

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Katie J. Sieben	Chair
Joe Sullivan	Vice Chair
Valerie Means	Commissioner
Matthew Schuerger	Commissioner
John Tuma	Commissioner

IN THE MATTER OF NORTHERN STATES
POWER COMPANY’S ANNUAL REPORT ON
SAFETY, RELIABILITY, AND SERVICE
QUALITY FOR 2021; AND PETITION FOR
APPROVAL OF ELECTRIC RELIABILITY
STANDARDS FOR 2022

DOCKET NO. E002/M-22-____

**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 2021. 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 2022, 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 2021, approve our proposed reliability standards for 2022.

I. SUMMARY OF FILING

A one-paragraph summary of this filing accompanies this Petition pursuant to Minn. R. 7829.1300, subp. 1.

II. SERVICE ON OTHER PARTIES

Xcel Energy has filed this document in eDockets and served a summary of the filing on all parties on Xcel Energy's miscellaneous electric service list, pursuant to Minn. R. 7829.1300, subp. 2.

III. GENERAL FILING INFORMATION

Xcel Energy provides the following required information pursuant to Minn. R. 7829.1300, subp. 3.

A. Name, Address, and Telephone Number of Utility

Northern States Power Company, doing business as Xcel Energy
414 Nicollet Mall
Minneapolis, MN 55401
(612) 330-5500

B. Name, Address, and Telephone Number of Utility Attorney

Shubha M. Harris
Senior Attorney
Xcel Energy
414 Nicollet Mall – 401 8th Floor
Minneapolis, MN 55401
(612) 215-4517

C. Date of Filing and Date Standards Take Effect

The date of this filing is April 1, 2022. Xcel Energy requests that the Commission accept the attached annual report on the Company's performance for 2021. Additionally, we request that our proposed reliability standards be approved for the year 2022.

Our report on reliability performance for 2022, subject to the standards approved by the Commission, will be filed on or before April 1, 2023, as required under Minn. R. 7826.0500, subp. 1, for the January 1 through December 31, 2022 period with a supplemental filing being submitted in August / September 2023 timeframe when IEEE data becomes available.

D. Statute Controlling Schedule for Processing the Filing

No specific statute imposes a schedule controlling the processing of this filing. Pursuant to Minn. R. 7826.1300, this report is to be filed as a miscellaneous filing under Minn. R. 7829.0100, subp. 11. Under Minn. R. 7829.1400 governing miscellaneous filings, initial comments are due within 30 days of filing, with reply comments due ten days thereafter.

E. Utility Employee Responsible for Filing

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 Manager, Policy and Outreach
 Xcel Energy
 414 Nicollet Mall – 401 7th Floor
 Minneapolis, MN 55401
 (612) 337-2096

IV. DESCRIPTION AND PURPOSE OF FILING

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.

Previously, we separated the Annual Report from our Petition and reorganized the Report to put similar information together. This year, we have gone one step further and separated the Annual Report, as laid out in Minnesota Rules, Chapter 7826, Electric Utility Standards, into two parts as Commission Staff did in 2018. 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 2021, and
- Approve our proposed reliability standards for 2022.

Each of these are discussed in more detail below.

A. Accept the Company's Annual Report for 2021

Attached to this Petition is the Company's Annual Report, detailing the Company's safety, reliability and service quality performance for 2021. 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 2021 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 2021.

B. Approve Proposed Reliability Standards for 2022

Minn. R. 7826.0600, subp. 1, requires the Company to propose 2022 standards for SAIFI, SAIDI, and CAIDI. The Company proposed setting the 2022 standards based on the 2022 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
- Southeast and Northwest work centers: IEEE second quartile for medium utilities

Our proposal is consistent with the 2021 standards established in the Commission's March 2, 2022 Order in Docket No. E002/M-21-237, Order Point 8. 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 2022 as detailed in this Petition.

Dated: April 1, 2022

Northern States Power Company

STATE OF MINNESOTA
BEFORE THE
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DOCKET NO. E002/M-22-____

**ANNUAL REPORT AND
PETITION**

SUMMARY OF FILING

Please take notice that on April 1, 2022, Northern States Power Company, doing business as Xcel Energy, filed with the Minnesota Public Utilities Commission its Annual Report on safety, reliability, and service quality as required under Minn. R. 7826.0400, 7826.0500, and 7826.1300. This filing also includes a Petition for approval of the Company's proposed electric reliability standards for 2022 as required under Minn. R. 7826.0600.

Xcel Energy's Service Quality Annual Report Part II

Reliability Standards and
Request for Approval of Electric Reliability Standards for 2022

April 1, 2022
Docket No. E-002/M-22-____

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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 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.		
	<p>The annual service quality report must include a detailed report on complaints by customer class and calendar month, including at least the following information:</p> <p>A. the number of complaints received;</p> <p>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;</p> <p>C. the number and percentage of complaints resolved upon initial inquiry, within ten days, and longer than ten days;</p> <p>D. the number and percentage of all complaints resolved by taking any of the following actions:</p> <p>(1) taking the action the customer requested;</p> <p>(2) taking an action the customer and the utility agree is an acceptable compromise;</p> <p>(3) providing the customer with information that demonstrates that the situation complained of is not reasonably within the control of the utility; or</p> <p>(4) refusing to take the action the customer requested; and</p> <p>E. the number of complaints forwarded to the utility by the commission's Consumer Affairs Office for further investigation and action.</p>	Section III.H
COMMISSION ORDERS		
DOCKET E002/M-21-237 March 2, 2022	<p>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.</p> <p>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.</p>	Section IV.B.1.a
DOCKET E002/M-21-237 December 2, 2021	<p>2. Required Xcel, MP, OTP to provide the following new information regarding electronic utility-customer interaction beginning with the reports filed in April 2023</p> <p>Percentage Uptime to second decimal:</p> <p>General Website xx.xx%</p> <p>Payment Services xx.xx%</p> <p>Outage map &/or Outage Info page xx.xx%</p> <p>Error Rate Percentage to the third decimal</p> <p>Payment Services* xx.xxx%</p> <p>*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."</p> <p>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)</p>	STARTS 2023
	<p>4. XE, MP and OTP continue to provide information on electronic utility-customer interaction such that baseline data are collected:</p> <p>a. Yearly total number of website visits</p> <p>b. Yearly total number of logins via electronic customer communication platforms;</p> <p>c. Yearly total number of emails or other customer service electronic communications received; and</p> <p>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</p>	Starts 2023 Section III.I
	<p>5. Xcel to provide additional information in its 2022 filing on the progress it has made regarding hiring new call center representatives in 2021 and the effects of those new employees on its agent only metrics</p>	Section III.E
	<p>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</p>	Section III.H
	<p>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.</p>	Section IV.A
Docket E002/M-20-406; December 18, 2020 Order	<p>3. Continue filing quarterly status reports on efforts to improve reliability in the Southeast Work Center through fourth quarter 2021.</p>	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	<p>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.</p> <p>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.</p> <p>5. Required Xcel to report on the major causes of outages for major event days.</p> <p>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.</p> <p>7. Required Xcel to continue reporting major service interruptions to the Commission's Consumer Affairs Office.</p>	Section IV.A Section IV.B.1.b
Docket E002/GR-12-961 November 19, 2013	<p>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:</p> <ol style="list-style-type: none"> 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	<p>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;</p> <p>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;</p> <p>5. For reports due April 1, 2011, the Commission requires Xcel to report on the major causes of outages for major event</p>	Section IV.A Section IV.B.1.b
Order: Docket E002/M-09-343 Order Date: August 11, 2009	<p>4. Regarding additional issues for reports due April 1, 2010, Xcel shall:</p> <ol style="list-style-type: none"> (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	<p>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:</p> <ul style="list-style-type: none"> • 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	<p>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.</p>	Section IV.B.2.b
Docket E002/M-04-511 November 3, 2004	<p>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</p>	Section IV.B.4.a
	<p>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</p>	Section III.E

IV. RELIABILITY PERFORMANCE REPORT FOR 2021

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 last 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 serves approximately 1.3 million electric customers; in 2021 and our Minnesota customers had power 99.983 percent of time. Excluding major event day's (MEDs), in 2021, our Minnesota customers were without power for an average of 89 minutes; an average customer experienced less than one outage in 2021; less than one percent of our Minnesota customers experienced more than six power outages; and less than two percent experienced an outage lasting longer than twelve hours in 2021.

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 2021 benchmarking results in the August/September timeframe at 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 2021, the Company continued to investigate the causes of lagging reliability performance in our Southeast Work Center and provided quarterly reports on its progress. 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, in our 4th quarter Southeast Quarterly Report, filed March 11, 2022, the Company voluntarily committed to continue providing quarterly status reports through 2022.

In the fourth quarterly update, filed March 11, 2022, the Company provided an update on staffing levels, 2021 reliability data, improvements to date, as well as ongoing improvement plans. The 2021 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, 2021, as required by Minn. R. 7826.0600, we proposed reliability standards for 2021 for each of our four Minnesota work centers based on IEEE benchmarking data.¹

[O]rder Points 8 and 9 in the Commission's March 2, 2022 Order in Docket No. E002/M-21-237:

8. The Commission sets Xcel Energy's 2021 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.

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.

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

Table 11 presents our 2021 reliability performance. As required in the March 2, 2022 Commission Order, the Company will submit a supplemental filing later this year, typically in late August or early September, after IEEE publishes its 2021 benchmarking results along with an explanation for any statewide standards we did not meet. The remaining “Standards” column will be completed at that time.

TABLE 11
2021 RELIABILITY PERFORMANCE RESULTS

		Performance Results	Standards
Minnesota	SAIDI	88.83	--
	SAIFI	0.92	--
	CAIDI	96.33	--
Metro East	SAIDI	82.00	--
	SAIFI	0.83	--
	CAIDI	98.41	--
Metro West	SAIDI	94.56	--
	SAIFI	1.05	--
	CAIDI	89.67	--
Northwest	SAIDI	93.42	--
	SAIFI	0.74	--
	CAIDI	126.13	--
Southeast	SAIDI	79.80	--
	SAIFI	0.76	--
	CAIDI	105.14	--

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.

And

[O]rder Point 19 in the Commission’s December 18, 2020 Order in Docket No. E002/M-21-237, required the Company to work with the workgroup to develop an

interactive map, with the input from stakeholders on the scope and details of the map and file an update on the development by October 1, 2021.

In the Company's October 1, 2021 letter to the Commission, we provided an update on the progress and development of the interactive map and stated the Company intended to make the completed interactive map available on the Xcel Energy website on April 1, 2022 in conjunction with this filing. This interactive map contains 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 2021 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 based on 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 2021, 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. More Detailed Looks at the Company's SAIDI,
SAIFI and CAIDI Performance**

[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.

To comply with Order Point 4, see Table 12. 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, as compared to the past several years so that interested reviewers can see the trends the Company has experienced over time. This table also complies with the obligations of Order Points 1 and 2 of Attachment B from the Commission's January 28, 2020 Order.

Table 12

Historical Reliability Indices & Storm Day Exclusions												
All Days ¹		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Minnesota	SAIDI	143.15	562.11	116.43	184.50	214.33	141.70	125.00	124.50	134.19	123.93	
	SAIFI	1.07	1.39	0.92	0.96	1.05	0.90	0.95	0.86	1.07	1.04	
	CAIDI	139.51	404.36	126.00	192.32	204.84	158.10	131.22	145.30	124.89	124.67	
Metro East	SAIDI	190.95	352.30	123.54	177.19	223.67	136.51	112.11	104.57	124.02	145.50	
	SAIFI	1.20	1.27	0.96	1.04	1.08	0.95	0.96	0.85	1.07	1.01	
	CAIDI	159.23	278.46	125.93	169.66	206.85	144.37	116.71	122.52	115.72	144.49	
Metro West	SAIDI	139.19	810.01	105.98	229.78	198.25	148.58	88.23	79.92	143.84	121.15	
	SAIFI	1.10	1.55	0.89	1.00	1.00	0.86	0.92	0.74	1.13	1.14	
	CAIDI	126.85	523.66	118.70	229.92	198.86	173.27	95.70	107.38	127.72	106.02	
Northwest ⁴	SAIDI	109.75	468.22	82.82	75.61	225.74	173.71	109.50	150.82	133.55	104.01	
	SAIFI	0.87	1.40	0.82	0.66	1.07	0.98	0.87	0.94	0.98	0.79	
	CAIDI	126.17	335.53	101.00	115.40	211.50	177.46	126.02	160.71	135.77	131.22	
Southeast ⁵	SAIDI	97.25	179.29	173.45	98.23	249.05	96.37	353.32	374.19	122.43	144.95	
	SAIFI	0.71	1.06	0.98	0.79	1.15	0.84	1.15	1.32	0.92	0.92	
	CAIDI	137.84	168.93	176.51	125.07	217.15	114.75	307.95	283.40	132.38	157.71	
MN Tariff ²		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	'21 Target
Minnesota	SAIDI	96.20	91.12	73.85	86.83	89.49	73.80	93.26	76.66	95.52	87.97	133.23
	SAIFI	0.88	0.86	0.78	0.79	0.81	0.72	0.85	0.70	0.96	0.90	1.21
	CAIDI	109.60	106.51	102.07	109.90	110.54	102.10	109.90	109.74	99.73	97.71	NA
Metro East	SAIDI	90.70	83.56	77.58	93.71	95.49	75.70	103.28	79.26	104.56	81.96	
	SAIFI	0.88	0.83	0.82	0.90	0.87	0.75	0.92	0.72	0.99	0.83	
	CAIDI	103.35	100.72	94.81	104.58	110.07	100.73	112.40	110.29	105.19	98.36	
Metro West	SAIDI	103.42	101.24	81.85	88.98	82.90	69.28	81.25	68.25	87.46	94.47	
	SAIFI	0.97	0.96	0.82	0.82	0.82	0.70	0.84	0.69	1.01	1.05	
	CAIDI	106.83	105.85	100.15	108.90	101.51	98.40	96.63	99.17	86.19	89.83	
Northwest ⁴	SAIDI	94.20	85.78	62.16	69.39	80.19	69.41	99.87	61.17	100.31	89.90	
	SAIFI	0.73	0.75	0.61	0.57	0.56	0.64	0.73	0.53	0.75	0.63	
	CAIDI	128.31	113.87	102.05	121.05	143.58	107.70	137.06	115.94	133.14	141.66	
Southeast ⁵	SAIDI	82.40	73.58	94.45	70.78	109.59	92.84	110.67	122.21	99.53	75.14	
	SAIFI	0.59	0.57	0.67	0.52	0.82	0.79	0.77	0.84	0.76	0.66	
	CAIDI	138.48	129.93	141.93	135.23	133.06	117.19	144.04	145.17	130.46	114.59	
Annual Rules ³		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	'21 Target ⁶
Minnesota	SAIDI	101.86	94.27	84.00	89.95	90.45	75.04	96.07	81.02	98.92	88.83	NA
	SAIFI	0.93	0.90	0.84	0.83	0.83	0.74	0.89	0.75	0.99	0.92	NA
	CAIDI	109.78	104.60	99.67	108.09	108.93	100.90	107.39	108.29	100.28	96.33	NA
Metro East	SAIDI	105.74	85.05	79.73	93.73	95.52	76.22	103.69	80.56	104.98	82.00	TBD
	SAIFI	0.96	0.86	0.86	0.90	0.87	0.76	0.93	0.75	1.01	0.83	Late Summer
	CAIDI	110.03	99.33	92.46	104.25	109.70	100.48	111.74	107.36	103.69	98.41	
Metro West	SAIDI	103.98	101.41	83.02	90.95	83.64	69.51	83.26	69.50	88.82	94.56	TBD
	SAIFI	0.98	0.96	0.84	0.84	0.82	0.71	0.87	0.70	1.00	1.05	Late Summer
	CAIDI	105.93	105.45	98.50	108.44	101.43	97.84	95.47	99.15	88.53	89.67	
Northwest ⁴	SAIDI	95.05	97.43	82.80	75.58	85.81	75.77	109.34	89.07	121.94	93.42	TBD
	SAIFI	0.83	0.94	0.82	0.66	0.70	0.76	0.87	0.78	0.93	0.74	Late Summer
	CAIDI	115.16	103.70	101.02	115.39	122.38	100.28	126.05	113.48	130.98	126.13	
Southeast ⁵	SAIDI	85.95	87.98	103.45	86.51	110.23	96.33	118.80	129.10	105.07	79.80	TBD
	SAIFI	0.67	0.73	0.80	0.75	0.85	0.84	0.92	0.93	0.87	0.76	Late Summer
	CAIDI	128.50	120.39	129.20	115.16	130.02	114.73	129.64	138.99	120.29	105.14	

1) All Days - Includes All Days, Levels and Causes, Meter-based customer counts

2) MN Tariff - Normalized using IEEE 1366 at the Regional level after removing Transmission Line level. All Causes, Meter-based customer counts

3) Annual Rules - Normalized using IEEE 1366 at the Regional level. All Levels, All Causes, Meter-based customer counts

4) Northwest - Includes customers counts and interruptions in the North Dakota work region that impact Minnesota customers

5) Southeast - Includes customers counts and interruptions in the South Dakota work region that impact Minnesota customers

6) 2012-2020 Annual Rules Targets were based on 5 year rolling actual averages or locked targets.

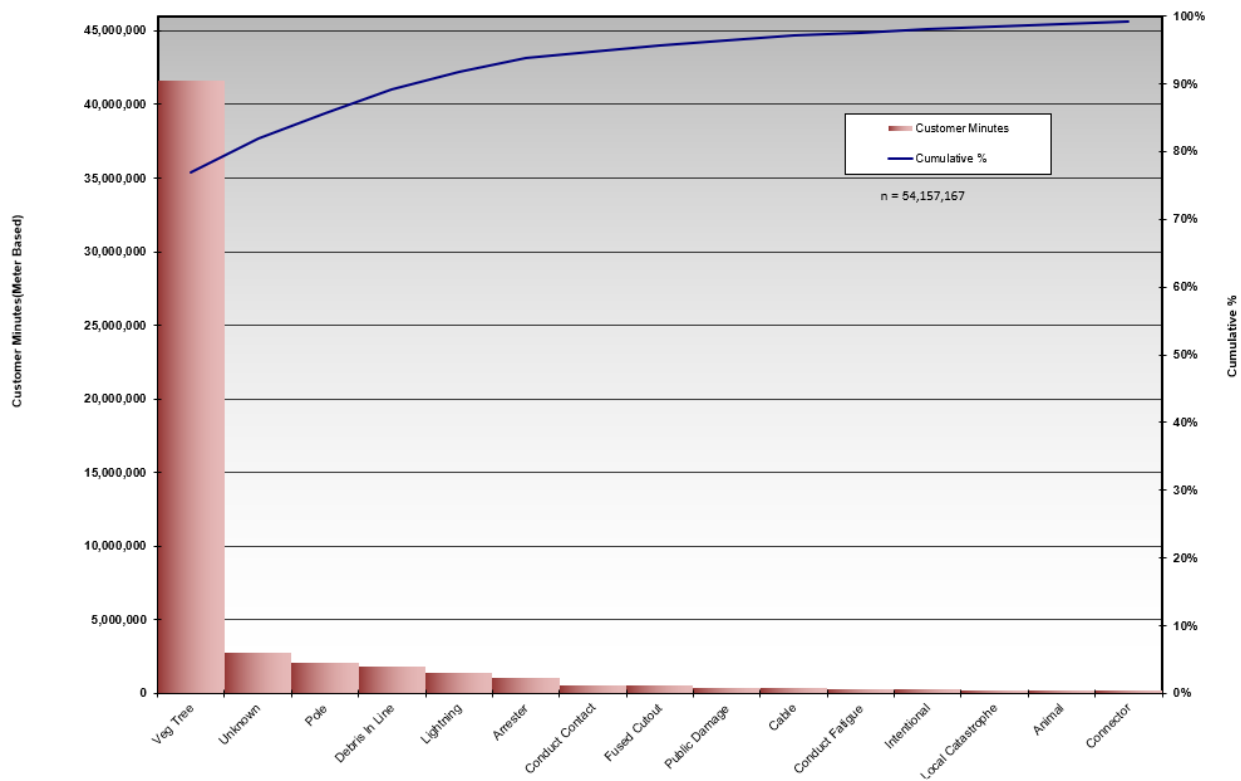
2021 Annual Rules Targets are based on IEEE Working Group Benchmarking study Large Utility Group 2nd Quartile for Metro East & West Medium Utility Group 2nd Quartile for Northwest & Southeast. Targets will become available late summer when study results are released

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



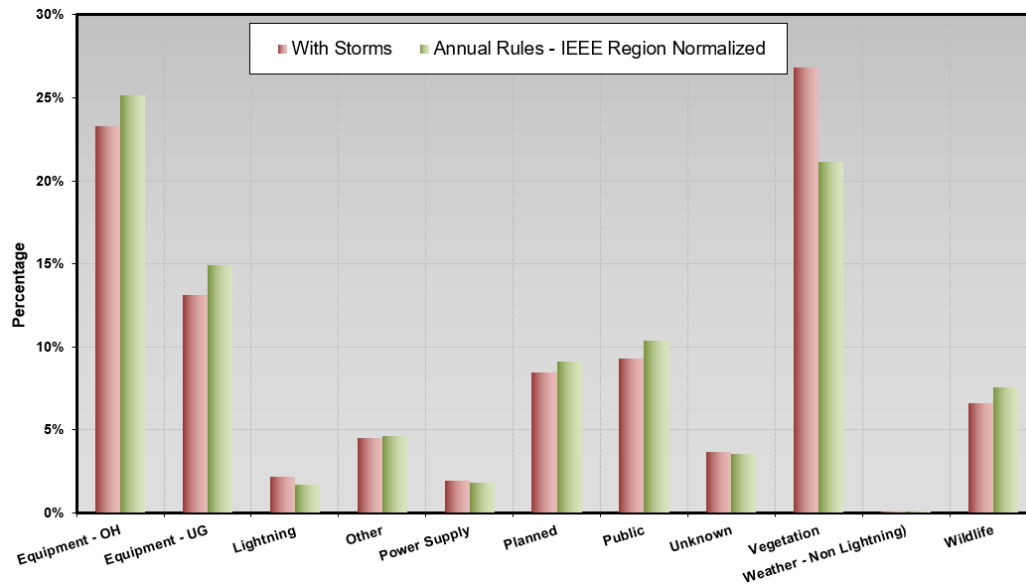
Minnesota - Top Causes
YE 2021 - MN Rules(IEEE All Levels) Major Event Days Only
Includes All Levels and All Causes



GRAPH 1A

Metro East Workregion *Outage Causes*

2017-2021 Average Annual Customer Interruption Percentages - All Levels

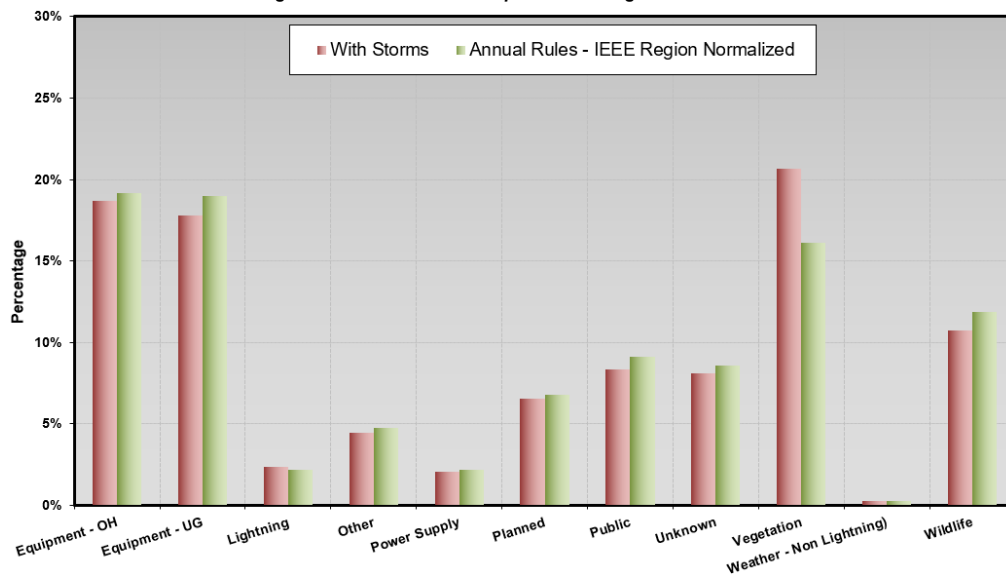


Annual Rules based on sustained outages (>5 minutes), including All Levels and All Cause codes, IEEE 1366 Region normalized using 5 year rolling data including outliers

GRAPH 1B

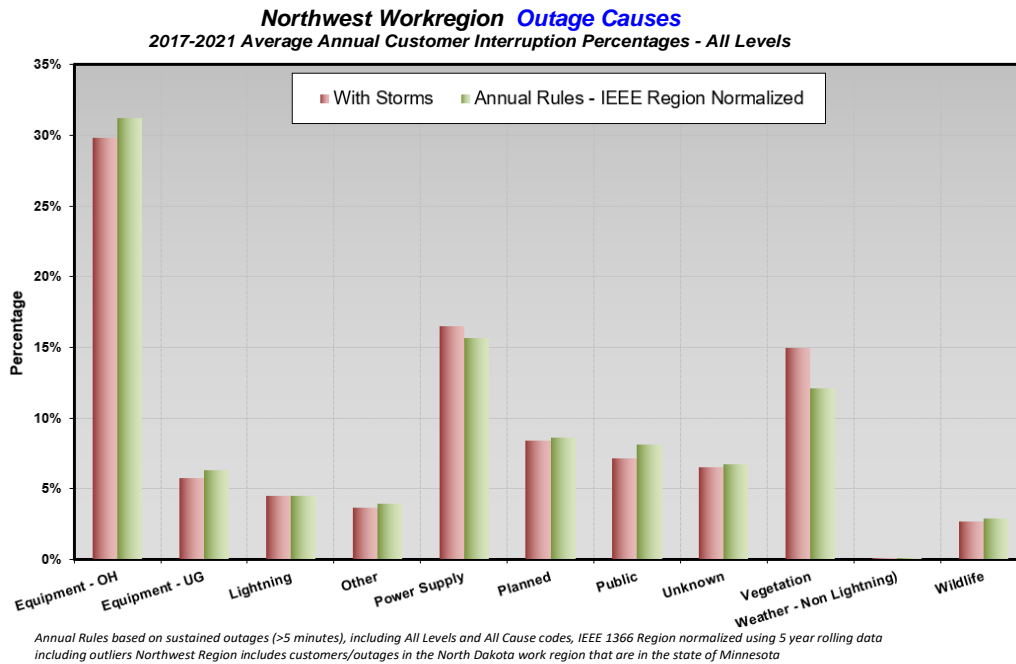
Metro West Workregion *Outage Causes*

2017-2021 Average Annual Customer Interruption Percentages - All Levels

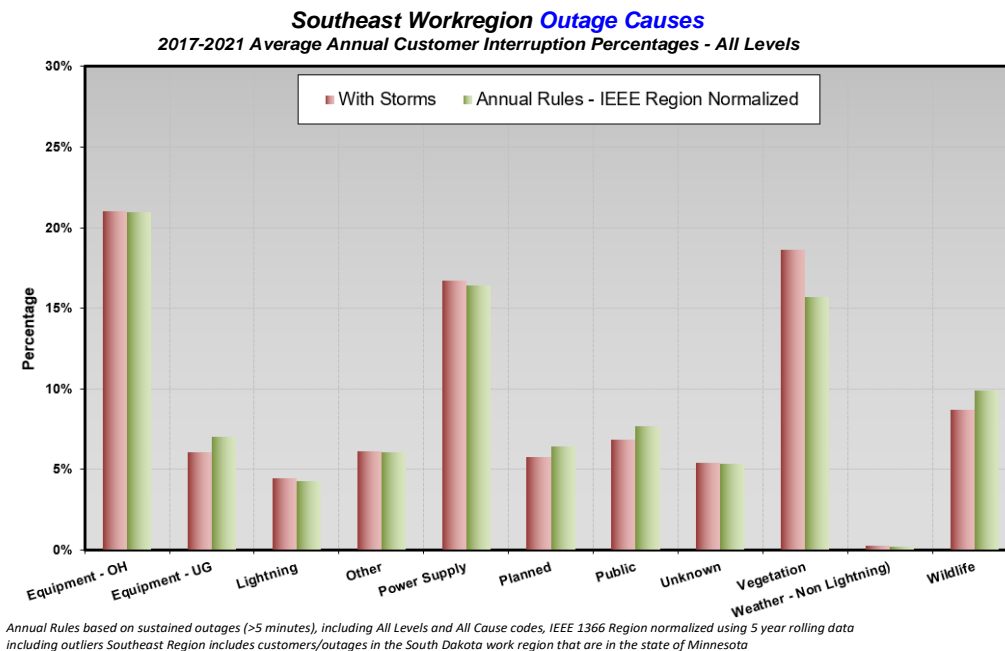


Annual Rules based on sustained outages (>5 minutes), including All Levels and All Cause codes, IEEE 1366 Region normalized using 5 year rolling data including outliers

GRAPH 1C



GRAPH 1D



[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.

The Company cannot provide the specific outage data by customer class requested by the Commission at this time and is investigating opportunities to be able to provide it in the future. We note that Attachment L provides customer class information along with the reliability data by feeder, however we are not able to provide an overall SAIDI by customer type.

We have reviewed the SAIDI by feeder and compared feeders with primarily residential customers to feeders with primarily commercial/industrial customers. Feeders that have more than 50 percent residential customers averaged a SAIDI of 90.6, SAIFI of 0.90 and a CAIDI of 118.2 normalized in 2021, while feeders with more than 50 percent commercial customers averaged a SAIDI of 87.0, SAIFI of 0.88 and a CAIDI of 119.6. Although not 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.

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 2020 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 2021 benchmarking data is available, likely in August/September, the Company will submit an update in this docket.

During 2020, NSPM's SAIDI performance was at the 2nd quartile performance level.

GRAPH 2 – NSPM SAIDI

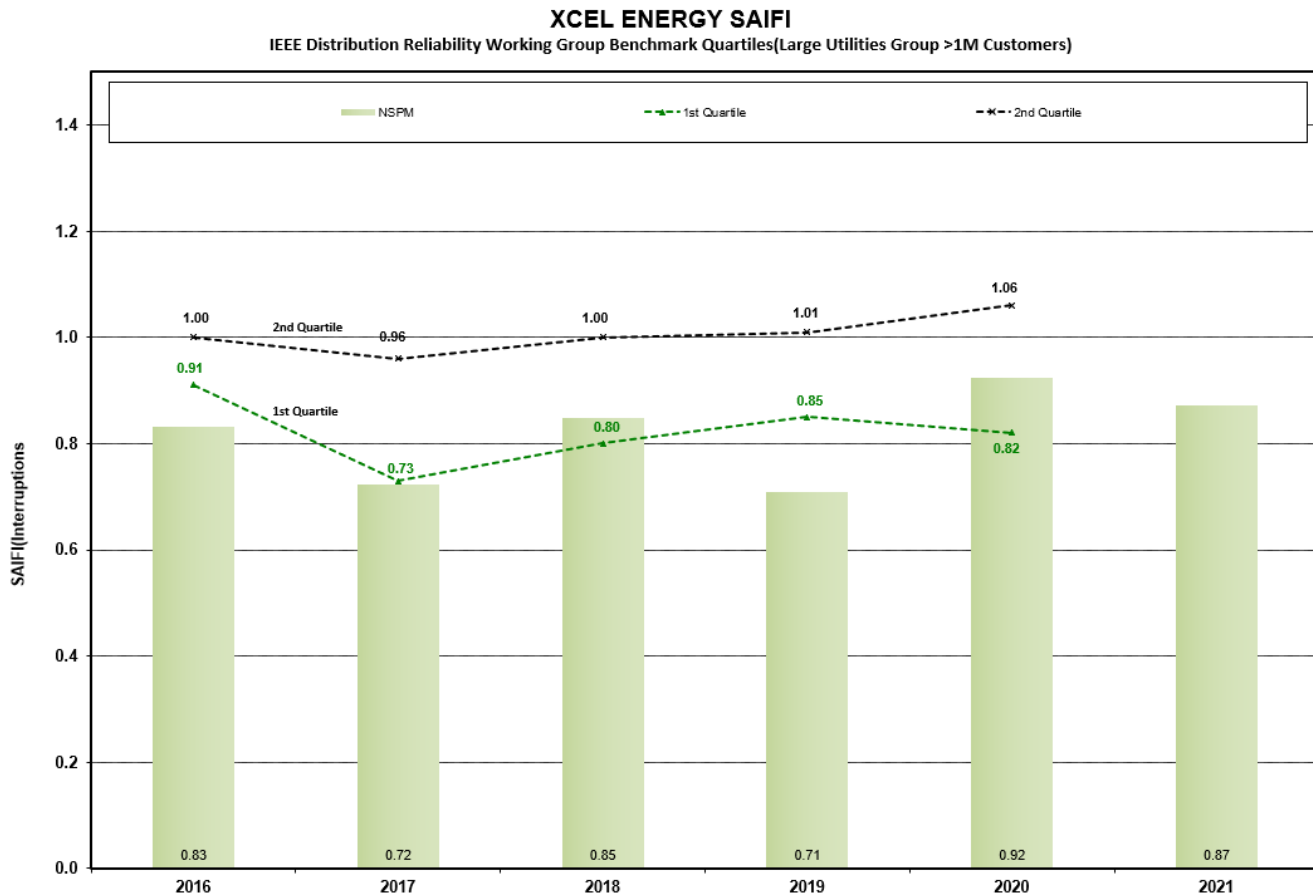
XCEL ENERGY SAIDI

IEEE Distribution Reliability Working Group Benchmark Quartiles(Large Utilities Group >1M Customers)



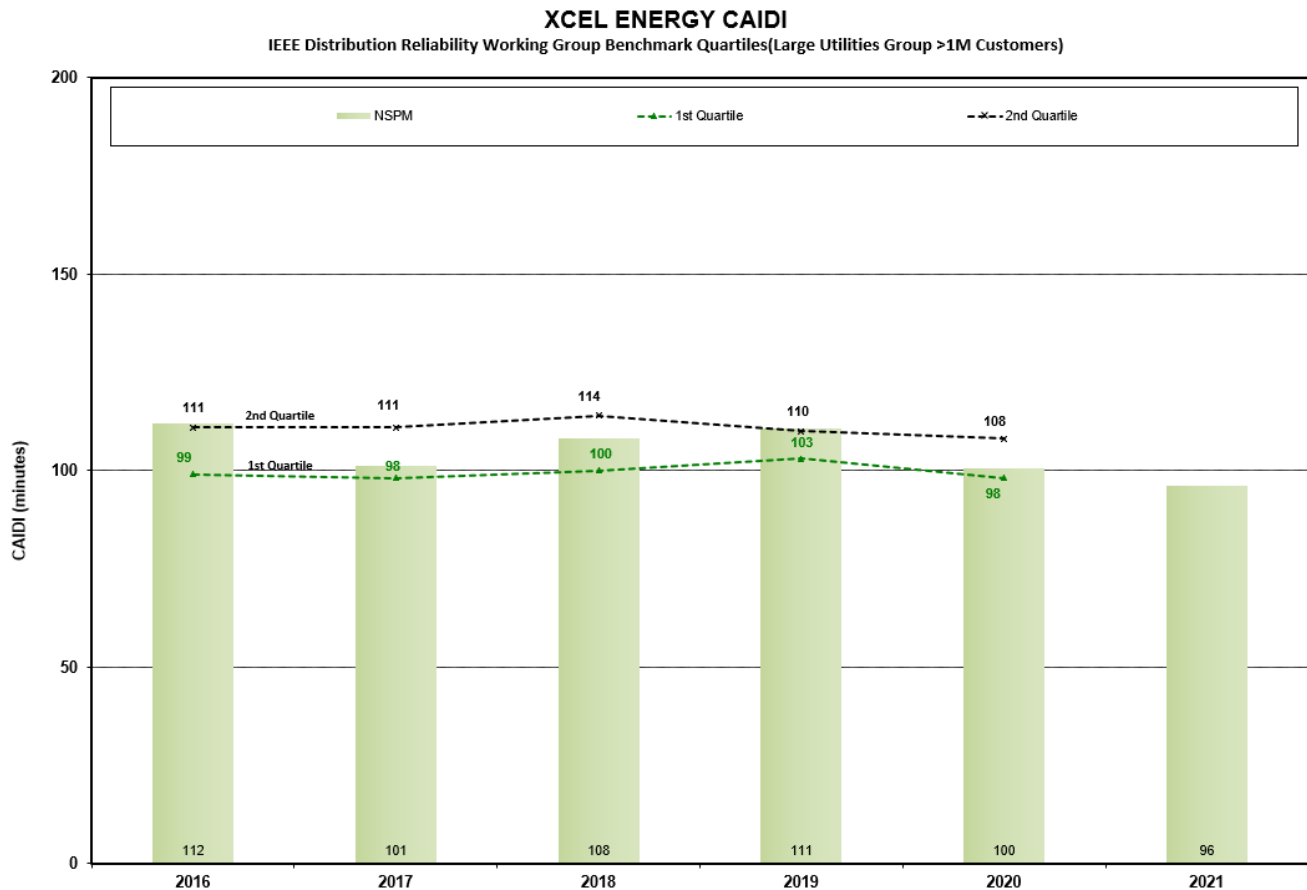
During 2020, NSPM's SAIFI performance was at the 2nd quartile performance level.

GRAPH 3 – NSPM SAIFI



During 2020, NSPM's CAIDI performance was at the 2nd quartile performance 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 currently 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 to expand 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. The Company is currently planning to deploy the integration between AMI and outage management system in 2022. 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 reliability metrics may show a decline since more accurate outage start and completion times will be reported. 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]rder Point 3 of the Commission’s December 18, 2020 Order in Docket No. E002/M-20-406 requires the Company to continue filing quarterly status reports on efforts to improve reliability in the Southeast Work Center through fourth quarter 2021.

[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 2021, 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 2022 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, Outage Exception Reporting Tool, 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 of our work centers and developing plans for system improvements. We will continue to evaluate, monitor, and report our progress.

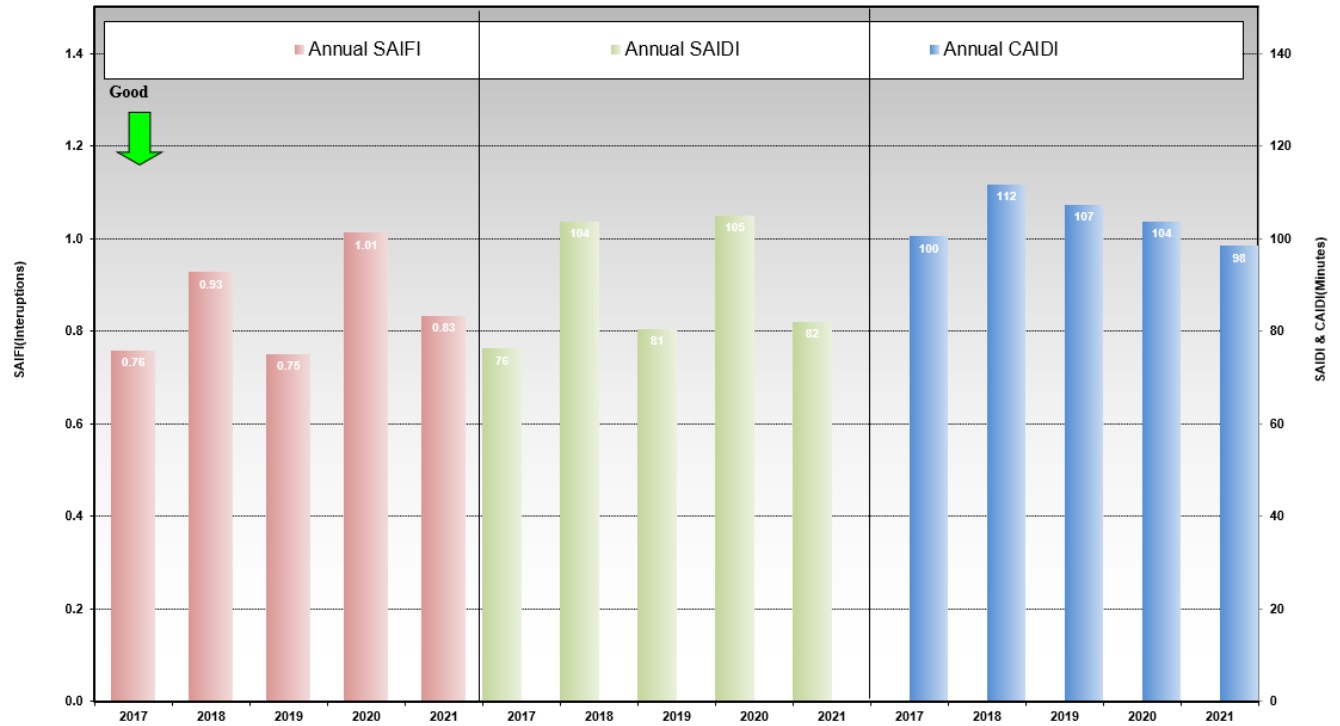
1. Metro East

In Graphs 5, 6, and 7, we show the five-year trend of all three indices, as well as Table 13 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



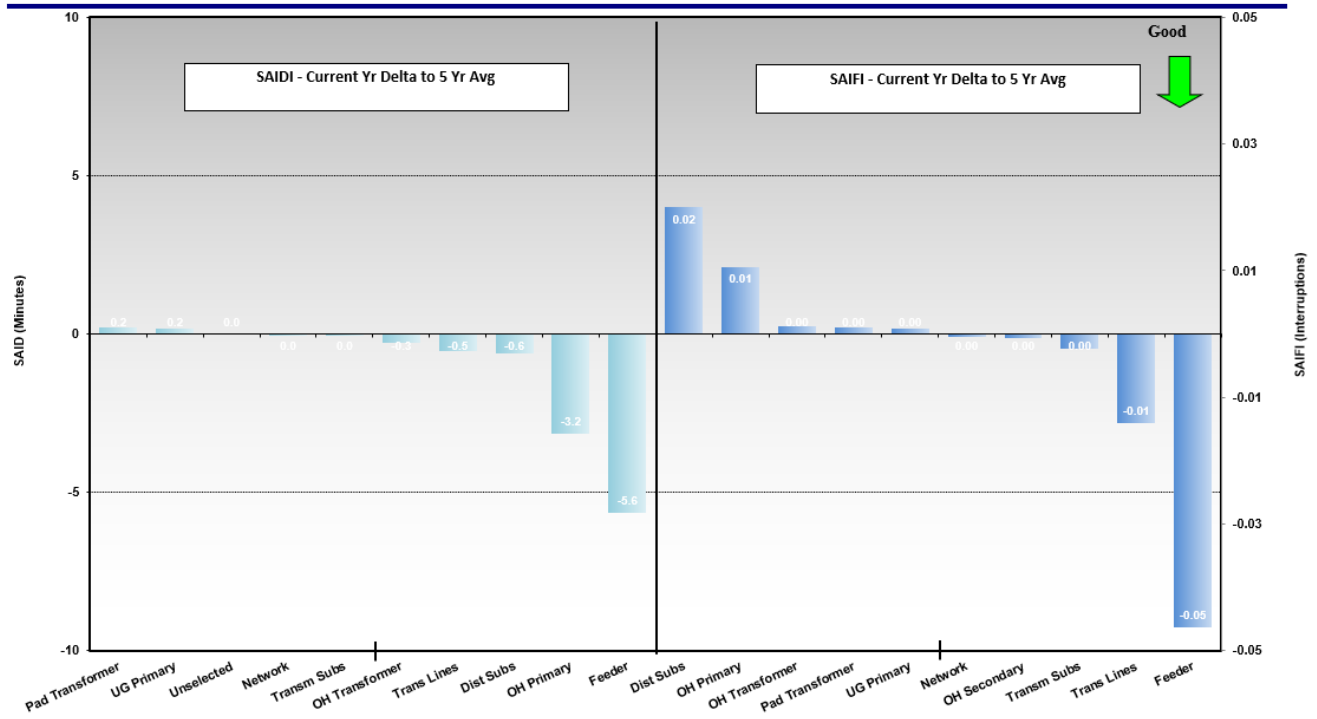
METRO EAST WORK CENTER 5 Year Actuals (Annual Rules Normalized - IEEE 1366)



GRAPH 6



METRO EAST WORK CENTER - 2021 Delta to 5 Year Avg
(Annual Rules Normalized - IEEE 1366 All Levels)



GRAPH 7



METRO EAST WORK CENTER - 2021 Delta to 5 Year Avg
(Annual Rules Normalized - IEEE 1366 All Levels)

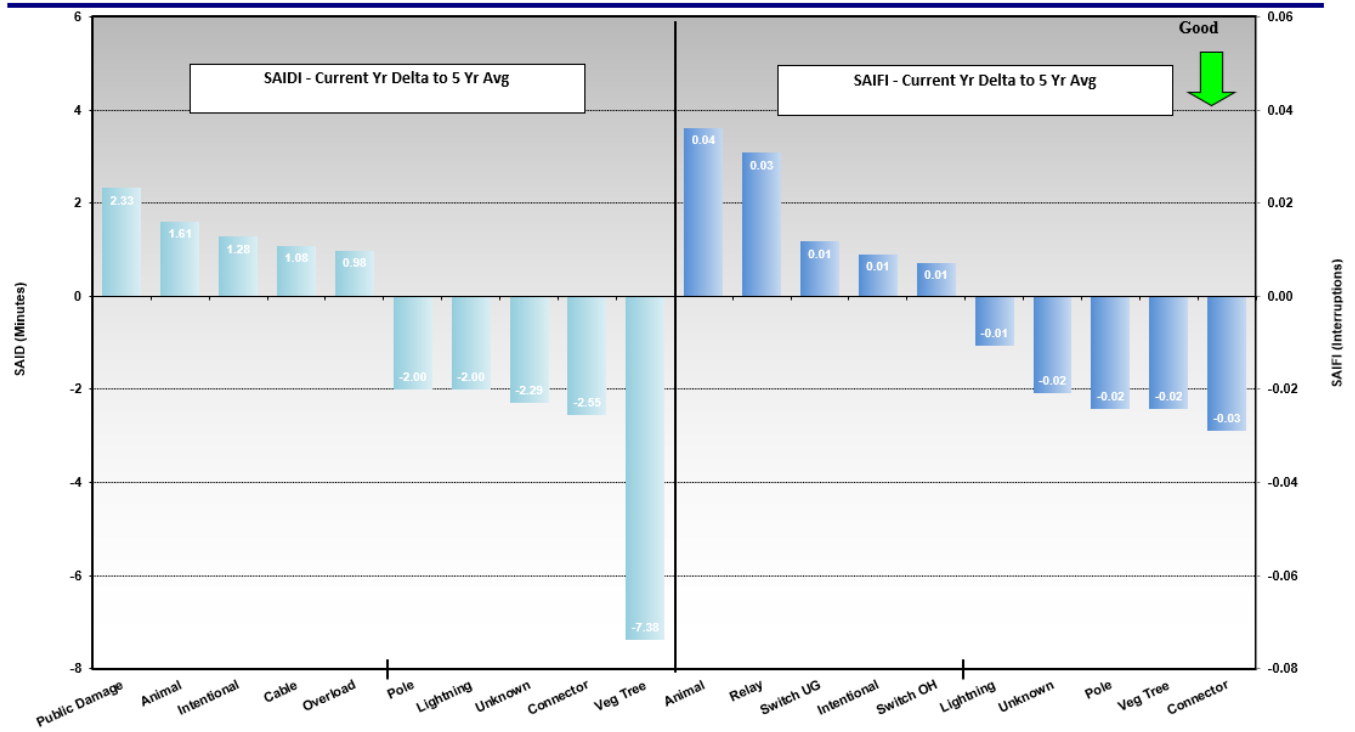


Table 13

Impact events / days

Major Event Days - Excluded from normalized results				
Date	SAIDI	SAIFI	CAIDI	Reason
8/24	8.9	0.06	154	High winds and thunderstorms. Many tree, line, & debris contacts & lightning strikes
9/17	54.9	0.12	471	High winds and thunderstorms. Many tree, line, & debris contacts & lightning strikes

Moderate Storm Activity				
Date	SAIDI	SAIFI	CAIDI	Reason
3/29	4.5	0.04	117	High wind-related events
6/9	2.5	0.03	99	Wind & Lightning and extreme heat-related events
7/23-25	5.9	0.04	149	Wind & Lightning and extreme heat-related events

Transmission				
Date	SAIDI	SAIFI	CAIDI	Area/s Reason
None	0.0	0.00	0	

Distribution Substation				
Date	SAIDI	SAIFI	CAIDI	Area/s Reason
3/15	0.4	0.01	50	Eagan Animal contact in the Distribution substation
4/5	1.6	0.03	51	Saint Paul Insulator equipment failure
4/6	0.2	0.03	7	Saint Paul Relay equipment failure
6/12	0.4	0.01	50	Wyoming Animal contact in the Distribution substation

Distribution Lines				
Date	SAIDI	SAIFI	CAIDI	Area/s Reason
3/29	1.6	0.00	678	Roseville Tree contact - Branch caused downed wire
3/29	1.0	0.02	59	Woodbury Intentional outage to correct wires contacting during storm
3/29	0.7	0.01	72	Lino Lakes Tree contact - Branch caused downed wire
7/23	1.4	0.01	210	Cottage Grove Mainline feeder cable failure
7/24	1.2	0.00	610	Chisago City Broken pole during storm
10/2	1.1	0.01	155	Chisago City Public vehicle hit and damaged pole
10/28	0.8	0.01	68	Rosemount Insulator equipment failure

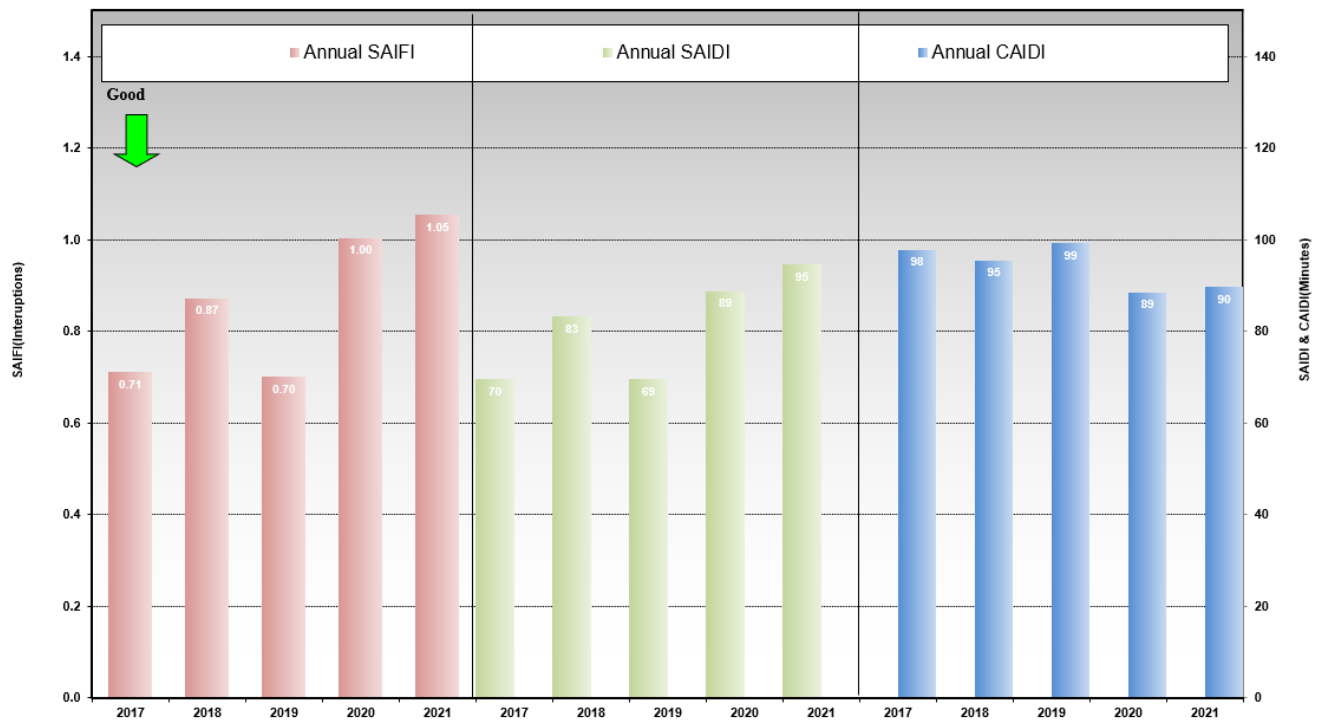
2. *Metro West*

Graphs 8, 9, and 10 show the five-year trend of all three indices, and Table 14 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



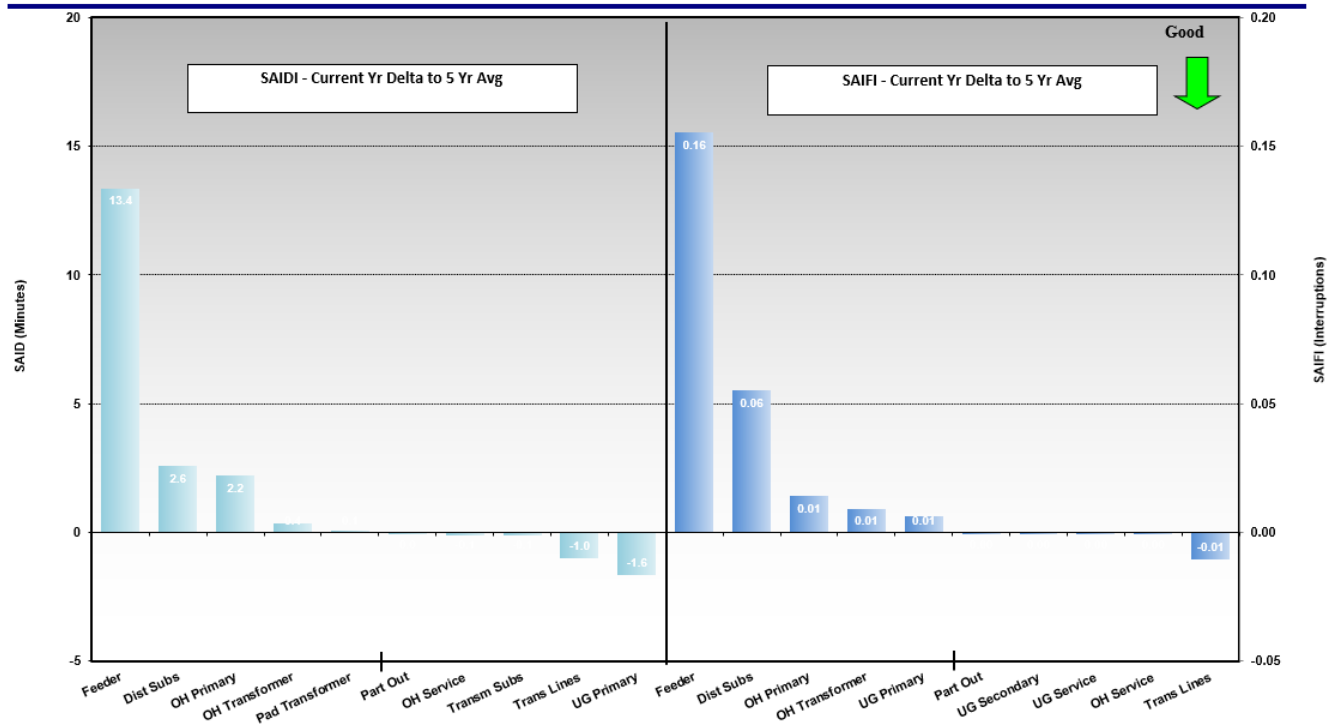
METRO WEST WORK CENTER 5 Year Actuals
(Annual Rules Normalized - IEEE 1366)



GRAPH 9



METRO WEST WORK CENTER - 2021 Delta to 5 Year Avg
(Annual Rules Normalized - IEEE 1366 All Levels)



GRAPH 10



METRO WEST WORK CENTER - 2021 Delta to 5 Year Avg
(Annual Rules Normalized - IEEE 1366 All Levels)

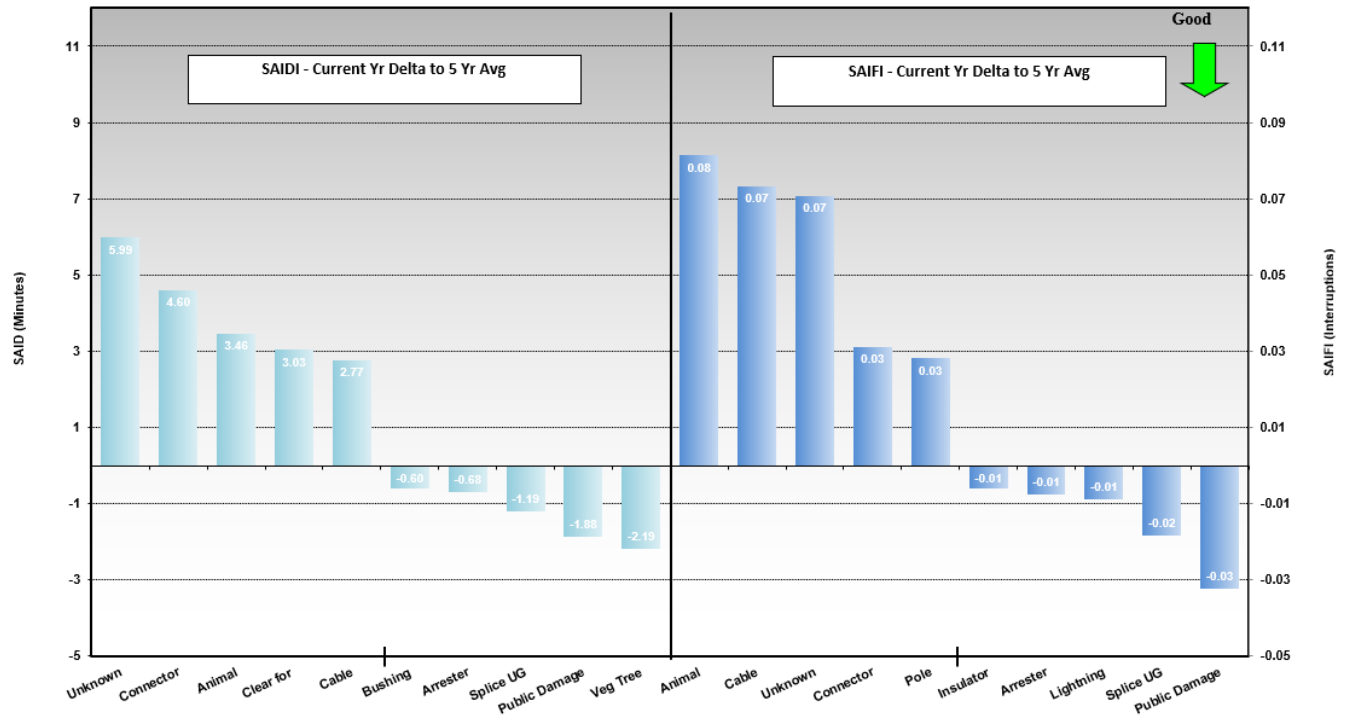


Table 14

Impact events / days

Major Event Days - Excluded from normalized results					
Date	SAIDI	SAIFI	CAIDI	Reason	
8/26	6.0	0.04	153	High winds and thunderstorms.	Many tree, line, & debris contacts & lightning strikes
9/17	20.7	0.05	418	High winds and thunderstorms.	Many tree, line, & debris contacts & lightning strikes
Moderate Storm Activity					
Date	SAIDI	SAIFI	CAIDI	Reason	
3/29	1.7	0.01	163	High winds and thunderstorms.	Many tree & line contacts & pole failures
8/24	2.4	0.02	140	High winds and thunderstorms.	Many tree & lightning strikes
12/15-16	3.4	0.02	198	High winds and thunderstorms.	Many tree, line, & debris contacts & lightning strikes
Transmission					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
7/23	0.1	0.01	26	Eden Prairie / Bloomington	Unknown cause event on Transmission line
9/28	0.2	0.00	44	Richfield/Bloomington	Animal contact in the substation caused Transmission outage
Distribution Substation					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
3/25	0.6	0.02	40	Champlain / Brookly Park	Substation transformer failure
4/28	0.3	0.01	21	Minneapolis / Richfield	Animal contact in the substation
6/8	1.6	0.01	193	Orono / Mound	Connector equipment failure caused wire to burn down
6/21	0.3	0.00	89	Minnetonka	Tree contact caused outage
7/27	0.1	0.02	7	Columbia Heights / Fridley	Unknown cause event
8/30	0.3	0.01	46	Minnetonka / Deephaven	Unknown cause event
9/5	0.4	0.01	28	Bloomington / Richfield	Animal contact in the substation
9/28	0.6	0.02	36	Bloomington / Richfield	Animal contact in the substation
10/17	0.3	0.00	93	Plymouth	Connector equipment failure
10/22	0.2	0.00	57	Mound	Unknown cause event
11/3	0.3	0.01	23	Bloomington / Richfield	Animal contact in the substation
Distribution Lines					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
3/10	0.7	0.01	92	Brooklyn Park	Lightning stirke - Equipment hit by lightning
3/27	0.6	0.01	80	Maple Grove	Pole Fire
4/5	0.4	0.01	48	Minneapolis / Richfield	Mainline feeder cable failure
5/19	0.6	0.01	52	Maple Grove	Equipment misoperation
5/25	0.5	0.01	57	Minneapolis	Pole Fire
6/3	3.0	0.00	611	Minneapolis	Intentional outage for public safety - Centerpoint gas leak
6/7	0.6	0.01	82	Minneapolis / St Louis Park	Connector equipment failure caused wire to burn down
6/30	0.4	0.01	65	Minnetonka / Plymouth	Cable Failure Pri Jacketed
8/19	2.2	0.00	1,643	Plymouth / New Hope	Mainline feeder cable failure
12/15	1.3	0.00	2,070	Edina	Lightning stirke - Equipment hit by lightning

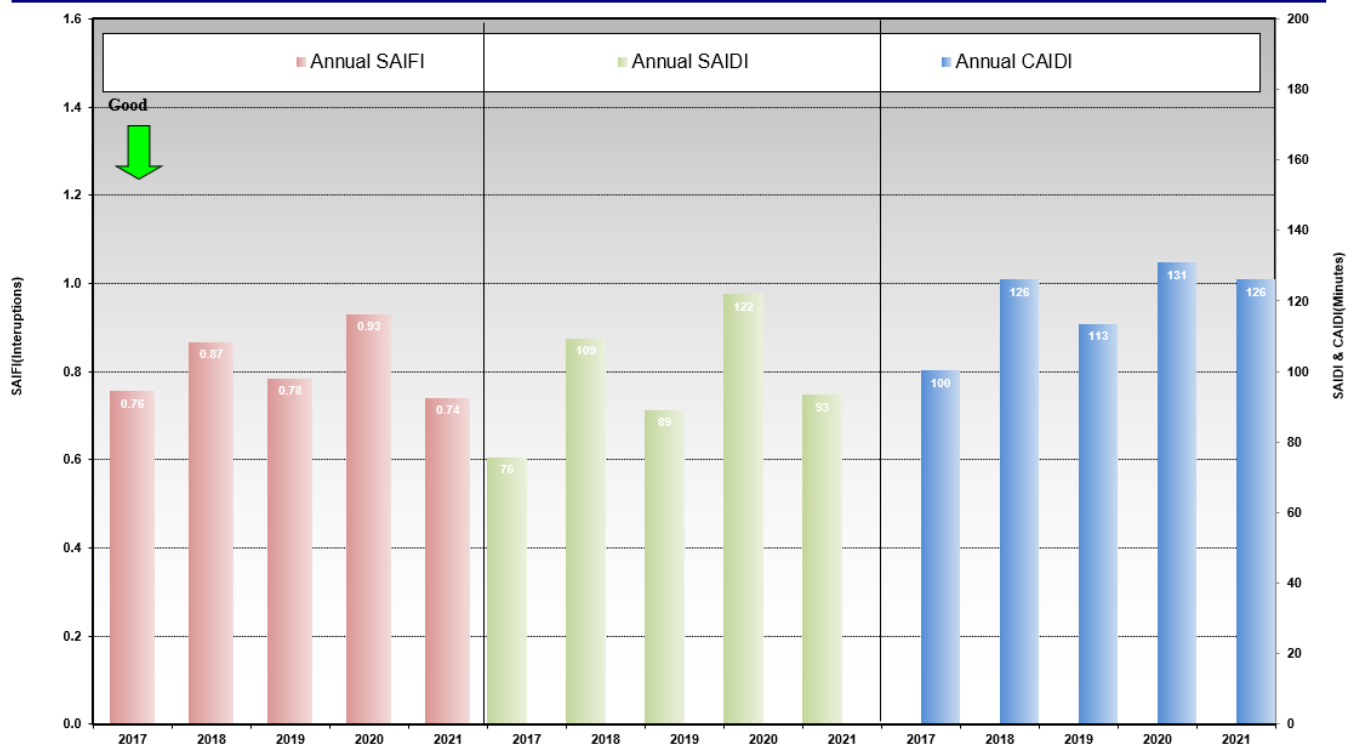
3. Northwest

Graphs 11, 12, and 13 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 11



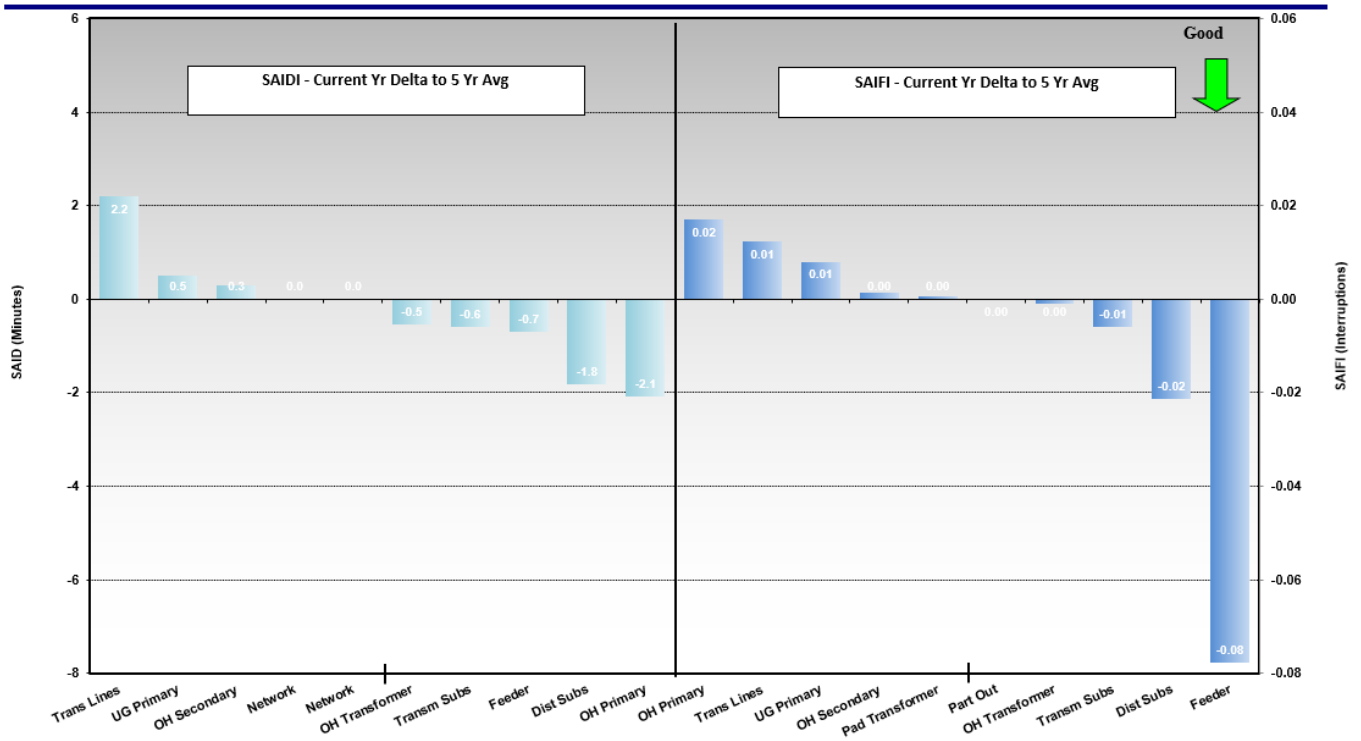
NORTHWEST WORK CENTER 5 Year Actuals
(Annual Rules Normalized - IEEE 1366)



GRAPH 12



NORTHWEST WORK CENTER - 2021 Delta to 5 Year Avg
(Annual Rules Normalized - IEEE 1366 All Levels)



GRAPH 13



NORTHWEST WORK CENTER - 2021 Delta to 5 Year Avg
(Annual Rules Normalized - IEEE 1366 All Levels)

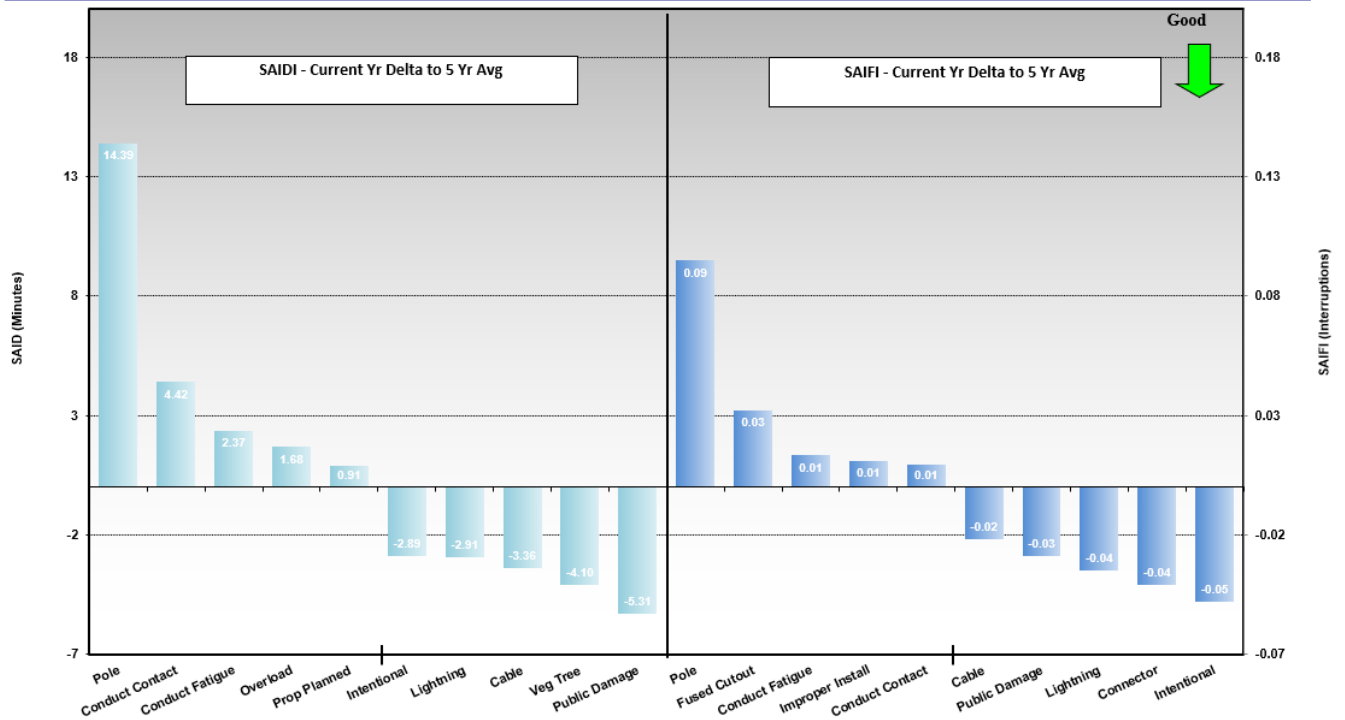


Table 15

Impact events / days

Major Event Days - Excluded from normalized results				
Date	SAIDI	SAIFI	CAIDI	Reason
8/28	10.7	0.05	205	High winds and thunderstorms. Many tree and lightning strikes to equipment

Moderate Storm Activity				
Date	SAIDI	SAIFI	CAIDI	Reason
3/29	1.8	0.01	161	High winds and snow. Tree & line contacts
8/24	2.2	0.01	259	High winds. Tree contacts & equipment failure
12/15-16	8.6	0.02	359	High winds and snow. Tree & line contacts

Transmission					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
2/6	0.7	0.01	55	Renville / Belview	Conductor Contact - Galloping impacted Transmission line
2/12	1.1	0.02	50	Avon / St Joseph	Unknown cause event on Transmission line
3/10	1.5	0.03	51	Richmond / Cold Springs	Unknown cause event on Transmission line
7/23	0.5	0.01	96	Cosmos	Lightning strike on equipment impacted Transmission line
9/16	0.7	0.02	31	Albany / Freeport	Unknown cause event on Transmission line
9/17	0.3	0.01	36	Morton	Unknown cause event on Transmission line
10/13	5.5	0.03	164	Delano / Waverly	Broken pole during storm impacted Transmission line

Distribution Substation				
Date	SAIDI	SAIFI	CAIDI	Area/s
None	0.0	0.00	0	

Distribution Lines					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
3/28	3.5	0.04	99	Saint Michael	Pole on fire
4/5	2.6	0.01	334	St Cloud	Lightning strike - Equipment hit by lightning
4/9	2.2	0.02	102	St Cloud	Public vehicle hit and damaged pole guy wire
5/14	3.5	0.02	178	St Cloud / Sauk Rapids	Pole on fire
5/25	0.7	0.03	24	St Cloud / Waite Park	Fused Cutout equipment failure
6/20	3.1	0.02	157	Dikworth	Pole on fire
8/4	1.5	0.02	71	Dikworth	Public vehicle hit and damaged pole
10/18	2.3	0.04	62	Albertville / Saint Michael	Pole on fire
12/15	5.3	0.01	464	Morgan	Conductors contacting each other during windy conditions
12/19	2.7	0.01	213	Monticello	Connector equipment failure

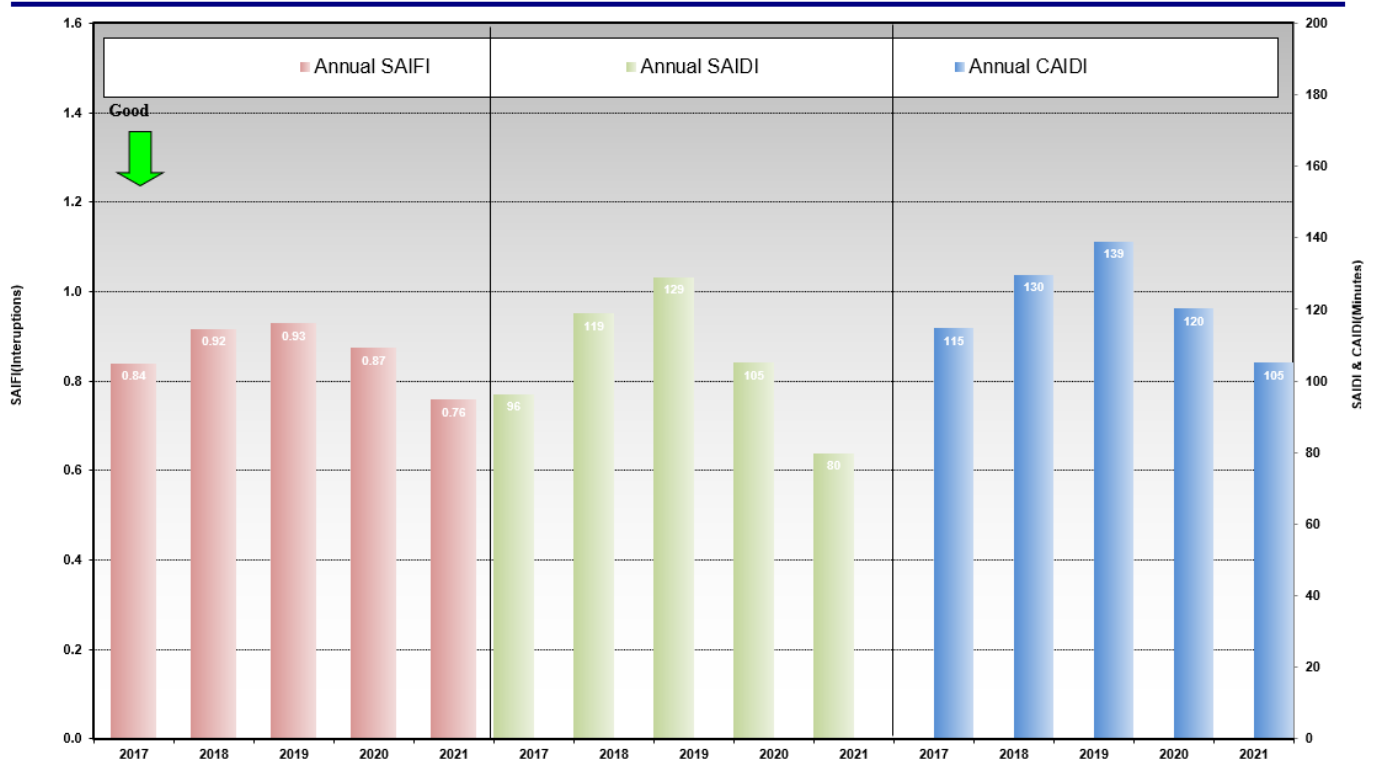
4. *Southeast*

Graphs 14, 15 and 16 show the 5-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.

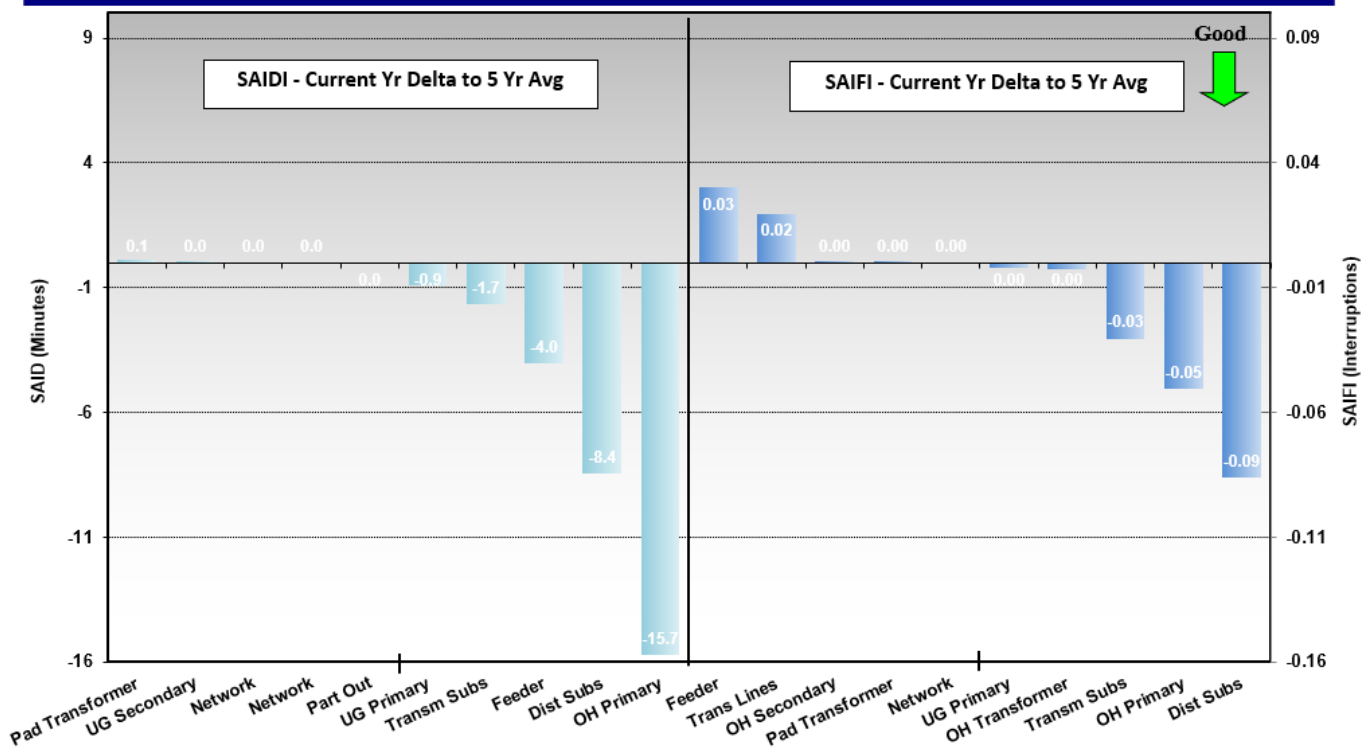
GRAPH 14



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



GRAPH 15


SOUTHEAST WORK CENTER - 2021 Delta to 5 Year Avg
 (Annual Rules Normalized - IEEE 1366 All Levels)


GRAPH 16

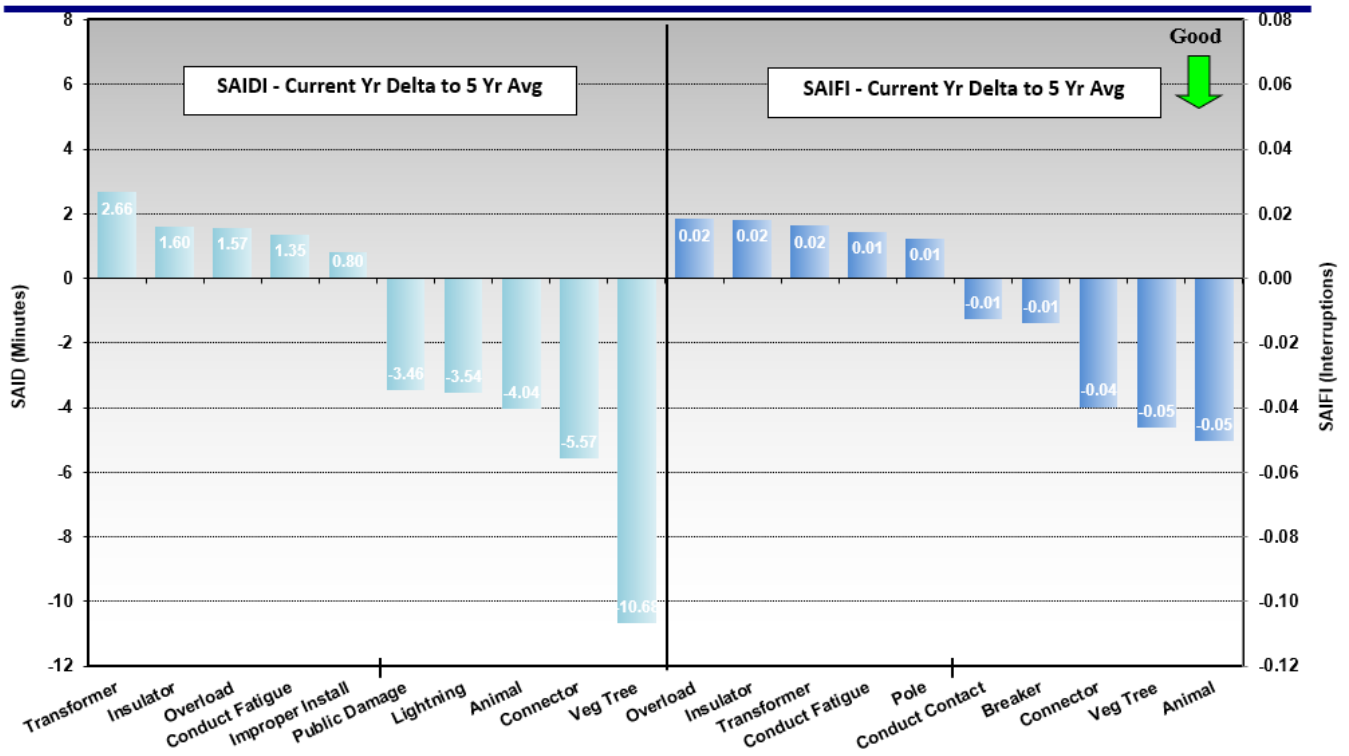

SOUTHEAST WORK CENTER - 2021 Delta to 5 Year Avg
 (Annual Rules Normalized - IEEE 1366 All Levels)


Table 16

Impact events / days

Major Event Days - Excluded from normalized results				
Date	SAIDI	SAIFI	CAIDI	Reason
7/29	10.5	0.03	396	High winds with tree contact and substation events
12/15	32.3	0.09	361	High winds, thunderstorms, and tornado. Many tree and line contacts & pole failures
12/16	22.7	0.05	501	High winds and thunderstorms. Many tree and line contacts & pole failures

Moderate Storm Activity				
Date	SAIDI	SAIFI	CAIDI	Reason
6/8	3.9	0.03	125	Extreme heat-related events
9/17	5.3	0.03	180	Wind & lightning-related events

Transmission					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
2/10	0.2	0.03	7	Prior Lake/Savage	Unknown cause event on Transmission line
7/6	1.4	0.02	70	Winona	Unknown cause event on Transmission substation/line
8/22	0.3	0.00	126	Green Isle/Wash. Lake	Unknown cause event in Transmission substation
9/19	1.4	0.01	242	Edgerton	Animal contact in Transmission sub
10/14	1.5	0.03	57	Wabasha	Public damage car damaging pole
11/13	0.5	0.01	53	Faribault	Conductor fault on Transmission line
12/27	1.2	0.02	66	Gaylord/Dryden	Unknown cause event on Transmission line

Distribution Substation					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
11/5	0.2	0.01	16	Madison Lake/Janesville	Public damage contact

Distribution Lines					
Date	SAIDI	SAIFI	CAIDI	Area/s	Reason
3/7	1.8	0.01	150	Northfield	Substation transformer failure
4/3	2.6	0.02	129	Faribault	Unknown event - No cause found
4/6	3.2	0.02	158	Faribault	Insulator failure - Lightning strike
4/29	1.7	0.01	138	Mankato	Unknown event - No cause found
5/19	1.1	0.01	158	Mankato	Pole on fire
6/8	2.2	0.02	110	Faribault	Overloaded transformer failure - Extreme heat
8/10	1.5	0.01	115	Mankato	Tree contact - Branch caused downed wire
8/24	1.2	0.01	77	Belle Plaine	Lightning strike - Pole hit by lightning
9/17	1.8	0.01	181	Lonsdale	Tree contact - Thunderstorm, branch caused downed wire
10/5	2.2	0.02	142	Mankato	Mainline feeder cable failure
12/1	1.4	0.01	167	New Richland	Pole on fire

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. Attachment M includes a column noting 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

[Minn. 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 2021, 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 2021, there were 231 outages on Xcel Energy’s system that met the definition of “major service interruption.” Please see Attachment O for a summary of the 2021 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 2021, we did not send an email notice to the CAO for thirteen of 231 major service interruptions. These were not sent were due to human error. The fields highlighted in yellow in Attachment O indicate the thirteen major service interruptions where an email notification was not sent to the CAO.

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.

[Minn. 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 2020, there were no such interruptions on Xcel Energy's system.

b. Outage Communications to Customers (Estimated Restoration Times)

[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.

By way of background, when an outage is first discovered (by a customer calling in or otherwise), more refined estimates get 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 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 message. After 20 minutes (an intentional duration set for established escalation rules to properly categorize the outage level, feeder, tap or transformer) of an identified outage, another automated message is sent providing an update. 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 one 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 the provides accuracy of +1 to +90. We provide Tables 17, 18, and 19 below 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 2016 thru 2021. As shown by these Tables, accuracy has increased in all three windows of accuracy:

Table 17

Estimated Restoration Time Accuracy							
Entity	Accuracy Criteria	2016	2017	2018	2019	2020	2021
NSPM	Within -90 to +0	45.9%	43.5%	43.6%	48.3%	53.4%	53.9%
MN Only	Within -90 to +0	45.7%	43.1%	43.5%	49.9%	54.3%	54.8%

Table 18

Estimated Restoration Time Accuracy							
Entity	Accuracy Criteria	2016	2017	2018	2019	2020	2021
NSPM	Within +1 to +30	8.2%	10.1%	8.0%	10.0%	10.4%	11.3%
MN Only	Within +1 to +30	8.3%	10.0%	7.5%	10.4%	10.3%	10.9%

Table 19

Entity	Accuracy Criteria	Estimated Restoration Time Accuracy					
		2016	2017	2018	2019	2020	2021
NSPM	Within +1 to +90	17.9%	19.0%	15.2%	18.6%	16.6%	19.3%
MN Only	Within +1 to +90	18.0%	18.6%	14.5%	18.7%	16.4%	18.5%

Overall, ERT Accuracy improved over ten percentage points in NSPM and over eleven points in MN in the -90 to 0-minute window from 2018 to 2021.

One reason for the improved accuracy is that our manual ERT's (i.e., the estimates field representatives provide after they have been able to assess the cause of the outage and determine the necessary remedial action) continue to get better, 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. Estimated ERT Accuracy from field representatives decreased slightly in 2021 to 47.0 percent, however, there was still significant improvement from our 2017 starting point. One significant driver of this improvement in performance is a concerted effort that began in 2017 to work with our first responders to provide more manual ERT estimates from our Field and Control Center personnel once they arrived "on-site" and were able to assess the cause of the outage and determine the necessary remediation. This training has continued every year since and is showing results.

The accuracy of our onsite (i.e., 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. This is partly due to our training that emphasizes going into "on-site" mode once a crew arrives on site, which impacts the frequency of timely updates and therefore the overall metric.

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.

Xcel Energy is working to streamline the outage order workflow for outage responders in the field by developing easy-to-use mobile apps that will allow field workers to quickly assess outage situations and provide real-time status updates and estimated restoration times which will improve timeliness and accuracy of outage customer communications. Development of the new field outage restoration mobile app began in 2020, went into testing with a small group of employees in 2021 and is expected to be rolled out in early 2022.

Efforts to continue to stabilize and improve systems and tools used during outages helps to improve confidence in providing a consistent customer experience. Work is in progress and having these more up-to-date platforms will allow us the flexibility to create more targeted and timely communications for our customers that meet their needs during outages.

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 with customers experiencing problems with electrical equipment. High voltage can result in bright light bulbs, and eventually shortens the life of the bulbs, or can 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 20
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 2021, the Company conducted 247 voltage investigations. These investigations resulted in a diagnosis of a specific voltage problem in 69 of these 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 21 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 21: 2021 STAFFING LEVELS BY WORK CENTER

	Metro East	Metro West	Northwest	Southeast	Other *
Trouble and O&M Staffing	132	171	33	51	52
Work Center Support (and Contractors)	53 (2)	69 (14)	22 (0)	32 (0)	34 (2)

* 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 eighteen 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 21 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 67 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 22 contains our 2021 MAIFI results followed by definitions of the calculation methodologies we applied.

TABLE 22: 2021 MAIFI RESULTS

	Non-Normalized	Xcel Energy QSP Tariff	Xcel Energy Annual Rules
Region	2021	2021	2021
Minnesota	0.72	0.60	0.69
Metro East	0.77	0.69	0.73
Metro West	0.53	0.50	0.51
Northwest	1.41	0.95	1.37
Southeast	0.83	0.52	0.79

Table 23 provides our MAIFI performance from 2011 to 2021 on a normalized basis using the 2.5 beta method outlined in IEEE 1366-2012. In addition, Table

23 includes non-normalized values per the Commission's decision in Docket No E002/M-18-239.

TABLE 23: MAIFI 2010 – 2021

With Storms - All Levels, All Causes

MAIFI(<=5Mins)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
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
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
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
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
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

Tariff - IEEE No Transmission Line, All Causes

MAIFI(<=5Mins)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
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
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
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
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
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

Annual Rules - IEEE All Levels, All Causes

MAIFI(<=5Mins)	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
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
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
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
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
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

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)

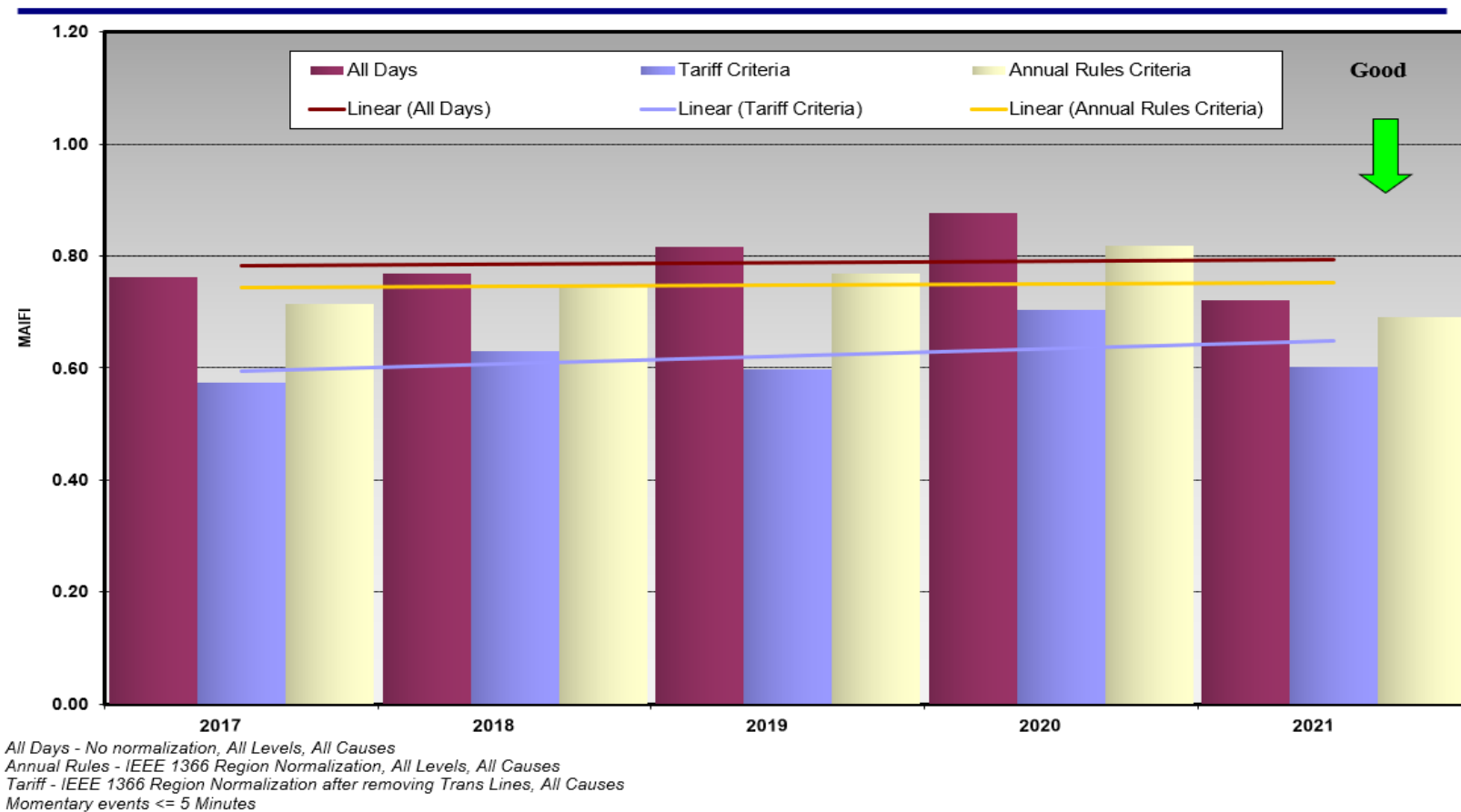
- Includes outages occurring at all levels (distribution, substation, and transmission).
- Includes all outage cause codes.
- Calculations are based on the number of customers' billing accounts and meters.
- Excludes all Major Event Days that qualify under IEEE 2.5 normalization method using all levels.

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

GRAPH 17

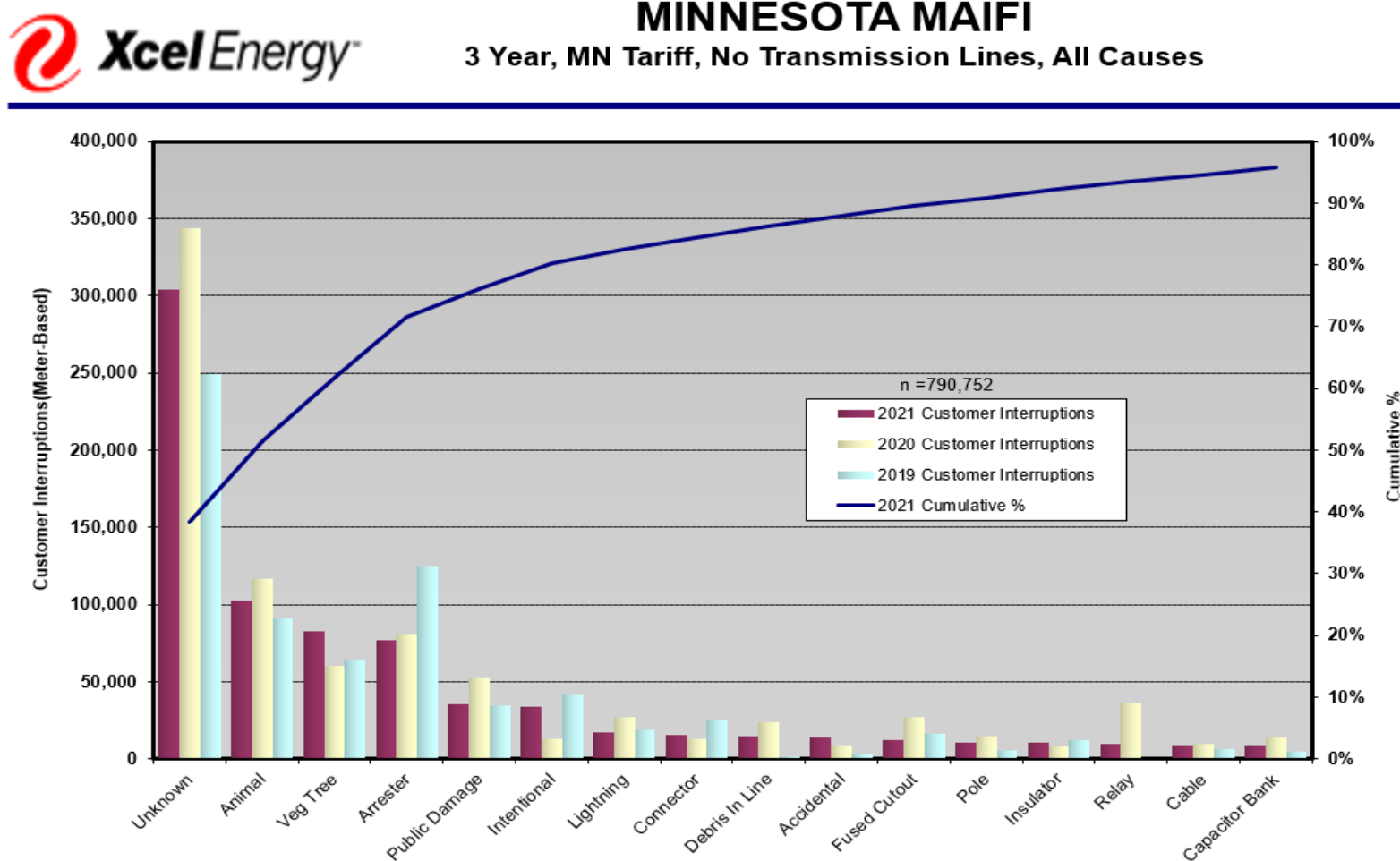


MINNESOTA MAIFI



Graph 18 provides a pareto chart showing the top causes for 2021 interruptions.

GRAPH 18



Tariff - IEEE Normalization after removing Trans Lines, All Causes
Momentary events <= 5 Minutes

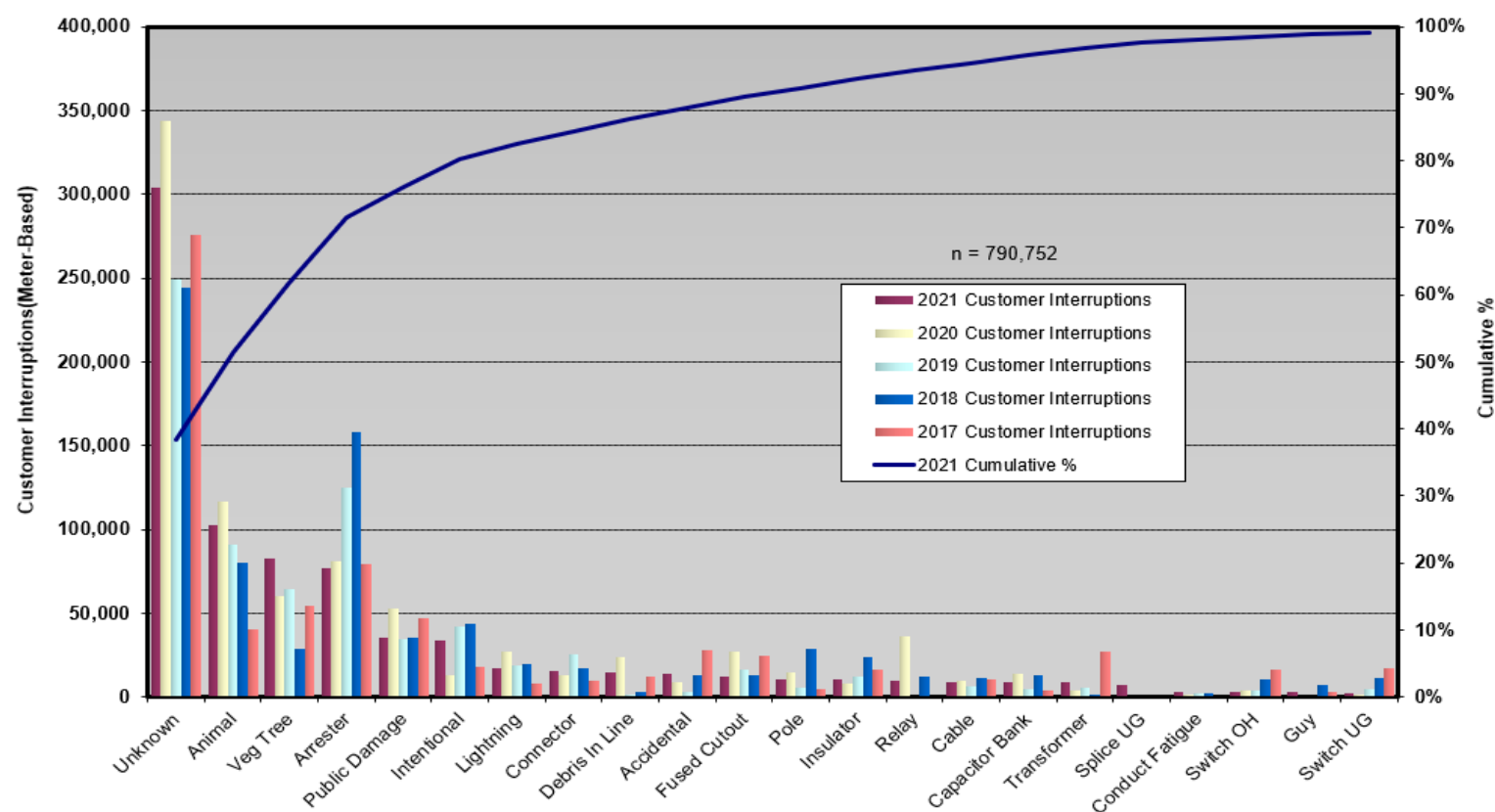
Graph 19 below is the pareto chart showing the top causes for interruptions for the past five years.

GRAPH 19



MINNESOTA MAIFI

5 Year, MN Tariff, No Transmission Lines, All Causes



Tariff - IEEE Normalization after removing Trans Lines, All Causes
Momentary events <= 5 Minutes

Attachment P provides the detailed MAIFI results and Customer Interruptions by month and by work center for 2017 to 2021.

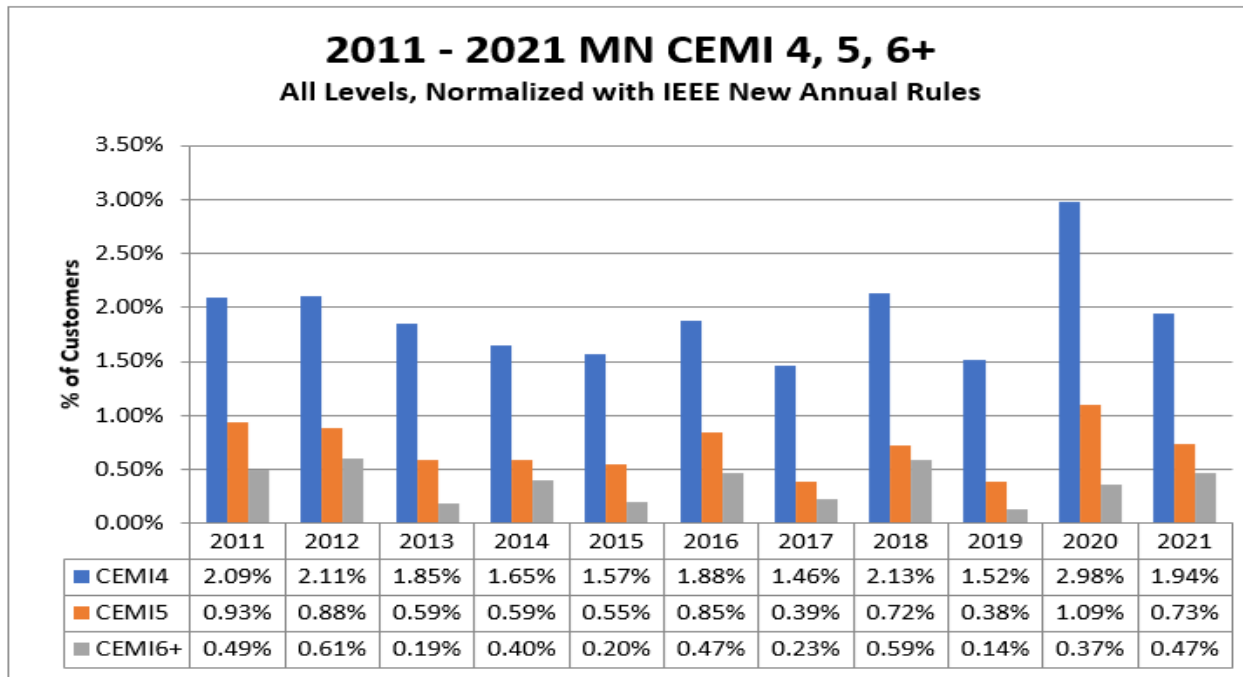
Our system capabilities and procedures have changed and evolved over time. Therefore, the historical MAIFI results will be based on what our protocol and physical capabilities were for capturing momentary events at that point in time.

2. Customers Experiencing Multiple Interruptions (CEMI)

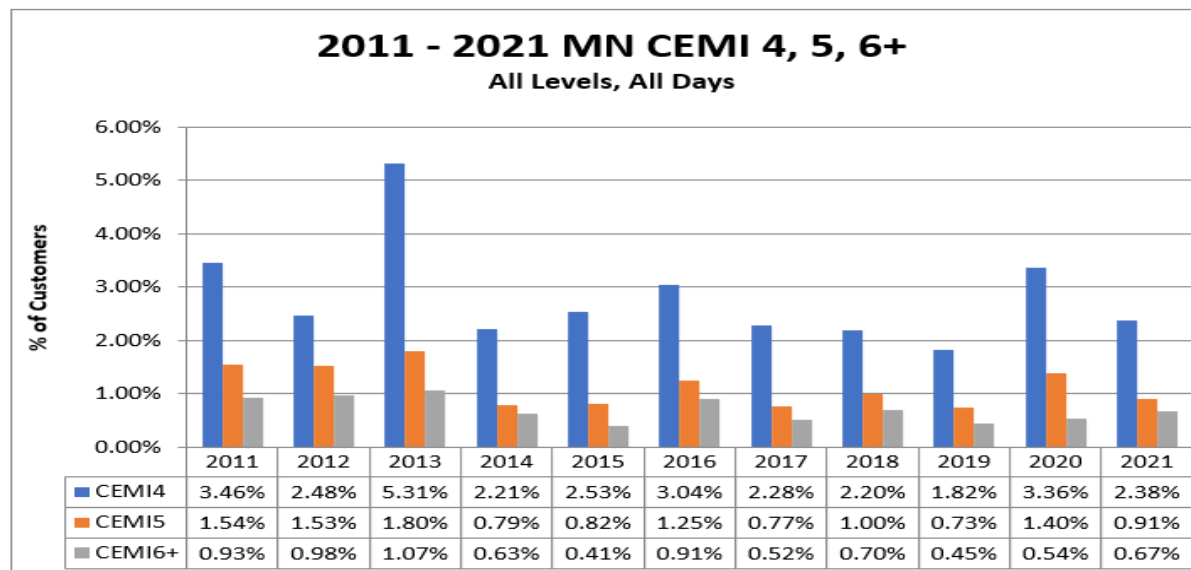
[I]n the Commission's March 19, 2019 Order in Docket No. E002/M-18- 239 at Order Point 3.c, the Commission required the Company to provide "CEMI at normalized and non-normalized outage levels of 4, 5, and 6."

Graph 20 illustrates CEMI results for 2011-2021, normalized using the IEEE 1366 New Annual Rules methodology. The bar graph breaks out Minnesota customers that experienced 4, 5, or 6 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) 2011 – 2021 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.)”

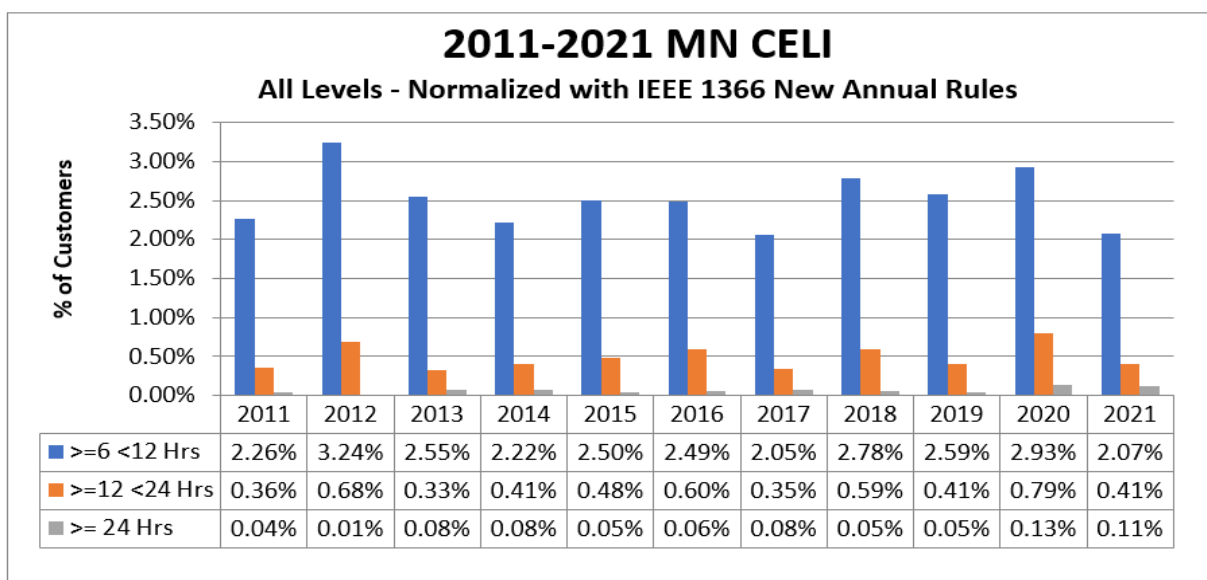
In 2021, two customers had the highest number of outages for both normalized and all days (11 outages). These customers reside in the Metro East region. The majority of the outages were due to intentional outages (four outages); three were equipment failures (two cable and one fused cutout failure); and three weather related outages (two vegetation tree and one lightning caused outages). In addition, there was one interruption due to public damage (overhead line contact).

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.”

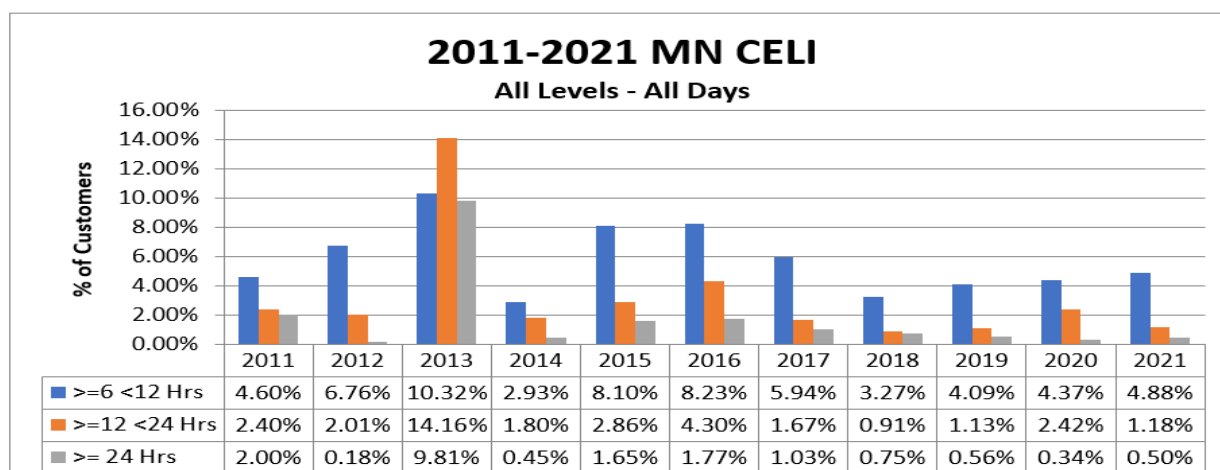
Graphs 22 and 23 (normalized and all days), illustrate the Company’s CELI for the percentage of MN customers that experienced long outages. The outages are bucketed by those greater than 6 hours but less than 12 hours, greater than 12 hours but less than 24 hours and greater than 24 hours during a calendar 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 (2011-2021) 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 for 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) 2011 – 2021 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 lightning strike on August 28, 2021. This occurred during a severe thunderstorm that moved through MN causing wind damage, large hail, and flash flooding. This was an IEEE-1366 Major Event Day where our crews were responding to

close to 200 outages where almost 15,000 customers were out of service. This outage with a duration of 3,848 minutes only affected one customer.

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.

IV. PROPOSED ELECTRIC RELIABILITY STANDARDS FOR 2022

[M]inn. 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 2022 Standards

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

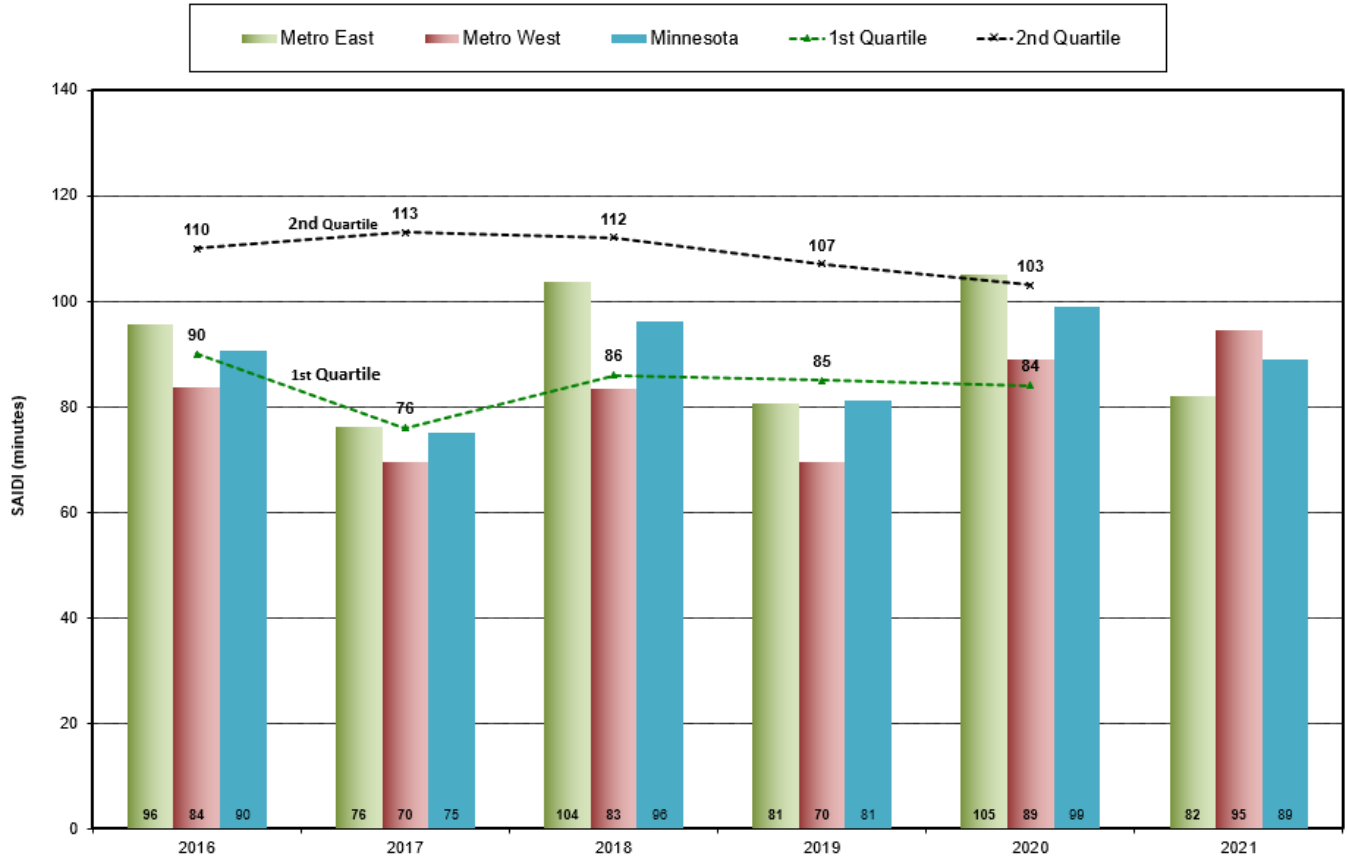
Consistent with the Commission’s March 2, 2022 Order in Docket No. E002/M-21-237, which set the Company’s 2021 reliability standards based upon the 2021 IEEE benchmarking results, we propose a similar approach for 2022. These reliability standards are as follows: (1) second quartile for our Metro East 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 third quarter of the following year, the 2022 benchmarking data will not be available until third quarter of 2023. The Company requests that the 2022 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 March 2, 2022 Order, Order Point 9. providing the 2021 IEEE benchmarking results compared to the Company’s 2021 reliability. If our proposed 2022 standards are approved, we would submit a similar filing in the summer of 2023.

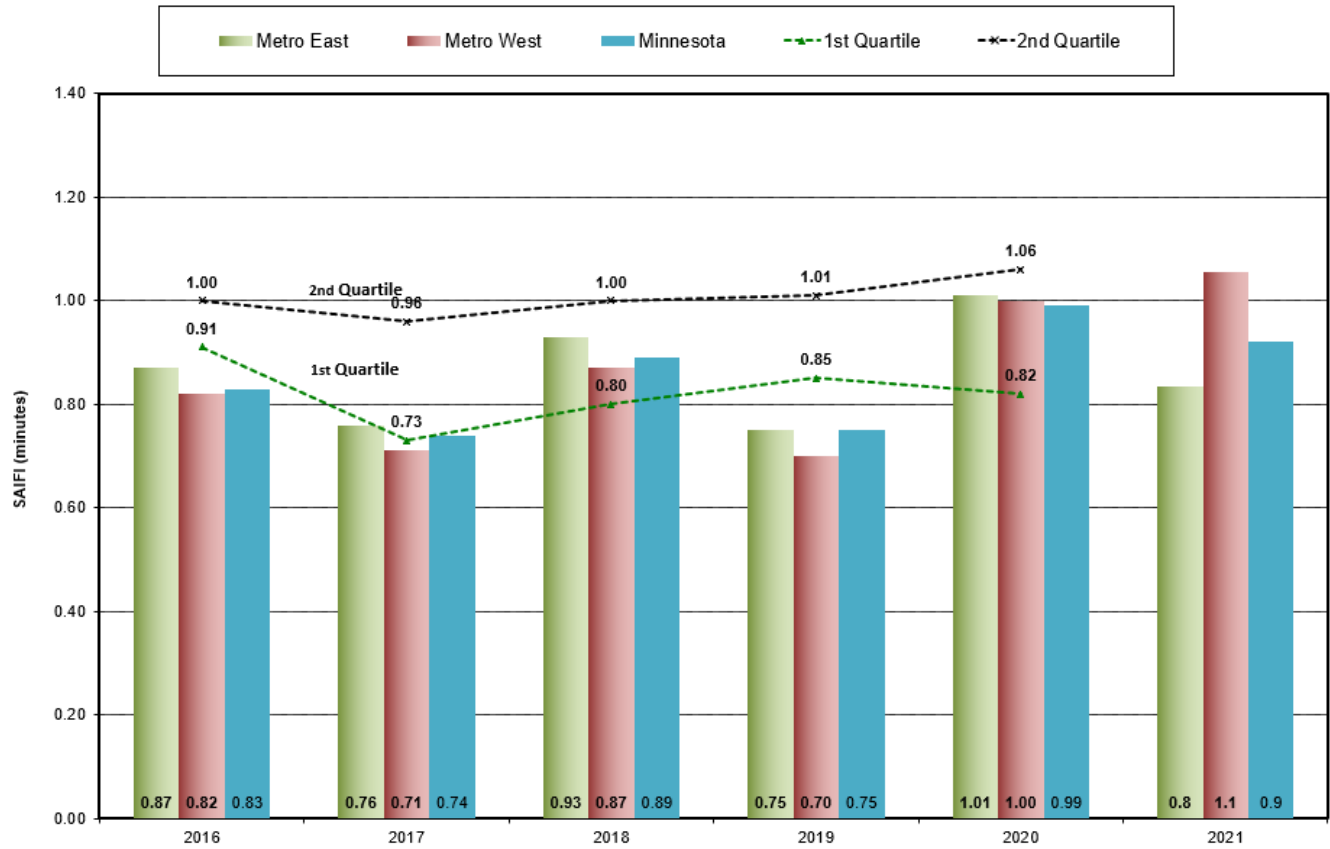
GRAPH 24

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



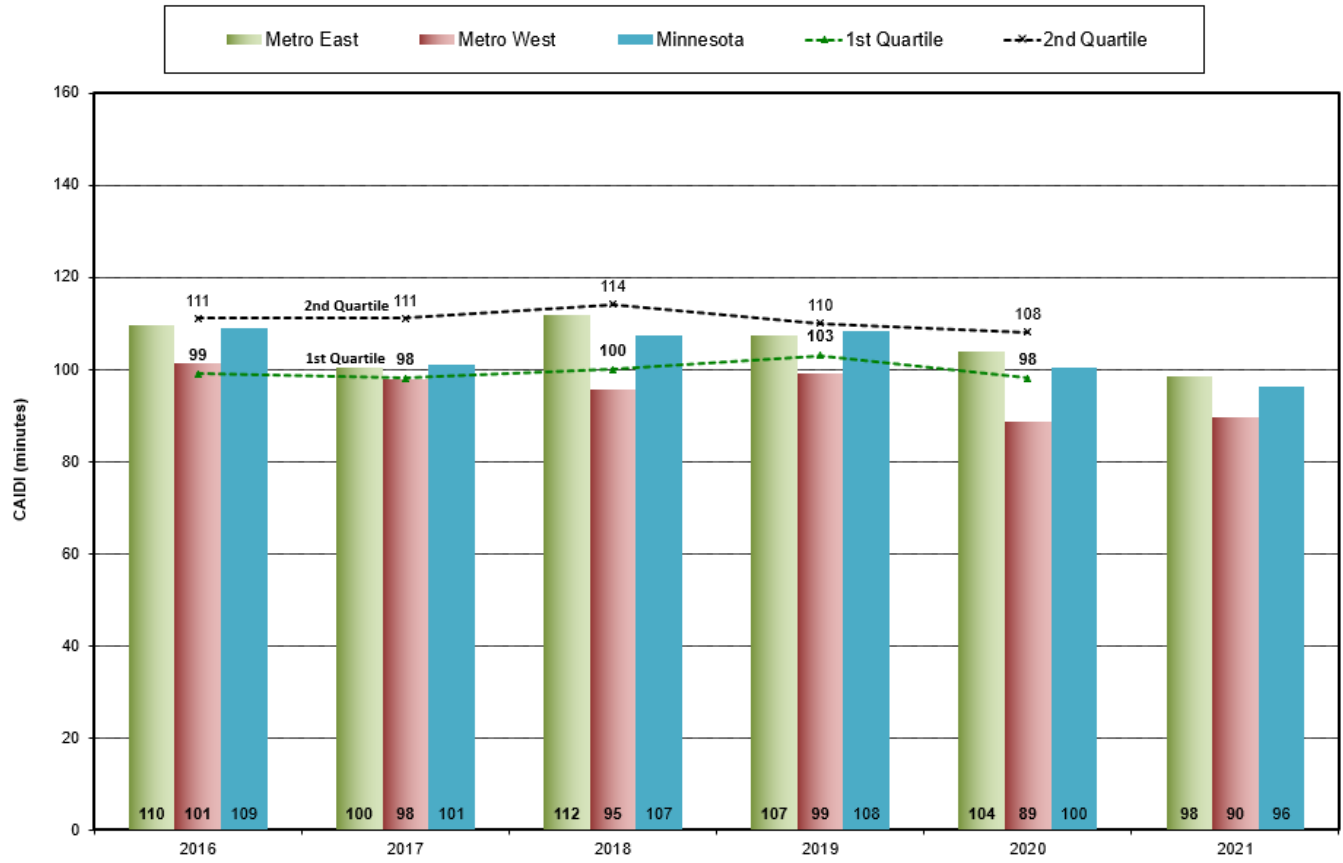
GRAPH 25

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



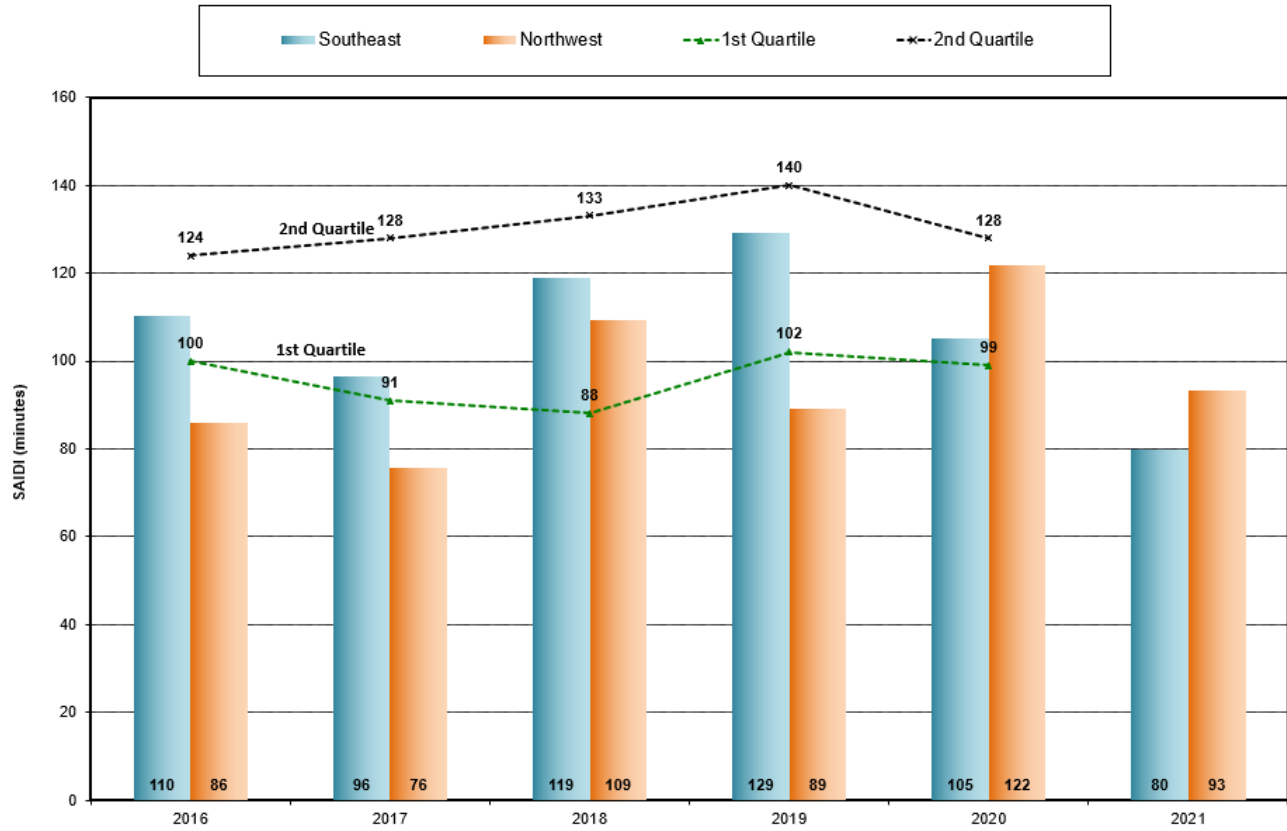
GRAPH 26

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



GRAPH 27

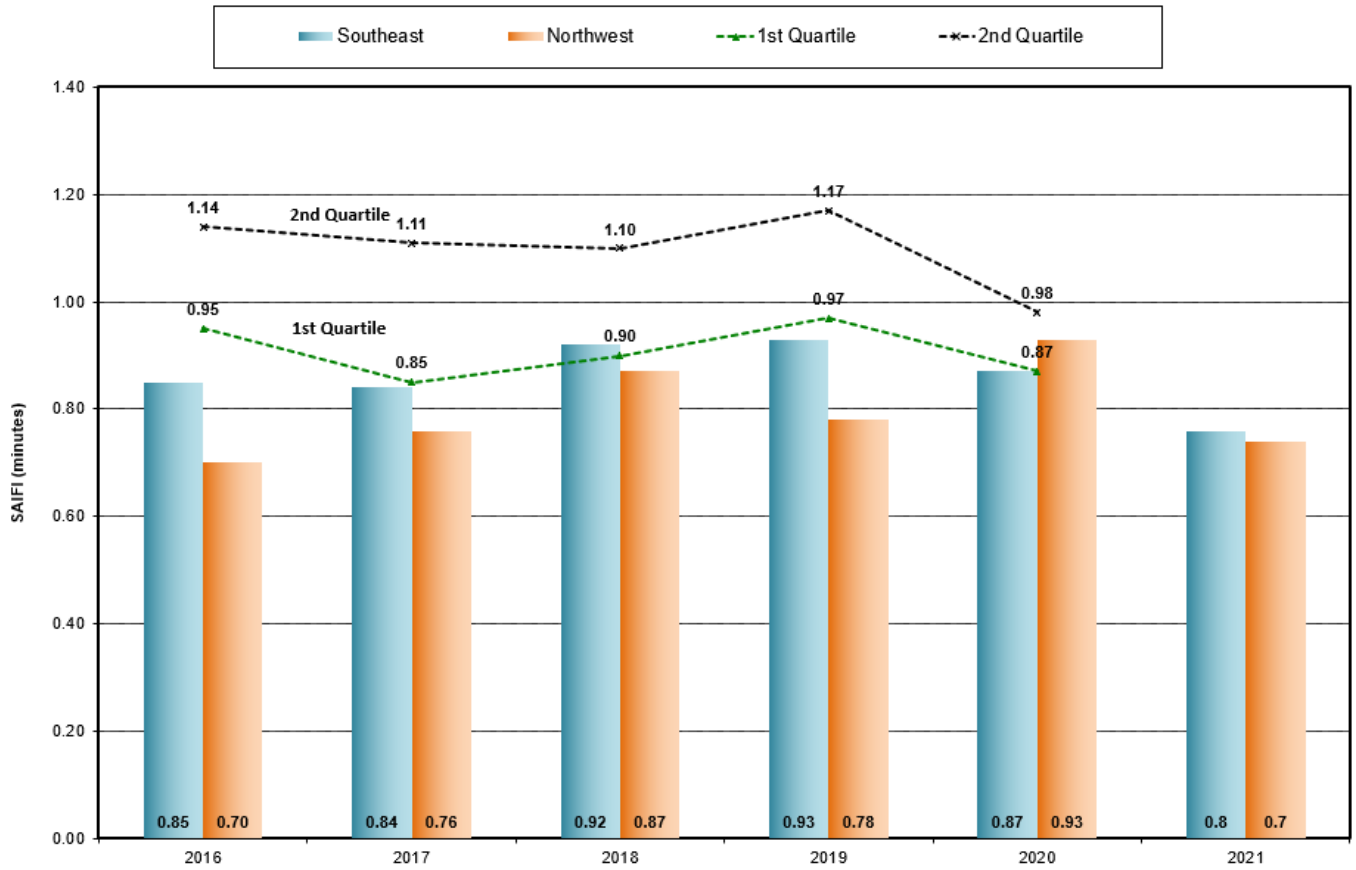
IEEE DRWG Benchmark SAIDI
Medium Utilities Group (>100,000 and < 1,000,000 Customers)



GRAPH 28

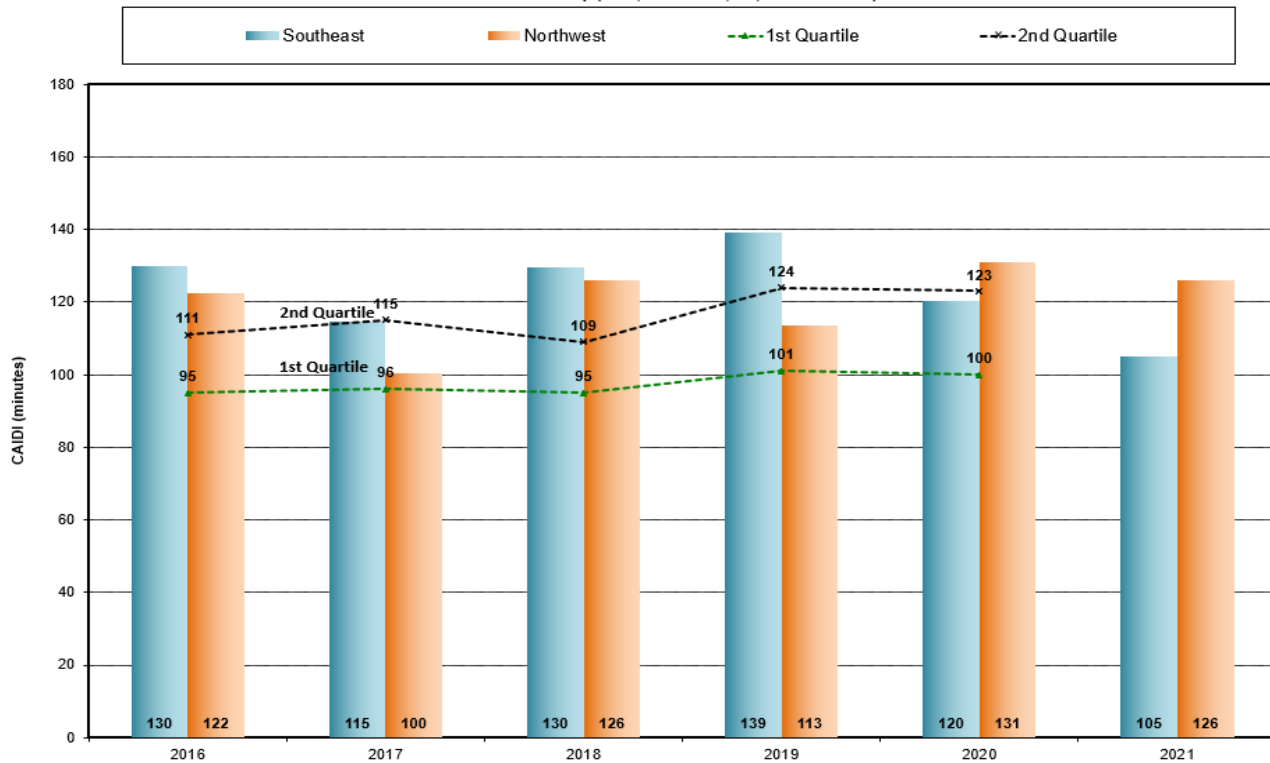
IEEE DRWG Benchmark SAIFI

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

V. 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

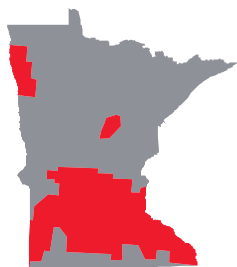
INFORMATION SHEET
MINNESOTA

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 2021*



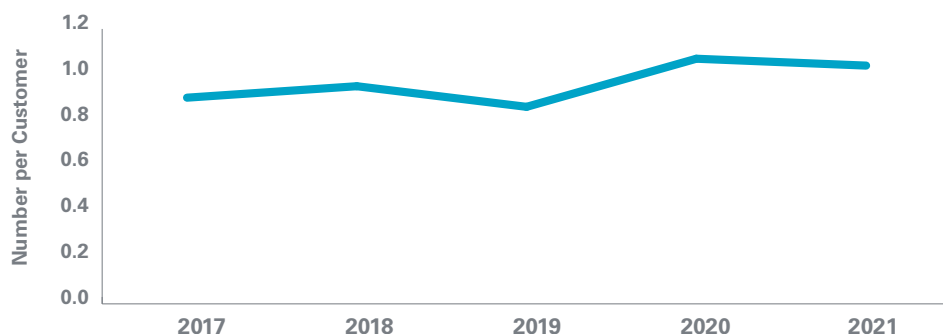
**89
minutes**

Average total time a customer
was without power in 2021**

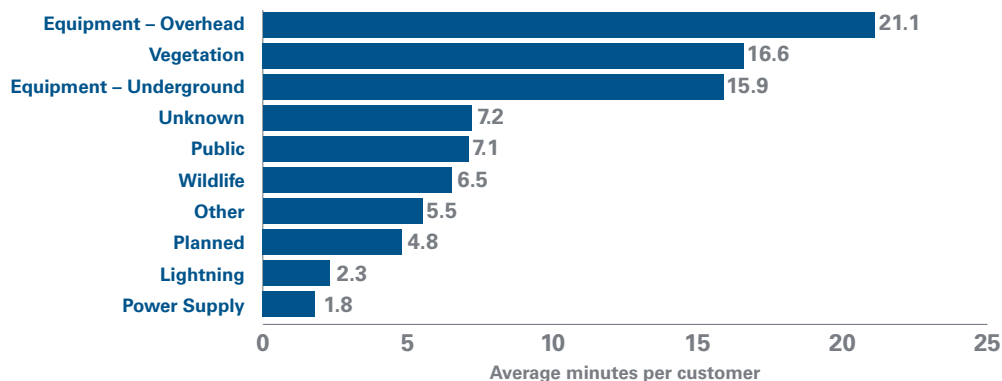
OUR COMMITMENT TO RELIABILITY

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 2021 **

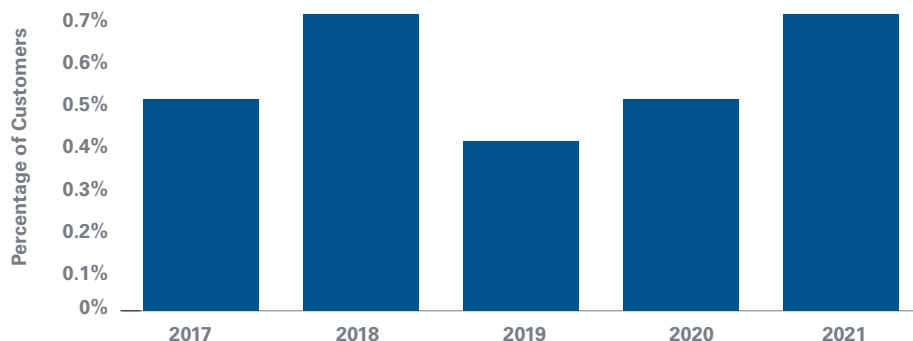
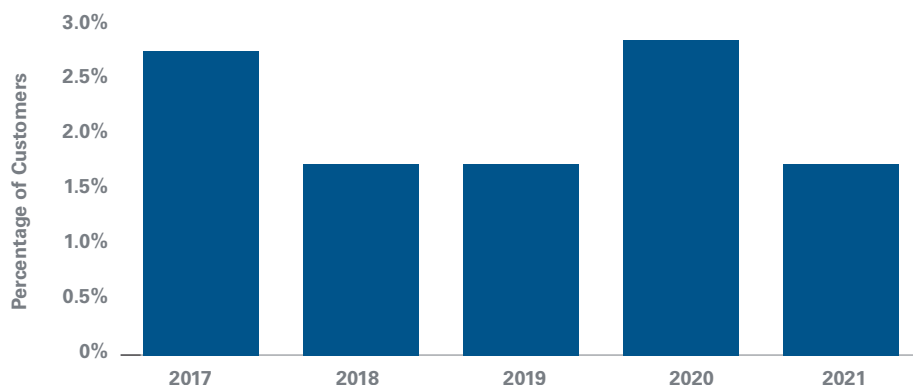


*Also known as Average Service Availability Index, or ASAI. Excludes major event days, which include high-impact storms.

**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 2021 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 250.6 customer complaints per year over the five years from 2017 to 2021. This compares to an average of 363.3 complaints allowed under the Company's Service Quality Tariff during those years.

2021 Reliability Performance Results

Minnesota	
Average outage duration per customer **	88.83 minutes
Total number of outages per customer †	0.92
Average outage length ***	96.33 minutes



5,346

New residential electric service installations completed in 2021



5.7 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.



2021 SOUTHEAST WORK CENTER 4TH QUARTER UPDATE
XCEL ENERGY
DOCKET NOS. E002/M-20-406 AND E002/M-21-237
MARCH 11, 2022

I. OVERVIEW

Northern States Power Company, a Minnesota corporation (the Company), submits this status report on efforts to improve reliability in the Southeast Work Center through fourth quarter 2021.¹

At the January 13, 2022 hearing on Xcel Energy's 2020 Service Quality report, the Commission asked numerous questions regarding the Company's efforts to improve reliability in the Southeast Work Center territory. As a preliminary matter, we note that the 2020 and 2021 SAIDI, SAIFI, and CAIDI metrics have made gains over previous years. In addition, in 2021, to address reliability issues in our Southeast Work Center, the Company initiated a program called the Southeast Region Reliability Initiative. In the fourth quarter of 2021, the Company spent approximately \$2 million for the Southeast Region Reliability Initiative and \$2.7 million on additional reliability improvements. Our fourth quarter efforts are detailed in Section III.C. The Company intends to continue the Southeast Region Reliability Initiative going forward and currently have \$3 million budgeted on an annual basis for those efforts.

To address the Commission's other questions raised at the hearing, 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 2021 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.

II. SOUTHEAST WORK CENTER

The Southeast Work Center is our southern Minnesota service territory and spans from nearly the border of South Dakota to the border of Wisconsin. 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

¹ In its December 18, 2020 Order in Docket No. E002/M-20-406, the Minnesota Public Utilities Commission ordered the Company to file quarterly status reports on efforts to improve reliability in the Southeast Work Center through fourth quarter 2021.

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. To aid in addressing these challenges, the Company operates multiple service centers and employs district representatives throughout the geographic region to serve the entire area.

The Southeast Work Center services approximately 122,000 customers on 132 feeders. When fully staffed, the Southeast Work Center employs 54 full-time employees. Its largest service centers are located in the area's largest municipalities; locations and corresponding head count are listed below:

Service Center	Field and Maintenance Personnel
Faribault	10
Mankato	10
Red Wing	6
Winona	7

Additionally, in order to service the entire geographic area, there are ten smaller service centers/district representative offices located in the region; locations and corresponding head count are listed below:

Service Centers/District Rep Offices	Field and Maintenance Personnel
Bird Island	1
Cannon Falls	1
Dodge Center	4
Gaylord	1
Jordan	5
La Crescent	1
Montevideo	5
Northfield	1
Wabasha	1
Waseca / Waterville	1

Finally, in addition to these service centers/district rep offices, there is a service center located in Pipestone and a district rep office located in Slayton that are located in Minnesota and serve Minnesota customers, but are organizationally part of our South Dakota Work Center. Approximately 8,000 Minnesota customers are served by Pipestone and Slayton.

STAFFING AT SOUTHEAST WORK CENTER

When fully staffed, the Southeast Work Center employs 54 full-time employees; our current headcount is 51 full-time employees. Postings for the three open positions went out in early fourth quarter; however, we are experiencing a lack of availability of experienced candidates that meet the criteria. A mixture of entry-level and experienced journey line workers is necessary to perform the work safely and timely, as well as to train apprentice line workers who are not yet qualified to perform the work alone. In addition, the Company's labor agreement requires all employees in the Southeast area to live within 20 miles of the service center in order to respond to outages when they occur; this requirement can make recruitment somewhat challenging. Finally, the number of applicants for these jobs has decreased significantly.

III. RELIABILITY WITHIN THE SOUTHEAST WORK CENTER

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

The following tables and charts show the 2021 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 System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI) are incremental indices wherein the year-to-

date performance is the summation of the month-end values. The Customer Average Interruption Duration Index (CAIDI) is an average performance index where the year-to-date performance can both rise and fall over the course of the year.

The typical trend line of the year-to-date SAIDI and SAIFI performance follows an “S” shape. The outage impacts in the first and fourth quarters of the year are fairly minimal and flat, due to light-to-moderate winter weather, whereas the second and third quarters tend to be steeper as a result of increased demands due to weather in the late spring through early fall. Since CAIDI is an average and dependent on the base number of outages being included, the year-to-date trend line generally fluctuates during the first and second quarters and then increases slightly with elevated summer activity before flattening out in the last quarter.

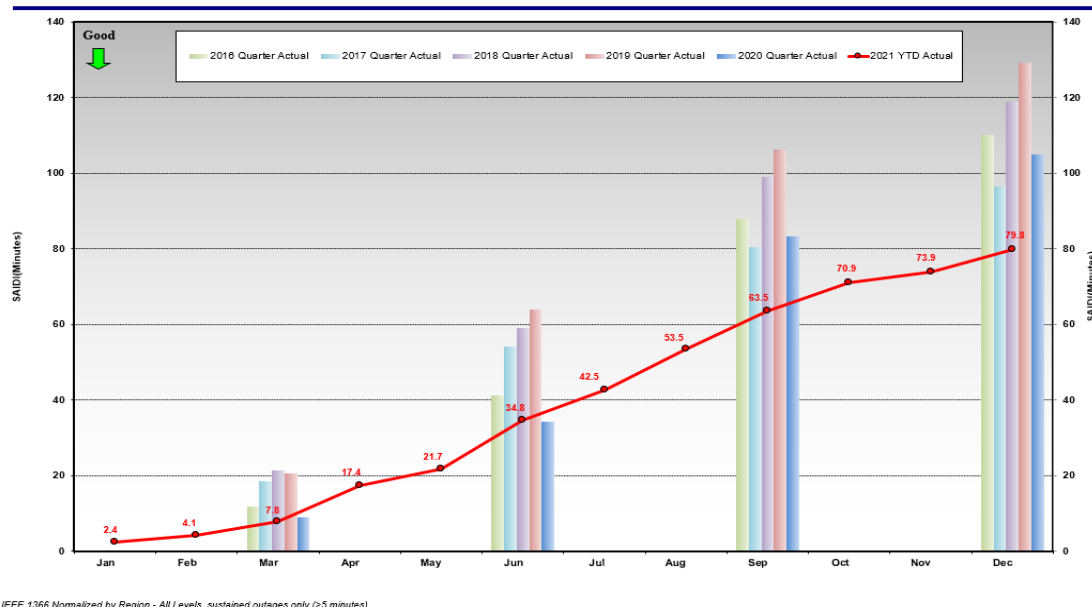
During the fourth quarter, reliability metrics (SAIDI, SAIFI, and CAIDI) have made significant gains as compared to previous years.

As shown in Chart 1, 79.8, the 2021 SAIDI value, depicted by the red line, is the lowest SAIDI in the past five years, with significant gains made in the fourth quarter of 2021.

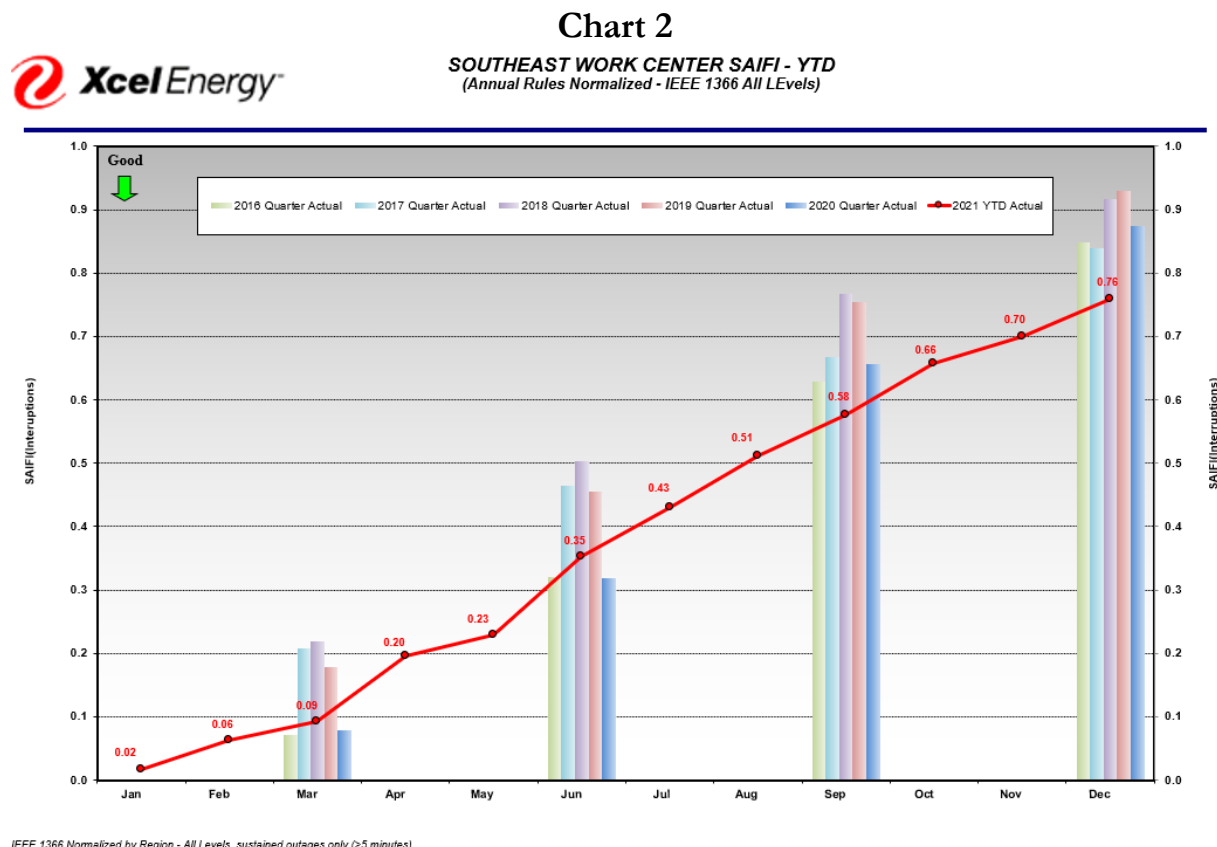
Chart 1



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



As shown in Chart 2, the 2021 SAIFI value, again depicted by the red line, 0.76, is the lowest SAIFI in the past five years, with significant gains made in the fourth quarter of 2021.

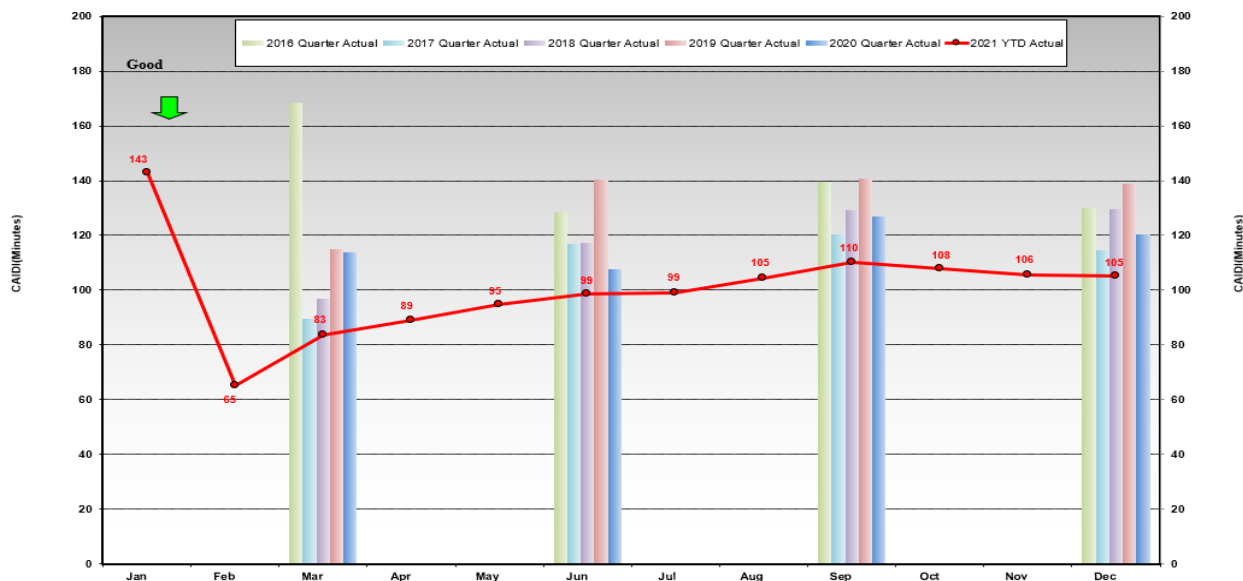


As shown in Chart 3, in 2021 we have continued to have the lowest CAIDI value in the past five years.

Chart 3



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



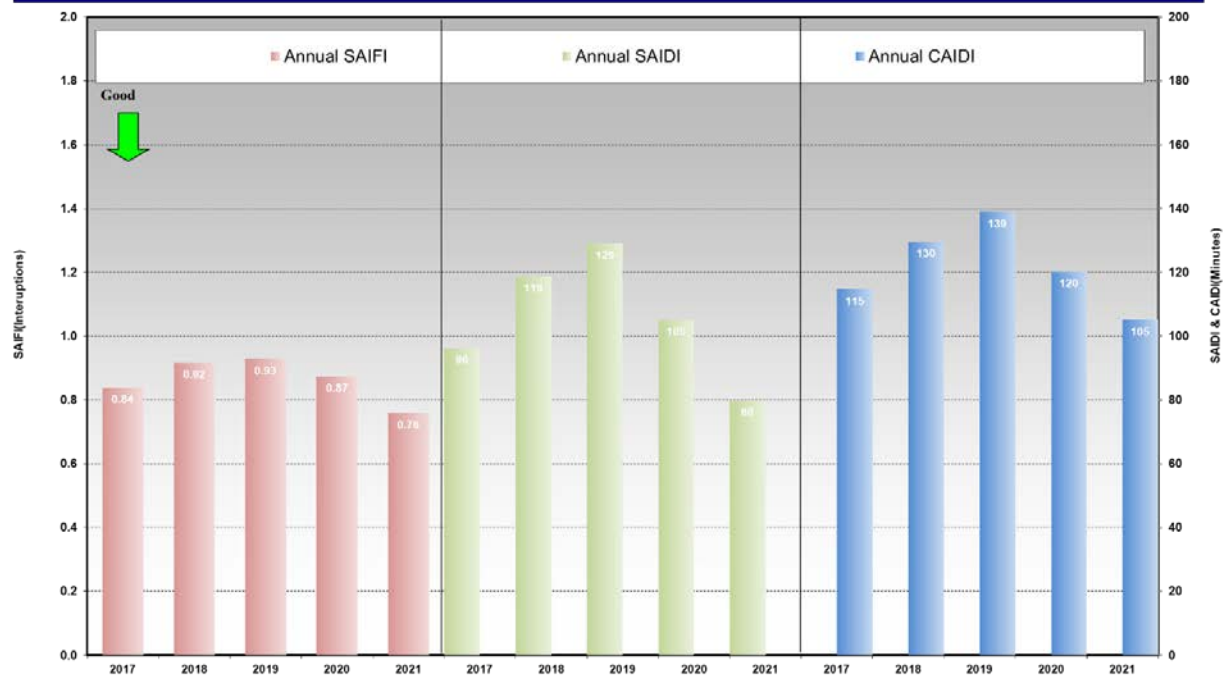
IEEE 1366 Normalized by Region - All Levels, sustained outages only (>5 minutes),

In addition to the quarterly gains, this quarter marks the second year of annual performance improvements. As shown in Chart 4 below, the Southeast Work Center has shown improvements since 2019. The downward trend, across all three-reliability metrics, suggests that the continued focus on reliability and operational improvements are showing results. In 2021, the Southeast Work Center achieved its best year-end results in 5 years for normalized SAIDI, SAIFI, and CAIDI metrics. Additionally, the Southeast Work Center had a best normalized 2021 SAIDI metric of all 4 Minnesota work centers.

Chart 4



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



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

B. Major Event Days / Impact Events in the Fourth Quarter 2021

Certain events on the system are severe enough to trigger what is called a Major Event Day or MED. The thresholds that define these days are calculated using IEEE Standard 1366 methods. Major Event Days 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 event 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.

- Major Event Day: 12/15/2021
 - On December 15th, the Southeast Work Center experienced a major event day when southern Minnesota experienced high winds, thunderstorms, and a tornado. This storm resulted in many large tree

contacts, pole failures, debris in lines, and conductor contact events at the distribution and transmission levels of the system.

- Indices impacts removed: SAIDI (32.1) / SAIFI (0.09) / CAIDI (361)
- Major Event Day: 12/16/2021
 - On December 16th, the Southeast Work Center experienced a major event day when southern Minnesota experienced high winds and thunderstorms. This storm resulted in many large tree contacts, pole failures, debris in lines, and conductor contact events at the distribution level of the system. Indices impacts removed: SAIDI (22.6) / SAIFI (0.05) / CAIDI (501)

The following is a list of some reliability events that occurred in the Southeast Work Center during the fourth quarter of 2021, and their impacts on the SAIDI, SAIFI, and CAIDI indices.

- Impact Events / Days
 - Transmission
 - 10/14/2021, Public Damage cause event on a Transmission line serving the Wabasha area
 - The transmission line tripped and locked out. The event was the result of a car contacting a pole. The event took place in the evening on a weekday. All customers were restored in just over 1 hour.
 - Indices impacts: SAIDI (1.5)/SAIFI (0.03)/CAIDI (57)
 - 12/27/2021, Unknown cause event on a Transmission line serving the Gaylord / Dryden area
 - The transmission substation and line tripped and locked out. The event occurred during windy conditions. The outage was investigated but no specific cause was identified. The event took place in the early evening on a weekday. All customers were restored in under 2 hours.
 - Indices impacts: SAIDI (1.2)/SAIFI (0.02)/CAIDI (66)
 - 11/13/2021, Conductor fault event on a Transmission line serving the Faribault area
 - The transmission line tripped and locked out. The event occurred during snowing conditions. The outage was the result of a conductor failing. The event took place in the

early evening on a weekend. All customers were restored in under 1 hour.

- Indices impacts: SAIDI (0.5)/SAIFI (0.01)/CAIDI (53)

- Distribution Substation

- 11/5/2021, Public damage contact event in a substation serving the Madison Lake / Janesville areas

- This event was the result of a guy wire being damaged causing the substation bus to lock out. The event took place midday on a weekday. All customers were restored within just over 15 minutes.
- Indices impacts: SAIDI (0.2)/SAIFI (0.01)/CAIDI (16)

- Distribution Lines

- 10/5/2021, Cable failure event in the North Mankato area.

- This event was the result of a cable failure on the mainline feeder which resulted in the feeder to locking out. The event took place in the evening on a weekday. All customers were restored within 2.5 hours.
- Indices impacts: SAIDI (2.2), SAIFI (0.02), CAIDI (142)

- 12/1/2021, Pole fire in the New Richmond area.

- This event was the result of a pole top catching on fire which caused a fuse serving a section of a feeder to trip and lock out. The event took place in the early morning on a weekday. All customers were restored within 3 hours.
- Indices impacts: SAIDI (1.4), SAIFI (0.01), CAIDI (167)

- 12/8/2021, Installation issue in the Elysian / Janesville areas.

- This event was the result of an equipment installation issue which caused the mainline feeder to lockout. The event took place in the morning on a weekday. All customers were restored within four hours.
- Indices impacts: SAIDI (0.9), SAIFI (0.01), CAIDI (103)

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 list of reliability-related projects that were completed specifically in the fourth quarter of 2021 and the approximate corresponding expenditures. In addition to the projects listed below, vegetation management efforts in 2021 consisted of 486 miles of overhead distribution line cleared in 33 maintenance areas.

- Faribault Area 2021: Q4 Expenditures: \$2.36 million
 - \$1.03 million of \$2.36 million is Southeast Region Reliability Initiative
 - 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 2021: Q4 Expenditures: \$437,000
 - Replacement of aging underground cable that has experienced multiple failures and lightning arrestor replacements throughout the Mankato area.
- Winona Area 2021: Q4 Expenditures: \$240,000
 - Replacement of aging underground cable that has experienced multiple failures in the Winona area.
- Montevideo Area 2021 Q4 Expenditures \$717,000
 - Replacement distribution poles that were identified through inspections in the Montevideo area.
- Pipestone Area 2021 Q4 Expenditures \$969,000
 - All \$969,000 is Southeast Region Reliability Initiative
 - Overhead distribution line rebuild work, replace aging poles, crossarms, and conductor spacers to reduce line galloping.

In 2022, we will continue with reliability improvements in the Southeast region. Vegetation management efforts will occur on 854 miles of line in 28 maintenance areas. In addition, below is a list of projects that are currently planned for the Southeast Work Center in 2022.

- Red Wing Area
 - Porcelain cutout and distribution pole replacements throughout the Red Wing area. Overhead distribution conversion to underground on Leesen Line.
- Winona Area
 - Underground feeder cable replacement.
- Mankato Area
 - Lightning arrestor and distribution pole replacement.
- Montevideo Area
 - Overhead distribution line rebuilds and pole replacements in the Yellow Medicine and Clara City areas.
- Pipestone Area
 - Pole replacements, crossarm reinforcements, and line spacer additions.
- Faribault Area
 - Overhead distribution line rebuilds in the Waterville, Randolph, and Waltham areas.
 - Porcelain cutout replacement and underground cable replacement in the Faribault area.

IV. CONCLUSION

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

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 2021 programs continuing into 2022 include: Feeder Performance Improvement Program (FPIP); Outage Exception Reporting Tool (OERT); 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 2021 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. Testing and monitoring continued into 2021. These feeders are now running Open Loop FLISR (supervisory). In 2022, the team is working with Distribution Control Center leadership to roadmap a transition to Closed Loop FLISR (fully automatic). In addition, the team is deploying approximately 40 additional FLISR devices in other areas of MN and will work with the control center to transition those to Open Loop FLISR in 2022 and incorporate those in the roadmap for Closed Loop transition. The device count may fluctuate slightly as engineering analysis concludes.

Additionally, an assessment was completed in 2021 for a pilot project of cutout mounted TripSaver II reclosers. The reclosers automatically restore temporary outages on previously fused laterals which reduces the number of sustained service interruptions to customers.

The decision to make these devices a standard protective option for engineers was made in 2021.

Performance improvement plans in 2021 also include 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. Examples of increased efforts is our continued enhanced investigation of tree related interruptions, our continued efforts on replacing porcelain cutouts and identification of areas with excessive galloping.

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.

1. Reliability Management Programs – ‘Star Chart’

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 those 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.

Reliability Management Program Impacts (Star Chart)

NSPM Program Summary Table 1

	Funded Programs	Description	2019 Actuals (k\$)	2020 Actuals (k\$)	2021 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.	1,138	1,011	695	★		★	★
	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.	292	143	250			★	★
	Mainline Cable Replacement, (UG)	Deteriorating non-jacketed cable is failing and causing repeat outages. Proactive and reactive replacement of this cable reduces the outages.	2,557	1,719	530	★			★
	Tap (URD) Cable, (UG)		15,019	26,470	23,113	★	★		★
	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.	0	65	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	40	58	★			
	Vegetation Management (Transmission & Distribution)	Cost benefit prioritized circuit trimming in NSPM. Continued reactive "Hot Spot" trimming.	31,193	20,633	29,908	★		★	★
	Program Replacements (Transmission)	Replaces end-of-life equipment (i.e. - switches, laminated arms, specific insulators, poles) in order to reduce maintenance costs and improve reliability.	1,444	3,764	3,173	★			★
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.	20,500	28,285	30,208	★	★		
	Transmission Substation	Replaces end-of-life equipment in order to reduce maintenance costs and improve reliability.	5,759	2,863	14,127	★			
	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.	5,303	2,239	5,021	★			★

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

The table below 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

	2021	2020	2019	2018	2017	2016	2015
Outage Exception Reporting Tool (OERT) (Replaced REMS in 2016)							
# of Exceptions identified	3,869	3,927	3,735	4,014	3,398	6,635	4,935
# of Service & Work Requests identified	829	959	518	652	297	215	408
Vegetation Management Program							
Total Overhead Distribution miles completed	2,019	1,606	2,647	2,307	2,417	2,086	1,856
Total Overhead Transmission miles completed	754	762	896	768	762	1,039	909
Normalized Tree-coded Sustained Cust Ints. (W/O Storms)	168,848	184,302	170,994	214,299	145,422	155,370	106,215
Non-normalized Tree-coded Sustained Cust Ints. (With Storms)	285,454	286,735	242,158	243,867	277,068	305,946	220,787
Underground Cable Replacement Program							
# of Segments That Have Been Replaced (est.)	2,252	2,579	1,158	1,504	1,411	1,378	861
# of Failures (Only on Primary Cable)	1,656	1,459	1,301	1,366	1,453	1,607	1,560
Feeder Infrared Evaluation (FIRE)							
# of Feeders Scanned	276	259	280	209	248	275	256
# of Hot Spots Corrected	28	66	55	67	71	68	99
Feeder Performance Improvement Plans (FPIP)							
Investigations Completed	97	112	111	108	113	105	96
Wood Pole Inspection Plan							
Total Distribution Wood Poles Inspected	39,045	40,179	10,312	33,720	17,972	18,845	10,213
Total Transmission Wood Poles Inspected	4,945	3,124	3,381	2,464	4,000	4,660	4,119

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
	Duration	Management Staffing	Schedule managers for staggered shifts in metro area to enable human response after hours: 3 managers working 5:30 a. m. to 4:00 p.m.: 1 manager 3:00 p.m. to 11:00 p.m.	Medium
Substations	Frequency	System Integrity	Substation inspection done on every substation specific to identifying animal incursion risk and vegetation issues.	High
	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) currently installed in five of six distribution control centers, the final control center will be in service by second quarter, 2022.	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

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, such as the Outage Exception Reporting Tool (OERT) 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

We have summarized the processes and data that 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 reliable performance of our distribution system.

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						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		
Metro East						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		Roseville	1.05	679.43	646.09	9	1,080	697,778	0	0	0	9	1,080	697,778	0	0	0
2		Saint Paul	0.71	602.86	844.00	2	5	4,220	0	0	0	2	5	4,220	0	0	0
3		Woodbury	5.08	440.90	86.85	111	13,849	1,202,766	0	0	0	110	13,842	1,200,876	1	7	1,890
4		Chisago City	1.62	381.09	235.29	52	4,953	1,165,384	0	0	0	52	4,953	1,165,384	0	0	0
5		Inver Grove Height	2.04	363.71	178.09	20	4,205	748,885	0	0	0	20	4,205	748,885	0	0	0
6		Woodbury	2.94	347.12	118.02	6	50	5,901	0	0	0	6	50	5,901	0	0	0
7		New Scandia	2.72	310.07	113.81	120	8,271	941,358	0	0	0	120	8,271	941,358	0	0	0
8		Hastings	1.21	281.86	232.71	18	1,686	392,342	0	0	0	18	1,686	392,342	0	0	0
9		Apple Valley	2.13	274.73	128.94	5	620	79,945	0	0	0	5	620	79,945	0	0	0
10		Cottage Grove	2.01	273.21	135.68	20	6,041	819,624	0	0	0	20	6,041	819,624	0	0	0
11		Inver Grove Height	3.64	253.98	69.74	13	681	47,494	0	0	0	13	681	47,494	0	0	0
12		Maplewood	1.27	234.90	184.86	16	845	156,207	0	0	0	16	845	156,207	0	0	0
13		Cottage Grove	2.32	232.06	99.88	10	1,329	132,737	0	0	0	10	1,329	132,737	0	0	0
14		New Brighton	2.27	225.89	99.43	5	986	98,038	0	0	0	5	986	98,038	0	0	0
15		Saint Paul	2.14	222.98	104.02	31	4,763	495,452	0	0	0	31	4,763	495,452	0	0	0
16		Saint Paul	1.21	214.39	177.83	4	129	22,940	0	0	0	4	129	22,940	0	0	0
17		Roseville	1.50	209.27	139.76	19	3,306	462,058	0	0	0	19	3,306	462,058	0	0	0
18		Shoreview	1.57	195.15	124.40	39	5,089	633,074	0	0	0	39	5,089	633,074	0	0	0
19		Hastings	1.31	189.54	144.85	66	1,510	218,729	0	0	0	65	1,509	218,573	1	1	156
20		Stillwater	0.88	186.65	211.51	77	1,802	381,136	0	0	0	77	1,802	381,136	0	0	0
21		Shoreview	2.30	177.12	77.17	31	2,658	205,108	0	0	0	31	2,658	205,108	0	0	0
22		White Bear	1.56	170.56	109.37	30	1,667	182,325	0	0	0	30	1,667	182,325	0	0	0
23		Saint Paul	1.34	169.16	126.27	24	1,538	194,196	0	0	0	24	1,538	194,196	0	0	0
24		Hastings	1.64	167.64	102.51	30	3,902	399,998	0	0	0	30	3,902	399,998	0	0	0
25		Saint Paul	1.80	160.91	89.41	15	2,129	190,351	0	0	0	15	2,129	190,351	0	0	0

(1) Based on Jan 1-Dec 31, 2021, 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)

Based on performance Sept 2020 to Aug 2021, 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
		White Bear Lake	1.63	197.835	121.39	44% CMO due to Animal contact. 35% CMO due to vegetation contact.	Feeder Tree Trimming scheduled in 2022. Re-conductor 9,500ft of single phase overhead wire on 4 taps. Scheduled in service date June 2022.
		Willernie	1.9682	277.33	140.91	82% CMO due to Vegetation outages.	Feeder Tree Trimming scheduled for 2022. Re-conductor 8,350ft of single phase overhead wire on 4 taps. Scheduled in service date June 2022.
		Marine Saint Croix	0.78	145.56	187.50	45% CMO due to Vegetation. 13% CMO Lightning Strike, 12% Unknowns.	Feeder Tree Trimming completed 2020. Replacing 326 Porcelain cutouts, replace 490 Lightning Arresters, Re-conductor 5,962 ft of single phase overhead wire on 4 taps, Re-conductor 1,747 ft of three phase wire on 1 tap. Replace 3 fuses with TripSaver. Scheduled in service date June 2022.
		St Paul	2.18	146.55	67.20	58% CMO due to debris in line, possibly due to appx 500 balloons being let go on 10/4/2020 at Harmon Park. 23% CMO due to Lightning arrester failure on Recloser R271140L on 12/23/2020.	Created request to replace appx 71 Porcelain cutouts on Feeder, remove 4 reclosers and sub-fuse taps, replace 4 poles, install 3 overhead Fault Indicators, Scheduled in service date June 2022.
		St Paul	2.49	230.247	92.38	50% CMO 2 outages same day, 1st tree issues, 2nd flash at overhead gang switch, 6/6/21. 30% CMO snow on feeder causing branch weighted with snow to cross phases, 10/20/20.	Feeder Tree Trimmed in 2021. Reconductor appx 3,500 ft of 2/0 to 556 in area of 6/6/21 & 10/20/20 outages. Created request to replace appx 45 Porcelain cutouts, 2 cross arms, 2 poles, 6 lightning arresters, install 11 sets of overhead Fault Indicators. Scheduled in service date June 2022.
[Security Data Ends]							

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

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Metro West						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		Brooklyn Center	2.26	2,220.76	981.78	11	1,511	1,483,470	0	0	0	11	1,511	1,483,470	0	0	0
2		Plymouth	7.16	624.98	87.32	7	2,004	174,994	0	0	0	7	2,004	174,994	0	0	0
3		Plymouth	7.27	486.19	66.92	28	18,621	1,246,105	0	0	0	28	18,621	1,246,105	0	0	0
4		St Louis Park	4.03	442.97	109.85	25	4,242	466,001	0	0	0	25	4,242	466,001	0	0	0
5		St Louis Park	4.31	426.21	98.88	20	12,659	1,251,770	0	0	0	19	12,658	1,251,446	1	1	324
6		Helen	1.36	416.86	307.16	3	19	5,836	0	0	0	3	19	5,836	0	0	0
7		Eden Prairie	2.72	402.90	148.38	28	6,297	934,322	0	0	0	27	6,268	926,782	1	29	7,540
8		Orono	2.18	393.50	180.75	23	3,172	573,336	2	2,900	549,550	22	3,170	573,130	1	2	206
9		Mound	4.32	391.71	90.71	55	8,481	769,314	0	0	0	54	8,478	769,134	1	3	180
10		Minnetonka	1.89	385.12	204.28	98	3,205	654,706	0	0	0	96	3,193	654,033	2	12	673
11		Waconia	2.73	373.56	136.90	70	8,216	1,124,783	0	0	0	67	8,209	1,124,418	3	7	365
12		Waconia	1.46	359.91	246.04	57	2,026	498,472	0	0	0	57	2,026	498,472	0	0	0
13		Fridley	2.20	337.89	153.82	21	2,324	357,483	0	0	0	21	2,324	357,483	0	0	0
14		Watertown	2.15	336.97	156.98	32	3,164	496,691	0	0	0	27	3,107	486,281	5	57	10,410
15		Golden Valley	4.08	331.39	81.20	12	1,155	93,784	0	0	0	12	1,155	93,784	0	0	0
16		Shakopee	1.00	314.90	314.90	1	1	315	1	1	315	1	1	315	0	0	0
17		Bloomington	5.30	300.87	56.80	8	837	47,538	1	158	3,318	8	837	47,538	0	0	0
18		Orono	2.05	290.49	141.52	29	3,038	429,926	1	1,470	291,060	27	3,027	429,498	2	11	428
19		St Louis Park	2.28	290.44	127.52	94	5,744	732,488	0	0	0	94	5,744	732,488	0	0	0
20		Mound	2.54	287.62	113.02	47	5,965	674,179	1	2,341	133,437	46	5,964	674,074	1	1	105
21		Watertown	1.53	279.60	183.30	54	2,012	368,794	0	0	0	49	1,962	361,829	5	50	6,965
22		Eden Prairie	2.01	271.95	135.52	7	891	120,747	0	0	0	7	891	120,747	0	0	0
23		Edina	3.83	266.94	69.64	4	138	9,610	0	0	0	4	138	9,610	0	0	0
24		Eden Prairie	4.46	261.88	58.68	35	9,310	546,291	0	0	0	35	9,310	546,291	0	0	0
25		Fridley	1.96	260.70	132.86	38	4,252	564,935	0	0	0	38	4,252	564,935	0	0	0

(1) Based on Jan 1-Dec 31, 2021, 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 2020 to Aug 2021, 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
		Plymouth	4.17	337.71	81.08	96% CMO Unknown & Vegetation on 10/31/20, 4/30/21, 5/14/21 & 8/13/21.	Feeder Trimming was moved up and completed at the end of 2021. Pole top accessory upgrades and additional fault indicators installed. Corrected and enhanced selective coordination through settings changes to the main breaker and changes for fuse sizes. Planned replacement of tap cable.
		Minnetonka	1.89	406.09	214.97	89% CMO due to Vegetation.	Feeder Tree Trimming scheduled in 2022.
		Minnetonka	3.09	283.71	91.75	89% CMO due to Feeder Cable failure on 7/6/21, 7/15/21 & 7/18/21. Underground switch is double lugged termination with 2 feeder cables on switch.	Feeder Tree Trimming scheduled in 2022. Replacing 1,700 ft of Underground feeder cable, replace switch center and install new switch center to eliminate double lug. Scheduled in service May 2022. Replacing 2,500 ft of underground feeder cable. Schedule ISD June 2022.
		Waconia	2.73	377.23	138.00	39% CMO Unknown, weather-rain on 4/11/21. 35% CMO Vegetation on 7/15/21. 25% CMO Vegetation on 8/20/21. Automated feeder switching failed to operate for these 3 feeder outages.	Feeder Tree Trimming scheduled in 2022. Communications between automated switches repaired after 8/20/21 outage.
		Eden Prairie	2.16	303.92	140.45	60% CMO due to Automatic failures 2 different time on 10/20/20. 31% CMO due to broken crossarm on 5/15/21.	Feeder Tree Trimming scheduled in 2022. Installing ClampStars over Automatic splices, ISD 6/3/22.
Security Data Ends]							

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

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						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		
Northwest						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		Sacred Heart	4.05	683.07	168.79	23	1,384	233,611	1	337	16,176	23	1,384	233,611	0	0	0
2		Montevideo	2.16	380.27	176.12	7	773	136,137	0	0	0	7	773	136,137	0	0	0
3		Dilworth	2.70	366.84	135.67	63	7,049	956,360	0	0	0	61	6,261	844,636	2	788	111,724
4		Glyndon	1.43	345.47	242.39	33	1,163	281,900	0	0	0	33	1,163	281,900	0	0	0
5		Kimball	1.11	328.71	295.52	7	525	155,150	0	0	0	7	525	155,150	0	0	0
6		Franklin	0.86	278.61	323.94	3	252	81,634	0	0	0	3	252	81,634	0	0	0
7		Montrose	1.49	243.95	163.27	51	2,942	480,344	1	1,964	359,412	50	2,927	477,261	1	15	3,083
8		Maynard	2.08	231.96	111.36	15	552	61,469	0	0	0	15	552	61,469	0	0	0
9		Becker	0.87	227.93	263.00	5	39	10,257	0	0	0	5	39	10,257	0	0	0
10		Lake Lillian	2.42	203.06	83.85	24	1,705	142,957	2	1,419	123,462	24	1,705	142,957	0	0	0
11		St Cloud	1.08	199.79	185.80	16	2,628	488,285	0	0	0	16	2,628	488,285	0	0	0
12		Waverly	1.27	195.49	153.51	15	1,574	241,629	1	1,217	187,418	14	1,573	241,583	1	1	46
13		Clarkfield	1.96	193.53	98.65	30	1,181	116,502	0	0	0	30	1,181	116,502	0	0	0
14		Montevideo	1.15	189.91	165.08	16	413	68,176	0	0	0	16	413	68,176	0	0	0
15		Howard Lake	1.17	179.69	154.23	14	1,193	183,998	1	980	137,200	14	1,193	183,998	0	0	0
16		Cottonwood	1.08	173.19	161.09	13	501	80,708	0	0	0	13	501	80,708	0	0	0
17		Rogers	2.16	172.76	79.86	31	9,897	790,381	0	0	0	31	9,897	790,381	0	0	0
18		Clara City	2.33	169.52	72.91	33	2,074	151,214	0	0	0	32	2,073	151,200	1	1	14
19		Albany	1.84	136.97	74.25	2	190	14,108	1	106	4,028	2	190	14,108	0	0	0
20		St Cloud	1.38	131.30	95.14	19	5,175	492,367	0	0	0	18	5,174	492,237	1	1	130
21		Monticello	0.94	127.44	135.59	2	438	59,387	0	0	0	2	438	59,387	0	0	0
22		St Cloud	1.20	126.74	105.84	19	3,287	347,902	0	0	0	19	3,287	347,902	0	0	0
23		Franklin	0.50	120.08	239.33	10	145	34,703	0	0	0	9	20	3,328	1	125	31,375
24		Monticello	0.63	118.76	189.66	25	2,164	410,420	0	0	0	25	2,164	410,420	0	0	0
25		Sumter	0.68	115.20	169.76	2	38	6,451	0	0	0	2	38	6,451	0	0	0

(1) Based on Jan 1-Dec 31, 2021, 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)

Based on performance Sept 2020 to Aug 2021, 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
		Avon	1.43	525.13	368.22	94% CMO due to Vegetation outages 8/28/21, Wind & Lightning.	Feeder Trimmed 2019. Next feeder trim scheduled 2024. Replace 26 Cutouts, Lightning arrestors, and Fiberglass brackets, install 3 fuse on unfused taps. In service date June 2022.
		Sauk Rapids	1.07	198.26	185.95	90% CMO due to pole fire on 5/14/21.	Pole replaced 5/21. Feeder Trimmed 2018. Next feeder trim scheduled 2023.
		Saint Michael	0.42	71.8435	170.95	62% CMO total due to Vegetation (41% CMO due to tree on primary 3/29/21). 22% CMO accidental dig-in due to underground cable.	Feeder Trimmed 2018. Next feeder trim scheduled 2023.
		Saint Cloud	1.27	112.28	88.56	91% CMO Vegetation 8/28/21, Wind & Lightning.	Feeder Trimmed 2018. Next feeder trim scheduled 2023.
		Kimball	1.23	349.77	283.96	94% Automatic Splice failure 6/29/21.	Feeder Trimmed 2019. Next feeder trim scheduled 2024. Repair span overhead 6/21.
Security Data Ends]							

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

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NOT PUBLIC DATA HAS BEEN EXCISED

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
[Security Data Begins]														
1		Faribault	3.69	490.11	132.87	31	6,400	850,346	0	0	0	31	6,400	850,346
2		La Crescent	3.25	475.73	146.51	30	6,270	918,634	0	0	0	30	6,270	918,634
3		La Crescent	1.69	465.02	275.65	25	2,350	647,768	1	1,382	545,890	24	2,286	647,064
4		Faribault	3.18	407.88	128.33	12	2,371	304,278	0	0	0	12	2,371	304,278
5		New Richland	1.92	376.63	196.50	2	92	18,078	0	0	0	2	92	18,078
6		Pipestone	2.10	328.81	156.39	39	2,277	356,106	0	0	0	39	2,277	356,106
7		Edgerton	2.04	274.46	134.22	7	1,413	189,653	1	685	165,770	7	1,413	189,653
8		Edgerton	1.95	246.28	126.47	2	111	14,038	1	55	13,310	2	111	14,038
9		Madison Lake	3.55	221.79	62.42	13	2,107	131,524	1	593	8,895	13	2,107	131,524
10		Red Wing	0.83	205.84	246.77	21	337	83,160	0	0	0	21	337	83,160
11		Mankato	2.05	202.72	99.02	8	1,904	188,528	0	0	0	8	1,904	188,528
12		Northfield	1.13	180.93	160.37	18	1,822	292,198	0	0	0	17	1,821	292,086
13		New Auburn	2.09	175.93	84.26	5	474	39,937	0	0	0	4	473	39,923
14		Winona	1.09	163.97	150.07	47	2,264	339,755	0	0	0	47	2,264	339,755
15		Mankato	1.30	163.41	125.93	19	2,651	333,853	0	0	0	19	2,651	333,853
16		Red Wing	1.47	162.13	110.23	18	2,171	239,302	0	0	0	18	2,171	239,302
17		Waterville	1.79	158.38	88.70	53	2,016	178,812	0	0	0	53	2,016	178,812
18		Wabasha	1.35	158.36	117.22	30	1,170	137,143	1	869	53,878	30	1,170	137,143
19		Mankato	1.26	154.88	123.40	7	2,022	249,506	0	0	0	7	2,022	249,506
20		Altura	0.35	153.60	433.03	26	354	153,292	0	0	0	26	354	153,292
21		Mankato	1.14	153.41	134.51	20	2,013	270,776	0	0	0	20	2,013	270,776
22		Gaylord	2.11	146.00	69.21	8	1,154	79,863	2	1,094	72,204	8	1,154	79,863
23		New Richland	0.98	140.63	143.15	88	2,670	382,220	0	0	0	88	2,670	382,220
24		Mazeppa	1.49	135.23	90.94	33	971	88,307	0	0	0	33	971	88,307
25		Dryden	2.01	134.84	67.06	3	187	12,541	2	186	12,269	3	187	12,541

(1) Based on Jan 1-Dec 31, 2021, 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 2020 to Aug 2021, 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
		La Crescent	2.24	449.149	200.27	91% CMO Vegetation branch on feeder, rain lightning 7/29/21	Feeder Tree Trimming scheduled in 2022.
		Northfield	1.14	182.43	159.76	82% CMO Substation outage 3/7/21. 11% CMO Total Vegetation.	Feeder Tree Trimming scheduled in 2022. Repaired substation transformer.
		Mankato	2.04	217.74	106.74	53% CMO Total Vegetation. 43% CMO Automatic Splice failure 10/23/20.	Feeder Tree Trimming scheduled in 2022. Repair span overhead 10/20.
		Mankato	2.06	204.09	98.85	77% CMO Pole fire 5/19/21. 20% CMO Lightning arrester failure 6/3/21.	Feeder Tree Trimming scheduled in 2022. Pole replaced 5/21. Lightning arrester replaced.
		Winona	1.93	222.29	115.19	27% CMO squirrel at substation feeder bay 10/11/20. 25% CMO failed feeder switch 1/21/21. 18% CMO Conductor Contact - Galloping 6/17/21. 17% CMO Total	Feeder Tree Trimming scheduled in 2022. Repaired damaged Disconnect 10/20. Replace switch 1/21. Repair conductor contact 6/21.
[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						
	2/6/2021	18:12	1	28	Wire down	Repaired down wire
	2/10/2021	1:03	0	6	Structure down, car hit	Replaced structure
	2/12/2021	16:06	4	48	Wire down	Repaired down wire Line being rebuilt
	2/26/2021	10:11	1	20	Failed Insulator	Repaired Structure
	3/10/2021	6:24	1	17	Wire down	Repaired down wire Line being rebuilt
	3/10/2021	10:49	0	45	Wire down	Repaired down wire Line being rebuilt
	4/1/2021	17:53	0	4	Unknown	Line already slated for rebuild
	4/27/2021	13:05	0	1	Relay malfunction	Repair relay
	6/11/2021	11:35	1	35	Thunderstorm	No damage found
	7/23/2021	8:09	0	26	Failed AC substation equipment	Replaced failed arrestor
	7/23/2021	21:44	1	46	Line fault	Line already slated for rebuild
	8/22/2021	20:25	2	7	Broken crossarm	Replaced structure
	8/28/2021	11:09	2	48	Thunderstorm	No damage found Line slated for rebuild
	8/28/2021	11:49	0	4	Broken insulator	Replaced failed parts
	8/28/2021	11:35	2	19	Branch (vegetation) on conductors	Removed branch
	8/28/2021	16:33	28	33	Weather took out line structures on both sides of Lennox	Replaced downed structures. Line being rebuilt
	9/16/2021	12:53	0	6	Unknown	Line already slated for rebuild
	9/17/2021	1:50	0	36	Thunderstorm	Repaired line
	9/17/2021	2:27	2	1	Thunderstorm	Patrol and repair
	9/17/2021	3:15	0	36	Vegetation in line	Removed branch or tree

	10/13/2021	13:28	3	4	Structure down	Replace structure Line already slated for rebuild
	10/14/2021	19:19	0	55	Tree fell on line	Tree felled by a motor vehicle struck line
	12/27/2021	7:11	2	27	Galloping	Isolated galloping section until galloping abated
Protected Data Ends]						

	Feeder	Primary Event #	Begin Time	Completion Time	Duration Min.	Customer s Out	Region	Email sent to CAO
	[PROTECTED DATA BEGINS							
JANUARY = 3 total qualifying events, 0 events with no email								
1		1960320	01/11/21 16:18	01/11/21 17:38	80	2,079	Metro West	x
2		1962691	01/21/21 23:54	01/22/21 02:14	140	806	Southeast	x
3		1964900	01/31/21 06:21	01/31/21 07:49	88	1,606	Metro East	x
FEBRUARY = 7 total qualifying events, 2 events with no email								
1		1966448	02/06/21 19:16	02/06/21 21:08	112	2,541	Metro West	x
2		1966660	02/07/21 10:15	02/07/21 11:21	66	994	Metro West	
3		1968577	02/14/21 10:04	02/14/21 11:57	113	1,025	Metro East	x
4		1968706	02/14/21 10:04	02/14/21 12:09	125	1,247	Metro East	x
5		1974587	02/24/21 04:59	02/24/21 06:24	85	2,921	Metro East	x
6		1974669	02/24/21 05:58	02/24/21 07:01	63	2,103	Metro West	
7		1975833	02/27/21 10:47	02/27/21 11:59	72	1,642	Metro West	x
MARCH = 19 total qualifying events, 0 events with no email								
1		1976336	03/01/21 13:05	03/01/21 14:46	101	2,573	Metro West	x
2		1977801	03/07/21 15:31	03/07/21 18:01	150	1,617	Southeast	x
3		1978372	03/09/21 17:05	03/09/21 18:47	102	2,204	Metro East	x
4		1978459	03/10/21 06:24	03/10/21 07:42	78	709	Northwest	x
5		1978748	03/10/21 18:08	03/10/21 19:41	93	4,830	Metro West	x
6		1979250	03/12/21 09:17	03/12/21 11:32	135	793	Southeast	x
7		1984956	03/24/21 03:56	03/24/21 06:07	131	2,093	Metro West	x
8		1985124	03/24/21 10:00	03/24/21 11:01	61	507	Northwest	x
9		1985181	03/24/21 13:12	03/24/21 14:18	66	2,088	Metro West	x
10		1985290	03/24/21 13:48	03/24/21 15:14	86	765	Metro East	x
11		1986245	03/27/21 11:19	03/27/21 12:39	80	4,995	Metro West	x
12		1986439	03/28/21 07:27	03/28/21 09:27	120	4,457	Northwest	x
13		1986695	03/29/21 12:26	03/29/21 13:38	72	4,138	Metro East	x
14		1987049	03/29/21 17:05	03/29/21 19:55	170	717	Metro West	x
15		1987067	03/29/21 17:05	03/29/21 18:46	101	901	Metro West	x
16		1987225	03/29/21 17:15	03/30/21 05:32	737	2,491	Metro West	x
17		1987251	03/29/21 17:19	03/29/21 18:33	74	7,389	Metro East	x
18		1987535	03/29/21 17:36	03/30/21 18:53	1,517	1,022	Metro East	x
19		1987717	03/29/21 18:45	03/30/21 09:42	897	1,160	Metro East	x
APRIL = 14 total qualifying events, 0 events with no email								
1		1989234	04/03/21 15:31	04/03/21 17:40	129	2,651	Southeast	x
2		1989419	04/04/21 00:03	04/04/21 01:47	104	3,422	Metro West	x
3		1990175	04/05/21 22:03	04/06/21 03:37	334	976	Northwest	x
4		1991244	04/06/21 15:29	04/06/21 17:04	95	1,076	Metro East	x
5		1991292	04/06/21 15:58	04/06/21 17:00	62	1,852	Metro East	x
6		1991476	04/06/21 19:56	04/06/21 22:37	161	2,651	Southeast	x
7		1991987	04/08/21 07:32	04/08/21 09:35	123	884	Metro West	x
8		1992207	04/09/21 06:55	04/09/21 08:39	104	2,738	Northwest	x
9		1992809	04/11/21 18:24	04/11/21 20:52	148	2,939	Metro West	x
10		1993112	04/12/21 11:35	04/12/21 12:38	63	588	Southeast	x
11		1994733	04/19/21 01:18	04/19/21 02:34	76	2,277	Metro East	x
12		1996308	04/26/21 05:12	04/26/21 06:37	85	2,385	Metro East	x

13		1997750	04/29/21 23:16	04/30/21 01:34	138	1,613	Southeast	x
14		1998006	04/30/21 22:48	05/01/21 01:19	151	2,559	Metro West	x
MAY = 9 total qualifying events, 0 events with no email								
1		2001279	05/14/21 17:48	05/14/21 21:35	227	2,448	Northwest	x
2		2001525	05/15/21 09:02	05/15/21 11:25	143	2,314	Metro West	x
3		2002537	05/19/21 00:39	05/19/21 03:45	186	924	Southeast	x
4		2002690	05/19/21 09:00	05/19/21 10:08	68	1,559	Metro East	x
5		2002991	05/19/21 16:21	05/19/21 17:21	60	1,438	Metro West	x
6		2003500	05/21/21 01:15	05/21/21 06:30	315	712	Metro East	x
7		2004118	05/22/21 20:01	05/23/21 17:44	1,303	803	Metro East	x
8		2005731	05/25/21 18:44	05/25/21 19:45	61	1,713	Metro East	x
9		2006597	05/27/21 07:04	05/27/21 08:15	71	1,572	Metro West	x
JUNE = 35 total qualifying events, 1 event with no email								
1		2008907	06/01/21 23:08	06/02/21 00:22	74	2,405	Metro East	x
2		2009687	06/03/21 12:13	06/04/21 04:17	964	3,053	Metro West	x
3		2010329	06/04/21 12:36	06/04/21 18:57	381	3,131	Metro East	x
4		2012289	06/06/21 19:53	06/06/21 22:19	146	1,989	Metro East	x
5		2013114	06/07/21 16:39	06/07/21 19:26	167	4,659	Metro West	x
6		2013875	06/08/21 13:47	06/08/21 15:42	115	2,644	Southeast	x
7		2013983	06/08/21 14:26	06/08/21 20:40	374	567	Metro West	x
8		2014002	06/08/21 14:45	06/08/21 17:45	180	1,450	Metro West	x
9		2014005	06/08/21 14:45	06/08/21 18:03	198	1,470	Metro West	x
10		2014004	06/08/21 14:46	06/08/21 18:05	199	2,260	Metro West	
11		2015677	06/09/21 18:48	06/09/21 20:20	92	2,541	Metro West	x
12		2015761	06/09/21 18:59	06/09/21 20:26	87	1,139	Metro East	x
13		2016475	06/09/21 19:02	06/09/21 20:32	90	2,469	Metro East	x
14		2015787	06/09/21 19:02	06/09/21 20:42	100	3,944	Metro East	x
15		2017197	06/10/21 18:07	06/10/21 20:36	149	2,891	Metro West	x
16		2018237	06/11/21 12:08	06/11/21 13:21	73	2,981	Metro West	x
17		2019388	06/13/21 05:54	06/13/21 06:57	63	3,411	Metro West	x
18		2019649	06/13/21 17:04	06/13/21 18:17	73	3,686	Metro East	x
19		2020084	06/14/21 06:16	06/14/21 07:34	78	1,475	Metro West	x
20		2021914	06/17/21 13:50	06/17/21 14:59	69	2,671	Metro West	x
21		2022004	06/17/21 15:21	06/18/21 03:48	747	2,696	Metro East	x
22		2022459	06/18/21 06:09	06/18/21 07:53	104	1,636	Metro West	x
23		2023307	06/20/21 06:23	06/20/21 07:35	72	926	Metro East	x
24		2023421	06/20/21 09:26	06/20/21 10:40	74	921	Metro West	x
25		2023661	06/20/21 12:00	06/20/21 13:01	61	926	Metro East	x
26		2023807	06/20/21 16:42	06/20/21 17:52	70	3,061	Metro West	x
27		2023947	06/20/21 18:12	06/20/21 19:37	85	2,883	Metro West	x
28		2024193	06/21/21 01:13	06/21/21 02:42	89	611	Metro West	x
29		2024177	06/21/21 01:13	06/21/21 02:42	89	9,016	Metro West	x
30		2024174	06/21/21 01:13	06/21/21 07:51	398	1,697	Metro West	x
31		2025739	06/23/21 18:34	06/23/21 20:52	138	1,460	Metro West	x
32		2026441	06/24/21 16:30	06/24/21 17:53	83	2,339	Metro West	x
33		2028603	06/28/21 08:39	06/28/21 09:43	64	3,058	Metro West	x
34		2028739	06/28/21 09:30	06/28/21 10:31	61	1,343	Metro West	x
35		2030044	06/30/21 17:42	06/30/21 18:49	67	4,072	Metro West	x

JULY = 25 total qualifying events, 1 event with no email								
1		2030306	07/01/21 06:52	07/01/21 08:14	82	1,864	Metro West	x
2		2031111	07/02/21 15:12	07/02/21 16:51	99	574	Metro East	x
3		2032948	07/05/21 21:40	07/05/21 23:37	117	2,483	Metro West	x
4		2033132	07/06/21 00:18	07/06/21 02:10	112	778	Metro West	x
5		2033164	07/06/21 03:46	07/06/21 06:16	150	3,024	Metro West	x
6		2033698	07/06/21 17:15	07/06/21 18:25	70	755	Southeast	x
7		2033696	07/06/21 17:15	07/06/21 18:26	71	1,542	Southeast	x
8		2035314	07/09/21 22:24	07/10/21 00:02	98	1,313	Metro West	x
9		2036206	07/12/21 16:03	07/12/21 18:31	148	1,297	Metro West	x
10		2036272	07/12/21 16:03	07/12/21 18:29	146	529	Metro West	x
11		2037593	07/15/21 10:12	07/15/21 11:41	89	2,399	Metro West	x
12		2037650	07/15/21 10:12	07/15/21 11:55	103	643	Metro West	x
13		2037795	07/15/21 15:39	07/15/21 17:51	132	2,965	Metro West	x
14		2038013	07/15/21 22:25	07/16/21 03:05	280	1,406	Metro East	x
15		2038957	07/18/21 07:30	07/18/21 08:30	60	2,948	Metro West	x
16		2039249	07/19/21 05:20	07/19/21 06:22	62	826	Metro East	x
17		2041428	07/23/21 17:28	07/24/21 00:12	404	2,809	Metro East	x
18		2041626	07/23/21 21:44	07/23/21 23:20	96	710	Northwest	x
19		2041662	07/23/21 23:55	07/24/21 02:19	144	3,243	Metro East	x
20		2042864	07/25/21 21:36	07/25/21 23:04	88	3,313	Metro East	
21		2050574	07/25/21 21:36	07/26/21 00:30	174	820	Metro East	
22		2046227	07/28/21 15:19	07/28/21 17:03	104	1,794	Metro East	x
23		2046923	07/29/21 00:15	07/29/21 07:04	409	1,930	Southeast	
24		2046924	07/29/21 00:15	07/29/21 06:50	395	1,382	Southeast	
25		2048060	07/30/21 07:36	07/30/21 08:45	69	2,603	Metro East	x
AUGUST = 38 total qualifying events, 1 event with no email								
1		2051544	08/06/21 10:23	08/06/21 12:19	116	3,123	Metro West	x
2		2054167	08/10/21 03:12	08/10/21 07:26	254	1,753	Southeast	x
3		2055331	08/13/21 01:42	08/13/21 02:44	62	2,562	Metro West	x
4		2056678	08/16/21 15:15	08/16/21 16:37	82	1,227	Metro West	x
5		2056936	08/17/21 01:36	08/17/21 14:27	771	2,049	Metro East	x
6		2057677	08/18/21 15:55	08/18/21 17:55	120	906	Metro West	x
7		2058116	08/19/21 09:56	08/21/21 06:09	2,653	520	Metro West	
8		2059002	08/20/21 21:12	08/21/21 18:30	1,278	927	Metro West	x
9		2059023	08/21/21 00:42	08/21/21 01:54	72	1,822	Metro West	x
10		2060365	08/24/21 04:46	08/24/21 16:14	688	4,846	Metro East	x
11		2060443	08/24/21 06:23	08/24/21 07:40	77	2,199	Southeast	x
12		2060463	08/24/21 06:29	08/24/21 09:55	206	1,371	Metro West	x
13		2060499	08/24/21 06:36	08/24/21 07:54	78	974	Metro West	x
14		2060564	08/24/21 06:46	08/24/21 08:01	75	1,301	Metro East	x
15		2060728	08/24/21 07:01	08/24/21 08:37	96	2,186	Metro East	x
16		2060786	08/24/21 07:05	08/24/21 08:17	72	2,902	Metro East	x
17		2060939	08/24/21 07:13	08/24/21 08:34	81	1,385	Metro East	x
18		2060989	08/24/21 07:15	08/24/21 08:50	95	1,538	Metro West	x
19		2061007	08/24/21 07:15	08/24/21 08:50	95	1,538	Metro West	x
20		2061179	08/24/21 07:33	08/24/21 08:54	81	1,104	Metro East	x
21		2062084	08/24/21 10:26	08/24/21 15:09	283	1,065	Metro East	x
22		2063369	08/25/21 14:04	08/25/21 15:13	69	1,630	Metro West	x

23		2063394	08/25/21 14:32	08/25/21 15:55	83	3,620	Metro West	x
24		2063763	08/26/21 13:00	08/26/21 15:44	164	2,309	Metro West	x
25		2063860	08/26/21 13:45	08/26/21 16:06	141	1,348	Metro West	x
26		2064503	08/26/21 14:11	08/27/21 12:08	1,317	1,391	Metro West	x
27		2064043	08/26/21 14:25	08/26/21 16:19	114	2,840	Metro West	x
28		2064176	08/26/21 14:54	08/26/21 16:22	88	3,058	Metro West	x
29		2064411	08/26/21 15:12	08/26/21 16:41	89	574	Metro East	x
30		2064584	08/26/21 16:23	08/26/21 17:27	64	2,829	Metro East	x
31		2064762	08/26/21 17:22	08/26/21 18:28	66	2,586	Metro West	x
32		2065011	08/26/21 19:32	08/26/21 21:10	98	2,056	Metro West	x
33		2065062	08/26/21 20:45	08/26/21 21:52	67	1,156	Metro East	x
34		2065211	08/26/21 23:29	08/27/21 00:44	75	1,703	Metro West	x
35		2066534	08/28/21 11:35	08/28/21 15:05	210	1,522	Northwest	x
36		2073184	08/28/21 11:35	08/28/21 13:28	113	761	Northwest	x
37		2067439	08/29/21 07:16	08/29/21 09:49	153	1,478	Southeast	x
38		2068317	08/30/21 18:02	08/30/21 22:17	255	1,326	Metro West	x
SEPTEMBER = 47 total qualifying events, 5 events with no email								
1		2069553	09/01/21 19:57	09/01/21 21:15	78	1,597	Metro West	x
2		2073521	09/12/21 07:57	09/12/21 09:47	110	2,688	Metro West	x
3		2074058	09/13/21 17:04	09/13/21 18:33	89	983	Metro West	x
4		2073985	09/13/21 17:04	09/13/21 18:33	89	972	Metro West	
5		2075935	09/17/21 03:02	09/17/21 12:43	581	728	Metro West	x
6		2075936	09/17/21 03:02	09/17/21 10:34	452	2,137	Metro West	x
7		2075924	09/17/21 03:03	09/17/21 06:41	218	998	Metro West	x
8		2075953	09/17/21 03:03	09/17/21 04:34	91	2,878	Metro West	x
9		2075965	09/17/21 03:05	09/17/21 04:25	80	1,851	Metro West	x
10		2076112	09/17/21 03:08	09/17/21 05:42	154	1,112	Metro West	x
11		2076024	09/17/21 03:08	09/17/21 08:00	292	1,654	Metro West	x
12		2076182	09/17/21 03:09	09/17/21 05:18	129	1,445	Metro East	x
13		2076286	09/17/21 03:09	09/17/21 08:54	345	1,164	Metro West	x
14		2076253	09/17/21 03:09	09/17/21 09:17	368	710	Metro West	x
15		2076199	09/17/21 03:10	09/17/21 04:42	92	1,405	Metro East	x
16		2076371	09/17/21 03:12	09/17/21 05:29	137	2,918	Metro West	x
17		2076392	09/17/21 03:14	09/17/21 06:38	204	4,845	Metro East	x
18		2076569	09/17/21 03:16	09/17/21 09:17	361	1,577	Metro East	x
19		2076598	09/17/21 03:16	09/17/21 11:23	487	2,053	Metro East	x
20		2076522	09/17/21 03:16	09/17/21 05:42	146	2,292	Metro West	x
21		2076586	09/17/21 03:18	09/17/21 06:54	216	2,082	Metro East	x
22		2076812	09/17/21 03:20	09/17/21 08:24	304	2,401	Metro East	x
23		2076859	09/17/21 03:21	09/17/21 09:07	346	943	Metro East	x
24		2078868	09/17/21 03:21	09/17/21 10:49	448	1,345	Metro East	x
25		2076903	09/17/21 03:23	09/17/21 10:19	416	2,147	Metro East	x
26		2076989	09/17/21 03:25	09/17/21 12:01	516	2,104	Metro East	
27		2077032	09/17/21 03:31	09/17/21 09:26	355	5,463	Metro East	x
28		2077316	09/17/21 03:31	09/17/21 09:43	372	1,304	Metro East	x
29		2077268	09/17/21 03:32	09/17/21 21:47	1,095	2,073	Metro East	x
30		2077580	09/17/21 03:45	09/17/21 10:51	426	999	Metro East	x
31		2077591	09/17/21 03:45	09/17/21 19:11	926	653	Metro East	
32		2077959	09/17/21 04:37	09/17/21 05:48	71	868	Metro West	x

33		2078206	09/17/21 06:01	09/17/21 15:32	571	1,929	Metro East	x
34		2078326	09/17/21 06:38	09/17/21 15:55	557	712	Metro East	
35		2078322	09/17/21 06:38	09/17/21 17:43	665	669	Metro East	
36		2078658	09/17/21 08:17	09/17/21 10:39	142	1,122	Southeast	x
37		2081288	09/19/21 09:13	09/19/21 10:18	65	1,765	Metro West	x
38		2082655	09/22/21 01:35	09/22/21 03:33	118	1,199	Northwest	x
39		2083286	09/23/21 20:09	09/23/21 21:43	94	2,172	Metro West	x
40		2083329	09/23/21 20:24	09/23/21 21:57	94	1,060	Metro West	x
41		2083558	09/24/21 07:58	09/24/21 11:43	225	1,097	Metro West	x
42		2083676	09/24/21 07:58	09/24/21 11:45	227	1,196	Metro West	x
43		2084444	09/26/21 15:52	09/26/21 18:31	159	1,461	Metro West	
44		2085554	09/28/21 19:26	09/28/21 20:51	85	2,693	Metro West	x
45		2085545	09/28/21 19:26	09/28/21 20:51	86	712	Metro West	x
46		2086317	09/29/21 14:33	09/30/21 10:52	1,219	3,119	Metro West	x
47		2086853	09/30/21 22:02	10/01/21 00:21	139	2,652	Metro West	x
NOVEMBER = 6 total qualifying events, 0 event with no email								
1		2102356	11/09/21 15:36	11/09/21 16:36	60	661	Metro East	x
2		2103469	11/10/21 17:40	11/10/21 18:45	65	1,496	Metro West	x
3		2104563	11/13/21 22:43	11/14/21 00:33	110	632	Metro East	x
4		2104632	11/13/21 22:43	11/14/21 02:30	227	523	Metro East	x
5		2108593	11/25/21 05:53	11/25/21 07:02	69	1,225	Metro East	x
6		2108589	11/25/21 05:53	11/25/21 07:02	69	1,501	Metro East	x
DECEMBER = 28 total qualifying events, 3 events with no email								
1		2111372	12/05/21 10:25	12/05/21 11:37	72	2,199	Metro East	x
2		2111744	12/05/21 19:10	12/05/21 20:48	98	1,838	Metro West	x
3		2113038	12/08/21 05:52	12/08/21 07:00	68	809	Southeast	x
4		2115003	12/14/21 01:43	12/14/21 03:02	79	576	Northwest	
5		2115894	12/15/21 19:42	12/16/21 00:26	284	763	Southeast	x
6		2115879	12/15/21 19:42	12/16/21 00:26	284	1,713	Southeast	x
7		2115882	12/15/21 19:42	12/16/21 00:26	284	1,053	Southeast	x
8		2116027	12/15/21 20:03	12/15/21 21:14	71	1,158	Metro East	x
9		2117024	12/15/21 23:16	12/16/21 08:57	581	1,093	Northwest	x
10		2117058	12/15/21 23:29	12/16/21 04:30	301	892	Northwest	x
11		2117150	12/15/21 23:45	12/16/21 02:19	154	626	Southeast	x
12		2117215	12/15/21 23:49	12/16/21 03:32	223	608	Southeast	
13		2117440	12/16/21 00:08	12/16/21 01:31	83	1,243	Southeast	
14		2117315	12/16/21 00:13	12/16/21 01:20	67	1,202	Metro West	x
15		2117321	12/16/21 00:14	12/16/21 02:09	115	1,356	Metro West	x
16		2117566	12/16/21 00:46	12/16/21 02:06	80	1,457	Metro West	x
17		2117897	12/16/21 01:37	12/16/21 02:46	69	1,165	Metro West	x
18		2118012	12/16/21 02:03	12/16/21 03:08	64	1,957	Metro West	x
19		2118159	12/16/21 02:56	12/16/21 05:04	128	1,588	Metro East	x
20		2118164	12/16/21 02:56	12/16/21 04:09	73	2,086	Metro East	x
21		2120639	12/19/21 01:48	12/19/21 05:22	213	1,559	Northwest	x
22		2121393	12/22/21 00:35	12/22/21 03:04	149	1,472	Metro West	x
23		2121394	12/22/21 00:35	12/22/21 03:04	149	869	Metro West	x
24		2121906	12/23/21 15:16	12/23/21 16:17	61	1,964	Metro East	x
25		2122089	12/24/21 01:18	12/24/21 03:25	127	2,954	Metro East	x
26		2123061	12/27/21 07:11	12/27/21 08:54	103	547	Southeast	x

27		2123627	12/29/21 01:23	12/29/21 13:05	701	3,508	Metro East	x
28		2123968	12/29/21 21:08	12/29/21 22:11	62	2,345	Metro West	x

Minnesota - MAIFI		January	February	March	April	May	June	July	August	September	October	November	December	YTD
2021	With Storms, All Levels, All Causes	0.02	0.03	0.04	0.06	0.06	0.11	0.08	0.11	0.10	0.05	0.03	0.05	0.72
	Tariff Normalized, IEEE Region No Trans Line, All C:	0.02	0.03	0.04	0.05	0.06	0.11	0.06	0.09	0.06	0.04	0.03	0.03	0.60
	Annual Normalized, IEEE Region All Levels, All Caus	0.02	0.03	0.04	0.06	0.06	0.11	0.08	0.09	0.08	0.05	0.03	0.04	0.69
	CES Cust Served													
2020	With Storms, All Levels, All Causes	0.01	0.03	0.03	0.06	0.07	0.17	0.12	0.15	0.07	0.07	0.03	0.06	0.88
	Tariff Normalized, IEEE Region No Trans Line, All C:	0.01	0.03	0.03	0.04	0.07	0.15	0.09	0.10	0.06	0.06	0.02	0.05	0.70
	Annual Normalized, IEEE Region All Levels, All Caus	0.01	0.03	0.03	0.06	0.07	0.17	0.11	0.11	0.07	0.06	0.03	0.06	0.82
	CES Cust Served													
2019	With Storms, All Levels, All Causes	0.03	0.04	0.06	0.11	0.09	0.08	0.10	0.06	0.14	0.06	0.04	0.01	0.82
	Tariff Normalized, IEEE Region No Trans Line, All C:	0.02	0.01	0.06	0.07	0.07	0.06	0.07	0.05	0.09	0.06	0.02	0.01	0.60
	Annual Normalized, IEEE Region All Levels, All Caus	0.03	0.04	0.06	0.08	0.09	0.08	0.09	0.06	0.12	0.06	0.04	0.01	0.77
	CES Cust Served													
2018	With Storms, All Levels, All Causes	0.01	0.04	0.03	0.09	0.13	0.08	0.09	0.10	0.10	0.05	0.03	0.01	0.77
	Tariff Normalized, IEEE Region No Trans Line, All C:	0.01	0.04	0.03	0.06	0.12	0.07	0.08	0.07	0.08	0.05	0.02	0.01	0.63
	Annual Normalized, IEEE Region All Levels, All Caus	0.01	0.04	0.03	0.08	0.13	0.08	0.09	0.10	0.10	0.05	0.03	0.01	0.75
	CES Cust Served													
2017	With Storms, All Levels, All Causes	0.04	0.02	0.06	0.06	0.04	0.14	0.10	0.04	0.09	0.13	0.01	0.03	0.76
	Tariff Normalized, IEEE Region No Trans Line, All C:	0.03	0.02	0.04	0.04	0.04	0.07	0.09	0.04	0.08	0.08	0.01	0.03	0.57
	Annual Normalized, IEEE Region All Levels, All Caus	0.04	0.02	0.06	0.06	0.04	0.09	0.10	0.04	0.09	0.13	0.01	0.03	0.71
	CES Cust Served													
MAIFI - <= 5 Minutes Duration														
Metro East - MAIFI		January	February	March	April	May	June	July	August	September	October	November	December	YTD
2021	With Storms, All Levels, All Causes	0.01	0.04	0.05	0.06	0.11	0.11	0.05	0.07	0.08	0.05	0.05	0.07	0.77
	Tariff Normalized, IEEE Region No Trans Line, All C:	0.01	0.04	0.05	0.05	0.11	0.11	0.05	0.05	0.06	0.05	0.05	0.04	0.69
	Annual Normalized, IEEE Region All Levels, All Caus	0.01	0.04	0.05	0.06	0.11	0.11	0.05	0.05	0.06	0.05	0.05	0.07	0.73
	CES Cust Served													
2020	With Storms, All Levels, All Causes	0.00	0.05	0.05	0.08	0.07	0.20	0.15	0.15	0.05	0.05	0.02	0.09	0.97
	Tariff Normalized, IEEE Region No Trans Line, All C:	0.00	0.05	0.05	0.08	0.07	0.18	0.12	0.10	0.04	0.05	0.02	0.08	0.85
	Annual Normalized, IEEE Region All Levels, All Caus	0.00	0.05	0.05	0.08	0.07	0.20	0.15	0.13	0.05	0.05	0.02	0.09	0.95
	CES Cust Served													
2019	With Storms, All Levels, All Causes	0.03	0.08	0.05	0.09	0.06	0.04	0.11	0.07	0.10	0.06	0.04	0.00	0.74
	Tariff Normalized, IEEE Region No Trans Line, All C:	0.03	0.01	0.05	0.09	0.06	0.03	0.06	0.07	0.05	0.06	0.03	0.00	0.54
	Annual Normalized, IEEE Region All Levels, All Caus	0.03	0.08	0.05	0.09	0.06	0.04	0.09	0.07	0.08	0.06	0.04	0.00	0.70
	CES Cust Served													
2018	With Storms, All Levels, All Causes	0.01	0.05	0.04	0.06	0.15	0.06	0.13	0.11	0.09	0.08	0.03	0.01	0.84
	Tariff Normalized, IEEE Region No Trans Line, All C:	0.01	0.05	0.04	0.06	0.14	0.06	0.13	0.09	0.09	0.08	0.03	0.01	0.81
	Annual Normalized, IEEE Region All Levels, All Caus	0.01	0.05	0.04	0.06	0.14	0.06	0.13	0.11	0.09	0.08	0.03	0.01	0.83
	CES Cust Served													
2017	With Storms, All Levels, All Causes	0.06	0.03	0.06	0.07	0.06	0.07	0.14	0.04	0.07	0.20	0.01	0.01	0.82
	Tariff Normalized, IEEE Region No Trans Line, All C:	0.06	0.03	0.06	0.05	0.05	0.05	0.13	0.04	0.07	0.09	0.01	0.01	0.65
	Annual Normalized, IEEE Region All Levels, All Caus	0.06	0.03	0.06	0.07	0.06	0.05	0.13	0.04	0.07	0.20	0.01	0.01	0.79
	CES Cust Served													
MAIFI - <= 5 Minutes Duration														

MAIFI - ≤ 5 Minutes Duration

Southeast - MAIFI		January	February	March	April	May	June	July	August	September	October	November	December	YTD
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 Caus	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
	CES Cust Served													
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 Caus	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
	CES Cust Served													
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 Caus	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
	CES Cust Served													
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 Caus	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
	CES Cust Served													
2017	With Storms, All Levels, All Causes	0.00	0.02	0.03	0.07	0.03	0.18	0.15	0.05	0.04	0.15	0.01	0.00	0.73
	Tariff Normalized, IEEE Region No Trans Line, All C:	0.00	0.02	0.00	0.04	0.03	0.02	0.09	0.03	0.03	0.10	0.01	0.00	0.37
	Annual Normalized, IEEE Region All Levels, All Caus	0.00	0.02	0.03	0.07	0.03	0.18	0.15	0.05	0.04	0.15	0.01	0.00	0.73
	CES Cust Served													
MAIFI - <= 5 Minutes Duration														
Minnesota - Customer Interruptions		January	February	March	April	May	June	July	August	September	October	November	December	YTD
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 Caus	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 Caus	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 Caus	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 Caus	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	
2017	With Storms, All Levels, All Causes	48,438	25,199	72,370	78,526	56,089	171,914	124,532	49,070	110,614	168,822	17,302	35,011	957,887
	Tariff Normalized, IEEE Region No Trans Line, All C:	43,639	25,199	55,242	51,938	44,843	83,569	111,372	44,023	105,611	101,720	17,302	35,011	719,469
	Annual Normalized, IEEE Region All Levels, All Caus	48,438	25,199	72,370	78,526	56,089	113,347	122,624	49,070	110,614	168,822	17,302	35,011	897,412
	CES Cust Served	1,253,235	1,253,916	1,254,234	1,254,354	1,254,432	1,254,973	1,254,729	1,255,562	1,256,281	1,256,880	1,258,571	1,259,394	

Metro East - Customer Interruptions		January	February	March	April	May	June	July	August	September	October	November	December	YTD
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 Caus	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 Caus	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 Caus	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	
2017	With Storms, All Levels, All Causes	23,529	10,552	23,793	29,693	26,334	30,215	56,586	17,240	27,139	84,099	5,706	5,862	340,748
	Tariff Normalized, IEEE Region No Trans Line, All C:	23,529	10,552	23,793	19,335	22,105	18,646	54,678	17,240	27,139	38,693	5,706	5,862	267,278
	Annual Normalized, IEEE Region All Levels, All Caus	23,529	10,552	23,793	29,693	26,334	18,646	54,678	17,240	27,139	84,099	5,706	5,862	327,271
	CES Cust Served	412,791	413,033	413,181	413,401	413,461	413,487	413,489	413,829	413,948	414,136	414,640	414,964	
Metro West - Customer Interruptions		January	February	March	April	May	June	July	August	September	October	November	December	YTD
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 Caus	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 Caus	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 Caus	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 Caus	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	
2017	With Storms, All Levels, All Causes	13,443	11,028	21,059	30,168	14,998	86,309	39,284	18,933	57,172	45,207	10,641	13,463	361,705
	Tariff Normalized, IEEE Region No Trans Line, All C:	13,443	11,028	21,059	24,943	14,998	49,924	39,284	18,933	55,280	30,413	10,641	13,463	303,409
	Annual Normalized, IEEE Region All Levels, All Caus	13,443	11,028	21,059	30,168	14,998	49,924	39,284	18,933	57,172	45,207	10,641	13,463	325,320
	CES Cust Served	594,042	594,419	594,617	594,504	594,556	595,107	594,745	595,053	595,586	595,728	596,694	597,020	

Northwest - Customer Interruptions		January	February	March	April	May	June	July	August	September	October	November	December	YTD
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 Causes	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 Causes	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 Causes	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 Causes	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 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
	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	
2017	With Storms, All Levels, All Causes	10,977	919	24,225	9,678	10,449	32,504	9,596	6,738	21,792	20,249	1	15,664	162,792
	Tariff Normalized, IEEE Region No Trans Line, All Causes	6,178	919	10,329	2,658	3,432	12,011	5,694	4,580	19,884	19,792	1	15,664	101,142
	Annual Normalized, IEEE Region All Levels, All Causes	10,977	919	24,225	9,678	10,449	21,891	9,596	6,738	21,792	20,249	1	15,664	152,179
	CES Cust Served	119,071	119,106	119,096	119,097	119,146	119,131	119,230	119,316	119,243	119,388	119,502	119,642	
Southeast - Customer Interruptions		January	February	March	April	May	June	July	August	September	October	November	December	YTD
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 Causes	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 Causes	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 Causes	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 Causes	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 Causes	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 Causes	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 Causes	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 Causes	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	
2017	With Storms, All Levels, All Causes	489	2,700	3,293	8,987	4,308	22,886	19,066	6,159	4,511	19,267	954	22	92,642
	Tariff Normalized, IEEE Region No Trans Line, All Causes	489	2,700	61	5,002	4,308	2,988	11,716	3,270	3,308	12,822	954	22	47,640
	Annual Normalized, IEEE Region All Levels, All Causes	489	2,700	3,293	8,987	4,308	22,886	19,066	6,159	4,511	19,267	954	22	92,642
	CES Cust Served	127,331	127,358	127,340	127,352	127,269	127,248	127,265	127,364	127,504	127,628	127,735	127,768	