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STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

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

IN THE MATTER OF NORTHERN STATES
POWER COMPANY’S ANNUAL REPORT
ON SAFETY, RELIABILITY, AND SERVICE
QUALITY FOR 2022; AND PETITION FOR
APPROVAL OF ELECTRIC RELIABILITY
STANDARDS FOR 2023

DOCKET NO. E002/M-23-73

ANNUAL REPORT AND PETITION

INTRODUCTION

Northern States Power Company, doing business as Xcel Energy, submits to the Minnesota Public Utilities Commission the attached Annual Report on our safety, reliability, and service quality performance for 2022. We make this filing pursuant to Minn. R. 7826.0400, 7826.0500, and 7826.1300. This filing also includes our Petition for approval of the Company’s proposed reliability standards for the year 2023, as required under Minn. R. 7826.0600. In addition, the Annual Report contains several compliance items from various dockets.

We respectfully request that the Commission accept our annual report for 2022, approve our proposed reliability standards for 2023.

I. DESCRIPTION AND PURPOSE OF FILING

A. Background

Legislation passed in 2001 required that the Commission establish safety, reliability, and service quality standards for electric distribution utilities. After a rulemaking process, the Commission adopted rules that became effective on January 28, 2003. These rules contain both performance standards and reporting requirements. Additionally, the rules require individual utilities to propose electric reliability standards each year for approval by the Commission. Over time, the Commission added additional compliance obligations through various Order Points.

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Consistent with last year, we have separated the Annual Report, as laid out in Minnesota Rules, Chapter 7826, Electric Utility Standards, into two parts: Part I contains Service Quality and Reporting standards; Part II contains the Safety and Reliability metrics.

In this Petition, we request the Commission take two actions on the two items listed below:

- Accept the Company's Annual Report for 2022, and
- Approve our proposed reliability standards for 2023.

Each of these are discussed in more detail below.

A. Accept the Company's Annual Report for 2022

Attached to this Petition is the Company's Annual Report, detailing the Company's safety, reliability and service quality performance for 2022. The Company's Annual Report, and its attachments, is consistent with the Minnesota service quality reporting rules found in Minn. R. Ch. 7826, as well as the various Commission Order Points adopted over the years. In addition to responding to the new compliance obligations ordered from the 2017 through 2022 Annual Reports, the Company has included a compliance matrix to assist our stakeholders to find the information they are looking for within the Annual Report. We respectfully request the Commission accept the Company's Annual Report for 2022.

B. Approve Proposed Reliability Standards for 2023

Minn. R. 7826.0600, subp. 1, requires the Company to propose 2023 standards for SAIFI, SAIDI, and CAIDI. The Company proposed setting the 2023 standards based on the 2023 IEEE benchmarking results as follows:

- Statewide reliability: IEEE second quartile for large utilities;
- Metro East and Metro West work centers: IEEE second quartile for large utilities; and
- Southeast and Northwest work centers: IEEE second quartile for medium utilities.

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Our proposal is consistent with the 2023 standards established in the Commission's November 9, 2022 Order in Docket No. E002/M-22-162, Order Point 4. Because the IEEE benchmarking data for the previous year is not available until third quarter of the following year, the 2022 benchmarking data will not be available until the summer of 2023. The Company proposes filing to supplement to its 2022 Annual Report providing the 2022 benchmarking information compared to our 2022 results along with an explanation and action plan for any standards not met for 2022.

V. EFFECT OF CHANGE UPON XCEL ENERGY REVENUE

Approval of our Annual Report and the reliability performance standards proposed in this Petition will not result in any changes to Xcel Energy's revenue.

CONCLUSION

Xcel Energy is committed to providing our customers with safe, reliable and quality customer service. We appreciate this opportunity to report our performance to the Commission, and respectfully request that the Commission accept our Annual Report on safety, reliability, and service quality. We also request that the Commission approve our proposed reliability standards for 2023 as detailed in this Petition.

Dated: March 31, 2023

Northern States Power Company

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ANNUAL REPORT AND PETITION

SUMMARY OF FILING

Please take notice that on March 31, 2023 Northern States Power Company doing business as Xcel Energy filed with the Minnesota Public Utilities Commission a Petition requesting approval of its 2022 Electric Annual Service Quality Performance Report and Petition of Northern States Power Company, requesting the Commission accept our 2022 report and approve our proposed reliability standards for 2023.

Xcel Energy's Service Quality Annual Report Part II

Reliability Standards and
Request for Approval of Electric Reliability Standards for 2023

March 31, 2023
Docket No. E-002/M-23-73

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- B Claims Report
- C Meter Reading Report
- D Meter Equipment Malfunctions
- E Involuntary Disconnections
- F Call Center Response Times
- G Customer Complaints
- H Infographic
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- K Outage Cause Codes
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Requirement	Item	Location
7826.0400 ANNUAL SAFETY REPORT.		
	A. summaries of all reports filed with the 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 II.A
	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.	Section II.B
7826.0500 RELIABILITY REPORTING REQUIREMENTS.		
	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 normalize its reliability data to account for major storms	Section IV.B.1.a
	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;	Section IV.B.2.a
	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;	Section IV.B.3
	G. a copy of each report filed under part 7826.0700;	Section IV.B.4.a
	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 IV.B.2.b
	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;	Section IV.B.5
	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;	Section IV.B.6
	K. Any other information the utility considers relevant in evaluating its reliability performance	
7826.0600 RELIABILITY STANDARDS.		
	Subpart 1. Annually proposed individual reliability standards. 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, subpart 11.	Section IV
7826.0700 REPORTING MAJOR SERVICE INTERRUPTIONS.		
	Subpart 1. Contemporaneous reporting. A utility shall promptly inform the commission's Consumer Affairs Office of any major service interruption. At that time, the utility shall provide the following information, to the extent known: A. the location and cause of the interruption; B. the number of customers affected; C. the expected duration of the interruption; and D. the utility's best estimate of when service will be restored, by geographical area.	Section IV.B.4.a
	Subp. 2. Written report. Within 30 days, a utility shall file a written report on any major service interruption in which ten percent or more of its Minnesota customers were out of service for 24 hours or more. This report must include at least a description of: A. the steps the utility took to restore service; and B. any operational changes the utility has made, is considering, or intends to make, to prevent similar interruptions in the future or to restore service more quickly in the future.	Section IV.B.4.a
7826.1200 CALL CENTER RESPONSE TIME.		
	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.	Section III.E

	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.	Section III.E
7826.1400 REPORTING METER-READING PERFORMANCE.		
	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	Section III.A.1
	D. data on monthly meter-reading staffing levels, by work center or geographical area	Section III.A.1
7826.1500 REPORTING INVOLUNTARY DISCONNECTIONS.		
	The annual service quality report must include a detailed report on involuntary disconnections of service, including, for each customer class and each calendar month: A. the number of customers who received disconnection notices; B. the number of customers who sought cold weather rule protection under Minnesota Statutes, sections 216B.096 and 216B.097, and the number who were granted cold weather rule protection; 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	Section III.C
7826.1600 REPORTING SERVICE EXTENSION REQUEST RESPONSE TIMES.		
	The annual service quality report must include a report on service extension request response times, including, for each customer class and each calendar month: A. the number of customers requesting service to a location not previously served by the utility 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; and B. the number of customers requesting service to a location previously served by the utility, 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.	Section III.D
7826.1700 REPORTING CALL CENTER RESPONSE TIMES.		
	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.	Section III.E
7826.1800 REPORTING EMERGENCY MEDICAL ACCOUNT STATUS.		
	The annual service quality report must include the number of customers who requested emergency medical account status under Minnesota Statutes, section 216B.098, subdivision 5, the number whose applications were granted, and the number whose applications were denied and the reasons for each denial.	Section III.F
7826.1900 REPORTING CUSTOMER DEPOSITS.		
	The annual service quality report must include the number of customers who were required to make a deposit as a condition of receiving service.	Section III.G
7826.2000 REPORTING CUSTOMER COMPLAINTS.		
	The annual service quality report must include a detailed report on complaints by customer class and calendar month, including at least the following information: A. the number of complaints received; B. 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; 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; and E. the number of complaints forwarded to the utility by the commission's Consumer Affairs Office for further investigation and action.	Section III.H
COMMISSION ORDERS		
Docket E,G-999/PR-22-13 Docket E002/M-22-162 January 18, 2023	1. Eliminated the standalone Annual Summary of Customer Complaints docket (YY-13). 2. Required utilities to include customer complaint data from Minn. Rules 7820.0500 in their Annual Service Quality reports with data filed as part of Minn. Rules 7826.2000.	Section III.H

Docket E002/M-22-162 November 9, 2022	4. Set Xcel Energy's 2022 statewide Reliability Standard at the IEEE benchmarking 2nd Quartile for large utilities. Set Xcel's Southeast and Northwest work center reliability standards at the IEEE benchmarking 2nd Quartile for medium utilities and Xcel's Metro East and Metro West work center reliability center standards at the IEEE benchmarking 2nd quartile for large utilities. Require a supplemental filing to Xcel's 2022 SQSR report 30 days after IEEE publishes the 2022 benchmarking results, with an explanation for any standards the utility did not meet.	Section IV.B.1.a
	5. Initiated a work group to simplify Xcel Energy's SQSR reporting requirements. The workshop shall file recommendations or a progress update with the 2023 SQSR report.	Section III.H
	6. Require Xcel Energy to provide, beginning with its April 1, 2023 service quality filing, an additional data set that reports discreet meters unread for 6-12 months and 12+ months, with a single meter listed in the longest appropriate category only, in Xcel Energy's reporting under MN Rules Section 7826.1400. To the extent possible, include historic data in this format as well, with the past five years being optimal.	Section III.A.1; Attachment C
	7. Required Xcel Energy to document response duration in days, beginning from the date of initial customer contact to the date of Company reply, for inquiries, complaints, or disputes related to DERs and/or the interconnection process that are received through Xcel's call center, email, or otherwise. Information shall be shared in a .xlsx format in the Company's 2023 service quality filing and in the temporary annual report in Docket No. E-999/CI-16-521.	STARTS 2024
	8. Required Xcel, MP, OTP to each display, either directly or via a link to a PDF file, the utility's public facing summary, as shown in Attachment A, on the utility's website placed such that the summary is available to a website user after a single click away from the home page.	Section IV.A
DOCKET E002/M-21-237 March 2, 2022	8. The Commission sets XE's 2021 statewide reliability standard at the IEEE benchmarking second quartile for large utilities; set XE's SE and NW work center reliability standards at the IEEE benchmarking second quartile for medium utilities; and sets XE's ME and MW work center reliability standards at the IEEE benchmarking second quartile for large utilities. 9. Xcel must file a supplemental filing to its 2021 safety, service quality, and reliability report 30 days after IEEE publishes the 2021 benchmarking results. The supplemental filing must include an explanation for any standards the utility did not meet.	Section IV.B.1.a
DOCKET E002/M-21-237 December 2, 2021	2. Required Xcel, MP, OTP to 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 the third decimal Payment Services* xx.xxx% *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." 3. XE, MP and OTP 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 (for 2021, 2022, 2023 annual reports)	Section III.I
	4. XE, MP and OTP 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 III.I
	6. Xcel to add in the upcoming and subsequent reports a "DER Complaint" reporting subcategory, following discussion with an input from the Complaint working group	Section III.H
	7. XE, MP and OTP to file public facing summaries with their annual Safety, Reliability, and Service Quality reports. Utilities shall work with Executive Secretary to publish those summaries in locations visible to consumers.	Section IV.A
Docket E002/M-20-406; December 18, 2020 Order	3. Continue filing quarterly status reports on efforts to improve reliability in the Southeast Work Center through fourth quarter 2021.	Section IV.B.2.a
	4. The Commission grants a variance to Minn. R. 7826.0500, subp.1, item G, applicable to MP, OTP and Xcel. The utilities must file a summary table that includes the information contained in the reports, similar to Att G of Xcel's filing	Section IV.B.4.a
	5. Utilities must file the reliability (SAIDI, SAIFI, CAIDI, MAIFI, normalized/non-normalized) for feeders with grid modernization investments such as Advanced Metering Infrastructure or Fault Location Isolation and Service Restoration to the historic five-year average reliability for the same feeders before grid modernization investments.	Section IV B.1.d

	14. Each utility must report over the next two reporting cycles, to the extent feasible, the following: 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 If a utility is unable to report the information, the utility must provide an explanation as to why the information is not filed and the plans for reporting the information in the future.	Section III.I
	16. After consultation with Department and Commission staff, each utility must file revised categories for reporting complaint data. The Commission hereby delegates authority to the Executive Secretary to approve additional reporting categories, with the goal of establishing them by April 1, 2021 reporting deadline.	Section III.H
	17. The Commission hereby delegates to the Executive Secretary the authority to approve Xcel's public-facing summaries. The Executive Secretary may work with the utilities to refine the language and content in the summaries as needed.	Section IV.A
	18. Xcel must file the information listed in the revised Attachment A with its Safety, Service Quality, and Reliability report due April 1, 2021. Xcel shall provide the following information, as a downloadable .csv or .xlsx file, by feeder, for the calendar year. Xcel may exclude feeders that meet the 15/15 aggregation standard. a. Reliability reporting region where the feeder is located b. The substation the feeder is on, with its full name c. The zip code in which the feeder is primarily located d. The number of customers on the feeder, including the proportion of residential to commercial and industrial e. Whether the feeder is overhead or underground f. SAIDI, SAIFI, and CAIDI, normalized (IEEE 1366 Standard) and with Major Event Days g. Number of outages, total customer outages, and total customer-minutes-out for the following situations: i. All levels, All Causes included ii. Bulk Power Supply - All causes, distribution, substation, transmission substation, and transmission line levels; iii. All levels, no "planned" cause, includes bulk power supply iv. All levels, "planned" cause only, includes bulk power supply (cont'd on next line)	Section IV.B.1.b
	18. Cont'd h. Number of outages, total customer outages, and total customer-minutes-out in the following primary outage cause categories, normalized and non-normalized i. Equipment - OH ii. Equipment - UG iii. Lightning iv. Other v. Power Supply vi. Planned vii. Public viii. Unknown ix. Vegetation x. Weather - non-lightning xi. Wildlife	Section IV.B.1.b'
Docket E002/M-19-261 Order Date: January 28, 2020	2. Attachment B, item 1: Non-normalized SAIDI, SAIFI and CAIDI values	Section IV.B.1.b
	2. Attachment B, item 2: SAIDI, SAIFI, and CAIDI, MAIFI, CEMI, and CELI normalized values calculated using the IEEE 1366 Standard.	Section IV.B.1.b
	2. Attachment B, item 3: MAIFI – normalized and non-normalized.	Section IV.C.1
	2. Attachment B, item 4: CEMI – at normalized and non-normalized outage levels of 4, 5, and 6 interruptions.	Section IV.C.2
	2. Attachment B, item 5: The highest number of interruptions experienced by any one customer (or feeder, if customer level is not available).	Section IV.C.2
	2. Attachment B, item 6: CELI – at normalized and non-normalized intervals of greater than 6 hours, 12 hours, and 24 hours.	Section IV.C.3
	2. Attachment B, item 7: The longest experienced interruption by any one customer (or feeder, if customer level is not available).	Section IV.C.3
	2. Attachment B, item 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.	Section IV.B.6
	2. Attachment B, item 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	Section IV.B.4.b

	2. Attachment B, item 10: IEEE benchmarking results for SAIDI, SAIFI, CAIDI, and MAIFI from the IEEE benchmarking working group	Section IV.B.1.c
	2. Attachment B, item 11: Performance by customer class, If reporting by class is not yet possible, an explanation of when the utility will have this capability.	Section IV.B.1.b
	2. Attachment B, item 12: Causes of sustained customer outages, by work center.	Section IV.B.2.a
Docket E002/M-19-261 January 29, 2020	12. Utilities shall consult with Commission staff to draft a brief summary of their annual service-quality and reliability metrics that is digestible and useable for general audiences and file it as an attachment to their next annual report due April 1, 2020.	Section IV.A
Docket E002/M-18-239 Order Date: May 14, 2019	2. Utilities shall consult with Commission Staff to draft a brief summary of their annual service-quality and reliability metrics that is digestible and useable for general audiences.	Section IV.A
	6. Xcel shall provide refreshed information responsive to the Commission's February 9, 2018 order in Docket Nos. E-002/M-16-281 and E-002/M-17-249 in future annual service-quality reports.	Various Sections
Docket E002/M-18-239 March 19, 2019	3. In future annual reports, Xcel must file the following: (a) Non-normalized SAIDI, SAIFI, and CAIDI values. (b) SAIDI, SAIFI, and CAIDI values calculated using the IEEE 2.5 beta method.	Section IV.B.1.b
	(c) CEMI – at normalized and non-normalized outage levels of 4, 5, and 6.	Section IV.C.2
	(d) CELI – at intervals of greater than 6 hours, 12 hours, and 24 hours. (e) CELI.	Section IV.C.3
	(f) Estimated restoration times.	Section IV.B.4.b
	(g) IEEE benchmarking.	Section IV.B.1.c
	(h) Performance by customer class.	Section IV.B.1.d
	(i) More discussion of leading causes of outages and mitigation strategies.	Section IV.a
Dockets E002/M-17-249 and E002/M-16-281 February 9, 2018 Referenced in Docket 18- 239 Refers to Dockets: 16- 281	3. (a) The Company's data on benchmarking with national IEEE Reliability Standards;	Section IV.B.1.c
	3. (b) A qualitative discussion of ways the Commission looks at increased granularity;	Section IV.B.1.a
	3. (c) An assessment of MAIFI data;	Section IV.C.1
	3. (d) A summary of the Company's estimated response time to customers and steps the Company is taking to measure and communicate more accurately the Company's estimated response time to customers;	Section IV.B.4.b
	3. (e) The Company's internal customer satisfaction goals and a comparison of the Company's actual performance to those goals, as well as an explanation of the basis for those customer satisfaction goals;	Section III.J
	3 (f) With respect to the distribution feeder table identification provided in the report, Xcel shall include the appropriate locational labels, applicable substation name, and region to which the information relates;	Section IV.B.4.b
	3. (h) Data on the number of applicants and participants in the Company's emergency medical accounts.	Section III.F
Docket E002/M-14-131 December 12, 2014	3. Required Xcel to augment its next filing to include a description of the policies, procedures and actions that it has implemented, and plans to implement, to assure reliability, including information on how it is demonstrating pro-active management of the system as a whole, increased reliability, and active contingency planning. 4. Required Xcel to incorporate into its next filing a summary table that allows the reader to more easily assess the overall reliability of the system and identify the main factors that affect reliability. 5. Required Xcel to report on the major causes of outages for major event days. 6. Required Xcel to consider other factors, in addition to historical data, on which to base its reliability indices for 2014 in an effort to demonstrate its commitment toward improving reliability performance. 7. Required Xcel to continue reporting major service interruptions to the Commission's Consumer Affairs Office.	Section IV.A Section IV.B.1.b
Docket E002/GR-12-961 November 19, 2013	In Schedule 11 of its Compliance Filing, the Company provided its proposal for additional reporting of MAIFI data. Xcel provided an example of the following five additional MAIFI reports that will be filed in the April 1, 2014 service quality report: 1. A table with annual MAIFI results for Minnesota and our four work centers using three different normalization methodologies; 2. A table with the MAIFI results and Customer Interruptions by month and by work center; 3. A five-year historical look for Minnesota MAIFI that shows the three different normalization methodologies and their associated trend lines; 4. A pareto chart showing the top causes for interruptions for the current year; and 5. A pareto chart showing the top causes for interruptions for the past five years.	Section IV.C.1

Order: Docket E002/M- 10-310 Order Date: September 30, 2010	2. For reports due April 1, 2011, the Commission requires Xcel to augment their next filing to include a description of the policies, procedures and actions that it has implemented, and plans to implement, to assure reliability. Xcel should include information on how it is demonstrating pro-active management of the system as a whole, increased reliability and active contingency planning; 3. For reports due April 1, 2011, the Commission continues to require Xcel to incorporate into its next filing a summary table (or summary information in some other format) that allows the reader to more easily assess the overall reliability of the system and identify the main factors that affect reliability; 5. For reports due April 1, 2011, the Commission requires Xcel to report on the major causes of outages for major event	Section IV.A Section IV.B.1.b
Order: Docket E002/M- 09-343 Order Date: August 11, 2009	4. Regarding additional issues for reports due April 1, 2010, Xcel shall: (a) augment its next filing to include a description of the policies, procedures and actions that it has implemented, and plans to implement, to assure reliability. Xcel shall include information on how it is demonstrating pro-active management of the system as a whole, increased reliability and active contingency planning, including a specific discussion of the status and actions of its strategic initiatives as set forth in Ordering Paragraph 4a of its Order Accepting Annual Reports, Setting Reliability Standards, and Setting Additional Filing Requirements, Docket No. E-002/M-08-393 (October 24, 2008); (b) incorporate into its next filing a summary, table (or summary information in some other format) that allows the reader to more easily assess the overall reliability of the system and identify the main factors that affect reliability;	Section IV.A Section IV.B.1.b
Docket G002/CI-08-871 Docket E,G002/M-09-224 November 30, 2010	Direct Xcel to file the following information with its annual electric service quality reports filed pursuant to Minn. Rules, Part 7826.0500 and its annual gas service quality reports established in Docket No. G-999/CI-09-409 starting in 2013: • Volume of Investigate and Remediate Field orders; • Volume of Investigate and Refer Field orders; • Volume of Remediate Upon Referral Field orders; • Average response time for each of the above categories by month and year; • Minimum days, maximum days, and standard deviations for each category; and • Volume of excluded field orders.	Section III.B
Docket E002/M-05-551 April 7,2006	3. In its annual safety, reliability, and service quality report due on or before April 1, 2007, Xcel Energy shall report on the 25 worst performing circuits in each of its four work centers.	Section IV.B.2.b
Docket E002/M-04-511 November 3, 2004	5. Xcel shall file, on a going forward basis, a copy of every notification of an outage event sent to the Consumer Affairs Office which meets the standards set forth in Minn Rules part 7826 0700, subp 1, i e affecting 500 or more customers for one or more hours	Section IV.B.4.a
	6. Xcel shall include, on a going forward basis, data regarding credit calls but not calls from C&I customers in its calculation of call center response times	Section III.E

IV. RELIABILITY PERFORMANCE REPORT FOR 2022

Minn. R. 7826.0500 requires the Company to provide an Annual Reliability Performance Report on or before April 1 of each year on its reliability performance during the previous calendar year. The Annual Reliability Performance Report has eleven elements required by Minnesota Rules and, over time, the Commission has required the Company to report additional elements related to the Company's reliability performance.

A. Overview of 2021 Reliability Performance

[O]rder Point 2 in the Commission's May 14, 2019 Order in Docket No. E002/M-18-239, Order Point 12 in the January 28, 2020 Order in Docket No. E002/M-19-261, and Order Point 7 in the December 2, 2021 Order in Docket No. E002/M-21-237 requires the Company to provide an infographic summarizing key customer-service quality and reliability metrics in a format for general audiences and consult with Commission staff on its development.

Depicted in the Infographic provided as Attachment H, Xcel Energy served approximately 1.3 million electric customers in 2022 and our Minnesota customers had power 99.983 percent of time utilizing the Average Service Availability Index (ASAI). Excluding major event day's (MEDs), in 2022, our Minnesota customers were without power for an average of 90 minutes. An average customer experienced less than one outage and less than one percent of our Minnesota customers experienced more than six power outages, with less than two percent experiencing an outage lasting longer than twelve hours in 2022.

We understand the Commission monitors the performance by work center as well. To meet this requirement, the Company will submit a supplemental filing after IEEE publishes its 2022 benchmarking results in August or September of 2023 for the work center level along with an explanation for any statewide standards we did not meet.

We also understand that the Commission is specifically monitoring the reliability progress in the Southeast Work Center. During 2022, the Company provided quarterly reports on the progress and improvements made in the Southeast Work Center. The Commission's Order dated December 18, 2020, Docket E002/M-20- 406, required the Company to continue filing quarterly

status reports on efforts to improve reliability in the Southeast Work Center through fourth quarter 2021. To continue the transparency of our efforts to improve reliability in our Southeast Work Center, the Company voluntarily committed to continue providing quarterly status reports through 2022.

In the final and fourth quarterly update, filed February 1, 2023, the Company provided an update on staffing levels, 2022 reliability data, improvements to date, as well as ongoing improvement plans. The 2022 Fourth Quarter report is included with this report as Attachment I.

This section includes the SAIDI, SAIFI and CAIDI reliability metrics. This section also provides information about other reliability metrics the Commission has asked us to report on: MAIFI, CEMI, and CELI.

[O]rder Point 3 in the Commission's December 12, 2014 Order in Docket No. E002/M-14-131 required the Company "to augment its next filing to include a description of the policies, procedures and actions that it has implemented, and plans to implement, to assure reliability, including information on how it is demonstrating pro-active management of the system as a whole, increased reliability, and active contingency planning.

And,

[O]rder Point 3.i in the Commission's March 19, 2019 Order in Docket No. E002/M-18-239 required the Company to include more discussion of leading causes of outages and mitigation strategies.

Each year, Xcel Energy develops and manages programs to maintain and improve the performance of its transmission and distribution assets. We identify and implement these programs based on some of the leading causes of outages, to assure reliability, to enable proactive management of the system as a whole, and to effectively respond when outages occur. The information requested by Order Point 3 in the Commission's December 12, 2014 Order can be found in Attachment J.

B. RELIABILITY METRICS CONTEMPLATED BY THE COMMISSION'S RULES

1. SAIDI, SAIFI and CAIDI Metrics

a. Overview of Company's SAIDI, SAIFI and

CAIDI Performance

[P]ursuant to Minn. R. 7826.0500, Subpart 1.A-D, each utility's reliability report should include:

- The utility's SAIDI for the calendar year, by work center and for its assigned service area as a whole.*
- The utility's SAIFI for the calendar year, by work center and for its assigned service area as a whole.*
- The utility's CAIDI for the calendar year, by work center and for its assigned service area as a whole.*
- An explanation of how the utility normalizes its reliability data to account for major storms.*

On April 1, 2022, as required by Minn. R. 7826.0600, we proposed reliability standards for 2022 for each of our four Minnesota work centers based on IEEE benchmarking data.¹

[O]rder Point 4 in the Commission's November 9, 2022 Order in Docket No. E002/M-22-162:

The Commission sets Xcel Energy's 2022 statewide reliability standard at the IEEE benchmarking second quartile for large utilities; sets Xcel's Southeast and Northwest work center reliability standards at the IEEE benchmarking second quartile for medium utilities; and sets Xcel's Metro East and Metro West work center reliability center standards at the IEEE benchmarking second quartile for large utilities.

Xcel must file a supplemental filing to its 2022 safety, service quality, and reliability report 30 days after IEEE publishes the 2022 benchmarking results.

Table 12 presents our 2022 reliability performance. As required in the November 9, 2022 Commission Order, the Company will submit a supplemental filing later this year, typically in late August or early September, after IEEE publishes its 2022 benchmarking results along with an explanation for any statewide standards we did not meet. The remaining "Standards" column will be completed at that time.

¹ The four Minnesota work centers include Metro East, Metro West, Northwest, and Southeast.

Table 12
2022 RELIABILITY PERFORMANCE RESULTS

		Performance Results	Standards
Minnesota	SAIDI	90.00	--
	SAIFI	0.86	--
	CAIDI	104.05	--
Metro East	SAIDI	96.79	--
	SAIFI	0.90	--
	CAIDI	107.99	--
Metro West	SAIDI	81.85	--
	SAIFI	0.87	--
	CAIDI	94.19	--
Northwest	SAIDI	84.06	--
	SAIFI	0.69	--
	CAIDI	122.38	--
Southeast	SAIDI	111.84	--
	SAIFI	0.91	--
	CAIDI	122.69	--

Our explanation on how the reliability data was normalized to account for major storms is explained in Section 2a.

[O]rder Point 3.B in the Commission's February 9, 2018 Order in Docket No. E002/M-17-249, required the Company to provide a discussion of the ways the Commission looks at increased granularity.

In conjunction with a stakeholder workgroup, the Company developed an interactive map and made it available on the Xcel Energy website on April 1, 2022. This interactive map contains increased granularity on certain electric reliability and service quality data, as well as low-income program participation. The data is combined with demographic data from the US Census Bureau. Any Census Block with 15 or fewer Xcel Energy premises has been excluded to protect customer confidentiality and privacy. The interactive map can be accessed at the link below:

[**Xcel Energy 2022 MN Electric Service Quality Interactive Map**](#)

We note that the reliability statistics are calculated using the normalization method of IEEE 1366 Regional Major Event Days (MED).

- Include outages occurring at all levels (distribution, substation, and transmission).
- Include all outage cause codes.
- Where applicable, include credit for partial restoration.
- Base calculations on the number of customers' billing accounts and meters.
- Base calculations on normalized data.

We determine regional major event day thresholds using the IEEE 1366 method. Any day that meets or exceeds the daily SAIDI MED threshold is considered a MED for the qualifying region. This means that all outages that start on a MED (which lasts from midnight to midnight) for a particular work center are excluded from the calculation of the various reliability indices for that work center.

For 2022, we used the IEEE MED threshold calculation procedure as explained below:

- Use the previous five years of outage history for each region,
 - Calculate the daily SAIDI;
 - Calculate the Natural Log of each daily SAIDI; and
 - Calculate the Average and Standard Deviation of the Natural Logs.
- Based on the above methodology, a unique MED threshold for each region is set. A MED is defined as any day meeting or exceeding the MED SAIDI threshold, which is set at the Exponent of the average plus 2.5 standard deviations of the Natural Logs.

b. Additional SAIDI, SAIFI, and CAIDI Performance Information

[O]rder Point 4 in the Commission's December 12, 2014 Order in Docket No. E-002/M-14-131 required the Company to "incorporate into its next filing a summary table that allows the reader to more easily assess the overall reliability of the system and identify the main factors that affect reliability."

And

[O]rder Points 1 and 2 from Attachment B of the Commission's January 28, 2020 Order required the Company to provide non-normalized and normalized values for reliability metrics calculated using the IEEE 1366 method.

And

[O]rder Point 3.b in the Commission's March 19, 2019 Order in Docket No. E002/M-18-239 required the Company to include performance by customer class.

Table 13 provides a historical view of the requirements under Order Point 4 and also designates the years the Company was on (green) and off (red) target for those years/indices based on the annual rules or tariff at that time. We have customarily provided a chart of our reliability performance with and without normalization, under both the methodology the Commission uses in this docket and the methodology the Company uses in the Company's Annual Service Quality Tariff filing. This table also complies with the requirements of Order Points 1 and 2 of Attachment B from the Commission's January 28, 2020, Order.

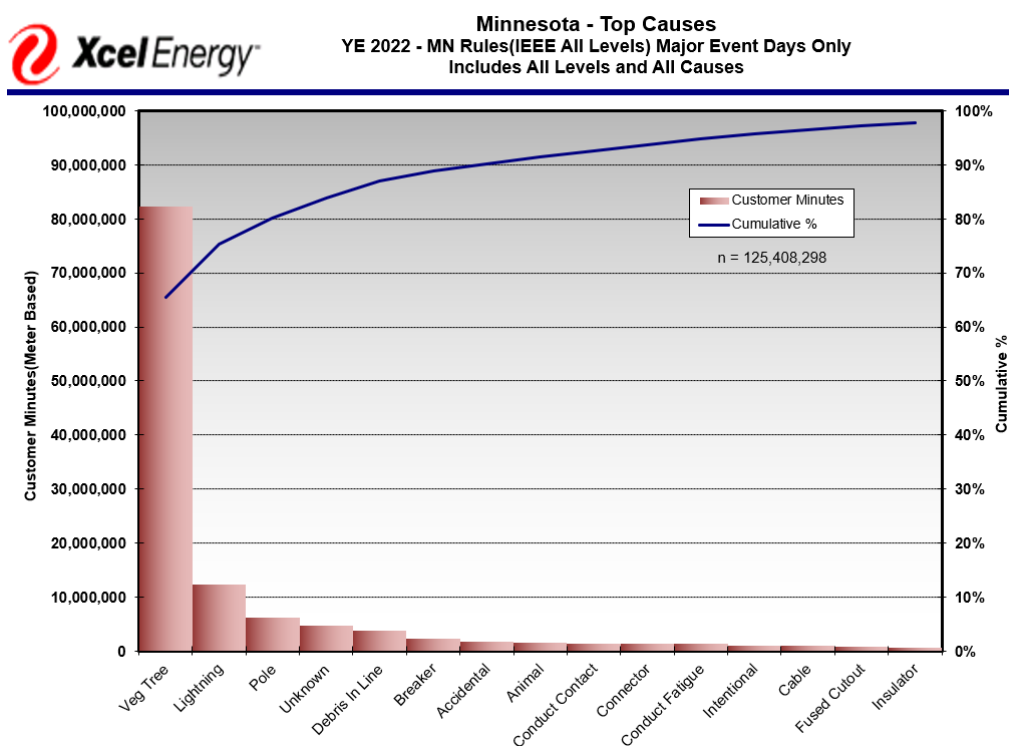
Table 13

Historical Reliability Indices & Major Event Day Exclusions												
All Days¹												
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Minnesota	SAIDI	562.11	116.43	184.50	214.39	141.70	125.00	124.50	134.19	129.93	184.42	
	SAIFI	1.39	0.92	0.96	1.05	0.90	0.95	0.86	1.07	1.04	1.08	
	CAIDI	404.36	126.00	192.32	204.84	158.10	131.22	145.30	124.89	124.67	170.24	
Metro East	SAIDI	352.30	123.54	177.19	223.67	136.51	112.11	104.57	124.02	145.50	142.85	
	SAIFI	1.27	0.98	1.04	1.08	0.95	0.96	0.85	1.07	1.01	1.05	
	CAIDI	278.46	125.93	169.86	206.85	144.37	116.71	122.52	115.72	144.49	136.23	
Metro West	SAIDI	810.01	105.98	229.78	198.25	148.58	88.23	79.92	143.84	121.15	214.14	
	SAIFI	1.55	0.89	1.00	1.00	0.86	0.92	0.74	1.13	1.14	1.11	
	CAIDI	523.66	118.70	229.92	198.86	173.27	95.70	107.38	127.72	106.02	193.13	
Northwest⁴	SAIDI	468.22	82.82	75.61	225.74	173.71	109.50	150.82	133.55	104.01	244.83	
	SAIFI	1.40	0.82	0.66	1.07	0.98	0.87	0.94	0.98	0.79	1.19	
	CAIDI	335.53	101.00	115.40	211.50	177.46	126.02	160.71	135.77	131.22	205.14	
Southeast⁵	SAIDI	179.29	173.45	98.23	249.05	96.37	353.32	374.19	122.43	144.95	123.52	
	SAIFI	1.06	0.98	0.79	1.15	0.84	1.15	1.32	0.92	0.92	0.97	
	CAIDI	168.93	176.51	125.07	217.15	114.75	307.95	283.40	132.38	157.71	126.95	
MN Tariff²												
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	'22 Target
Minnesota	SAIDI	91.12	79.85	86.83	89.49	73.80	93.26	76.66	95.52	87.97	87.92	133.23
	SAIFI	0.86	0.78	0.79	0.81	0.72	0.85	0.70	0.96	0.90	0.84	1.21
	CAIDI	106.51	102.07	109.90	110.54	102.10	109.90	109.74	99.73	97.71	104.63	NA
Metro East	SAIDI	83.56	77.58	93.71	95.49	75.70	103.28	79.26	104.56	81.96	96.62	
	SAIFI	0.83	0.82	0.90	0.87	0.75	0.92	0.72	0.99	0.83	0.89	
	CAIDI	100.72	94.81	104.58	110.07	100.79	112.40	110.29	105.19	98.36	108.37	
	MED's	3	3	2	3	3	1	2	1	2	4	
Metro West	SAIDI	101.24	81.85	88.98	82.90	69.28	81.25	68.25	87.46	94.47	81.22	
	SAIFI	0.96	0.82	0.82	0.82	0.70	0.84	0.69	1.01	1.05	0.86	
	CAIDI	105.85	100.15	108.90	101.51	98.40	96.63	99.17	86.19	89.83	94.52	
	MED's	5	1	1	3	2	1	2	2	2	4	
Northwest⁴	SAIDI	85.78	62.16	69.39	80.19	69.41	99.87	61.17	100.31	89.90	79.19	
	SAIFI	0.75	0.61	0.57	0.56	0.64	0.73	0.53	0.75	0.63	0.63	
	CAIDI	113.87	102.05	121.05	143.58	107.70	137.06	115.94	133.14	141.66	125.90	
	MED's	2	0	0	4	1	0	5	3	0	5	
Southeast⁵	SAIDI	73.58	94.45	70.78	109.59	92.84	110.67	122.21	99.53	75.14	99.26	
	SAIFI	0.57	0.67	0.52	0.82	0.79	0.77	0.84	0.76	0.66	0.78	
	CAIDI	129.93	141.93	135.23	133.06	117.19	144.04	145.17	130.46	114.59	126.96	
	MED's	4	4	1	3	0	2	4	3	3	1	
Annual Rules³												
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	'22 Target ⁴
Minnesota	SAIDI	94.27	84.00	89.95	90.45	75.04	96.07	81.02	98.92	88.83	90.00	NA
	SAIFI	0.90	0.84	0.83	0.83	0.74	0.89	0.75	0.99	0.92	0.86	NA
	CAIDI	104.60	99.67	108.09	108.93	100.90	107.39	108.29	100.28	96.33	104.05	NA
Metro East	SAIDI	85.05	79.73	93.73	95.52	76.22	103.69	80.56	104.98	82.00	96.79	TBD
	SAIFI	0.86	0.86	0.90	0.87	0.76	0.93	0.75	1.01	0.83	0.90	Late
	CAIDI	99.33	92.46	104.25	109.70	100.48	111.74	107.36	103.69	98.41	107.99	Summer
	MED's	3	3	2	3	3	1	2	1	2	4	
Metro West	SAIDI	101.41	83.02	90.95	83.64	69.51	83.26	69.50	88.82	94.56	81.85	TBD
	SAIFI	0.96	0.84	0.84	0.82	0.71	0.87	0.70	1.00	1.05	0.87	Late
	CAIDI	105.45	98.50	108.44	101.43	97.84	95.47	99.15	88.53	89.67	94.19	Summer
	MED's	5	1	1	3	2	1	2	4	2	4	
Northwest⁴	SAIDI	97.43	82.80	75.58	85.81	75.77	109.34	89.07	121.94	93.42	84.06	TBD
	SAIFI	0.94	0.82	0.66	0.70	0.76	0.87	0.78	0.93	0.74	0.69	Late
	CAIDI	103.70	101.02	115.39	122.38	100.28	126.05	113.48	130.98	126.13	122.38	Summer
	MED's	2	0	0	5	1	0	3	1	1	5	
Southeast⁵	SAIDI	87.98	103.45	86.51	110.23	96.33	118.80	129.10	105.07	79.80	111.84	TBD
	SAIFI	0.73	0.80	0.75	0.85	0.84	0.92	0.93	0.87	0.76	0.91	Late
	CAIDI	120.39	129.20	115.16	130.02	114.73	129.64	138.99	120.29	105.14	122.69	Summer
	MED's	4	4	1	3	0	2	4	1	3	1	

- All Days** - Includes All Days, Levels and Causes, Meter-based customer counts
- MN Tariff** - Normalized using IEEE 1366 at the Regional level after removing Transmission Line level. All Causes, Meter-based customer counts
- Annual Rules** - Normalized using IEEE 1366 at the Regional level, All Levels, All Causes, Meter-based customer counts
- Northwest** - Includes customers counts and interruptions in the North Dakota work region that impact Minnesota customers
- Southeast** - Includes customers counts and interruptions in the South Dakota work region that impact Minnesota customers
- 2012-2020 Annual Rules Targets were based on 5 year rolling actual averages or locked targets.
2021 Annual Rules Targets are based on IEEE Working Group Benchmarking study Large Utility Group 2nd Quartile for Metro East & West
Medium Utility Group 2nd Quartile for Northwest & Southeast, Current year targets will become available late summer when study results are released

Graph 1 below illustrates the major causes of outages for storm days using our Annual Rules normalization methodology for all of Minnesota. These types of outages are the main factors that affect reliability. Graphs 1A-1D provide the percentage of customer interruptions by various outage categories for each work center. Results presented using Annual Rules storm normalization and all-days (no normalization). Please see Attachment K for the underlying data for Graphs 1A – 1D.

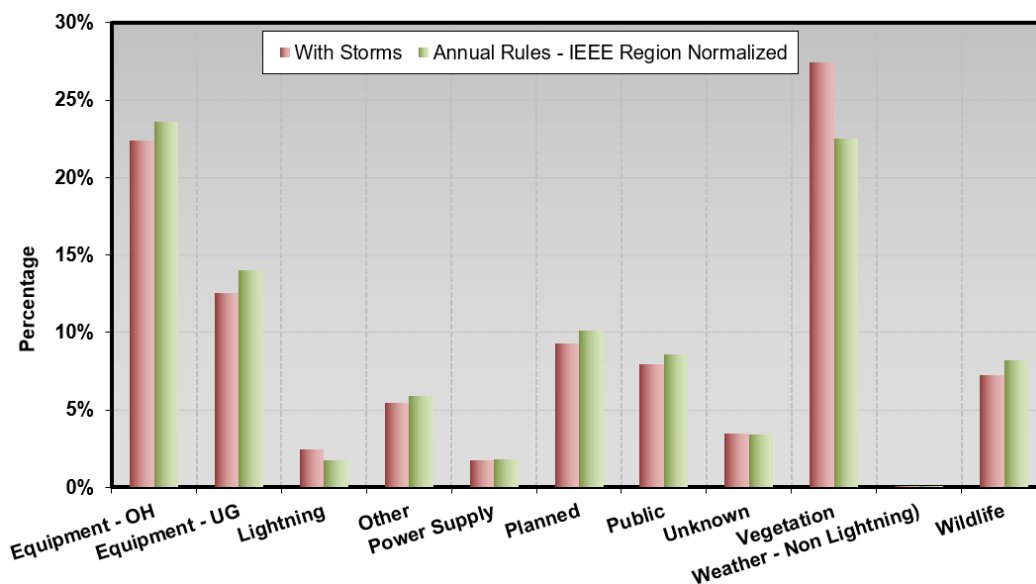
GRAPH 1
MAJOR CAUSE OF OUTAGES



GRAPH 1A

Metro East Workregion Outage Causes

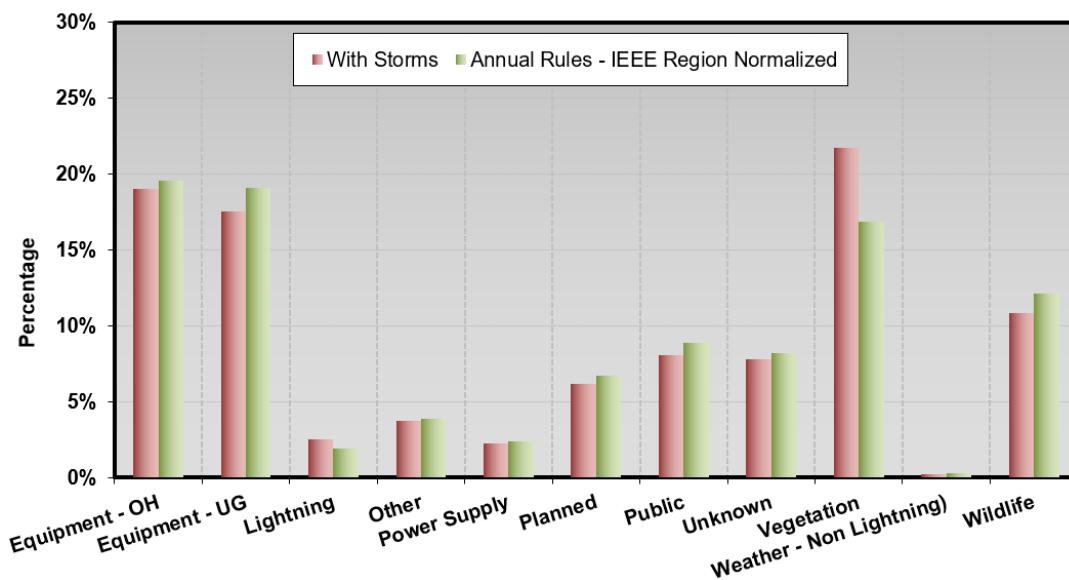
2018-2022 Average Annual Customer Interruption Percentages - All Levels



GRAPH 1B

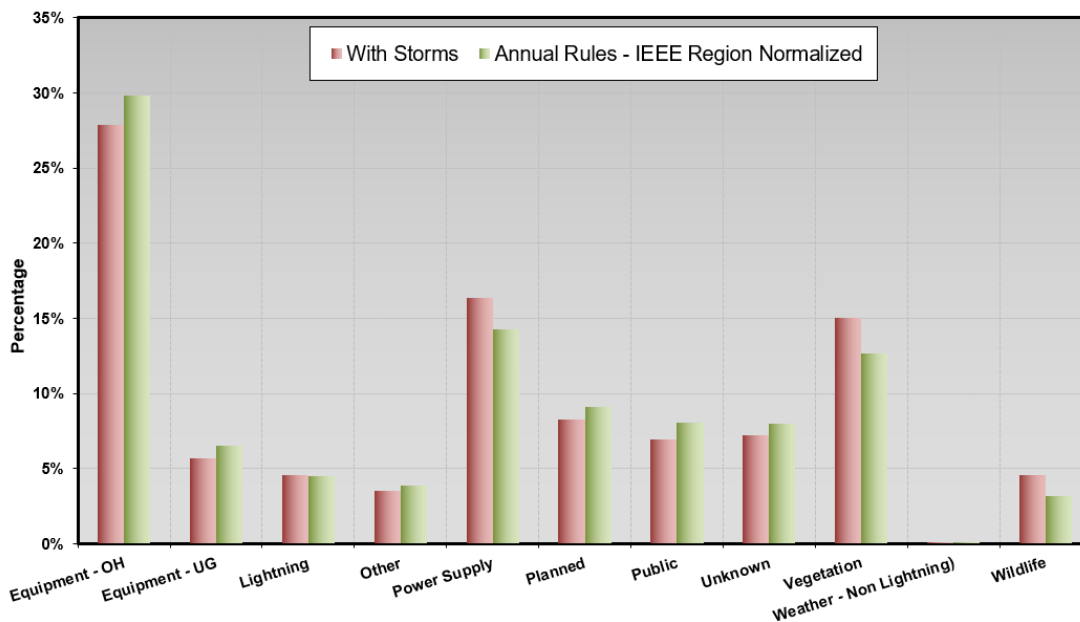
Metro West Workregion Outage Causes

2018-2022 Average Annual Customer Interruption Percentages - All Levels



GRAPH 1C

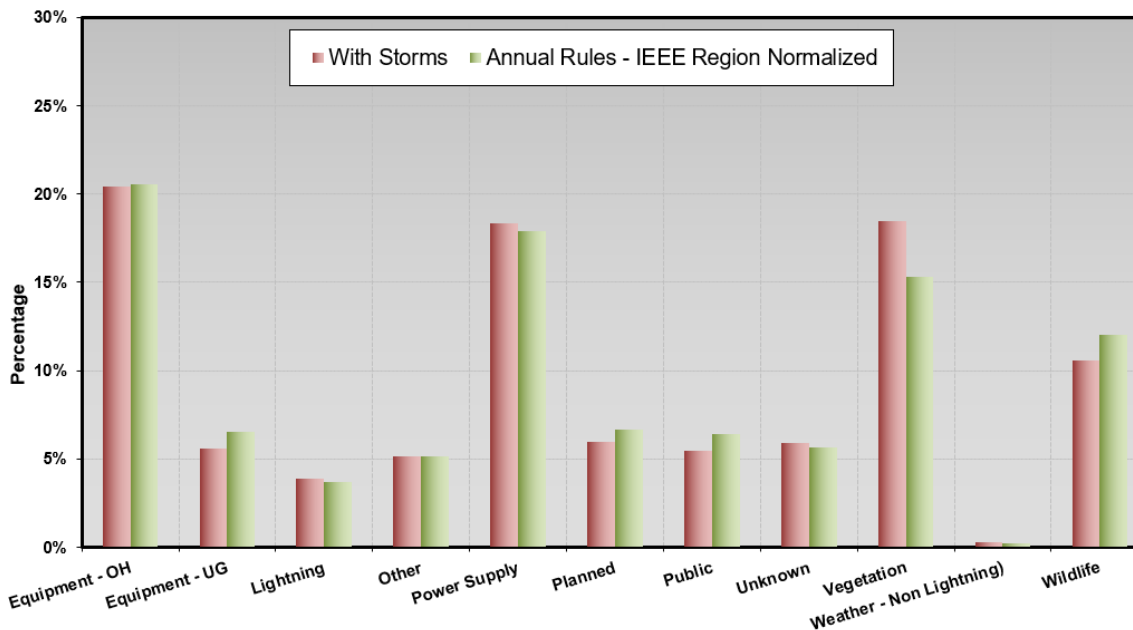
Northwest Workregion Outage Causes
 2018-2022 Average Annual Customer Interruption Percentages - All Levels



Annual Rules based on sustained outages (>5 minutes), including All Levels and All Cause codes, IEEE 1366 Region normalized using 5 year rolling data including outliers Northwest Region includes customers/outages in the North Dakota work region that are in the state of Minnesota

GRAPH 1D

Southeast Workregion Outage Causes
 2018-2022 Average Annual Customer Interruption Percentages - All Levels



Annual Rules based on sustained outages (>5 minutes), including All Levels and All Cause codes, IEEE 1366 Region normalized using 5 year rolling data including outliers Southeast Region includes customers/outages in the South Dakota work region that are in the state of Minnesota

[O]rder Point 11 of Attachment B in the Commission’s January 28, 2020, Order in Docket No. E-002/M-19-261 requires the Company to provide reliability metrics by customer class or if that information is not available, a timeline by which the Company will be able to provide such data.

Table 13A complies with Order Point 3.h from the Commission’s March 19, 2019 Order. Table 13A also complies with the requirements of Order Point 11, of Attachment B in the Commission’s January 28, 2020 Order and includes reliability metrics using Annual Rules storm normalization by customer class.

Table 13A

2022 Reliability Indices by Customer Class					
Annual Rules		Residential	Commercial	Industrial	ALL
Minnesota	SAIDI	90.37	81.82	77.47	89.45
	SAIFI	0.87	0.78	0.72	0.86
	CAIDI	103.73	105.4	107.47	104

The 2022 reporting year is the first year the Company has been able to provide reliability data by customer class in accordance with the Commission’s Order. We have provided the SAIDI, SAIFI, and CAIDI metrics for residential, commercial, and industrial customers. As this is the first year we have been able to calculate metrics by customer class, the Company is working to fully understand the causes and differences between customer class and reliability results. Although not formally studied, the difference between feeders primarily serving commercial versus residential customers is likely due to less vegetation in industrial and commercial areas, shorter feeders due to higher load density resulting in less exposure to the environment, and a higher percentage of customers with underground service. We note that Attachment L provides customer class information along with the reliability data by feeder. The Company will continue to research and determine differences in reliability results between customer classes and report on any insights gained in future service quality reports.

Much of the data on Attachment L has been marked as protected data. This information is “security information” as defined by Minn. Stat. § 13.37, subd. 1(a). As we have explained in past filings related to our treatment of customer data, we take our responsibility for all the data we maintain in order to provide our customers with reliable and safe service very seriously. Nearly daily, we hear about data breaches impacting individuals and organizations. Responsible access to sensitive data must be balanced with accountability for third parties to demonstrate their actions with the data will be in the public interest before gaining access. Additionally, as we have pointed out in the past

with respect to utility release of customer data, once released by the utility, the Commission will have no jurisdiction over third parties – and the utilities lose any ability to control its use, sale, or other dissemination.

Our Company principles with respect to privacy and security are:

- Maintain customer privacy, confidentiality, and security in terms of their usage and how they are connected to the grid
- Avoid revealing details that would give a bad actor information to target an attack for maximum impact (ex. Peak load, equipment capacities, number of customers, how critical infrastructure is connected to the grid, etc.)

Attachment L to this filing contains information that the Company believes could be manipulated to reveal the location and size of facilities serving our customers. The public disclosure or use of this information creates a risk because those who want to disrupt the electrical grid for political or other reasons may learn which facilities to target to create the greatest disruption. For this reason, pursuant to Minn. Stat. § 13.37, subd. 2, we have excised this data from the public version of our filing.

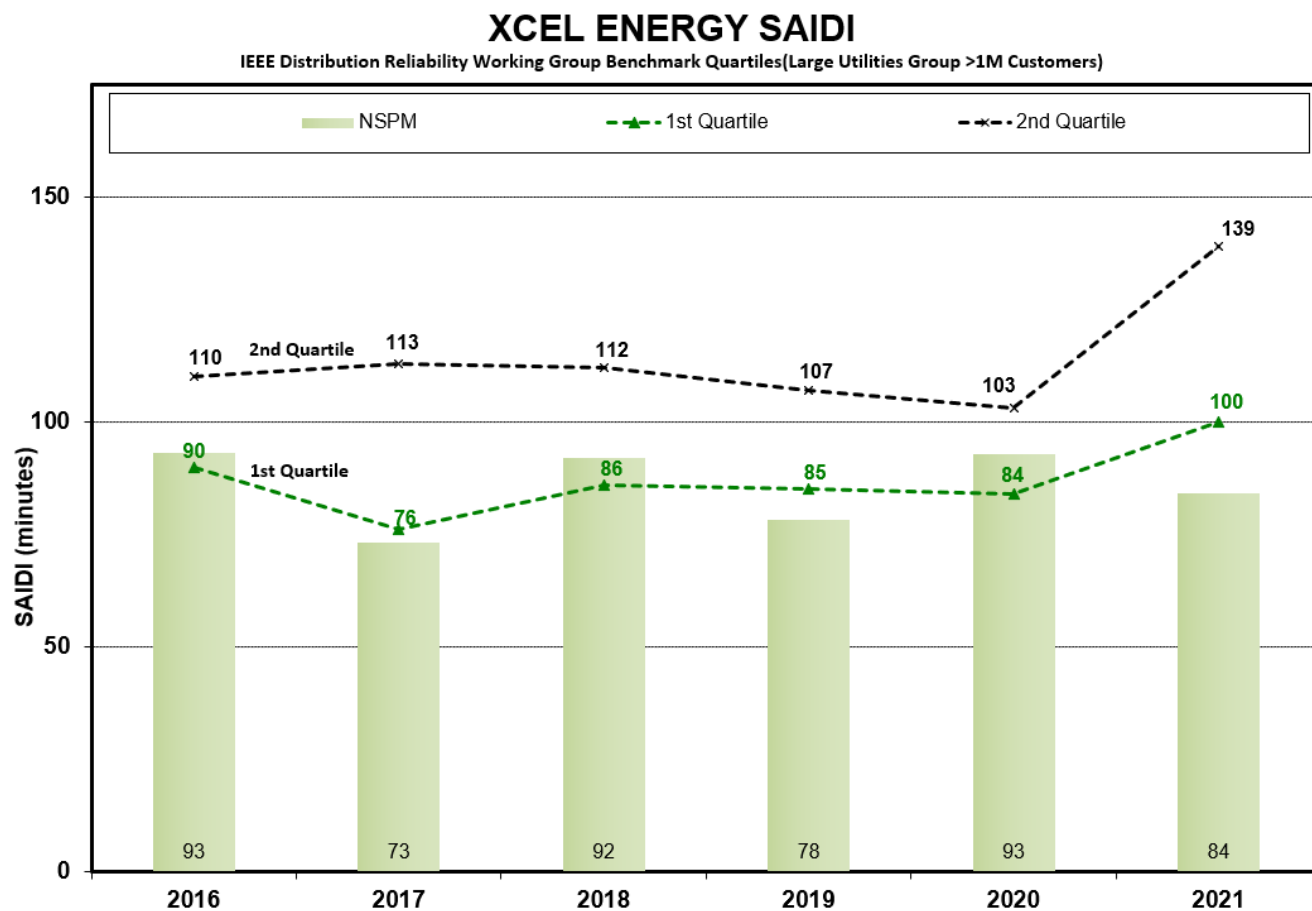
c. Benchmarking the Company's SAIDI, SAIFI, and CAIDI performance with IEEE

[O]rder Point 10 in Attachment B in the Commission's January 28, 2020 Order in Docket No. E-002/M-19-261 requires the Company to provide "IEEE Benchmarking results for SAIDI, SAIFI, CAIDI, and MAIFI from the IEEE benchmarking working group."

We participate in the reliability benchmarking survey sponsored by the IEEE Distribution Reliability Working Group. In Graphs 2 through 4, we provide the 2021 benchmarking info for SAIDI, SAIFI, and CAIDI, which is the most current and available benchmarking data. We submit performance results to the survey at the operating company level. Currently, benchmarking for MAIFI is not available and is not benchmarked by the IEEE industry. Once the IEEE 2022 benchmarking data is available, likely in August/September, the Company will submit an update in this docket.

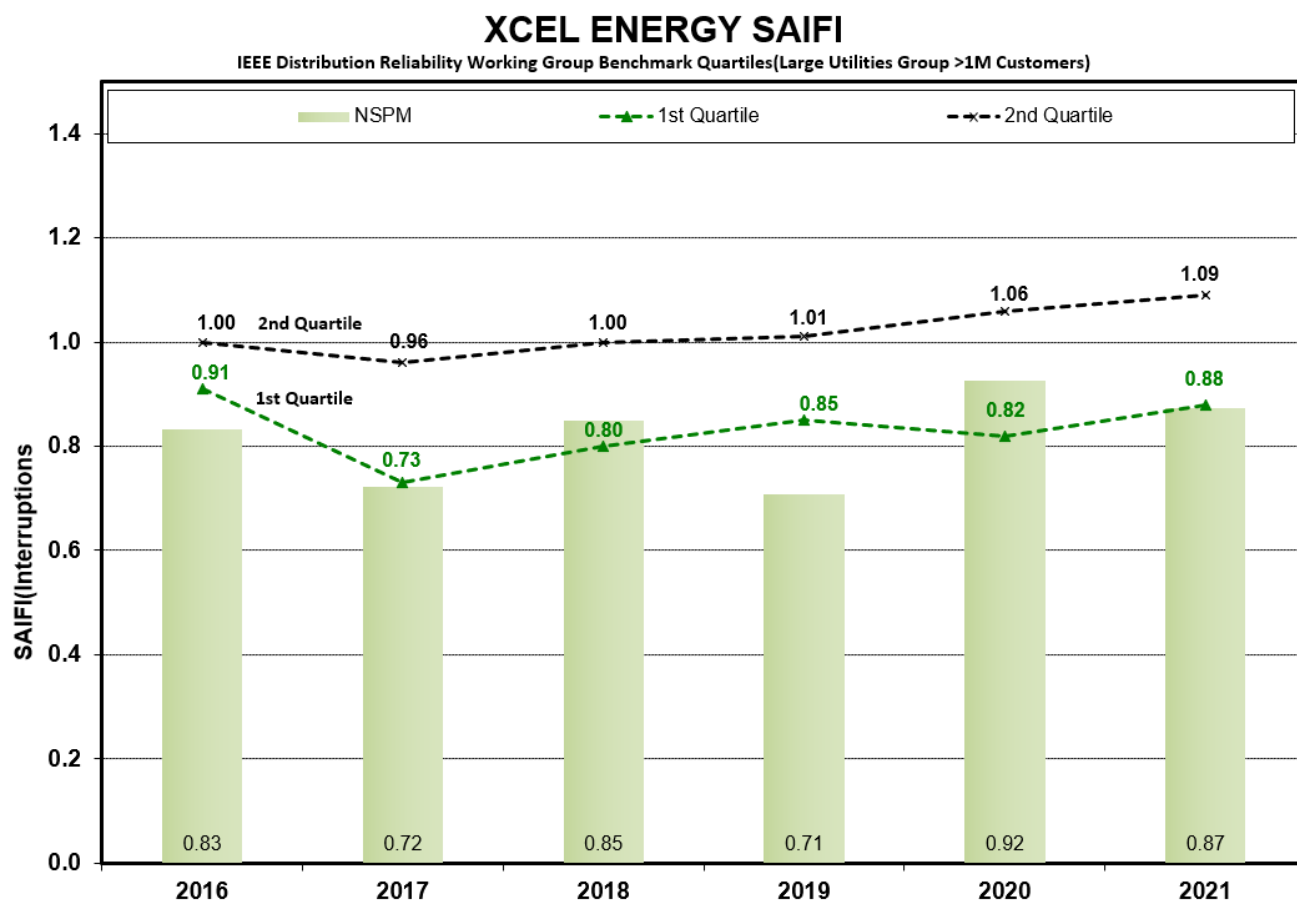
During 2021, NSPM's SAIDI performance was at the 1st quartile performance level.

GRAPH 2 – NSPM SAIDI



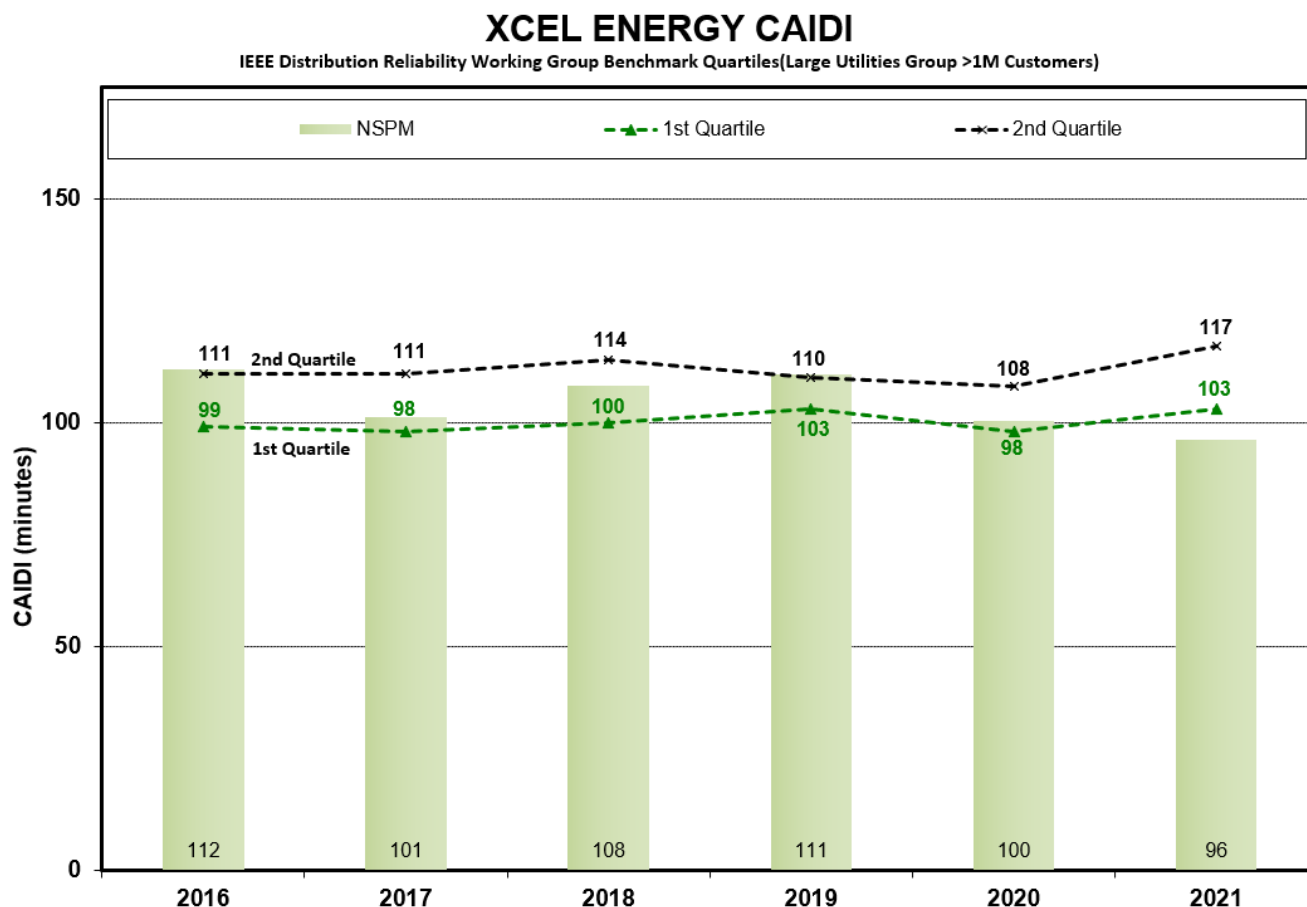
During 2021, NSPM's SAIFI performance was at the 1st quartile performance level.

GRAPH 3 – NSPM SAIFI



During 2021, NSPM's CAIDI performance was at the 1st quartile level.

GRAPH 4 – NSPM CAIDI



d. Additional contemplated SAIDI, SAIFI, and CAIDI metrics based on grid modernization investments

[O]rder Point 5 of the Commission's December 18, 2020 Order in Docket No. E002/M-20-406 required the Company to "file the reliability (SAIDI, SAIFI, CAIDI, MAIFI, normalized/ nonnormalized) for feeders with grid modernization investments such as Advanced Metering Infrastructure or Fault Location Isolation and Service Restoration to the historic five-year average reliability for the same feeders before grid modernization investments."

Like the Commission, the Company is interested in realizing the reliability improvements gained through grid modernization efforts. In considering any metric that measures the impact of grid modernization investments, it is important to note that reliability improvements are expected to be gradual rather than a step change. In addition, when assessing reliability performance for individual feeders and non-normalized reliability metrics, reliability performance can vary greatly on an annual basis due to a number of factors, including severity of weather that may not fully reflect the benefits of grid modernization investments.

As part of the deployment of ADMS to the Minnesota Distribution Control Centers, the Company installed automated field devices on three feeders that were used to test the functionality of FLISR. These automated field devices are integrated with ADMS and are currently running what is referred to as Open Loop FLISR, or a mode that is supervised and controlled by control center operators. The Company will be expanding the initial test area and feeders with enabled fault location prediction. Included in this expansion, the Company has developed a 2021-2027 deployment plan and proceeded to implement expansion of the FLISR footprint. It is expected to result in reliability improvements in the future with footprint expansion and utilizing fault location functionality within ADMS.

Advanced Metering Infrastructure (AMI) is expected to provide improvements that will give the Company insight into customers' outages sooner. In 2022, the Company began integration between AMI and the outage management system. Integration efforts are continuing into 2023. This integration merges real-time AMI data and capabilities into the outage management system to enhance outage detection, accelerate outage response, and reduce truck rolls. AMI data such as last gasp, power restoration, and ping responses will be leveraged to enhance our response to outages and improve reliability performance. However, it should be noted that because AMI technology provides enhanced capabilities, creating more accurate outage start and completion times, this will likely reflect as a decline of our reported reliability metrics as compared to our historical reporting. In addition, reliability performance for individual feeders and non-normalized reliability metrics can fluctuate greatly year-to-year based on a number of factors, including severity of weather and an improving or declining reliability performance.

2. ACTION PLAN FOR FAILURES TO COMPLY BY WORK CENTER

a. Reliability Performance as Compared to Standards

[M]inn. R. 7826.0500 subpart 1.E requires the Company to provide “[a]n action plan for remedying any failure to comply with the reliability standards set for in Minn R. 7826.0600 or an explanation as to why non- compliance was unavoidable.

[O]rder Point 12 from Attachment B of the Commission’s January 28, 2020 Order in Docket No. E002/M-19-261 requires the Company to provide the causes of sustained customer outages, by work center.

[O]n April 1, 2021, as required by Minn. R. 7826.0600, we proposed reliability standards for 2021 for our MN service territory and each of our four Minnesota work centers. We note that these reliability statistics are calculated using the newly ordered normalization method of IEEE 1366 Regional Major Event Days (MED).

- *Include outages occurring at all levels (distribution, substation, and transmission).*
- *Include all outage cause codes.*
- *Where applicable, include credit for partial restoration.*
- *Base calculations on the number of customers’ billing accounts and meters.*
- *Base calculations on normalized data*

We determine regional major event day thresholds based on using the IEEE 1366 method. Any day that meets or exceeds the daily SAIDI Major Event Day (MED) threshold is considered a MED for the qualifying region. This means that all outages that start on a MED (which lasts from midnight to midnight) for a particular work center are excluded from the calculation of the various reliability indices for that work center.

For 2022, we used the following IEEE MED threshold calculation procedures:

- Using the previous five years of outage history for each region, we:
 - Calculate the daily SAIDI;
 - Calculate the Natural Log of each daily SAIDI; and
 - Calculate the Average and Standard Deviation of the Natural Logs.
- Based on the above methodology, IEEE 1366 sets a unique Major Event Day (MED) threshold for each region. A MED is defined as any day meeting or exceeding the MED SAIDI threshold, which is set at the exponent of the average plus 2.5 standard deviations of the

Natural Logs.

The Company will be submitting a supplemental filing in late August or early September 2023 with IEEE Benchmarking results and how each work center performed based on those results. As part of that filing the Company will provide any explanations and/or action plans for any failures to meet the IEEE Benchmarking results.

Our Reliability Management Program, as summarized in Attachment J, focuses on reviewing outage data including the items highlighted below and identifying improvement opportunities through several methods including our Feeder Performance Improvement Program, vegetation management, proactive cable replacements and substation and transformer breaker assessments. The Company will continue our ongoing assessments of reliability and asset health, seeking to implement additional programs that will allow for system improvements and maintenance to achieve the largest improvements in reliability measurements. We are committed to providing reliable service to our customers and discuss the reliability performance of the specific work centers below.

The Company is committed to understanding the root causes of the reliability issues in all our work centers and developing plans for system improvements. We will continue to evaluate, monitor, and report our progress.

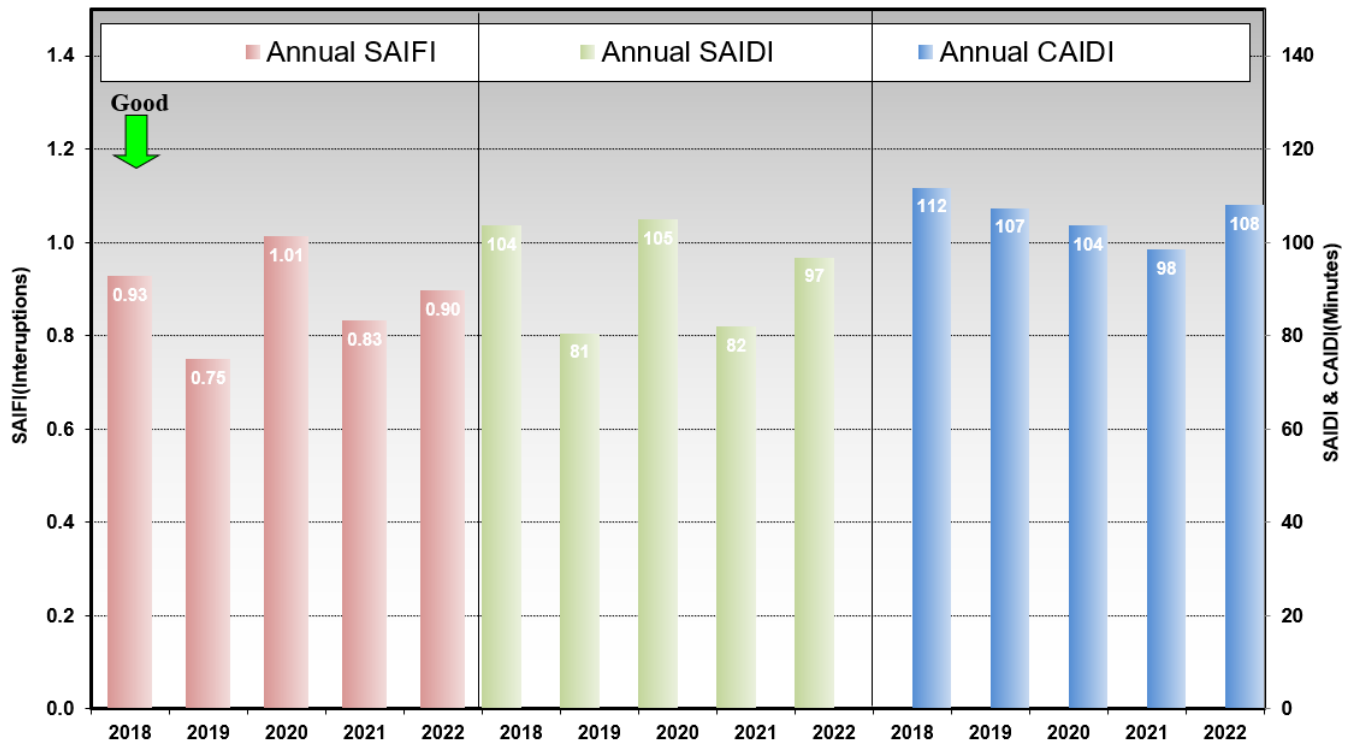
1. *Metro East*

In Graphs 5, 6, and 7, we show the five-year trend of all three indices, as well as Table 14 indicating the top level and cause of outages from the current year that deviated higher and lower than the previous five-year average.

GRAPH 5



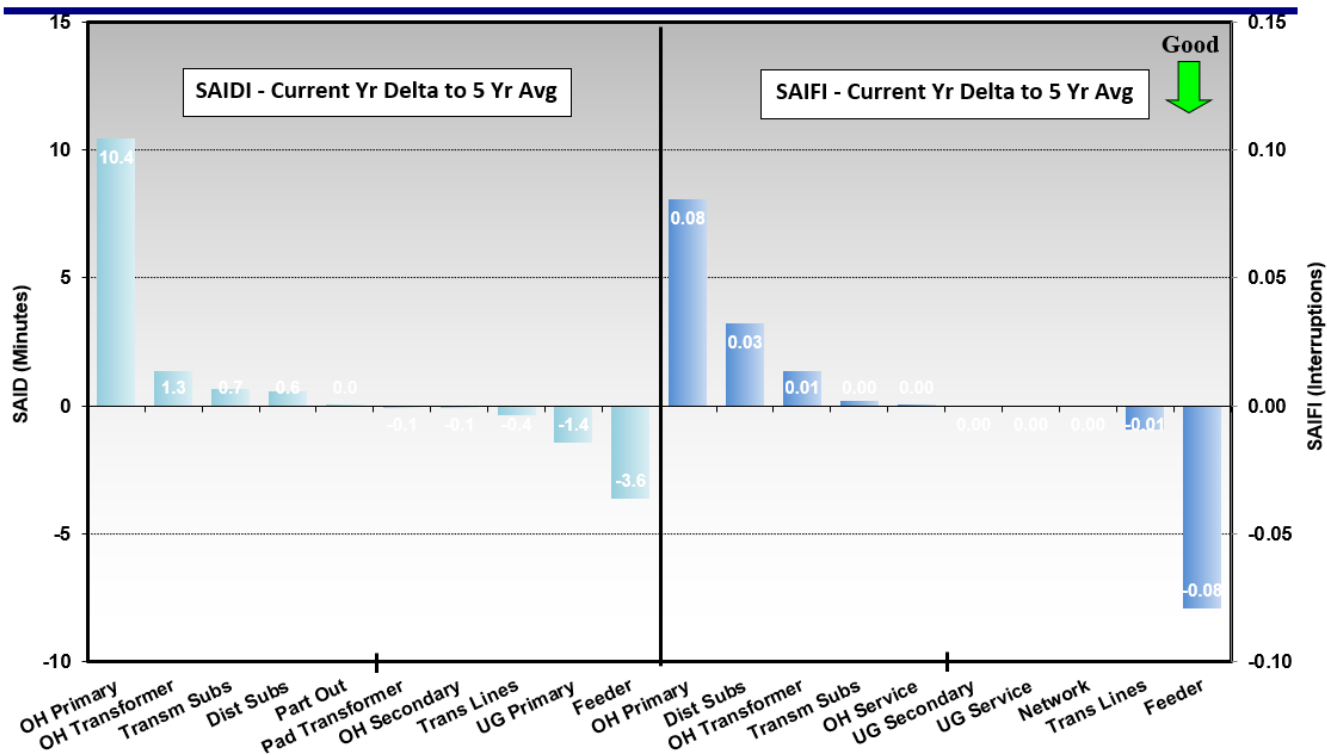
METRO EAST WORK CENTER 5 Year Actuals
(Annual Rules Normalized - IEEE 1366)



GRAPH 6



METRO EAST WORK CENTER - 2022 Delta to 5 Year Avg
 (Annual Rules Normalized - IEEE 1366 All Levels)



GRAPH 7



METRO EAST WORK CENTER - 2022 Delta to 5 Year Avg
 (Annual Rules Normalized - IEEE 1366 All Levels)

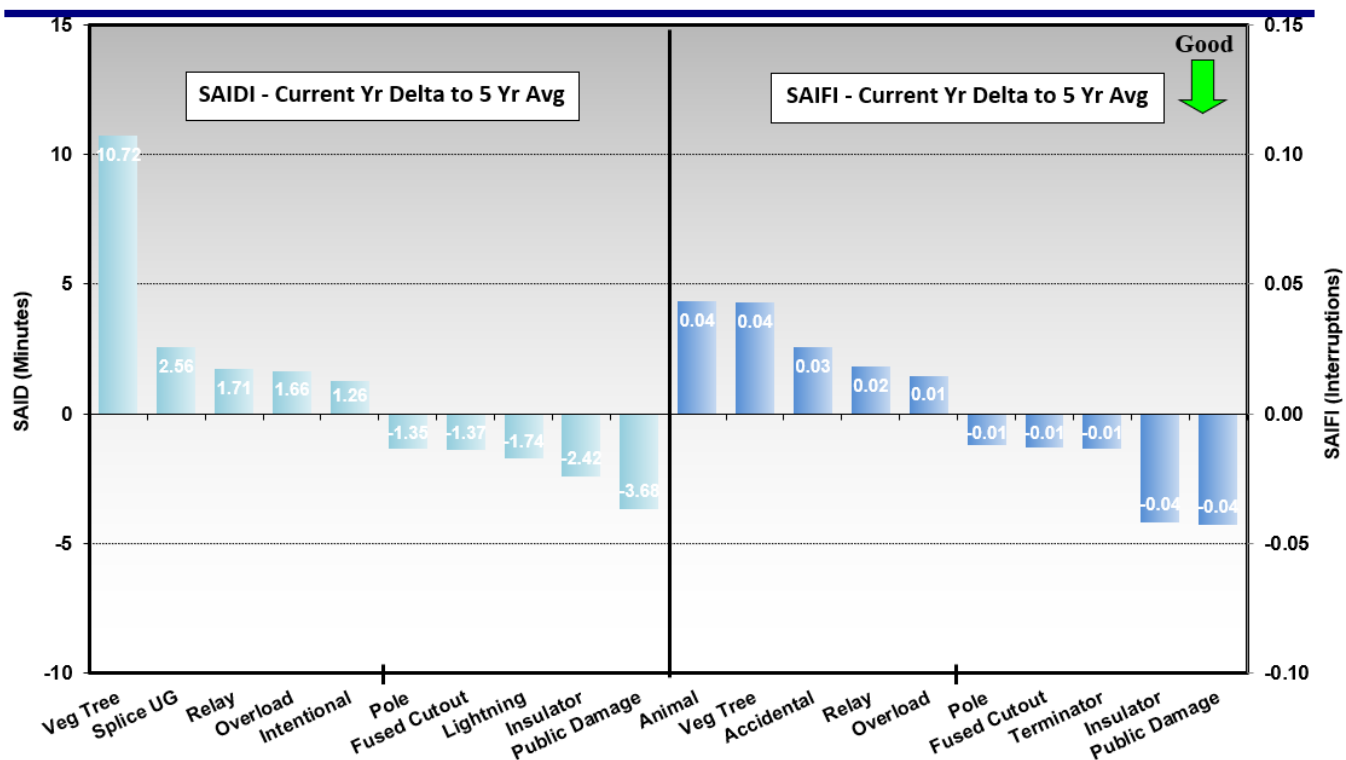


Table 14

Impact events / days

Major Event Days - Excluded from normalized results				
Date	SAIDI	SAIFI	CAIDI	Reason
5/11	13.2	0.03	431	High winds/thunderstorms/tornado. Many tree & line contacts & lightning strikes.
8/3	14.4	0.05	288	High winds/thunderstorms. Many tree contacts & lightning strikes.
8/27	12.1	0.03	422	High winds/thunderstorms. Many tree contacts & lightning strikes.
12/15	6.3	0.04	146	High winds/snow/sleet. Many tree contacts.

Moderate Storm Activity				
Date	SAIDI	SAIFI	CAIDI	Reason
3/5	5.1	0.02	238	High winds/snow/ice. Tree debris contacts & equipment failures
5/9	3.8	0.02	181	High winds/thunderstorms. Tree contacts & equipment failures
5/30	3.9	0.02	238	High winds/thunderstorms. Tree contacts & equipment failures
7/20	2.1	0.02	115	High winds/thunderstorms. Tree contacts & equipment failures
12/16	2.7	0.02	171	High winds/snow/sleet. Tree contacts & equipment failures.

Transmission					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
5/9	0.9	0.01	96	Lindstrom/Scandia	Tree contact to equipment on transmission substation/line

Distribution Substation					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
8/1	1.9	0.02	92	West/South St Paul	Equipment failure - Relay
8/6	0.6	0.01	81	Inver Grove Heights	Equipment failure - Cable mainline
8/24	0.1	0.01	12	Inver Grove Heights/Egan	Equipment failure - Transformer overload
10/4	0.5	0.03	15	Saint Paul	Switching error
11/1	0.4	0.02	23	Cottage Grove/Saint Paul	Animal contact in the distribution substation

Distribution Lines					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
6/20	2.5	0.01	359	Cottage Grove/Saint Paul	Equipment failure - Underground splice
11/6	1.5	0.01	194	Lent/Wyoming/Chisago	Public vehicle hit and damaged pole
6/30	1.3	0.01	176	Saint Paul	Equipment failure - Crossarm
7/20	1.3	0.01	134	Lino Lakes/Blaine	Tree contact - Branch caused equipment failure
3/5	1.2	0.00	628	Stillwater/May Twp	Tree contact - Icing conditions
3/5	1.2	0.00	243	Woodbury	Tree contact - Icing conditions
5/20	1.1	0.01	157	Chisago City	Tree contact - Branch caused downed wire
9/19	1.0	0.01	147	Saint Paul	Tree contact - Branch caused downed wire
12/16	1.0	0.00	512	Chisago City	Tree contact - Snowy conditions
2/18	0.9	0.01	102	Inver Grove Heights	Tree contact - Branch on wire

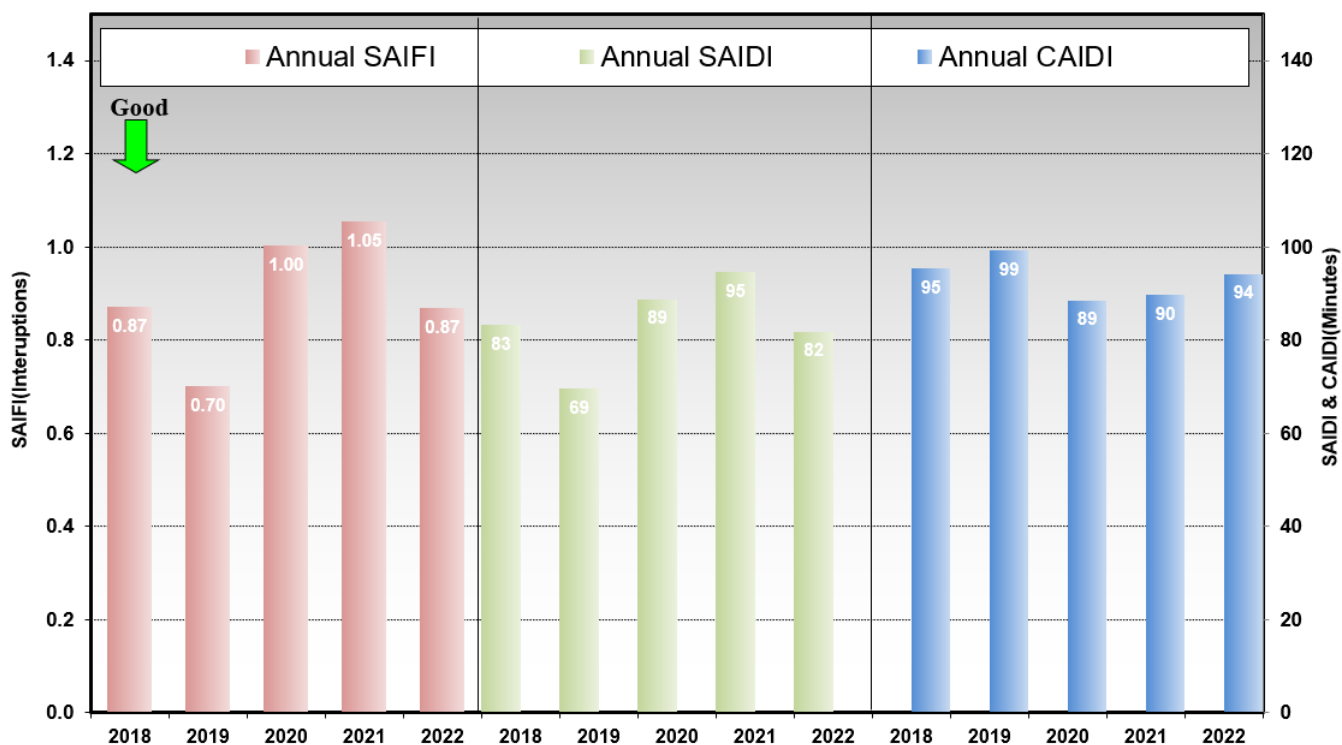
2. *Metro West*

Graphs 8, 9, and 10 show the five-year trend of all three indices, and Table 15 illustrates the top level and cause of outages from the current year that deviated higher and lower than the previous five-year average.

GRAPH 8



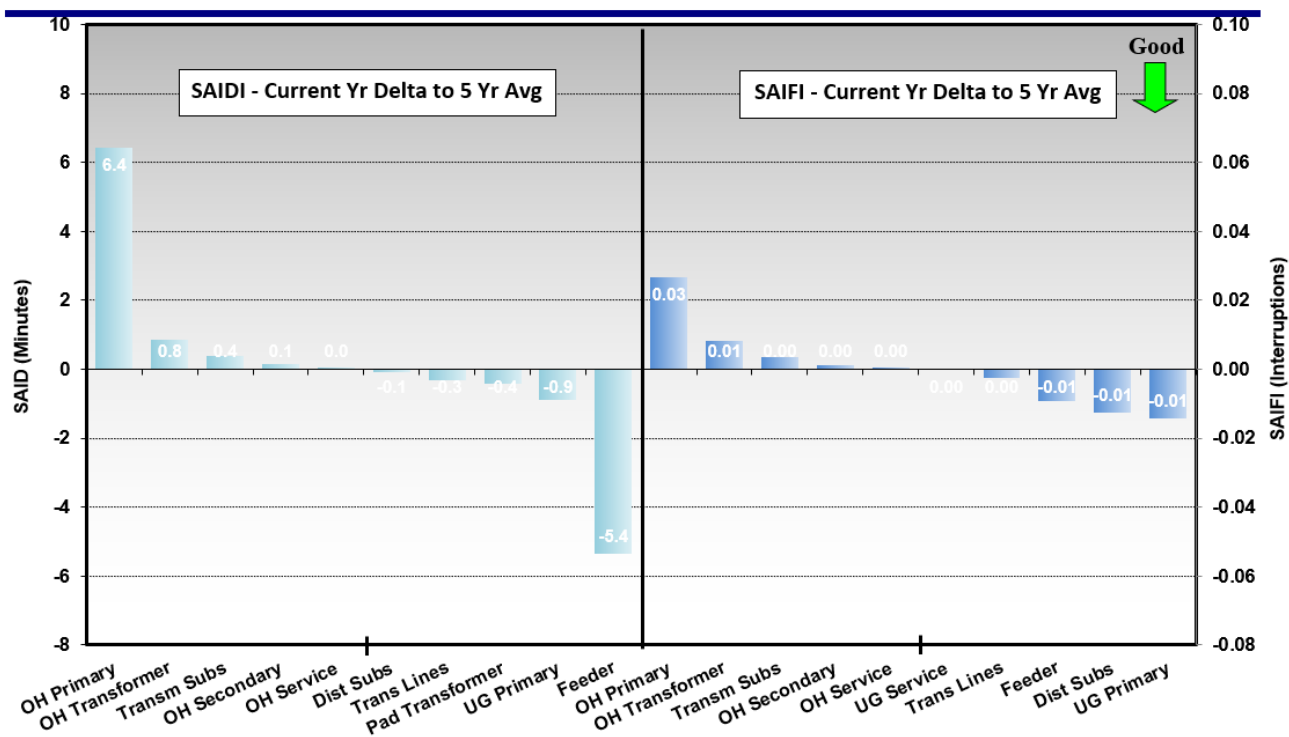
METRO WEST WORK CENTER 5 Year Actuals
(Annual Rules Normalized - IEEE 1366)



GRAPH 9



METRO WEST WORK CENTER - 2022 Delta to 5 Year Avg
 (Annual Rules Normalized - IEEE 1366 All Levels)



GRAPH 10



METRO WEST WORK CENTER - 2022 Delta to 5 Year Avg
 (Annual Rules Normalized - IEEE 1366 All LEvels)

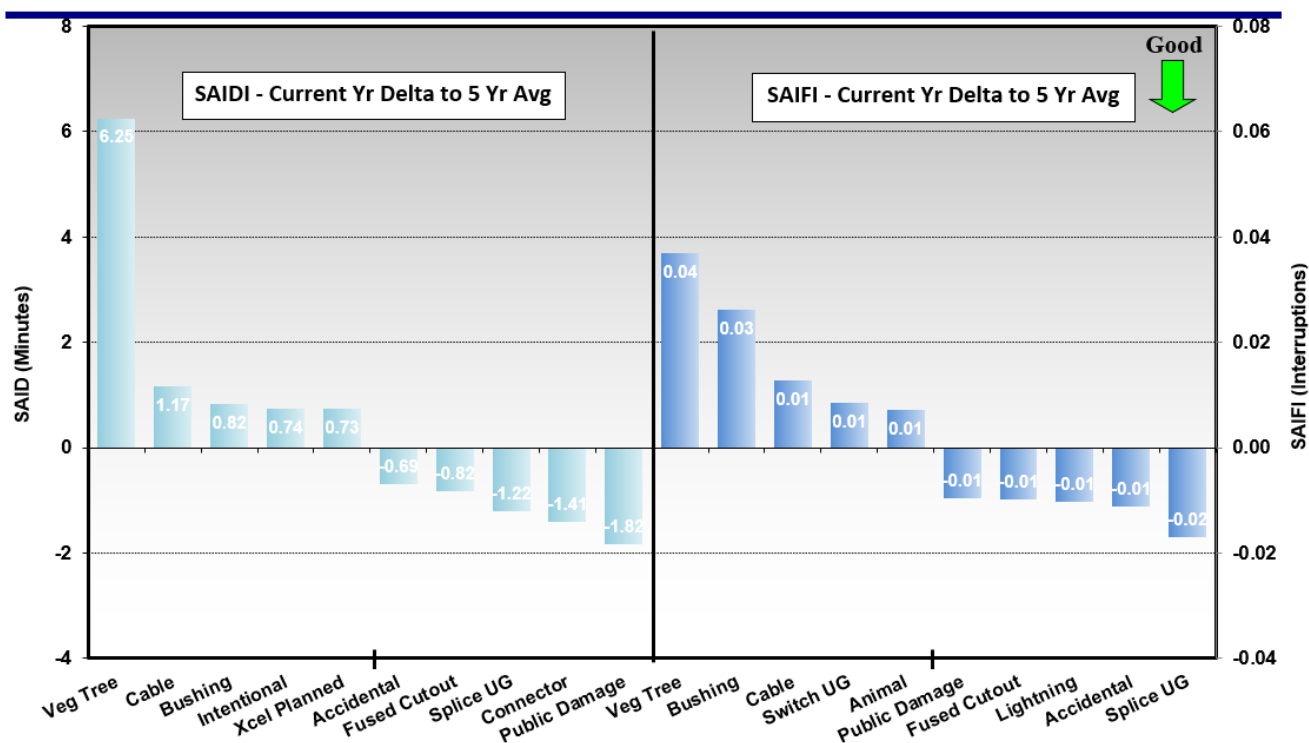


Table 15

Impact events / days

Major Event Days - Excluded from normalized results					
Date	SAIDI	SAIFI	CAIDI	Reason	
5/11	68.1	0.11	637	High winds/thunderstorms/tornado. Many tree, debris, & line contacts & lightning strikes.	
5/12	15.4	0.02	764	High winds/thunderstorms/tornado. Many tree, debris, & line contacts & lightning strikes.	
8/3	38.2	0.08	473	High winds/thunderstorms/tornado. Many tree, debris, & line contacts & lightning strikes.	
8/27	10.5	0.03	331	High winds/thunderstorms/tornado. Many tree, debris, & line contacts & lightning strikes.	

Moderate Storm Activity					
Date	SAIDI	SAIFI	CAIDI	Reason	
5/30-31	6.3	0.04	172	High winds/thunderstorms. Tree contacts & equipment failures	
6/30	2.0	0.01	186	High winds/thunderstorms. Tree contacts & equipment failures	
8/2	4.0	0.02	232	High winds/thunderstorms. Tree contacts, lightning strikes, & equipment failures	
8/6	1.6	0.01	189	High winds/thunderstorms. Tree contacts, lightning strikes, & equipment failures	

Transmission					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
3/5	0.2	0.00	110	Wayzata/Minnetonka	Equipment failure - Pole fire on transmission line
4/4	0.5	0.00	152	Rockford/Loretto	Unknown cause event in transmission substation
4/17	0.3	0.01	56	Minnetonka/Hopkins	Unknown cause event in transmission substation
4/23	0.3	0.00	81	Lester Prairie/Silver Lake	Transmission line outage caused by other utility tied to line

Distribution Substation					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
2/8	1.2	0.03	43	Bloomington/Edina	Equipment failure - Insulator
4/1	0.8	0.01	86	Mound/Saint Bonafacius	Equipment failure - Breaker/Recloser
9/11	0.6	0.01	42	Minneapolis	Animal contact in the distribution substation
10/5	0.3	0.01	28	Bloomington / Richfield	Animal contact in the distribution substation

Distribution Lines					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
1/26	1.4	0.00	796	Minneapolis	Equipment failure - Cable underground primary
6/30	1.0	0.01	179	Columbia Heights	Equipment failure - Distribution pole
8/2	1.0	0.00	230	Orono	Tree contact - Storm
8/2	0.8	0.00	213	Mound	Tree contact - Storm
5/11	0.7	0.00	178	Brooklyn Center	Tree contact - Branch on wires
8/28	0.7	0.00	669	Edina	Lightning strike - Equipment hit by lightning
3/5	0.6	0.01	88	Minneapolis	Equipment failure - Pole Fire
6/12	0.6	0.01	98	Minneapolis/Richfield	Equipment failure - Cable mainline
8/2	0.6	0.00	906	Chanhassen	Tree contact - Storm
3/16	0.6	0.01	59	Minneapolis	Public vehicle hit and damaged pole

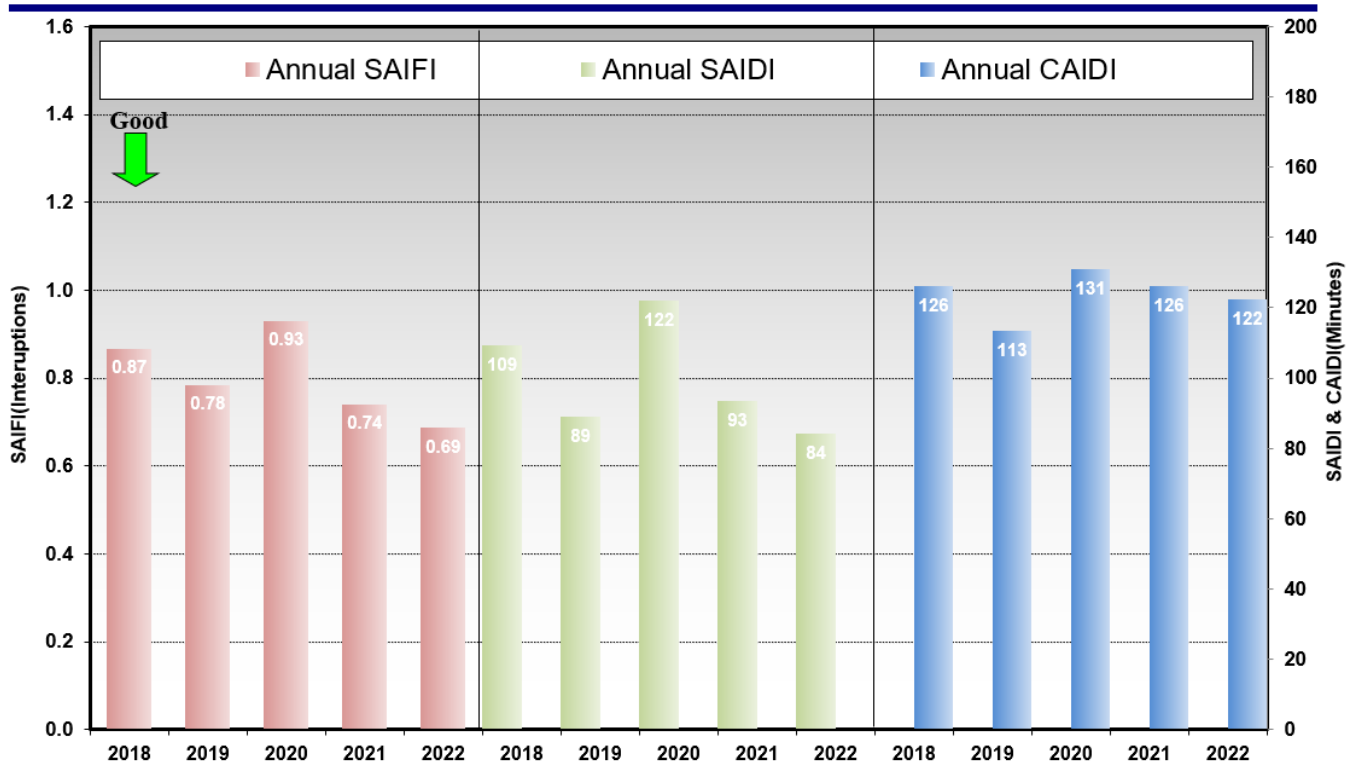
3. Northwest

Graphs 11, 12, and 13 show the five-year trend of all three indices, and Table 16 illustrates the top level and cause of outages from the current year that deviated higher and lower than the previous five-year average.

GRAPH 11



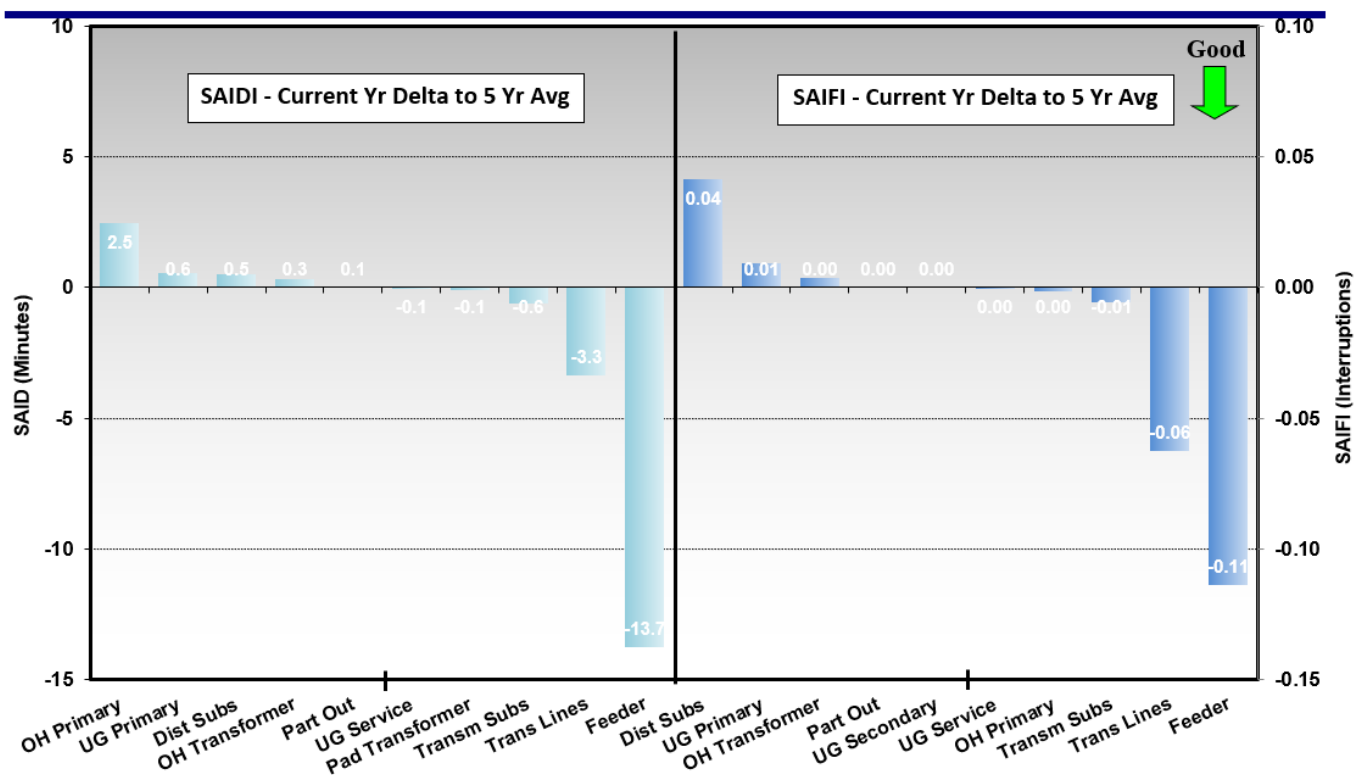
NORTHWEST WORK CENTER 5 Year Actuals
 (Annual Rules Normalized - IEEE 1366)



GRAPH 12



NORTHWEST WORK CENTER - 2022 Delta to 5 Year Avg
 (Annual Rules Normalized - IEEE 1366 All Levels)



GRAPH 13



NORTHWEST WORK CENTER - 2022 Delta to 5 Year Avg
 (Annual Rules Normalized - IEEE 1366 All Levels)

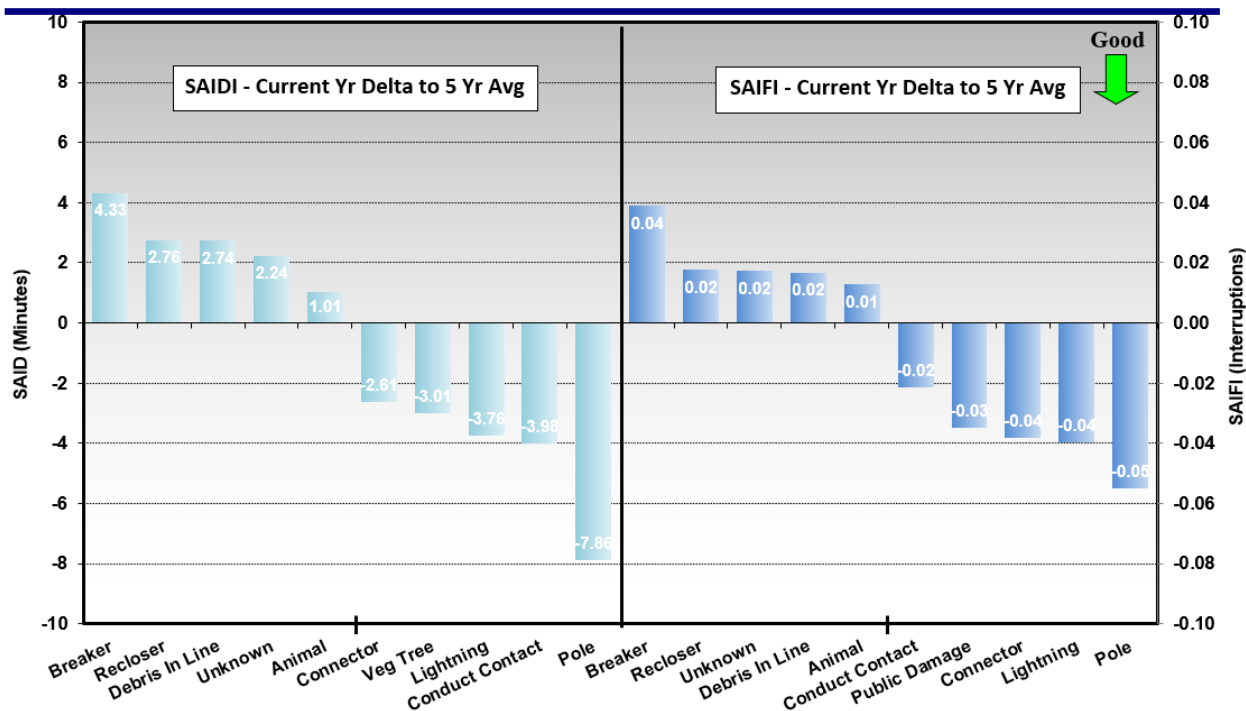


Table 16

Impact events / days

Major Event Days - Excluded from normalized results				
Date	SAIDI	SAIFI	CAIDI	Reason
1/16	12.5	0.11	115	Animal contact in substation.
5/12	81.3	0.13	625	High winds/thunderstorms. Many tree contacts & lightning strikes to equipment
5/30	46.1	0.16	284	High winds/thunderstorms. Many tree & debris line contacts & lightning strikes.
6/20	11.0	0.04	247	High winds/thunderstorms. Many tree contacts, pole failures, & lightning strikes.
6/24	9.7	0.06	162	High winds/thunderstorms. Many tree and lightning strikes to equipment

Moderate Storm Activity				
Date	SAIDI	SAIFI	CAIDI	Reason
6/21	2.8	0.01	235	High winds/thunderstorms. Tree/debris contacts, lightning strikes, & equipment failures
6/30	3.0	0.01	200	High winds/thunderstorms. Tree/debris contacts & lightning strikes
8/2	3.1	0.01	214	High winds/thunderstorms. Tree/debris contacts, lightning strikes, & equipment failures
12/13	3.0	0.02	154	High winds/snow. Tree contacts & equipment failures

Transmission					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
1/27	1.2	0.02	70	Cokato/Dassel	Equipment failure - Broken pole on transmission line
5/4	0.8	0.01	118	Glyndon/Felton	Unknown cause event on transmission line
5/10	2.8	0.03	97	Annandale/Kimball	Unknown cause event on transmission line

Distribution Substation					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
2/11	2.1	0.05	42	Saint Cloud	Unknown cause event at substation

Distribution Lines					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
12/13	2.9	0.02	153	New London/Spicer	Equipment failure - Bushing
8/4	2.9	0.01	264	Sartell/Sauk Rapids	Equipment failure - Cable mainline
4/22	2.3	0.02	114	Paynesville/Eden Valley	Equipment failure - Breaker
10/8	2.1	0.01	197	Saint Michael	Public vehicle hit and damaged pole
12/28	1.7	0.02	107	Montrose/Franklin Twp	Equipment failure - Breaker
5/11	1.5	0.02	81	Monticello	Tree contact - Branch on wires
4/22	1.4	0.02	66	Saint Cloud	Pole on fire
8/18	1.4	0.02	69	Hanover/Saint Michael	Tree contact - Branch on wires
5/1	1.3	0.02	85	Montrose/Franklin Twp	Animal contact - mainline
8/2	1.2	0.01	172	Monticello	Equipment failure - Breaker overload

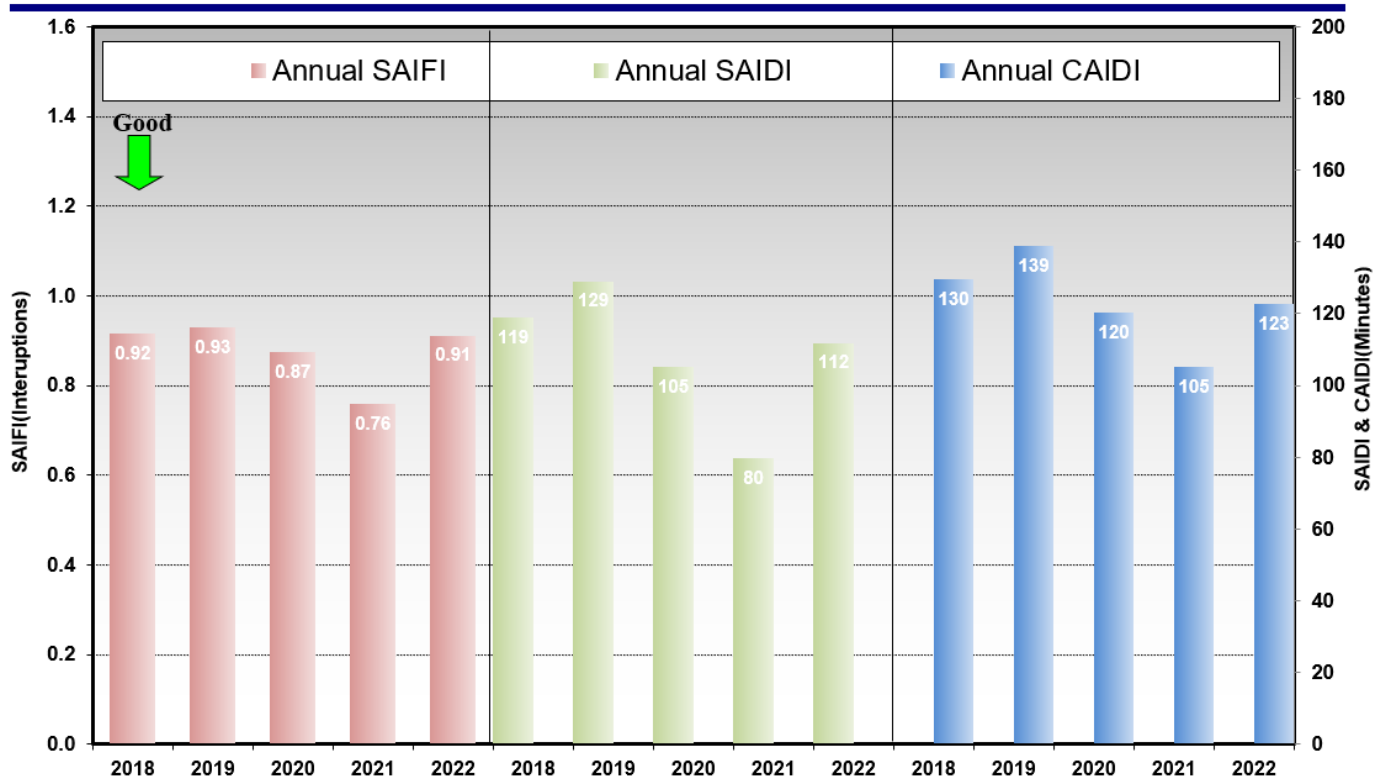
4. *Southeast*

Graphs 14, 15, and 16 show the five-year trend of all three indices, and Table 17 illustrates the top level and cause of outages from the current year that deviated higher and lower than the previous five-year average.

GRAPH 14



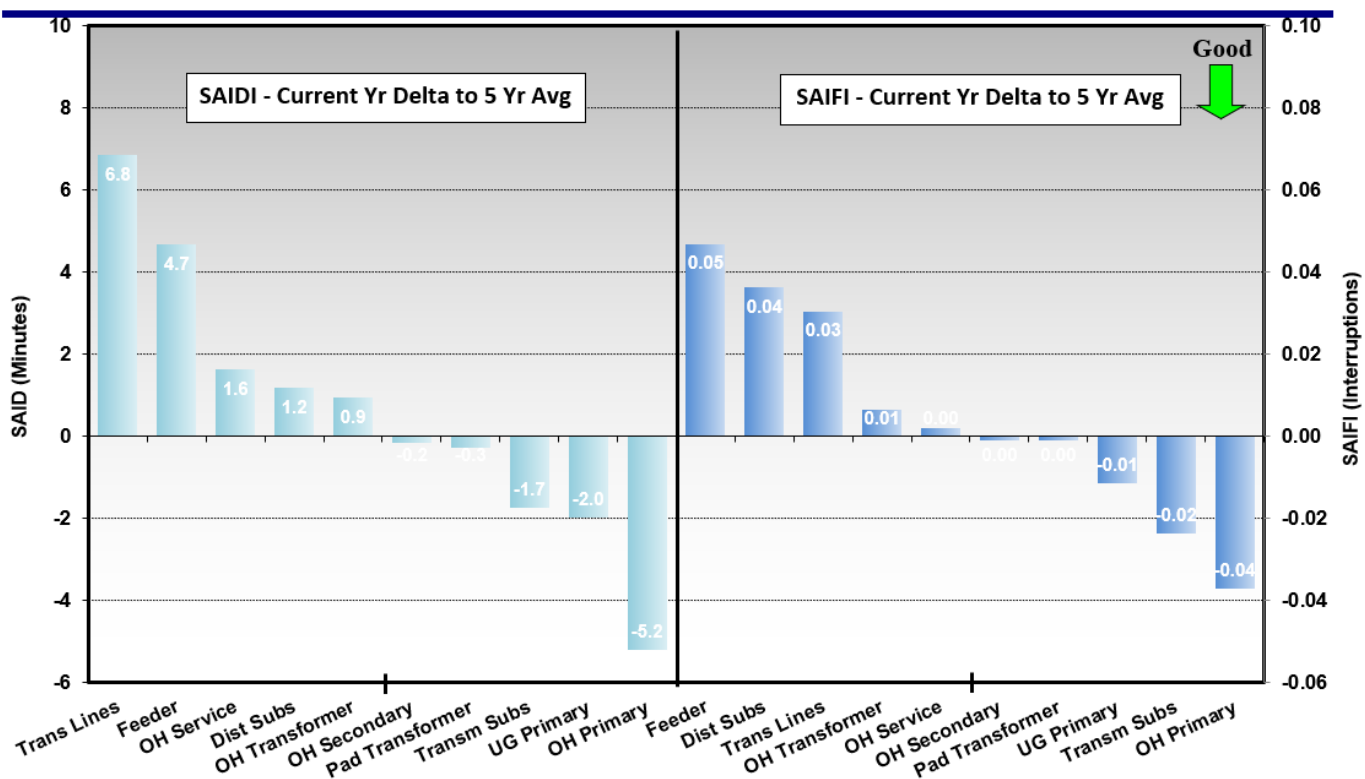
SOUTHEAST WORK CENTER 5 Year Actuals
 (Annual Rules Normalized - IEEE 1366)



GRAPH 15



SOUTHEAST WORK CENTER - 2022 Delta to 5 Year Avg
 (Annual Rules Normalized - IEEE 1366 All Levels)



GRAPH 16



SOUTHEAST WORK CENTER - 2022 Delta to 5 Year Avg
(Annual Rules Normalized - IEEE 1366 All Levels)

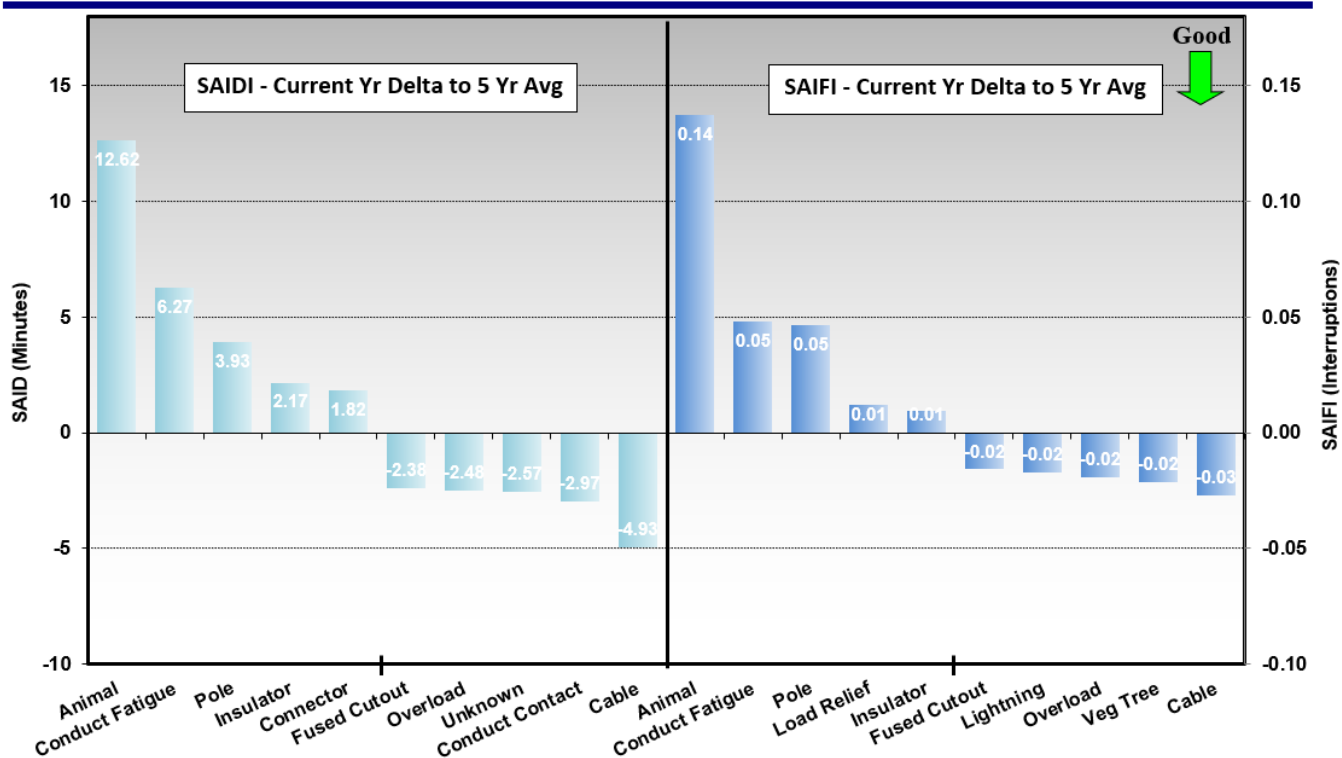


Table 17

Impact events / days

Major Event Days - Excluded from normalized results				
Date	SAIDI	SAIFI	CAIDI	Reason
5/11	11.6	0.06	190	High winds/thunderstorms. Many tree & lightning strikes to equipment.

Moderate Storm Activity				
Date	SAIDI	SAIFI	CAIDI	Reason
1/21	4.8	0.03	190	High winds - Equipment failure - Wire down on transmission line
4/12	6.0	0.05	123	High winds/thunderstorms. Many tree/debris contacts & lightning strikes
5/12	5.1	0.03	156	High winds/thunderstorms. Many tree/debris contacts, lightning strikes, & equipment failure
5/30	7.3	0.03	267	High winds/thunderstorms. Many tree/debris contacts, lightning strikes, & equipment failure
6/20	5.6	0.02	223	High winds/thunderstorms. Many tree contacts & equipment failures(Transmission event)
7/15	3.9	0.02	227	High winds/thunderstorms. Many tree contacts
12/13	3.9	0.02	161	High winds/snow/ice. Many tree contacts & equipment failures(Transmission event)

Transmission					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
1/21	4.8	0.03	190	La Crescent	Equipment failure - Wire down on transmission line
2/28	2.0	0.02	96	Zumbrota	Unknown cause event on transmission line
4/11	1.8	0.02	89	Wabasha/Greenfield	Animal contact in transmission sub
4/12	1.7	0.02	90	Northfield/Morrisstown	Equipment failure - Line & poles down from straight line winds
6/15	0.7	0.03	29	La Crescent	Unknown cause event on transmission line
6/20	1.2	0.01	215	Edgerton	Equipment failure - Broken pole on transmission line
12/13	1.4	0.01	253	Edgerton	Transmission line outage caused by other utility tied to line

Distribution Substation					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
1/3	0.8	0.03	29	Mankato	Animal contact in the distribution substation
4/11	0.6	0.01	94	Wabasha/Pepin	Animal contact in the distribution substation
6/18	0.2	0.00	126	Gaylord	Animal contact in the substation/Intentional outage to repair
7/24	1.1	0.00	231	Mazeppa	Animal contact in the distribution substation
9/18	2.1	0.02	105	Northfield	Animal contact in the distribution substation
10/24	1.2	0.03	37	Northfield	Animal contact in the distribution substation

Distribution Lines					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
10/2	3.3	0.02	163	Wabasha/Greenfield	Animal contact - mainline
7/15	2.1	0.00	778	Wilson Twp/Pleasant Hills	Tree contact - Branch caused downed wire
5/12	1.9	0.02	125	Mankato	Equipment failure - Insulator
9/18	1.8	0.01	151	Northfield/Greenvale	Animal contact - mainline
4/28	1.7	0.01	230	Mantorville	Animal contact - mainline
4/8	1.6	0.01	123	Mankato	Tree contact - Branch caused downed wire
7/17	1.6	0.01	134	Northfield/Greenvale	Unknown event - No cause found
6/20	1.6	0.00	397	Jasper	Tree contact - Downed tree/storm
5/12	1.6	0.01	118	Mankato	Equipment failure - Overhead conductor
6/20	1.6	0.01	129	Northfield/Greenvale	Equipment failure - Connector/wires down

b. Worst Performing Feeders by Work Center

[M]inn. R. 7826.0500, Subpart 1.H, requires the Company to provide “to the extent technically feasible, circuit interruption data, including identifying the worst performing circuit in each work center, stating the criteria that utility used to identify the worst performing circuit, stating the circuits 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.”

[T]he Commission’s April 7, 2006 Order in Docket No. E-002/M-05- 551 reflected an increase by the Commission of the number of feeders that the Company includes in this portion of the report to 25 per work center, for a total of 100. The Commission’s April 7, 2006 Order also directed the Company to work with Commission staff on the format of the Worst Performing Feeder portion of the Annual Report.

Attachment M to this report provides the resulting feeder performance data by work center, in two sections, identifying the city where the substation for each feeder is located.

The top section of each work center’s report provides a list of feeders, sorted by SAIDI, using calendar year data and the format requested by Commission Staff. We note this format includes additional outages such as bulk power supply and planned outages that are not used internally to identify poor performers. Thus, using the Company’s criteria for identifying poorest-performing feeders will not result in 25 actual “poor performers” for each region, or 100 system-wide.

For this reason, some of the feeders listed in Attachment M are not actual “poor performers,” but rather, are included in the list only because the Company is required to identify 25 feeders, and their performance values were greater than other feeders (but less than poor performer feeders in that particular work center). For top feeders in each region that were identified as poor performers and needing operational change(s) under the internal feeder performance improvement plan (FPIP), we have completed a reliability review and provide information on the reasons for the poor performance and any planned improvements in the lower section of each work center’s report provided in Attachment M.

We evaluate the worst performing feeders annually and prepare plans and projects to remedy the causes of outages; however, despite these efforts, occasionally a feeder will reappear on the worst performer list. This can be caused by several reasons, including storms, distance from first responders, or

quickly growing vegetation. In addition, feeders can be on the list due to poor tap performance which may not have been investigated in previous years.

The feeder numbers and substation names in Attachment M have been marked as protected data, but pursuant to the Commission's discussion of previous Annual Reports, the Company has added a column providing publicly the City in which the substation is located. The protected data is "security information" as defined by Minn. Stat. § 13.37, subd. 1(a). Xcel Energy believes the information could be manipulated to reveal the number of customers served by a particular feeder. The public disclosure or use of this information creates an unacceptable risk because those who want to disrupt the electrical grid for political or other reasons may learn which facilities to target to create the greatest disruption. For this reason, pursuant to Minn. Stat. § 13.37, subd. 2, we have excised this data from the public version of our report.

3. BULK POWER INTERRUPTIONS

[M]inn. R. 7826.0500, Subpart 1.F requires the Company to provide "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."

During 2022, there were no generation outages on Xcel Energy's system that caused an interruption of service to firm electric customers. All curtailments of customers subject to load management rates or Demand-Side Management (DSM) programs were consistent with the terms of the load management tariffs and DSM programs.

We provide the required information regarding transmission outages as Attachment N to this report. As the incidents shown were reactionary due to storms, public damage, or other activities associated with random and unforeseen events, no plans have been developed to address the specific issues encountered. However, the Transmission Line Performance (TLP) work area works very closely with the area account representatives and trouble men, Transmission Construction, System Operations, and other work areas to proactively inspect and maintain our infrastructure. When determined applicable, TLP will apply specific asset renewal or reliability enhancement programs to identified circuits that extend the circuit's service life and enhances its reliability.

The transmission line names in Attachment N have been marked as protected

data. This information is “security information” as defined by Minn. Stat. § 13.37, subd. 1(a). Xcel Energy believes the information could in some circumstances be manipulated to reveal potential vulnerabilities in our system. The public disclosure or use of this information creates an unacceptable risk because those who want to disrupt the electrical grid for political or other reasons may learn which facilities to target to create the greatest disruption. For this reason, pursuant to Minn. Stat. § 13.37, subd. 2, we have excised this data from the public version of our report.

4. OUTAGE COMMUNICATIONS

a. Outage Communications to the CAO

[M]inn. R. 7826.0500, Subpart 1.G requires the Company to provide “a copy of each report filed under part 7826.0700.” Minn. R. 7826.0700 requires the Company to “promptly inform the commission’s Consumer Affairs Office (CAO) of any major service interruption” occurring on the utility’s system with certain information.

[O]rder Point 4 of the Commission’s December 18, 2020 Order in Docket No. E-002/M-20-406 granted a variance to Minn. R. 7826.0500, subp.1, item G and requires the Company to file a summary table that includes the information contained in the reports similar to Attachment G of Xcel’s filing.

“Major Service Interruption” is defined under Minn. R. 7826.0200, subp. 7 as an interruption of service at the feeder level or above and affecting 500 or more customers for one or more hours. Xcel Energy regularly sends the CAO notification of sustained outages occurring at the feeder level or above; these notifications also include reporting outages that are not necessarily large enough or long enough to meet the definition of a major service interruption under Minn. R. 7826.0200, subp. 7.

We are committed to providing the CAO with timely and accurate information. Our Customer Advocate Group generally sends these notifications via e-mail directly to the CAO. During 2022, there were 258 outages on Xcel Energy’s system that met the definition of “major service interruption.” Please see Attachment O for a summary of the 2022 qualifying outages.

Attachment O contains summary information regarding the Company’s feeders and other system components, and associated customers served. This information is “security information” as defined by Minn. Stat. § 13.37, subd.

1(a). Xcel Energy believes the information could be manipulated to reveal the number of customers served by a particular feeder. The public disclosure or use of this information creates an unacceptable risk because those who want to disrupt the electrical grid for political or other reasons may learn which facilities to target to create the greatest disruption. For this reason, pursuant to Minn. Stat. § 13.37, subd. 2, we have excised this data from the public version of our report.

In an effort to provide information as quickly as we can, whenever possible, our Customer Advocate Group sends the CAO the first outage notification received from the Control Center for an outage event. First notifications often do not include full cause and/or follow-up action information since the restoration crew may not have yet completed its work related to the event. However, we believe it is more important to give the CAO notification as soon as possible rather than waiting for complete information before sending the CAO an alert.

As discussed in previous annual reports, we note that during high volume outage times, it is possible the Control Center does not send an email for each and every outage event. Often during these high-volume events, the Company's Customer Advocate Group works with the Control Center to obtain more general status updates in lieu of individual emails. These updates, which are also forwarded to the CAO, usually include information on which communities were affected, total customers out of service, and any available information on expected restoration times. If available, information is also provided regarding crews brought in from other areas to assist restoration during times of escalated operations.

As with any process that involves human intervention and handoffs, errors will occur, and notices may not be sent to the CAO. There are instances when the Control Center may not create a notice, or the Company's Customer Advocates do not forward a notice to the CAO. In 2022, we did not send an email notice to the CAO for fourteen of 258 major service interruptions. These were not sent due to human error and are reflected in Attachment O.

In our 2020 petition, we requested a rule variance from Minn. R. 7826.0500, Subpart 1.G, which requires a copy of each report filed under Minn. R. 7826.0700. The Commission's Order dated December 18, 2020 in Docket No. E002/M-20-406 granted the variance and ordered the Company to file a summary table that includes the information contained in the reports similar to Attachment G that the Company submitted in our 2020 petition.

[M]inn. R. 7826.0700 subpart 2 requires a utility to file a written report on any major service interruption in which 10 percent or more of its Minnesota customers were without service for 24 hours or more.

During 2022, there were no such interruptions on Xcel Energy's system.

b. Outage Communications to Customers (Estimated Restoration)

[O]rder Point 3.D in the Commission's February 9, 2018 Order in Dockets No. E-002/M-16-281 and E-002/M-17-249 requires the Company to provide: "[a] summary of the Company's estimated response time to customers and steps the Company is taking to measure and communicate more accurately the Company's estimated response time to customers. The Company has agreed to provide summary ERT data on a going-forward basis as part of these Annual reports and proposed the data would be summarized as to the accuracy of our ERT estimates for the calendar year."

And

[O]rder Point 2 (Attachment B, item 9) in the January 28, 2020 Order in Docket No. E002/M-19-261 also requires the Company to provide the estimated restoration time accuracy for 0 to +30 minute window.

On a monthly basis, the Company pulls year-to-date data from its Outage Management System (NMS) that itemizes each outage along with associated outage data such as: (i) time of outage; (ii) number of customers impacted, interrupting device; (iii) level of outage; (iv) estimated restoration time (ERT) pre-determined by the Company; and (v) actual restoration time. The information is used to analyze the accuracy of our estimated restoration times when compared to the actual restoration time.

When an outage is first discovered (by customer notice or otherwise), refined estimates are developed as the Company learns more information. When an outage is identified, an initial automated message is sent to the customer within the first 15 minutes of our Control Center being notified of a customer outage. This message either confirms their outage if they reported it or notifies them of an outage we believe is impacting them.

An ERT is not communicated in the initial customer message. A second communication is sent 20 minutes later, following an escalation process to categorize the outage level, feeder, tap or transformer of an identified outage. If

an ERT is available, it would be provided at this time. A standard three-hour outage estimate is assumed when we first discover an outage. A second estimate is created when the Company's first responder gets on site in the field and begins their investigation. Finally, a third, more refined estimate, is developed when field personnel are able to assess the cause of the outage and determine the necessary remediation action. Additional messages to the customer during the outage will be dependent on ERT changes or the outage being closed. The final message the customer receives will confirm their power has been restored and provides a way for the customer to report if they are still without power.

Beginning in 2018, we removed the initial (standard three-hour) ERTs from the calculation of our accuracy (and also stopped communicating the initial ERT to our customers). The current metric included ERTs generated by our model (which is based on the impacted device(s) and algorithms) and ERTs entered by field and control center personnel. The model usually provides an estimate within 15 minutes after notification of an outage. The -90 to 0 minute window of accuracy is used by the Company to track our accuracy of reporting to customers, but the Commission also requested that we provide information about our accuracy for the 0 to +30 window of accuracy; however, we have provided "+1 to +30" to ensure we are not double counting any instances where the outage is restored exactly at 0. We have included an additional table that provides accuracy of +1 to +90. We provide Tables 18, 19, and 20 which summarize the annual percent accuracy of ERT estimates provided to electric customers in the NSPM Operating Company, as well as the Minnesota Jurisdiction for the years 2017 thru 2022.

Table 18

Estimated Restoration Time Accuracy							
Entity	Accuracy Criteria	2017	2018	2019	2020	2021	2022
NSPM	Within -90 to+0	43.5%	43.6%	48.3%	53.4%	53.9%	50.4%
MN Only	Within -90 to+0	43.1%	43.5%	49.9%	54.3%	54.8%	51.6%

Table 19

Estimated Restoration Time Accuracy							
Entity	Accuracy Criteria	2017	2018	2019	2020	2021	2022
NSPM	Within +1 to +30	10.1%	8.0%	10.0%	10.4%	11.3%	12.5%
MN Only	Within +1 to +30	10.0%	7.5%	10.4%	10.3%	10.9%	11.5%

Table 20

Entity	Accuracy Criteria	Estimated Restoration Time Accuracy					
		2017	2018	2019	2020	2021	2022
NSPM	Within +1 to +90	19.0%	15.2%	18.6%	16.6%	19.3%	23.8%
MN Only	Within +1 to +90	18.6%	14.5%	18.7%	16.4%	18.5%	19.9%

Overall, ERT accuracy improved just under seven percentage points in NSPM and MN in the -90 to 0-minute window from 2018 to 2022. The ERT accuracy improvement can be in part attributed to our manual ERT's or the estimates field representatives provide after they have been able to assess the cause of the outage and determine the necessary remedial action. These manual ERT's continue to refine, improving significantly from 29.7 percent in 2017 to 51.8 percent in 2018 to 51.6 percent in 2019 to 54.0 percent in 2020. Manual ERT accuracy from field representatives decreased slightly from 47.0 percent in 2021 to 46.7 percent in 2022. One significant driver of this improvement in performance is a concerted effort that began in 2017 and continues to this day to work with our first responders to provide more manual ERT estimates from our Field and Control Center personnel once they arrive on-site and are able to assess the cause of the outage and determine the necessary remediation. This training continues to show results every year.

The accuracy of our onsite, or an estimate when the first responders arrive on site in the field and begin their investigations ERT estimates also improved from 31.9 percent in 2018 to 46.6 percent in 2019 to 48.2 percent in 2020 to 53.0 percent in 2021 but was down slightly to 47.4 percent in 2022. Similar to the manual ERT process, our ongoing training for on-site mode, impacts the frequency of timely updates to help improve accuracy, and as a result, the overall metric results over time.

We continue to provide several proactive communication channels when an outage occurs such as email, text, and push notifications via a mobile app. We also provide notification channels that require the customer to pull the information such as our website, social media and outage maps.

Pull channels (website, social media, and outage map) leverage the same data sources as our push channels. This ensures consistent information across channels and provides additional resources to our customers. Customers can also receive information via two-way text. A customer can text us "OUT" to report an electric outage or "STAT" and receive an on-demand text message as to the status of their outage.

Efforts continue to identify systems and tools to be used during outages to help improve the outage customer experience. One highlight from the past year is our new Electric Outage Restoration (EOR) App. The EOR provides a new alternative for receiving assigned outages, completing more convenient and timely status updates and closing electric outage orders in the field. Benefits include increased mobility, integrated customer information and navigation assistance.

5. VOLTAGE FLUCTUATIONS

[M]inn. R. 7826.0500 Subpart 1.I requires the Company to provide “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.”

Voltage deviations typically result from customers experiencing problems with electrical equipment. High voltage can shorten the life of lightbulbs or result in electric motor damage. Low voltage can have equally significant consequences.

A first responder initially handles customer voltage complaints. If a non-voltage cause cannot be found, we initiate a voltage investigation, and install a recording voltmeter. In the metro area, Xcel Energy has a dedicated technician that sets these recorders and performs the voltage investigations. In the non-metro areas, a first responder or a district representative conducts the voltage investigations.

Xcel Energy’s allowable service voltage range is 120 volts plus/minus five percent, or a minimum of 114 volts to a maximum of 126 volts. As shown in the table below, Xcel Energy’s allowable service voltage range falls within the American National Standards Institute (ANSI) voltage range B.

Table 21
XCEL ENERGY ALLOWABLE SERVICE VOLTAGE RANGE

	Minimum Voltage	Maximum Voltage
ANSI Voltage Range B (service voltage)	110	127
Xcel Energy Range (service voltage)	114	126

During 2022, the Company conducted 224 voltage investigations. The investigations resulted in a diagnosis of a specific voltage problem in 122 of the cases. These problems are typically the result of transformer overloads or some other equipment malfunction, such as capacitor banks or voltage regulators. In all other cases, either no problem was found, or the root cause was attributed to something other than voltage deviations. In cases where the Company finds the voltage to be out of the acceptable range, we take appropriate actions, including but not limited to swapping transformers, upgrading transformers, or checking capacitor banks.

6. STAFFING

[M]inn. R. 7826.0500 Subp. 1.J requires the Company to provide “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”

[I]n Order Point 8, of Attachment B in the Commission’s January 28, 2020 Order in Docket No. E-002/M-19-261, the Commission required the Company to provide “separate information on the number of contractors for each work center.”

Table 22 reflects staffing levels by work center. This Table also includes counts for work center personnel that support the electric distribution function such as Administrative Assistant, Ops Coordinators, Designers, Field Operations Associates, Operations Managers, Operations Specialists, Electric Meter Specialists, Distribution Design Supervisor, Field Ops Supervisor, Meter Technician, etc. The total headcount reflects Company employees with a limited number of staff augmentation employees that fill the job of electric service designers. In 2021, Trouble and O&M staffing increased in three work centers by a headcount of two to seven employees; however, one work center decreased due to attrition of retirements and employees relocating. Work center support staff increased by one to seven employees.

Table 22
2022 STAFFING LEVELS BY WORK CENTER

	Metro East	Metro West	Northwest	Southeast	Other *
Trouble and O&M Staffing	135	188	32	58	50
Work Center Support (and Contractors)	56 (4)	69 (12)	17 (0)	33 (0)	41 (5)

* Xcel Energy personnel associated with the South Dakota / North Dakota work centers provide support in western Minnesota and the Dakotas.

Current open and posted trouble and O&M positions include fifteen in the Metro West work center; three positions in the Southeast work center and five in Other.

We note that although we are reporting staffing levels by work center, our field personnel continue to respond to trouble and perform duties in other work centers as need arises.

The contractor counts included in Table 22 above are for a limited number of positions that fulfill the role of Service Designers in our work centers. The Company also hires contractors to perform field and maintenance work, but the Company's contracts with its bargaining employees contain certain agreements regarding when and how contractors can be used. As a general principle, the number of contractors in a region cannot exceed the number of internal field and maintenance personnel. The Company hires contractors to assist with large requests for new service or maintenance projects such as large pole replacement projects discovered through our pole testing program or major distribution line rebuilds. Contractors can also perform outage response if the Company experiences staffing constraints or if there is emergent outage work (for example, an anticipated large storm system) and the Company determines it is reasonable to redeploy contract crews to the area to respond to expected outages.

Because of the nature of this work, contractors are not assigned to a particular work center. Rather, they work in various work centers depending on the service needs of our customers in Minnesota. Historically, the Company uses the most contractors during the summer months (when most contractor time is used to assist with large requests for new service) and fewer contractors during the winter months. However, the Company does utilize contractors in the winter for programmatic maintenance work, such as the pole replacements or distribution rebuilds described above.

C. OTHER RELIABILITY METRICS REQUESTED BY THE COMMISSION

1. MAIFI

[I]n the Commission's September 3, 2013 Order in Docket No E002/GR- 12-961 at Order Point 32 the Commission required the Company to "provide additional reporting of its currently available Momentary Average Interruption Frequency Index (MAIFI) data, such as trend lines, to the extent available."

And

[I]n the Commission's February 9, 2018 Order in Docket Nos. E002/M- 16-281 and E002/M-17-249 at Order Point 3.C., the Commission required the Company to provide "[a]n assessment of MAIFI data."

Momentary outage information is available at the Feeder-level and above, by Feeder circuit, and only on Feeders that are located in substations with Supervisory Control and Data Acquisition (SCADA) capability. With current distribution infrastructure, there is SCADA capability at 68 percent of our substations and approximately 90 percent of customers are served from these substations. Since MAIFI reporting at the substation level required this capability, our reporting for MAIFI would also cover approximately 90 percent of our customers.

Table 23 contains our 2022 MAIFI results followed by definitions of the calculation methodologies we applied.

Table 23:
2022 MAIFI RESULTS

	Non-Normalized	Xcel Energy QSP Tariff	Xcel Energy Annual Rules
Region	2022	2022	2022
Minnesota	0.76	0.57	0.65
Metro East	0.82	0.61	0.67
Metro West	0.70	0.56	0.60
Northwest	0.85	0.62	0.76
Southeast	0.78	0.42	0.74

Table 23 provides our MAIFI performance from 2012 to 2022 on a normalized basis using the 2.5 beta method outlined in IEEE 1366-2012. In addition, Table 24 includes non-normalized values per the Commission's decision in Docket No. E002/M-18-239.

Table 24: MAIFI 2010 – 2022

All Days - All Levels, All Causes

MAIFI(<=5Mins)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Metro East	1.18	0.80	0.95	0.97	0.70	0.89	0.80	0.82	0.84	0.74	0.97	0.77	0.82
Metro West	1.10	0.89	1.01	0.87	0.82	0.73	0.85	0.61	0.56	0.64	0.72	0.53	0.70
Northwest	1.38	1.59	1.42	1.82	1.51	1.44	1.42	1.37	1.42	1.52	1.27	1.41	0.85
Southeast	1.29	1.09	1.08	0.89	1.20	0.88	1.05	0.73	0.92	1.22	0.96	0.83	0.78
Minnesota	1.17	0.95	1.04	1.00	0.89	0.86	0.91	0.76	0.77	0.82	0.88	0.72	0.76

Tariff - IEEE No Transmission Line, All Causes

MAIFI(<=5Mins)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Metro East	0.89	0.59	0.81	0.77	0.55	0.81	0.70	0.65	0.81	0.54	0.85	0.69	0.61
Metro West	0.72	0.52	0.76	0.65	0.67	0.55	0.65	0.51	0.53	0.61	0.62	0.50	0.56
Northwest	0.61	0.38	0.96	0.67	0.81	0.69	0.64	0.85	0.75	0.84	0.75	0.95	0.62
Southeast	0.32	0.22	0.37	0.35	0.34	0.32	0.39	0.37	0.44	0.48	0.56	0.52	0.42
Minnesota	0.72	0.50	0.76	0.66	0.61	0.62	0.64	0.57	0.63	0.60	0.70	0.60	0.57

Annual Rules - IEEE All Levels, All Causes

MAIFI(<=5Mins)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Metro East	1.03	0.74	0.87	0.81	0.57	0.82	0.76	0.79	0.83	0.70	0.95	0.73	0.67
Metro West	0.94	0.75	0.96	0.77	0.80	0.64	0.76	0.55	0.55	0.64	0.63	0.51	0.60
Northwest	1.31	0.84	1.42	1.28	1.51	1.44	0.95	1.28	1.42	1.43	1.22	1.37	0.76
Southeast	1.08	1.09	1.06	0.81	0.97	0.88	1.00	0.73	0.78	0.99	0.90	0.79	0.74
Minnesota	1.02	0.79	0.98	0.84	0.81	0.80	0.80	0.71	0.75	0.77	0.82	0.69	0.65

Below is a description of how each of the three methods is calculated:

Non-normalized

- Includes outages occurring at all levels (distribution, substation, and transmission).
- Includes all outage cause codes.
- Calculations are based on the number of customers' billing accounts and meters.
- Include all days in calculations.

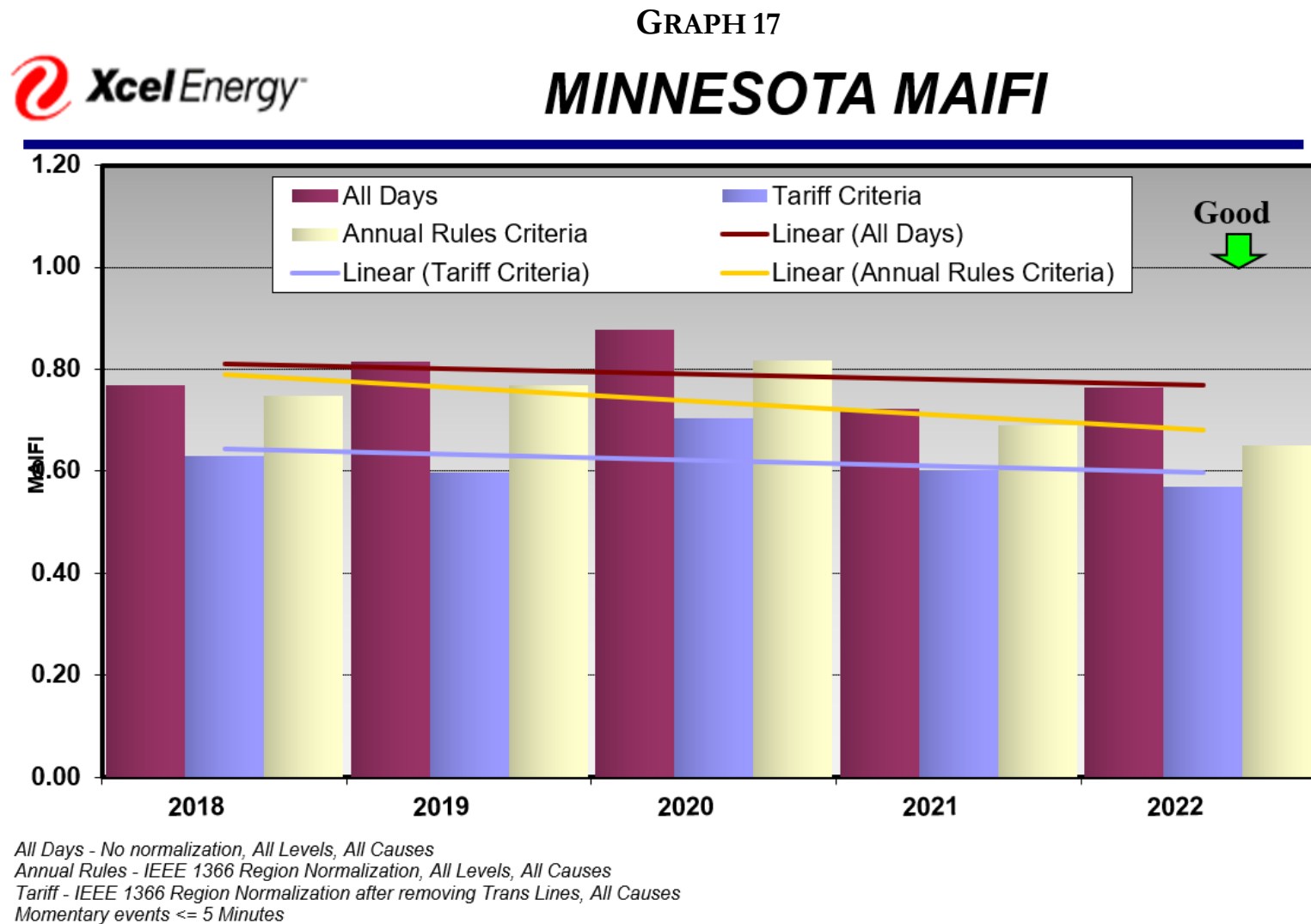
Xcel Energy (Quality of Service Plan Tariff Method)

- Excludes outages occurring at Transmission Line level.
- Includes all outage cause codes.
- Calculations are based on the number of customers' billing accounts and meters.
- Excludes all Major Event Days that qualify under IEEE 2.5 normalization method after removing Transmission Line level.

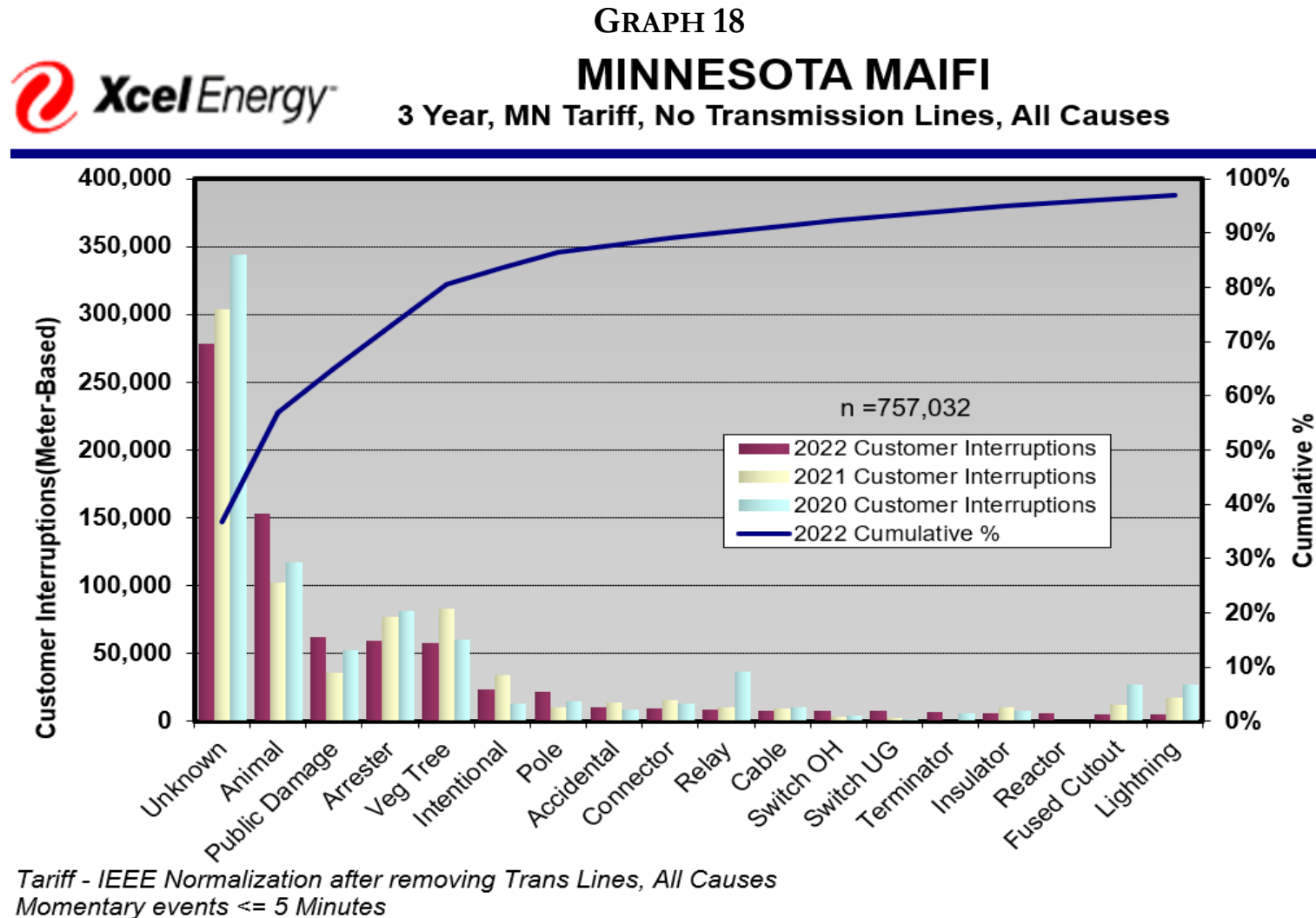
Xcel Energy (Annual Rules Method)

- Includes outages occurring at all levels (distribution, substation, and transmission).
- Includes all outage cause codes.
- Calculations are based on the number of customers' billing accounts and meters.
- Excludes all Major Event Days that qualify under IEEE 2.5 normalization method using all levels.

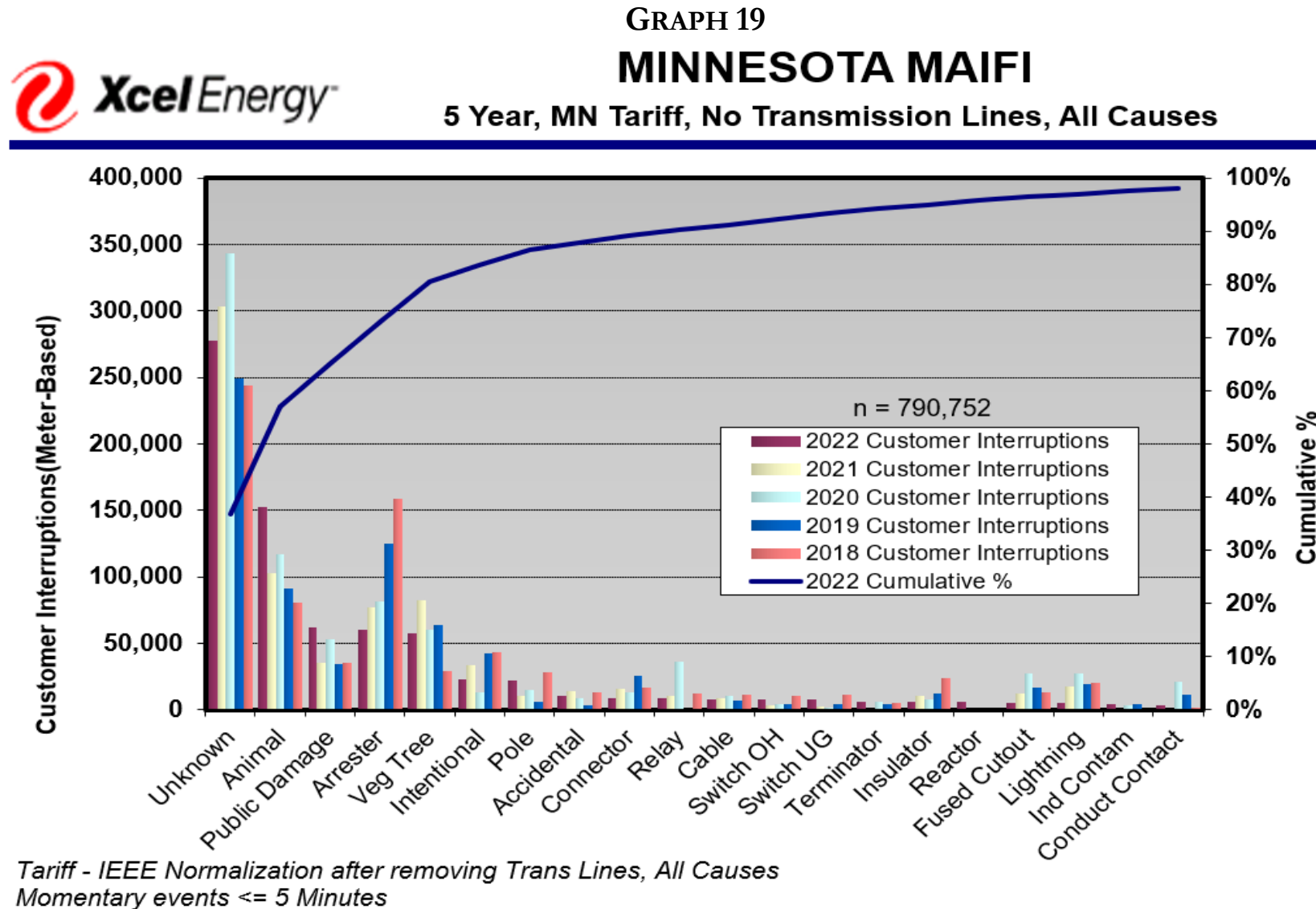
Graph 17 provides a five-year historical look for Minnesota MAIFI showing the three different normalization methodologies and the associated trend lines.



Graph 18 provides a pareto chart showing the top causes for 2022 interruptions.



Graph 19 below is the pareto chart showing the top causes for interruptions for the past five years.



Attachment P provides the detailed MAIFI results and Customer Interruptions by month and by work center for 2018 to 2022.

Our system capabilities and procedures have changed and evolved over time. Therefore, the historical MAIFI results will be based on what our protocol and physical capabilities were for capturing momentary events at that point in time.

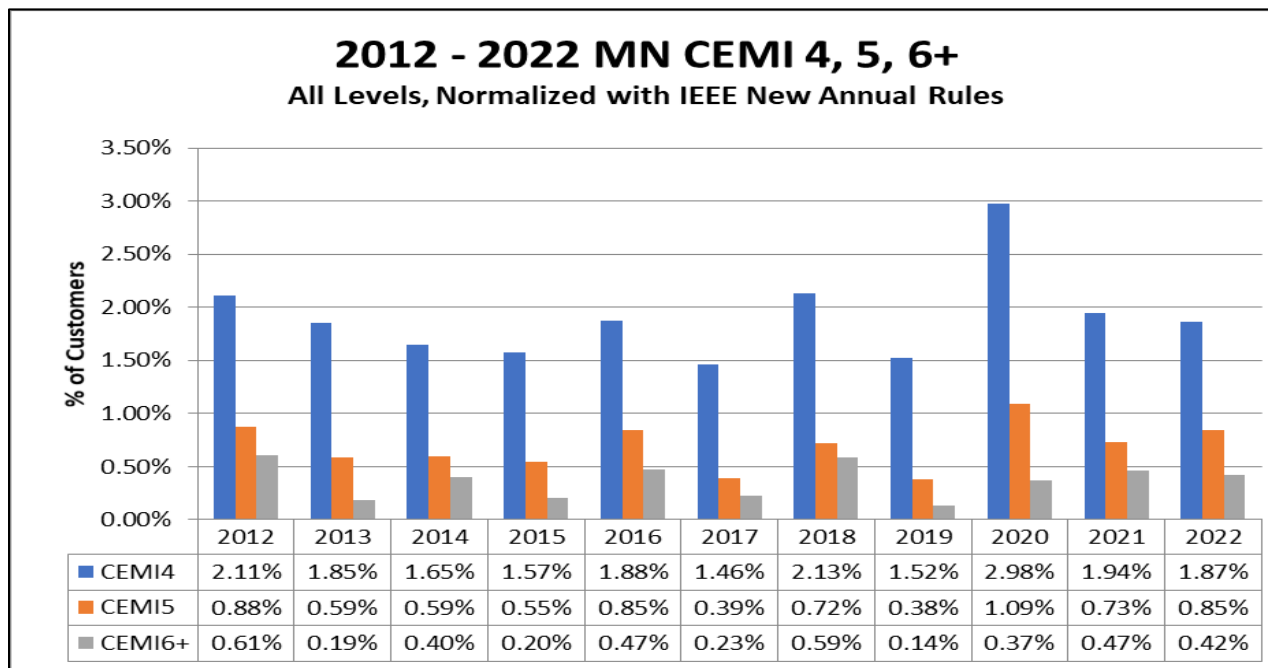
2. Customers Experiencing Multiple Interruptions (CEMI)

[I]n the Commission's March 19, 2019 Order in Docket No. E002/M-18- 239 at Order Point 3.c, the Commission required the Company to provide "CEMI at normalized and non-normalized outage levels of 4, 5, and 6."

Graph 20 illustrates CEMI results for 2012-2022, normalized using the IEEE 1366 New Annual Rules methodology. The bar graph breaks out Minnesota customers that experienced four, five, or six plus events. As shown, the customers experiencing six or more events are typically a much smaller percentage than those experiencing only four or more events. Internally, the Company tracks those experiencing four or more outages on a 12-month rolling basis and reviews opportunities to improve performance through mitigation efforts such as additional tree trimming or installation of animal protection. To track how the Company compares to other utilities, the Company does participate in an annual EEI benchmarking study. Unfortunately, due to a non-disclosure agreement, no data from this benchmarking study is available outside the Company. Just as SAIDI varies from year-to-year, CEMI will vary from year-to-year typically due to weather patterns.

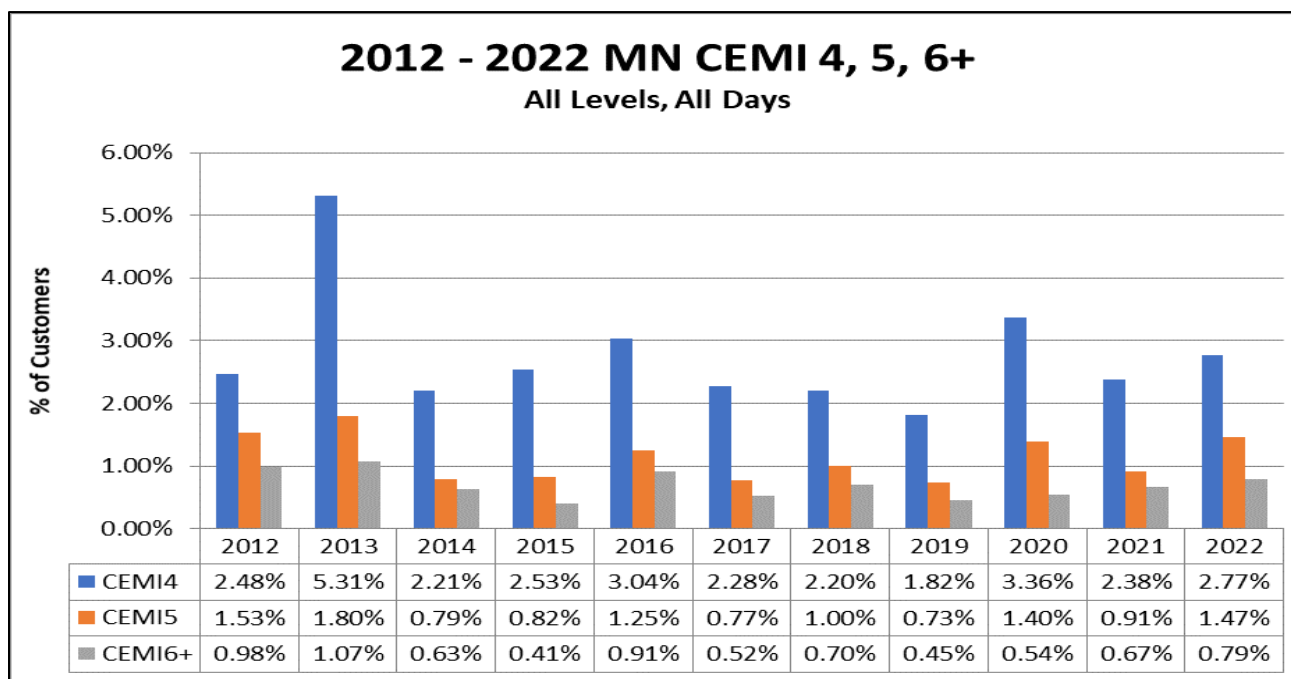
It should be noted that under our QSP tariff, CEMI-related outage credits are given to customers experiencing six or more outage events in a year based on the tariff normalization methodology.

GRAPH 20



Graph 21 illustrates CEMI, all days (with MEDs) 2012 – 2022 data.

GRAPH 21



[I]n the Commission's January 28, 2020 Order, in Docket No. E002/M-19-261 in Attachment B, Order Point 5, the Commission required the Company to provide "[t]he highest number of interruptions experienced by any one customer (or feeder, if customer level is not available.)"

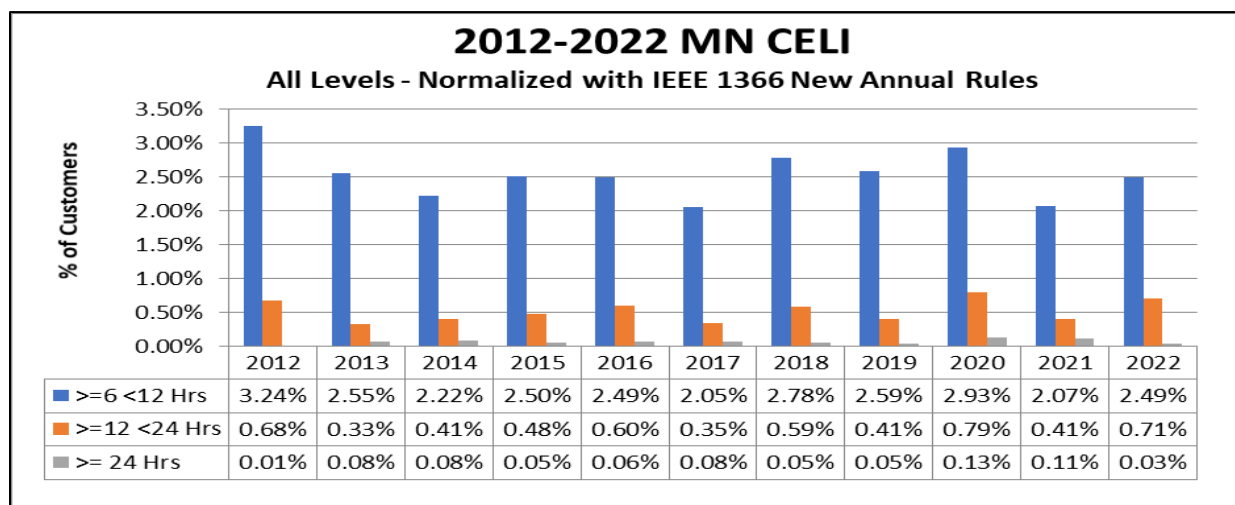
In 2022, two customers had the highest number of outages for normalized outages (13 outages) and 22 customers had the highest number for all days (13 outages). These customers reside in the Metro West region. The majority of the normalized outages were unknown causes (seven); three animal contacts caused outages; one lightning strike, one intentional outage; and one equipment failure (cable failure). The majority of the outages on all days were weather related outages (nine vegetation caused outages). In addition, there were two animal contact interruptions and two intentional outages. Four of the weather-related outages were due to major storms and were considered major event days.

3. Customer Experiencing Lengthy Interruptions (CELI)

[I]n the Commission's March 19, 2019 Order in Docket No. E002/M-18- 239 at Order Point 3.d., the Commission required the Company to provide "CELI at intervals of greater than 6 hours, 12 hours, and 24 hours."

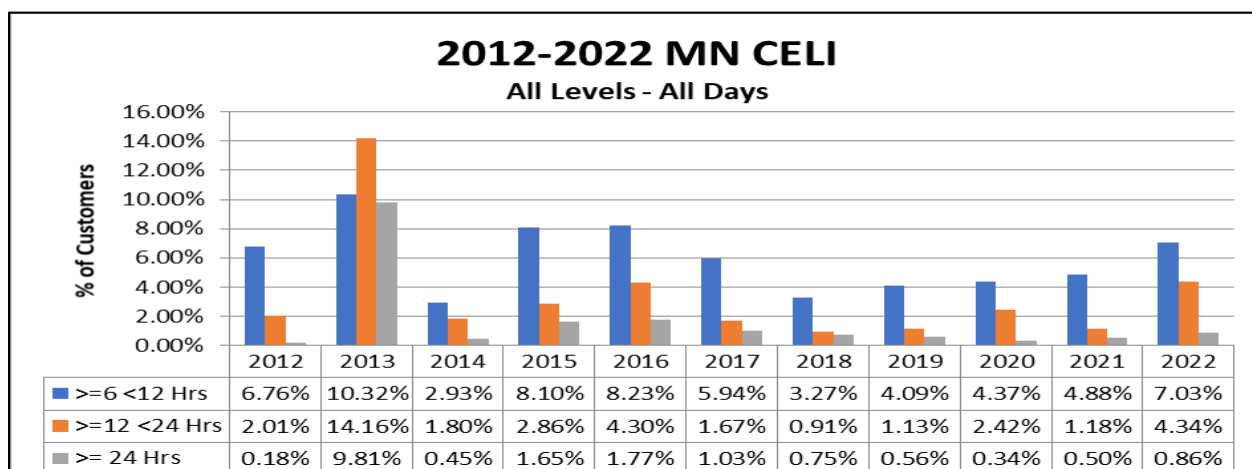
Graphs 22 and 23 (normalized and all days), illustrate the Company's CELI for the percentage of MN customers that experienced long outages. The outages are categorized by those greater than 6 hours but less than 12 hours, greater than 12 hours but less than 24 hours and greater than 24 hours during a calendar year. If a customer experienced an outage, this represents the percent chance, by year, of the outage lasting more than 6, 12, or 24 hours. Eleven years of data are represented (2012-2022) and are normalized based on the IEEE 1366 New Annual Rules methodology. Graph 22 provides a slightly different view than the CELI based outage credits in our QSP Tariff. The Tariff credits are provided to customers that experience an outage greater than 24 hours based on the tariff methodology. As with the other metrics, although the normalization method attempts to remove the year-to-year variability, variability still occurs, typically due to weather patterns.

GRAPH 22



Graph 23 illustrates CELI, all days (with storms) 2012 – 2022 data.

GRAPH 23



[I]n the Commission’s January 28, 2020 Order in Docket No. E002/M-19- 261 at Attachment B, Order Point 7, the Commission required the Company to provide “[t]he longest experienced interruption by any one customer (or feeder, if customer level is not available.)”

The longest outage was due to a planned outage on May 9, 2022. This was required for a solar garden installation. This outage with a duration of 6,357 minutes only affected one customer in the Metro West region.

We note that the IEEE Distribution Reliability Working Group does not

benchmark CEMI or CELI and the Edison Electric Institute (EEI) benchmark information for CEMI is proprietary and thus we are unable to share it. However, the CEMI information stated here is similar in metric design to what EEI uses (which is the count of customers who experience “x” number of outages or more in a year based on normalized data) based on several counts of outages.

V. PROPOSED ELECTRIC RELIABILITY STANDARDS FOR 2023

[Minn. R. 7826.0600, subp. 1 requires each utility to propose standards for the following reliability indices:

- System Average Interruption Duration Index,*
- System Average Interruption Frequency Index, and*
- Customer Average Interruption Duration Index.*

SAIDI measures the average total number of minutes a customer was without power during a calendar year. This index is calculated as follows:

$$\text{SAIDI} = \frac{\text{Total Customer Minutes of Sustained Outages}}{\text{Number of Customers}}$$

SAIFI measures the average frequency of sustained service interruptions per customer during a calendar year and is calculated as follows:

$$\text{SAIFI} = \frac{\text{Total Number of Sustained Customer Interruptions}}{\text{Number of Customers}}$$

CAIDI measures the average outage time a customer could expect to be without power if they experienced a sustained outage and is calculated as follows:

$$\text{CAIDI} = \frac{\text{Total Customer Minutes of Sustained Outages}}{\text{Total number of Sustained Customer Interruptions}}$$

Minn. R. Chapter 7826 allows utilities to report reliability performance using normalized data. Normalized data is defined by Minn. R. 7826.0200, subp. 9 as “data that has been adjusted to neutralize the effects of outages due to major

storms.”

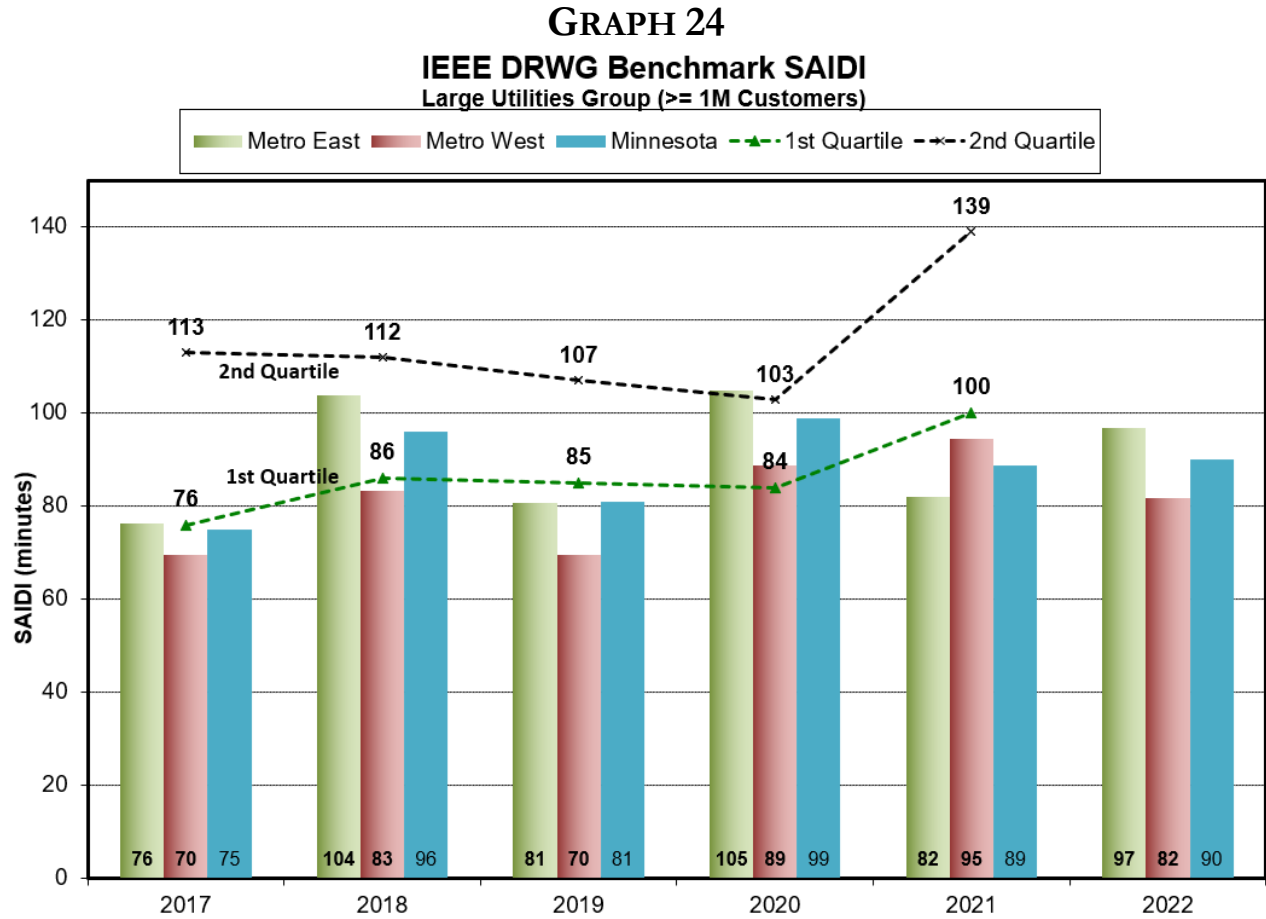
A. Recommendation for 2023 Standards

Minn. R. 7826.0600, subp. 1, requires the Company to propose 2022 standards for SAIFI, SAIDI, and CAIDI.

Consistent with the Commission’s November 9, 2022 Order in Docket No. E002/M-22-162, which set the Company’s 2022 reliability standards based upon the 2022 IEEE benchmarking results, we propose a similar approach for 2023. These reliability standards are as follows: (1) second quartile for our Metro East and Metro West work centers where our peers are other large utilities; and (2) second quartile for our Southeast and Northwest work centers where our peers are medium utilities. Because the IEEE benchmarking data for the previous year is not available until the third quarter of the following year, the 2023 benchmarking data will not be available until the third quarter of 2024. The Company requests that the 2023 proposed reliability standards for SAIFI, SAIDI, and CAIDI be set consistent with the Commission’s March 2, 2022 Order.

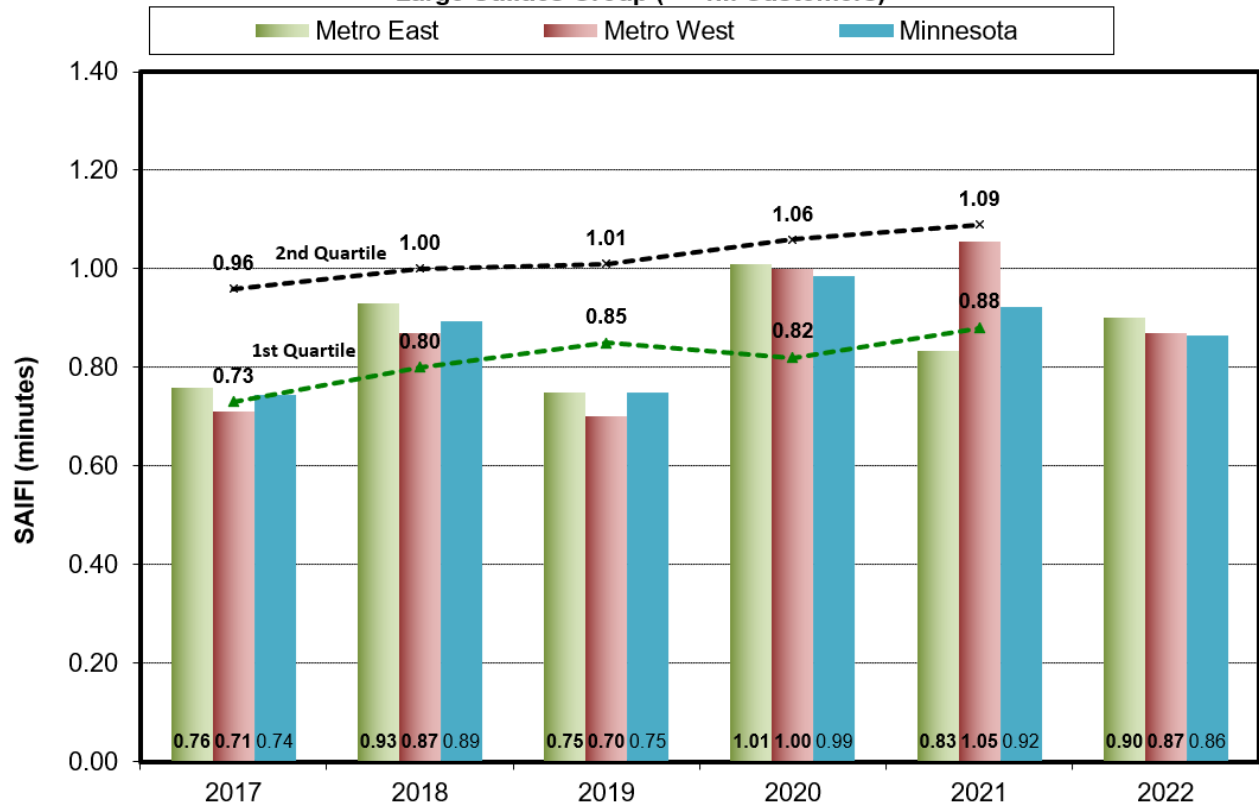
Below are graphs showing our historical performance for SAIDI, SAIFI, and CAIDI compared to the corresponding benchmark. Graphs 24 to 26 provide the large utility information for our Metro West and Metro East work centers. Graphs 27 to 29 provide the medium utility information for our Southeast and Northwest work centers.

Graphs 24 to 29 will be updated in our Supplemental filing consistent with the Commission’s November 9, 2022 Order, Order Point 4. providing the 2022 IEEE benchmarking results compared to the Company’s 2022 reliability. If our proposed 2023 standards are approved, we would submit a similar filing in the summer of 2024.



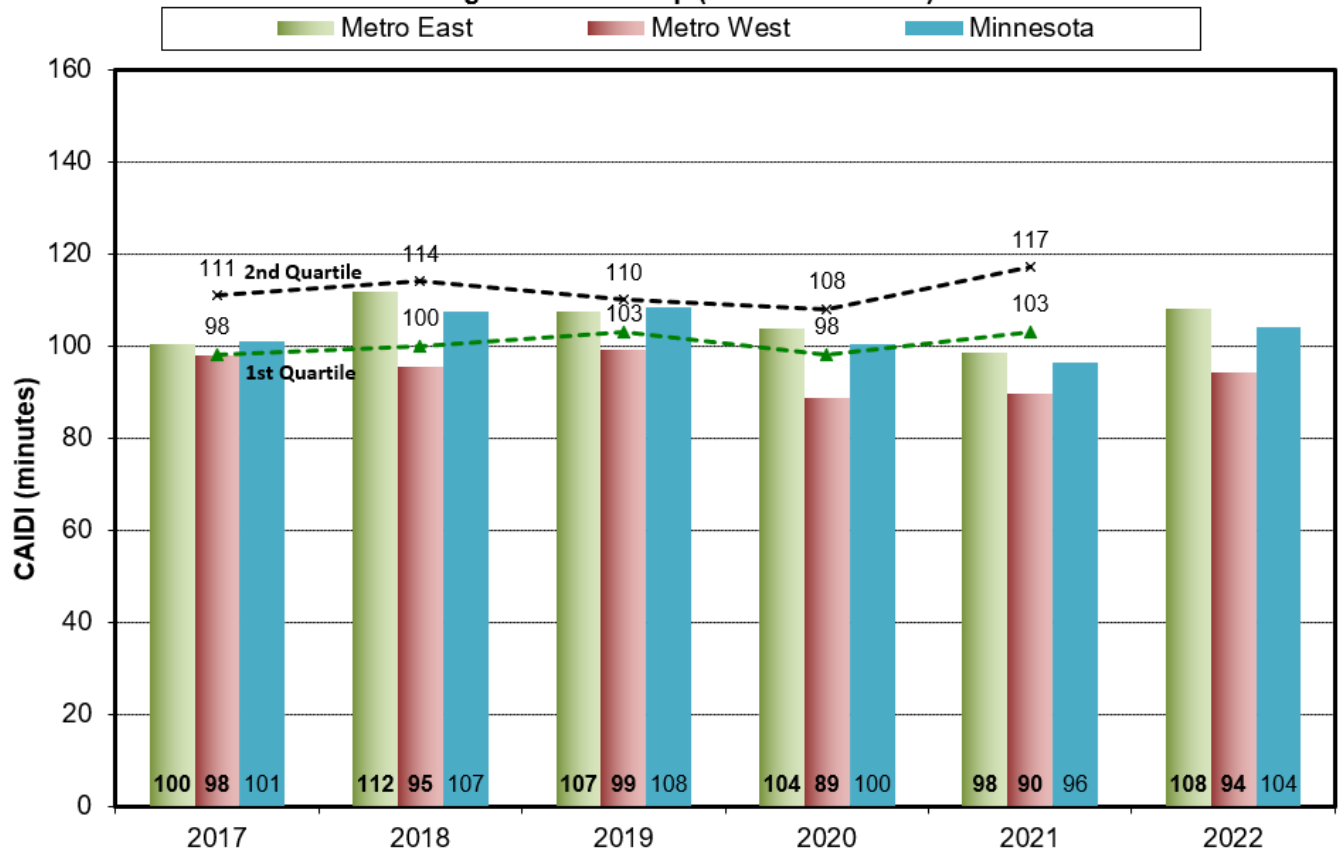
GRAPH 25

IEEE DRWG Benchmark SAIFI
Large Utilities Group (>= 1M Customers)



GRAPH 26

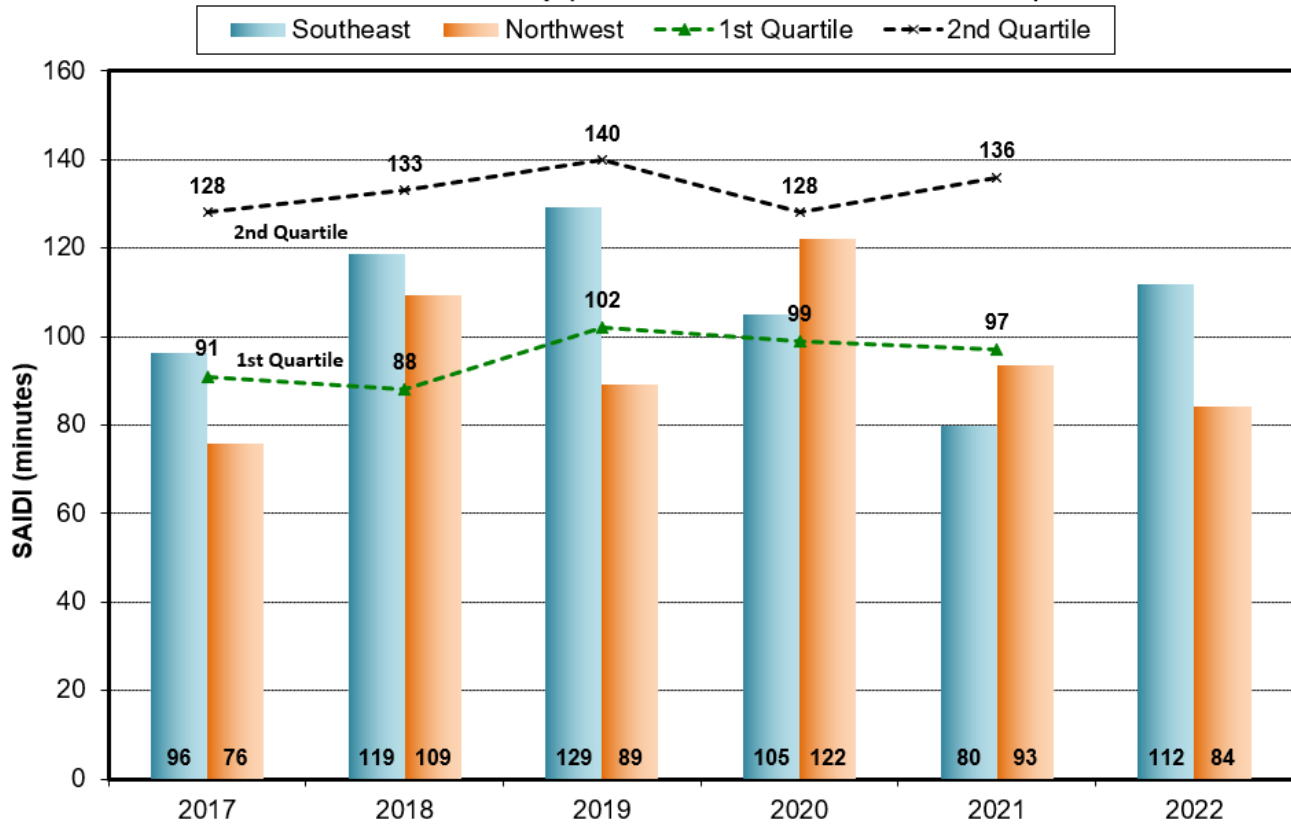
IEEE DRWG Benchmark CAIDI
Large Utilities Group (>=1M Customers)

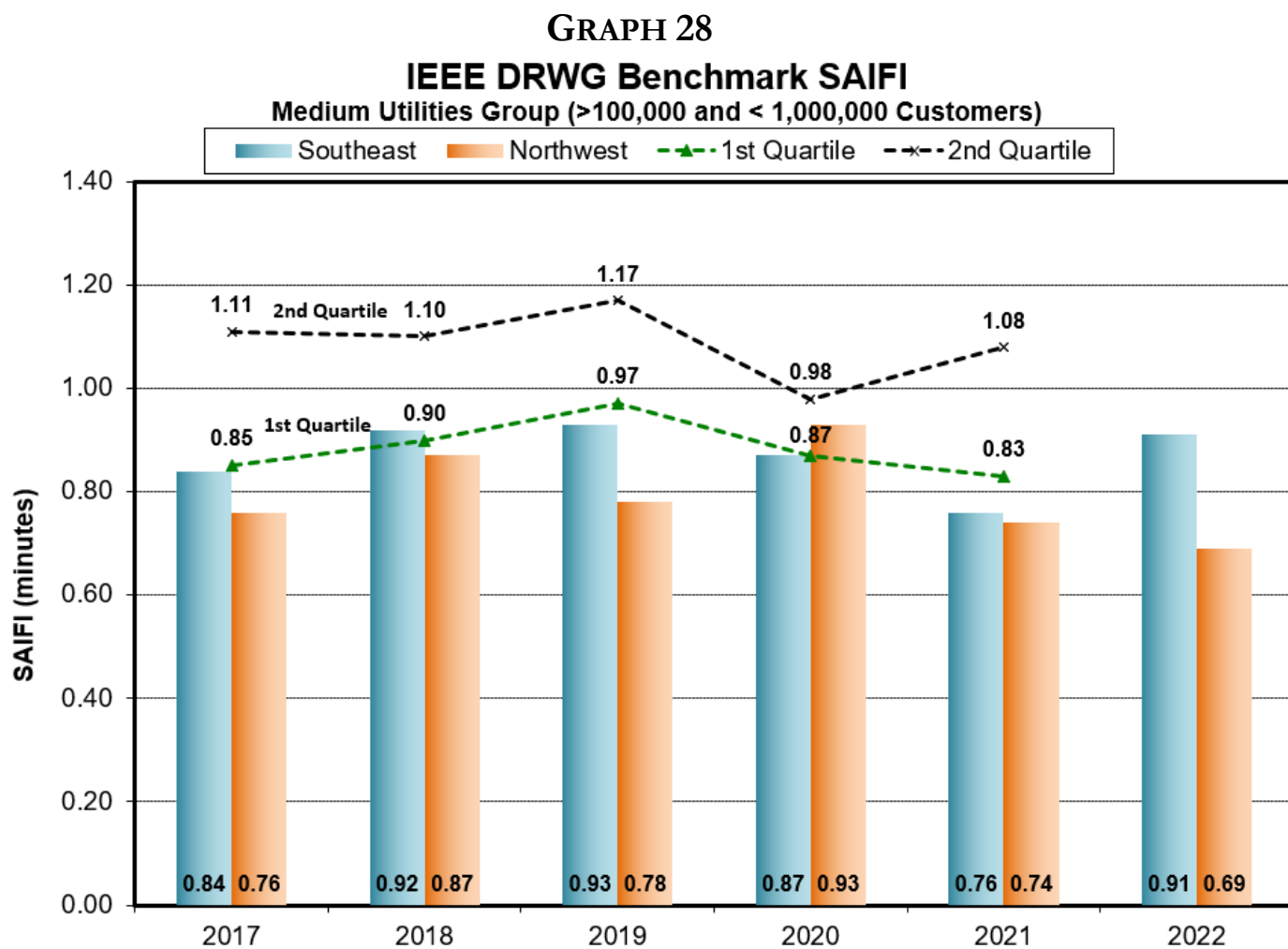


GRAPH 27

IEEE DRWG Benchmark SAIDI

Medium Utilities Group (>100,000 and < 1,000,000 Customers)

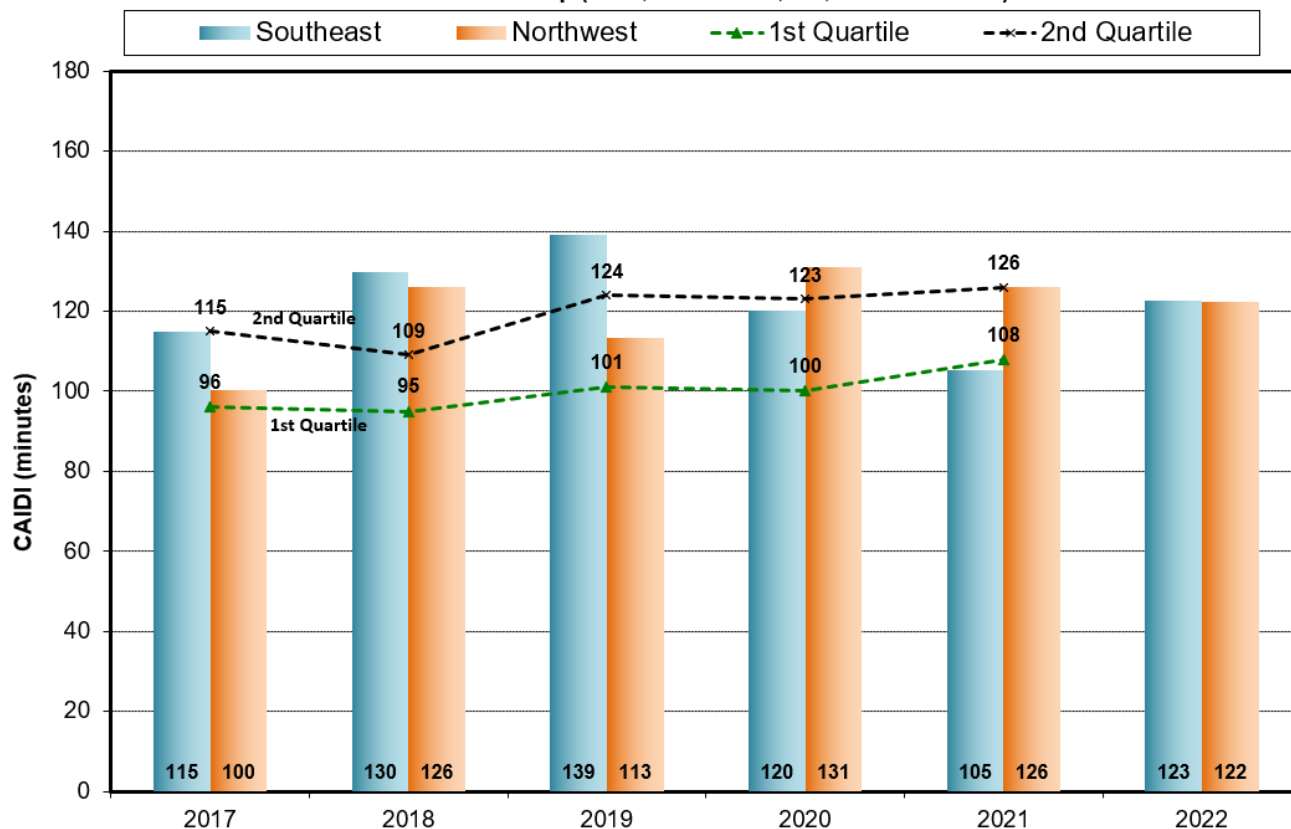




GRAPH 29

IEEE DRWG Benchmark CAIDI

Medium Utilities Group (>100,000 and < 1,000,000 Customers)



Minn. R. 7826.0200, subp. 13 defines work center as a portion of a utility's assigned service area that it treats as an administrative subdivision for purposes of maintaining and repairing its distribution system. Xcel Energy defines its work centers under the rule as our regional service areas. Customer outages on our system are categorized by region and our delivery system work management is tied to these regional divisions.

These regions are:

- Metro East
- Metro West
- Northwest
- Southeast

VI. CONCLUSION

Xcel Energy is committed to providing our customers with quality, reliable service. We appreciate this opportunity to report our performance to the Commission, and respectfully request that the Commission accept our annual report on safety, reliability, and service quality.

DELIVERING CLEAN, SAFE, RELIABLE ELECTRICITY

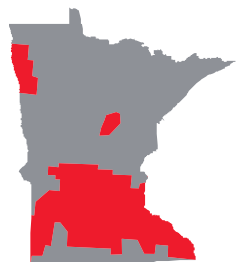
INFORMATION SHEET
MINNESOTA

MINNESOTA SERVICE QUALITY AND RELIABILITY



ABOUT XCEL ENERGY MINNESOTA

At Xcel Energy, we provide our customers with safe, clean, reliable electricity at a competitive price.



1.3 million

electric customers served in Minnesota



99.983%

Percentage of time
Minnesota customers
had power in 2022*



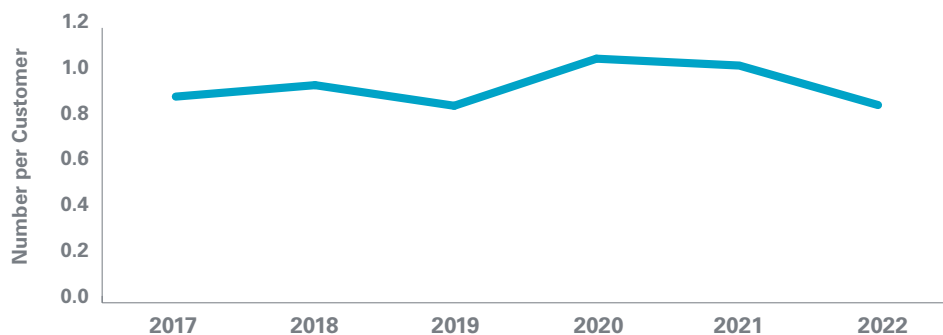
90
minutes

Average total time a customer
was without power in 2022**

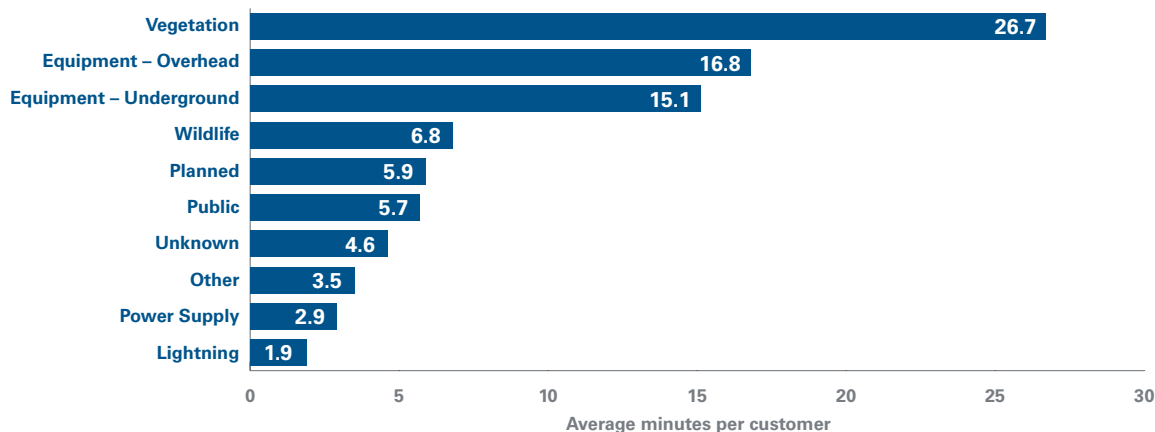
OUR COMMITMENT TO RELIABILITY

Each year, we report on various measurements of electric service reliability. Each measurement typically has two numbers: one number includes all outages during the year, including outages caused by major events like high-impact storms, and the other number excludes outages caused by major events. Here are some highlights.

Average number of outages per customer†



Top ten outage causes in 2022**

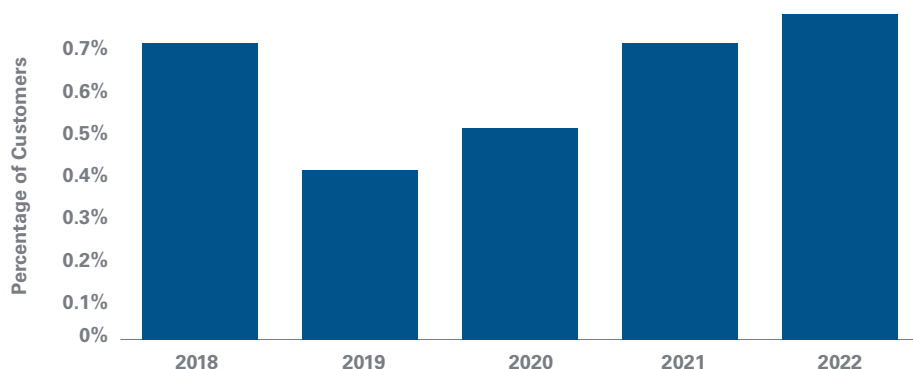
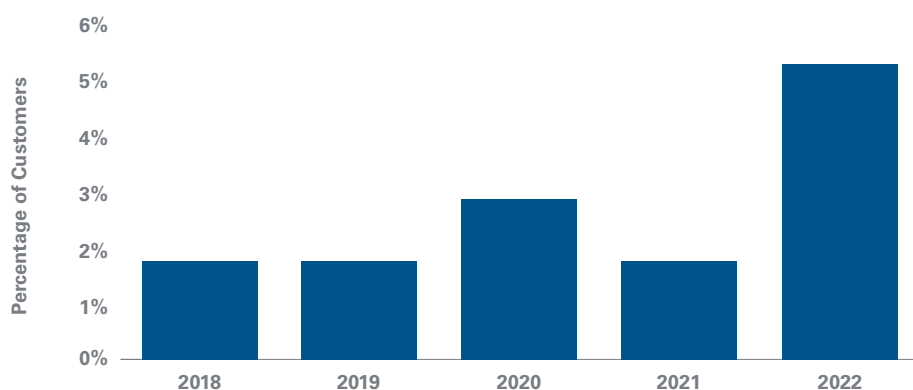


* Also known as Average Service Availability Index, or ASAI. Excludes major event days, which include high-impact storms.

** Also known as System Average Interruption Duration Index, or SAIDI. Excludes major event days, which include high-impact storms.

† Also known as System Average Interruption Frequency Index, or SAIFI. Excludes major event days, which include high-impact storms.

All figures represent 2022 averages for all Minnesota customers, unless otherwise noted.

Percentage of customers with more than six power outages^{††}Percentage of customers with a power outage lasting longer than twelve hours[§]

The Company has averaged 294.2 customer complaints per year over the five years from 2018 to 2022. This compares to an average of 367.2 complaints allowed under the Company's Service Quality Tariff during those years.

2022 Reliability Performance Results

Minnesota

Average outage duration per customer ^{**}	90 minutes
Average number of outages per customer [†]	0.86
Average outage length ^{***}	104.05 minutes



4,521

New residential electric service installations completed in 2021



12 days

Average time to complete a new residential service installation

CONTACT INFORMATION

Customers can contact us and learn more by visiting [xcelenergy.com](https://www.xcelenergy.com), calling customer service at **800-895-4999**, or finding us on Facebook or Twitter.

If you believe we have not resolved your concerns, you may contact the Minnesota Public Utilities Commission, Consumer Affairs Office at 651-296-0406 or 800-657-3782 or email at consumer.puc@state.mn.us at any time.

^{††} Also known as Customers Experiencing Multiple Interruptions, or CEMI, includes major event days

[§] Also known as Customers Experiencing Lengthy Interruptions, or CELI, includes major event days

^{**} Also known as System Average Interruption Duration Index, or SAIDI.

Excludes major event days, which include high-impact storms.

[†] Also known as System Average Interruption Frequency Index, or SAIFI.

Excludes major event days, which include high-impact storms.

^{***} Also known as Customer Average Interruption Duration Index, or CAIDI.

Excludes major event days, which include high-impact storms.



2022 SOUTHEAST WORK CENTER FOURTH QUARTER UPDATE
XCEL ENERGY
DOCKET No. E002/M-21-237
FEBRUARY 1, 2023

I. OVERVIEW

Northern States Power Company, a Minnesota corporation (the Company), submits this final quarterly status report on reliability statistics and efforts to improve reliability in the Southeast Work Center through the fourth quarter of 2022.¹ The year 2022 held weather challenges for us, but we have worked hard to provide consistency and great reliability to our customers. A historic increase in severe thunderstorm activity in Southern Minnesota in the spring of 2022 led to an increase in outages caused by high winds, tree contacts, and lightning and resulted in an increase in the System Average Interruption Duration Index (SAIDI), System Average Interruption Frequency Index (SAIFI), and Customer Average Interruption Duration Index (CAIDI) metrics. The Southeast Work Center had its best third quarter performance since 2017 for both SAIDI and SAIFI. The end of the fourth quarter, weather continued to be a contributing factor where several days of wind, snow and ice added to above normal impacts in December. Ultimately, all three measures of SAIDI, SAIFI, and CAIDI remain within the five-year acceptable performance range at year end.

Reliability improvement projects within the Southeast Work Center made significant progress with a total spend of over \$6 million in the fourth quarter. The total amount spent in the Southeast Work Center for all of 2022 was over \$15 million. We believe the reliability improvement projects have and will continue to make positive impacts on our overall reliability performance.

This report includes background and characteristics of the Southeast territory that can have an impact on reliability. It also includes updates on staffing levels and fourth quarter 2022 reliability data, as well as ongoing performance improvement plans. As discussed in previous reports, there are a variety of factors and system components that impact reliability, and we will continue to investigate them to identify areas that need remediation.

¹ In the Company's March 11, 2022 Southeast Quarterly Report, Docket Nos. E002/M-20-406 and E002/M-21-237, the Company voluntarily committed to continue providing quarterly status reports through 2022.

II. SOUTHEAST WORK CENTER

As explained in previous reports, the Southeast Work Center is in our southern Minnesota service territory and spans from nearly the border of South Dakota to the border of Wisconsin. The Company operates 14 service centers throughout the geographic region to serve the entire area. The work center represents a larger geographic area than our other three Minnesota work centers and poses some unique challenges due to the size and nature of the territory. These challenges can include, but are not limited to, larger patrol areas, dense vegetation, and expansive feeder systems. In addition, the Southeast Work Center is primarily a rural area and therefore, a majority of the distribution lines are overhead, as opposed to underground; specifically, 71 percent of the distribution lines in the Southeast are overhead while 29 percent are underground. The Southeast Work Center services approximately 122,000 customers on 132 feeders.

STAFFING AT SOUTHEAST WORK CENTER

At the end of the fourth quarter, the work center was fully staffed with 63 employees which includes three temporary linemen to assist in the reliability initiative project through the end of 2023, and one employee on long-term disability. As additional employees contribute to preventative and proactive maintenance efforts, we believe this increase in staffing is making a positive impact on our reliability performance.

III. RELIABILITY WITHIN THE SOUTHEAST WORK CENTER

A. SAIDI, SAIFI, and CAIDI Metrics Year to Date

The following tables and charts show the 2022 current year and historical reliability performance by individual quarter and year-to-date.

These reliability statistics are calculated using the Annual Rules ordered method of IEEE 1366 Regional Major Event Day (MED), which means it includes outages occurring at all levels (distribution, substation, and transmission) and:

- Includes all outage cause codes,
- Where applicable, includes credit for partial restoration,
- Bases calculations on the number of customers' billing accounts and meters, and,
- Bases calculations on normalized data.

The SAIDI and SAIFI are incremental indices wherein the year-to-date performance is the summation of the month-end values. The CAIDI is an average performance index where the year-to-date performance can both rise and fall over the course of the year.

As seen in the Table 1, the first section shows the 2022 annual monthly breakdown of indices while the second section shows the comparison of 2022 to previous historical results. Due to the increase in storms in the second quarter of 2022 over historic levels, the SAIDI, SAIFI, and CAIDI values are above the 2017 through 2021 averages. However, all three metrics are within the five-year performance range year to date. Additionally, gains were made in the third quarter in all three metrics when compared to the five-year averages.

TABLE 1

MN SOUTHEAST REGION SYSTEM DATA
MN ANNUAL RULES - IEEE 1366 Region Normalized

2022	Cust Ints	Cust Mins	Cust Serv	SAIDI	SAIFI	CAIDI	YTD SAIDI	YTD SAIFI	YTD CAIDI
Jan	11,513	1,270,710	132,621	9.6	0.09	110	9.6	0.09	110
Feb	4,783	520,906	132,702	3.9	0.04	109	13.5	0.12	110
Mar	3,378	307,144	132,795	2.3	0.03	91	15.8	0.15	107
Apr	18,455	2,227,844	132,899	16.8	0.14	121	32.6	0.29	113
May	11,862	2,425,235	132,760	18.3	0.09	204	50.9	0.38	135
Jun	13,709	1,602,647	132,711	12.1	0.10	117	62.9	0.48	131
Jul	10,226	1,607,443	132,829	12.1	0.08	157	75.0	0.56	135
Aug	8,065	850,404	133,010	6.4	0.06	105	81.4	0.62	132
Sep	10,002	1,052,114	133,020	7.9	0.08	105	89.3	0.69	129
Oct	14,551	1,234,314	133,252	9.3	0.11	85	98.6	0.80	123
Nov	4,796	439,308	133,360	3.3	0.04	92	101.9	0.84	122
Dec	9,852	1,331,570	133,466	10.0	0.07	135	111.9	0.91	123
YTD	121,192	14,869,639		111.9	0.91	123			

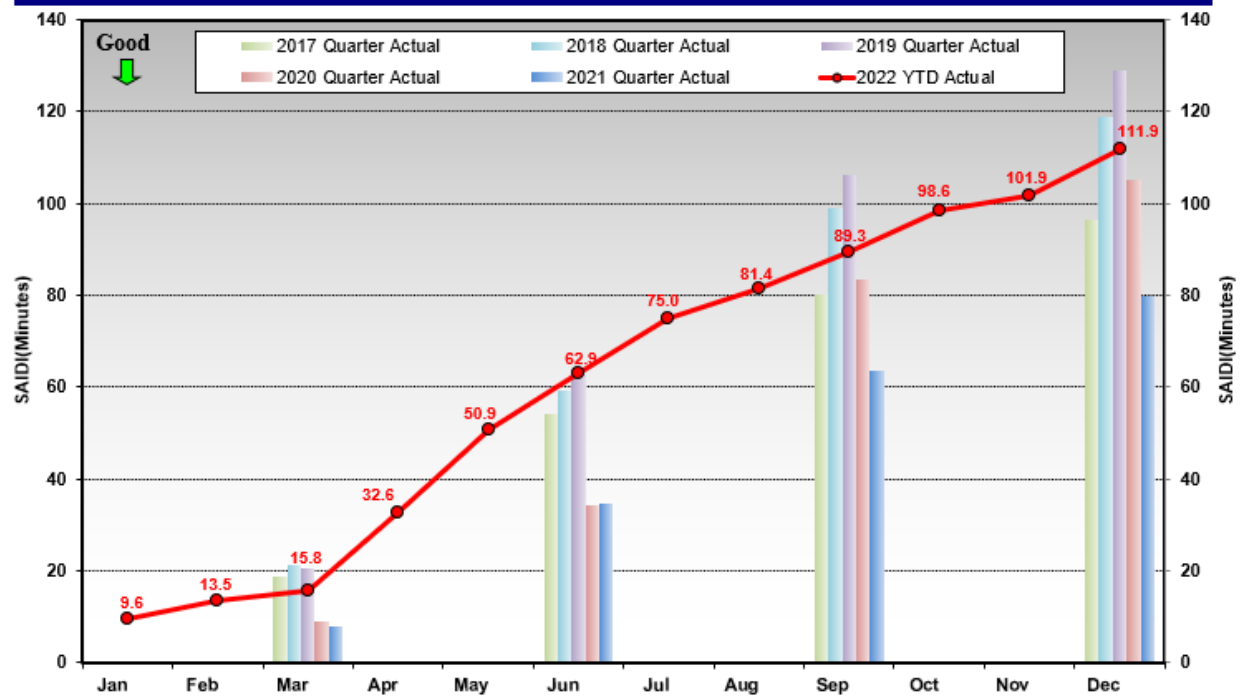
Index	YTD 2022	Delta to 2021	Delta to 3 Yr Avg	Delta to 5 Yr Avg	3 Yr Avg (19-21)	5 Yr Avg (17-21)	YTD 2021	YTD 2020	YTD 2019	YTD 2018	YTD 2017
SAIDI 1st Quarter	15.8	8.1	3.4	0.4	12.4	15.4	7.8	9.0	20.5	21.3	18.6
2nd Quarter	62.9	28.1	18.6	13.7	44.3	49.3	34.8	34.3	63.9	59.1	54.3
3rd Quarter	89.3	25.8	4.9	2.8	84.4	86.5	63.5	83.4	106.3	99.0	80.4
4th Quarter	111.9	32.1	7.2	6.1	104.6	105.8	79.8	105.1	129.1	118.8	96.3
SAIFI 1st Quarter	0.15	0.06	0.03	-0.01	0.12	0.16	0.09	0.08	0.18	0.22	0.21
2nd Quarter	0.48	0.13	0.10	0.06	0.38	0.42	0.35	0.32	0.46	0.50	0.46
3rd Quarter	0.69	0.12	0.03	0.01	0.66	0.68	0.58	0.66	0.75	0.77	0.67
4th Quarter	0.91	0.15	0.06	0.05	0.85	0.86	0.76	0.87	0.93	0.92	0.84
CAIDI 1st Quarter	107	23	3	7	104	100	83	114	115	97	89
2nd Quarter	131	33	16	15	116	116	99	108	140	117	117
3rd Quarter	129	19	3	3	126	126	110	127	141	129	120
4th Quarter	123	18	1	1	121	122	105	120	139	130	115

As shown in Chart 1, 111.9, the fourth quarter/year-end SAIDI reliability metric, depicted by the red line, is higher than in 2017, 2020, and 2021 and lower than the years 2018 and 2019. The Southeast Work Center had a higher than average fourth quarter SAIDI performance due to several consecutive days of wind, snow, and ice that impacted the region in December but maintained a year-end performance within the acceptable five-year range.

CHART 1



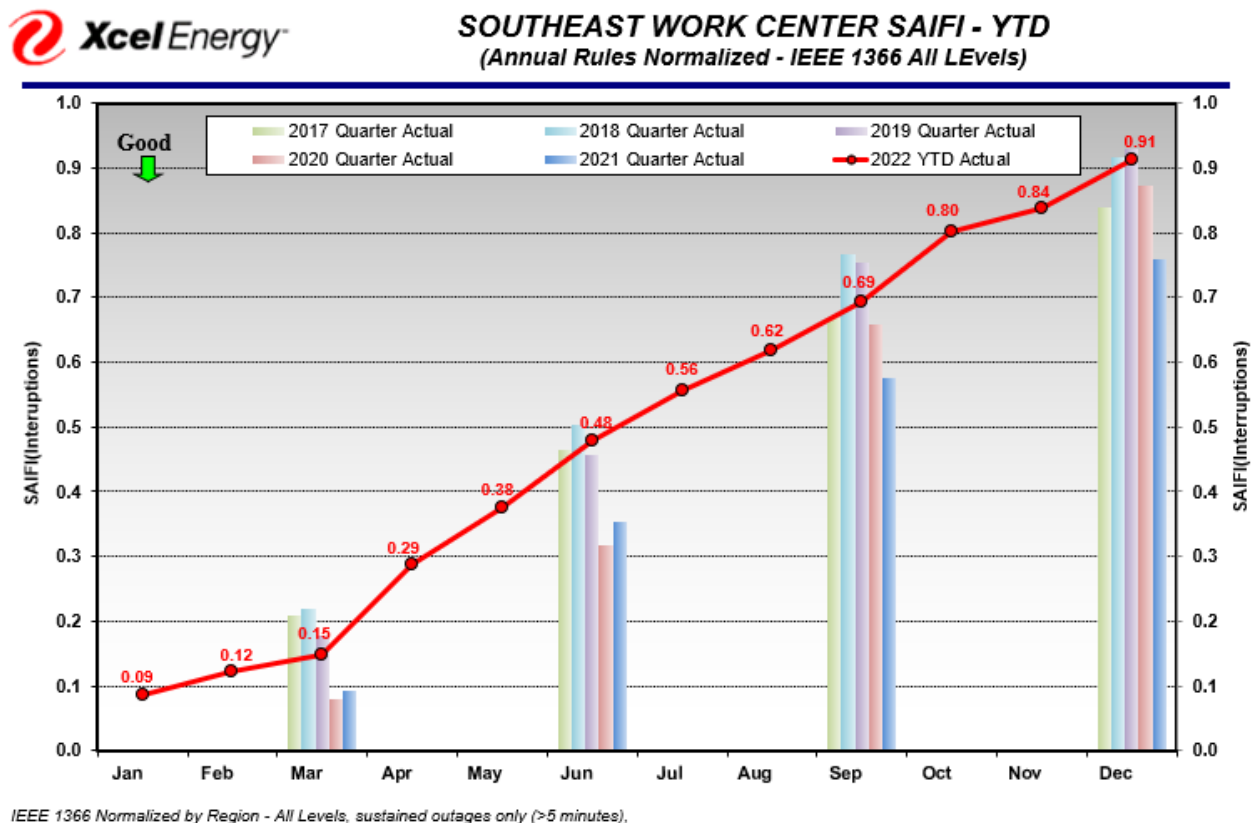
SOUTHEAST WORK CENTER SAIDI - YTD
(Annual Rules Normalized - IEEE 1366 All Levels)



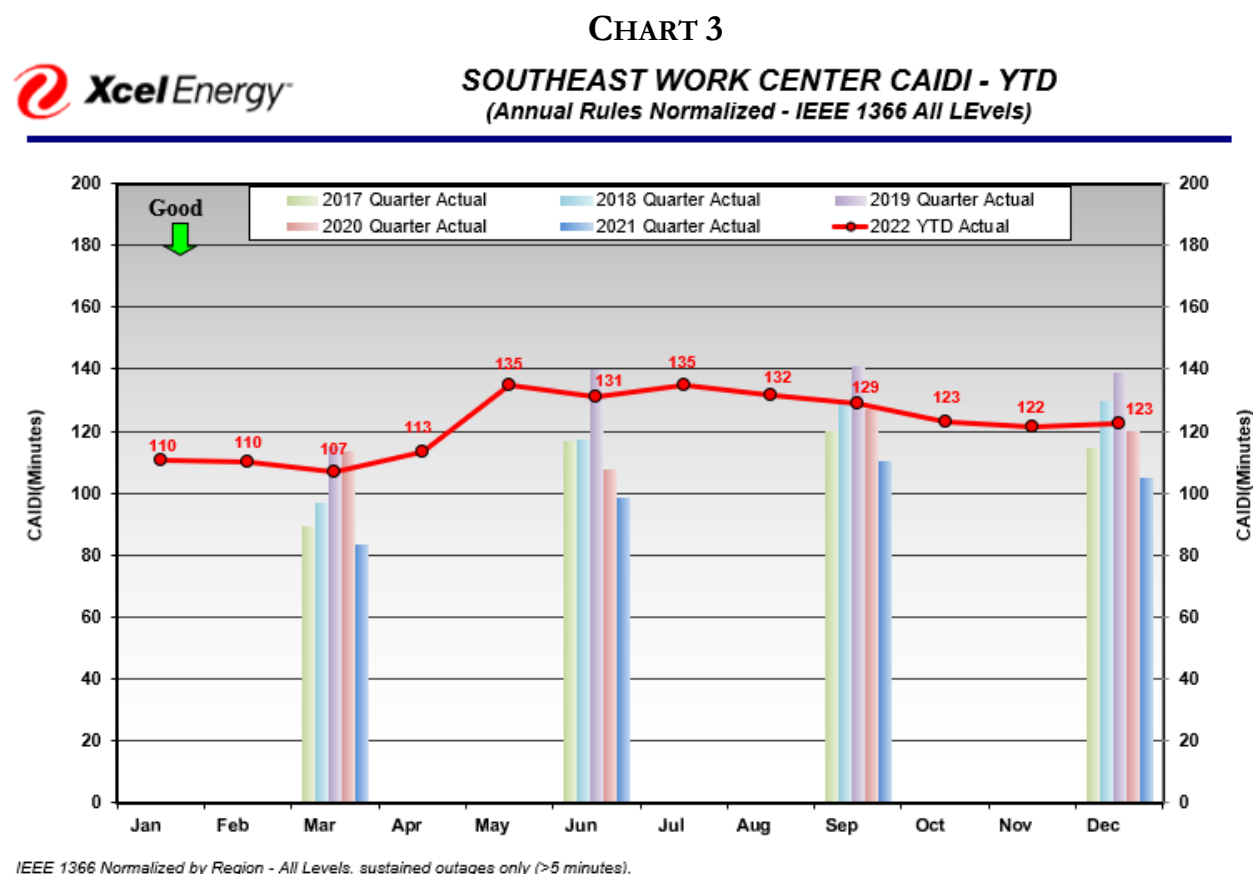
IEEE 1366 Normalized by Region - All Levels, sustained outages only (>5 minutes),

As shown in Chart 2, 0.91, the fourth quarter/year-end SAIFI reliability metric, depicted by the red line, is higher than in 2017, 2020, and 2021 and is similar to the performance achieved in the years 2018 and 2019. Consistent with our SAIFI results, the Southeast Work Center had a higher than average fourth quarter SAIDI performance due to several consecutive days of wind, snow, and ice that impacted the region in December with year-end performance maintaining position within the acceptable five-year range.

CHART 2



As shown in Chart 3, 123, the fourth quarter/year-end CAIDI reliability metric result, depicted by the red line, remained steady and decreased slightly at the end of the fourth quarter. It is higher than in 2017, 2020, and 2021 but consistent with SAIFI and SAIDI, and lower than the years 2018 and 2019. The year-end performance remains within the five-year acceptable range.



B. Major Event Days / Impact Events in the Fourth Quarter 2022

Certain events on the system are severe enough to trigger what is called a Major Event Day (MED). The thresholds that define these days are calculated using IEEE Standard 1366 methods. MED's are used to normalize data for year-to-year comparisons and reporting purposes. The interruptions associated with each MED are excluded from normalized reliability metric calculations. Details are provided to give clarity on what days were excluded and what events transpired on those days. Reliability metrics presented below for SAIDI and SAIFI reflect the total impact to southeast indices. Metrics presented for CAIDI pertain to that event and do not reflect that event's total impact on the southeast indices.

Table 2 is a list of reliability events that occurred in the Southeast Work Center during the fourth quarter of 2022, and their impacts on the SAIDI, SAIFI, and CAIDI indices.

TABLE 2
Impact Days / Events
Events that did not meet the MED threshold level and therefore impact the southeast results.

Major Event Days - Excluded from normalized results				
Date	SAIDI	SAIFI	CAIDI	Reason
None	0.0	0.00	0	None

Moderate Storm Activity				
Date	SAIDI	SAIFI	CAIDI	Reason
12/13-15	6.2	0.04	150	Strong winds/Snow/Ice. Tree and conductor contacts events - distribution & transmission

Transmission							
Date	Time	Day	SAIDI	SAIFI	CAIDI	Area/s	Reason
12/13	Afternoon	Weekday	1.4	0.01	253	Edgerton	Other Utility - Connection to other utility lines outage
11/14	Morning	Weekday	0.1	0.01	14	Dennison	Public Damage - Truck hit pole
12/9	Morning	Weekday	0.1	0.01	11	Edgerton	Unknown - No cause was able to be determined
11/30	Midday	Weekday	0.1	0.00	75	Gaylord	Public Damage - Truck backed into transmission switch
10/13	Morning	Weekday	0.0	0.00	7	Canton	Unknown - No cause was able to be determined

Distribution Substation							
Date	Time	Day	SAIDI	SAIFI	CAIDI	Area/s	Reason
10/24	Afternoon	Weekday	1.2	0.03	37	Northfield	Animal contact event - Substation bus lockout

Distribution Lines							
Date	Time	Day	SAIDI	SAIFI	CAIDI	Area/s	Reason
10/2	Morning	Weekend	3.3	0.02	163	Wabasha	Animal contact - Swan flew into lines
12/9	Evening	Weekday	1.2	0.01	157	Tracy	Insulator Flash - Pole fire
10/18	Morning	Weekday	1.1	0.01	75	Carver	Animal contact - Squirrel contact
12/14	Evening	Weekday	0.7	0.00	184	Woodstock	Insulator - Failed equipment
10/18	Morning	Weekday	0.7	0.01	75	Belle Plaine	Animal contact - Squirrel contact
11/14	Morning	Weekday	0.6	0.00	135	Wanamingo	Public Damage - Car hit pole
12/1	Night	Weekday	0.6	0.00	153	Cleveland	Pole failure - Downed pole

C. Improvement Plan Updates

Our previous reports have provided a comprehensive list of ongoing projects that we have undertaken to improve our reliability metrics in the Southeast region. Below is a summary of ongoing reliability-related projects and the approximate corresponding expenditures for the fourth quarter of 2022. Vegetation management efforts will occur on 854 miles of line in 28 maintenance areas in 2022. All of the 2022 scheduled vegetation management efforts were completed by the end of the fourth quarter.

- Faribault Area 2022: Q4 Expenditures: \$2.66 million
 - Overhead distribution line rebuild project in the Waterville area to replace aging poles, crossarms, and conductors which will increase capacity and address voltage challenges. Porcelain cutout replacements in the Waterville and Waseca areas.
 - Replacement of aging underground cable that has experienced multiple failures throughout the Faribault area.
- Mankato Area 2022: Q4 Expenditures: \$1.25 million
 - Replacement of poles identified through inspections and lightning arrestor replacements throughout the Mankato area.
 - Replacement of aging underground cable that has experienced multiple failures throughout the Mankato area.
- Winona Area 2022: Q4 Expenditures: \$159,000
 - Replacement of aging underground cable that has experienced multiple failures throughout the Winona area.
 - Replacement of poles identified through inspections and lightning arrestor replacements throughout the Winona area.
- Montevideo Area 2022: Q4 Expenditures \$1.2 million
 - Overhead distribution line rebuild project in the Sacred Heart, Yellow Medicine, and Clara City areas to address capacity and voltage challenges. Replacement of distribution poles that were identified through inspections and replacement of aging underground cable that has experienced multiple failures in the Montevideo area.
- Red Wing Area 2022: Q4 Expenditures \$482,000
 - Replacement of aging underground cable that has experienced multiple failures and replacement of porcelain cutouts.

- Pipestone Area 2022: Q4 Expenditures \$430,000
 - Overhead distribution line rebuild, replacement of aging poles and crossarms, addition of conductor spacers and poles to reduce span length to mitigate overhead line galloping.

The Company will continue work on the porcelain cutout replacement program, vegetation management, pole replacements, underground cable replacements, and overhead distribution rebuilds. The Company will continue to remain focused on the reliability of the Southeast Work Center to identify additional areas where improvements can be made in the coming years.

IV. CONCLUSION

The Company appreciates the opportunity to provide the Commission with this final update for the fourth quarter of 2022 regarding improvements in staffing levels and reliability metrics in the Southeast Work Center.

Distribution System Performance Summary

Order Point 3 in the Commission’s December 12, 2014 Order in Docket No. E-002/M-14-131 required the Company “to augment its next filing to include a description of the policies, procedures and actions that it has implemented, and plans to implement, to assure reliability, including information on how it is demonstrating pro-active management of the system as a whole, increased reliability, and active contingency planning.”

Each year, Xcel Energy develops and manages programs to maintain and improve the performance of its transmission and distribution assets. We identify and implement these programs in an effort to assure reliability, enable proactive management of the system as a whole, and effectively respond when outages occur.

Reliability Management Program Development

Causes and trends for historical outages are monitored and reviewed to identify opportunities to maintain and improve reliability. Investments in reliability improvement are made in addition to other capital programs that provide for adequate capacity to meet customer requirements. Investments for improvement become part of the reliability management program. A reliability core team, consisting of both field and planning functions, monitors system performance and progress against performance targets on a regular basis, taking actions as necessary to ensure the best possible system performance.

High value 2022 programs continuing into 2023 include: Feeder Performance Improvement Program (FPIP); proactive mainline and tap cable replacement; substation transformer and breaker condition assessment; and vegetation management (tree trimming). The vegetation management program includes investigation of tree-related events causing large outages to determine if the outage would have been preventable if trimming had occurred the day before the outage. These programs all target primary outage cause codes seen in 2022 and prior years’ performance. They are expected to support strong system performance. The reliability core team will continue to monitor system performance on a regular basis to determine if additional and/or shifts in actions should be initiated as the year unfolds.

In 2019, six automated switches were installed for a FLISR (Fault Location Isolation and Service Restoration) pilot project. This project tested FLISR technology which has potential for reducing the number of customers experiencing service interruptions. These feeders are now running Open Loop FLISR (supervisory). Beginning in 2021 through 2027 we will continue our planned long-term FLISR device deployment. A five-year history of outages will be evaluated to determine feeders that would benefit and justify FLISR investment. The FLISR devices provide initial reliability benefits once they are operational in the field and additional reliability benefits as we integrate the FLISR devices with ADMS and enable the FLISR functionality in ADMS.

Performance improvement plans in 2022 also included multiple initiatives for improving electric service in the Southeast work area, as detailed more in our previously filed report on the Southeast work center, which is attached to this filing at Attachment I.

Improvements to existing work practices that reliability core team members and their staff identify, and implement are important contributors to reliable utility performance and good customer reliability experience. Improvements include operational and/or procedural changes to reduce the duration and the frequency of outages. Many of these improvements do not require additional funding to implement and are achieved via ongoing employee training and/or incorporation into standard work procedures. System improvement programs are monitored and updated as appropriate.

I. Reliability Management Programs – ‘StarChart’

After considering the most common failures and their causes, as well as at-risk equipment, we have developed work plans, or programs, to target our investments; we show a summary of these programs in the ‘Star Chart’ on the following page. These programs represent our proactive investments in our transmission and distribution systems that we believe are most likely to improve overall reliability, asset health, and meet various contingency planning requirements. These investments are made in addition to other capital investments that provide for adequate capacity to meet customer requirements and to accommodate load switching during outage response to minimize customer impacts.

Table 1
NSPM Program Summary
Reliability Management Program Impacts (Star Chart)

	Funded Programs	Description	2020 Actuals (k\$)	2021 Actuals (k\$)	2022 Actuals (k\$)	IMPACTS			
						SAIFI	CAIDI	CEMI	Complaints
Reliability	Feeder Perf. Improvement Program (OH & UG)	FPIP evaluates and implements improvements for feeders experiencing an increased number of outages based on prior year information.	1,011	695	3,271	★		★	★
	Outage Exception Reporting Tool (OH & UG)	OERT process provides automatic notification to area engineers when repeating outage criteria have been met and engineering solutions are implemented to eliminate recurring problems.	143	250	668			★	★
	Mainline Cable Replacement, (UG)	Deteriorating non-jacketed cable is failing and causing repeat outages. Proactive and reactive replacement of this cable reduces the outages.	1,719	530	4,448	★			★
	Tap (URD) Cable, (UG)		26,470	23,113	31,980	★	★		★
	Install Automated Switches	These automation solutions reduce restoration times for long lines with long drive times to bring CAIDI in-line with other distribution lines.	65	0	0	★		★	★
	Feeder Infrared Evaluation (OH)	Many pieces of equipment show excess heating prior to failure. The FIRE program provides infrared scans of overhead mainline which reveal specific equipment that is likely to fail so it can be repaired prior to causing an outage.	40	58	45	★			
	Vegetation Management (Transmission & Distribution)	Cost benefit prioritized circuit trimming in NSPM. Continued reactive "Hot Spot" trimming.	20,633	29,908	35,522	★		★	★
Integrity	Pole Inspection & Replacement (Distribution)	Pole Inspections include an above groundline visual inspection. Groundline inspections are based on age and environment and may include visual, sound and bore and excavation. Treatment of poles may be included. Based on results poles may be tagged for replacement.	28,285	30,208	25,621	★	★		
	Transmission Substation	Replaces end-of-life equipment in order to reduce maintenance costs and improve reliability.	2,863	14,127	15,373	★			
	Line ELR Work (Transmission)	Identifies lines that have components that have reached their end of life or where significant refurbishment work is needed to enhance system performance and reliability. Project focus may be to extend life of existing asset 20+ years, or to replace and address future capacity upgrade concerns.	2,239	5,021	5,200	★			★

Footnote: The above table reflects multi-year initiatives that are part of the Reliability Management Program (RMP). Information is based on current RMP and is subject to change.

Funding information for previous years is a combination of Capital and O&M dollars; most of the equipment replacement dollars are capital expense while the inspection and testing programs include O&M dollars; O&M dollars and capital for pole replacements and FIRE program are currently estimates since changes are included in broader programs of work (e.g., OH rebuild OH maintenance accounts).

We have indicated the primary performance impacts of these programs with a red star, where applicable; performance impacts include SAIFI (System Average Interruption Frequency Index), CAIDI (Customer Average Interruption Duration Index), CEMI (Customers Experiencing Multiple Interruptions) and Customer Complaints.

2. Reliability Management Programs – Key Initiatives

Table 2 outlines primary program indicators for our key initiatives / programs. The actual amount of work completed under each program varies from year-to-year and is based primarily on assessments of those areas requiring the greatest attention, as well as the results of our condition assessment (i.e., the number of deficiencies requiring corrective action). For further description of the programs described in Table 2 below, Key Initiatives, please see the Star Chart (Table 1) above.

Table 2
Reliability Management Key Initiatives/Programs

	2022	2021	2020	2019	2018	2017	2016
Vegetation Management Program							
Total Overhead Distribution miles completed	2,239	2,019	1,606	2,647	2,307	2,417	2,086
Total Overhead Transmission miles completed	807	754	762	896	768	762	1,039
Normalized Tree-coded Sustained Cust Ints. (W/O Storms)	231,463	168,848	184,302	170,994	214,299	145,422	155,370
Non-normalized Tree-coded Sustained Cust Ints. (With Storms)	405,731	285,454	286,735	242,158	243,867	277,068	305,946
Underground Cable Replacement Program							
# of Segments That Have Been Replaced (est.)	2,591	2,252	2,579	1,158	1,504	1,411	1,378
# of Failures (Only on Primary Cable)	1,429	1,656	1,459	1,301	1,366	1,453	1,607
Feeder Infrared Evaluation (FIRE)							
# of Feeders Scanned	270	276	259	280	209	248	275
# of Hot Spots Corrected	16	28	66	55	67	71	68
Feeder Performance Improvement Plans (FPIP)							
Investigations Completed	91	97	112	111	108	113	105
Wood Pole Inspection Plan							
Total Distribution Wood Poles Inspected	42,330	39,045	40,179	10,312	33,720	17,972	18,845
Total Transmission Wood Poles Inspected	4,329	4,945	3,124	3,381	2,464	4,000	4,660

Information based on Current RMP, subject to change

3. Reliability Management Programs – Work Practices

Improvements to existing work practices that the reliability core team members and their staffs identify and implement are also an important contributor to the customer reliability experience and our reliability performance. These are operational and/or procedural changes intended to either reduce the duration of outages should they occur, or to reduce the frequency of outages.

As noted in the Reliability Management Work Practices Table (3) below, we assess and prioritize the actions based on a balance of their ability to positively impact reliability (high, medium or low), as well our ability to incorporate into standard work practices – with most

occurring concurrently. Many of these actions do not require additional funding to implement and are achieved via ongoing employee training and/or incorporation into standard work procedures. We continuously monitor all actions and update our plan as appropriate.

Table 3
Reliability Management Work Practices

Areas of Opportunity	Key Initiative	Action/Program	Description	Reliability Impact
Resource Management	Duration	Work Coordination	Adding a full-time work coordinator to schedule all appointment work. The coordinator will be in contact with customers prior-to, during and following their scheduled appointment. This will optimize use resources in support our customers. Better customer service for appointments and resource availability for outage restoration work will result.	Medium
	Frequency	System Integrity	Substation inspection done on every substation specific to identifying animal incursion risk and vegetation issues, in addition moving to an electronic work collection APP to track and prioritize timely maintenance.	High
Substations	Frequency	Infrared Inspections	IR Subs after major equipment is switched out of service or thermal heating is suspected.	High
	Duration	Equipment Failure Response	Install Mobile subs and connection cables as quickly as possible when customers are out due to equipment failure.	Medium
	Duration	Restore before repair	During a feeder event Control Center personnel restore service to as many customers as possible before making temporary/permanent repairs.	Medium
Feeders	Duration	Patrol Optimization	Use of application software to assist manual patrol of outages and momentary outages. This will allow for quicker response and permit a single resource to respond to a greater number of outages or appointments.	Medium
	Frequency	Intentional Outages	Reduce impact of intentional outage to ensure all steps are being taken to keep the maximum number of customers on. Verify switching to reduce customer counts. Repair while hot instead of taking outage.	Medium
	Frequency & Duration	VM Partnership	Partner with Vegetation Management leadership to prioritize trimming of circuits that are scheduled to be trimmed. Substations to be trimmed with associated feeders.	High
	Frequency & Duration	Feeder Patrol Program	Looking for unfused taps and animal protection. Identify 336 auto splices. Continued use of IR/thermo imaging to identify problems.	Medium
	Frequency	Condition Assessment & Correction	Utilizing UAS (Drone) technology to complete a comprehensive inspection of our worst performing feeders, a pilot program has been instituted to identify and mitigate risk to the distribution system.	High
Control Center	Duration	Restore before repair	Advanced technology going into the control centers and the field.	High
	Duration	Distribution Operations Model	ADMS (Advanced Distribution Management System) application is live in all NSP Control Centers (4); as the application matures, we are working to locate the fault on the circuit to cut down on the response time.	High
	CAIDI	Model 1/0 Switching	Standard operating procedure to model 1/0 URD as close to real time so the OMS model will reflect the configuration of the URD circuit after it has been switched.	Medium
	CAIDI	Validate Restoration Times	Tighten up existing process on actual restoration times, utilize approver process to ensure outage times are correct.	High
COM	CAIDI	COM Saturday Crews	Crews metro COM Saturday Crews. 3 Metro East and 3 Metro West	Medium
	CAIDI	Backup Crews	Currently negotiating on-call crews for outage response, Friday-Monday to enhance response time to customer outages.	Medium
	SAIFI & CAIDI	Underground Cable Repair	Repair and/or replace cables as directed by engineering	High
	SAIFI	REMS/CEMI Work	Complete work referred by engineering in a timely manner	Low
Reliability Team/Communications	SAIFI & CAIDI	On-going Regular Reliability Meeting	Meet regularly to review reliability and share ideas to improve reliability performance.	Low
	CAIDI	Outage Reviews	Root Cause Investigation of outages greater than 90 minutes or 0.1 SAIDI	Medium
	CAIDI	Continuous Improvement	In 2021, Control Center Leadership is producing a detailed CAIDI report on a monthly basis, the purpose and impact of the report is to call out opportunities for improvement on response, meet with the first responders to develop plans to remove obstacles to response and holding employees accountable to timeliness of response using the data and operator comments.	Medium

4. *CEMI Tools*

Xcel Energy developed tools that allow us to better track the causes of our CEMI (Customers Experiencing Multiple Interruptions). In conjunction with a mapping tool, we can look at our customers' experience as it identifies customers with multiple outages over a revolving 12 months and then provide a visual representation of those outages in our service territory. Although, the metric measures customers who have experienced at least six sustained outages during non-storm days, we can study customers' experience earlier. This customer centric tool helps highlight customers that have had outages from different causes rather than a single root cause. In other words, this tool does not look at the device that caused the outage, it examines how many times a customer was out of service regardless of the reason.

These tools compliment other programs that help us identify specific equipment issues (for instance, the same device tripping multiple times). The CEMI tools provide the link from the outage information to the specific customer information on a holistic basis. Since much of our analysis has focused on a system perspective, this tool really rounds out our reliability planning by helping focus on the customers' experience.

There are many reasons a customer could have an outage. These causes include downed trees, animal contact, a car hitting a pole, or even a lightning strike. Each one of these causes could show up on a different report for a different piece of equipment that all flow down to the same customer. These tools allow us to analyze customer experience truly from a customers' experience. These tools help our efforts in the long term to reduce repeated outages for customers.

The Company provides more detail about CELI metrics, including responding to specific Commission order points, in the body of its Annual Report.

Conclusion

In accordance with Order Point 3 in the Commission's December 12, 2014 Order in Docket No. E-002/M- 14-131 we include this process summary with the data we use to determine areas of greatest impact, develop targeted investment strategies, ensure the execution of annual work plans, and assure reliability and ongoing satisfactory performance of the system as a whole. We know that positive results are a direct reflection of consistent and sustained focus, and as such, believe our reliability management programs and other actions provide a solid foundation on which to deliver and maintain reliable performance of our distribution system.

Metro East						All levels, All Causes included			All Causes, Distribution Substation, Transmission Substation, and Transmission Line levels			All levels, No "Planned" Cause Includes Bulk Power Supply			All levels, "Planned" Cause only Includes Bulk Power Supply		
						Total			Bulk Power Supply			Unplanned			Planned		
Feeder ID	Substation	City	SAIFI	SAIDI	CAIDI	Outages	Customers Affected	Customer Mins Out	Outages	Customers Affected	Customer Mins Out	Outages	Customers Affected	Customer Mins Out	Outages	Customers Affected	Customer Mins Out
[Security Data Begins]																	
1		Chisago City	3.67	463.6	126	63	11,323	1,431,256	0	0	0	63	11,323	1,431,256	0	0	0
2		Taylors Falls	2.02	448.4	222	73	4,042	898,154	0	0	0	73	4,042	898,154	0	0	0
3		Lent	1.79	418.0	233	117	5,920	1,379,085	0	0	0	117	5,920	1,379,085	0	0	0
4		Saint Paul	3.18	370.8	117	34	3,143	366,750	0	0	0	34	3,143	366,750	0	0	0
5		Stillwater	0.88	361.8	409	72	1,818	743,567	0	0	0	72	1,818	743,567	0	0	0
6		New Scandia	2.90	341.7	118	116	8,884	1,048,316	2	2,794	339,660	116	8,884	1,048,316	0	0	0
7		Shoreview	1.10	324.1	296	37	3,792	1,121,367	0	0	0	37	3,792	1,121,367	0	0	0
8		Newport	4.35	323.7	74	5	657	48,877	3	453	30,605	5	657	48,877	0	0	0
9		Mahtomedi	1.48	298.2	202	31	2,794	563,065	0	0	0	31	2,794	563,065	0	0	0
10		New Brighton	1.74	283.3	163	47	2,986	485,648	0	0	0	47	2,986	485,648	0	0	0
11		New Brighton	2.07	279.2	135	9	786	106,078	0	0	0	9	786	106,078	0	0	0
12		White Bear Lake	1.69	254.5	150	6	1,197	179,936	0	0	0	6	1,197	179,936	0	0	0
13		Mahtomedi	1.89	253.5	134	62	4,195	563,030	0	0	0	62	4,195	563,030	0	0	0
14		Saint Paul	1.13	250.6	221	16	524	115,766	0	0	0	16	524	115,766	0	0	0
15		Roseville	2.21	226.5	102	33	5,426	555,309	0	0	0	33	5,426	555,309	0	0	0
16		Woodbury	1.13	219.8	194	24	3,111	604,251	0	0	0	24	3,111	604,251	0	0	0
17		Eagan	3.87	217.0	56	28	8,198	459,880	2	4,163	141,839	28	8,198	459,880	0	0	0
18		Minneapolis	0.50	215.7	431	1	3	1,294	0	0	0	1	3	1,294	0	0	0
19		New Brighton	1.10	211.9	193	8	1,017	196,193	0	0	0	8	1,017	196,193	0	0	0
20		Lakeland	1.45	202.4	139	114	3,975	554,456	0	0	0	112	3,959	553,333	2	16	1,123
21		Lino Lakes	1.40	199.5	143	52	5,822	830,639	0	0	0	52	5,822	830,639	0	0	0
22		West Saint Paul	1.75	197.2	113	60	6,349	716,526	1	3,544	318,960	60	6,349	716,526	0	0	0
23		Saint Paul	1.24	194.6	156	29	3,971	620,939	0	0	0	28	3,955	617,499	1	16	3,440
24		Oakdale	1.40	192.2	138	35	3,233	445,359	0	0	0	35	3,233	445,359	0	0	0
25		Forest Lake	1.38	184.1	134	190	8,800	1,177,222	0	0	0	190	8,800	1,177,222	0	0	0

(1) Based on Jan 1-Dec 31, 2022, year-end normalized data (IEEE Op Co Level)
"Total" includes all causes, all levels
"Bulk Power Supply" includes Distribution Substation, Transmission Substation, and Transmission Line levels, all cause codes
"Unplanned" includes all levels and no outages with a primary cause code of "Intentional/Planned", Includes Bulk Power Supply outages
"Planned" includes all levels and only outages with a primary cause code of "Intentional/Planned", Includes Bulk Power Supply outages

Metro East Poor Performing Feeders (2)						CMO: customer minutes out	
Based on performance Sept 2021 to Aug 2022, Major Event Days are included							
Feeder ID	Substation	City	SAIFI	SAIDI	CAIDI	Reasons for Poor Performance	Operational Changes Made, Considering or Planned
A		Cottage Grove	2.34	788.1	336	45% CMO 6/20/22 head end splice failure, all splices in splice pit replaced. 43% CMO due to Vegetation, 9% CMO 7/5/22 splice failure between 2-CGR72 & 3-CGR72.	Also on last year's FPIP list due to cable failures and feeder load relief. Replacing appx 2700ft of feeder cable between 2-CGR72 & 3-CGR72 and between 5-CGR72 & 6-CGR72 with schedule completion 7/28/23. Feeder Trimmed completed in 2022. All porcelain cutouts on feeder mainline replaced 1/2023. New CHE65 feeder energized 1/2023 to relieve load off CGR72.
B		White Bear	0.85	130.2	153	82% CMO due to Vegetation behind taps, 56% Vegetation on 3/5/22, 5/16/22, 5/18/22 & 9/17/21.	Also on last year's FPIP list both years due to Vegetation. Feeder Trim completed 12/2020. Replaced 13 fuses with Trip Savers. Re-Conductor 5670ft of Overhead taps (2700ft 1Phase, 670ft 1Phase, 550ft 1Phase & 1750ft 2Phase), Replacing 8 fuses for better coordination. Adding pole wraps to all poles behind 4 taps, replacing 341 porcelain cutouts off mainline feeder. Schedule completion 9/29/23.
C		Roseville	2.82	328.8	117	69% CMO due to Vegetation (30% inside corridor, 39% outside corridor), 23% CMO 1/18/22 due to cold splice failure b/w 4- and 5-RAM064, splice replaced.	Feeder Tree Trim in 3 sections. 1st section trees trimmed in 2016, schedule in 2023. 2nd section trees trimmed in 2017, schedule in 2023, 3rd section trees trimmed 2019 next scheduled in 2024. Replacing 2 spans of open wire secondary & 6 porcelain cutouts complete. Re-conductor appx 1275ft of 1Phase overhead and replace 4 porcelain cutouts, schedule in service date 7/21/2023. Replace 60 Porcelain cutouts, replace 1 fuse with Trip Saver and add 8 Remote Fault Indicators, schedule in service date 7/21/23.
D		St Paul	1.45	411.3	284	97% CMO due to Vegetation (85% inside corridor, 12% outside) with 74% from one feeder event at 1697 English St on 9/17/21.	Feeder Tree Trim in 2 sections. 1st section completed 2021; 2nd section completed 2022. Replacing 85 porcelain cutouts off mainline, adding 11 cutouts various locations, replace 8 fuses with Trip Savers, replace 10 porcelain arresters, 6 animal guards 2 900A Gang Switches, 2 overhead transformers and add 5 Remote Fault Indicators, schedule in service date 6/23/23.
E		Inver Grove Heights	3.94	454.9	115	80% CMO due to Vegetation issues, (8% CMO 9/17/21, 21% 12/16/21, 10% CMO 12/29/21, 22% CMO on 2/18/22 & 19% CMO on 8/3/22).	Feeder last trimmed 2018, scheduled trimmed in 2023. Replace 136 porcelain cutouts off mainline feeder, replace 10 cross-arms, install 13 clamp stars over automatic splices, replace 15 porcelain arresters and 2 new 100T cutouts scheduled in service date 6/9/2023. Replace 7 porcelain cutouts, 1 porcelain arrester and add 1 pole wrap schedule in service date 5/19/2023.
Security Data Ends]							

(2) Distribution outages only, Major Event Days are included

						All Causes, Distribution Substation, Transmission Substation, and Transmission Line levels			All levels, No "Planned" Cause Includes Bulk Power Supply			All levels, "Planned" Cause only Includes Bulk Power Supply					
Metro West						All levels, All Causes included											
						Total			Bulk Power Supply			Unplanned			Planned		
Feeder ID	Substation	City	SAIFI	SAIDI	CAIDI	Outages	Customers Affected	Customer Mins Out	Outages	Customers Affected	Customer Mins Out	Outages	Customers Affected	Customer Mins Out	Outages	Customers Affected	Customer Mins Out
[Security Data Begins																	
1		Minneapolis	1.31	882.9	675	4	1,427	963,287	0	0	0	4	1,427	963,287	0	0	0
2		Helen	1.00	724.2	724	6	14	10,139	0	0	0	6	14	10,139	0	0	0
3		Bloomington	1.00	551.3	551	1	1	551	0	0	0	1	1	551	0	0	0
4		Mound	5.18	521.9	101	60	14,041	1,415,281	1	2,710	241,190	60	14,041	1,415,281	0	0	0
5		Columbia Heights	2.16	395.0	183	20	3,583	655,271	0	0	0	20	3,583	655,271	0	0	0
6		Hopkins	3.04	376.8	124	10	1,335	165,414	1	3	372	10	1,335	165,414	0	0	0
7		Edina	0.92	329.5	358	24	1,414	505,732	0	0	0	24	1,414	505,732	0	0	0
8		Long Lake	3.28	321.9	98	33	4,327	424,245	0	0	0	33	4,327	424,245	0	0	0
9		Golden Valley	1.47	300.9	205	26	899	184,162	0	0	0	26	899	184,162	0	0	0
10		Waconia	1.29	254.6	198	49	3,989	789,556	0	0	0	46	3,977	733,352	3	12	56,204
11		Brooklyn Center	1.49	246.6	165	43	3,807	628,158	0	0	0	42	3,762	616,098	1	45	12,060
12		Rockford	2.10	233.2	111	14	2,522	279,644	1	1,190	180,880	14	2,522	279,644	0	0	0
13		Shorewood	2.47	232.9	94	35	3,271	308,642	0	0	0	35	3,271	308,642	0	0	0
14		Waconia	2.71	231.7	85	19	3,694	315,577	0	0	0	18	3,692	315,337	1	2	240
15		Bloomington	3.02	228.7	76	17	1,878	142,004	1	622	16,172	17	1,878	142,004	0	0	0
16		Bloomington	2.41	228.5	95	8	1,866	176,858	0	0	0	8	1,866	176,858	0	0	0
17		Eden Prairie	3.58	226.1	63	6	394	24,875	0	0	0	6	394	24,875	0	0	0
18		Fridley	2.45	225.7	92	35	4,188	385,702	0	0	0	33	4,143	375,670	2	45	10,032
19		Mound	1.06	225.1	213	46	2,498	532,461	0	0	0	46	2,498	532,461	0	0	0
20		Orono	1.84	224.2	122	37	2,756	336,469	0	0	0	37	2,756	336,469	0	0	0
21		Fridley	1.88	222.8	119	36	2,432	288,808	0	0	0	36	2,432	288,808	0	0	0
22		Bloomington	2.52	212.4	84	17	5,415	456,442	0	0	0	17	5,415	456,442	0	0	0
23		Silver Lake	2.15	204.8	95	13	1,499	142,780	1	694	56,214	13	1,499	142,780	0	0	0
24		Bloomington	2.12	204.2	96	26	2,497	240,587	0	0	0	26	2,497	240,587	0	0	0
25		Eden Prairie	3.00	203.9	68	4	786	53,413	0	0	0	4	786	53,413	0	0	0

(1) Based on Jan 1-Dec 31, 2022, year-end normalized data (IEEE Op Co Level)
"Total" includes all causes, all levels
"Bulk Power Supply" includes Distribution Substation, Transmission Substation, and Transmission Line levels, all cause codes
"Unplanned" includes all levels and no outages with a primary cause code of "Intentional/Planned", Includes Bulk Power Supply outages
"Planned" includes all levels and only outages with a primary cause code of "Intentional/Planned", Includes Bulk Power Supply outages

Metro West Poor Performing Feeders (2)

Based on performance Sept 2021 to Aug 2022, Major Event Days are included

						CMO: customer minutes out	
Feeder ID	Substation	City	SAIFI	SAIDI	CAIDI	Reasons for Poor Performance	Operational Changes Made, Considering or Planned
A		Edina	4.89	332.3	68	82% CMO three Feeder Cable failures [(33% on 9/3/21 & 34% 9/20/21 same section) and 15% on 8/5/22].	245 ft of cable replace from 9/3 & 9/20 outages. 80ft cable replace from 8/5 outage. All underground feeder.
B		Minnetonka	3.94	1,466.9	372	93% CMO Vegetation outages, 69% CMO on 5/11/22 & 8/3/22.	Feeder last trimmed 2016, scheduled trim in 2024. Replacing one fuse with Trip Saver schedule in service date 7/23/2023.
C		Minnetonka	3.48	397.7	114	58% CMO due to three feeder lockouts (28% CMO on 9/12/21 wrapped phases, 15% CMO on 9/19/21 animal contact at 6-MND72, 15% CMO on 10/22/21 unknown). 34% CMOs Vegetation outages (24% on 8/3/22).	Projects will install mainline reclosers to support feeder sectionalization and future automation scheduled in service date 8/25/2023. Project to replace aging copper conductor on a tap scheduled in service date 10/20/2023. Project to replace legacy porcelain cutouts and arrestors and a project to replace degraded crossarms, scheduled in service date 10/30/2023. Feeder last trimmed 2019, next scheduled trim 2024.
D		Edina	1.66	1,374.3	826	91% CMO behind recloser on 12/15/21, 8/7/22 & 8/27/22 of affecting 398 customers.	Replacing 3 single phase hydraulic reclosers for 3 Trip Saver for better fuse coordination. Scheduled in service date 6/1/2023. Feeder last trimmed 2017, scheduled trim in 2023.
E		Brooklyn Park	2.39	683.9	286	82% CMO on 5/11/22 & 5/12/22 due to Vegetation and Unknown.	Remove 3 fuses and install 3 Trip Savers, install 3 sets of 1P over head Fault Indicators and re-conductor 200ft of 1P over head wire. Schedule in seservice date 11/17/2023. Feeder last trimmed 2019, scheduled trim in 2024.
Security Data Ends]							

(2) Distribution outages only, Major Event Days are included

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Northwest						All levels, All Causes included			All Causes, Distribution Substation, Transmission Substation, and Transmission Line levels			All levels, No "Planned" Cause Includes Bulk Power Supply			All levels, "Planned" Cause only Includes Bulk Power Supply		
						Total			Bulk Power Supply			Unplanned			Planned		
Feeder ID	Substation	City	SAIFI	SAIDI	CAIDI	Outages	Customers Affected	Customer Mins Out	Outages	Customers Affected	Customer Mins Out	Outages	Customers Affected	Customer Mins Out	Outages	Customers Affected	Customer Mins Out
[Security Data Begins																	
1		Clarkfield	3.32	487.8	147	30	1,997	293,170	1	599	16,772	30	1,997	293,170	0	0	0
2		Glyndon	2.51	446.5	178	39	2,037	362,541	1	817	96,406	39	2,037	362,541	0	0	0
3		Grand Forks	2.00	380.3	190	0	2	380	0	0	0	0	2	380	0	0	0
4		Sumter Twp	1.71	379.2	222	5	94	20,856	0	0	0	5	94	20,856	0	0	0
5		Woodlake	3.06	360.7	118	32	1,424	168,085	0	0	0	32	1,424	168,085	0	0	0
6		Watkins	2.01	339.6	169	4	927	156,883	1	462	115,962	4	927	156,883	0	0	0
7		Belview	2.18	337.6	155	20	744	115,453	0	0	0	20	744	115,453	0	0	0
8		St Cloud	2.81	317.2	113	59	13,168	1,485,228	2	9,305	916,303	58	13,167	1,485,213	1	1	15
9		Danube	1.95	311.5	160	15	576	91,886	0	0	0	12	519	87,779	3	57	4,107
10		Sparta Twp	1.77	242.0	137	34	904	123,653	0	0	0	32	894	122,961	2	10	691
11		Montevideo	1.04	231.1	223	3	408	91,055	0	0	0	3	408	91,055	0	0	0
12		Montrose	2.25	225.6	100	32	4,435	445,428	0	0	0	32	4,435	445,428	0	0	0
13		Sartell	0.89	219.0	247	19	2,129	524,841	0	0	0	19	2,129	524,841	0	0	0
14		St Cloud	1.23	217.8	177	17	3,032	536,762	0	0	0	17	3,032	536,762	0	0	0
15		New Munich	0.63	213.9	340	6	173	58,835	0	0	0	6	173	58,835	0	0	0
16		Kingston	1.12	211.6	190	9	154	29,207	1	138	23,874	9	154	29,207	0	0	0
17		Montevideo	1.13	208.5	184	7	327	60,264	0	0	0	6	313	59,004	1	14	1,260
18		New London Twp	1.10	198.7	181	36	2,994	541,330	0	0	0	36	2,994	541,330	0	0	0
19		Becker Twp	1.53	194.5	127	6	69	8,752	1	45	1,845	6	69	8,752	0	0	0
20		Monticello	1.10	192.1	174	12	985	171,507	0	0	0	12	985	171,507	0	0	0
21		Sauk Rapids	1.24	190.0	154	62	4,647	714,675	0	0	0	59	4,615	711,278	3	32	3,397
22		Clara City	0.79	186.0	236	28	609	143,798	0	0	0	27	608	143,727	1	1	71
23		Glenwood	1.22	180.9	149	16	1,072	159,408	0	0	0	16	1,072	159,408	0	0	0
24		Starbuck	1.32	174.9	132	16	1,544	204,226	0	0	0	16	1,544	204,226	0	0	0
25		St Cloud	1.62	173.5	107	19	4,437	474,093	0	0	0	19	4,437	474,093	0	0	0

(1) Based on Jan 1-Dec 31, 2022, year-end normalized data (IEEE Op Co Level)
"Total" includes all causes, all levels
"Bulk Power Supply" includes Distribution Substation, Transmission Substation, and Transmission Line levels, all cause codes
"Unplanned" includes all levels and no outages with a primary cause code of "Intentional/Planned", Includes Bulk Power Supply outages
"Planned" includes all levels and only outages with a primary cause code of "Intentional/Planned", Includes Bulk Power Supply outages

Northwest Poor Performing Feeders (2)						CMO: customer minutes out	
Based on performance Sept 2021 to Aug 2022, Major Event Days are included							
Feeder ID	Substation	City	SAIFI	SAIDI	CAIDI	Reasons for Poor Performance	Operational Changes Made, Considering or Planned
A		Lake Lillian	1.54	1,044.7	679	90% Storm damage 12/15/21, 5/30/22 & 6/29/22	Last Feeder Trim in 2022. Fusing will be added to improve coordination.
B		Morgan	2.65	722.5	273	87% CMO Storm Damage 12/15/21 & 12/16/21; 7% CMO 12/14/21 Intentional to repair failing connectors.	Replaced 6 poles, connector outside of Sub and 3 Voltage Regulators. Replace 24 poles scheduled in service date 8/31/2023. Last Feeder Trim in 2022.
C		Granite Falls	2.62	527.0	202	67% CMO Lightning Strike 4/30/22 & 6/29/22. 7% CMO on 5/30/22 due to Vegetation. 7% CMO 8/7/22 due to tap cable failure.	Last Feeder Trim in 2019. Replacing 13.000ft of 1 Phase Underground with 1Phase over head, schedule in service date 10/25/25.
D		Paynesville	2.00	584.1	293	72% CMO Storm Damage 5/22/22; 20% CMO 4/22/22 Substation Breaker Failure.	Last Feeder Trim in 2020. Rebuild degraded section of overhead.
E		Belview	3.14	856.6	273	74% CMO Storm Damage 5/30/22 to 5/31/22. 16% COM Operator Error (sub breaker left on non-reclose)	Was on FPIP list last year. Feeder breaker accidentally left on Non-Reclose causing breaker to lockout on momentary faults 6/2/21, 6/25/21 & 4/6/22. Feeder Breaker put on Auto after 4/6/22. Multiyear project to rebuild mainline from Sacred Heart to Belview is completed. Add fusing in Belview to help isolate location of faults on over head. Last Feeder Trim in 2019.
Security Data Ends]							

(2) Distribution outages only, Major Event Days are included

						All Causes, Distribution Substation, Transmission Substation, and Transmission Line levels			All levels, No "Planned" Cause Includes Bulk Power Supply			All levels, "Planned" Cause only Includes Bulk Power Supply					
Southeast						Total			Bulk Power Supply			Unplanned			Planned		
Feeder ID	Substation	City	SAIFI	SAIDI	CAIDI	Outages	Customers Affected	Customer Mins Out	Outages	Customers Affected	Customer Mins Out	Outages	Customers Affected	Customer Mins Out	Outages	Customers Affected	Customer Mins Out
[Security Data Begins																	
1		Castle Rock Twp	1.93	757.8	393	2	156	61,384	0	0	0	2	156	61,384	0	0	0
2		Iona	2.34	724.0	310	12	486	150,589	0	0	0	12	486	150,589	0	0	0
3		Mankato	1.00	447.6	448	1	1	448	0	0	0	1	1	448	0	0	0
4		Northfield	4.37	408.6	93	32	7,003	654,571	1	1,610	87,021	29	6,973	654,198	3	30	373
5		Jasper	2.75	362.3	132	45	2,974	392,379	0	0	0	45	2,974	392,379	0	0	0
6		Tracy	2.40	331.9	139	19	2,357	326,557	0	0	0	19	2,357	326,557	0	0	0
7		Mazeppa	1.29	304.5	237	25	852	201,853	1	656	151,536	25	852	201,853	0	0	0
8		La Crescent	2.27	295.9	131	23	3,185	415,784	2	2,793	304,985	23	3,185	415,784	0	0	0
9		La Crescent	2.58	289.5	112	38	5,006	560,996	2	3,866	423,327	38	5,006	560,996	0	0	0
10		Wabasha	2.25	285.0	127	58	6,145	779,810	1	2,714	241,546	57	6,144	779,479	1	1	331
11		Dryden Twp	2.04	270.6	132	3	184	24,351	2	182	24,263	3	184	24,351	0	0	0
12		Nerstrand	3.21	262.1	82	24	1,630	132,870	3	1,516	114,968	24	1,630	132,870	0	0	0
13		Mantorville Twp	1.35	261.9	194	36	1,821	353,502	0	0	0	36	1,821	353,502	0	0	0
14		Dryden Twp	1.88	255.5	136	2	15	2,044	2	15	2,044	2	15	2,044	0	0	0
15		Wabasha	2.76	243.6	88	30	2,394	211,414	1	868	81,592	30	2,394	211,414	0	0	0
16		Gaylord	1.03	238.8	231	5	574	132,771	0	0	0	5	574	132,771	0	0	0
17		Slayton	1.12	220.1	196	6	541	106,286	0	0	0	6	541	106,286	0	0	0
18		Winona	0.52	218.0	417	44	1,082	451,276	0	0	0	44	1,082	451,276	0	0	0
19		Cleveland	1.35	216.8	160	12	668	107,103	0	0	0	12	668	107,103	0	0	0
20		Rollingstone	1.86	210.4	113	35	1,872	212,320	0	0	0	34	1,871	212,150	1	1	170
21		Mankato Twp	2.99	202.1	68	4	2,801	189,528	1	930	22,720	4	2,801	189,528	0	0	0
22		Mankato	1.47	196.3	134	26	2,574	343,953	0	0	0	26	2,574	343,953	0	0	0
23		North Mankato	2.50	192.0	77	18	2,033	155,902	1	819	38,493	18	2,033	155,902	0	0	0
24		Belle Plaine	2.07	188.3	91	17	2,603	237,227	0	0	0	17	2,603	237,227	0	0	0
25		Morristown	2.08	186.6	90	27	2,571	230,811	1	1,229	103,236	27	2,571	230,811	0	0	0

(1) Based on Jan 1-Dec 31, 2022, year-end normalized data (IEEE Op Co Level)
"Total" includes all causes, all levels
"Bulk Power Supply" includes Distribution Substation, Transmission Substation, and Transmission Line levels, all cause codes
"Unplanned" includes all levels and no outages with a primary cause code of "Intentional/Planned", Includes Bulk Power Supply outages
"Planned" includes all levels and only outages with a primary cause code of "Intentional/Planned", Includes Bulk Power Supply outages

Southeast Poor Performing Feeders (2)

Based on performance Sept 2021 to Aug 2022, Major Event Days are included

CMO: customer minutes out

Feeder ID	Substation	City	SAIFI	SAIDI	CAIDI	Reasons for Poor Performance	Operational Changes Made, Considering or Planned
A		Kenyon	1.08	1,256.7	1,163	99% CMO 12/15/2021 Wind & Lightning which took down transmission poles	Last Feeder Trim in 2021.
B		Northfield	2.42	315.7	130	Poor SAIFI performance as a result of a transfer trip which was inconsistency programed into the substation scheme. Additionally, trips from failing customer equipment which incorrectly coordinated.	Removed transfer trip scheme and corrected coordination issue. A comprehensive patrol and repair project which replaced crossarms, poles, switches, padmounted gear, porcelain cutouts and arrestors, insulators, and recloser reprogramming scheduled in service date 9/29/2023.
C		New Auburn	1.24	994.8	804	95% CMO 5/30/22 Trees on over head wire.	Install 8 spans of over head wire schedule in service date 12/1/2023. Feeder Trim scheduled in 2023.
D		Mankato	4.50	604.5	134	40% CMO 12/16/21 large tree fell on feeder outside of Maintenance Corridor. 25% CMO 7/4/22 Lightning Strike, feeder breaker tripped out, Trouble patrol no issue re-closed breaker.	Last Feeder Trim in 2021. Additional arrestors will be installed scheduled in service date 10/27/2023.
E		Mankato	2.71	310.5	115	63% vegetation and 27% incidental contact / debris	Roughly 10 miles of the feeder is being rebuilt, which is in-progress. In service date 12/31/2023
Security Data Ends]							

(2) Distribution outages only, Major Event Days are included

Line	Begin Date	Begin Time	Duration Hrs	Duration Mins	Cause	Remedial Action
[Protected Data Begins...						
	01/15/2022	00:45	0	12	Wind	No damage found
	03/05/2022	23:58	0	27	Gallopings	Gallopings mitigation program
	03/07/2022	07:59	0	8	Unknown	No damage found
	04/04/2022	00:12	2	37	Storm	Patrol and repair
	04/12/2022	13:47	0	41	Storm	Patrol and repair
	04/14/2022	10:53	4	7	Broken Ground	Removed broken wire
	04/18/2022	18:46	0	28	Pole Fire	Replace pole
	04/22/2022	14:03	2	35	Broken Pole	Repair Pole
	05/04/2022	23:36	1	38	Insulator	Replace insulator
	05/08/2022	09:00	0	5	Storm/Structure Down	Replace structure
	05/09/2022	10:31	0	44	Storm	Patrol and repair
	05/10/2022	02:25	4	11	Phase to Ground Fault	Patrol and repair
	05/11/2022	18:53	11	34	Storm	Line damage, breakers repaired
	05/11/2022	19:17	0	24	Unknown	Patrol and repair
	05/11/2022	19:55	0	6	Storm	No damage found
	05/12/2022	18:26	0	13	Storm	Patrol and repair
	05/12/2022	22:50	11	40	Broken Insulator	Repair broken insulator
	05/24/2022	09:44	0	59	Vehicle hit Guy Wire	Line damages were repaired
	05/30/2022	02:57	1	31	Storm	Patrol and repair
	05/30/2022	03:33	0	33	Storm	Patrol and repair
	05/30/2022	03:47	0	18	Storm	No damage found
	05/30/2022	04:30	0	55	Storm	Patrol and repair
	05/30/2022	16:36	2	41	Storm	Patrol and repair
	05/30/2022	18:24	2	24	Storm	Patrol and repair
	05/30/2022	18:36	1	34	Storm	Patrol and repair
	06/20/2022	21:15	2	21	Storm/Structure Down	Replace pole
	06/20/2022	21:38	1	1	Storm	Patrol and repair
	06/20/2022	22:13	6	44	Storm-Poles Down	Replace poles
	07/23/2022	18:28	2	7	Vehicle hit pole	Replace pole
	07/26/2022	20:25	1	16	Storm	Patrol and repair
	08/03/2022	00:52	1	28	Trees In Line	Remove trees from line
	08/04/2022	19:36	1	35	Blown Arrester	Replace arrester
	10/21/2022	09:10	0	40	Unknown	No damage found
	10/24/2022	09:56	0	41	Vehicle hit Pole	Replace pole
	11/14/2022	10:12	1	21	Vehicle hit Pole	Replace pole
	12/13/2022	15:19	4	13	Broken Shield Wire	Repair Shield Wire
	12/15/2022	09:44	0	25	Storm	No damage found
...Protected Data Ends]						

	Feeder	Primary Event #	Begin Time	Completion Time	Duration Min.	Customers Out	Region	Email sent to CAO
	[PROTECTED DATA BEGINS]							
JANUARY = 1 total qualifying event, 0 events with no email								
1		2132083	01/30/22 02:11	01/30/22 04:29	137	971	Metro West	x
FEBRUARY = 5 total qualifying events, 0 events with no email								
1		2134398	02/08/22 13:03	02/08/22 14:08	65	2,026	Metro West	x
2		2135816	02/14/22 00:29	02/14/22 02:45	135	2,321	Metro East	x
3		2136983	02/18/22 14:56	02/18/22 16:38	102	3,682	Metro East	x
4		2139639	02/28/22 12:40	02/28/22 14:16	96	557	Southeast	x
5		2139640	02/28/22 12:40	02/28/22 14:16	96	2,156	Southeast	x
MARCH = 11 total qualifying events, 0 events with no email								
1		2140288	03/02/22 12:26	03/02/22 13:49	83	2,112	Metro East	x
2		2140983	03/05/22 03:10	03/05/22 07:13	243	2,161	Metro East	x
3		2141127	03/05/22 06:22	03/05/22 08:12	110	1,260	Metro West	x
4		2141167	03/05/22 07:05	03/05/22 09:31	146	681	Metro East	x
5		2141569	03/05/22 09:47	03/05/22 13:20	212	4,523	Metro West	x
6		2142145	03/05/22 21:38	03/06/22 14:20	1,002	2,255	Metro East	x
7		2143618	03/10/22 02:52	03/10/22 04:10	77	2,836	Metro West	x
8		2144418	03/13/22 21:26	03/13/22 22:49	82	2,657	Metro West	x
9		2146314	03/19/22 19:53	03/19/22 21:38	105	2,313	Metro West	x
10		2150906	03/28/22 15:41	03/28/22 16:47	65	2,441	Metro East	x
11		2151875	03/31/22 01:54	03/31/22 03:42	108	960	Metro East	x
APRIL = 28 total qualifying events, 1 event with no email								
1		2152377	04/01/22 16:26	04/01/22 17:55	89	2,710	Metro West	x
2		2152378	04/01/22 16:26	04/01/22 18:13	107	1,800	Metro West	x
3		2153056	04/04/22 00:07	04/04/22 03:14	186	930	Metro East	x
4		2153060	04/04/22 00:13	04/04/22 02:45	152	713	Metro West	x
5		2153058	04/04/22 00:13	04/04/22 02:45	152	1,190	Metro West	x
6		2153906	04/05/22 16:38	04/06/22 01:24	526	1,677	Metro West	x
7		2154180	04/06/22 08:46	04/06/22 10:02	76	1,896	Metro West	x
8		2154511	04/07/22 05:14	04/07/22 06:54	100	1,701	Metro West	x
9		2155001	04/08/22 19:07	04/09/22 03:15	488	1,760	Southeast	x
10		2156101	04/11/22 12:31	04/11/22 14:05	94	868	Southeast	x
11		2156094	04/11/22 12:31	04/11/22 14:00	89	2,714	Southeast	x
12		2157280	04/11/22 20:57	04/11/22 22:55	118	606	Metro East	x
13		2156582	04/12/22 13:50	04/12/22 15:14	84	1,230	Southeast	x
14		2156618	04/12/22 13:50	04/12/22 16:45	175	504	Southeast	x
15		2156855	04/12/22 15:31	04/12/22 17:03	92	1,230	Southeast	x
16		2158011	04/14/22 08:28	04/14/22 10:32	124	903	Metro West	x
17		2158291	04/14/22 11:10	04/14/22 12:59	109	1,357	Metro West	x
18		2158749	04/14/22 16:13	04/14/22 18:03	110	1,217	Southeast	x
19		2159073	04/14/22 22:50	04/15/22 01:44	173	1,532	Metro West	x
20		2159369	04/16/22 03:13	04/16/22 04:26	73	2,111	Metro West	x
21		2161793	04/22/22 19:31	04/22/22 21:09	98	1,174	Northwest	x
22		2161830	04/22/22 19:31	04/22/22 21:40	129	1,400	Northwest	x
23		2161885	04/22/22 22:04	04/23/22 04:10	366	552	Northwest	x
24		2162128	04/23/22 12:09	04/23/22 14:08	118	1,304	Metro East	
25		2162445	04/23/22 19:03	04/23/22 20:19	75	1,669	Metro West	x

26		2162463	04/23/22 19:11	04/23/22 20:16	64	1,334	Metro East	x
27		2165031	04/30/22 06:18	04/30/22 07:40	82	989	Metro East	x
28		2165381	04/30/22 15:22	04/30/22 16:25	63	1,486	Metro West	x
MAY = 66 total qualifying events, 10 events with no email								
1		2165674	05/01/22 15:16	05/01/22 16:26	70	3,598	Metro West	x
2		2165809	05/01/22 16:56	05/01/22 18:21	85	1,970	Northwest	x
3		2168014	05/06/22 03:51	05/06/22 06:02	131	1,102	Northwest	x
4		2169264	05/09/22 10:29	05/09/22 13:45	196	1,988	Metro East	x
5		2169248	05/09/22 10:32	05/09/22 16:47	375	1,951	Metro East	x
6		2172860	05/11/22 19:17	05/11/22 21:55	158	569	Southeast	x
7		2172876	05/11/22 19:28	05/11/22 21:30	121	681	Southeast	x
8		2174382	05/11/22 19:28	05/11/22 22:16	167	1,077	Southeast	x
9		2172879	05/11/22 19:30	05/11/22 21:46	136	1,611	Southeast	x
10		2172941	05/11/22 19:55	05/11/22 23:13	198	594	Southeast	x
11		2172964	05/11/22 19:55	05/11/22 22:04	129	1,022	Southeast	
12		2172953	05/11/22 19:57	05/11/22 21:31	94	1,583	Metro West	x
13		2172978	05/11/22 20:02	05/13/22 12:11	2,408	1,093	Metro West	x
14		2173005	05/11/22 20:05	05/12/22 00:15	249	2,090	Metro West	x
15		2173008	05/11/22 20:06	05/12/22 00:45	279	849	Metro West	x
16		2173015	05/11/22 20:09	05/12/22 00:06	236	1,370	Metro West	x
17		2173038	05/11/22 20:11	05/12/22 03:13	421	1,698	Metro West	x
18		2173040	05/11/22 20:12	05/12/22 04:45	513	699	Metro West	x
19		2173045	05/11/22 20:13	05/12/22 09:30	797	1,229	Metro West	x
20		2173052	05/11/22 20:14	05/11/22 21:35	81	2,331	Northwest	x
21		2173081	05/11/22 20:16	05/12/22 08:13	717	2,947	Metro West	x
22		2173097	05/11/22 20:17	05/12/22 01:14	297	2,034	Metro West	x
23		2173088	05/11/22 20:17	05/12/22 08:17	720	830	Metro West	x
24		2173128	05/11/22 20:19	05/12/22 07:50	691	2,185	Metro West	x
25		2173130	05/11/22 20:19	05/12/22 04:18	479	2,527	Metro West	x
26		2173129	05/11/22 20:19	05/12/22 07:51	692	963	Metro West	x
27		2173131	05/11/22 20:19	05/12/22 09:41	802	1,934	Metro West	x
28		2173170	05/11/22 20:20	05/12/22 06:03	583	886	Metro West	x
29		2173178	05/11/22 20:21	05/12/22 00:55	273	2,555	Metro West	x
30		2173217	05/11/22 20:21	05/12/22 00:55	273	2,555	Metro West	x
31		2173238	05/11/22 20:22	05/12/22 10:26	843	1,954	Metro West	x
32		2173249	05/11/22 20:22	05/11/22 22:16	113	2,762	Metro West	x
33		2173268	05/11/22 20:23	05/12/22 00:00	217	2,576	Metro West	x
34		2173330	05/11/22 20:25	05/12/22 08:41	735	1,314	Metro West	x
35		2173482	05/11/22 20:30	05/11/22 22:56	145	1,796	Metro East	x
36		2173550	05/11/22 20:33	05/11/22 23:34	181	3,297	Metro West	x
37		2173991	05/11/22 20:53	05/11/22 23:18	145	2,024	Metro West	x
38		2174409	05/11/22 22:10	05/12/22 00:37	147	3,507	Metro East	x
39		2174863	05/11/22 23:36	05/12/22 07:28	472	2,154	Metro West	x
40		2175144	05/12/22 01:10	05/12/22 02:17	67	675	Northwest	
41		2175440	05/12/22 05:03	05/12/22 20:19	916	2,527	Metro West	
42		2177842	05/12/22 15:19	05/12/22 16:31	71	681	Southeast	
43		2178053	05/12/22 15:19	05/12/22 17:47	147	1,077	Southeast	
44		2178815	05/12/22 18:27	05/13/22 02:00	453	769	Northwest	
45		2178801	05/12/22 18:27	05/13/22 19:23	1,496	890	Northwest	
46		2206680	05/12/22 18:27	05/12/22 21:17	170	936	Northwest	

47		2180876	05/12/22 18:59	05/13/22 19:54	1,495	871	Northwest	x
48		2179696	05/12/22 21:56	05/12/22 23:27	91	1,857	Metro West	x
49		2179790	05/12/22 22:51	05/13/22 01:12	141	1,166	Northwest	
50		2184179	05/18/22 17:11	05/18/22 18:38	86	2,709	Metro West	x
51		2187885	05/26/22 14:27	05/26/22 15:41	74	545	Metro West	x
52		2189883	05/30/22 03:34	05/30/22 06:01	147	687	Northwest	x
53		2189880	05/30/22 03:34	05/30/22 06:01	147	511	Northwest	
54		2189940	05/30/22 03:47	05/30/22 13:21	574	707	Northwest	x
55		2190046	05/30/22 04:30	05/30/22 12:36	486	945	Northwest	x
56		2190073	05/30/22 04:39	05/30/22 06:57	137	2,455	Northwest	x
57		2191556	05/30/22 15:17	05/30/22 17:17	120	1,457	Metro West	x
58		2192026	05/30/22 18:25	05/30/22 20:48	143	1,969	Northwest	x
59		2192027	05/30/22 18:25	05/30/22 20:48	143	1,245	Northwest	x
60		2192424	05/30/22 19:24	05/30/22 22:03	159	1,737	Southeast	x
61		2192589	05/30/22 19:53	05/30/22 21:19	86	1,397	Metro East	x
62		2192658	05/30/22 20:07	05/31/22 03:14	427	3,075	Metro East	x
63		2193202	05/31/22 01:45	05/31/22 03:38	112	532	Metro West	x
64		2193392	05/31/22 01:45	05/31/22 15:30	824	2,023	Metro West	x
65		2193226	05/31/22 01:54	05/31/22 03:21	86	15,232	Metro West	x
66		2195119	05/31/22 16:46	05/31/22 18:52	126	1,102	Northwest	x
JUNE = 23 total qualifying events, 0 events with no email								
1		2197216	06/05/22 01:09	06/05/22 03:18	129	775	Metro West	x
2		2197238	06/05/22 02:14	06/05/22 03:39	85	2,224	Metro East	x
3		2200394	06/11/22 06:37	06/11/22 08:44	127	1,600	Metro West	x
4		2200417	06/11/22 07:34	06/11/22 08:45	71	603	Metro West	x
5		2200501	06/11/22 09:30	06/11/22 12:36	186	3,548	Metro East	x
6		2200816	06/12/22 08:13	06/12/22 10:04	110	3,711	Metro West	x
7		2201387	06/13/22 08:38	06/13/22 09:49	71	1,369	Metro West	x
8		2210226	06/20/22 15:30	06/20/22 23:48	498	3,030	Metro East	x
9		2207711	06/20/22 21:18	06/20/22 22:25	67	838	Northwest	x
10		2207775	06/20/22 21:35	06/20/22 23:44	129	1,603	Southeast	x
11		2207829	06/20/22 22:15	06/21/22 05:13	418	531	Northwest	x
12		2208343	06/21/22 02:25	06/21/22 03:51	85	1,888	Metro West	x
13		2208652	06/21/22 07:44	06/21/22 09:44	120	800	Metro East	x
14		2210419	06/24/22 00:36	06/24/22 03:08	152	3,693	Northwest	x
15		2210421	06/24/22 00:41	06/24/22 03:55	194	2,459	Northwest	x
16		2212205	06/26/22 14:18	06/26/22 20:38	380	2,025	Metro East	x
17		2213380	06/28/22 13:11	06/28/22 14:50	99	1,312	Metro West	x
18		2214565	06/29/22 23:55	06/30/22 01:29	93	510	Northwest	x
19		2214723	06/30/22 03:04	06/30/22 07:18	254	1,319	Metro West	x
20		2214789	06/30/22 04:27	06/30/22 06:06	99	1,647	Metro West	x
21		2214884	06/30/22 04:27	06/30/22 10:21	354	1,131	Metro West	x
22		2214879	06/30/22 04:27	06/30/22 06:06	99	774	Metro West	x
23		2214816	06/30/22 04:40	06/30/22 13:03	503	3,178	Metro East	x
JULY = 20 total qualifying events, 1 event with no email								
1		2216017	07/01/22 02:02	07/01/22 14:31	749	709	Metro East	x
2		2218810	07/05/22 17:01	07/05/22 18:17	76	3,041	Metro East	x
3		2221151	07/07/22 02:53	07/07/22 05:08	135	949	Metro West	x
4		2221163	07/07/22 05:22	07/07/22 06:53	91	2,478	Metro West	x
5		2225825	07/13/22 09:21	07/13/22 10:30	69	832	Metro West	x

6		2226730	07/15/22 06:37	07/15/22 08:25	108	1,778	Southeast	x
7		2226816	07/15/22 07:40	07/15/22 09:00	80	2,048	Metro West	
8		2228163	07/17/22 20:06	07/17/22 22:20	134	1,607	Southeast	x
9		2228878	07/18/22 19:03	07/18/22 20:49	106	3,080	Metro East	x
10		2229238	07/19/22 06:50	07/19/22 09:46	176	1,434	Metro East	x
11		2229644	07/19/22 12:14	07/19/22 13:52	98	2,189	Metro East	x
12		2230330	07/20/22 07:27	07/20/22 08:47	80	1,317	Metro East	x
13		2230697	07/20/22 14:12	07/20/22 18:13	240	4,107	Metro East	x
14		2230734	07/20/22 14:51	07/20/22 16:38	106	2,025	Metro West	x
15		2231333	07/21/22 05:48	07/21/22 08:09	141	910	Metro West	x
16		2231953	07/22/22 18:21	07/22/22 19:44	83	586	Metro West	x
17		2233029	07/23/22 18:23	07/23/22 19:44	81	1,256	Metro West	x
18		2233037	07/23/22 18:23	07/23/22 19:44	81	694	Metro West	x
19		2233437	07/24/22 07:28	07/24/22 11:19	231	656	Southeast	x
20		2235639	07/28/22 10:19	07/28/22 11:19	60	1,884	Metro West	x
AUGUST = 58 total qualifying events, 1 event with no email								
1		2250113	08/01/22 18:04	08/01/22 19:34	90	3,544	Metro East	x
2		2250118	08/01/22 18:04	08/01/22 19:37	93	2,180	Metro East	x
3		2250119	08/01/22 18:04	08/01/22 19:40	96	920	Metro East	x
4		2250115	08/01/22 18:04	08/01/22 19:37	93	2,631	Metro East	x
5		2238800	08/02/22 16:03	08/02/22 17:27	84	2,792	Metro West	x
6		2239039	08/02/22 17:38	08/02/22 20:30	172	891	Northwest	x
7		2239369	08/02/22 23:35	08/03/22 03:46	251	2,709	Metro West	x
8		2239370	08/02/22 23:55	08/03/22 02:12	136	1,950	Metro West	x
9		2239627	08/03/22 00:10	08/03/22 03:13	183	3,302	Metro West	x
10		2239647	08/03/22 00:10	08/03/22 05:40	329	933	Metro West	x
11		2239626	08/03/22 00:11	08/03/22 07:57	466	2,089	Metro West	x
12		2239663	08/03/22 00:11	08/03/22 08:21	489	1,070	Metro West	x
13		2239737	08/03/22 00:14	08/03/22 03:26	191	2,025	Metro West	x
14		2239772	08/03/22 00:15	08/03/22 03:59	223	511	Metro West	x
15		2239785	08/03/22 00:16	08/03/22 04:22	246	2,013	Metro West	x
16		2239789	08/03/22 00:16	08/03/22 08:33	497	1,700	Metro West	x
17		2239832	08/03/22 00:17	08/03/22 01:19	62	3,629	Metro West	x
18		2239861	08/03/22 00:18	08/03/22 07:20	422	703	Metro West	x
19		2239863	08/03/22 00:18	08/03/22 05:13	295	2,560	Metro West	x
20		2239902	08/03/22 00:19	08/03/22 04:04	224	1,299	Metro West	x
21		2239992	08/03/22 00:22	08/03/22 05:20	297	2,043	Metro West	x
22		2240107	08/03/22 00:29	08/03/22 17:00	991	2,088	Metro East	x
23		2240197	08/03/22 00:34	08/03/22 03:07	153	2,115	Metro East	x
24		2240316	08/03/22 00:41	08/03/22 02:24	103	5,667	Metro East	x
25		2240351	08/03/22 00:44	08/03/22 08:56	492	3,198	Metro West	x
26		2240559	08/03/22 00:56	08/03/22 03:51	174	1,479	Metro East	x
27		2240568	08/03/22 00:57	08/03/22 19:20	1,103	2,147	Metro East	x
28		2241199	08/03/22 03:19	08/03/22 07:39	260	1,378	Metro West	x
29		2239718	08/03/22 11:58	08/03/22 17:25	327	649	Metro West	x
30		2245907	08/05/22 08:30	08/05/22 10:26	116	2,147	Metro East	x
31		2246303	08/05/22 17:54	08/05/22 19:34	100	908	Metro West	x
32		2246489	08/06/22 07:33	08/06/22 08:36	62	938	Metro West	x
33		2246628	08/06/22 08:59	08/06/22 13:22	263	787	Metro West	x
34		2247045	08/06/22 08:59	08/06/22 13:10	251	530	Metro West	x

35		2246799	08/06/22 10:35	08/06/22 15:10	275	679	Metro East	x
36		2246802	08/06/22 10:35	08/06/22 11:36	61	2,087	Metro East	x
37		2248088	08/07/22 22:45	08/07/22 23:55	69	2,368	Metro East	x
38		2249191	08/09/22 16:05	08/09/22 20:16	251	569	Southeast	x
39		2251086	08/13/22 04:53	08/15/22 07:26	3,033	1,128	Metro West	x
40		2252826	08/17/22 14:55	08/17/22 15:56	61	2,475	Southeast	x
41		2253011	08/17/22 17:22	08/17/22 18:57	95	2,085	Metro East	x
42		2254072	08/19/22 15:07	08/19/22 16:26	79	1,034	Metro East	x
43		2254992	08/22/22 12:11	08/22/22 18:01	350	3,341	Metro East	x
44		2256101	08/24/22 13:45	08/24/22 14:50	65	782	Metro East	x
45		2257260	08/27/22 02:35	08/27/22 03:56	81	1,034	Metro East	x
46		2257653	08/27/22 20:44	08/28/22 01:11	267	880	Metro West	x
47		2258475	08/27/22 20:44	08/28/22 01:11	267	653	Metro West	x
48		2257665	08/27/22 20:44	08/27/22 22:39	115	1,229	Metro West	x
49		2257648	08/27/22 20:44	08/27/22 22:39	115	967	Metro West	x
50		2257641	08/27/22 20:44	08/27/22 22:50	126	616	Metro West	x
51		2258405	08/27/22 20:44	08/28/22 10:20	816	1,409	Metro West	x
52		2257784	08/27/22 20:52	08/27/22 23:53	181	2,180	Metro West	x
53		2257814	08/27/22 20:54	08/27/22 22:29	94	1,243	Metro West	
54		2257979	08/27/22 21:08	08/27/22 22:19	70	2,965	Metro East	x
55		2257986	08/27/22 21:10	08/27/22 22:13	63	1,888	Metro East	x
56		2258482	08/28/22 01:45	08/28/22 12:54	669	653	Metro West	x
57		2264825	08/29/22 14:41	08/29/22 16:58	137	726	Metro East	x
58		2261546	08/30/22 18:37	08/30/22 19:44	67	1,193	Metro West	x
SEPTEMBER = 13 total qualifying events, 1 event with no email								
1		2262671	09/01/22 13:51	09/01/22 15:25	94	998	Metro West	x
2		2262987	09/02/22 00:19	09/02/22 01:33	74	2,098	Metro West	x
3		2263016	09/02/22 05:13	09/02/22 07:21	127	2,187	Metro West	x
4		2264097	09/04/22 16:41	09/04/22 17:42	61	1,130	Metro West	x
5		2265025	09/07/22 08:11	09/07/22 09:24	72	978	Metro East	x
6		2267469	09/13/22 12:36	09/13/22 13:36	60	2,105	Metro East	x
7		2268874	09/18/22 08:11	09/18/22 09:57	106	2,611	Southeast	x
8		2268876	09/18/22 08:11	09/18/22 10:42	151	1,609	Southeast	x
9		2269091	09/19/22 01:28	09/19/22 11:07	579	2,961	Metro East	x
10		2269367	09/19/22 14:29	09/19/22 16:50	140	934	Southeast	x
11		2269363	09/19/22 15:16	09/19/22 17:04	108	2,361	Metro West	x
12		2269897	09/21/22 00:51	09/21/22 02:00	68	1,056	Southeast	x
13		2273751	09/30/22 17:36	09/30/22 20:00	144	871	Northwest	
OCTOBER = 13 total qualifying events, 0 events with no email								
1		2273930	10/01/22 09:16	10/01/22 10:22	66	2,057	Metro West	x
2		2274193	10/02/22 08:58	10/02/22 11:23	145	2,566	Southeast	x
3		2274759	10/03/22 15:23	10/03/22 16:49	85	1,075	Metro East	x
4		2277082	10/08/22 11:18	10/08/22 12:29	71	1,658	Metro West	x
5		2277142	10/08/22 12:24	10/08/22 13:29	65	816	Metro West	x
6		2277401	10/09/22 10:24	10/09/22 11:56	92	1,556	Metro West	x
7		2281401	10/18/22 09:05	10/18/22 10:20	75	2,235	Southeast	x
8		2281411	10/18/22 09:06	10/18/22 10:25	79	1,254	Southeast	x
9		2281687	10/18/22 12:25	10/18/22 14:12	107	876	Northwest	x
10		2282977	10/20/22 20:13	10/20/22 21:41	87	647	Metro West	x
11		2283996	10/23/22 17:43	10/23/22 18:49	65	2,279	Metro West	x

12		2284639	10/24/22 18:43	10/24/22 20:45	121	2,707	Metro East	x
13		2284761	10/25/22 07:50	10/25/22 09:07	76	829	Metro East	x
NOVEMBER = 9 total qualifying events, 0 events with no email								
1		2288282	11/04/22 00:36	11/04/22 01:42	66	1,353	Metro West	x
2		2288281	11/04/22 00:36	11/04/22 01:50	74	2,060	Metro West	x
3		2288882	11/06/22 01:24	11/06/22 15:25	840	2,948	Metro East	x
4		2289360	11/06/22 16:21	11/06/22 17:55	94	1,968	Metro East	x
5		2290445	11/08/22 20:37	11/08/22 22:00	83	976	Metro West	x
6		2290810	11/09/22 17:23	11/09/22 19:15	112	991	Metro East	x
7		2290924	11/09/22 19:11	11/09/22 20:37	86	1,916	Metro East	x
8		2293317	11/18/22 10:05	11/18/22 11:19	73	2,181	Metro East	x
9		2295131	11/24/22 21:57	11/24/22 23:03	66	516	Southeast	x
DECEMBER = 11 total qualifying events, 0 events with no email								
1		2300443	12/14/22 03:53	12/14/22 05:09	76	616	Metro West	x
2		2301823	12/15/22 05:03	12/15/22 07:05	121	1,879	Northwest	x
3		2301874	12/15/22 05:14	12/15/22 07:05	111	1,286	Metro East	x
4		2301999	12/15/22 05:45	12/15/22 07:17	92	1,559	Northwest	x
5		2302951	12/15/22 08:44	12/15/22 12:14	210	1,874	Metro East	x
6		2303173	12/15/22 09:14	12/15/22 11:33	139	2,449	Metro East	x
7		2305019	12/15/22 18:56	12/15/22 19:57	60	864	Southeast	x
8		2305301	12/15/22 22:02	12/15/22 23:13	70	2,028	Northwest	x
9		2310016	12/22/22 07:58	12/22/22 09:27	89	748	Southeast	x
10		2310388	12/22/22 13:37	12/22/22 14:54	76	2,099	Metro East	x
11		2312581	12/28/22 16:22	12/28/22 18:09	107	1,973	Northwest	x

MAIFI - ≤ 5 Minutes Duration

MAIFI - ≤ 5 Minutes Duration

Southeast - MAIFI														YTD
2022	With Storms, All Levels, All Causes	0.05	0.00	0.03	0.08	0.12	0.19	0.10	0.07	0.02	0.03	0.07	0.02	0.78
	Tariff Normalized, IEEE Region No Trans Line, All C	0.02	0.00	0.00	0.03	0.05	0.12	0.05	0.06	0.02	0.03	0.02	0.02	0.42
	Annual Normalized, IEEE Region All Levels, All Cau	0.05	0.00	0.03	0.08	0.08	0.19	0.10	0.07	0.02	0.03	0.07	0.02	0.74
2021	With Storms, All Levels, All Causes	0.03	0.09	0.04	0.01	0.01	0.09	0.14	0.11	0.21	0.04	0.02	0.04	0.83
	Tariff Normalized, IEEE Region No Trans Line, All C	0.02	0.08	0.01	0.01	0.01	0.09	0.07	0.09	0.09	0.03	0.02	0.00	0.52
	Annual Normalized, IEEE Region All Levels, All Cau	0.03	0.09	0.04	0.01	0.01	0.09	0.14	0.11	0.21	0.04	0.02	0.00	0.79
2020	With Storms, All Levels, All Causes	0.03	0.00	0.00	0.14	0.01	0.15	0.14	0.22	0.08	0.05	0.09	0.03	0.96
	Tariff Normalized, IEEE Region No Trans Line, All C	0.03	0.00	0.00	0.04	0.01	0.10	0.11	0.15	0.07	0.04	0.02	0.00	0.56
	Annual Normalized, IEEE Region All Levels, All Cau	0.03	0.00	0.00	0.14	0.01	0.15	0.14	0.17	0.08	0.05	0.09	0.03	0.90
2019	With Storms, All Levels, All Causes	0.04	0.04	0.13	0.30	0.11	0.15	0.14	0.03	0.12	0.05	0.09	0.02	1.22
	Tariff Normalized, IEEE Region No Trans Line, All C	0.02	0.04	0.09	0.02	0.04	0.03	0.08	0.03	0.04	0.05	0.05	0.01	0.48
	Annual Normalized, IEEE Region All Levels, All Cau	0.04	0.04	0.13	0.12	0.11	0.15	0.12	0.03	0.09	0.05	0.09	0.02	0.99
2018	With Storms, All Levels, All Causes	0.04	0.04	0.03	0.16	0.07	0.11	0.13	0.17	0.14	0.01	0.03	0.02	0.92
	Tariff Normalized, IEEE Region No Trans Line, All C	0.02	0.00	0.01	0.03	0.06	0.07	0.09	0.10	0.03	0.01	0.02	0.00	0.44
	Annual Normalized, IEEE Region All Levels, All Cau	0.04	0.04	0.03	0.11	0.07	0.11	0.13	0.17	0.04	0.01	0.03	0.02	0.78
MAIFI - <= 5 Minutes Duration														
Minnesota - Customer Interruptions														YTD
2022	With Storms, All Levels, All Causes	35,895	21,428	36,985	88,710	235,216	159,774	97,051	108,797	56,247	67,723	62,104	44,075	1,014,005
	Tariff Normalized, IEEE Region No Trans Line, All C	19,960	21,428	23,016	68,229	130,379	145,521	90,719	67,038	41,482	63,845	51,370	34,045	757,032
	Annual Normalized, IEEE Region All Levels, All Cau	35,895	21,428	36,985	88,710	137,974	157,110	97,051	68,474	56,247	67,723	62,104	34,045	863,746
CES Cust Served		1,324,119	1,325,254	1,327,088	1,328,088	1,327,967	1,327,652	1,327,732	1,328,421	1,329,048	1,330,817	1,332,272	1,334,479	
2021	With Storms, All Levels, All Causes	24,324	43,648	49,795	79,383	74,122	145,866	101,017	138,048	130,570	65,673	33,770	60,947	947,163
	Tariff Normalized, IEEE Region No Trans Line, All C	22,911	38,520	46,020	62,452	74,122	137,934	85,098	114,698	74,756	58,274	33,769	42,198	790,752
	Annual Normalized, IEEE Region All Levels, All Cau	24,324	43,648	49,795	79,383	74,122	145,866	101,017	122,217	111,392	65,673	33,770	55,599	906,806
CES Cust Served		1,301,933	1,304,654	1,307,442	1,308,019	1,308,083	1,309,157	1,310,749	1,313,826	1,315,994	1,318,851	1,321,135	1,322,302	
2020	With Storms, All Levels, All Causes	10,396	39,042	39,986	75,276	94,115	222,654	157,725	197,967	93,098	93,900	35,448	76,966	1,136,573
	Tariff Normalized, IEEE Region No Trans Line, All C	10,396	39,042	35,813	54,924	88,609	197,434	113,516	123,612	81,003	79,725	25,943	61,441	911,458
	Annual Normalized, IEEE Region All Levels, All Cau	10,396	39,042	39,986	75,276	94,115	222,654	147,286	144,530	93,098	80,913	35,448	76,966	1,059,710
CES Cust Served		1,290,479	1,293,848	1,294,877	1,295,113	1,295,757	1,296,076	1,296,089	1,296,619	1,297,076	1,297,132	1,298,128	1,299,397	
2019	With Storms, All Levels, All Causes	33,812	52,508	81,258	134,469	108,928	103,049	124,083	79,369	179,825	75,041	50,310	18,447	1,041,099
	Tariff Normalized, IEEE Region No Trans Line, All C	28,787	16,119	76,448	87,955	88,939	80,372	87,100	65,265	110,861	75,041	30,296	16,859	764,042
	Annual Normalized, IEEE Region All Levels, All Cau	33,812	52,508	81,258	107,764	108,928	103,049	111,694	79,369	159,811	75,041	50,310	18,447	981,991
CES Cust Served		1,271,572	1,272,182	1,273,191	1,273,389	1,273,236	1,272,910	1,273,366	1,280,040	1,280,959	1,282,278	1,284,381	1,287,572	
2018	With Storms, All Levels, All Causes	17,028	50,720	37,088	110,806	166,321	96,952	116,525	125,816	132,306	63,103	35,948	18,615	971,228
	Tariff Normalized, IEEE Region No Trans Line, All C	14,890	45,049	31,883	70,214	145,886	86,076	106,829	93,386	105,644	58,219	26,819	13,179	798,074
	Annual Normalized, IEEE Region All Levels, All Cau	17,028	50,720	37,088	104,668	162,571	96,952	114,166	125,816	120,555	63,103	35,948	18,615	947,230
CES Cust Served		1,260,537	1,261,499	1,262,635	1,263,050	1,263,057	1,266,221	1,266,173	1,263,754	1,266,996	1,268,418	1,269,462	1,270,153	

Metro East - Customer Interruptions														YTD
2022	With Storms, All Levels, All Causes	20,394	5,961	8,862	40,773	69,282	70,487	39,289	34,591	13,700	16,134	23,729	17,873	361,075
	Tariff Normalized, IEEE Region No Trans Line, All C	9,909	5,961	8,862	26,702	26,745	70,487	39,289	17,990	13,700	16,133	23,729	7,843	267,350
	Annual Normalized, IEEE Region All Levels, All Cau	20,394	5,961	8,862	40,773	26,986	70,487	39,289	17,990	13,700	16,134	23,729	7,843	292,148
	CES Cust Served	437,017	437,393	438,274	438,661	438,831	438,877	438,923	439,239	439,660	440,084	440,685	441,360	
2021	With Storms, All Levels, All Causes	3,058	16,639	22,450	25,223	48,489	49,219	23,752	29,321	36,864	22,706	23,137	31,059	331,917
	Tariff Normalized, IEEE Region No Trans Line, All C	3,058	16,639	22,450	19,493	48,489	49,218	23,752	23,021	24,986	22,706	23,136	19,286	296,234
	Annual Normalized, IEEE Region All Levels, All Cau	3,058	16,639	22,450	25,223	48,489	49,219	23,752	23,021	24,986	22,706	23,137	31,059	313,739
	CES Cust Served	428,444	429,234	430,346	430,527	430,677	431,454	432,101	433,066	433,949	435,194	435,923	436,222	
2020	With Storms, All Levels, All Causes		21,232	22,795	34,095	31,423	87,285	63,157	64,341	22,355	22,675	6,522	37,749	413,629
	Tariff Normalized, IEEE Region No Trans Line, All Causes		21,232	22,795	34,095	31,183	78,150	53,017	44,777	18,391	19,787	6,522	34,516	364,465
	Annual Normalized, IEEE Region All Levels, All Causes		21,232	22,795	34,095	31,423	87,285	63,157	54,908	22,355	22,675	6,522	37,749	404,196
	CES Cust Served	424,660	426,282	426,613	426,479	426,652	426,708	426,462	426,801	426,834	426,885	427,232	427,721	
2019	With Storms, All Levels, All Causes	13,545	35,223	19,335	39,427	25,017	15,108	45,934	31,388	43,475	23,817	18,352	2	310,623
	Tariff Normalized, IEEE Region No Trans Line, All C	13,545	4,999	19,335	35,822	25,017	13,692	25,945	31,388	22,336	23,817	11,675	2	227,573
	Annual Normalized, IEEE Region All Levels, All Cau	13,545	35,223	19,335	39,427	25,017	15,108	39,627	31,388	35,312	23,817	18,352	2	296,153
	CES Cust Served	419,683	419,901	420,157	420,211	420,088	419,961	420,135	421,742	421,918	422,298	423,044	424,150	
2018	With Storms, All Levels, All Causes	5,434	22,864	16,058	26,163	60,461	26,771	55,108	44,561	37,613	33,627	14,436	6,069	349,165
	Tariff Normalized, IEEE Region No Trans Line, All C	5,434	22,864	16,058	26,163	56,711	26,771	55,108	38,388	37,613	33,627	12,145	6,069	336,951
	Annual Normalized, IEEE Region All Levels, All Cau	5,434	22,864	16,058	26,163	56,711	26,771	55,108	44,561	37,613	33,627	14,436	6,069	345,415
	CES Cust Served	415,400	415,867	416,331	416,570	416,559	417,460	417,406	417,529	417,675	418,464	418,813	419,251	
Metro West - Customer Interruptions														YTD
2022	With Storms, All Levels, All Causes	7,448	11,767	22,607	34,796	115,548	45,106	43,212	57,233	35,763	36,294	17,880	14,569	442,223
	Tariff Normalized, IEEE Region No Trans Line, All C	7,279	11,767	12,575	34,627	74,938	45,106	43,212	33,511	25,722	36,294	15,922	14,569	355,522
	Annual Normalized, IEEE Region All Levels, All Cau	7,448	11,767	22,607	34,796	74,938	45,106	43,212	33,511	35,763	36,294	17,880	14,569	377,891
	CES Cust Served	628,724	629,209	629,883	630,342	630,198	629,915	629,739	629,790	629,983	630,923	631,560	632,808	
2021	With Storms, All Levels, All Causes	17,511	12,411	10,111	29,718	18,187	42,356	32,865	67,209	48,752	27,008	7,784	16,805	330,717
	Tariff Normalized, IEEE Region No Trans Line, All C	17,511	9,549	10,111	29,718	18,187	42,356	32,865	62,194	34,821	27,008	7,784	16,805	308,909
	Annual Normalized, IEEE Region All Levels, All Cau	17,511	12,411	10,111	29,718	18,187	42,356	32,865	62,194	41,452	27,008	7,784	16,805	318,402
	CES Cust Served	618,963	620,426	621,339	621,741	621,752	621,901	622,483	624,083	625,023	626,431	627,511	628,040	
2020	With Storms, All Levels, All Causes	5,461	5,585	10,064	10,976	41,059	90,801	58,284	76,417	51,502	48,884	16,127	26,842	442,002
	Tariff Normalized, IEEE Region No Trans Line, All C	5,461	5,585	10,064	10,976	41,059	90,801	36,345	38,039	51,502	48,884	16,127	26,842	381,685
	Annual Normalized, IEEE Region All Levels, All Cau	5,461	5,585	10,064	10,976	41,059	90,801	53,880	39,950	51,502	35,897	16,127	26,842	388,144
	CES Cust Served	613,516	614,496	614,923	615,283	616,090	616,224	616,529	616,512	616,878	616,744	617,202	617,724	
2019	With Storms, All Levels, All Causes	12,910	6,452	31,818	46,135	48,620	52,224	39,878	24,462	64,468	40,849	11,121	10,557	389,494
	Tariff Normalized, IEEE Region No Trans Line, All C	12,687	2,015	31,818	46,135	47,497	52,224	34,914	23,340	64,468	40,849	5,698	10,557	372,202
	Annual Normalized, IEEE Region All Levels, All Cau	12,910	6,452	31,818	46,135	48,620	52,224	36,037	24,462	64,468	40,849	11,121	10,557	385,653
	CES Cust Served	602,621	602,845	603,436	603,556	603,725	603,657	603,795	608,316	608,874	609,255	610,028	611,784	
2018	With Storms, All Levels, All Causes	5,634	16,461	8,897	32,597	60,725	37,120	36,442	43,114	58,046	19,281	13,773	2,689	334,779
	Tariff Normalized, IEEE Region No Trans Line, All C	5,634	15,033	8,897	31,479	60,725	37,120	34,083	32,924	58,046	19,281	9,258	2,689	315,169
	Annual Normalized, IEEE Region All Levels, All Cau	5,634	16,461	8,897	32,597	60,725	37,120	34,083	43,114	58,046	19,281	13,773	2,689	332,420
	CES Cust Served	597,570	597,981	598,412	598,492	598,854	600,487	600,447	600,156	600,628	601,130	601,579	601,815	

Northwest - Customer Interruptions		January	February	March	April	May	June	July	August	September	October	November	December	YTD
2022	With Storms, All Levels, All Causes	1,305	3,221	1,624	2,751	34,572	19,535	1,064	7,401	4,257	11,397	10,966	9,344	107,437
	Tariff Normalized, IEEE Region No Trans Line, All Causes		3,221	1,579	2,751	22,265	14,205	1,063	7,401	10	7,520	9,340	9,344	78,699
	Annual Normalized, IEEE Region All Levels, All Cau	1,305	3,221	1,624	2,751	25,255	16,871	1,064	7,401	4,257	11,397	10,966	9,344	95,456
	CES Cust Served	125,757	125,950	126,136	126,186	126,178	126,149	126,241	126,382	126,385	126,558	126,667	126,845	
2021	With Storms, All Levels, All Causes		2,199	12,577	23,294	6,108	41,911	26,417	26,930	16,733	11,005	15	7,732	174,921
	Tariff Normalized, IEEE Region No Trans Line, All Causes		2,199	11,929	12,093	6,108	34,014	18,738	17,655	3,538	5,218	15	6,104	117,611
	Annual Normalized, IEEE Region All Levels, All Causes		2,199	12,577	23,294	6,108	41,911	26,417	22,414	16,733	11,005	15	7,732	170,405
	CES Cust Served	123,499	123,748	124,141	124,109	124,144	124,193	124,395	124,592	124,797	124,938	125,330	125,526	
2020	With Storms, All Levels, All Causes	885	12,198	6,920	11,708	19,925	24,671	17,486	27,932	8,402	16,134	1,298	7,967	155,526
	Tariff Normalized, IEEE Region No Trans Line, All C	885	12,198	2,748	4,362	15,613	15,912	9,343	21,861	1,485	6,257	1,298	27	91,989
	Annual Normalized, IEEE Region All Levels, All Cau	885	12,198	6,920	11,708	19,925	24,671	11,451	27,932	8,402	16,134	1,298	7,967	149,491
	CES Cust Served	122,214	122,579	122,794	122,821	122,682	122,715	122,721	122,854	122,872	122,971	123,052	123,224	
2019	With Storms, All Levels, All Causes	1,728	5,899	13,998	10,907	20,768	16,473	20,235	19,306	56,047	4,285	9,243	5,554	184,443
	Tariff Normalized, IEEE Region No Trans Line, All Causes		4,172	13,998	3,710	11,114	11,089	15,677	6,357	19,484	4,285	6,821	5,554	102,261
	Annual Normalized, IEEE Region All Levels, All Cau	1,728	5,899	13,998	6,769	20,768	16,473	20,235	19,306	48,244	4,285	9,243	5,554	172,502
	CES Cust Served	120,666	120,755	120,871	120,858	120,786	120,697	120,884	121,043	121,183	121,384	121,716	121,815	
2018	With Storms, All Levels, All Causes	1,198	6,639	8,612	31,935	36,360	18,864	8,792	16,827	19,251	9,246	4,400	7,474	169,598
	Tariff Normalized, IEEE Region No Trans Line, All C	907	6,639	5,767	8,789	20,908	12,801	6,423	9,496	6,688	4,362	3,456	3,820	90,056
	Annual Normalized, IEEE Region All Levels, All Cau	1,198	6,639	8,612	31,935	36,360	18,864	8,792	16,827	19,251	9,246	4,400	7,474	169,598
	CES Cust Served	119,719	119,746	119,834	119,899	119,749	120,060	120,084	117,736	120,257	120,307	120,531	120,566	
Southeast - Customer Interruptions		January	February	March	April	May	June	July	August	September	October	November	December	YTD
2022	With Storms, All Levels, All Causes	6,748	479	3,892	10,390	15,814	24,646	13,486	9,572	2,527	3,898	9,529	2,289	103,270
	Tariff Normalized, IEEE Region No Trans Line, All C	2,772	479		4,149	6,431	15,723	7,155	8,136	2,050	3,898	2,379	2,289	55,461
	Annual Normalized, IEEE Region All Levels, All Cau	6,748	479	3,892	10,390	10,795	24,646	13,486	9,572	2,527	3,898	9,529	2,289	98,251
	CES Cust Served	132,621	132,702	132,795	132,899	132,760	132,711	132,829	133,010	133,020	133,252	133,360	133,466	
2021	With Storms, All Levels, All Causes	3,755	12,399	4,657	1,148	1,338	12,380	17,983	14,588	28,221	4,954	2,834	5,351	109,608
	Tariff Normalized, IEEE Region No Trans Line, All C	2,342	10,133	1,530	1,148	1,338	12,346	9,743	11,828	11,411	3,342	2,834	3	67,998
	Annual Normalized, IEEE Region All Levels, All Cau	3,755	12,399	4,657	1,148	1,338	12,380	17,983	14,588	28,221	4,954	2,834	3	104,260
	CES Cust Served	131,027	131,246	131,616	131,642	131,510	131,609	131,770	132,085	132,225	132,288	132,371	132,514	
2020	With Storms, All Levels, All Causes	4,050	27	207	18,497	1,708	19,897	18,798	29,277	10,839	6,207	11,501	4,408	125,416
	Tariff Normalized, IEEE Region No Trans Line, All C	4,050	27	206	5,491	754	12,571	14,811	18,935	9,625	4,797	1,996	56	73,319
	Annual Normalized, IEEE Region All Levels, All Cau	4,050	27	207	18,497	1,708	19,897	18,798	21,740	10,839	6,207	11,501	4,408	117,879
	CES Cust Served	130,089	130,491	130,547	130,530	130,333	130,429	130,377	130,452	130,492	130,532	130,642	130,728	
2019	With Storms, All Levels, All Causes	5,629	4,934	16,107	38,000	14,523	19,244	18,036	4,213	15,835	6,090	11,594	2,334	156,539
	Tariff Normalized, IEEE Region No Trans Line, All C	2,555	4,933	11,297	2,288	5,311	3,367	10,564	4,180	4,573	6,090	6,102	746	62,006
	Annual Normalized, IEEE Region All Levels, All Cau	5,629	4,934	16,107	15,433	14,523	19,244	15,795	4,213	11,787	6,090	11,594	2,334	127,683
	CES Cust Served	128,602	128,681	128,727	128,764	128,637	128,595	128,552	128,939	128,984	129,341	129,593	129,823	
2018	With Storms, All Levels, All Causes	4,762	4,756	3,521	20,111	8,775	14,197	16,183	21,314	17,396	949	3,339	2,383	117,686
	Tariff Normalized, IEEE Region No Trans Line, All C	2,915	513	1,161	3,783	7,542	9,384	11,215	12,578	3,297	949	1,960	601	55,898
	Annual Normalized, IEEE Region All Levels, All Cau	4,762	4,756	3,521	13,973	8,775	14,197	16,183	21,314	5,645	949	3,339	2,383	99,797
	CES Cust Served	127,848	127,905	128,058	128,089	127,895	128,214	128,236	128,333	128,436	128,517	128,539	128,521	