

AN ALLETE COMPANY



April 1, 2022

VIA E-FILING Will Seuffert Executive Secretary Minnesota Public Utilities Commission 121 7th Place East, Suite 350 St. Paul, MN 55101-2147

Re: In the Matter of Minnesota Power's 2021 Safety, Reliability and Service Quality Standards Report Docket No. E015/M-22-____

Dear Mr. Seuffert:

Minnesota Power (or the "Company") submits its annual Safety, Reliability and Service Quality Standards Report ("Report") to the Minnesota Public Utilities Commission ("Commission") in accordance with Minn. Rule 7826 - ELECTRIC UTILITY STANDARDS, and relevant Commission-issued orders. This Report covers Minnesota Power's safety, reliability and service quality for 2022 and its corresponding reliability results. Through this Report, Minnesota Power details the Company's efforts and commitment to provide safe, reliable and affordable electric service to its unique customer base in northeastern and central Minnesota.

Please contact me at (218) 355-3082 or <u>cvatalaro@allete.com</u> if you have any questions regarding this filing.

Yours truly,

Claire Vatalaro

Claire Rajala Vatalaro Regulatory Compliance Specialist

CRV:th Attach.



Together we choose to work safely for our families, each other, and the public. We commit to be injury-free through continuous learning and improvement.

STATE OF MINNESOTA BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of Minnesota Power's 2021 Safety, Reliability and Service Quality Standards Report in Accordance with Minn. Rule 7826 Docket No. E-15/M-22-_____ 2021 SRSQ REPORT

Summary of Filing

Minnesota Power (or the "Company") respectfully submits its annual Safety, Reliability and Service Quality ("SRSQ") Report ("Report") to the Minnesota Public Utilities Commission ("Commission") in accordance with Minnesota Rules Chapter 7826 -ELECTRIC UTILITY STANDARDS, and relevant Commission-issued orders, including the Commission's December 2, 2021 and March 2, 2022 orders in the Company's 2020 SRSQ (Docket No. E15/M-21-230). Through this Report, Minnesota Power provides the Commission, Department of Commerce - Division of Energy Resources and other stakeholders information detailing the Company's efforts and commitment to providing safe, reliable and affordable electric service to its unique customer base.

Table of Contents

Sumn	nary of Filing	i
I.	Introduction	1
Α.	Procedure and Authority	2
в.	Organization of Filing	4
C.	Key Reliability Performance Metrics	5
D.	List of Reporting Requirements	5
Ε.	Overview of Distribution System	10
II.	2021 Year in Review	14
Α.	Factors Affecting Reliability	17
в.	Reliability Cost Overview	21
III.	Grid Modernization, System Construction and Protection	26
Α.	Grid Modernization	26
в.	Voltage Monitoring	29
C.	Vegetation Management	29
D.	Line Inspection Program	32
Ε.	Emergency Preparedness and Mutual Aid	32
IV.	Safety Reporting	
v.	Reliability Metrics Reporting	39
Α.	Work Centers	39
в.	Benchmarking	41
C.	Minn. Rule 7826.0500 Annual Reliability Reporting	43
VI.	Meter-Reading Performance	55
VII.	Customer Service Data	
VIII.	Service Quality Performance Reporting	66
IX.	Proposed Reliability Standards	
х.	Conclusion	

TABLE OF FIGURES:

FIGURE 7: MAJOR EVENT EXCLUDED SAIDI WITH CAPITAL SPENDING	22
FIGURE 8: MAJOR EVENT EXCLUDED SAIFI WITH CAPITAL SPENDING	23
FIGURE 9: VEGETATION BUDGET AND SPEND 2017-2021	30
FIGURE 10: LOCATION OF CENTRAL, NORTHERN & WESTERN WORK CENTERS	40
FIGURE 11- IEEE BENCHMARKING PARTICIPANTS	42
FIGURE 12: SAIDI, SAIFI, CAIDI BY WORK CENTER & OVERALL	44
FIGURE 13: MAJOR EVENT TOTALS BY YEAR	46
FIGURE 14: LIST OF INTERRUPTIONS TO BULK POWER SUPPLY FACILITIES	47
FIGURE 15: METER-READING STAFFING LEVELS BY WORK CENTER	61
FIGURE 16: CUSTOMER EXPECTATIONS	62
FIGURE 17: EMAIL WRAP CODES	65
FIGURE 18: DISCONNECTION NOTICES 2021	66
FIGURE 19: CUSTOMERS WHO SOUGHT AND WERE GRANTED CWR PROTECTION 2021	67
FIGURE 20: RESIDENTIAL CUSTOMERS DISCONNECTED INVOLUNTARILY & RESTORED W/IN	24
HOURS	68
FIGURE 21: COMMERCIAL CUSTOMERS DISCONNECTED INVOLUNTARILY & RESTORED W/IN	24
HOURS	68
FIGURE 22: CUMULATIVE LIHEAP CUSTOMERS 2021	72
FIGURE 23: RESIDENTIAL CUSTOMERS RESTORED W/IN 24 HOURS	73
FIGURE 24: NEW SERVICE EXTENSIONS - COMMERCIAL 2021	74
FIGURE 25: NEW SERVICE EXTENSIONS - RESIDENTIAL 2021	74
FIGURE 26: NEW SERVICE EXTENSIONS - MUNICIPAL 2021	75
FIGURE 27: NEW SERVICE EXTENSIONS - INDUSTRIAL 2021	75
FIGURE 28: NEW SERVICE EXTENSIONS - REASONS DATES NOT MET 2021	76
FIGURE 29: PREVIOUS LOCATIONS - COMMERCIAL 2021	77
FIGURE 30: PREVIOUS SERVICE LOCATIONS - RESIDENTIAL 2021	77
FIGURE 31: PREVIOUS SERVICE LOCATIONS - REASONS DATE NOTE MET 2021	78
FIGURE 32: RESPONSE TIME – BUSINESS HOURS 2021	81
FIGURE 33: RESPONSE TIME – AFTER HOURS 2021	83
FIGURE 34: CALLS BY SUBJECT MATTER - 2021	85
FIGURE 35: CUSTOMER COMPLAINTS BY MONTH 2021	88
TABLE OF TABLES:	
TABLE 1: 2021 REPORTING REQUIREMENTS	6
TABLE 2: 2021 OVERALL & WORK CENTER RELIABILITY RESULTS IN COMPARISON TO IEEE	
STANDARD	16
TABLE 3: FIVE-YEAR DISTRIBUTION PROJECTS	23
TABLE 4: RELIABILITY METRICS FOR FEEDERS WITH GRID MODERNIZATION INVESTMENT	27
TABLE 5: CIRCUITS OUTSIDE OF 6-YEAR TRIMMING CYCLE	31
TABLE 6: 2021 MUTUAL AID EVENTS	34
TABLE 7: 2021 OSHA REPORTABLE INJURIES	37
TABLE 8: 2021 DAMAGE CLAIMS PAID	38
TABLE 9: WORST PERFORMING FEEDERS USING MAJOR EVENT NORMALIZED DATA BY	
WORK CENTER	48
TABLE 10: REPORTED INSTANCES OF ANSI VOLTAGE VIOLATIONS 2021	49
TABLE 11: EMPLOYEES BY WORK CENTER	52
IABLE 12: PERCENTAGE OF CUSTOMERS EXPERIENCING REPEATED INTERRUPTIONS BY	
	52
TABLE 13: PERCENTAGE OF CUSTOMERS EXPERIENCING LONG OUTAGE DURATIONS BY	
	53
TABLE 14: RELIABILITY PERFURMANUE BY CUSTUMER CLASS	54
	54
TADLE TO. WETER EQUIPMENT AND PERCENTAGE DEPLOTED	55

TABLE 17: RESIDENTIAL METER READS – UTILITY 2021	56
TABLE 18: COMMERCIAL METER READS – UTILITY 2021	57
TABLE 19: INDUSTRIAL METER READS – UTILITY 2021	57
TABLE 20: MUNICIPAL METER READS – UTILITY 2021	58
TABLE 21: LIGHTING METER READS - UTILITY 2021	58
TABLE 22: RESIDENTIAL METER READS - SELF-READ 2021	59
TABLE 23: COMMERCIAL METER READS – SELF-READ 2021	59
TABLE 24: METERS NOT READ 6-12 MONTHS 2021	60
TABLE 25: CUSTOMER COMMUNICATION DATA FOR 2021	64
TABLE 26: TOTAL NUMBER OF EMAILS RECEIVED BY MONTH 2021	65
TABLE 27: DISCONNECTION NOTICES IN 2021	66
TABLE 28: TOTAL RESIDENTIAL CUSTOMERS WHO SOUGHT & WERE GRANTED CWR	
PROTECTION	67
TABLE 29: TOTAL CUSTOMERS DISCONNECTED INVOLUNTARILY AND RESTORED W/IN 24	
HOURS 2021	68
TABLE 30: CUSTOMERS RESTORED VIA PAYMENT PLAN 2021	69
TABLE 31: RESPONSE TIME - BUSINESS HOURS 2021	82
TABLE 32: RESPONSE TIME - AFTER HOURS 2021	84
TABLE 33: EMERGENCY MEDICAL ACCOUNT STATUS COUNT 2021	86
TABLE 34: CUSTOMER COMPLAINTS TOTALS	88
TABLE 35: RESIDENTIAL AND COMMERCIAL COMPLAINTS BY TYPE 2021	89
TABLE 36: TIMEFRAME OF COMPLAINTS RESOLVED 2021	89
TABLE 37: RESIDENTIAL COMPLAINTS RESOLVED 2021	90
TABLE 38: 2021 PROPOSED RELIABILITY PERFORMANCE STANDARDS (THESE NUMBERS W	/ILL
BE UPDATED TO 2022 PROPOSED RELIABILITY PERFORMANCE STANDARDS WHEN IEI	EE
NUMBERS BECOME AVAILABLE.)	92

LIST OF APPENDICES:

Appendix A - Outage Reports Appendix B - SAIDI Feeder Maps by Area

STATE OF MINNESOTA BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of Minnesota Power's 2021 Safety, Reliability and Service Quality Standards Report in Accordance with Minn. Rule 7826 Docket No. E-15/M-22-_____ 2021 SRSQ REPORT

I. Introduction

Minnesota Power (or the "Company") respectfully submits its sixteenth annual Safety, Reliability and Service Quality ("SRSQ") Report ("Report") to the Minnesota Public Utilities Commission ("Commission") in accordance with Minn. Rule 7826 - ELECTRIC UTILITY STANDARDS, and relevant Commission-issued orders, including the Commission's December 2, 2021 and March 2, 2022 orders in the Company's 2020 SRSQ (Docket No. E15/M-21-230).¹ Through this Report, Minnesota Power provides the Commission, Department of Commerce-Division of Energy Resources ("Department") and other stakeholders information detailing the Company's efforts and commitment to provide safe, reliable and affordable electric service to its unique customer base. Minnesota Power is proud to have provided over 99 percent reliable power for its customers in 2021 and reports, by work center, on how it performed compared to peer utilities. As described in this report, along with the Company's most recent Integrated Distribution Plan ("IDP"), Minnesota Power has initiated a number of efforts to improve reliability, including strategic undergrounding and asset renewal programs.

As described throughout this filing, Minnesota Power continued to adapt its operations as the COVID-19 pandemic evolved, the state's peacetime emergency declaration ended and residential customer disconnections resumed. Throughout 2021, Minnesota Power experienced similar challenges as others in the industry – including supply chain disruptions and workforce shortages. Therefore, the Company was challenged in meeting some of the metrics in this report, including call response times. However, the Company's Customer Care and Support Representatives spent the necessary time on customer calls

¹ In the Matter of Minnesota Power's 2020 Safety, Reliability, and Service Quality Standards Report, Docket No. E015/M-21-230 (Dec. 2, 2021and March 2, 2022).

discussing payment agreement options and assistance programs as Minnesota utilities returned to normal operations.

In addition to ensuring reliability of its system and caring for its customers, Minnesota Power is also dedicated to helping communities and fellow utilities as they endure natural disaster-related outages. In 2021, Minnesota Power received two Emergency Assistance Awards from the Edison Electric Institute for its response to supporting Ameren customers facing wind storms and Con Ed's customers in the midst of an East Coast nor'easter. Minnesota Power looks forward to continuing its commitment to Customers, Communities and the Climate in executing its Energy*Forward* strategy towards a carbon-free future.

A. Procedure and Authority

Minnesota Power is submitting this Report in accordance with Minn. Rules 7826.0400, 7826.0500, 7826.0600, subp. 1, and 7826.1300 and in compliance with Commission rules and orders relating to annual filings associated with Minnesota Power's Safety, Reliability, Service Quality and proposed reliability results. The Company provides the following required general filing information.

1. <u>Name, Address, and Telephone Number of Utility</u> (Minn. Rule 7829.1300, subp. 3(A))

> Minnesota Power 30 West Superior Street Duluth, MN 55802 (218) 722-2641

2. <u>Name, Address, and Telephone Number of Utility Attorney</u> (Minn. Rule 7829.1300, subp. 3(B))

> Matthew Brodin Senior Attorney ALLETE 30 West Superior Street Duluth, MN 55802 (218) 279-5000 mbrodin@allete.com

3. <u>Date of Filing and Date Proposed Changes Take Effect</u> (Minn. Rule 7829.1300, subp. 3(C)) This petition is being filed on April 1, 2022. Until Commission approval, the existing reliability results will remain in effect.

4. <u>Statute Controlling Schedule for Processing the Petition</u> (Minn. Rule 7829.1300, subp. 3(D))

This petition is made pursuant to Minnesota Rules 7826.0400, 7826.0500, 7826.0600, subp. 1, and 7826.1300.

Furthermore, Minnesota Power's request for approval of its proposed reliability results falls within the definition of a "Miscellaneous Tariff Filing" under Minn. Rules 7829.0100, subp. 11 and 7829.1400, subp. 1 and 4 permitting comments in response to a miscellaneous filing to be filed within 30 days, and reply comments to be filed no later than 10 days thereafter.

5. Utility Employee Responsible for Filing

(Minn. Rule 7829.1300, subp. 3(E))

Claire Vatalaro Regulatory Compliance Specialist 30 West Superior Street Duluth, MN 55802 (218) 355-3082 cvatalaro@allete.com

6. Official Service List

Pursuant to Minn. Rule 7829.0700, Minnesota Power respectfully requests the following persons to be included on the Commission's official service list for this proceeding:

Matthew Brodin Senior Attorney ALLETE 30 West Superior Street Duluth, Minnesota 55802 (218) 279-5000 mbrodin@allete.com Claire Vatalaro Regulatory Compliance Specialist Minnesota Power 30 West Superior Street Duluth, MN 55802 (218) 355-3082 <u>cvatalaro@allete.com</u>

7. Service on Other Parties

Minnesota Power is eFiling this report and notifying all persons on Minnesota Power's SRSQ Service List that this report has been filed through eDockets. A copy of the service list is included with the filing along with a certificate of service.

8. Filing Summary

As required by Minn. Rule 7829.1300, subp. 1, Minnesota Power is including a summary of this filing on a separate page.

B. Organization of Filing

This Report covers Minnesota Power safety, reliability and service quality for 2021 and its corresponding reliability results; and is organized into several sections. Each section is dependent on information from the other sections, making it appropriate to file the collection of sections as a single document. The sections and information addressed are:

- Key Reliability Performance Metrics
- List of Reporting Requirements
- Overview of Distribution System
- Public Performance Summary
- ✤ 2021 Year in Review
- Grid Modernization, System Construction and Protection
- Safety Reporting
- Reliability Metrics Reporting
- Meter-Reading Performance
- Customer Service Data
- Service Quality Performance Reporting
- Proposed Reliability Standards

Prior Commission-issued orders require Minnesota Power to respond in this filing with additional information not delineated in the administrative rules.

C. Key Reliability Performance Metrics

Reliability of the Company's distribution system is evaluated based on multiple metrics. The primary metrics used for this Report are the following:

- System Average Interruption Duration Index ("SAIDI"): Provides the duration, in minutes, of the average time customers are interrupted.
- System Average Interruption Frequency Index ("SAIFI"): Provides the frequency of sustained power outages (longer than five minutes) experienced by the average customer.
- Customer Average Interruption Duration Index ("CAIDI"): Derived by dividing SAIDI by SAIFI. The statistic generally speaks to the amount of time needed to respond to an outage.
- Momentary Average Interruption Frequency Index ("MAIFI"): Provides a measure of the average number of short outages, an interruption of electrical service Minnesota Power defines as lasting less than five minutes in duration.

Other reliability and service-specific performance metrics are addressed in this Report to provide further information and transparency into Minnesota Power's safety, reliability and service quality performance in 2021.

D. List of Reporting Requirements

This Report includes several reporting requirements that are new or updates to existing reporting requirements. Table 1 provides a cross reference of these reporting requirements to the location within this Report where this information is provided.

Table 1: 2021 Reporting Requirements

NEW REPOR	TING REQUIREMENTS	
2020 SRSQ F 230	Report Orders Dated December 2, 2021 & March 2, 2022 in Docket No.	E015/M-21-
Order Pt 2 (3/2/22)	Set Minnesota Power's 2021 statewide Reliability Standard at the Institute of Electrical and Electronics Engineers ("IEEE") benchmarking 2nd Quartile for medium utilities. Set Minnesota Power's work center reliability standards at the IEEE benchmarking 2nd quartile for small utilities.	Section II Page 15
Order Pt 3 (3/2/22)	Require a supplemental filing to Minnesota Power's 2021 SQSR report 30 days after IEEE publishes the 2021 benchmarking results, with an explanation for any standards the utility did not meet.	Anticipated to be filed August 2022
Order Pt 4 (3/2/22)	Establish three work centers for Minnesota Power, as described on pages 25-26 of the Company's 2020 Safety, Reliability, and Service Quality Report	Section II, pg. 15; Section V, pg. 39
Order Pt 2 (12/2/21)	Provide the following new information regarding electronic utility- customer interaction beginning with the reports filed in April 2023: Percentage Uptime [to second decimal] General Website XX.XX% Payment Services XX.XX% Outage map &/or Outage Info page XX.XX% Error Rate Percentage [to third decimal] Payment Services* XX.XX% *If more granular data is available, please break down the error rate for unexpected errors, errors outside of the customer's control (i.e. how often to online payments fail for reasons other than insufficient funds or expired payment methods), and/or some other meaningful categorization."	To be reported in 2023
Order Pt 3 (12/2/21)	Provide percentage uptime and error rate percentage information in their annual reports for the next three reporting cycles, to build baselines for web-based service metrics.	To be reported in 2023
Order Pt 4 (12/2/21)	Continue to provide information on electronic utility-customer interaction such that baseline data are collected: a. Yearly total number of website visits; b. Yearly total number of logins via electronic customer communication platforms; c. Yearly total number of emails or other customer service electronic communications received; and d. Categorization of email subject, and electronic customer service communications by subject, including categories for communications related to assistance programs and disconnections as part of reporting under Minn. R. 7826.1700.	Section VII Pgs.65-66
Order Pt 7 (12/2/21)	File public facing summaries with their annual Safety, Reliability, and Service Quality reports. Utilities shall work with the Executive Secretary to publish those summaries in locations visible to consumers.	Section II Pgs. 12-13

ON-GOING REPORTING REQUIREMENTS				
2019 SRSQ R	eport Order Dated December 18, 2020 in Docket No. E015/M-20-404			
Order Pt.	File the reliability (SAIDI, SAIFI, CAIDI, MAIFI, normalized/non-			
5	normalized) for feeders with grid modernization investments such as	Section III		
	Advanced Metering Infrastructure or Fault Location Isolation and			
	Service Restoration to the historic five-year average reliability for the	Pg. 28		
	same feeders before grid modernization investments.			
Order Pt.	Each utility must report over the next two reporting cycles, to the extent	Section VII		
14	feasible specific data related to electronic access and communication to	Pgs.64-65		
	customers of information.			
2018 SRSQ R	Report Order Dated January 28, 2020 in Docket No. E015/M-19-254			
Order Pt.	The Commission clarifies the reporting requirements from the			
2	Commission's March 19, 2019 order, as specified in Attachment B:	Section V		
	1. Non-normalized SAIDI, SAIFI, and CAIDI values.	Pg. 39		
	2. SAIDI, SAIFI, and CAIDI, MAIFI, CEMI, and CELI normalized values			
	calculated using the IEEE 1366 Standard.			
	MAIFI – normalized and non-normalized.			
	4. CEMI – at normalized and non-normalized outage levels of 4, 5, and			
	6 interruptions.			
	5. The highest number of interruptions experienced by any one			
	customer (or feeder, if customer level is not available).			
	6. CELI – at normalized and non-normalized intervals of greater than 6			
	hours, 12 hours, and 24 hours.			
	7. The longest experienced interruption by any one customer (or feeder,			
	if customer level is not available).			
	8. A breakdown of field versus office staff as required Minn. Rules			
	7826.0500 Subp. 1, J, including separate information on the number of			
	contractors for each work center.			
	9. Estimated restoration time accuracy, using the following windows:			
	a. Within -90 minutes to 0 of estimated restoration time			
	b. Within 0 to +30 minutes of estimated restoration time			
	10. IEEE benchmarking results for SAIDI, SAIFI, CAIDI, and MAIFI from			
	the IEEE benchmarking working group.			
	11. Performance by customer class: ASAI, SAIDI, SAIFI, CAIDI, MAIFI			
	Residential Non-normalized & Normalized, Commercial Non-normalized			
	& Normalized; industrial Non-normalized & Normalized.			
	In reporting by class is not yet possible, an explanation of when the			
	12 Courses of ouetoined ouetomer outerees, by work conter			
	12. Causes of sustained customer outages, by work center.			
Reconnect P	lot Program Order Dated December 9, 2020 in Docket No. E015/M-19-	766 (See pg.		
4)				
	The Company committed to providing specific data related to its	Section VIII		
	remote-reconnect pilot program (Reconnect Program)	Pa 69		
	1. Number of customers participating in the remote-reconnect program;	· 9. 00		
	2. Total number of Minnesota Power customers receiving low-income			
	home energy assistance;			
	3. Number of remote-reconnect participants receiving low-income			
	assistance;			
	4. Number of customers who have opted out of the remote-reconnect			
	program;			
	5. Estimated annual cost savings from the remote-reconnect program;			
	6. Average time to reconnect using the remote-reconnect program			
	compared to the standard reconnection process; and			

7. Number of reconnections restored within 24 hours of disconnection, distinguishing between standard and remote reconnections.	
Minnesota Rules 7826.0400 – 7826.2000	
Annual Safety Report 7826.0400	
Summaries of all reports filed with United States Occupational Safety and Health Administration and the Occupational Safety and Health Division of the Minnesota Department of Labor and Industry during the calendar year.	Section IV Pg. 37
A description of all incidents during the calendar year in which an injury requiring medical attention or property damage resulting in compensation occurred as a result of downed wires or other electrical system failures and all remedial action taken as a result of any injuries or property damage described.	Section IV Pg. 37-38
Reliability Reporting Requirements 7826.0500	
The utility's SAIDI for the calendar year by work center and for its assigned service area as a whole.	Section V Pa. 44
The utility's SAIFI for the calendar year by work center and for its assigned service area as a whole.	Section V Pg. 44
The utility's CAIDI for the calendar year by work center and for its assigned service area as a whole.	Section V Pg. 44
An explanation of how the utility normalizes its reliability data to account for major storms.	Section V Pg. 45
An action plan for remedying any failure to comply with the reliability standards set forth at part 7826.0600 or an explanation as to why non-compliance was unavoidable under the circumstances.	Section V Pg. 46
To the extent technically and administratively feasible, a report on each interruption of a bulk power supply facility during the calendar year, including the reasons for interruption, duration of interruption, and any remedial steps that have been taken.	Section V Pg. 47
A copy of each report filed under part 7826.0700 REPORTING MAJOR SERVICE INTERRUPTIONS.	Section V Pg. 47
To the extent technically feasible, circuit interruption data, including identifying the worst performing circuit in each work center, stating the criteria the utility used to identify the worst performing circuit, stating the circuit's SAIDI, SAIFI, and CAIDI, explaining the reasons that the circuit's performance is in last place, and describing any operational changes the utility has made, is considering, or intends to make to improve its performance.	Section V Pg. 47
Data on all known instances in which nominal electric service voltages on the utility's side of the meter did not meet the standards of the American National Standards Institute for nominal system voltages greater or less than voltage range B.	Section V Pg. 49
Data on staffing levels at each work center, including the number of full-time equivalent positions held by field employees responsible for responding to trouble and for the operation and maintenance of distribution lines.	Section V Pg. 50
Any other information the utility considers relevant in evaluating its reliability performance over the calendar year.	Section V Pg. 52-53
RELIABILITY STANDARDS 7826.0600; Subpart 1	
On or before April 1 of each year, each utility shall file proposed reliability performance standards in the form of proposed numerical values for the SAIDI, SAIFI, and CAIDI for each of its work centers. These filings shall be treated as "miscellaneous tariff filings" under the Commission's rules of practice and procedure, part 7829.0100, subp. 11.	Section IX Pg. 92
REPORTING METER-READING PERFORMANCE 7826.1400	
The annual service quality report shall include a detailed report on the utility's meter reading performance, including, for each customer class and for each calendar month:	Section VI

 A. The numbers and percentages of customer meters read by utility personnel. B. The numbers and percentages of customer meters self-read by customers. C. The number and percentage of customer meters that have not been read by utility personnel for periods of six to twelve months and for periods of longer than twelve months, and an explanation as to why they have not been read. D. Data on monthly meter-reading staffing levels, by work center or geographical area. 	Pgs. 56-61
REPORTING INVOLUNTARY DISCONNECTIONS 7826.1500	
The annual service quality report must include a detailed report on involuntary	Section VIII
disconnections of service, including, for each customer class and each calendar month:	Pgs. 66-69
A. the number of customers who received disconnection notices;	
B. the number of customers who sought cold weather rule protection under	
C the total number of customers whose service was disconnected involuntarily	
and the number of these customers restored to service within 24 hours and	
D. the number of disconnected customers restored to service by entering into a	
payment plan.	
REPORTING SERVICE EXTENSION REQUEST RESPONSE TIMES 7826.1600	
The annual service quality report must include a detailed report on service extension	Section VIII
request response times, including, for each customer class and each calendar month:	Pas 73-79
A. The number of customers requesting service to a location not previously	1 95. 10 15
served by Minnesota Power and the intervals between the date service was	
date the premises were reads for service	
B The number of customers requesting service to a location previously served by	
Minnesota Power, but not served at the time of the request, and the intervals	
between the date service was installed and the later of the in-service date	
requested by the customer or the date the premises were ready for service.	
REPORTING CALL CENTER RESPONSE TIMES 7826.1700	
The annual service quality report must include a detailed report on call center	Section VIII
response times, including calls to the business office and calls regarding service	Pas 79-85
interruptions. The report must include a month-by-month breakdown of this	. 90. 10 00
REPORTING EMERGENCY MEDICAL ACCOUNT STATUS 7826.1800	
The annual service quality report must include the number of customers who	Section VIII
requested emergency medical account status under Minn. Stat. §216B.098, subd. 5,	
the number whose applications were granted, and the number whose applications	Pys. 00-07
were denied, and the reasons for each denial.	
REPORTING CUSTOMER DEPOSITS 7826.1900	
The annual service quality report must include the number of customers who were	Section VIII
required to make a deposit as a condition of receiving service.	Pgs. 87
REPORTING CUSTOMER COMPLAINTS 7826,2000	
The annual service quality report must include a detailed report on complaints by	Section VIII
customer class and calendar month, including at least the following information:	Dae 89 01
A. The number of complaints received;	r ya. 00-a i
B. The number and percentage of complaints alleging billing errors, inaccurate	
metering, wrongtul disconnection, high bills, inadequate service, and the	
any other identifiable subject matter involved in five percent or more of	
customer complaints:	
C. the number and percentage of complaints resolved upon initial inquiry. within	
ten days, and longer than ten days	

D. The number and percentage of all complaints resolved by taking any of the following actions: (1) taking the action the customer requested; (2) taking an action the customer and the utility agree is an acceptable compromise, (3) providing the customer with information that demonstrates that the situation complained of is not reasonably within the control of the utility; or (4) refusing to take the action the customer requested.
E. The number of complaints forwarded to the utility by the Commission's Consumer Affairs Office for further investigation and action.

E. Overview of Distribution System

Minnesota Power is transforming the way it energizes communities and businesses through its Energy*Forward* resource strategy. First incorporated in 1906, Minnesota Power provides electricity service to over 145,000 residential and commercial customers, 15 municipal systems, and some of the nation's largest industrial customers across northeastern and central Minnesota. Minnesota Power's distribution system is comprised of 6,170 miles of distribution lines and 201 distribution substations ("distribution system"). The Company's service territory spans over 26,000 square miles from International Falls in the north, to Royalton in the south, and from Duluth in the east, to as far west as the Long Prairie and Park Rapids communities as shown in Figure 1.



Figure 1: Minnesota Power's Territory

Residential and commercial customers are the primary users of the distribution system, with residential customers comprising a relatively large portion of Minnesota Power's distribution system load but only representing about 13 percent of Minnesota Power's annual retail electric sales. Much of the Company's service territory across northern and central Minnesota consists of rural communities. These rural communities and customers present unique issues when planning for investment in the distribution system. Customers located at the end of multiple miles of line on a single feeder will present different service and reliability

considerations than a customer located in a more populated area with feeder redundancy.

The Company also serves a diverse group of commercial customers with varying needs and expectations, depending on the specific business (i.e., electric costs as a percentage of total operating/production costs, power quality and reliability needs, etc.). Commercial customers comprise approximately 14 percent of Minnesota Power's annual retail electric sales. Reliability is of the utmost priority to commercial customers, and for many of these customers, any interruption in electric service has the potential to stop business and immediately impact their bottom line. For those customers with sensitive loads and technology-related businesses, power quality, and even momentary outages, may be a significant issue.

Minnesota Power's industrial customers are serviced directly from the transmission system, with the exception of required ancillary services, such as pumps and lighting, which are served from the Company's distribution system.

In order to meet the needs of its unique customer base, Minnesota Power developed its distribution strategy on the foundation of technology, innovation, and continuous learning. Customers expect reliable, affordable, and safe electric service, all of which are encompassed in the distribution planning strategy. Meeting these expectations requires deploying right time/right fit distribution technology that is flexible, adaptable, and upgradable. The Company has also strategically positioned its distribution system for the deployment of emerging distribution technology through thoughtful planning in all areas of its business while maintaining a focus on customers' needs, upholding distribution planning principles,² and aligning these investments with the Company's sustainability³ goals. Sustainable prosperity which balances economic, environmental, and social needs, for both the Company and its customers, over the long-term is Minnesota Power's goal. Safety, integrity, environmental stewardship, employee development, and community engagement must be in the balance of every decision made and action taken.

² *In the Matter of Minnesota Power's 2021 Integrated Distribution Plan*, Docket No. E015/M-21-390, 2021 Integrated Distribution Plan, at 9 (Oct. 25, 2021).

³ *In the Matter of Minnesota Power's 2021 Integrated Resource Plan*, Docket No. E015/RP-21-33, 2021 Integrated Resource Plan at 6 (Feb. 1, 2021).

The public summary communication regarding Minnesota Power's 2021 SRSQ results is included below.

2021 SAFETY, RELIABILITY, AND SERVICE QUALITY

OUR MISSION: Together we will safely and reliably create and deliver vital energy to enhance security, comfort, and quality of life.

Minnesota Power, a division of ALLETE Inc., is committed to the reliability and security of the regional power system that provides electricity in a 26,000-square-mile electric service area in northeastern Minnesota.

MINNESOTA POWER PROVIDES OVER 99% RELIABILITY for its residential, commercial and industrial customers. Reliability is having the energy when it's needed.







COMPANY READ METERS:

In 2021, our meter reading systems and meter reader collectors read nearly all of our residential meters in an effort to ensure customer bills are accurate.

Meter reading by method:

Company reads - 97.75% Customer self-reads - 0.04% Estimated - 2.21% CUSTOMER SERVICE: Minnesota Power is dedicated to providing safe, reliable, affordable and increasingly clean electric service and to achieving high levels of customer satisfaction.

- In 2021, we received 123,019 customer calls in our Call Center. Our customer care and support representatives answered 50% of incoming phone calls during business hours within 20 seconds.
- In 2021, 102 lineworkers and 21 substation technicians responded to trouble calls and worked on maintenance of our distribution lines and associated equipment.
- In 2021, 51 employees working in a variety of positions, including vegetation management and system operations, provided line operation support.

COMMUNICATIONS: We communicate with our

customers in person; by phone; through news releases, media, direct mail and bill inserts; on **mnpower.com**; through MyAccount at **mnpower.com/myaccount**; and via the Minnesota Power app.



NEED INFORMATION OR ASSISTANCE?

Customer Service: 1 (800) 228-4966 or CustomerService@mnpower.com

Minnesota Relay/TTY: 711 or (800) 627-3529

COVID-19 FAQs: www.mnpower.com/CustomerService/Covid19FAQ

Report an outage or enter a trouble order: www.mnpower.com/OutageCenter/ReportAnOutage or call 800-30-POWER (218-307-6937); if emergency, call 911.

2021 SAFETY, RELIABILITY, AND SERVICE QUALITY

MINNESOTA POWER

SYSTEM RESILIENCY

Interruptions are the total loss of electric power to one or more customers connected to the distribution system.

What causes Interruptions?

A higher frequency of windstorms was a major contributor to weather being the largest reliability factor in 2021. Minnesota Power is making investments and executing several reliability and resiliency initiatives to strengthen the company's system in coming years.



0.0% - 6 + interru pitton s

We work to minimize weather-related outages in a variety of ways, including:

- Using Trip Saver technology to minimize long duration outages and dispatch of service technicians.
- Providing resiliency during storm events and strategically strengthening the distribution system through our strategic underground initiative.
- Optimizing the use of a secure fiber-optic network and technology to quickly isolate and restore customers through the use of intellirupters and motor operated switches.



The Minnesota Power app makes it easier for customers to access the company's outage map and other outage information. Users are able to check on the status of power outages in their area, learn when their powerwill be restored or report an outage. mnpower.com/mobileapp

MUTUAL AID: Minnesota Power is a respected mutual aid partner lending assistance in the Midwest as a member of the Midwest Mutual Assistance Group as well as on a national level. Crews and line support staff have assisted on many natural disasters over the years including snow and high windstorms, hurricanes and wildfires.

In recognition of our mutual aid, Minnesota Power received an Emergency Assistance Award from the Edison Electric Institute for our responses to a nor'easter in New York in 2021, a derecho in Illinois in 2020, a severe snow and windstorm in Manitoba in 2019, and hurricanes in Puerto Rico in 2018, and Miami in 2017.

mnpower.com | 1-800-228-4966

22040

Figure 2: Minnesota Power's Public Summary for 2021

II. 2021 Year in Review

Minnesota Power swiftly adapted its operations as the COVID-19 pandemic evolved over the course of 2020 and continued into 2021. In March 2020, the Company voluntarily took several proactive measures to provide protections and enhance safety for employees, customers, and communities during the declared state peacetime emergency.⁴ First and foremost, Minnesota Power put numerous additional safety precautions in place, including: suspensions of all non-emergency customer site visits, avoiding direct customer contact while conducting construction and maintenance of electric facilities and equipment, eliminating all indoor work (except by specific, necessary personnel or in the case of emergency), and following appropriate Centers for Disease Control ("CDC") and Occupational Safety and Health Administration ("OSHA") guidelines when entering homes or businesses for emergency-related services only. Currently, any customer site visits are preplanned and prescreened, and follow current CDC and OSHA guidelines.

The Company also responded to COVID-19 by immediately suspending disconnections for residential customers facing financial hardship as a result of the coronavirus pandemic. In its August 13, 2020 Order under Docket No. E,G-999/CI-20-375, the Commission formally ordered suspension of disconnections for residential customers; suspension of negative reporting to credit agencies for residential customers; and waiving reconnection, service deposits, late fees, interest, and penalties for residential customers. In the Commission's May 26, 2021 Order, the Commission adopted a modified Consumer Advocates' Transition Plan, and allowed for the resumption of residential customer collections were suspended, Minnesota Power redeployed field staff to focus on advanced metering infrastructure ("AMI") installations. As approved in the Commission's May 26, 2021 Order, then the Completeness and it its May 26, 2021 Order, Minnesota Power resumed normal operations by way of disconnection notices

⁴ On March 13, 2020, Governor Tim Walz signed Emergency Executive Order 20-01, declaring a Peacetime Emergency and Coordinating Minnesota's Strategy to Protect Minnesotans from COVID-19, as most recently extended through July 14, 2021 in Emergency Executive Order 21-24, https://mn.gov/governor/assets/EO%2021-24%20Final_tcm1055-485447.pdf. Governor Walz's emergency powers ended on July 1, 2021.

starting in June 2021 and reinstatement of service disconnections for non-payment on or after August 2, 2021. Some protections remain in place for the duration of the transition period, which ends April 30, 2022.

In 2021, Minnesota Power continued to be impacted by the COVID-19 pandemic in its day-to-day operations. One aspect is supply chain disruptions which include unexpected, significant increases in commodity prices and lengthy delays in material delivery times. The Company has been proactively finding creative ways to address these impacts, including working with neighboring utilities, communicating with customers, and working diligently with vendors and suppliers to identify new options and plans for longer lead times. Another aspect impacted in 2021 is call response times. As the return to more standard collections operations occurred, the number of calls and duration of those calls has increased. In particular, Minnesota Power has worked with customers on expanded payment agreement terms and accessing a significant increase in available assistance program funding to help customers with arrears balances that grew from the beginning of the pandemic. Like many employers currently experiencing the implications of a workforce shortage, Minnesota Power's call center was further challenged by unplanned absences and staffing shortages.

The Commission recognized in its January 28, 2020 Order in Docket No. E015/M-19-254 that some metrics, including the method by which it currently sets reliability goals, may need to be modified and agreed that benchmarking provides a better way to understand how utilities are performing in relation to peer utilities. In Order Point 2 of its March 2, 2022 Order in Docket No. E015/M-21-230, the Commission set Minnesota Power's 2021 statewide Reliability Standard at the Institute of Electrical and Electronics Engineers ("IEEE") benchmarking 2nd Quartile for medium utilities, and set the Company's work center reliability standards at the IEEE benchmarking 2nd quartile for small utilities.

Based on the standards for medium utilities, the Company met these major event-excluded IEEE 2nd quartile target goals for SAIDI by 2.00 minutes and CAIDI by 29.2 minutes but failed to meet its goals for SAIFI by 0.36.⁵

Based on the standards for small utilities, the Company met these major event-excluded IEEE 2nd quartile target goal for SAIDI in the Central, Northern, and Western Work Centers by 92.16, 28.81, and 22.05, respectively.

For SAIFI, the Company met the goal in the Central and Northern Work Centers by 0.22 and 0.17 respectively, but failed to meet this goal in the Western Work Center by 0.24. Lastly, the Company met the goal for CAIDI in the Central and Western Work Centers by 39.64 and 19.84, respectively, but failed to meet this goal in the Northern Work Center by 7.45.

Year: 2021	SAIDI	SAIFI	CAIDI
Medium Utilities 2 nd Quartile	128.00	0.98	123.00
Results Overall	126.00	1.34	93.80
Small Utilities 2 nd Quartile	187.00	1.42	119.00
Results Central	94.84	1.20	79.36
Results Northern	158.19	1.25	126.45
Results Western	164.95	1.66	99.16

Table 2: 2021 Overall & Work Center Reliability Results in Comparison to IEEE Standard

*Red indicates goal not met

For all SAIDI values throughout 2021, including the two major event-excluded days, there were more than 5,900 unique events, of which 98 major events (greater than 50,000

⁵ Details of the Company's performance in relation to the work center reliability standards at the IEEE benchmarking 2nd quartile for small utilities are included in Section V.

Customer Minutes of Interruption ("CMI")) contributed more than 68 percent of overall SAIDI. The Company is experiencing a greater number of significant weather events which did not rise to the level of the major event exclusion rule threshold, but still impact operations. These non-excluded events account for the majority of the Company's SAIDI minutes.

In 2021, Minnesota Power experienced a number of incidents similar to 2020 but that were not typical compared to prior years. For example, in 2021, the Company experienced about 5,900 incidents throughout the course of the year, and in 2020 the Company experienced about 6,000 incidents. However, this is well-above the approximately 3,475; 5,000; and 5,100 incidents experienced in 2017, 2018 and 2019, respectively. The Company continues to assess trends from previous years as it seeks to refine its expectations for the near-term and beyond.

A. Factors Affecting Reliability

For major event-excluded SAIDI data, weather events attributed to 31 percent, overhead equipment failure 11 percent, underground equipment failure 11 percent, and wildlife contributing 9 percent. The remaining outage minutes consisted of incidents related to people (car accidents, etc.), vegetation, planned outages and other causes. (More on causes of outages can be found in Section V of this Report.)

Weather was the largest reliability factor in 2021. Lightning occurred at a higher frequency throughout the year, but a heavy snowfall in March was the single largest contributor to overall outage totals. Minnesota Power is continually developing solutions and is executing several reliability initiatives to help minimize weather-related outages in the future. Trip Savers are being installed across Minnesota Power's service territory to clear temporary faults resulting from tree contacts and lightning. Strategic undergrounding efforts were initiated in 2020 and will continue on some of the Company's worst performing overhead lines. For its strategic undergrounding effort, Minnesota Power is targeting areas where customers do not allow access to vegetation management, such as tree trimming, and areas where overhead lines are installed in inaccessible areas with heavy vegetation.

Equipment failure was also a contributing factor to reliability results in 2021. Asset renewal programs such as switch and cutout replacements, along with Trip Savers, to replace porcelain cutouts are expected to aid improvement of this category. The Company is continuing the implementation of its Preventative Maintenance ("PM") program on substation and distribution equipment. This PM program includes replacement or refurbishment of switches, capacitor banks, and reclosers. In the future, the program will focus on transformers and regulators. By focusing on this PM program, the Company can verify at any time that system equipment is functioning. PM reviews will also more readily identify equipment that needs to be replaced or updated as part of larger asset renewal programs. For more information regarding the Company's reliability improvement efforts, including strategic undergrounding and asset renewal, please see Minnesota Power's 2021 Integrated Distribution Plan in Docket No. E015/M-21-390.

Major Event Excluded SAIDI by Cause Overall







Figure 3: Major Event Exclude SAIDI Results



Figure 4: Major Event Excluded SAIFI Results

B. Reliability Cost Overview

The following graphs show the trouble costs and capital spending for SAIDI and SAIFI in 2021. The increased capital spending reflects the Company's commitment to improve the reliability of its system through strategic investments.



Figure 5: SAIDI with Trouble Costs



Figure 6: SAIFI with Trouble Costs



Figure 7: Major Event Excluded SAIDI with Capital Spending



Figure 8: Major Event Excluded SAIFI with Capital Spending

As communicated in Minnesota Power's 2021 IDP, the Company also maintains a substation modernization program that is anticipated to include individual projects with a total cost of greater than two million dollars. The estimated cost and overview of these projects are discussed in Table 3: Five-Year Distribution Projects.

Project Name	Preliminary Projected Costs	Anticipated In-Service - Date	Project Area	Project Description
Switchgear Replacement Program	\$2.0M \$7.5M	2025 2026	Anticipated Substations*: Colbyville, Haines Road (Duluth) *subject to change based on asset renewal	Across Minnesota Power's system there are many transmission-to- distribution substations that require age-related upgrades. Much of the original equipment in these substations is nearing or beyond the end of its useful life. Minnesota Power's Switchgear Replacement Program involves coordinated replacement of end- of-life assets and holistic modernization improvements designed to extend the

Table 3. Five-real Distribution Fiolect	Table 3	3: Five-Yea	r Distribution	Projects
---	---------	-------------	----------------	----------

			project prioritization	lives of these substations for the next several decades. Planned age-related replacements include distribution-voltage indoor switchgear, transformers, and associated equipment. The Switchgear Replacement Program takes a holistic, site-by-site approach to facilitating the coordinated and efficient modernization of aging substations with indoor switchgear throughout Minnesota Power's system, addressing the unique needs and constructability considerations of these sites. In 2019-2020, the prioritization of Substation Modernization and Switchgear Replacement program projects was re- evaluated and updated to be consistent with the overall transmission and distribution asset renewal needs of each site.
Substation Modernization (Asset Renewal) Program	\$7.8M \$9.9M \$10.7M \$5.9M \$3.9M	2022 2023 2024 2025 2026	Anticipated Substations*: Long Prairie, Silver Bay, Cloquet, Verndale, Little Falls, Winton, Hibbing, Nashwauk, Virginia *subject to change based on asset renewal project prioritization	Across Minnesota Power's system there are many transmission-to-distribution substations that require age-related upgrades. Much of the original equipment in these substations is nearing or beyond the end of its useful life. Minnesota Power's Substation Modernization (Asset Renewal) Program involves coordinated replacement of end-of-life assets and holistic modernization improvements designed to extend the lives of these substations for the next several decades. Planned age-related replacements include outdoor circuit breakers, transformers, switches and associated equipment. The Program takes a holistic, site-by-site approach to facilitating the coordinated and efficient modernization of the many aging substations throughout Minnesota Power's system. In 2019-2020, the prioritization of Substation Modernization and Switchgear Replacement Program projects was re-evaluated and updated to be consistent with the overall transmission and distribution asset renewal needs of each site.

Canosia Road Substation 34 kV Expansion	\$2.2M	2022	Cloquet	The Canosia Road Substation 34 kV Expansion will be the first step and foundation in a multi-year plan to modernize and improve the Cloquet-area distribution system. There are several factors driving the need for improvements in the Cloquet area:		
				• Asset Renewal & Standardization: Implementing a standard 34.5 kV backbone distribution network for the Duluth/Cloquet area. There are presently three different backbone distribution voltages between Duluth, Cloquet, and Hinckley. The Canosia Road Expansion and subsequent projects will convert existing 24 kV and 46 kV systems to 34.5 kV while addressing asset renewal needs for existing feeders and stepdowns associated with these systems		
				• System Capacity & Asset Renewal Project Constructability: Enabling the Cloquet Substation Modernization (Asset Renewal) Project to take place. Cloquet Substation is one of the highest-priority asset renewal sites in the Minnesota Power system, but the distribution system lacks sufficient capability to reliably support the Cloquet area during the extended outage of the Cloquet Substation that would be needed to implement the asset renewal project		
				• <i>Reliability & Grid Modernization</i> : Improving reliability for Cloquet-area customers by reducing feeder exposure, providing backup capability from new feeders and 34/14 kV stepdowns, and enabling feeder automation projects to be implemented for enhanced visibility and rapid system restoration		

III. Grid Modernization, System Construction and Protection

In the following sections, the Company discusses its efforts to modernize and strengthen the distribution system in order to maintain safe, reliable, affordable – and increasingly resilient - energy to meet customer and stakeholders expectations.

A. Grid Modernization

Grid Modernization Projects are efforts that go beyond the Company's baseline efforts to maintain safe, reliable, and affordable energy but are necessary to keep pace with changing technology, regulatory requirements, and customer expectations. Grid modernization is and has been a priority for Minnesota Power and the Company has developed a plan to modernize the system and ensure reliability of service. With many assets more than 40 years old, asset management programs and investments have become an area of significant focus for the Company. Asset renewal programs have been bolstered in recent years in an effort to target areas known to impact customer reliability and system resiliency. Minnesota Power has taken a strategic approach that targets key feeder and substation connected assets that are both at end-of-life and contributing negatively to reliability. At the substation level, programs have been integrated into a single substation modernization project designed to efficiently address all of the asset renewal needs at once.

Reliability improvements will continue to be implemented using equipment such as Trip Savers, storm hardening the system via strategic undergrounding, and using FLISR (Fault Location, Isolation, and Service Restoration) technology utilizing a secure fiber-optic network to quickly isolate and restore customers through the use of intelligent reclosers, smart sensors, and motor operated equipment. The Company will expand the use of Trip Savers, which are maintenance free and significantly cheaper than traditional oil filled reclosers that have been historically used for similar applications. Trip Savers are also being installed to replace porcelain fused cutouts which will reduce failures and clear temporary faults, resulting in improved reliability and reduced incidents where a technician is dispatched to perform a service. In 2021, over 100 Trip Savers and six reclosers were installed or replaced across the Minnesota Power system. In compliance

with Order Point 5 of the December 18, 2020 Order for the 2019 SRSQ Report, Minnesota Power provides the SAIDI, SAIFI, CAIDI, and MAIFI (normalized/non-normalized) for feeders with grid modernization investments to the historic five-year average reliability for the same feeders before grid modernization investments.

RGV-256 IntelliRupters installed in 2012	Storm Included			Storm Excluded				
Year	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
Before Install 5 Year Ave(2007-2011)	143.72	0.6	3.2	239.53	24.23	0.32	1.8	75.72
2021	50.05	1.2	0	41.71	50.05	1.2	0	41.71
RGV-252 IntelliRupters installed in 2011	Storm Included			Storm Excluded				
Year	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
Before Install 5 Year Ave(2006-2010)	195.37	1.47	7.8	132.90	55.32	0.66	7.4	83.82
2021	271.2	2.64	15.98	102.73	212.94	1.89	15.98	112.67
SLA-203 IntelliRupters installed in 2015	Storm Included			Storm Excluded				
Year	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
Before Install 5 Year Ave(2010-2014)	0	0	0	0	0	0	0	0
2021	125	1	0	125.00	125	1	0	125.00
SLA-208 IntelliRupters installed in 2015	Storm Included			Storm Excluded				
Year	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
Before Install 5 Year Ave(2010-2014)	0	0	0.2	0	0	0	0.2	0
2021	0	0	0	0	0	0	0	0
FBG-269 Tripsavers installed in 2016	Storm Included			Storm Excluded				
Year	SAIDI	SAIFI	MAIFI	CAIDI	SAIDI	SAIFI	MAIFI	CAIDI
Before Install 5 Year Ave(2011-2015)	246.57	1.35	0.2	182.64	242.59	1.35	0.2	179.70
2021	124.75	0.75	0.09	166.33	123.7	0.75	0.09	164.93

Table 4: Reliability Metrics for Feeders with Grid Modernization Investment

The Company has made several advancements in tracking and improving the frequency of failed equipment. Minnesota Power recently developed a Mobile Workforce application that allows all employees to identify areas of concern on the system. In the last five and one-half years, the Company has received over 5,750 observations and has remedied over 81 percent of those observations. Maintenance work identified by the program is prioritized and executed daily. The Company expects to see rates of failed equipment decrease in future years as these issues are resolved. In 2020, this program was expanded to employees within vegetation management, power delivery, and transmission departments to enter and react to issues discovered in the field.

Minnesota Power implemented Mobile Workforce in three phases: in 2017 paperless processing was created for nearly 30,000 customer orders annually; in 2019 trouble tickets from the Outage Management System into the Mobile Workforce application went live allowing an additional 4,000 tickets annually to be processed electronically within that application; and in 2022 the Company is focused on integration of work and asset management systems.

Inspection programs, such as monthly substation inspections and groundline resolution on wood poles, also help to identify problem areas on the distribution system. Groundline inspections utilize a third party contractor to test wood poles for shell thickness, deterioration, and infestation of insects. As items are discovered during inspections, they are entered into the Company's Geographical Information System ("GIS") for resolution. As this equipment is identified and replaced, the reliability of the newer equipment serves to reduce outages.

Lastly, an inspection app was created for line personnel to actively inspect and address issues on distribution feeders. This app tracks issues identified and which areas still require inspection. By proactively identifying and fixing issues such as cracked insulators, cutouts, crossarms, and damaged poles, the Company expects reliability to improve as all feeders are inspected. In 2021, 10 feeder inspections were fully completed.

28

B. Voltage Monitoring

Smart grid line sensors replaced obsolete line voltage and outage monitors in 2017. The new technology improves system monitoring including outages, voltage levels (under or over), current levels, and power quality. Alarms and profiles will help identify areas that may be experiencing momentary outages or have temporary voltage drop or rise outside of normal operating limits. The Company now has line sensors at every feeder within its system that did not have SCADA.⁶ This information is emailed to area engineers, supervisors, and line personnel as events happen on the feeders.

C. Vegetation Management

Vegetation Management is essential to improve reliability and mitigate risks of wildfire and power outages on the distribution system – and is even more critical for overhead portions of the distribution system that have long radial single sourced feeders, primarily in rural areas. System reliability can be adversely impacted by many external environmental factors and vegetation encroachments are one of the more significant factors that can impact the Company's system. A coordinated and systematic vegetation management program is a key component of Minnesota Power's distribution reliability effort. Minnesota Power has designed a vegetation management program to address each distribution line approximately every six years and transmission lines every seven years. Vegetation management benefits the system in various ways:

- Reduces momentary outage events due to vegetation contact
- Improves system performance by reducing wildlife contacts
- Improves restoration time as circuits are easier to access

⁶ Supervisory control and data acquisition ("SCADA") is a system comprised of hardware and software components used to monitor and control industrial processes. A SCADA system collects and analyzes real time production data, monitors and manage alarms, and programs automatic control responses triggered by certain events or system parameters.

Figure 9 presents Minnesota Power's budget to spend for vegetation management over the past five years.



Figure 9: Vegetation Budget and Spend 2017-2021

Minnesota Power's vegetation management program for its distribution system has 340 electrical circuits spanning 4,753 miles of overhead distribution right-of-way. Routine vegetation management activities are typically scheduled on a six year timetable, but this schedule may be advanced or delayed depending on actual conditions. Since vegetative growth depends on many conditions such as: precipitation, temperature, length of growing season, type of vegetation, soil fertility, and the time of year the circuit was previously maintained; the actual maintenance schedule may be longer or shorter than six calendar years.

Vegetation maintenance is normally accomplished through tree trimming, tree removal and/or application of herbicide. In addition to routine vegetation maintenance, Minnesota Power responds directly to tree concerns from its customers. When a customer calls with a tree concern, a Company representative visits the customer's property to investigate the situation. In cases where the vegetation creates a potential electrical hazard due to its proximity with the electric facilities, Minnesota Power eliminates the hazard. However, it should be noted that trees can fall onto lines that are well outside of the prescribed vegetation management limits addressed as part of the regular maintenance cycle.

Minnesota Power plans to continue diligent management of the vegetation on its distribution system on a targeted six year basic cycle. The Company's vegetation management program utilizes three Certified Arborists in determining the actual vegetative growth, environmental conditions, reliability performance and growing seasons for each circuit. After examining these factors, the Company determines the timing of circuit clearing activities. This approach has aided in providing customers with reliable service for many years.

Table 5 lists the individual circuits scheduled to receive routine maintenance that have not had vegetation management activities in the six years prior to December 31, 2021. Together, they represent 4.8 percent of the Company's total distribution system by line miles. All of these circuits will be completed in 2022.

Substation	Feeder	Mileage	Last Done	Scheduled	Years
COL-241	Colbyville 241	19.0	2015	2022	7
COL-242	Colbyville 242	26.0	2015	2022	7
COL-244	Colbyville 244	19.7	2015	2022	7
COA-1	Cohasset, River crossing	0.8	2015	2022	7
COE-1	Coleraine, Arena, Curley Ave.	1.8	2015	2022	7
COF-1	Coleraine, Overpass, Hwy 169	1.4	2015	2022	7
DRR-2	Deer River 2	5.2	2015	2022	7
DRW-1	Deer River, C.R. 128	0.3	2015	2022	7
FRR-275	French River 275	54.1	2015	2022	7
FRR-276	French River 276	24.3	2015	2022	7
GRR-325	Grand Rapids 325	5.9	2015	2022	7
EGV-513	Eagle Valley 513	11.2	2015	2022	7
EGV-517	Eagle Valley 517	9.6	2015	2022	7
LGW-334	Lind-Greenway 334	15.1	2015	2022	7
ZMP-335	Zemple 335	22.7	2015	2022	7
ZMP-337	Zemple 337	9.1	2015	2022	7
	Total	226.3			

Table 5: Circuits outside of 6-year trimming cycle
D. Line Inspection Program

Minnesota Power has an active line inspection program which includes the inspection of each pole on a ten year cycle. Poles that are 20 years and older are bored and checked internally for structural integrity. Approximately 15,000 poles, or ten percent, are inspected annually. Depending on what is found during the pole inspection, one of the following actions is taken:

- 1) Poles found to be compliant with inspection criteria are identified as needing no work pending the next ten year inspection; or
- 2) If insects or decay within the pole are found and treatable, action is taken to stop further effects from the insect or decay; or
- 3) If the pole is beyond treatment or stubbing, it is replaced.

Along with poles, line inspectors also visually inspect electrical equipment and other attachments to the pole, as well as ground-mounted equipment looking for potential problems. The line inspectors are given Minnesota Power contact information that allows them to resolve issues requiring immediate response in the field. Other items are addressed through a standardized Groundline Resolution program. Minnesota Power is currently in the fourth year of its second complete ten year cycle. The Company estimates that the average age of the poles in its service territory are 35 years old and the average age of a replaced pole is approximately 50 years old. Minnesota Power has found this to be a prudent and logical way of evaluating and replacing the poles on its system.

E. Emergency Preparedness and Mutual Aid

Mutual aid is the cooperation between utilities to provide labor and vehicles to a utility so profoundly affected by outages that it is unlikely they will have the ability to restore power to all of their customers within four to seven days. A robust protocol has been developed between the Midwest Mutual Assistance Group ("MMAG") which is comprised of 34 investor owned utilities. Generally, a utility calls upon Mutual Aid when they face a week or more of outage times and multiple weeks of restoration work. Regionally, neighboring

mutual aid partners, when able, respond to outages and restoration work estimated in the 36 to 48 hour timeframe. Responding utilities are reimbursed by the requesting utility for all expenses occurred.

To begin the process, Mutual Aid member representatives are contacted via e-mail, text message and finally a call by an interactive voice response unit. Each company has a minimum of two (and most have three) Mutual Aid representatives so attendance by each utility on the conference call is virtually guaranteed. At the beginning of a Mutual Aid call, the moderator references a spreadsheet with all of the utility names and their representatives. The moderator will work utility by utility obtaining and recording system status, utility needs and utility resources. After all of the utilities have reported, the most effective response coordination is formulated and finalized.

Utilities also utilize the Resource Allocation Management Program for Utility Personnel ("RAMP-UP") tool, where a requesting utility can enter their needed resources, and the other utilities can put in their crew resources until the need is filled. RAMP-UP was created after Superstorm Sandy in 2012 when Edison Electric Institute ("EEI") leadership initiated the National Response Event to provide a better way to allocate responding resources among the requesting utilities on a national base. Prior to RAMP-UP, a spreadsheet was developed to capture and manage all resource requests and responses. This spreadsheet was not designed to be multi-user, had limited reporting capabilities, and was difficult to use. RAMP-UP is a network-based, multi-user application designed to support several hundred concurrent users.

RAMP-UP allows users to: initiate a new event within RAMP-UP; enter their requests for needed resources or offers to provide resources; see a consolidated view of requests and responses displayed in a Map View; run an allocation calculation to determine equitable shares of resources for each requesting company; match the requests with the crews and other resources being offered; produce useful reports; and provide situational awareness to key organizations during an event.

EEI worked closely with its members and utility partners to create RAMP-UP, and is another way EEI member companies seek to continually improve and move forward in storm and disaster response. To date, this has been the best tool to efficiently get a requesting utility help efficiently and effectively, both regionally and nationally.

Requesting Utility	Reason	Location	Date
Con Edison	Winter Storm	New York, NY	2/3-2/26
Grand Rapids Public Utilities	Thunderstorms/Wind	Grand Rapids, MN	7/28-7/30
Xcel Energy	Thunderstorms/Wind	Newport, MN	9/17-9/19
Xcel Energy	Winter Storm	Rhinelander, WI	12/17
Wisconsin Public Service	Winter Storm	Rhinelander, WI	12/17-12/19

Table 6: 2021 Mutual Aid Events

In February, Con Edison requested our assistance with New York City underground electric system repair due to salt water damage after a very large winter storm. Minnesota Power's specialized underground Line crews broke into two working teams so that the Company could send half of them with a supervisor for the first two weeks, while the other half remained in Duluth to be able to respond to Duluth system underground issues as needed. After the initial two weeks, the crews switched, using commercial flights and leaving the trucks for the second crews. The supervisor stayed in New York for the duration of the assistance by both crews. Additional details are provided below as the crew earned another EEI Emergency Assistance Award.

Grand Rapids Public Utilities, Xcel Energy, and Wisconsin Public Service storm responses were shorter responses, with less of an extended stay needed. Minnesota Power is proud to report that crews had zero injuries and accidents throughout its 2021 Mutual Assistance trips.



Above: Minnesota Power crew members pump water out of an enclosure in order to locate a faulted cable while working mutual assistance for Con Edison in New York City.

Mutual Aid Recognition

Minnesota Power and Superior Water Light and Power ("SWL&P") crews have assisted other utilities during many natural disaster-related outages over the years, and have received several Emergency Assistance Awards for their service. The Emergency Assistance Award is given to select EEI member companies to recognize their outstanding efforts to assist other electric companies with power restoration after service has been disrupted by severe weather or other major incidents. The winners are chosen by a panel of judges following an international nomination process. In 2021, Minnesota Power received two EEI Emergency Assistance Awards for mutual aid responses.

On Jan. 14, 2021, EEI presented Minnesota Power and SWL&P with the EEI "Emergency Assistance Award" for their mutual aid response in assisting Ameren in restoring power

to thousands of customers after a derecho⁷ event caused widespread severe wind damage across lowa, northern Illinois, and northern Indiana in August 2020.

Minnesota Power received its second Emergency Assistance Award of 2021 on June 8, 2021, for the Company's mutual aid response after a nor'easter⁸ damaged underground electric systems in New York City in February, 2021. After the storm, Con Edison requested underground lineworkers to help repair damage to underground electrical wiring. The area received about 18 inches of snow followed by above-freezing temperatures, and the runoff from melting snow and road salt made its way into the utility's underground vaults.

Minnesota Power has a long history of assisting other utilities when needed. In 2019, Minnesota Power and SWL&P assisted Manitoba Hydro in restoring power after Manitoba was hit with heavy snow and high winds in a slow-moving storm. Crews have also joined hurricane responses six times in the past 15 years, including in Florida, Ohio, Maryland, New Jersey; and in Puerto Rico from late 2017 into early 2018 after Hurricanes Irma and Maria. Additionally, in 2018, Minnesota Power foresters helped Pacific Gas and Electric inspect and clear burned and dangerous trees from power line easements in the area affected by the Camp Fire, the deadliest wildfire in California history.

⁷ A derecho event is a widespread, long-lived wind storm associated with rapidly moving showers or thunderstorms.

⁸ Nor'easters are large, intense areas of low pressure that typically develop off the East Coast during the late fall, winter and early spring.

IV. Safety Reporting

"Together we choose to work safely for our families, each other and the public. We commit to be injury-free through continuous learning and improvement."

Safety is a core value at Minnesota Power. The Company provides important information for customers on its website (<u>https://www.mnpower.com/CustomerService/safety</u>) addressing safety topics including: Call Before You Dig; Outdoor Safety; Electrical Safety at Home: Electrical Safety at Work; Electrical Safety for Emergency Responders; and Please Drive Safely Around Our Crews. Per Minn. Rule 7826.0400, the Company provides the required information.

A. Summaries of all reports filed with United States Occupational Safety and Health Administration and the Occupational Safety and Health Division of the Minnesota Department of Labor and Industry during the calendar year.

Deaths	Total number of cases with days away from work	Job transfer or restriction	Other recordable cases
1	6	1	10
<u>-</u>	·	·	-

Table 7: 2021 OSHA Reportable Injuries Number of Cases

Number of Days

Days of job transfer or restriction	Days away from work
259	287

Injury and Illness Types

Injuries	Skin disorders	Respiratory conditions	Poisonings	All other illnesses
18	0	0	0	0

B. A description of all incidents during the calendar year in which an injury requiring medical attention or property damage resulting in compensation occurred as a result of downed wires or other electrical system failures and all remedial action taken as a result of any injuries or property damage described.

There were no incidents in 2021 in which injuries requiring medical attention occurred as a result of downed wires or other electrical system failures. However, Minnesota Power

is deeply saddened to report the accidental death of a substation technician that occurred in March during maintenance work on a substation in Bovey, Minnesota.

A listing of all incidents in which property damage resulting in compensation occurred as a result of downed wires or other electrical system failures and the remedial actions taken is included in Table 8.

Date	Cause of Damage	Paid	
01/11/21	Pay Electrician's Invoice	\$720.00	
02/08/21	Vehicle Damage	\$2,728.76	
02/13/21	Pay Electrician's Invoice	\$324.46	
04/30/21	Dented Metal Roof	\$9,148.93	
05/25/21	Tree Dropped on Vehicle	\$1,667.87	
05/31/21	MP Dug into Private Sewer Pipe	\$605.00	
06/07/21	DC Line High Wind Event – Crop Damage	\$3,215.05	
06/07/21	DC Line High Wind Event – Crop Damage	\$4,400.00	
06/07/21	DC Line High Wind Event – Crop Damage	\$516.00	
06/07/21	DC Line High Wind Event – Crop Damage	\$150.00	
06/07/21	DC Line High Wind Event – Crop Damage	\$2,700.00	
06/07/21	DC Line High Wind Event – Crop Damage	\$1,404.00	
06/18/21	Vehicle Damage	\$2,752.29	
08/13/21	Private Equipment Damage – Electrician's Invoice	\$904.84	
08/30/21	Vehicle Damage	\$1,487.93	
10/07/21	Power Outage – Equipment Failure	\$34,732.00	
Total Paymen	Total Payment for 16 Claims:		

Table 8	3:	2021	Damage	Claims	Paid
---------	----	------	--------	--------	------

V. Reliability Metrics Reporting

This section includes information submitted in compliance with the following:

- Minnesota Rule 7826.0500 RELIABILITY REPORTING REQUIREMENTS
- Order Pt. 4 of March 2, 2022 Order (Docket No. E015/M-21-230)
- Order Pts. 5 & 14 of December 18, 2020 Order (Docket No. E015/M-20-404)
- Order Pt. 2 of January 28, 2020 Order (Docket No. E015/M-19-254)

Minnesota Power is committed to the reliability and security of the regional power system that provides electricity across a 26,000-square-mile electric service area in northeastern Minnesota. In 2021, the Company provided over 99 percent reliability for its residential, commercial and industrial customers. As previously stated, the reliability of the distribution system is evaluated using SAIDI, SAIFI, CAIDI and MAIFI. For this section, Minnesota Power also reports on the Average Service Availability Index ("ASAI") which is the ratio of the total number of customer hours that service was available during a given time period to the total customer hours demanded.

The utility's SAIDI, SAIFI and CAIDI are calculated using the data excluded by the IEEE 2.5 beta method (data from major event days). A major event is defined by the 2.5 beta method developed by the IEEE Standard for Distribution Reliability, if the event reaches this threshold it is excluded. The exclusion process is designed to remove all outage records attributed to a specific, major event such as a large storm. Major Event Included means that all major events such as wind storms, ice storms, etc., are included in the reliability calculations. Since there were two excluded events in 2021, these values are different from the Major Event Included values.

A. Work Centers

Prior to Minnesota Power's 2020 SRSQ Report, the Company responded as one work center. In compliance with Order Point 4 of the Commission's March 2, 2022 Order, which established future SRSQ reporting guidelines, the Company provides reliability performance metrics for each of its work centers (Central, Northern and Western), in

addition to the overall system performance.⁹ Figure 10 shows the location of the Company's three work centers.



Figure 10: Location of Central, Northern & Western Work Centers

⁹ As described on pages 25-26 of the Company's 2020 SRSQ Report (Docket No. E015/M-21-230).

The Central work center includes service centers in Duluth, Cloquet, and Sandstone, with a customer count of over 77,000. This area is by far the most populous and contains the largest city within the Company's service territory, Duluth. It also includes the customers from Floodwood to Silver Bay and Meadowlands to Hinckley.

The Northern work center includes service centers in Eveleth, Coleraine, and International Falls. This area has the least amount of customers, with a count of over 23,000, but contains all of Minnesota Power's largest mining customers and two major paper customers. This area also serves many wholesale municipal customer accounts. It includes the customers from Deer River to Winton and International Falls to Cohasset.

The Western work center includes service centers in Little Falls, Long Prairie, Pine River, and Park Rapids. This area has about 42,500 customers and covers the Brainerd Lakes area and rural farming communities, along with a couple of municipal accounts. It includes customers from Verndale to Deerwood and Walker to Upsala.

B. Benchmarking

The Commission recognized in its January 28, 2020 Order¹⁰ that some metrics, including the method by which it currently sets reliability goals, may need to be modified and agreed that benchmarking provides a better way to understand how utilities are performing in relation to peer utilities.

Order Point 2 of the Commission's March 2, 2022 Order for the 2020 SRSQ Report sets Minnesota Power's 2021 statewide reliability standard at the IEEE benchmarking second quartile for medium utilities and sets work center reliability standards at the IEEE benchmarking second quartile for small utilities. These reliability metrics take into consideration varying reporting methods, system terrain and age, and customer mix, among other factors. This depiction of reliability metrics is a more holistic view of what is happening on electric distribution systems nationwide. The Company has actively participated in the IEEE Transmission and Distribution Reliability Working Group over the last several years, gaining valuable insights. This committee is working towards a

¹⁰ 2018 Safety, Reliability and Service Quality Report (Docket No. E015/M-19-254).

consistent application of IEEE 1366 reliability standard with industry partners and the Company is appropriately benchmarking regionally with others of similar size on reliability measurements and efforts. Figure 11 identifies the regions represented by the participants in the 2021 Benchmark Study (results to be released later in 2022). As required by Order Point 3 of the March 2, 2022 Order, the Company will file a supplemental filing to its 2021 SRSQ Report within 30 days after IEEE publishes the 2021 benchmarking results, including an explanation for any standards Minnesota Power did not meet.

Regions represented by the participants 2021 Benchmark Study



Figure 11- IEEE Benchmarking Participants

C. Minn. Rule 7826.0500 Annual Reliability Reporting

Per Subpart 1 of Minn. Rule 7826.0500, [o]n or before April 1 of each year, each utility shall file a report on its reliability performance during the last calendar year. This report shall include at least the following information:

- A. the utility's SAIDI for the calendar year, by work center and for its assigned service area as a whole;
- *B.* the utility's SAIFI for the calendar year, by work center and for its assigned service area as a whole;
- C. the utility's CAIDI for the calendar year, by work center and for its assigned service area as a whole;
- *D.* an explanation of how the utility normalizes its reliability data to account for major storms;
- E. an action plan for remedying any failure to comply with the reliability standards set forth in part 7826.0600 or an explanation as to why noncompliance was unavoidable under the circumstances;
- *F.* to the extent feasible, a report on each interruption of a bulk power supply facility during the calendar year, including the reasons for interruption, duration of interruption, and any remedial steps that have been taken or will be taken to prevent future interruption;
- G. a copy of each report filed under part 7826.0700;
- H. to the extent technically feasible, circuit interruption data, including identifying the worst performing circuit in each work center, stating the criteria the utility used to identify the worst performing circuit, stating the circuit's SAIDI, SAIFI, and CAIDI, explaining the reasons that the circuit's performance is in last place, and describing any operational changes the utility has made, is considering, or intends to make to improve its performance;
- I. data on all known instances in which nominal electric service voltages on the utility's side of the meter did not meet the standards of the American National Standards Institute for nominal system voltages greater or less than voltage range B;

- J. data on staffing levels at each work center, including the number of full-time equivalent positions held by field employees responsible for responding to trouble and for the operation and maintenance of distribution lines; and
- *K.* any other information the utility considers relevant in evaluating its reliability performance over the calendar year.

Minnesota Power provides the required information in the following sections.

1. Subp. 1.A through 1.C. The utilities SAIDI, SAIFI, CAIDI for the calendar year, by work center and for its assigned service area as a whole.

In addition to the information required by Subpart 1. A through C, the information required in Order Points 2.3 and 2.11 of Docket No. E015/M-19-254 is provided in Figure 12.

		Overall	Central	Northern	Western
Reporting Requirement	Customers	143,144	77,281	23,363	42,500
	Overall SAIDI	150.76	116.14	169.43	203.45
Subp. 1.A.	Normalized SAIDI	126.00	94.84	158.19	164.95
	Major Event Excluded SAIDI	24.77	21.30	11.24	38.51
	Overall SAIFI	1.45	1.33	1.28	1.77
Subp. 1.B.	Normalized SAIFI	1.34	1.20	1.25	1.66
	Major Event Excluded SAIFI	0.11	0.14	0.03	0.11
	Overall CAIDI	103.68	87.13	132.26	114.98
Subp. 1.C.	Normalized CAIDI	93.80	79.36	126.45	99.16
	Major Event Excluded CAIDI	223.52	154.58	374.00	362.93
Doc. E015/M-	Overall MAIFI	4.42	4.17	3.48	5.39
19-254	Normalized MAIFI	4.07	3.73	3.48	5.02
Order Pt. 2.3	Major Event Excluded MAIFI	0.35	0.44	0.00	0.37
Doc. F015/M-	Overall ASAI	99.97132%	99.97790%	99.96776%	99.96129%
19-254	Normalized ASAI	99.97603%	99.98196%	99.96990%	99.96862%
Order Pt. 2.11	Major Event Excluded ASAI	0.00471%	0.00405%	0.00214%	0.00733%

Figure 12: SAIDI, SAIFI, CAIDI by Work Center & Overall

2. Subp. 1.D. An explanation of how the utility normalizes its reliability data to account for major storms:

In 2021, there were two major events excluded based on the 2.5 beta method defined by the IEEE Standard for Distribution Reliability. The normalization process is designed to remove all outage records attributed to a specific major event, such as a large storm.

At Minnesota Power, normalization is performed only when the following criterion is met for a major event:

Event SAIDI is greater than the Threshold for an IEEE Major Event.

As storms occur, customers call into Minnesota Power representatives and/or the Interactive Voice Response ("IVR") system to report outages. Those calls, along with the Company's AMI meters reporting an outage, are then used to create trouble orders using a prediction engine within the Outage Management System ("OMS"). That information, along with information from other sources, is entered into a database for comparison. Often, the weather event will have been detected by multiple sources. Duplications are eliminated and an accurate time and duration for each event is calculated.

Once all data streams have been combined and duplications have been eliminated, the resulting database is analyzed by the Reliability Engineer. The database is queried to look for timeframes when the Company SAIDI has incurred an incremental increase above the Threshold for Major Event. When sets of data are discovered that meet the criterion discussed above, that data is flagged and set aside - what remains is Minnesota Power's Major Event Normalized Data.

Threshold for Major Event calculation description:

A Threshold for a major event (T_{med}) is computed once per year. First, data is assembled for the five most recent years of historical values of daily SAIDI. Any day with a SAIDI value of zero is discarded. Then, the natural log of each SAIDI value is computed and the average (alpha) and standard deviation (beta) of the natural logarithms is computed. The major event threshold can then be found by using this equation: $T_{med} = \exp$ (alpha + 2.5*beta). If any event in the next year has SAIDI greater than T_{med} , it qualifies as a major event. Note that an excluded event is not limited to a single day and may span consecutive days, depending on the severity of the event.

As stated earlier, major event normalization is designed to exclude data from rare, major events that may skew the overall data. In the last five years, there was generally an average of 1-3 major events excluded each year. Two events were excluded in 2021.



Number of Excluded Events

Figure 13: Major Event Totals by Year

3. Subp. 1.E. An action plan for remedying any failure to comply with the reliability standards set forth at part 7826.0600 or an explanation as to why non-compliance was unavoidable under the circumstances:

Minnesota Power did not meet the Commission threshold for Overall Company SAIFI, Northern CAIDI, and Western SAIFI in 2021. The majority of the outages throughout 2021 were attributed to weather, vegetation, and equipment failure. Minnesota Power increased focus on distribution equipment maintenance and replacement in 2018 and will continue to develop these programs into the future. Two assistant engineers were hired in May 2017 to develop a trouble order tracking and remediation system which was put in place in Q4 of 2018. These assistant engineers also began implementation of a switch replacement blanket and commenced auditing of the Company's system in order to develop an asset management preventative maintenance program throughout the Company's service territory. This preventative maintenance program should increase the reliability of Minnesota Power's distribution assets going forward. In 2020, an inspection app was created for linemen to inspect and address issues while out in the field. By inspecting lines on an ongoing basis, the Company hopes to find and address issues that will lead to better reliability performance in the future. In 2021, another assistant engineer was added to the distribution department to focus on maintenance.

4. Subp. 1.F. To the extent technically and administratively feasible, a report on each interruption of a bulk power supply facility during the calendar year, including the reasons for interruption, duration of interruption, and any remedial steps that have been taken or will be taken to prevent future interruption:

Feeder	Date	Duration	Cause
23 Line (Bear Creek)	8/12/2021	32	Vegetation
23 Line (Bear Creek)	7/23/2021	138	Weather
30Line (Virginia)	6/20/2021	67	Unknown
31Line (Babbitt - Winton)	8/18/2021	87	Wildlife
33 Line (Winton)	6/6/2021	242	Weather

Figure 14: List of Interruptions to Bulk Power Supply Facilities

Refer to Appendix A for remedial steps taken for each interruption reported.

5. Subp. 1.G. A copy of each report (major service interruptions) filed under part 7826.0700;

These reports are provided as Appendix A to this Report.

6. Subp. 1.H. To the extent technically feasible, circuit interruption data, including identifying the worst performing circuit in each work center, stating the criteria the utility used to identify the worst performing circuit, stating the circuit's SAIDI, SAIFI, and CAIDI, explaining the reasons that the circuit's performance is in last place, and describing any operational changes the utility has made, is considering, or intends to make to improve its performance.

Section H requires that Minnesota Power report on the Company's worst performing circuit for each work center. Within previous SRSQ filings, Minnesota Power has responded as one work center. Per Order Point 4 of the March 2, 2022 Order, the Company will report 3 work centers (Central, Northern, and Western). To maintain consistency with past filings, rather than listing only one feeder, the four worst performing feeders (2 urban and 2 rural) are identified in each work center. This is done in recognition of how reliability indices are affected by differing characteristics of feeder length and quantity of customers.

The feeder evaluation process utilized high feeder SAIDI and high total customer-minutes of outage (i.e. # customers X SAIDI) as criteria for selection of two urban and two rural feeders. The following table clarifies the selections.

Table 9: Worst Performing Feeders Using Major Event Normalized Data by Work Center **Central**

Criteria	Circuit/Work Center	# of Customers	SAIDI	SAIFI	CAIDI
High Feeder SAIDI (Urban)	Lake Superior Paper 224	39	559.44	2.13	262.87
High Customer Outage Minutes (Urban)	Ridgeview 252	3045	212.94	1.89	112.84
High Feeder SAIDI (Rural)	Burnett 408	362	610.23	4.14	147.40
High Customer Outage Minutes (Rural)	Four Corners 215	956	263.24	2.54	103.69

Northern

Criteria	Circuit/Work Center	# of Customers	SAIDI	SAIFI	CAIDI
High Feeder SAIDI (Urban)	St. Croix 1	162	877.62	3.07	286.07
High Customer Outage Minutes (Urban)	Eveleth 1	1050	299.11	4.41	67.88

High Feeder SAIDI (Rural)	Nashwauk 314	6	660.00	1.00	660.00
High Customer Outage Minutes (Rural)	International Falls 1	1169	553.90	1.91	290.11

Western

Criteria	Circuit/Work Center	# of Customers	SAIDI	SAIFI	CAIDI
High Feeder SAIDI (Urban)	Eagle Valley 517	8	775.75	7.75	100.10
High Customer Outage Minutes (Urban)	Little Falls 1	934	303.27	0.02	3.15
High Feeder SAIDI (Rural)	Pepin Lake 514	264	809.75	5.23	154.80
High Customer Outage Minutes (Rural)	Gull Lake 1	1125	473.49	2.64	179.05

7. Subp. 1.I. Data on all known instances in which nominal electric service voltages on the utility's side of the meter did not meet the standards of the American National Standards Institute for nominal system voltages greater or less than voltage range B.

There were 24 reported instances of ANSI voltage violations in 2021.

Table 10: Reported Instances of ANSI Voltage Violations 2021

Date	Cause	Voltages			
		Line to Ground	Line to ground	Line to Line	
01/05/21	Underground Equipment	122	84	150	
01/12/21	Overhead Equipment	217	21	236 (Line to Line 3 phase)	
02/13/21	Underground Equipment	124	124	6 (Line to Line 3 phase)	
03/05/21	Underground Equipment	85	157	240	
03/06/21	Underground Equipment	120	28	0	

03/12/21	Underground	124	0	130 (Line to Line 3 phase)
04/08/21	Overhead Equipment	7	120	q
04/09/21	Overhead Equipment	80	120	0
/ /				(Line to Line 3 phase)
05/18/21	Underground Equipment	120	70	210
05/22/21	Overhead Equipment	120	17	120 (Line to Line 2 phase)
06/10/21	Overhead Equipment	1/15	00	
06/10/21	Underground	145	50	60
00/12/21	Equipment	100	00	(Line to Line 3 phase)
06/12/21	Overhead Equipment	120	18	120
				(Line to Line 3 phase)
07/06/21	Underground Equipment	92	122	212
07/19/21	Overhead Equipment	25	224	246
07/19/21	Overhead Equipment	120	80	200
08/21/21	Overhead Equipment	106	133	239
09/08/21	Overhead Equipment	80	140	240
09/09/21	Overloaded Equipment	120	10	240
09/13/21	Overhead Equipment	100	140	240
09/18/21	Overhead Equipment	121	61	182
09/21/21	Underground	30	123	0
	Equipment			(Line to Line 3 phase)
11/24/21	Overhead Equipment	90	90	285
12/21/21	Underground Equipment	109	121	200

8. Subp. 1.J. Data on staffing levels at each work center, including the number of full-time equivalent positions held by field employees responsible for responding to trouble and for the operation and maintenance of distribution lines.

Prior to the 2020 filing, Minnesota Power reported as one work center and only provided the total numbers for Line Operations Field Workers and Contractors that worked on the Distribution System. Shown below are updated numbers that also include support for field workers and engineering support for construction, maintenance and storm response. Though the Central work center¹¹ shows more employees, many of those individuals assist or concentrate their efforts across the entire service territory.

The Line Operations Field Workers include outdoor field support that provide construction, maintenance, and trouble response on the distribution system. This group includes Lineworkers, Substation technicians, Relay technicians, and Communication Infrastructure technicians.

The Line Operations Support employees include the area Supervisors, Operations Planning and Scheduling employees, System Operators, Vegetation Management employees and Fleet Mechanics.

Engineering Support includes engineers, designers, administrative employees, and Geographical Information System specialists responsible for the construction and maintenance of our system. These employees can also be called upon for larger storm events as part of our Emergency Response Plan. If the event is large enough such as the July 2016 storm, the Company will call mutual aid from other EEI member utilities.

Contractors are seasonal at-hire individuals that perform line construction and maintenance, vegetation management, and ground line inspections on the system. Most of these contractors are hired over the spring, summer, and fall months to help with the peak working conditions once the snow has melted. These employees work across Minnesota Power's entire service territory and cannot be grouped into individual work centers.

¹¹ The Central work center customer count is largest at over 77,000, in comparison to the Northern work center which is over 23,000 and the Western work center at about 42, 500.

Table 11: Employees by Work Center

2021 Support	Central	Northern	Western	
Line Operations Field Workers	Line – 46	Line – 26	Line – 30	
	Sub - 9	Sub - 7	Sub - 5	
Line Operations Support	OPS – 1	OPS – 1	OPS – 1	
	Line – 9	Line – 1	Line – 2	
	Fleet – 7	Fleet – 3	Fleet - 3	
	Sub - 1	Sub - 1		
	Syster	n Operations – 1	8	
	Vegetati	ion Management	:-3	
Engineering Support	Dist – 19	Dist – 7	Dist – 7	
	Meter - 13	Meter - 1	Meter - 4	
	GIS – 8	GIS - 1	GIS – 1	
	Transmission – 6			
	Substation - 13			
Contractors	22 – Line			
	2	– Groundline		
	Roug	nly 75 - Vegetatio	on	

9. Subp. 1.K. Any other information the utility considers relevant in evaluating its reliability performance over the calendar year.

CEMI

Table 12: Percentage of Customers Experiencing Repeated Interruptions by Work Center

Central		No	rthern	Western		
2021		Storm Excluded		Storm Excluded		Storm Excluded
+6	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
+5	0.47%	0.47%	0.00%	0.00%	3.87%	3.87%
+4	0.64%	0.64%	4.72%	4.72%	3.31%	3.21%
+3	14.80%	13.12%	2.40%	2.39%	7.90%	8.00%

The highest feeder CEMI for overall outage data within the Central work center was Burnett 408 with 5.15 outages, within the Northern work center was Cohasset, River Crossing with 4.48 outages, and within the Western work center was Sebeka 1 with 5.29 outages.

<u>CELI</u>

	Ce	entral	Northern		Western	
2021		Storm Excluded		Storm Excluded		Storm Excluded
6 hr.	1237	453	2009	1307	2223	1485
%	1.60%	0.59%	8.60%	5.59%	5.23%	3.49%
12 hr.	41	9	1	1	601	115
%	0.05%	0.01%	0.00%	0.00%	1.41%	0.27%
24 hr.	2	2	6	6	13	6
%	0.00%	0.00%	0.03%	0.03%	0.03%	0.01%

Table 13: Percentage of Customers Experiencing Long Outage Durations by Work Center

Within the Central work center, the longest customer outage duration was 2,139 minutes. This was a broken cutout at a remote customer site within a secured area. The customer was without power until the Company was able to access the damaged equipment.

Within the Northern work center, the longest customer outage duration was 2,967 minutes. This section of the line was out of power while crews replaced several structures that were at the point of failure. Affected customers were remote operational sites that were at the time unoccupied.

Within the Western work center, the longest customer outage duration was 2,600 minutes. This was a cabin that was unoccupied at the time. Underground cable failed and the repair was worked into the schedule at a later date.

		ASAI	SAIDI	SAIFI	CAIDI	MAIFI
Residential	Non- normalized	99.97%	142.30	1.37	103.53	4.17
	Normalized	99.98%	118.43	1.27	93.65	3.84
Commercial	Non- normalized	99.99%	8.32	0.08	103.53	0.24
	Normalized	99.99%	6.96	0.07	99.43	0.23
Industrial	Non- normalized	99.99%	0.14	0.00	103.53	0.04
	Normalized	99.99%	0.11	0.00	94.03	0.00

Table 14: Reliability Performance by Customer Class

Estimated Time of Restoration Data

In compliance with Order Point 2 of the January 28, 2020 Order in the 2018 SRSQ Report (Docket No. E015/M-19-254), Minnesota Power provides the estimated restoration time using the specified windows.

Table 15: Estimated Time of Restoration Accuracy

2021		Initial			Final		
	ETRs used	0->+30	-90->0	>+30 or <- 90	0->+30	-90->0	>+30 or <- 90
Totals	8243	426	640	7177	116	0	7061
Percentages	100%	5.17%	7.76%	87.07%	1.41%	0.00%	98.59%

Table 15 is the breakdown of Estimated Times of Restoration ("ETR") in the OMS. This shows the accuracy of the ETRs used on trouble orders throughout the year. Initial ETRs were deemed to be over 87 percent accurate and final ETRs were over 98 percent accurate.

VI. Meter-Reading Performance

Per Minn. Rule 7826.1400, the annual service quality report must include a detailed report on the utility's meter-reading performance, including, for each customer class and for each calendar month:

- A. the number and percentage of customer meters read by utility personnel;
- B. the number and percentage of customer meters self-read by customers;
- C. the number and percentage of customer meters that have not been read by utility personnel for periods of six to 12 months and for periods of longer than 12 months, and an explanation as to why they have not been read; and
- D. data on monthly meter-reading staffing levels, by work center or geographical area.

Table 16 provides an overview of the Company's meter equipment and its deployment across the Minnesota Power distribution system.

Equipment	Percent in Use ¹²	Description
Mechanical Meters	0.00%	Traditional electro-mechanical meter that records kWh usage.
AMR – Mechanical Hybrid	3.72%	Traditional electro-mechanical meters that are retro-fitted with a one-way electronic automatic meter reading ("AMR") module capable of reporting multiple quantities including kWh, kW, and outage count.
AMR – Solid State	0.13%	Modern Solid State electronic meters integrated with a one-way AMR module or retrofitted with an external AMR unit. Capable of reporting multiple quantities including kWh, kVARh, kW, and outage count.
AMI – Solid State	96.00%	Modern solid state devices integrated with a two- way AMI communication module. Capable of multiple measurement functions including Time of Use (TOU), kW, kWh, KVA, kVAh, kVAR, kVARh, instantaneous and average voltage, two channel load profile, and remote disconnect. Also capable of remote firmware, program, and display updates.

Table 16: Meter Equipment and Percentage Deployed

¹² As of 1/1/2022.

MV-90	0.15%	A software system produced by Itron that is used to
		interrogate a wide variety of meters and recorders
		using telephone communication and modems to
		obtain both meter readings and meter interval data
		generally from commercial and industrial
		customers.

A. Numbers and percentages of customer meters read by utility personnel

In 2021, Minnesota Power read an average of 97.75 percent of residential meters, 99.39 percent of commercial meters, 99.81 percent of industrial, 99.84 percent municipal pumping, and 99.93 percent lighting meters.

Month	Co. Reads	Est	Total	% Read
Jan-21	130,798	751	131,549	99.43%
Feb-21	117,895	641	118,536	99.46%
Mar-21	144, 468	399	144,867	99.72%
Apr-21	112,922	6,824	119,746	94.30%
May-21	143,584	2,638	146,222	98.20%
Jun-21	117,994	3,840	121,834	96.85%
Jul-21	140,177	7,775	147,952	94.74%
Aug-21	131,070	3,529	134,599	97.38%
Sep-21	117,834	2,542	120,376	97.89%
Oct-21	142,010	2,723	144,733	98.12%
Nov-21	117,019	2,788	119,807	97.67%
Dec-21	130,422	1,032	131,454	99.21%
Average	128,849	2,957	131,806	97.75%

Table 17: Residential Meter Reads - Utility 2021

In 2021, Minnesota Power read an average of 99.39 percent of commercial meters.

Month	Co. Reads	Est	Total	% Read
Jan-21	21,563	8	21,571	99.96%
Feb-21	19,728	10	19,738	99.95%
Mar-21	22,481	18	22,499	99.92%
Apr-21	21,416	716	22,132	96.76%
May-21	24,203	287	24,490	98.83%
Jun-21	19,880	220	20,100	98.91%
Jul-21	23,880	191	24,071	99.21%
Aug-21	21,952	35	21,987	99.84%
Sep-21	20,101	68	20,169	99.66%
Oct-21	23,336	34	23,370	99.85%
Nov-21	20,013	28	20,041	99.86%
Dec-21	21,555	19	21,574	99.91%
Average	21,676	136	21,812	99.39%

Table 18: Commercial Meter Reads - Utility 2021

In 2021, Minnesota Power read an average of 99.81 percent of industrial meters.

Month	Co. Reads	Est	Total	% Read
Jan-21	399	0	399	100.00%
Feb-21	376	0	376	100.00%
Mar-21	385	0	385	100.00%
Apr-21	358	3	361	99.17%
May-21	513	5	518	99.03%
Jun-21	521	0	521	100.00%
Jul-21	449	2	451	99.56%
Aug-21	483	0	483	100.00%
Sep-21	477	0	477	100.00%
Oct-21	465	0	465	100.00%
Nov-21	460	0	460	100.00%
Dec-21	491	0	491	100.00%
Average	448	1	449	99.81%

Table 19: Industrial Meter Reads - Utility 2021

In 2021, Minnesota Power read an average of 99.84 percent of municipal meters.

Month	Co. Reads	Est	Total	% Read
Jan-21	278	0	278	100.00%
Feb-21	263	0	263	100.00%
Mar-21	249	0	249	100.00%
Apr-21	275	1	276	99.64%
May-21	288	0	288	100.00%
Jun-21	263	3	266	98.87%
Jul-21	266	1	267	99.63%
Aug-21	269	0	269	100.00%
Sep-21	266	0	266	100.00%
Oct-21	267	0	267	100.00%
Nov-21	265	0	265	100.00%
Dec-21	268	0	268	100.00%
Average	268	0	269	99.84%

Table 20: Municipal Meter Reads - Utility 2021

In 2021, Minnesota Power read an average of 99.93 percent of lighting meters.

Month	Co. Reads	Est	Total	% Read
Jan-21	369	0	369	100.00%
Feb-21	330	0	330	100.00%
Mar-21	365	1	366	99.73%
Apr-21	359	1	360	99.72%
May-21	437	0	437	100.00%
Jun-21	370	1	371	99.73%
Jul-21	402	0	402	100.00%
Aug-21	366	0	366	100.00%
Sep-21	340	0	340	100.00%
Oct-21	388	0	388	100.00%
Nov-21	351	0	351	100.00%
Dec-21	358	0	358	100.00%
Average	370	0	370	99.93%

Table 21: Lighting Meter Reads - Utility 2021

B. Numbers and percentages of customer meters self-read by customers

Residential customer reads averaged 0.04 percent of the system total in 2021, of those Minnesota Power received an average of 98.16 percent of reads.

Month	Cust Reads	Est	Total	% Read
Jan-21	62	0	62	100.00%
Feb-21	49	0	49	100.00%
Mar-21	72	0	72	100.00%
Apr-21	43	3	46	93.48%
May-21	69	0	69	100.00%
Jun-21	50	0	50	100.00%
Jul-21	64	5	69	92.75%
Aug-21	58	0	58	100.00%
Sep-21	45	1	46	97.83%
Oct-21	67	0	67	100.00%
Nov-21	44	2	46	95.65%
Dec-21	56	1	57	98.25%

Table 22: Residential Meter Reads - Self-Read 2021

Commercial customer reads averaged 0.01 percent of the system total in 2021, of those Minnesota Power received an average of 97.98 percent of reads.

Month	Cust Reads	Est	Total	% Read
Jan-21	12	0	12	98.39%
Feb-21	12	0	12	96.23%
Mar-21	12	0	12	97.26%
Apr-21	12	1	13	98.21%
May-21	15	0	15	98.63%
Jun-21	14	0	14	98.08%
Jul-21	12	0	12	98.67%
Aug-21	13	0	13	98.44%
Sep-21	12	0	12	98.15%
Oct-21	12	0	12	98.68%
Nov-21	12	0	12	96.36%
Dec-21	12	0	12	98.61%

Table 23: Commercial Meter Reads - Self-read 2021

C. Number and percentage of customer meters that have not been read by utility personnel for periods of six to twelve months and for periods of longer than twelve months, and an explanation as to why they have not been read.

Months Estimated	Company Read Service Points	% of Total	Not Read Reason	Customer Read Service Points	% of Total
6 Months	20	0.013%	No Access/AMR	0	0.000%
7 Months	8	0.005%	No Access/AMR	0	0.000%
8 Months	11	0.007%	No Access/AMR	0	0.000%
9 Months	10	0.006%	No Access/AMR	0	0.000%
10 Months	1	0.001%	No Access/AMR	0	0.000%
11 Months	0	0.000%	No Access/AMR	0	0.000%
12 Months	0	0.000%	No Access/AMR	0	0.000%
12+Months	0	0.000%	No Access/AMR	0	0.000%
Totals:	50			0	

Table 24: Meters Not Read 6-12 Months 2021

Minnesota Rules 7820.3300 requires that meters are read annually. Customers with Company read meters that are not read for six to twelve months are left reminder notices at the home premise and/or are sent reminder letters of the utility's need to access the meter. A similar process is used for customer read meters not read for over twelve months. In addition, phone calls are made to each customer in an attempt to schedule a meter reading. Disconnection warnings are issued for unresponsive accounts. In accordance with the Cold Weather Rule, no disconnections for unread meters are performed during the Cold Weather Rule months.



D. Data on monthly meter-reading staffing levels, by work center or geographical area

Figure 15: Meter-reading Staffing Levels by Work Center

VII. Customer Service Data

This section includes information submitted in compliance with the following:

• Order Pts. 2, 3 & 4 of December 2, 2021 Order (Docket No. E015/M-21-230)

Minnesota Power recognizes that, above all else, customers expect reliable, safe, and affordable electricity, as illustrated in the results from a survey of 800 Minnesota Power residential customers conducted by Rapp Strategies and shown in Figure 16. Inherent to each of these are quality customer interactions through a variety of channels (i.e. in person, in writing, via email, over the phone, online, through social media, and in the field). Further, convenience, transparency about services, timely updates regarding interruption to services, and clarity about costs and program offerings are essential to the customer experience.



Figure 16: Customer Expectations

A. Customer Care

Minnesota Power's approach is to continue to provide core customer services such as establishing and maintaining service, accurate and timely billing, inquiry resolution, and general customer care as effectively as possible while meeting or exceeding formal service quality expectations related to response times for customer calls and establishing or restoring service in a timely manner.

Minnesota Power also seeks to leverage technology advances where applicable and practical to improve convenience and ensure a positive experience for our customers, which means customer relations and the customer experience are always evolving. This is inclusive of day-to-day interactions between the Company and its customers through traditional channels such as the Company's Call Center, billing services, and in the field. It is also inclusive of emerging channels such as online tools, apps, and social media, all of which have proven to be effective options for requesting services and for receiving updates affecting services such as outages.

B. Customer Communication

In this section, Minnesota Power provides responses to the additional data request from Order Point 14 of the 2019 SRSQ Order. The Company appreciates the interest in other customer communication channels, particularly self-service options. This is something the Company commented on in its previous SRSQ filings under Docket Nos. E015/M-18-250 and E015/M-19-254, where Minnesota Power suggested that customer expectations and preferences regarding communication channels will ultimately need to be a point of consideration and reviewed as part of service quality reporting. These options will impact the types of calls the Call Center receives and challenge traditional response metrics such as Call Center response times. The tables below summarize yearly total of web site visits, including Facebook and Instagram daily page engaged users; yearly total number of logins via electronic customer communications platforms, including MyAccount logins, app installations, and app pageviews; and yearly total number of emails received, as determined by the Customer Service email address and related tracking tool. Categorization by email subject is also provided using consistent wrap codes as those used for calls to the Call Center. The fuel assistance wrap code is indicative of energy assistance inquiries. There are also Customer Affordability of Residential Electricity ("CARE") affordability program and disconnect/reconnect wrap codes for email, but these were nominal (less than 100) in 2021.

Customer Communication Data for 2021					
	Web Site Pageviews ¹³	MyAccount Electronic Self Service Logins	Mobile App Installations	Facebook Daily Page Engaged Users	Instagram Daily Page Engaged Users
January	110,883	40,935	540	2,639	2,856
February	149,303	41,248	629	3,292	3,077
March	142,795	42,435	917	4,665	2,732
April	128,253	27,065	598	2,028	2,692
May	124,282	38,491	712	1,855	2,696
June	146,545	38,822	622	2,447	2,242
July	158,360	41,685	966	3,124	2,517
August	143,699	49,013	642	1,878	2,641
September	128,686	43,678	599	2,997	2,620
October	119,961	43,073	548	1,508	1,981
November	120,987	40,600	919	3,072	2,546
December	124,971	43,622	814	2,181	2,047
Total:	1,598,725	490,667	8,506	31,686	30,647

Table 25: Customer Communication Data for 2021

The following table reflects the yearly number of emails received through CustomerService@mnpower.com, which would be indicative of general inquiries and relatively in line with how calls are tracked for the Call Center. This is the email address published on the Minnesota Power web site. These figures do not include other operational email distribution groups, direct emails to individual employees, or technical support emails through the online MyAccount tool, as those do not have an established tracking progress or subject categorization methodology in place.

¹³ www.mnpower.com.

Table 26: Total Number of Emails Received by Month 2021

Emails			
January	1,096		
February	1,274		
March	1,509		
April	1,222		
May	1,310		
June	1,397		
July	1,469		
August	1,690		
September	1,498		
October	1,712		
November	1,407		
December	1,343		
Total:	16,927		

Categorization of email subject, which uses the same wrap codes used for calls to the Call Center, is as follows:



Figure 17: Email Wrap Codes

VIII. Service Quality Performance Reporting

The information required to be reported Minnesota Rules 7826.1400 through 7826.2000 is provided on the following pages.

Disconnection Notices in 2021 4,000 3,500 3,000 2,500 2,000 1,500 1,000 500 0 Jan Feb March April May June July Aug Sep Oct Nov Dec Industrial 0 3 2 1 1 1 3 1 1 3 0 1 Commercial 5 3 7 7 4 205 197 180 93 83 108 96 Residential 0 0 0 0 1 3,216 3,408 2,273 1,799 1,897 1,983 1,941 Residential Commercial Industrial

1. Number of customers who received disconnection notices

A. Reporting Involuntary Disconnections: Minnesota Rule 7826.1500

Figure 18: Disconnection Notices 2021

Table 27: Disconnection Notices in 2021

Total Disconnection Notices in 2021			
Residential Commercial Industrial			
16,518	988	17	



2. Number of customers who sought cold weather rule protection under chapter 7820 and the number who were granted cold weather rule protection

Figure 19: Customers Who Sought and were Granted CWR Protection 2021

Table 28: Total Residential Customers Who Sought & Were Granted CWR Protection
--

Total Residential Customers Who Sought CWR	Total Residential Customers Granted CWR
Protection	Protection
1,295	1,295

Minnesota Power granted Cold Weather Rule protection to 100 percent of customers who requested protection.


3. The total number of customers whose service was disconnected involuntarily and the number of these customers restored to service within 24 hours

Figure 20: Residential Customers Disconnected Involuntarily & Restored w/in 24 Hours





T I I AA T I I	O I DI I			o /
Table 29: Total	Customers Disconnected	i Involuntarily an	id Restored w/in	24 Hours 2021

Total Custom	ners Disconnecte	ed Involuntarily	Total Custo	mers Restored w	vithin 24 Hours
Residential	Commercial	Industrial	Residential	Commercial	Industrial
949	68	2	537	29	0

4. The number of disconnected customers restored to service by entering into a payment plan

Month	Residential	Commercial	Industrial
Jan	0	0	0
Feb	0	0	0
Mar	0	0	0
Apr	0	0	0
Мау	0	0	0
Jun	0	0	0
Jul	0	0	0
Aug	132	6	0
Sep	209	15	0
Oct	54	5	0
Nov	69	1	0
Dec	53	2	0

Table 30: Customers Restored Via Payment Plan 2021

B. Reconnect Pilot Program

On December 2, 2019, Minnesota Power filed a new petition for a three-year remote reconnect pilot program in Docket No. E-015/M-19-766. This proposal was approved by the Commission on December 9, 2020.

Due to the economic impacts of the COVID-19 pandemic, and particularly in response to the issuance of the Governor's Emergency Executive Order,¹⁴ Minnesota Power voluntarily took several proactive measures to provide protections and enhance safety for employees, customers, and communities during the peacetime emergency. Part of these actions included suspension of disconnections for residential customers facing financial hardship as a result of the coronavirus pandemic. In its August 13, 2020 Order under Docket No. E,G999/CI-20-375, the Commission ordered: suspension of disconnections for residential customers; suspension of negative reporting to credit agencies for

¹⁴ On March 13, 2020, Governor Tim Walz signed Emergency Executive Order 20-01, declaring a Peacetime Emergency and Coordinating Minnesota's Strategy to Protect Minnesotans from COVID-19, as most recently extended through July 14, 2021 in Emergency Executive Order 21-24, https://mn.gov/governor/assets/EO%2021-24%20Final_tcm1055-485447.pdf. Governor Walz's emergency powers ended on July 1, 2021.

residential customers; and waiving reconnection, service deposits, late fees, interest, and penalties for residential customers. In the Commission's May 26, 2021 Order in Docket No. E,G999/CI-20-375, the Commission adopted a modified Consumer Advocates' Transition Plan and allowed for the resumption of disconnections on August 2, 2021. With the resumption of disconnections, Minnesota Power continued the process of deploying remote-capable meters, timed with reconnection of service, to realize operational efficiency and maximize the potential savings to customers in terms of Company costs as well as direct costs such as future reconnection fees.

Due to the timing of the approval order for this pilot and the peacetime emergency that continued into 2021, the timing for implementation of this voluntary three-year pilot program was deferred until resumption of normal operations where residential customer disconnections for non-payment may occur. Once implemented, residential electricity customers had the option to participate. Participating customers whose service has been disconnected for non-payment have the option to have their service reconnected remotely after meeting reconnection requirements. This is contingent on them having a remotecapable meter. These customers can be reconnected within minutes after calling customer service, which eliminates the need for Minnesota Power to send staff to the customer's location to reconnect service in person. The remote reconnection is accomplished through advanced metering infrastructure equipped with remote technology. Participating residential customers will have remote-capable meters over the duration of the pilot and become eligible. For any customer interested in pilot participation who does not have a remote-capable meter, the Company will provide the necessary meter upgrade at no additional charge upon request by the customer and contingent on meter stock availability.

Under normal operating conditions, Minnesota Power charges customers a \$20 fee for in-person service reconnection during business hours or a \$100 fee outside of business hours. For any customer that opts for remote reconnection through the pilot, the Company is waiving the reconnection fee, whether during or outside of business hours. Remote reconnection enables faster reconnection of service and provides potential cost savings and safety benefits by reducing the need to send trucks and staff to customer locations.

70

The pilot is being offered on a voluntary basis to any residential customer whose service has been disconnected for non-payment. Minnesota Power will also prioritize customers and locations with frequent disconnections, difficult access, location hazards, or unsafe conditions, because remote reconnection offers greater opportunities for cost savings and safety benefits in such locations.

As of December 31, 2021, there were approximately 3,731 remote-capable meters installed for residential accounts. Cold Weather Rule protections began October 1, 2021 and run through April 30, 2022, which aligns with the timing of the transition plan referenced above.

As part of the Order approving the Reconnect Pilot Program, Minnesota Power agreed to report the following information in the annual SRSQ:

- 1. The number of customers participating in the remote-reconnect program.
- 2. Total number of customers under the low-income home energy assistance program ("LIHEAP").
- 3. The number of remote-reconnect participants with LIHEAP.
- 4. The number of customers who have opted out of the remote-reconnect program.
- 5. The estimated annual cost savings from the remote-reconnect program.
- 6. The average time to reconnect using the remote-reconnect program compared to the standard reconnection process.
- 7. The number of reconnections restored within 24 hours of disconnection, distinguishing between standard and remote reconnections.

In 2021, there were 3,731 participants in the Remote Reconnect Pilot. This is based on the number of residential customers with remote-capable meters. Figure 22 below shows the total number of LIHEAP customers in 2021.



Figure 22: Cumulative LIHEAP Customers 2021

There were 904 LIHEAP customers in the Remote Reconnect Pilot. Fifteen customers opted out of having an AMI meter at their home in 2021, and would therefore have opted out of the Pilot. Based on the limited activity in 2021, Minnesota Power estimates the representative net cost changes specifically related to the Remote Reconnect Pilot to be approximately \$464,000, which is an expenditure increase based on the incremental cost of the remote-capable meters. As 2021 is heavily weighted on installations and there was limited activity for disconnections and reconnections in 2021, the Company anticipates figures related to years two and three of the Pilot will be more informative. The average length of disconnection in days under the Pilot was just under six days as compared to the standard collection process where it was just over eight days.

Figure 23 shows the number of reconnections restored within 24 hours of disconnection, distinguishing between standard and remote reconnections.



Figure 23: Residential Customers Restored w/in 24 Hours

C. Service Extension Request Response Times: Minnesota Rule 7826.1600

1. The number of customers requesting service to a location not previously served by Minnesota Power and the intervals between the date service was installed and the later of the in-service date requested by the customer or the date the premises were ready for service.

The following charts demonstrate, by customer class, the number of customers requesting service in 2021 to a location not previously served by Minnesota Power.



New Service Extensions - Commercial (2021)



New Service Extensions - Residential (2021)

Figure 25: New Service Extensions - Residential 2021



New Service Extensions - Municipal (2021)

Figure 26: New Service Extensions - Municipal 2021



New Service Extensions - Industrial (2021)

Figure 27: New Service Extensions - Industrial 2021

Figure 28 lists the number and percentage of locations not previously served by Minnesota Power where the service was installed later than the in-service date requested by the customer, or the date the premises were ready for service and the reason for the delay.

Overall, the customer request date was met for 1,165 of 1,457 customer requests (79.96 percent). Of the remaining 292 requests, the three largest and most significant reasons for a delay in meeting in-service date in 2021 were: Dates Not Updated (46.58 percent), Customer Not Ready (19.86 percent), and MP Unable to Meet Date (13.7 percent).



Reasons Extension In-Service Date Not Met (2021)

Figure 28: New Service Extensions - Reasons Dates Not Met 2021

2. The number of customers requesting service to a location previously served by Minnesota Power, but not served at the time of the request, and the intervals between the date service was installed and the later of the in-service date requested by the customer or the date the premises were ready for service.



Previous Service Locations - Commercial (2021)

Figure 29: Previous Locations - Commercial 2021



Previous Service Locations - Residential (2021)

Figure 30: Previous Service Locations - Residential 2021

There were no industrial or municipal customers requesting service to a location previously served by Minnesota Power.

The following table lists the number of locations previously served by Minnesota Power where the service was installed later than the in-service date requested by the customer or the date the premises were ready for service and the reason for the delay.

The largest and most significant reason for a delay in meeting in-service date for previous service locations in 2021 was Dates Met. This occurred when customers requested service on a Friday and Minnesota Power installed the meter on Monday.



Figure 31: Previous Service Locations - Reasons Date Note Met 2021

Overall Minnesota Power provided service to a similar number of customers in 2021 as the prior year. The major challenges faced included supply chain issues due to material shortages, mainly in the form of transformers and meter pedestals. This caused a shift inservice delays the Company had not experienced the previous year. As depicted above, the "Dates not updated" was the most prevailing reason for not meeting the new construction customer requested date. Similar to last year, the pandemic was still causing impacts to the workforce with unexpected absences. From employees to customers to contractors, there were often delays.

The reporting for new service extensions was optimized in 2021. All reporting for new service extension request response times had been previously reported from Minnesota Power's Customer Information System ("CIS"). For 2021 new service extension data, Minnesota Power enhanced the reporting process to include qualifying information from the Company's work management system, Maximo, for all customers requesting service to a location not previously served. During its analysis of the process, Minnesota Power uncovered duplication in some counts caused by previous years' queries used to calculate the number of customers requesting service to a location previously served. Therefore, the CIS query for locations previously served was also reconfigured in 2021, correcting this issue.

D. Reporting Call Center Response Times: Minnesota Rules 7826.1200 & 7826.1700

7826.1200:

Subpart 1. Calls to business office. On an annual basis, utilities shall answer 80 percent of calls made to the business office during regular business hours within 20 seconds. "Answer" means that an operator or representative is ready to render assistance or accept the information to handle the call. Acknowledging that the customer is waiting on the line and will be served in turn is not an answer. If the utility uses an automated call-processing system, the 20-second period begins when the customer has selected a menu option to speak to a live operator or representative. Utilities using automatic call-processing systems must provide that option, and they must not delay connecting the caller to a live operator or representative for purposes of playing promotional announcements.

Subp. 2. Calls regarding service interruptions. On an annual basis, utilities shall answer 80 percent of calls directed to the telephone number for reporting service interruptions within 20 seconds. "Answer" may mean connecting the caller to a recording providing, to the extent practicable, at least the following information:

- A. the number of customers affected by the interruption
- B. the cause of the interruption
- C. the location of the interruption; and
- D. the utility's best estimate of when service will be restored, by geographical area.

7826.1700:

The annual service quality report must include a detailed report on call center response times, including calls to the business office and calls regarding service interruptions. The report must include a month-by-month breakdown of this information.

Generally, calls to Minnesota Power – whether they relate to service interruption, line extension, billing inquiries or any other subject matter – are routed through the Company's Interactive Voice Response ("IVR") unit. Customers have a menu of options within the IVR to choose from in order to address the subject of their call. The first option is to report an outage by entering a trouble order; and there is an option to speak directly to a Call Center representative.

Calls routed to outage reporting are handled immediately through the automated troubleorder system; calls that are directed to the Call Center are manually entered into the trouble-order system by the Call Center representative.

Response Time:

Consistent with prior SRSQ reporting, Minnesota Power defines business hours as 7:00 am to 5:30 pm, Monday through Friday, excluding holidays. Minnesota Power's response time calculation methodology includes all calls offered. Minnesota Power answered 50 percent of calls offered in 2021 during business hours within 20 seconds, significantly below the annual goal of 80 percent, as defined in Minn. Rule 7826.1200. Minnesota Power only met the 80 percent goal threshold 2 out of 12 months of the year. Notably, due to the COVID-19 pandemic, Minnesota Power transitioned nearly all Customer Care and Support Representatives in the Call Center to a remote work environment, beginning in March 2020. As essential workers, these employees were given the option to work from the office and only one chose to do so. Minnesota Power struggled with lean staffing in the Call Center in 2021 due to a combination of attrition and unplanned absences. While call volume started out significantly lower in 2021 compared to 2020, this increased significantly in June, surpassing volumes seen in 2020. This call volume increase closely aligns with the resumption of disconnection notices and other collections activity as part of the transition plan. Response times were further challenged by increased average handle time, as more payment agreement options were offered and customers were

referred to available assistance programs to help with past due balances that had grown from the start of the pandemic. Minnesota Power has continued to hire in the Call Center and, while response time remains challenged in the start of 2022, the Company is optimistic that it will improve as onboarding of additional Call Center staff continues.



Figure 32: Response Time – Business Hours 2021

Business Hours 7			
Month 2021	Response Time	Total Calls Offered	Calls Answered within 20 seconds
JAN	84%	7,355	6,174
FEB	75%	8,814	6,611
MAR	78%	9,420	7,342
APR	81%	8,746	7,121
MAY	65%	9,806	6,398
JUN	56%	11,035	6,154
JUL	41%	11,431	4,664
AUG	32%	12,643	4,021
SEP	15%	12,972	1,963
OCT	17%	11,301	1,957
NOV	46%	10,306	4,740
DEC	48%	9,190	4,373
YTD	50%	123,019	61,518

Table 31: Response Time - Business Hours 2021



Figure 33: Response Time – After Hours 2021

Month	Response	Total	Calls Answered
2021	Time	Calls	within 20
		Offered	seconds
JAN	75%	872	658
FEB	55%	1,374	752
MAR	47%	1,578	747
APR	65%	1,053	685
MAY	53%	1,420	758
JUN	47%	1,951	914
JUL	30%	3,600	1,065
AUG	45%	1,980	892
SEP	47%	1,618	759
ОСТ	62%	1,231	759
NOV	54%	1,482	804
DEC	57%	1,128	648
YTD	49%	19,287	9,441

Table 32: Response Time - After Hours 2021 After Hours 5:30 p.m. - 7:00 a.m.

Figure 34 provides a breakdown of calls received in 2021 by subject matter category. This breakdown is based on the wrap codes that are used by representatives when closing and documenting a call. Calls may cover a range of topics, so the primary subject matter is determined subjectively by each representative. Please note that the total number of calls and the number of wrap codes do not reconcile, as multiple representatives may handle a single call and each would choose a wrap code according to their role in addressing the customer inquiry. The Phone Transfer and Not Specified categories generally relate to calls where a representative with primarily operator responsibilities transferred the call or the caller requested to be transferred.



Figure 34: Calls by Subject Matter - 2021

E. Reporting Emergency Medical Account: Minnesota Rule 7826.1800

The annual service quality report must include the number of customers who requested emergency medical account status under Minn. Stat. §216B.098, subd. 5, the number whose applications were granted, and the number whose applications were denied, and the reasons for each denial.

DATE	Requested	Renewed	Added	Denied
Jan	3	1	2	0
Feb	23	16	7	0
Mar	7	3	4	0
Apr	4	4	0	0
May	2	1	1	0
Jun	4	2	2	0
Jul	4	1	3	0
Aug	2	0	2	0
Sep	6	1	5	0
Oct	1	0	1	0
Nov	12	11	1	0
Dec	5	0	5	0
Totals:	73	40	33	0

Table 33: Emergency Medical Account Status Count 2021

In 2021, Minnesota Power had 73 customers request emergency medical account status. 73 requests were granted after customers provided Minnesota Power with the required signed physician documentation indicating need. In total with the above referenced requests and renewals, there were 203 customers noted in the system with medical account status designation. A total of 9 were removed due to customer request, deceased customer, or closed account. All documentation is on file and available upon request. Due to COVID precautions and challenges customers may have faced in getting updated documentation from medical professionals, there were no customers removed in 2021.

When customers contact Minnesota Power indicating they have medical/life sustaining equipment, they are advised that to be eligible to participate in the program they should have their physician or medical supply company send the Company a signed letter identifying there is a medically necessary need and the duration prescribed. The letter is to be mailed or faxed to Minnesota Power's office (mailing/faxing information listed on mnpower.com). When the signed form is received, it is directed to a Customer Care and

Support Representative ("CCSR") who updates the account with emergency medical account status and the form is then filed. This certification must be renewed annually, under normal operating circumstances. Approximately 30 days prior to a certificate expiring, a CCSR sends a letter to the customer. If Minnesota Power does not receive a response, the Company attempts to reach the customer via phone. If a new letter is received, the account is updated for another year. If not, the medical account status is removed from the account. Due to the peacetime emergency and challenges customers may have faced in obtaining a letter from a physician or medical supply company, Minnesota Power put a stay on removing customers from this status on the basis of renewal starting in May, 2020. Further, due to customer data privacy, Minnesota Power is no longer asking for specific details about the life support equipment. A letter indicating medical necessity from a physician or medical supply company will be the most granular level of detail the Company requests as part of this process. Outreach efforts regarding medical account status continue, as described in the Company's January 18, 2021 Compliance Filing.

F. Reporting Customer Deposits: Minnesota Rule 7826.1900

The annual service quality report must include the number of customers who were required to make a deposit as a condition of receiving service.

Minnesota Power refunded all deposits in 2014. Collection of deposits may be reconsidered in the future.

G. Reporting Customer Complaints: Minnesota Rule 7826.2000

The annual service quality report must include a detailed report on complaints by customer class and calendar month, including at least the following information:

[Any complaints for customer classes other than Commercial and Residential are handled individually and, as such, not recorded in Minnesota Power's Customer Information System.]



1. The number of complaints received.

Figure 35: Customer Complaints by Month 2021

Table 34: Customer Complaints Totals

Customer Class	Total	% of Total
Residential	469	91.42%
Commercial	44	8.58%
Total	513	100.00%

2. The number and percentage of complaints alleging billing errors, inaccurate metering, wrongful disconnection, high bills, inadequate service, and the number involving service extension intervals, service restoration intervals, and any other identifiable subject matter involved in five percent or more of customer complaints.

Complaint Description	Customer Class	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Total
Billing Error	Commercial	0	0	0	1	0	0	0	0	0	0	0	1	2	0.39%
Billing Error	Residential	2	3	1	1	1	0	1	2	3	0	0	1	14	2.73%
High Bill Complaint	Commercial	2	3	1	3	7	0	5	6	5	2	2	0	36	7.02%
High Bill Complaint	Residential	52	48	59	20	27	20	19	32	52	18	16	19	382	74.46%
Inadequate Service	Commercial	0	0	0	0	1	0	0	2	1	0	0	0	4	0.78%
Inadequate Service	Residential	3	2	0	1	8	2	3	1	2	2	3	1	28	5.46%
Incorrect Metering	Commercial	0	0	0	0	1	0	0	0	0	0	1	0	2	0.39%
Incorrect Metering	Residential	5	5	4	2	3	1	3	3	11	4	4	0	45	8.77%
Service Restoration	Residential	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
Wrongful Disconnection	Residential	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
Total		64	61	65	28	47	23	31	46	74	26	26	22	513	100%

Table 35: Residential and Commercial Complaints by Type 2021

3. The number and percentage of complaints resolved upon initial inquiry, within ten days, and longer than ten days.

Days To Resolution	Customer Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	% of Total
Greater Than 10 Days	Commercial	0	0	0	0	4	0	0	3	1	1	1	0	10	24.51%
Greater Than 10 Days	Residential	4	6	14	9	10	6	10	14	19	7	8	9	116	
Less Than 10 Days	Commercial	1	1	1	3	4	0	5	3	3	1	2	0	24	45.91%
Less Than 10 Days	Residential	28	22	26	7	15	11	10	16	40	15	12	10	212	
Same Day Resolution	Commercial	1	2	0	1	1	0	0	1	0	0	1	0	10	29.57%
Same Day Resolution	Residential	30	30	24	8	13	6	6	8	9	2	4	2	142	
Total		64	61	65	28	47	23	31	46	74	26	27	22	514	100%

Table 36: Timeframe of Complaints Resolved 2021

4. The number and percentage of all complaints resolved by taking any of the following actions: (1) taking the action the customer requested; (2) taking an action the customer and the utility agree is an acceptable compromise, (3) providing the customer with information that demonstrates that the situation complained of is not reasonably within the control of the utility; or (4) refusing to take the action the customer requested.

Resolution Reason	Commercial	Residential	Total	% Resolved Contacts
Compromise	11	81	92	17.93%
Customer Request	17	132	149	29.04%
No Control	16	255	271	52.83%
Refuse	0	1	1	0.19%
Total	44	469	513	100.00%

Table 37: Residential Complaints Resolved 2021

5. The number of complaints forwarded to the utility by the Commission's Consumer Affairs Office for further investigation and action.

Minnesota Power had 27 complaints forwarded to the utility by the Commission's Consumers Affairs Office for further investigation and action in 2021.

H. Customer Complaint Categories

Regarding Order Point 16 of the 2020 SRSQ Order, Commission Staff, including the Consumer Affairs Office, convened a work group meeting on Monday, March, 1, 2021, with the Department of Commerce, Xcel Energy, Minnesota Power, and Otter Tail Power to review and discuss current complaint categories used in annual SRSQ reports. Minnesota Rule 7826.2000 was reviewed along with the current categories used by each of the utilities and the Consumer Affairs Office. The group agreed to work together to further refine definitions for existing categories to allow for greater specificity and seek consistency, where possible. As part of this review, additional categories may be considered based on emerging topics of interest.

Additional work group meetings were held in June 2021, January 2022, and March 2022 to further discuss and compare the complaint reporting for commonalities. In the March 2022 meeting, the utilities each brought further details regarding the practical application

of complaint categories their respective organizations used. These were discussed in detail to find consensus categories and application, where possible, for reporting in annual service quality reports, including category definitions and timing for any changes determined as part of the work group process. Ultimately, parties agreed to additional detail for reporting of the category "Inadequate Service", as listed in Minnesota Rule 7826.2000. Inadequate Service is a broad topic and separating this category further will assist in the overall depiction of the types of complaints reported. Utilities will break out Inadequate Service into:

- Inadequate Service Field/Operations
- Inadequate Service Customer Service
- Inadequate Service Programs and Services
- Inadequate Service Cold Weather Rule Protection

Parties in the work group generally agreed that, beginning with the 2023 SRSQ Annual Report, filed in April of 2024, the utilities would report on the customer complaint categories agreed to by consensus. Beginning with those SRSQ reports, the utilities will include a table of the agreed upon complaint categories, definitions of what falls into those categories, and count of complaints by category.

IX. Proposed Reliability Standards

Minnesota Rule 7826.0600, Subp. 1 requires each utility, on or before April 1 of each year to file proposed reliability standards in the form of proposed numerical values for the SAIDI, SAIFI, and CAIDI values for each of its work centers. In an Order dated March 2, 2022 Order in Docket No. E015/M-21-230, the Commission established three work centers for Minnesota Power, as described on pages 25-26 of the Company's 2020 Safety, Reliability and Service Quality Report. Additionally, in this same Order the Commission set the Company's 2021 statewide Reliability Standard at the IEEE benchmarking 2nd Quartile for medium utilities, and its work center reliability standards at the IEEE benchmarking 2nd quartile for small utilities. In compliance with Minn. Rule 7826.0600, Subp. 1, Minnesota Power proposes following the 2nd quartile numbers from the 2021 IEEE reliability survey, the results of which will be published in the second half of 2022. At that time, Minnesota Power will submit a supplemental filing with the updated goals.

	CENTRAL	NORTHERN	WESTERN	OVERALL
SAIDI	187.00	187.00	187.00	128.00
SAIFI	1.42	1.42	1.42	0.98
CAIDI	119.00	119.00	119.00	123.00

Table 38: 2021 Proposed Reliability Performance Standards (These numbers will be updated to 2022 Proposed Reliability Performance Standards when IEEE numbers become available.)

X. Conclusion

Minnesota Power respectfully submits information on its Safety, Reliability and Service Quality metrics. This information provides the Commission and stakeholders transparency into the Company's distribution system and the holistic planning that goes into maintaining the system's robustness and resilience, while remaining responsive to customers and their expectations. Minnesota Power is proud to have provided power that was over 99 percent reliable for its customers in 2021 and reports, by work center, on how it performed compared to peer utilities. As described in this report, along with the Company's most recent Integrated Distribution Plan, Minnesota Power has initiated a number of efforts to improve reliability, including strategic undergrounding and asset renewal programs.

As also described throughout this filing, Minnesota Power continued to adapt its operations as the COVID-19 pandemic evolved, the state's peacetime emergency declaration ended and the Company returned to normal operations, including residential customer disconnections. Throughout 2021, Minnesota Power experienced similar challenges as others in the industry – including supply chain disruptions and workforce shortages. As such, the Company was challenged in meeting some of the metrics in this report, including call response times. However, the Company's Customer Care and Support Representatives spent necessary time on customer calls discussing payment agreement options and assistance programs as Minnesota utilities returned to normal operations and to help customers with past due balances that had grown during the pandemic.

In addition to ensuring reliability of our system and caring for its customers, Minnesota Power is also dedicated to helping communities and fellow utilities as they endure natural disaster-related outages. In 2021, Minnesota Power received two Emergency Assistance Awards from the Edison Electric Institute for its response to supporting Ameren customers facing wind storms and Con Ed's customers in the midst of an East Coast nor'easter. Minnesota Power looks forward to continuing its commitment to Customers, Communities and the Climate in executing its Energy*Forward* strategy towards a carbon-free future.

93

STATE OF MINNESOTA)	AFFIDAVIT OF SERVICE VIA
) ss	ELECTRONIC FILING
COUNTY OF ST. LOUIS)	

Tiana Heger of the City of Duluth, County of St. Louis, State of Minnesota, says that on the 1st day of April, 2022, she served Minnesota Power's Initial Filing of its 2021 Safety, Reliability and Service Quality Standards Report in **Docket No. E015/M-22**-_____ on the Minnesota Public Utilities Commission and the Energy Resources Division of the Minnesota Department of Commerce via electronic filing. The persons on E-Docket's Official Service List for this Docket were served as requested.

Tiana Heger

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Matthew	Brodin	mbrodin@allete.com	Minnesota Power Company	30 West Superior St Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs SRSQ Serv Lst
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.st ate.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400 St. Paul, MN 55101	Electronic Service	No	GEN_SL_Minnesota Power_MPs SRSQ Serv Lst
Hillary	Creurer	hcreurer@allete.com	Minnesota Power	30 W Superior St Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs SRSQ Serv Lst
Sharon	Ferguson	sharon.ferguson@state.mn .us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	GEN_SL_Minnesota Power_MPs SRSQ Serv Lst
Adam	Heinen	aheinen@dakotaelectric.co m	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	GEN_SL_Minnesota Power_MPs SRSQ Serv Lst
Lori	Hoyum	Ihoyum@mnpower.com	Minnesota Power	30 West Superior Street Duluth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs SRSQ Serv Lst
Allen	Krug	allen.krug@xcelenergy.co m	Xcel Energy	414 Nicollet Mall-7th fl Minneapolis, MN 55401	Electronic Service	No	GEN_SL_Minnesota Power_MPs SRSQ Serv Lst
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	GEN_SL_Minnesota Power_MPs SRSQ Serv Lst
Generic Notice	Residential Utilities Division	residential.utilities@ag.stat e.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	No	GEN_SL_Minnesota Power_MPs SRSQ Serv Lst
Susan	Romans	sromans@allete.com	Minnesota Power	30 West Superior Street Legal Dept Duulth, MN 55802	Electronic Service	No	GEN_SL_Minnesota Power_MPs SRSQ Serv Lst
				·	·		

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th PI E Ste 350 Saint Paul, MN 55101	Electronic Service	No	GEN_SL_Minnesota Power_MPs SRSQ Serv Lst
Lynnette	Sweet	Regulatory.records@xcele nergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	GEN_SL_Minnesota Power_MPs SRSQ Serv Lst