP TR01	BRP062	0.3	Thermal Charging	3.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Brooklyn Park	BRP TR01	BRP063	0.4	Thermal Charging	6.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Brooklyn Park	BRP TR02	BRP071	0.1	Primary Under-Voltage	2.0	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Brooklyn Park	BRP TR02	BRP072	0.2	Thermal Charging	1.0	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Brooklyn Park	BRP TR02	BRP073	0.0	Thermal Charging	3.3	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Brownton	BRW TR01	BRW001	0.3	Regulator Deviation	0.3	Regulator Deviation	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Butterfield	BTF TR01	BTF001	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	0	7/31/2023	Nov-23	
Southeast - 144	Burnside	BUR TR01	BUR022	0.3	Thermal Charging	6.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Burnside	BUR TR01	BUR023	0.7	Thermal Charging	8.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Burnside	BUR TR02	BUR032	0.0	Thermal Charging	3.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Baytown	BYT TR01	BYT061	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Baytown	BYT TR02	BYT071	0.0	Thermal Charging	6.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Baytown	BYT TR02	BYT072	0.1	Thermal Charging	3.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Cannon Falls	CAF TR01	CAF021	0.6	Thermal Charging	6.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Cannon Falls	CAF TR01	CAF022	0.0	Thermal Charging	5.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Cedarvale	CDV TR01	CDV061	0.8	Thermal Charging	9.2	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Cedarvale	CDV TR01	CDV062	0.0	Thermal Charging	8.9	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Cedarvale	CDV TR01	CDV063	0.7	Thermal Charging	9.4	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Cedarvale	CDV TR02	CDV071	0.0	Thermal Charging	5.1	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Cedarvale	CDV TR02	CDV072	0.4	Thermal Charging	2.9	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minneapolis - 1	Cedar Lake	CEL TR01	CEL061	0.7	Thermal Charging	5.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Cedar Lake	CEL TR01	CEL062	0.0	Thermal Charging	5.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Cedar Lake	CEL TR01	CEL063	2.9	Thermal Charging	6.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Cedar Lake	CEL TR01	CEL064	0.0	Thermal Charging	4.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Cedar Lake	CEL TR01	CEL066	0.3	Thermal Charging	8.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Cedar Lake	CEL TR02	CEL071	0.8	Thermal Charging	5.3	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Cedar Lake	CEL TR02	CEL072	0.0	Thermal Charging	5.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Cedar Lake	CEL TR02	CEL075	0.0	Thermal Charging	4.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Cottage Grove	CGR TR01	CGR061	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Cottage Grove	CGR TR01	CGR062	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Cottage Grove	CGR TR01	CGR063	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Cottage Grove	CGR TR01	CGR064	0.0	Thermal Charging	1.7	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Cottage Grove	CGR TR02	CGR071	0.5	Native Capacity Utilization	0.5	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Cottage Grove	CGR TR02	CGR072	0.3	Thermal Charging	0.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Cottage Grove	CGR TR02	CGR073	0.0	Thermal Charging	3.2	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Cottage Grove	CGR TR02	CGR074	0.3	Thermal Charging	5.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Chemolite	CHE TR01	CHE062	4.7	Thermal Charging	11.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Chemolite	CHE TR01	CHE063	0.1	Thermal Charging	4.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Chemolite	CHE TR01	CHE064	0.0	Thermal Charging	5.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Chemolite	CHE TR01	CHE065	#N/A	#N/A	#N/A	#N/A	#N/A	[redacted]	[redacted]	#N/A	7/31/2023	Nov-23	#N/A
Newport - 150	Chemolite	CHE TR02	CHE075	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Chemolite	CHE TR02	CHE076	0.0	Thermal Charging	3.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Chisago Coun	CHI TR02	CHI311	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Clarks Grove	CKG TR01	CKG041	0.0	Thermal Charging	0.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Clara City	CLC TR01	CLC022	0.2	Thermal Charging	1.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Clara City	CLC TR02	CLC221	0.1	Thermal Charging	4.7	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Maple Grove - 1	Coon Creek	CNC TR01	CNC061	0.0	Thermal Charging	0.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Coon Creek	CNC TR01	CNC062	0.0	Thermal Charging	2.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Coon Creek	CNC TR01	CNC063	0.8	Thermal Charging	2.8	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Coon Creek	CNC TR02	CNC071	0.6	Thermal Charging	5.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Coon Creek	CNC TR02	CNC072	1.3	Thermal Charging	5.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Coon Creek	CNC TR02	CNC073	0.0	Thermal Charging	3.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Cokato	COK TR01	COK061	0.1	Thermal Charging	7.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Crystal Foods	CRF TR01	CRF061	0.5	Thermal Charging	8.9	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Crystal Foods	CRF TR01	CRF062	0.0	Thermal Charging	1.0	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Maple Grove - 1	Crooked Lake	CRL TR01	CRL027	0.7	Thermal Charging	4.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Crooked Lake	CRL TR02	CRL031	0.4	Thermal Charging	4.2	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Crooked Lake	CRL TR02	CRL033	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Crooked Lake	CRL TR01	CRL065	0.0	Thermal Charging	3.4	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Castle Rock	CSR TR01	CSR001	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Cannon Falls	CTF TR01	CTF021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Cannon Falls	CTF TR01	CTF022	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Credit River	CTR TR01	CTR021	0.4	Thermal Charging	3.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Credit River	CTR TR01	CTR022	0.0	Thermal Charging	5.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Credit River	CTR TR02	CTR031	0.1	Primary Under-Voltage	1.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Danube	DAN TR01	DAN021	0.0	Thermal Charging	0.8	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Dassel	DAS TR01	DAS061	0.1	Thermal Charging	9.0	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR01	DBL060	0.4	Thermal Charging	2.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR01	DBL061	0.0	Thermal Charging	1.8	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR01	DBL062	0.8	Thermal Charging	5.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR01	DBL063	0.4	Thermal Charging	3.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR01	DBL064	0.8	Thermal Charging	3.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR01	DBL065	0.5	Thermal Charging	1.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR01	DBL066	0.1	Thermal Charging	6.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR01	DBL067	0.1	Thermal Charging	0.5	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR01	DBL068	0.4	Thermal Charging	1.8	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR01	DBL069	0.0	Thermal Charging	2.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR02	DBL072	7.3	Thermal Charging	7.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR02	DBL073	0.4	Thermal Charging	4.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR02	DBL074	0.0	Thermal Charging	5.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR03	DBL081	0.6	Thermal Charging	6.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Daytons Bluff	DBL TR03	DBL082	0.0	Thermal Charging	7.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Douglas Coun	DGC TR03	DGC061	0.3	Thermal Charging	7.8	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Dahlgren	DHL TR01	DHL061	0.1	Thermal Charging	6.2	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Delano	DLO TR01	DLO021	0.1	Native Capacity Utilization	0.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Dundas	DND TR01	DND061	0.0	Thermal Charging	4.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Dundas	DND TR01	DND062	0.0	Thermal Charging	2.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Dundas	DND TR02	DND071	0.0	Thermal Charging	5.4	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Dundas	DND TR02	DND072	0.0	Thermal Charging	3.4	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Dodge Center	DOC TR02	DOC021	0.0	Thermal Charging	3.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Dodge Center	DOC TR03	DOC031	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Dodge Center	DOC TR01	DOC211	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Deephaven	DPN TR01	DPN061	0.1	Thermal Charging	6.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Native Loading Standard	Substation Transformer Forecasted Peak Load (kVA)	Feeder Forecasted Peak Load (kVA)	LTC or Regulator	Data Cutoff	Latest Quarterly Update	Notes
Minnetonka - 14	Deephaven	DPN TR01	DPN062	0.1	Thermal Charging	3.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Deephaven	DPN TR01	DPN063	0.6	Thermal Charging	7.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Deephaven	DPN TR02	DPN071	0.1	Thermal Charging	6.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Deephaven	DPN TR02	DPN072	0.7	Thermal Charging	3.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Deephaven	DPN TR02	DPN073	0.8	Primary Under-Voltage	5.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR01	EBL062	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR01	EBL064	0.0	Thermal Charging	0.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR01	EBL065	3.3	Thermal Charging	3.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR01	EBL066	1.9	Thermal Charging	4.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR01	EBL067	2.8	Thermal Charging	2.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR02	EBL071	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR02	EBL072	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR02	EBL073	2.1	Thermal Charging	6.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR02	EBL074	1.2	Thermal Charging	4.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR02	EBL075	2.0	Thermal Charging	2.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR02	EBL076	2.1	Thermal Charging	6.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR02	EBL077	1.9	Thermal Charging	1.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR03	EBL081	0.0	Thermal Charging	2.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR03	EBL082	1.4	Thermal Charging	3.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR03	EBL083	3.0	Thermal Charging	8.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR03	EBL084	0.7	Thermal Charging	3.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR03	EBL085	1.9	Thermal Charging	1.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR03	EBL086	1.2	Thermal Charging	1.2	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	East Blooming	EBL TR03	EBL087	5.2	Thermal Charging	5.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Elm Creek	ECK TR01	ECK061	0.8	Thermal Charging	3.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Elm Creek	ECK TR01	ECK062	1.3	Thermal Charging	3.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Elm Creek	ECK TR01	ECK063	0.7	Thermal Charging	3.3	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Elm Creek	ECK TR03	ECK081	1.0	Thermal Charging	11.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Elm Creek	ECK TR03	ECK082	1.0	Thermal Charging	7.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Elm Creek	ECK TR02	ECK321	0.5	Primary Under-Voltage	11.9	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Elm Creek	ECK TR02	ECK322	0.1	Thermal Charging	17.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Elm Creek	ECK TR04	ECK341	4.4	Thermal Charging	11.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR01	EDA061	0.5	Thermal Charging	5.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR01	EDA062	1.9	Thermal Charging	2.3	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR01	EDA065	0.1	Thermal Charging	3.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR01	EDA066	1.0	Thermal Charging	4.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR01	EDA067	0.0	Thermal Charging	0.7	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR01	EDA068	0.7	Thermal Charging	6.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR01	EDA069	0.1	Thermal Charging	5.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR02	EDA071	0.3	Thermal Charging	5.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR02	EDA072	0.1	Thermal Charging	3.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR02	EDA073	0.0	Thermal Charging	0.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR02	EDA074	0.2	Thermal Charging	4.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR02	EDA075	0.1	Thermal Charging	3.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR02	EDA076	3.3	Thermal Charging	7.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR02	EDA077	1.3	Thermal Charging	5.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR02	EDA078	0.0	Thermal Charging	5.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR02	EDA079	2.0	Thermal Charging	3.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR03	EDA081	0.0	Thermal Charging	5.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR03	EDA082	2.1	Thermal Charging	5.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR03	EDA083	1.3	Thermal Charging	3.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR03	EDA084	0.1	Thermal Charging	5.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR03	EDA085	0.8	Thermal Charging	8.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR03	EDA087	0.0	Thermal Charging	4.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR03	EDA088	0.5	Thermal Charging	2.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Edina	EDA TR03	EDA089	0.8	Thermal Charging	3.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR01	EDP062	1.0	Thermal Charging	5.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR01	EDP063	0.9	Thermal Charging	8.0	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR01	EDP071	1.7	Thermal Charging	5.3	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR01	EDP072	0.8	Thermal Charging	9.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR01	EDP073	0.6	Thermal Charging	1.3	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR03	EDP081	3.7	Thermal Charging	11.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR03	EDP082	0.9	Thermal Charging	6.4	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR03	EDP083	1.3	Thermal Charging	6.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR03	EDP084	0.1	Thermal Charging	10.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR03	EDP085	0.0	Thermal Charging	8.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR04	EDP091	0.7	Thermal Charging	4.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR04	EDP092	1.2	Thermal Charging	7.4	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR04	EDP093	0.0	Thermal Charging	7.4	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR04	EDP094	1.2	Thermal Charging	6.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Eden Prairie	EDP TR04	EDP095	0.5	Thermal Charging	6.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Eagle Lake	EGL TR01	EGL021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Eagle Lake	EGL TR01	EGL022	0.0	Thermal Charging	1.1	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Elko	EKO TR01	EKO021	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	0	7/31/2023	Nov-23	Substation owned by Foreign Utility. Contractual obligations may reduce capacity and increase interconnection timelines
Minneapolis - 1	Elliot Park	ELP TR01	ELP061	0.8	Thermal Charging	3.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR01	ELP062	0.5	Thermal Charging	2.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR01	ELP063	0.7	Thermal Charging	1.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR02	ELP071	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR02	ELP072	2.1	Thermal Charging	3.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR02	ELP073	2.5	Thermal Charging	2.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR02	ELP074	0.6	Thermal Charging	5.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR02	ELP075	0.8	Thermal Charging	6.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR03	ELP081	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR03	ELP082	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR03	ELP083	1.6	Thermal Charging	4.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR03	ELP084	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR03	ELP085	2.1	Native Capacity Utilization	2.1	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Elliot Park	ELP TR03	ELP86X	3.0	Thermal Charging	5.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Essig	ESG TR01	ESG001	0.2	Thermal Charging	0.2	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Southeast - 144	Eastwood	ESW TR01	ESW061	0.2	Thermal Charging	2.4	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Eastwood	ESW TR01	ESW062	0.0	Thermal Charging	2.0	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Eastwood	ESW TR01	ESW063	1.2	Thermal Charging	9.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Eastwood	ESW TR02	ESW071	0.0	Thermal Charging	4.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Eastwood	ESW TR02	ESW072	0.4	Thermal Charging	6.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Eastwood	ESW TR02	ESW073	0.0	Thermal Charging	7.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Eastwood	ESW TR03	ESW081	0.4	Thermal Charging	3.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Native Loading Standard	Substation Transformer Forecasted Peak Load (kVA)	Feeder Forecasted Peak Load (kVA)	LTC or Regulator	Data Cutoff	Latest Quarterly Update	Notes
Southeast - 144	Eastwood	ESW TR03	ESW082	0.9	Thermal Charging	4.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	East Winona	EWI TR01	EWI022	0.0	Thermal Charging	3.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Excelsior	EXC TR01	EXC061	0.6	Thermal Charging	4.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Excelsior	EXC TR01	EXC062	0.3	Primary Under-Voltage	2.4	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Faribault	FAB TR02	FAB061	0.0	Thermal Charging	3.0	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Faribault	FAB TR02	FAB063	0.0	Thermal Charging	0.8	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Faribault	FAB TR01	FAB071	0.0	Thermal Charging	4.5	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Faribault	FAB TR01	FAB073	0.1	Thermal Charging	4.7	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Fair Park	FAP TR01	FAP061	0.0	Thermal Charging	3.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Fair Park	FAP TR01	FAP062	0.0	Thermal Charging	6.3	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Fair Park	FAP TR02	FAP071	0.0	Thermal Charging	0.9	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Northwest - 154	Fiesta City	FIC TR01	FIC021	0.0	Thermal Charging	7.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Fiesta City	FIC TR01	FIC022	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Fiesta City	FIC TR02	FIC031	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Franklin	FRA TR07	FRA001	0.1	Thermal Charging	0.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Franklin	FRA TR04	FRA211	0.4	Thermal Charging	6.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Farmington	FRM TR01	FRM061	0.0	Thermal Charging	10.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Farmington	FRM TR01	FRM062	0.0	Thermal Charging	7.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Farmington	FRM TR02	FRM071	0.5	Thermal Charging	4.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Frontenac	FRO TR01	FRO021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	First Lake	FSL TR01	FSL311	0.0	Thermal Charging	14.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	First Lake	FSL TR01	FSL312	0.1	Thermal Charging	10.5	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Fifth Street	FST TR01	FST067	0.0	Thermal Charging	2.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Fifth Street	FST TR01	FST068	5.9	Native Capacity Utilization	5.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Fifth Street	FST TR02	FST077	7.4	Thermal Charging	7.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Fifth Street	FST TR02	FST078	0.3	Thermal Charging	7.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Fifth Street	FST TR03	FST085	9.1	Thermal Charging	9.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Fifth Street	FST TR03	FST086	7.8	Thermal Charging	7.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Fifth Street	FST TR04	FST087	3.0	Thermal Charging	6.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Fifth Street	FST TR04	FST088	7.9	Thermal Charging	7.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Gaylord	GAY TR01	GAY001	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Gaylord	GAY TR01	GAY002	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Gaylord	GAY TR01	GAY003	0.1	Thermal Charging	0.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Maple Grove - 1	Greenfield	GFD TR01	GFD021	0.4	Thermal Charging	7.9	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Maple Grove - 1	Greenfield	GFD TR01	GFD022	0.0	Thermal Charging	8.7	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Gibbon	GIB TR01	GIB021	0.1	Primary Under-Voltage	1.2	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Glenwood	GLD TR01	GLD021	0.0	Thermal Charging	0.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Glenwood	GLD TR02	GLD031	0.0	Thermal Charging	1.2	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Goose Lake	GLK TR01	GLK061	0.0	Thermal Charging	2.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Goose Lake	GLK TR01	GLK062	0.0	Thermal Charging	3.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Goose Lake	GLK TR01	GLK063	0.0	Thermal Charging	6.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Goose Lake	GLK TR01	GLK064	0.5	Thermal Charging	1.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Goose Lake	GLK TR01	GLK065	0.7	Thermal Charging	7.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Goose Lake	GLK TR02	GLK071	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Goose Lake	GLK TR02	GLK072	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Goose Lake	GLK TR02	GLK073	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Goose Lake	GLK TR02	GLK074	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Glen Lake	GNL TR01	GNL061	0.5	Thermal Charging	3.2	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Glen Lake	GNL TR01	GNL062	0.0	Thermal Charging	0.4	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Glen Lake	GNL TR01	GNL063	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Glen Lake	GNL TR02	GNL071	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Glen Lake	GNL TR02	GNL072	0.0	Thermal Charging	3.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Glen Lake	GNL TR02	GNL073	1.0	Thermal Charging	3.3	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minneapolis - 1	Gopher	GPH TR01	GPH061	0.3	Thermal Charging	2.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Gopher	GPH TR01	GPH062	0.1	Thermal Charging	1.7	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Gopher	GPH TR01	GPH068	6.2	Thermal Charging	7.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Gopher	GPH TR01	GPH069	4.7	Thermal Charging	4.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Gopher	GPH TR02	GPH073	0.7	Thermal Charging	6.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Gopher	GPH TR02	GPH074	10.0	Thermal Charging	11.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Gopher	GPH TR02	GPH075	9.2	Thermal Charging	9.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Gopher	GPH TR02	GPH079	13.5	Thermal Charging	15.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Granite City	GRC TR01	GRC062	0.1	Thermal Charging	3.3	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Granite City	GRC TR01	GRC063	0.0	Thermal Charging	1.8	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Granite City	GRC TR02	GRC073	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Granite City	GRC TR03	GRC311	0.1	Thermal Charging	18.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Granite City	GRC TR03	GRC312	0.2	Thermal Charging	15.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Granite City	GRC TR03	GRC313	0.3	Thermal Charging	24.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Green Isle	GRI TR01	GRI001	0.1	Thermal Charging	0.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Gleason Lake	GSL TR07	GSL061	0.4	Thermal Charging	4.0	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Gleason Lake	GSL TR07	GSL064	0.4	Thermal Charging	5.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Gleason Lake	GSL TR07	GSL065	0.3	Thermal Charging	2.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Gleason Lake	GSL TR08	GSL074	0.0	Thermal Charging	4.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Gleason Lake	GSL TR08	GSL075	0.6	Thermal Charging	3.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Gleason Lake	GSL TR08	GSL076	0.0	Thermal Charging	3.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Gleason Lake	GSL TR08	GSL079	0.4	Thermal Charging	4.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Gleason Lake	GSL TR04	GSL341	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Gleason Lake	GSL TR04	GSL342	0.0	Thermal Charging	2.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Goodview	GVW TR01	GVW021	0.0	Thermal Charging	1.0	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Goodview	GVW TR01	GVW022	0.0	Thermal Charging	2.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Goodview	GVW TR01	GVW023	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Goodview	GVW TR02	GVW031	0.0	Thermal Charging	4.2	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Goodview	GVW TR02	GVW032	0.0	Thermal Charging	2.8	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
South Dakota -	Hadley	HAD TR01	HAD021	0.4	Thermal Charging	3.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
South Dakota -	Hadley	HAD TR01	HAD022	0.0	Thermal Charging	2.5	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Hastings	HAS TR01	HAS021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Hastings	HAS TR01	HAS022	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Hastings	HAS TR01	HAS023	0.0	Thermal Charging	1.2	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Hastings	HAS TR02	HAS031	0.5	Thermal Charging	8.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Hastings	HAS TR02	HAS032	0.7	Thermal Charging	8.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Hastings	HAS TR02	HAS033	0.5	Thermal Charging	6.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Hector	HEC TR01	HEC001	0.1	Thermal Charging	1.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Henderson	HEN TR01	HEN021	0.1	Thermal Charging	1.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Maple Grove - 1	Hollydale	HOL TR01	HOL061	0.2	Thermal Charging	5.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Hollydale	HOL TR01	HOL062	0.0	Thermal Charging	4.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Hollydale	HOL TR02	HOL071	0.6	Primary Under-Voltage	7.0	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Hollydale	HOL TR02	HOL072	0.9	Primary Under-Voltage	6.3	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Native Loading Standard	Substation Transformer Forecasted Peak Load (kVA)	Feeder Forecasted Peak Load (kVA)	LTC or Regulator	Data Cutoff	Latest Quarterly Update	Notes
Maple Grove - 1	Hollydale	HOL TR02	HOL073	0.8	Thermal Charging	9.0	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Howard Lake	HOW TR01	HOW061	0.4	Thermal Charging	6.1	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Hassan	HSN TR01	HSN311	0.2	Thermal Charging	17.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Hassan	HSN TR01	HSN312	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Hassan	HSN TR02	HSN321	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Hassan	HSN TR02	HSN322	1.1	Thermal Charging	7.7	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Hugo	HUG TR01	HUG311	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Hugo	HUG TR01	HUG312	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Hugo	HUG TR02	HUG321	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Hugo	HUG TR02	HUG322	1.8	Thermal Charging	21.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Hiawatha Wes	HWW TR01	HWW061	0.2	Thermal Charging	7.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Hiawatha Wes	HWW TR01	HWW062	0.0	Thermal Charging	4.4	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Hiawatha Wes	HWW TR02	HWW071	0.4	Thermal Charging	4.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Hiawatha Wes	HWW TR02	HWW072	0.4	Thermal Charging	8.3	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Hiawatha Wes	HWW TR02	HWW073	0.1	Thermal Charging	4.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Hiawatha Wes	HWW TR02	HWW074	0.2	Thermal Charging	4.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Hiawatha Wes	HWW TR02	HWW075	0.4	Thermal Charging	4.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Hyland Lake	HYL TR01	HYL061	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Hyland Lake	HYL TR01	HYL062	0.1	Thermal Charging	3.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Hyland Lake	HYL TR01	HYL063	0.0	Thermal Charging	1.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Hyland Lake	HYL TR01	HYL064	0.0	Thermal Charging	0.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Hyland Lake	HYL TR01	HYL065	0.0	Thermal Charging	1.4	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Hyland Lake	HYL TR02	HYL071	0.0	Thermal Charging	7.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Hyland Lake	HYL TR02	HYL072	0.0	Thermal Charging	3.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Hyland Lake	HYL TR02	HYL073	0.5	Thermal Charging	1.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Hyland Lake	HYL TR02	HYL074	0.2	Thermal Charging	2.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Hyland Lake	HYL TR02	HYL075	0.6	Thermal Charging	4.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Indiana	IDA TR01	IDA061	0.9	Thermal Charging	5.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Indiana	IDA TR01	IDA062	0.4	Thermal Charging	2.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Indiana	IDA TR01	IDA063	0.0	Thermal Charging	0.6	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Indiana	IDA TR01	IDA064	0.2	Thermal Charging	2.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Indiana	IDA TR02	IDA071	1.2	Thermal Charging	2.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Indiana	IDA TR02	IDA072	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Indiana	IDA TR02	IDA073	0.1	Thermal Charging	2.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Indiana	IDA TR02	IDA074	0.0	Thermal Charging	3.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Jordan	JOR TR01	JOR021	0.0	Thermal Charging	3.3	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Jordan	JOR TR01	JOR022	0.1	Thermal Charging	2.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Kasson	KAN TR01	KAN022	0.0	Thermal Charging	4.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Kasson	KAN TR02	KAN031	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Kenyon	KEN TR01	KEN021	0.3	Primary Under-Voltage	3.1	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Southeast - 144	Kenyon	KEN TR01	KEN022	0.1	Thermal Charging	4.9	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Northwest - 154	Kimball	KIM TR01	KIM021	0.4	Thermal Charging	4.8	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Kegan Lake	KLK TR01	KLK061	0.2	Thermal Charging	3.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Kohlman Lake	KOL TR01	KOL061	0.0	Thermal Charging	1.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Kohlman Lake	KOL TR01	KOL062	0.0	Thermal Charging	2.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Kohlman Lake	KOL TR01	KOL063	0.3	Thermal Charging	5.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Kohlman Lake	KOL TR01	KOL064	3.1	Thermal Charging	3.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Kohlman Lake	KOL TR01	KOL065	0.4	Thermal Charging	0.4	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Kohlman Lake	KOL TR02	KOL071	0.7	Thermal Charging	7.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Kohlman Lake	KOL TR02	KOL073	0.3	Thermal Charging	5.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Kohlman Lake	KOL TR02	KOL074	0.0	Thermal Charging	5.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Lake Bavaria	LAB TR01	LAB311	0.2	Thermal Charging	21.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Lake Bavaria	LAB TR01	LAB312	0.0	Thermal Charging	21.4	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	La Crescent	LAC TR01	LAC062	0.0	Thermal Charging	0.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	La Crescent	LAC TR01	LAC063	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Lake Emily	LAE TR01	LAE061	0.1	Thermal Charging	5.3	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Lafayette	LAF TR01	LAF001	0.1	Thermal Charging	0.5	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Lake City	LAK TR02	LAK032	0.1	Primary Under-Voltage	0.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	Substation owned by Foreign Utility. Contractual obligations may reduce capacity and increase interconnection timelines
Northwest - 154	Lake Pulaski	LAP TR03	LAP311	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
South Dakota -	Lake Yankton	LAY TR03	LAY061	0.1	Thermal Charging	3.2	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Lawrence Cre	LCR TR01	LCR311	0.1	Thermal Charging	18.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR01	LEX061	0.2	Thermal Charging	3.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR01	LEX062	3.0	Thermal Charging	5.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR01	LEX063	0.7	Thermal Charging	3.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR01	LEX064	0.7	Thermal Charging	3.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR01	LEX065	0.6	Thermal Charging	4.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR02	LEX071	0.0	Thermal Charging	2.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR02	LEX072	3.1	Thermal Charging	7.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR02	LEX073	1.1	Thermal Charging	7.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR02	LEX074	0.3	Thermal Charging	2.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR02	LEX075	0.7	Thermal Charging	5.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR03	LEX331	0.1	Primary Under-Voltage	16.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR03	LEX332	0.0	Thermal Charging	7.5	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lexington	LEX TR03	LEX333	0.1	Primary Under-Voltage	7.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Lake Lillian	LIL TR01	LIL021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Lindstrom	LIN TR01	LIN022	0.4	Thermal Charging	5.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Lindstrom	LIN TR02	LIN031	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Long Lake	LLK TR01	LLK061	0.1	Thermal Charging	5.5	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Long Lake	LLK TR01	LLK063	0.2	Thermal Charging	4.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Long Lake	LLK TR02	LLK071	0.1	Thermal Charging	4.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Long Lake	LLK TR02	LLK072	0.2	Thermal Charging	4.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Linn Street	LNS TR01	LNS021	0.3	Thermal Charging	0.9	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Linn Street	LNS TR01	LNS022	1.1	Thermal Charging	6.8	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Linn Street	LNS TR02	LNS032	0.8	Thermal Charging	1.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Linn Street	LNS TR02	LNS033	0.7	Primary Under-Voltage	1.0	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Lone Oak	LOK TR01	LOK061	0.0	Thermal Charging	4.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Lone Oak	LOK TR01	LOK062	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Lone Oak	LOK TR01	LOK063	3.7	Thermal Charging	7.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Lone Oak	LOK TR02	LOK081	0.4	Thermal Charging	5.2	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Lone Oak	LOK TR02	LOK082	0.7	Thermal Charging	7.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Lone Oak	LOK TR02	LOK083	1.3	Thermal Charging	3.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Lone Oak	LOK TR02	LOK091	1.1	Thermal Charging	4.2	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Lone Oak	LOK TR02	LOK092	1.1	Thermal Charging	2.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Lone Oak	LOK TR02	LOK093	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Lowry	LOW TR01	LOW021	0.0	Thermal Charging	7.9	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Lester Prairie	LSP TR01	LSP021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Native Loading Standard	Substation Transformer Forecasted Peak Load (kVA)	Feeder Forecasted Peak Load (kVA)	LTC or Regulator	Data Cutoff	Latest Quarterly Update	Notes
Minnetonka - 14	Lester Prairie	LSP TR01	LSP022	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Maple Lake	MAP TR01	MAP061	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Mazeppa	MAZ TR01	MAZ021	0.7	Thermal Charging	3.3	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Medford Junct	MDF TR01	MDF021	0.0	Thermal Charging	4.4	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minneapolis - 14	Midtown	MDT TR01	MDT061	0.0	Thermal Charging	5.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Midtown	MDT TR01	MDT062	0.1	Thermal Charging	1.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Midtown	MDT TR01	MDT067	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Midtown	MDT TR02	MDT071	0.1	Thermal Charging	1.5	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Midtown	MDT TR02	MDT073	0.5	Thermal Charging	5.4	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Midtown	MDT TR02	MDT074	0.0	Thermal Charging	5.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Midtown	MDT TR02	MDT077	0.0	Thermal Charging	6.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Meire Grove	MEI TR01	MEI021	0.2	Thermal Charging	1.2	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Meeker REA	MEK TR01	MEK021	0.4	Primary Under-Voltage	5.4	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	Substation owned by Foreign Utility. Contractual obligations may reduce capacity and increase interconnection timelines
Minneapolis - 14	Medicine Lake	MEL TR01	MEL061	0.1	Thermal Charging	1.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR01	MEL062	0.6	Thermal Charging	1.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR01	MEL063	1.0	Thermal Charging	6.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR01	MEL064	0.0	Thermal Charging	4.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR01	MEL065	0.4	Thermal Charging	4.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR01	MEL066	0.3	Thermal Charging	4.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR01	MEL067	0.4	Thermal Charging	1.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR01	MEL068	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR01	MEL069	0.0	Thermal Charging	4.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR02	MEL071	0.0	Thermal Charging	6.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR02	MEL072	0.4	Thermal Charging	1.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR02	MEL073	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR02	MEL074	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR02	MEL075	0.0	Thermal Charging	0.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR02	MEL076	1.2	Thermal Charging	2.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR02	MEL077	0.0	Thermal Charging	1.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR02	MEL078	0.2	Thermal Charging	1.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR02	MEL079	3.4	Thermal Charging	6.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR03	MEL081	0.0	Thermal Charging	0.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR03	MEL082	0.2	Thermal Charging	1.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR03	MEL083	0.6	Thermal Charging	2.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR03	MEL087	0.5	Thermal Charging	4.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR03	MEL088	1.3	Thermal Charging	3.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Medicine Lake	MEL TR03	MEL089	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Morgan	MGN TR01	MGN211	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Mayhew Lake	MHW TR01	MHW311	0.0	Thermal Charging	12.5	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Mayhew Lake	MHW TR01	MHW312	0.0	Thermal Charging	21.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Mound	MND TR01	MND061	0.4	Thermal Charging	8.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Mound	MND TR01	MND062	0.0	Thermal Charging	0.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Mound	MND TR01	MND063	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Mound	MND TR02	MND071	0.7	Thermal Charging	5.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Mound	MND TR02	MND072	0.3	Thermal Charging	3.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Minnesota Lak	MNL TR01	MNL001	0.0	Thermal Charging	0.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Northwest - 154	Minnesota Vall	MNV TR07	MNV211	0.1	Thermal Charging	6.8	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR01	MOL061	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR01	MOL062	0.0	Thermal Charging	3.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR01	MOL063	0.1	Thermal Charging	3.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR01	MOL064	0.2	Thermal Charging	0.2	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR01	MOL065	0.0	Thermal Charging	2.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR01	MOL066	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR01	MOL067	0.1	Thermal Charging	8.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR01	MOL068	0.2	Thermal Charging	2.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR01	MOL069	0.0	Thermal Charging	9.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR02	MOL071	0.6	Thermal Charging	2.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR02	MOL072	0.8	Thermal Charging	2.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR02	MOL073	0.0	Thermal Charging	2.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR02	MOL074	0.2	Thermal Charging	6.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR02	MOL076	0.0	Thermal Charging	0.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR02	MOL077	0.5	Thermal Charging	5.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR02	MOL078	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Moore Lake	MOL TR02	MOL079	0.0	Thermal Charging	6.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR01	MPK061	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR01	MPK062	0.7	Thermal Charging	3.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR01	MPK063	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR01	MPK064	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR01	MPK065	0.3	Thermal Charging	3.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR01	MPK066	1.2	Thermal Charging	4.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR01	MPK067	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR01	MPK068	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR02	MPK071	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR02	MPK072	1.8	Thermal Charging	1.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR02	MPK073	0.1	Thermal Charging	4.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR02	MPK074	0.4	Thermal Charging	3.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR02	MPK075	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR02	MPK076	1.0	Thermal Charging	3.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR02	MPK077	0.2	Thermal Charging	1.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR02	MPK078	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR03	MPK081	2.0	Thermal Charging	2.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR03	MPK082	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR03	MPK083	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR03	MPK084	0.2	Thermal Charging	2.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR03	MPK085	0.2	Thermal Charging	0.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR03	MPK086	0.7	Thermal Charging	1.5	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Merriam Park	MPK TR03	MPK087	0.0	Thermal Charging	0.2	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Mapleton	MPN TR01	MPN081	0.1	Thermal Charging	1.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Meriden	MRN TR01	MRN021	0.1	Primary Under-Voltage	2.5	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minneapolis - 14	Main Street	MST TR01	MST063	0.0	Thermal Charging	8.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Main Street	MST TR01	MST064	4.2	Thermal Charging	9.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Main Street	MST TR01	MST066	0.2	Thermal Charging	3.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Main Street	MST TR01	MST068	0.2	Thermal Charging	4.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Main Street	MST TR01	MST069	0.0	Thermal Charging	2.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Main Street	MST TR02	MST070	0.0	Thermal Charging	0.1	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Main Street	MST TR02	MST071	0.4	Thermal Charging	0.7	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Native Loading Standard	Substation Transformer Forecasted Peak Load (kVA)	Feeder Forecasted Peak Load (kVA)	LTC or Regulator	Data Cutoff	Latest Quarterly Update	Notes
Minneapolis - 1	Main Street	MST TR02	MST074	0.8	Thermal Charging	7.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Main Street	MST TR02	MST075	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Main Street	MST TR02	MST076	0.3	Thermal Charging	6.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Main Street	MST TR01	MST080	0.1	Thermal Charging	4.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Montrose	MTR TR01	MTR021	0.7	Thermal Charging	5.0	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Montevideo	MTV TR01	MTV001	0.0	Thermal Charging	1.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Montevideo	MTV TR01	MTV002	0.2	Thermal Charging	1.3	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Montevideo	MTV TR01	MTV003	0.2	Thermal Charging	1.1	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Montevideo	MTV TR02	MTV021	0.0	Thermal Charging	8.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Montevideo	MTV TR02	MTV022	0.0	Thermal Charging	9.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Morristown	MTW TR01	MTW021	0.2	Thermal Charging	2.0	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Maynard	MYN TR01	MYN021	0.1	Primary Under-Voltage	1.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Nerstrand	NER TR01	NER021	0.1	Primary Under-Voltage	3.9	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Edina - 143	Nine Mile Cree	NMC TR01	NMC063	0.0	Thermal Charging	0.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Nine Mile Cree	NMC TR01	NMC064	3.1	Thermal Charging	3.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Nine Mile Cree	NMC TR02	NMC082	0.0	Thermal Charging	0.8	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Nine Mile Cree	NMC TR02	NMC083	0.0	Thermal Charging	0.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Nine Mile Cree	NMC TR02	NMC092	0.5	Thermal Charging	1.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Nine Mile Cree	NMC TR02	NMC093	2.8	Thermal Charging	4.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Northfield	NOF TR01	NOF061	0.0	Thermal Charging	2.4	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Northfield	NOF TR01	NOF062	0.1	Thermal Charging	3.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Northfield	NOF TR02	NOF071	0.0	Thermal Charging	3.2	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Northfield	NOF TR02	NOF072	0.0	Thermal Charging	1.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Northfield	NOF TR02	NOF073	1.0	Thermal Charging	7.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oakdale	OAD TR01	OAD061	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oakdale	OAD TR01	OAD062	0.2	Thermal Charging	5.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oakdale	OAD TR01	OAD063	0.7	Thermal Charging	4.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oakdale	OAD TR01	OAD064	0.3	Thermal Charging	5.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oakdale	OAD TR01	OAD065	0.0	Thermal Charging	2.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oakdale	OAD TR02	OAD071	0.0	Thermal Charging	1.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oakdale	OAD TR02	OAD072	0.0	Thermal Charging	0.9	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oakdale	OAD TR02	OAD073	0.7	Thermal Charging	1.4	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oakdale	OAD TR02	OAD074	0.0	Thermal Charging	5.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oakdale	OAD TR02	OAD075	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oak Park	OPK TR07	OPK065	0.0	Thermal Charging	3.4	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oak Park	OPK TR07	OPK066	9.2	Thermal Charging	9.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oak Park	OPK TR07	OPK067	0.3	Thermal Charging	1.0	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oak Park	OPK TR08	OPK071	1.0	Thermal Charging	6.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oak Park	OPK TR08	OPK072	0.7	Thermal Charging	8.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oak Park	OPK TR08	OPK073	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oak Park	OPK TR08	OPK074	6.6	Native Capacity Utilization	6.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oak Park	OPK TR08	OPK075	3.7	Thermal Charging	3.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Oak Park	OPK TR08	OPK077	0.4	Thermal Charging	1.7	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Orono	ORO TR01	ORO061	0.1	Thermal Charging	4.4	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Orono	ORO TR01	ORO062	0.0	Thermal Charging	1.7	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR01	OSS061	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR01	OSS062	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR01	OSS063	0.6	Thermal Charging	1.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR01	OSS064	0.0	Thermal Charging	2.4	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR01	OSS065	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR01	OSS066	0.0	Thermal Charging	0.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR02	OSS071	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR02	OSS072	0.0	Thermal Charging	3.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR02	OSS073	0.0	Thermal Charging	0.8	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR02	OSS074	0.9	Thermal Charging	5.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR02	OSS075	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR02	OSS076	1.0	Thermal Charging	2.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Osseo	OSS TR02	OSS077	0.0	Thermal Charging	4.2	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Paynesville Tra	PAT TR04	PAT312	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Paynesville Tra	PAT TR03	PAT313	0.1	Thermal Charging	11.7	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Paynesville Tra	PAT TR03	PAT314	0.4	Thermal Charging	19.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Pine Bend	PBE TR03	PBE061	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Pine Island	PIL TR01	PIL021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	Fdr Reg - Sub	7/31/2023	Nov-23	
Southeast - 144	Pine Island	PIL TR02	PIL022	0.2	Thermal Charging	1.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	Fdr Reg - Sub	7/31/2023	Nov-23	
South Dakota -	Pipestone	PIP TR01	PIP061	0.4	Thermal Charging	6.0	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
South Dakota -	Pipestone	PIP TR01	PIP062	0.5	Thermal Charging	7.7	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
South Dakota -	Pipestone	PIP TR03	PIP090	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR01	PKL061	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR01	PKL062	0.0	Thermal Charging	5.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR01	PKL063	1.3	Thermal Charging	4.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR01	PKL064	0.3	Thermal Charging	0.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR01	PKL065	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR01	PKL066	0.0	Thermal Charging	4.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR02	PKL071	0.0	Thermal Charging	0.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR02	PKL072	0.0	Thermal Charging	6.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR02	PKL073	0.5	Thermal Charging	5.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR02	PKL074	0.0	Thermal Charging	7.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR02	PKL075	0.7	Thermal Charging	8.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR03	PKL081	0.0	Thermal Charging	9.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR03	PKL082	0.3	Thermal Charging	1.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR03	PKL083	0.9	Thermal Charging	1.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR03	PKL084	1.3	Thermal Charging	10.3	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Parkers Lake	PKL TR03	PKL085	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Plato	PLA TR01	PLA022	0.3	Thermal Charging	9.1	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Plato	PLA TR01	PLA023	3.9	Thermal Charging	3.9	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
St Paul - 151	Prior	PRR TR01	PRR061	0.1	Thermal Charging	4.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Prior	PRR TR01	PRR062	0.0	Thermal Charging	6.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Prior	PRR TR01	PRR063	0.0	Thermal Charging	6.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Ramsey	RAM TR01	RAM061	0.4	Thermal Charging	3.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Ramsey	RAM TR01	RAM062	0.6	Thermal Charging	2.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Ramsey	RAM TR01	RAM063	0.4	Thermal Charging	3.2	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Ramsey	RAM TR01	RAM064	0.0	Thermal Charging	4.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Ramsey	RAM TR02	RAM071	0.3	Thermal Charging	3.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Ramsey	RAM TR02	RAM072	0.6	Thermal Charging	2.3	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Ramsey	RAM TR02	RAM073	0.0	Thermal Charging	0.6	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
White Bear Lak	Ramsey	RAM TR02	RAM077	0.2	Thermal Charging	2.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Native Loading Standard	Substation Transformer Forecasted Peak Load (kVA)	Feeder Forecasted Peak Load (kVA)	LTC or Regulator	Data Cutoff	Latest Quarterly Update	Notes
Southeast - 144	Rapidan	RAP TR01	RAP081	0.2	Thermal Charging	3.6	Thermal Charging	Compliant	[redacted]	[redacted]	Fdr Reg - Sub	7/31/2023	Nov-23	
Northwest - 154	Richmond	RCH TR01	RCH061	1.0	Thermal Charging	1.4	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
North Dakota -	Red River	RED TR02	RED091	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Red Wing	REW TR01	REW021	0.1	Thermal Charging	2.3	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Red Wing	REW TR01	REW022	0.7	Thermal Charging	1.9	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Red Wing	REW TR01	REW023	0.1	Thermal Charging	0.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Red Wing	REW TR02	REW031	0.5	Thermal Charging	2.4	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Red Wing	REW TR02	REW032	0.7	Thermal Charging	5.2	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Red Wing	REW TR02	REW033	0.7	Thermal Charging	6.1	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minneapolis - 1	Riverside	RIV TR01	RIV061	0.7	Thermal Charging	0.7	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Riverside	RIV TR01	RIV062	0.0	Thermal Charging	0.7	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Riverside	RIV TR01	RIV063	0.0	Thermal Charging	5.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Riverside	RIV TR01	RIV064	0.0	Thermal Charging	0.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Riverside	RIV TR01	RIV065	3.4	Thermal Charging	3.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Riverside	RIV TR01	RIV066	0.9	Thermal Charging	0.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Riverside	RIV TR02	RIV071	0.0	Thermal Charging	0.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Riverside	RIV TR02	RIV072	3.5	Thermal Charging	4.0	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Riverside	RIV TR02	RIV073	0.4	Thermal Charging	1.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Riverside	RIV TR02	RIV074	0.0	Thermal Charging	5.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Riverside	RIV TR02	RIV075	0.0	Thermal Charging	6.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	Riverside	RIV TR02	RIV076	0.2	Thermal Charging	1.4	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rogers Lake	RLK TR01	RLK064	1.0	Thermal Charging	7.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rogers Lake	RLK TR01	RLK065	0.0	Thermal Charging	5.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rogers Lake	RLK TR01	RLK066	0.5	Thermal Charging	3.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rogers Lake	RLK TR01	RLK068	1.7	Thermal Charging	6.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rogers Lake	RLK TR01	RLK069	0.4	Thermal Charging	5.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rogers Lake	RLK TR02	RLK071	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rogers Lake	RLK TR02	RLK072	0.0	Thermal Charging	6.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rogers Lake	RLK TR02	RLK073	0.1	Thermal Charging	3.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rogers Lake	RLK TR02	RLK079	0.6	Thermal Charging	4.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rosemount	RMT TR01	RMT311	0.0	Thermal Charging	16.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rosemount	RMT TR01	RMT321	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Renville	RNV TR01	RNV021	0.6	Thermal Charging	8.7	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
South Dakota -	Rock River	ROC TR01	ROC090	0.1	Primary Under-Voltage	7.4	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
South Dakota -	Rock River	ROC TR01	ROC091	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
St Paul - 151	Rose Place	RPL TR01	RPL061	0.5	Thermal Charging	4.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Rose Place	RPL TR01	RPL062	0.0	Thermal Charging	7.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Rose Place	RPL TR01	RPL063	0.6	Thermal Charging	5.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Rose Place	RPL TR01	RPL064	0.6	Thermal Charging	4.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Rose Place	RPL TR02	RPL071	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Rose Place	RPL TR02	RPL072	0.3	Thermal Charging	4.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Rose Place	RPL TR02	RPL073	0.7	Thermal Charging	7.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Rose Place	RPL TR02	RPL074	0.3	Thermal Charging	3.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Rose Place	RPL TR02	RPL075	0.3	Thermal Charging	8.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Raptor	RPO TR01	RPO311	0.0	Thermal Charging	14.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Raptor	RPO TR01	RPO312	2.1	Thermal Charging	21.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Red Rock	RRK TR01	RRK061	5.1	Native Capacity Utilization	5.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Red Rock	RRK TR01	RRK062	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Red Rock	RRK TR01	RRK063	0.1	Thermal Charging	6.8	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Red Rock	RRK TR01	RRK064	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Red Rock	RRK TR02	RRK071	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Red Rock	RRK TR02	RRK072	0.0	Thermal Charging	3.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Red Rock	RRK TR03	RRK081	0.9	Thermal Charging	0.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Red Rock	RRK TR03	RRK082	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Red Rock	RRK TR03	RRK083	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Rich Spring	RSP TR01	RSP061	0.1	Thermal Charging	4.3	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Rich Valley	RVA TR01	RVA061	0.1	Primary Under-Voltage	4.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rich Valley	RVA TR01	RVA062	0.1	Thermal Charging	4.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Rich Valley	RVA TR01	RVA063	13.5	Thermal Charging	15.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Riverwood	RWD TR01	RWD061	0.4	Thermal Charging	8.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Riverwood	RWD TR01	RWD062	0.3	Thermal Charging	4.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Riverwood	RWD TR01	RWD063	0.7	Thermal Charging	7.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Riverwood	RWD TR02	RWD081	1.2	Thermal Charging	8.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Riverwood	RWD TR02	RWD082	0.3	Thermal Charging	8.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Sauk River	SAK TR01	SAK311	0.1	Thermal Charging	18.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Sauk River	SAK TR01	SAK312	0.2	Regulator Deviation	18.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Sauk River	SAK TR02	SAK321	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	0	7/31/2023	Nov-23	
Edina - 143	Savage	SAV TR01	SAV063	0.6	Thermal Charging	3.9	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Edina - 143	Savage	SAV TR01	SAV067	0.1	Thermal Charging	3.7	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Edina - 143	Savage	SAV TR01	SAV069	0.2	Thermal Charging	2.5	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Edina - 143	Savage	SAV TR02	SAV071	0.1	Thermal Charging	1.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Savage	SAV TR02	SAV072	0.0	Thermal Charging	8.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Savage	SAV TR02	SAV073	0.3	Thermal Charging	6.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Scandia	SCA TR01	SCA021	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Sacred Heart	SCH TR01	SCH001	0.3	Thermal Charging	0.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Sacred Heart	SCH TR01	SCH211	0.1	Primary Under-Voltage	2.0	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	St Cloud	SCL TR01	SCL311	0.1	Primary Under-Voltage	1.7	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	St Cloud	SCL TR01	SCL312	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	St Cloud	SCL TR01	SCL313	0.0	Thermal Charging	16.7	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	St Cloud	SCL TR02	SCL322	0.1	Thermal Charging	12.4	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	St Cloud	SCL TR02	SCL323	0.2	Thermal Charging	7.5	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Salida Crossin	SDX TR02	SDX311	0.1	Thermal Charging	25.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Salida Crossin	SDX TR02	SDX312	0.1	Thermal Charging	24.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Salida Crossin	SDX TR02	SDX313	16.7	Thermal Charging	16.7	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Sedan	SED TR01	SED061	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
St Paul - 151	Shepard	SHP TR01	SHP061	0.6	Thermal Charging	4.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Shepard	SHP TR01	SHP062	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Shepard	SHP TR01	SHP063	0.8	Thermal Charging	3.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Shepard	SHP TR02	SHP071	0.1	Thermal Charging	1.9	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Shepard	SHP TR02	SHP072	0.2	Thermal Charging	2.1	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Sibley Park	SIP TR01	SIP061	0.0	Thermal Charging	3.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Sibley Park	SIP TR01	SIP062	0.0	Thermal Charging	2.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Sibley Park	SIP TR01	SIP063	0.4	Thermal Charging	6.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Sibley Park	SIP TR02	SIP071	0.0	Thermal Charging	5.0	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Sibley Park	SIP TR02	SIP072	0.0	Thermal Charging	6.0	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Sibley Park	SIP TR02	SIP073	0.0	Thermal Charging	6.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Native Loading Standard	Substation Transformer Forecasted Peak Load (kVA)	Feeder Forecasted Peak Load (kVA)	LTC or Regulator	Data Cutoff	Latest Quarterly Update	Notes
Northwest - 154	St Johns	SJO TR01	SJO001	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR04	SLP071	0.2	Thermal Charging	1.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR04	SLP072	0.2	Thermal Charging	1.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR04	SLP073	0.1	Thermal Charging	1.7	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR04	SLP074	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR04	SLP075	0.4	Thermal Charging	2.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR04	SLP076	0.1	Thermal Charging	1.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR04	SLP077	0.4	Thermal Charging	4.0	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR05	SLP081	0.6	Thermal Charging	3.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR05	SLP082	0.0	Thermal Charging	3.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR05	SLP083	0.7	Thermal Charging	2.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR05	SLP084	0.0	Thermal Charging	0.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR05	SLP085	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR05	SLP086	0.5	Thermal Charging	2.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR05	SLP087	0.3	Thermal Charging	3.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR06	SLP091	0.4	Thermal Charging	5.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR06	SLP092	0.0	Thermal Charging	0.5	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR06	SLP093	0.1	Primary Under-Voltage	3.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR06	SLP094	0.8	Thermal Charging	5.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR06	SLP095	1.3	Thermal Charging	4.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR06	SLP096	0.5	Thermal Charging	0.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR06	SLP097	0.0	Thermal Charging	1.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR02	SLP321	0.0	Thermal Charging	16.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	St Louis Park	SLP TR02	SLP322	0.0	Thermal Charging	14.2	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
South Dakota -	Slayton West	SLW TR01	SLW061	0.5	Thermal Charging	6.0	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
South Dakota -	Slayton West	SLW TR01	SLW062	0.6	Thermal Charging	6.5	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Southeast - 144	Summit Avenu	SMT TR01	SMT061	0.3	Thermal Charging	3.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Summit Avenu	SMT TR01	SMT062	0.1	Thermal Charging	5.2	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Summit Avenu	SMT TR01	SMT063	0.0	Thermal Charging	7.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Summit Avenu	SMT TR01	SMT071	0.0	Thermal Charging	2.1	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Summit Avenu	SMT TR01	SMT072	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Summit Avenu	SMT TR02	SMT081	0.0	Thermal Charging	4.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Summit Avenu	SMT TR02	SMT082	0.0	Thermal Charging	2.6	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Summit Avenu	SMT TR02	SMT091	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Summit Avenu	SMT TR02	SMT092	0.3	Thermal Charging	10.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	South Haven	SOH TR01	SOH001	0.1	Thermal Charging	0.2	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR01	SOU061	0.5	Thermal Charging	5.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR01	SOU063	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR01	SOU064	0.0	Thermal Charging	1.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR01	SOU065	0.0	Thermal Charging	4.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR01	SOU066	0.9	Thermal Charging	4.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR01	SOU069	0.1	Thermal Charging	7.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR02	SOU072	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR02	SOU073	0.6	Thermal Charging	6.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR02	SOU075	0.0	Thermal Charging	2.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR02	SOU076	1.1	Thermal Charging	4.4	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR02	SOU077	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR02	SOU078	0.4	Thermal Charging	7.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR02	SOU079	0.0	Thermal Charging	0.9	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR03	SOU081	0.0	Thermal Charging	4.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR03	SOU082	0.6	Thermal Charging	5.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR03	SOU083	0.0	Thermal Charging	5.2	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR03	SOU084	0.7	Thermal Charging	8.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR03	SOU085	0.0	Thermal Charging	4.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR03	SOU086	0.0	Thermal Charging	3.0	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR03	SOU087	0.0	Thermal Charging	2.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Southtown	SOU TR03	SOU088	0.1	Thermal Charging	8.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
South Dakota -	Southridge	SRD TR01	SRD211	0.1	Thermal Charging	2.6	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	St Joseph	STO TR01	STO001	1.1	Thermal Charging	1.1	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	St Joseph	STO TR01	STO002	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Stewart	STW TR01	STW021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Stockyards	STY TR01	STY061	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Stockyards	STY TR01	STY062	0.1	Thermal Charging	0.4	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Stockyards	STY TR01	STY063	0.4	Thermal Charging	1.5	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Stockyards	STY TR01	STY065	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Stockyards	STY TR02	STY071	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Stockyards	STY TR02	STY072	0.0	Thermal Charging	2.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Stockyards	STY TR02	STY073	0.2	Thermal Charging	5.0	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Stockyards	STY TR02	STY075	0.3	Primary Under-Voltage	5.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Swan Lake	SWN TR01	SWN021	0.3	Thermal Charging	2.1	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Swan Lake	SWN TR01	SWN022	0.2	Primary Under-Voltage	2.9	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR01	TER061	0.1	Thermal Charging	2.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR01	TER062	0.2	Thermal Charging	1.7	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR01	TER063	0.0	Thermal Charging	0.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR01	TER064	0.5	Thermal Charging	4.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR01	TER065	0.2	Thermal Charging	4.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR01	TER066	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR02	TER071	0.1	Thermal Charging	2.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR02	TER072	2.9	Thermal Charging	3.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR02	TER073	0.0	Thermal Charging	3.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR02	TER074	5.9	Thermal Charging	5.9	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR02	TER075	0.1	Thermal Charging	7.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR02	TER076	0.0	Thermal Charging	10.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR03	TER081	0.6	Thermal Charging	2.3	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR03	TER082	0.0	Thermal Charging	2.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR03	TER083	0.3	Thermal Charging	2.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR03	TER084	8.1	Thermal Charging	8.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR03	TER085	0.7	Thermal Charging	4.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 14	Terminal	TER TR03	TER086	3.4	Thermal Charging	3.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR01	TLK023	15.0	Primary Under-Voltage	15.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR02	TLK032	15.0	Primary Under-Voltage	15.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR02	TLK034	15.0	Primary Under-Voltage	15.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR01	TLK061	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR01	TLK062	0.0	Thermal Charging	3.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR01	TLK064	0.5	Thermal Charging	2.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR01	TLK065	10.4	Thermal Charging	15.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Native Loading Standard	Substation Transformer Forecasted Peak Load (kVA)	Feeder Forecasted Peak Load (kVA)	LTC or Regulator	Data Cutoff	Latest Quarterly Update	Notes
White Bear Lak	Tanners Lake	TLK TR01	TLK066	0.0	Thermal Charging	5.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR01	TLK067	0.3	Thermal Charging	5.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR02	TLK071	0.2	Thermal Charging	5.2	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR02	TLK073	0.7	Thermal Charging	4.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR02	TLK075	0.2	Thermal Charging	4.0	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR02	TLK076	7.4	Native Capacity Utilization	7.4	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Tanners Lake	TLK TR02	TLK077	0.0	Thermal Charging	3.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
South Dakota -	Tracy	TRA TR01	TRA001	0.1	Thermal Charging	1.2	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
South Dakota -	Tracy	TRA TR01	TRA002	0.4	Thermal Charging	1.2	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
South Dakota -	Tracy Switchin	TSS TR01	TSS061	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR01	TWL061	0.0	Thermal Charging	1.5	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR01	TWL062	0.2	Thermal Charging	4.3	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR01	TWL063	0.8	Thermal Charging	1.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR01	TWL064	0.0	Thermal Charging	5.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR01	TWL065	0.0	Thermal Charging	0.3	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR01	TWL066	0.2	Thermal Charging	1.7	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR01	TWL067	0.0	Thermal Charging	3.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR01	TWL068	0.0	Thermal Charging	0.6	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR01	TWL069	0.5	Thermal Charging	1.5	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR02	TWL071	0.0	Thermal Charging	4.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR02	TWL072	0.0	Thermal Charging	2.6	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR02	TWL073	0.0	Thermal Charging	4.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR02	TWL074	0.5	Thermal Charging	1.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR02	TWL075	0.5	Thermal Charging	7.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR02	TWL076	0.1	Thermal Charging	4.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR02	TWL077	0.8	Thermal Charging	8.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR02	TWL078	0.4	Thermal Charging	0.9	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR02	TWL079	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR03	TWL081	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR03	TWL082	0.0	Thermal Charging	1.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR03	TWL083	0.0	Thermal Charging	1.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	Twin Lakes	TWL TR03	TWL089	0.3	Thermal Charging	3.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR01	UPP061	0.0	Thermal Charging	3.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR01	UPP062	0.0	Thermal Charging	0.8	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR01	UPP063	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR01	UPP064	0.0	Thermal Charging	1.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR01	UPP065	1.1	Thermal Charging	1.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR01	UPP066	0.3	Thermal Charging	3.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR01	UPP067	1.0	Thermal Charging	6.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR01	UPP068	0.7	Thermal Charging	6.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR01	UPP069	6.8	Native Capacity Utilization	6.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR03	UPP081	0.0	Thermal Charging	1.5	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR03	UPP082	0.0	Thermal Charging	0.7	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR03	UPP083	0.3	Thermal Charging	5.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR03	UPP084	0.0	Thermal Charging	0.4	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR03	UPP085	0.0	Thermal Charging	1.8	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR03	UPP086	0.0	Thermal Charging	2.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR03	UPP088	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Upper Levee	UPP TR03	UPP089	0.0	Thermal Charging	3.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Veseli	VES TR01	VES021	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Villard	VIL TR01	VIL021	0.9	Thermal Charging	2.8	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Edina - 143	Viking	VKG TR01	VKG061	0.0	Thermal Charging	6.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Viking	VKG TR01	VKG065	0.0	Thermal Charging	6.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Viking	VKG TR01	VKG071	1.2	Thermal Charging	9.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Viking	VKG TR01	VKG072	0.1	Thermal Charging	4.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Vermillion Rive	VMR TR03	VMR061	0.8	Thermal Charging	9.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Vermillion Rive	VMR TR03	VMR062	1.3	Thermal Charging	7.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Vermillion Rive	VMR TR03	VMR063	1.3	Thermal Charging	11.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Wabasha	WAB TR01	WAB021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Wabasha	WAB TR02	WAB031	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Wakefield	WAK TR02	WAK321	0.0	Thermal Charging	13.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Waseca	WAS TR02	WAS081	0.0	Thermal Charging	6.2	Thermal Charging	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Waseca	WAS TR04	WAS091	1.1	Thermal Charging	11.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Waseca	WAS TR04	WAS092	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Waseca	WAS TR03	WAS231	5.7	Native Capacity Utilization	5.7	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Waterville	WAT TR03	WAT021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Waterville	WAT TR01	WAT081	0.0	Thermal Charging	3.1	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Waterville	WAT TR02	WAT221	0.0	Thermal Charging	11.7	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Waverly	WAV TR01	WAV021	0.3	Thermal Charging	0.7	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	Williams Broth	WBP TR03	WBP061	1.3	Thermal Charging	8.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Williams Broth	WBP TR03	WBP062	2.8	Thermal Charging	8.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	West Coon Ra	WCR TR03	WCR061	0.2	Thermal Charging	8.3	Thermal Charging	Compliant	[redacted]	[redacted]	0	7/31/2023	Nov-23	
Maple Grove - 1	West Coon Ra	WCR TR03	WCR062	0.1	Thermal Charging	4.4	Thermal Charging	Compliant	[redacted]	[redacted]	0	7/31/2023	Nov-23	
Maple Grove - 1	West Coon Ra	WCR TR03	WCR063	0.2	Thermal Charging	3.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	0	7/31/2023	Nov-23	
Maple Grove - 1	West Coon Ra	WCR TR01	WCR311	0.0	Thermal Charging	9.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	West Coon Ra	WCR TR02	WCR321	0.0	Thermal Charging	12.0	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Maple Grove - 1	West Coon Ra	WCR TR02	WCR322	1.1	Primary Under-Voltage	13.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Waconia	WCS TR01	WCS062	0.5	Thermal Charging	3.3	Native Capacity Utilization	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Minnetonka - 14	Waconia	WCS TR01	WCS064	0.7	Thermal Charging	9.0	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Minnetonka - 14	Waconia	WCS TR02	WCS071	0.2	Thermal Charging	7.6	Thermal Charging	Compliant	[redacted]	[redacted]	0	7/31/2023	Nov-23	
Minnetonka - 14	Waconia	WCS TR02	WCS072	0.2	Thermal Charging	8.5	Thermal Charging	Compliant	[redacted]	[redacted]	0	7/31/2023	Nov-23	
Newport - 150	Woodbury	WDY TR01	WDY311	0.1	Thermal Charging	16.6	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Woodbury	WDY TR01	WDY312	0.0	Thermal Charging	5.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Woodbury	WDY TR02	WDY321	0.0	Thermal Charging	17.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	Woodbury	WDY TR02	WDY322	2.8	Thermal Charging	18.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	West Byron	WEB TR01	WEB021	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	West Faribault	WEF TR07	WEF061	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	West Faribault	WEF TR03	WEF071	0.0	Thermal Charging	5.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Newport - 150	West Hastings	WEH TR01	WEH021	0.5	Thermal Charging	6.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Newport - 150	West Hastings	WEH TR01	WEH022	0.4	Thermal Charging	6.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Wells Creek	WEL TR01	WEL021	0.2	Thermal Charging	1.7	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
St Paul - 151	Western	WES TR01	WES061	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Western	WES TR01	WES062	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Western	WES TR01	WES063	0.0	Thermal Charging	4.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Western	WES TR01	WES064	0.0	Thermal Charging	0.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Western	WES TR01	WES065	0.6	Thermal Charging	1.0	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	

PROTECTED DATA SHADED

Planning Region	Substation	Transformer Name	Feeder	Minimum Available Hosting Capacity (MW)	Min Constraining Metric	Maximum Available Hosting Capacity (MW)	Max Constraining Metric	Feeder Native Loading Standard	Substation Transformer Forecasted Peak Load (kVA)	Feeder Forecasted Peak Load (kVA)	LTC or Regulator	Data Cutoff	Latest Quarterly Update	Notes
St Paul - 151	Western	WES TR02	WES071	0.0	Thermal Charging	1.9	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Western	WES TR02	WES072	0.5	Native Capacity Utilization	0.5	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Western	WES TR02	WES073	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Western	WES TR02	WES074	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Western	WES TR02	WES075	0.2	Thermal Charging	0.9	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
St Paul - 151	Western	WES TR02	WES076	0.0	Thermal Charging	1.1	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR03	WIL071	0.0	Thermal Charging	0.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR03	WIL072	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR03	WIL073	0.0	Thermal Charging	2.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR03	WIL074	0.0	Thermal Charging	1.8	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR03	WIL075	0.0	Thermal Charging	2.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR03	WIL076	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR03	WIL077	0.0	Thermal Charging	1.4	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR03	WIL078	0.4	Thermal Charging	3.3	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR03	WIL079	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR04	WIL081	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR04	WIL082	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR04	WIL083	0.0	Thermal Charging	1.7	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR04	WIL084	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR04	WIL085	0.6	Thermal Charging	1.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR04	WIL086	0.3	Thermal Charging	3.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR04	WIL087	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR04	WIL088	0.5	Thermal Charging	10.3	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR04	WIL089	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR05	WIL091	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR05	WIL092	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR05	WIL093	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR05	WIL094	0.5	Thermal Charging	1.6	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR05	WIL095	0.0	Thermal Charging	1.6	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR05	WIL096	0.1	Thermal Charging	0.1	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR05	WIL097	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Wilson	WIL TR05	WIL098	0.4	Thermal Charging	3.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Winona	WIN TR01	WIN021	0.0	Thermal Charging	3.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Winona	WIN TR01	WIN022	0.1	Thermal Charging	2.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Winona	WIN TR01	WIN023	0.1	Thermal Charging	4.3	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Winona	WIN TR02	WIN032	0.0	Thermal Charging	0.0	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Winona	WIN TR02	WIN033	0.0	Thermal Charging	0.5	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Winona	WIN TR02	WIN034	0.2	Thermal Charging	3.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Winona	WIN TR03	WIN041	0.0	Thermal Charging	7.5	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Winona	WIN TR03	WIN042	0.0	Thermal Charging	4.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Southeast - 144	Winona	WIN TR03	WIN043	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Watkins	WKN TR01	WKN001	0.1	Thermal Charging	2.4	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Wobegon Trai	WOB TR01	WOB021	0.6	Primary Under-Voltage	3.7	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Wobegon Trai	WOB TR01	WOB022	0.3	Thermal Charging	2.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minneapolis - 1	West River Rc	WRR TR01	WRR061	0.7	Thermal Charging	4.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	West River Rc	WRR TR01	WRR064	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	West River Rc	WRR TR02	WRR074	1.2	Thermal Charging	2.1	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	West River Rc	WRR TR02	WRR075	0.2	Thermal Charging	4.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	West River Rc	WRR TR03	WRR081	0.8	Thermal Charging	4.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	West River Rc	WRR TR03	WRR084	0.8	Thermal Charging	4.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minneapolis - 1	West River Rc	WRR TR03	WRR085	0.0	Thermal Charging	7.2	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Winsted	WSD TR01	WSD061	0.0	Thermal Charging	7.6	Thermal Charging	Compliant	[redacted]	[redacted]	Fdr Reg - Sub	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR03	WSG061	1.0	Thermal Charging	5.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR03	WSG062	1.8	Thermal Charging	3.2	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR03	WSG063	0.4	Thermal Charging	5.3	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR03	WSG064	0.9	Thermal Charging	5.7	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR03	WSG065	0.9	Thermal Charging	1.3	Thermal Charging	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR03	WSG066	0.5	Thermal Charging	3.8	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR04	WSG071	0.3	Native Capacity Utilization	0.3	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR04	WSG072	1.8	Thermal Charging	6.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR04	WSG073	3.5	Thermal Charging	6.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR04	WSG074	0.2	Thermal Charging	3.6	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR04	WSG075	0.9	Thermal Charging	4.2	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR04	WSG076	0.0	Thermal Charging	7.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR05	WSG351	0.5	Thermal Charging	24.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR05	WSG352	0.0	Thermal Charging	16.9	Native Capacity Utilization	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR06	WSG361	0.0	Thermal Charging	5.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Edina - 143	Westgate	WSG TR06	WSG362	0.0	Thermal Charging	14.4	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Westport	WSP TR01	WSP021	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Northwest - 154	West Union	WSU TR01	WSU021	0.1	Native Capacity Utilization	0.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	0	7/31/2023	Nov-23	Substation owned by Foreign Utility. Contractual obligations may reduce capacity and increase interconnection timelines
Northwest - 154	Watab River	WTB TR01	WTB021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Watertown	WTN TR01	WTN061	0.7	Thermal Charging	7.3	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Watertown	WTN TR01	WTN062	0.1	Thermal Charging	8.4	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	West Waconia	WWK TR01	WWK311	0.1	Thermal Charging	17.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	West Waconia	WWK TR02	WWK321	0.1	Thermal Charging	24.5	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Wyoming	WYO TR01	WYO021	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Wyoming	WYO TR01	WYO022	0.0	Thermal Charging	1.8	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Wyoming	WYO TR02	WYO031	0.4	Thermal Charging	2.2	Native Capacity Utilization	Over-Utilized	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Wyoming	WYO TR02	WYO032	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
White Bear Lak	Wyoming	WYO TR02	WYO033	0.3	Thermal Charging	5.1	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Crossroads	XRD TR01	XRD061	0.3	Thermal Charging	5.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Crossroads	XRD TR01	XRD062	0.1	Thermal Charging	4.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Crossroads	XRD TR01	XRD063	0.0	Thermal Charging	5.0	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Crossroads	XRD TR02	XRD075	0.8	Thermal Charging	4.4	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Crossroads	XRD TR02	XRD076	0.1	Primary Under-Voltage	2.6	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Northwest - 154	Crossroads	XRD TR02	XRD077	0.6	Thermal Charging	2.8	Thermal Charging	Compliant	[redacted]	[redacted]	LTC	7/31/2023	Nov-23	
Minnetonka - 14	Young America	YAM TR01	YAM021	0.3	Thermal Charging	5.2	Thermal Charging	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Minnetonka - 14	Young America	YAM TR02	YAM031	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Yellow Medicir	YLM TR01	YLM211	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Over-Utilized	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Northwest - 154	Yellow Medicir	YLM TR01	YLM212	0.0	Primary Under-Voltage	0.0	Primary Under-Voltage	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Zumbro Falls	ZUF TR01	ZUF021	0.4	Thermal Charging	0.9	Thermal Charging	Compliant	[redacted]	[redacted]	Bus Reg - Sub	7/31/2023	Nov-23	
Southeast - 144	Zumbrota	ZUM TR01	ZUM021	0.1	Thermal Charging	3.1	Native Capacity Utilization	Compliant	[redacted]	[redacted]	None	7/31/2023	Nov-23	
Southeast - 144	Zumbrota	ZUM TR01	ZUM022	0.0	Native Capacity Utilization	0.0	Native Capacity Utilization	Exceeded	[redacted]	[redacted]	None	7/31/2023	Nov-23	

216B.2425 STATE TRANSMISSION AND DISTRIBUTION PLAN.			
Statute	**Requirement**	**Link**	**Notes**
216B.2425	Subd. 8.Distribution study for distributed generation. Each entity subject to this section that is operating under a multiyear rate plan approved under section 216B.16, subdivision 19, shall conduct a distribution study to identify interconnection points on its distribution system for small-scale distributed generation resources and shall identify necessary distribution upgrades to support the continued development of distributed generation resources, and shall include the study in its report required under subdivision 2.	https://www.revisor.mn.gov/statutes/cite/216B.2425	

Minnesota Public Utilities Commission's July 31, 2020 Order Accepting Report and Setting Further Requirements; Docket No. 19-685			
Order Point	**Requirement**	**Compliance**	**Notes**
Order Point 6	In future HCA reports, Xcel is directed, to the extent practicable, to include on the HCA map and in downloadable spreadsheet format the following data: Transformer Name, Transformer Absolute Min, Load Tap Changer (LTC) or Regulator, Feeder Absolute Min, and Network or Radial.	Attachment B: Gen-HCA 2023 Feeder Summary Results. Attachment D: Load-HCA 2023 Feeder Summary Results.	
Order Point 7	In its 2020 IDP Compliance Filing, Xcel must provide a discussion of how Xcel's hosting capacity analysis can be used to assist state energy policy goals related to beneficial electrification including detail on how a load hosting analysis would be done, an estimate of the resources that would be required, and the specific information the Company could provide.	See Annual Update Compliance filed in Docket No. E002/M-19-666 on October 30, 2020, Section III.	
Order Point 8	Xcel's future HCA reports must be detailed enough to provide developers with a reliable estimate of the available level of hosting capacity at the feeder and sub-feeder levels at the time of submittal of the report to the extent practicable. The information should be sufficient to provide developers with a starting point for interconnection applications.	Attachment A: November 2023 Hosting Capacity Analysis Report in its entierity.Attachment B: Gen-HCA 2023 Feeder Summary Results. Attachment C: Gen-HCA 2023 Feeder Nodal Results. Attachment D: Load-HCA 2023 Feeder Summary Results.	
Order Point 9	The Commission adopts a long-term goal to use the hosting capacity analysis in the interconnection process's fast track screens. Xcel should work with stakeholders to refine the hosting capacity analysis. Xcel may seek cost and timing clarification from the Commission.	N/A	
Order Point 10	In its 2020 HCA Report, Xcel must provide options for monthly, quarterly and semiannual HCA updates, including cost estimates.	N/A	
Order Point 11	In its 2020 HCA Report, Xcel must, to the extent practicable, include a unique name or number for each line segment in the maps' pop-up boxes.	N/A	

Order Point 12	In its 2020 HCA Report, Xcel must, to the extent practicable, show the actual locations of distribution system lines instead of broad blocks of color on the HCA map.	N/A	
Order Point 13	Starting in November 2020, Xcel must make available a tabular report containing the sub-feeder results displayed on the 2020 hosting capacity map. This report shall be available in the docket, on the hosting capacity webpage, and/or by email request.	Attachment C: Gen-HCA 2023 Feeder Nodal Results.	
Order Point 14	In its 2020 HCA Report, Xcel must include the precise number of feeders with actual and estimated Daytime Minimum Load data and note the feeders with estimated Daytime Minimum Load on the tabular spreadsheet to inform developers' use of the report.	Attachment A: November 2023 Hosting Capacity Analysis, Section III.A.1. 2023 Hosting Capacity Results for Generation. Attachment B: Gen-HCA 2023 Feeder Summary Results. Attachment D: Load-HCA 2023 Feeder Summary Results.	
Order Point 15	In its 2020 HCA tabular report, Xcel must publish the criteria violation and corresponding hosting capacity values for each HCA model run and location, and map with appropriate caveats.	Attachment C: Gen-HCA 2023 Feeder Nodal Results.	
Order Point 16	The Commission does not require a sensitivity analysis for the 2020 HCA.	N/A	
Order Point 17	Following a Commission determination of the Use Case for future HCA reports, Xcel must develop a corresponding data validation plan for HCA results, solicit written feedback from stakeholders on the draft plan, and then include the final plan in the next HCA report.	N/A	
Order Point 18	Xcel must further explore and explain issues related to whether the result of Xcel Energy's hosting capacity analysis should be redacted for customer energy use data (CEUD) privacy and security concerns. a. Xcel must separately evaluate and justify each privacy and security concern, so as to provide a full description and specific basis for withholding the information.	2023 Hosting Capacity Program Summary, Section II: Grid Security and Customer Security and Confidentiality Considerations.	

Order Point 19	The Commission hereby delegates authority to the Executive Secretary to issue Notice(s), set schedules, and designate comment periods to further discuss grid and customer security issues related to public display or access to grid data which includes, but is not limited to distribution grid mapping, aggregated load data, and critical infrastructure. The Commission anticipates consideration of the record and comments within 12 months of this order.	N/A	
Order Point 20	The Commission requests that the Commissioner of Commerce seek authority from the Commissioner of Management and Budget to incur costs for specialty services to provide a recommendation on privacy and security in the next hosting capacity report proceeding and to participate in related analysis and stakeholder engagement, and subsequently bill those expenses to Xcel pursuant to Minn. Stat. § 216B.62, subd. 8.	N/A	
Order Point 21	Xcel must implement its 2020 stakeholder engagement plan as outlined in the docket. In the 2020 HCA Report, Xcel must provide the results of the stakeholder process, including an overview of the feedback and suggestions provided by stakeholders, whether the feedback and suggestions are included in the 2020 HCA Report, and an explanation for any feedback and suggestions received but not included in the 2020 HCA Report.	N/A	
Order Point 22	Commission staff are directed to oversee and facilitate a discussion with Xcel and stakeholders of the technical assumptions, limiting criteria, and thresholds used in Xcel's HCA. The discussion should address: a. Thresholds for what constitutes a significant change in configuration, load, or generation to warrant rebuilding a feeder model; b. Use of the Maximum Tap Regulators in Over/Under-Voltage Analysis setting; c. Analysis assumptions for Primary Voltage Deviation; d. Other voltage analysis issues identified in IREC's opening comments	N/A	
Order Point 23	In its 2020 HCA Report, Xcel must provide the results of the stakeholder discussion, including an overview of the feedback and suggestions provided by stakeholders, and whether the feedback and suggestions are included in the 2020 HCA Report.	N/A	
Order Point 24	Xcel Energy must file the 2020 HCA Report on November 2, 2020.	N/A	
Order Point 25	This order shall become effective immediately.	N/A	
Minnesota Public Utilities Commission's November 9, 2021 Order Accepting Report and Setting Further Requirements; Docket No. 20-812			

Order Point	Requirement	Compliance	Notes
Order Pt 1	The Commission accepts Xcel's 2020 HCA Report and HCA.	N/A	
Order Pt 2	For future HCA reports, Xcel must continue to comply with ordering paragraph 8 of the 2020 HCA Order, which reads:		
	Xcel's future HCA reports must be detailed enough to provide developers with a reliable estimate of the available level of hosting capacity at the feeder and sub-feeder at the time of submittal of the report to the extent practicable. The information should be sufficient to provide developers with a starting point for interconnection applications.	Attachment A: November 2023 Hosting Capacity Analysis Report in its entierity. Attachment B: Gen-HCA 2023 Feeder Summary Results. Attachment C: Gen-HCA 2023 Feeder Nodal Results. Attachment D: Load-HCA 2023 Feeder Summary Results	
Order Pt 3	Xcel must fully comply with the requirements of ordering paragraph 15 of the 2020 HCA Order and publish all criteria violation on the map by May 2022.	Attachment A: 2023 Hosting Capacity Analysis Report; Introduction; Section III.A.	This language is from the November 19, 2021 ERRATUM NOTICE in Docket No. E-002/M-20-812.
Order Pt 4	Xcel must perform an HCA for load and file the analysis by November 2022.	Attachment A: 2023 Hosting Capacity Analysis Report	
Order Pt 5	The Commission directs that stakeholder workshops be held that provide for proposals put forward by stakeholders to incorporate the HCA into the interconnection process; the workshops will be convened by the Distributed Generation Work Group and facilitated by Commission staff. The Commission delegates administrative authority to the Executive Secretary to set schedules and timelines. Xcel shall, in collaboration with stakeholders, identify which priorities should be addressed first. For the priorities, stakeholders shall discuss the costs and benefits. Once complete, Xcel shall use the resulting information to develop a cost-benefit analysis and timelines for the priorities. The Company shall provide this information within 120 days after the workshops conclude, or in the alternative, a status update and revised timeline for providing this timeline.	N/A	
Order Pt 6	Xcel must conduct a benefit-cost analysis of the Company's proposed Path 1 and Path 2 improvements of its hosting capacity analysis in any future cost recovery filing. This analysis should clearly indicate which improvements are incremental to any existing and planned grid modernization proposals, such as Xcel's ongoing Advanced Distribution System Management project. Additionally, this analysis should include a discussion of revenue generation from beneficiaries of any improvements.	N/A	
Order Pt 7	Xcel must exclude its hosting capacity analysis costs from its next rate case if the Company requests recovery of its HCA costs through its next Transmission Cost Recovery Rider Petition.	2023 Hosting Capacity Program Summary, Section IV.B.	
Order Pt 8	Xcel must separately develop a proposal to implement the Fast Track Supplemental Review Screen (FTSRS) Use Case in the next hosting capacity analysis report consistent with the Commission's long-term goal of the hosting capacity analysis and must conduct a benefit-cost analysis of the FTSRS Use Case.	N/A	

Order Pt 9	Xcel must develop, following a Commission determination of the Use Case for future HCA reports, a corresponding data validation plan for HCA results, solicit written feedback from stakeholders on the draft plan, and then include the final plan in the next HCA report. (2020 HCA Order, ordering paragraph 17).	2023 Hosting Capacity Program Summary, Section V.A.	
Order Pt 10	Xcel must collaborate with stakeholders in evaluating the costs and benefits associated with a hosting capacity analysis able to achieve the following objectives (2020 HCA Order, ordering paragraph 4):	N/A	
a.	remaining an early indicator of possible locations for interconnection;	N/A	
b.	replacing or augmenting initial review screens and/or supplemental review in the interconnection process; and/or	N/A	
c.	automating interconnection studies.	N/A	
Order Pt 11	Xcel must continue working with stakeholders to identify opportunities to integrate the HCA and the MN DIP pre-application and screening processes in future iterations of the HCA. (2020 HCA Order, ordering paragraph 5).	2023 Hosting Capacity Program Summary, Section V.C.	
Order Pt 12	The Commission adopts a long-term goal to use the hosting capacity analysis in the interconnection process's fast track screens. Xcel should work with stakeholders to refine the hosting capacity analysis. Xcel may seek cost and timing clarification from the Commission. (2020 HCA Order, ordering paragraph 9).	N/A	
Order Pt 13	Xcel must provide, in its 2021 HCA Report, options for monthly HCA updates, including cost estimates.	N/A	
Minnesota Public Utilities Commission's September 9, 2022 Order Accepting Report and Setting Further Requirements; Docket No. 21-767			
Order Point	**Requirement**	**Compliance**	**Notes**
NA	NA	NA	
Minnesota Public Utilities Commission's September 12, 2023 Order Accepting Report and Setting Further Requirements; Docket No. 22-574			
Order Point	**Requirement**	**Compliance**	**Notes**
Order Pt 1	The Commission accepts Xcel's 2022 Hosting Capacity Program Report.	N/A	
Order Pt 2	Xcel shall pursue implementation of the Monthly Updates use case.	2023 Hosting Capacity Program Summary, Section V.A.	
Order Pt 3	Xcel shall provide information related to the Modeling Software Review RFP in a future cost recovery request proceeding.	N/A	
Order Pt 4	Xcel shall provide more robust cost-benefit analysis for the FTSRS use case. This analysis should include benefits to developers derived from consultations with external stakeholders and whether Xcel could gain monetary savings by using internal labor to conduct the FTSRS.	Preliminary results are in the 2023 Hosting Capacity Program Summary, Section V.5.1.	
Order Point 5	Xcel shall provide the following information in its cost recovery request for any investment Xcel makes in its HCA and requests cost recovery for in a future TCR Rider proceeding:	2023 Hosting Capacity Program Summary, Section IV.B.	

a.	the functionality of the investment(s)	N/A	
b.	analysis of alternatives to the investment(s)	N/A	
c.	clearly identifiable costs and benefits of the investment(s)	N/A	
d.	a comparison between scenarios that illustrates the impact that the investment(s) is/are expected to have.	N/A	
Order Pt 6	In future HCA annual reports, Xcel shall do the following:		
a.	provide all actual historical and all future estimated costs related to the hosting capacity analysis broken down by cost type.	2023 Hosting Capacity Program Summary Sections IV.A. and IV.B.	
b.	indicate where HCA costs are recovered from or where it proposes to recover the costs from.	2023 Hosting Capacity Program Summary Section IV.B.	
c.	employ a net load methodology consistent with other Company planning processes for its Load-HCA.	Attachment A - 2023 Hosting Capacity Analysis Report Section II.B.	
Order Pt 7	This order shall become effective immediately.		
Based on the July 20, 2023 Commission Agenda Meeting	Provide a detailed description the records the company maintains with respect to its Secondary System. This includes paper and digital records and whether paper records have been digitized or left in paper form, but retained. Then provide a pathway to make the records useable for HCA and do so at no additional cost to ratepayers.		

ATTACHMENT F – SECONDARY SYSTEM DATA

I. INTRODUCTION

In our November 1, 2022, Hosting Capacity (HCA) Program Report, we stated that, historically, it has not been necessary to collect and maintain detailed secondary system information for the Company's general operating purposes. Similarly, in the July 20, 2023, Agenda Meeting regarding the November 2022 HCA filing, we said that we have gaps in the mapping data for our secondary system. At this same meeting, the Commission requested that the Company provide information about our secondary system and the information we have about these assets in our November 1, 2023, HCA Program Report. Specifically, the Commission requested the following information:

1) What secondary system records the Company has, including type, size, rating, and location of assets;
2) Whether these existing records are manual or digital;
3) What secondary system records the Company does not have;
4) An explanation of why the Company does not have these records; and
5) A path forward for improving our records.

After consulting with our subject matter experts, the Company would like to clarify the statement we made about having gaps in the mapping data for our secondary system. The Company has comprehensive information about our secondary system in our Geospatial Information System (GIS), and what little is missing does not impact our ability to operate effectively or provide our customers with safe and reliable power or perform interconnection studies. Additionally, while the Company does not consider the service transformers or service conductors/cables to be part of the secondary system in GIS, we generally do collect the same information about them in GIS as we do for the secondary system, and this information is comprehensive, and no notable data is unavailable.

Our November 1, 2022, HCA filing explained that the Asset Data Validation Initiative – which we are not planning on pursuing at this time – would have been to collect additional asset data necessary to provide benefits to the HCA and interconnection process, such as increased accuracy and automated interconnection steps. This would have allowed our engineers to run these processes with less manual intervention and oversight compared to the current processes that uses only existing GIS asset data.

Before digitalized GIS systems were developed, the Company kept detailed records of its primary and secondary system on paper maps that were maintained and updated by local service centers. Since approximately 1995, any changes in the field design for the primary and the secondary system have been consistently recorded in GIS maps. The legacy paper maps have also been digitalized into GIS, and this effort was completed in the late 1990s.

This Attachment F to our November 1, 2023, HCA Program Report offers details on our secondary system, including an explanation of what secondary system records we have, and what records we do not have. For the records we do not have, we provide an explanation of why we do not have them and explain the Company's plan for obtaining them. Additionally, we provide insight into how industry best practices for designing and maintaining the secondary system are developed, and how the Company participates in and complies with these processes.

II. SECONDARY SYSTEM STANDARDS

The current equipment used on the Company's secondary and service systems is derived from the application for which they are needed. Over time, technologies and standards have evolved due to increasing customer load and to improvements in technologies, which has led to changes in the equipment we utilize. Additionally, the Company has acquired other utility companies, and thus inherited the legacy equipment they had installed. Consequently, the equipment on the Company's secondary and service systems today are an amalgamation of equipment that complies with the current standards and legacy equipment. We are continuously evaluating industry standards to ensure legacy equipment is updated as needed.

A. Legacy Equipment and the Digitization Process

When legacy equipment was installed, it had an expected in-service lifetime. Unless there is an operational, safety, or other pressing need for replacing legacy equipment before it has reached this end-of-life cycle, it will typically not be retired early for cost reasons. This means that we maintain areas of legacy construction and equipment that adhere to older standards. When we repair or rebuild these legacy areas of our system, we do so with the current standard materials, which improves the system, brings down costs, and makes future repairs more efficient. As part of this process, any field alterations to the distribution system, including the secondary system, would be captured as a part of the red line (field correction) process, and the final corrected design would be incorporated into the GIS mapping system. The utility industry has strived to make this process simpler by incorporating more common standard components, which helps bring down costs and makes it easier to acquire materials for the distribution system.

Prior to using digital design and GIS mapping, a similar process to capture any changes on the Company's distribution system as the one described above was accomplished on paper maps, using drafting tools. When this was the standard practice, record keeping for the primary and the secondary system was done at the service center level, and data collection practices may have varied slightly from location to location, sometimes resulting in gaps on some data fields for the secondary system equipment.

In 1995, Northern States Power Company (NSP) began the multi-year process of migrating paper maps to digital, and data collection practices became more consistent and uniform. Since approximately 1995, any changes in the field design for the primary and the secondary system in the Minnesota service territory have been consistently recorded in the Company's GIS. After the formation of Xcel Energy in 2000, all the information about the systems of our Op-Cos was gradually merged into GE Smallworld. Throughout the digitization process, system designs were increasingly done digitally. Until the last few years, paper records were utilized in the field for documenting as-builds, and then transferred to our digital GIS system. Now, redlines are done digitally in the field. During the period of digitalization, process improvements continued to evolve, including the modeling of customer services in the GIS system. As a result, some attributes for service lines – such as material, size, and type – were historically not specified in the mapping system because they were specified in the work order.

B. Development of and Compliance with Industry Standards and Best Practices

Best practices for secondary system design are determined through several processes. There are various standards[1] that define equipment testing and design of various products used in the distribution system. The Company incorporates these changes into our material specifications and participates directly in the development though

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[1] American National Standards Institute (ANSI), Institute of Electrical and Electronics Engineers (IEEE), Institute of Electrical and Electronics Engineers - Insulated Conductor Committee (IEEE-ICC), Institute of Electrical and Electronics Engineers - Switchgear Committee (IEEE 37C), American National Standards Institute - Roadway Lighting (ANSI 136), National Electrical Manufacturers Association (NEMA).

ANSI C136, IEEE C37, IEEE ICC, and other organizations.[2] In addition, all electric utilities follow the National Electric Safety Code (NESC, IEEE C2), and revisions are incorporated into Design and Construction standards used at Xcel Energy on a minimum two-year publication cycle, with an option for interim updates as needed. The Company participates directly in this standard making process and is a member of several ANSI/NEMA and IEEE committees. We are also active members of myriad utility industry groups, where we exchange best practices with our peer utilities through participating in organizations such as Electric Power Research Institute (EPRI), Midwest Electric Distribution Exchange (MEDE), Western Underground, and Electric Utility Outdoor Lighting Council (EUOLC), to name a few. These utility groups allow the Company to gather and share problems, solutions, and ideas from some of the best minds in the utility industry.

When new standards are published, the Company studies them and creates and executes a plan to address any needed changes on our system or in our standard of operations. If urgent changes are needed, an update can be issued to Xcel Energy design and construction standards between publications. For example, in 2011, the NESC issued a change to the safety factor rating system for structural members, which prompted the Company to change the design of the dead-end crossarms that were being used from a wood dead-end crossarm to a stronger, fiberglass dead-end crossarm.

C. How DER is Changing Standards

Since the beginning of the electric utility industry, customer demand for electricity has constantly grown. Over the past decades, society has become increasingly electrified. Electricity has gradually been replacing wood, oil, and gas, and new devices that could not exist without electricity have been invented and gained widespread popularity. As this customer demand (load) increases and continues to increase, the best practices and equipment to bring electricity to people who rely on it have changed in response.

Distributed Energy Resources (DER) are the next stage in this evolution of electrification and increasing load. Some examples of best practices that the Company has participated in creating and adopting in relation to this new era include utilizing new materials that allow for higher currents without damaging equipment; having fewer customers on a transformer to allow for a better upgrade path for when customers convert appliances from gas to electric or an ICE vehicle to an EV with a home-charger; and initially installing a larger service conductor to preempt potential future power quality problems, such as flicker or voltage sag, due to increasing load.

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[2] ANSI and IEEE are both standards and organizations. These organizations make the standards that underpin the majority of the equipment the Company and other utilities use, thus the standards are named after the organization.

III. SECONDARY SYSTEM INFORMATION

The secondary system is comprised of the circuits between the point of interconnection (the consumer) and the service transformer, which steps the voltage down from mid-voltages (4kV to 35kV) to low voltages (120V to 480V). The secondary system is distinct from the primary system and the service (e.g., overhead (OH) service drop, or the underground (UG) lateral) that provides electrical service to the customer. While we technically do not consider the service transformers or service conductors/cables to be part of the secondary system in GIS, we generally do collect the same information about them in GIS as we do for the secondary system. Therefore, in the remainder of this document the service is described under the secondary system.

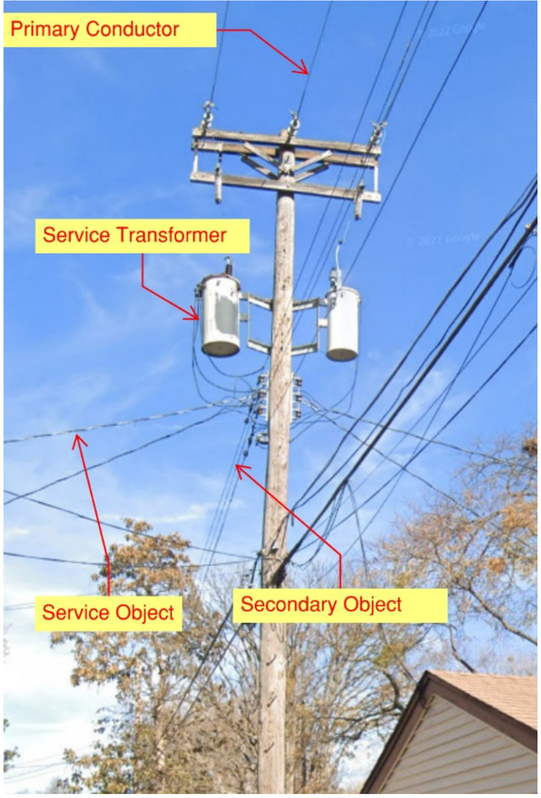
Table 1 defines terms commonly used in our GIS to describe the secondary system.

Table 1: Secondary System Terms in GIS

Term	Definition
Service Object	OH conductors and UG cables that tie into the customer's service entrance.
Secondary Object	OH conductors and UG cables between the service transformer and the service object.
Service Transformer	Demarcation point between the primary system and the beginning of the secondary system.
Parent Level	Information related to an object's function in GIS (i.e., OH Secondary).
Child Level	A sub layer of the Parent Level that houses additional details related to the object (material type, size, etc.).

Figure 1 shows an example of the overhead secondary system, labeled with the types of objects that are documented in our GIS system.

Figure 1: Overhead Secondary System



A. Information Available About the Secondary System

Xcel Energy's secondary distribution system is represented in GIS-Smallworld, with the geographic location of components, including the connection points to other Xcel Energy assets, including but not limited to, pole-to-pole connections on the overhead system and transformer to residential pedestal, or transformer to other connection points on the underground secondary system. Using this data, the "Calculated Length" based on the length drawn in GIS-Smallworld provides a representation of the length of secondary conductors on the system, and the data can be further refined using the "Installed Length" field which allows technicians to input data captured from as-built documentation. Any span of conductors inserted without the "Installed Length" populated will default to the "Calculated Length" to derive the span length.

Other data fields required in GIS for object insertion at the top or parent level for conductor are Configuration, Type, Ownership, Secondary Voltage, and Status. Wire information is stored at the sub or child level along with Status, Size, Material, and

Insulation as required values. Additional attribution is captured within each individual span of secondary conductor related to the configuration of the wire which could vary between open wire (bare open wire) or lashed wire (insulated wires bundled with a neutral) among several other options. For an object requiring a value in a data field, the value can be marked as "Unknown." This means that the Company knows that the asset exists in its location, but we do not have all other additional details.

The "Status" field in GIS is used to represent proposed installations or removals of secondary assets. This feature is also used to show existing in-serviced conductors. Actual install dates, captured from work order as-builts,[3] are populated within each secondary conductor object in the Status field. Additionally, the work order numbers are associated with newly placed objects in GIS to help identify and locate the supporting documentation related to the assets. Conductor size and material are captured on a wire-by-wire basis, and the number of individual wire runs are represented in a GIS attribute field so a graphical representation can be drawn as one line. The total installed length of wire can be calculated with this information. For example, the install length between poles is 100 feet and there are three runs of single conductor, totaling 300 feet of secondary conductor at that span.

In summary, the Company collects and stores the following information about our secondary system conductor (including both secondary object and service object) in GIS:

- Configuration
- Type
- Ownership
- Secondary Voltage
- Status
- Size
- Material
- Insulation
- Geographic Location
- Connection Points
- Calculated Length
- Installed Length

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[3] A set of drawings or documents that allows for comparison between the designed versus final specifications, and provides a detailed blueprint of the project and the land around it as actually constructed.

- Installation Date

For underground cables, the GIS has the following information:

- Rated KVA
- Phase
- Insulation
- Protection Type
- Status
- Install Date
- Spec Code
- Company Number
- Serial Number
- OH Transformer Bank ID
- OH Transformer Bank
- Fused Rated Current
- Manufacturer
- Fuse Speed Ration
- ID
- ERP ID

For service transformers, the GIS has the following information:

- Geographic Location
- Size
- Ownership
- Status
- Install Date
- Bank Configuration
- Output Voltage
- Rated Voltage
- Nominal Voltage
- Multiple Voltage
- Phase Designation
- Bank Size
- Secondary Connection
- OH Transformer Units

B. Unavailable Information About the Secondary System

While we have robust information about our secondary system, there are some gaps in the overhead conductor and underground cable data fields, due to legacy equipment and the digitization process, as we discussed above in Section II. The information about service transformers in the Company's GIS database is comprehensive and no notable data is unavailable. Considering the large number of individual overhead and underground secondary span objects in our GIS – over 685,000 – the number of objects with missing information is very small. Approximately 21,000 secondary objects have a missing data field,[4] such as wire size or wire material. This equals approximately 3 percent of our secondary objects that have a missing data field.

1. Secondary Objects

For the Minnesota service territory, GIS contains 567,990 individual overhead secondary span objects, covering 16,543 linear miles, which does not fully account for the conductors that are in service. About 8,840 miles are listed as "Neutral Only", which means the equipment has a single wire for grounding purposes. An additional 7,612 miles are energized conductors, and depending on the application, these could be configurations of two, three, or four wires that provide the appropriate secondary voltage to the customer's service wires. Service conductors are mapped in GIS as a separate object type. Most of the data gaps are related to legacy data, which predates electronic attribute capturing and modern as-built collection techniques.

Among each of the 567,990 overhead secondary objects, there are associated child units that contain information about the distinct wires that comprise the secondary system. Out of the 567,990 parent objects, 7,961 have at least one child unit with an "Unknown" wire size, 5,507 have an "Unknown" wire material, and 1,286 do not have any wires associated.

Additionally, there are 118,963 individual spans of underground secondary in GIS, covering 3,070 linear miles. Of those 118,963 objects, 3,499 have an "Unknown" material attribute and 2,994 have an "Unknown" size attribute.

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[4] The actual number of objects may be smaller because of duplicative objects, i.e., the same object may be missing several data fields.

2. *Service Objects*

In addition to the secondary objects discussed above, the Company's GIS database contains a total of 448,789 overhead service objects, 379,546 underground service objects, and 165,443 customer pointers for the Minnesota service territory. Unlike the overhead and underground service objects, the customer pointer object does not have the capability to capture information on material or length. In total, there are 993,778 customer service connections being represented in our GIS database. This number is lower than our actual customer count, however, this apparent discrepancy can be accounted for by the fact that multiple customers can be serviced by a single service line. For example, an apartment building could have dozens of customer meters, all of which are fed by a single service line.

Before NSP and New Century Energies, Inc. (NCE) merged in August 2000 to form Xcel Energy, it was a common practice to map a customer pointer object rather than a service object. The pointer object could not capture the material and length information, but did retain the important customer-to-transformer connections that are utilized for outage restoration and load studies. This was a legacy business practice that occurred during the original GIS data conversion in Colorado in the early 1980s. Other companies that were undergoing GIS data conversion – such as Wisconsin Public Service – also followed this practice. After the merger that formed Xcel Energy, this business practice was discontinued, and the current business practice was implemented. The Company's current practice is to receive as-built information from construction projects, which details the service route, material, and type of equipment installed. This information is then mapped in GIS to represent overhead and underground service. When we make any secondary system changes on these legacy customer pointer objects, they are updated in GIS to service objects that can retain all necessary data.

While the impact of these legacy pointer objects is larger than the gaps in the secondary system object data, our current business practices will resolve this over time. This issue was the primary concern that would have been addressed by the Asset Data Validation Initiative use case, as addressing the data impacts of legacy practices would be needed to fully automate interconnection applications. As we explain below, the gaps in service object data do not impact the Company's ability to perform interconnection studies – just the feasibility of a fully automated process – as we can assume standard line size and measure line length. Field verification in the Facilities Study phase is needed for less than 1 percent of behind-the-meter interconnection applications that are less than 40 kW.

IV. SECONDARY SYSTEM DATA NEEDED FOR PROCESSING SOLAR APPLICATIONS

The applications for interconnection to the secondary system the Company receives are typically for behind-the-meter rooftop installations up to 40 kW on private residences. Larger systems tend to be commercial or industrial in scale and have a customer-owned secondary system.

When the Company receives an application for interconnection to the secondary system, the first step in the DER interconnection screening process is the Initial Review, which checks that the service transformer can adequately accommodate the new generation. Most – approximately 90 percent – behind-the-meter applications that are less than 40 kW are processed in this Initial Review, which does not take the secondary system into account.

Approximately 10 percent of behind-the-meter applications that are less than 40 kW go through the second step of the DER interconnection screening process – the Supplemental Review. The Supplemental Review looks at both the primary and secondary systems to ensure that steady-state voltage and voltage fluctuation are within allowable limits. The secondary system is the most relevant for behind-the-meter rooftop applications, because if our screening tool identifies issues on the primary system, additional steps are taken to provide an accurate primary voltage at the customer's service point using feeder modeling analysis.

A. Information Needed for the DER Interconnection Screening Process

The information about the secondary system that is needed to complete the Supplemental Review is the size, material, and the length of the secondary and service conductor. This is used to calculate the impedance, which is then used to calculate and check steady state voltage, voltage fluctuation, and loading. This information is typically readily available in GIS. In some cases, the conductor type is unknown and would require field verification. However, in such cases where the length of the secondary conductor is known or can be measured, the conductor type may be assumed to be a standard size, meaning field verification is not necessary. If the screen result still does not pass on this assumption, then the location is field checked by the Design and Construction groups during the Facilities Study. Less than 1 percent of applications end up needing to be field checked before completion of the Facilities Study.

B. Assumptions Used When Secondary Data Is Not Populated

When secondary data is not available on the conductor length or type, information can be assumed by measuring distance in GIS and assuming a standard conductor size. Measuring distance is done based on the satellite imagery and the application Site Plan. This is a common engineering practice and fairly straightforward. As for conductor types, Xcel Energy only uses a few standard conductor sizes: 1/0 AL, 4/0 AL, and 500kcmil. When we need to infer the conductor type, we most commonly assume it is 1/0 AL, since this generally applies to most residential customers. However, in some cases, the conductor may have been installed under a legacy standard or under different ownership, as we previously discussed. In these cases, we may see #2 or #4, Copper or Aluminum conductor types. These legacy sizes all have larger impedance values, yet are very similar to 1/0 AL. Therefore, assuming that unknown conductor types are 1/0 AL results in fairly accurate screening results when reviewing the customer secondary, and ensures that the secondary system voltage remains within required limits.

V. MOVING FORWARD

While the Company retains a significant amount of data about our secondary system, there are opportunities to fill in the few gaps that exist. Moving forward, the Company will continue to follow defined processes to capture and catalog secondary system data. This process involves designers recording the proposed assets electronically in GIS, the field crews either verifying the project was completed as designed or making redline changes upon installation, and the Geospatial team updating GIS accordingly with the appropriate attributes. We will also utilize upcoming field software changes to capture crew observations and operations more efficiently. Additionally, based on discussion in the industry, we anticipate that as data analytics continue to mature, there may be opportunities to gather electrical equipment information from AMI data/DI agents.

In addition to the processes and technologies discussed above, the Company has previously undergone and will continue to undergo data collection efforts for Advanced Distribution Management System (ADMS). GIS data is critical for ADMS to provide location and specification information for the physical primary voltage system assets from the substation down to, and including, the distribution service transformers. ADMS will use that information to maintain the electric distribution model in near-real-time, leveraging the advanced applications targeted at improving system operation and customer service response activities.

While the Company maintains records of all its assets, ADMS will require granular asset information to operate effectively. Therefore, the Company initiated an effort to review its electric distribution physical asset records (feeder and equipment attributes, etc.), to ensure that the information available complies with the necessary level of detail needed for ADMS. The GIS data collection effort is comprised of three steps, the first of which is collecting data that will validate the physical characteristics of the current system. Since ADMS is dependent on a robust dataset, we leveraged system and data knowledge to confirm the accuracy and completeness of the electric distribution grid model. This is accomplished by verifying the information contained in the corporate GIS via the performance of a physical data verification and capture effort with the goal of meeting the data needs required to support the ADMS application.

The second step is collecting the additional data attributes that define the electrical characteristics necessary to enable the ADMS model. We collect data such as the size of primary wire; the size and location of equipment such as transformers, switches, poles; phasing and connectivity; and device control settings. This process validates the various data attributes contained in the corporate GIS system.

The third step is the validation of equipment settings (e.g., substation control devices) that are critical to ADMS to ensure it has the necessary operating information to support grid optimization algorithms.

VI. CONCLUSION

The Company has comprehensive information about the secondary system in GIS, as well as the service transformers and service conductors/cables. Before digitalized GIS systems were developed, the Company kept detailed records of the secondary and service systems on paper maps that were maintained and updated by local service centers. Since approximately 1995, any changes in the field design for the secondary system have been consistently recorded in GIS maps. The legacy paper maps have also been digitalized into GIS, and this effort was completed in the late 1990s. Although there are some minor gaps in secondary and service system information on certain data fields (no notable data is unavailable for service transformers), such as the line type, size, or length, this does not impact our ability to operate our system safely, reliably, and effectively. Similarly, this minor lack of data does not typically impact our interconnection screening processes, because we can measure line length and use an assumed line type and size.

The Company will continue to follow industry best practices and defined processes to capture and catalog secondary and service system data in GIS. We will also capitalize on opportunities to capture information more effectively that will be presented by upcoming field software changes and – potentially – evolutions in AMI technology.

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 NOS. **E002/M-22-574**
Miscellaneous Electric Service List

Dated this 31st day of October 2023

/s/

Ella Giefer
Regulatory Administrator

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