



April 1, 2021

VIA E-FILING

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

**Re: In the Matter of Minnesota Power's 2020 Safety,
Reliability and Service Quality Standards Report
Docket No. E015/M-21-_____**

Dear Mr. Seuffert:

Minnesota Power (or the "Company") submits its annual Safety, Reliability and Service Quality Standards Report ("Report") to the Minnesota Public Utilities Commission ("Commission") in accordance with Minn. Rule 7826 - ELECTRIC UTILITY STANDARDS, and relevant Commission-issued orders. This Report covers Minnesota Power's safety, reliability and service quality for 2020 and its corresponding reliability results. Through this Report, Minnesota Power details the Company's efforts and commitment to provide safe, reliable and affordable electric service to its unique customer base in northeastern and central Minnesota.


Please contact me at (218) 355-3601 or lhoyum@mnpower.com if you have any questions regarding this filing.

Yours truly,



Lori Hoyum
Regulatory Compliance Administrator

LMH:th
Attach.



Safety, Reliability and Service Quality Standards Report in Accordance With Minn. Rule 7826

Minnesota Power

4/1/2021

**STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION**

In the Matter of Minnesota Power's 2020 Safety,
Reliability and Service Quality Standards
Report in Accordance with Minn. Rule 7826

Docket No. E-15/M-21-_____
2020 SRSQ REPORT

SUMMARY OF FILING

Minnesota Power (or the “Company”) respectfully submits its sixteenth annual Safety, Reliability and Service Quality (“SRSQ”) Report (“Report”) to the Minnesota Public Utilities Commission (“Commission”) in accordance with Minnesota Rules Chapter 7826 - ELECTRIC UTILITY STANDARDS, and relevant Commission-issued orders, including the Commission’s December 18, 2020 Order in the Company’s 2019 SRSQ (Docket No. E15/M-20-404). Through this Report, Minnesota Power provides the Commission, Department of Commerce-Division of Energy Resources and other stakeholders information detailing the Company’s efforts and commitment to provide safe, reliable and affordable electric service to its unique customer base.

Overview of Distribution System

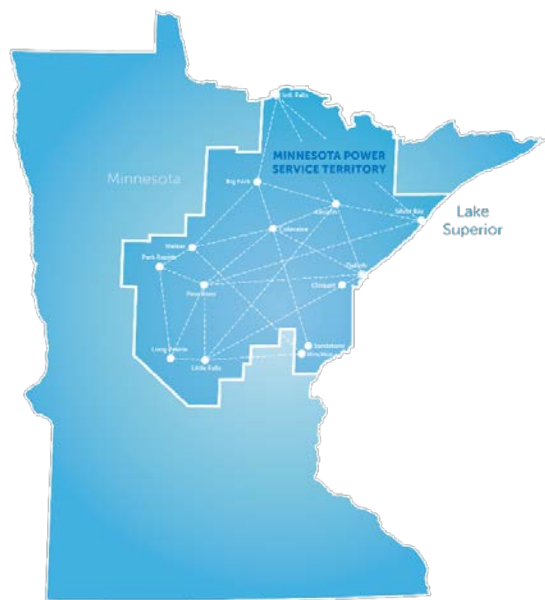


Figure 1: Minnesota Power's Service Territory

Serving over 145,000 residential and commercial electric customers across northeastern and central Minnesota, Minnesota Power's (or the "Company's") distribution system is comprised of 5,800 miles of distribution lines and 201 distribution substations. The Company's service territory spans over 26,000 square miles from International Falls in the north to Little Falls in the south, and from Silver Bay in the east to Park Rapids in the west as shown in Figure 1.

Minnesota Power's residential customers are served directly from the distribution system. Interactions with these customers include items such as: reliable electric service, planning for new construction, service extensions, outage restoration, system upgrades and responding to a wide variety of other electric service and rate questions. Residential customers comprise about thirteen percent of the Company's annual retail electric sales. However, since most of Minnesota Power's customer sales are served via transmission-level voltage, residential customers comprise a relatively large portion of Minnesota Power's distribution system load. Consequently, while residential customers comprise a small portion of the Company's overall load and revenue, they are a relatively large part of the distribution system, and an important part of Minnesota Power's business. Additionally, much of Minnesota Power's service territory, outside of the Duluth area, consists of rural communities. These rural communities and customers present unique issues when planning for investment in the distribution system. Customers located at the end of multiple miles of line on a single radial feeder will have different challenges and requirements than someone located in a more populated area with feeder redundancy.

Minnesota Power's commercial customers account for approximately fifteen percent of regulated retail electric sales revenue and are also served directly from the distribution system. A wide range of interactions occur with commercial customers including: reliable electric service, planning for new construction, service extensions, outage restoration, reliability and power quality concerns, system upgrades, and responding to a variety of other electric service and rate questions. These customers are a diverse group with varying needs and expectations depending on the business (i.e., electric costs as a percentage of total operating/production costs, power quality and reliability needs, etc.). Reliability is of utmost priority to commercial customers, and for many of these customers any interruption in electric service has the potential to stop business and immediately impact their bottom line. Customer businesses consisting of office workers may no longer have access to computers or phones and productivity drops, while retailers may lose the ability to conduct business resulting in lost revenue. For those customers with sensitive loads and technology related businesses, power quality and even momentary outages may be a significant issue.

In order to meet the needs of this diverse customer base, Minnesota Power built its distribution strategy upon the core values of technology, innovation, and continuous learning. Customers expect reliable, safe, and affordable electric service, all of which are encompassed in these core distribution values. Meeting these expectations requires deploying right time/right fit distribution technology that is flexible, adaptable, and upgradable. The Company has strategically positioned its distribution system for the deployment of emerging distribution technology through thoughtful planning in all areas of its business while maintaining a focus on customers' needs, and upholding its distribution values.

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2020 Safety, Reliability, and Service Quality Report

I. Introduction & Requirements

Minnesota Power (or the “Company”) respectfully submits its sixteenth annual Safety, Reliability and Service Quality (“SRSQ”) Report (“Report”) to the Minnesota Public Utilities Commission (“Commission”) in accordance with Minn. Rule 7826 - ELECTRIC UTILITY STANDARDS, and relevant Commission-issued orders, including the Commission’s December 18, 2020 Order (“2019 SRSQ Order”) in Docket No. E15/M-20-404.¹ Through this Report, Minnesota Power provides the Commission, Department of Commerce-Division of Energy Resources (“Department”) and other stakeholders information detailing the Company’s efforts and commitment to provide safe, reliable and affordable electric service to its unique customer base.

Organization of Filing

This Report covers Minnesota Power safety, reliability and service quality for 2020 and its corresponding reliability results; and is organized into several sections. Each section is dependent on information from the other sections, making it appropriate to file the collection of sections as a single document. The sections and information addressed are:

- ❖ Introduction & Background
- ❖ 2020 Year in Review
- ❖ 5-Year Rolling Average Metric and EEI Benchmarking
- ❖ Work Center Data
- ❖ Customer Service Data
- ❖ Reconnection Pilot Data
- ❖ 2020 Reliability Summary Graphs
- ❖ Reliability Cost Matrix
- ❖ System Construction and Protection

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

¹ In the Matter of Minnesota Power’s 2019 Safety, Reliability, and Service Quality Standards Report in Docket No. E015/M-20-404.

a separate appendix has been provided to specifically respond to the administrative rules which apply to this Report.

New Reporting Requirements

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

Table 1: List of New Reporting Requirements

2019 SRSQ Report Order Dated December 18, 2020 in Docket No. E015/M-20-404		
Order Pt. 4	The Commission hereby grants a variance to Minn. R. 7826.0500, subp. 1, item G, applicable to Minnesota Power, Otter Tail, and Xcel. The utilities must file a summary table that includes the information contained in the reports, similar to Attachment G of Xcel's filing.	Section VII
Order Pt. 5	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 VII
Order Pt. 6	Discuss and propose a transition to a full benchmarking approach to setting reliability standards. <ul style="list-style-type: none"> a. Definition of "work centers" b. Benchmarking for individual work centers c. Other considerations for the transition to benchmarking 	Section IV
Order Pt. 7	File a supplemental filing to its 2020 service quality report 30 days after IEEE publishes the 2020, IEEE benchmarking second quartile for medium utilities results with an explanation for any standards the utilities did not meet.	<i>The Company will file a report within 30 days with an explanation for any unmet standards</i>
Order Pt. 8	Minnesota Power's service center Reliability Standards for 2020 are set at the levels described below. SAIFI 2016 Standard SAIDI 98.19 SAIFI 1.02 CAIDI 96.26	Sections II, IV, and VII
Order Pt. 14	Each utility must report over the next two reporting cycles, to the extent feasible specific data related to electronic access and communication to customers of information	Section V
Order Pt. 16	Each utility must file revised categories for reporting complaint data.	Section V

Order Pt. 17	The Executive Secretary may work with the utilities to refine the language and content in the public-facing summaries as needed.	<i>Appendix D</i>
Reconnect Pilot Program Order Dated December 9, 2020 in Docket No. E015/M-19-766 (See pg. 4)		
	The Company committed to providing specific data related to its remote-reconnect pilot program (Reconnect Program)	Section VI

Procedure and Authority

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

A. Name, Address, and Telephone Number of Utility
(Minn. Rules 7825.3500 (A) and 7829, subp. 3 (A))

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

B. Name, Address, and Telephone Number of Utility Attorney
(Minn. Rules 7825.3500 (A) & 7829, subp. 3 (B))

David R. Moeller
Senior Attorney and Director of Regulatory Compliance
Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 723-3963
dmoeller@allte.com

C. Date of Filing and Date Proposed Rates Take Effect

This petition is being filed on April 1, 2021. Until Commission approval, the existing reliability results will remain in effect.

D. Statute Controlling Schedule for Processing the Petition

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

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

E. Utility Employee Responsible for Filing

Lori Hoyum
Regulatory Compliance Administrator
30 West Superior Street
Duluth, MN 55802
(218) 355-3601
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F. Official Service List

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

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G. Service on Other Parties

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

H. Filing Summary

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

II. 2020 Year in Review

As the COVID-19 pandemic evolved in 2020 and with the issuance of the Governor's Emergency Executive Order,² Minnesota Power needed to swiftly adapt its operations. In March 2020, Minnesota Power voluntarily took several proactive measures to provide protections and enhance safety for employees, customers, and communities during the peacetime emergency. First and foremost, Minnesota Power put numerous additional safety precautions in place. This has included suspensions of all non-emergency customer site visits, conducting construction and maintenance of electric facilities and equipment with absolutely no direct customer contact and no inside work unless it was an emergency, and following appropriate Center for Disease Control ("CDC") guidelines when entering homes or businesses for emergency-related services only. Currently, any customer site visits are preplanned and prescreened, and follow current CDC guidelines.

These actions also included immediate suspension of disconnections for residential customers facing financial hardship in relation to the coronavirus pandemic; voluntary extension of Minnesota's Cold Weather Rule through May 31, 2020; encouraging customers to reach out regarding payment plans and options that reflect their unique financial resources and circumstances; and suspension of all non-emergency customer site visits. On March 30, 2020, these protective measures were expanded to include waiving late payment charges for residential and small business (general service) customers; suspending disconnections for small business (general service) customers facing financial hardship in relation to the coronavirus pandemic; and waiving reconnection fees during normal business hours for residential and small business (general service) customers previously disconnected for non-payment. In its August 13, 2020 Order under Docket No. E,G-999/CI-20-375, the Commission formally ordered suspension of disconnections for residential customers; suspension of negative reporting to credit agencies for residential customers; and waiving reconnection, service deposits, late fees, interest, and penalties for residential customers. Per the Commission's August

² On March 13, 2020, Governor Tim Walz signed Emergency Executive Order 20-01, Declaring a Peacetime Emergency and Coordinating Minnesota's Strategy to Protect Minnesotans from COVID-19, as most recently extended through April 14, 2021 in Emergency Executive Order 21-12, https://mn.gov/governor/assets/EO%2021-12_tcm1055-472035.pdf.

13, 2020 Order, these protections are to remain in effect for the duration of the peacetime emergency with 60 days' notice before resuming these activities and were in effect until the end of the reporting period for this filing. In addition, while field activities related to customer collections were suspended, Minnesota Power redeployed field staff to focus on advanced metering infrastructure ("AMI") installations.

In the midst of all these protections, arrears balances have steadily grown, particularly for residential customers; however, the number of customers with arrears decreased significantly midyear in 2020 and remained lower at the close of 2020 when compared to the number of customers in arrears at the end of 2019. This data reflects that more customers are current on their account at the end of 2020 than at the end of 2019, while customers who are not current on their accounts have increased their arrears balance throughout 2020 amidst the COVID-19 pandemic protections. There are many steps Minnesota Power has taken that contributed to a reduction in accounts in arrears, including the rate case resolution,³ interim rate refunds, flexible payment plans, Customer Affordability of Residential Electricity ("CARE") discounts and referrals to apply for energy assistance dollars.

To communicate all these changes, Minnesota Power has leveraged multiple channels to ensure the Company continues to meet customers where they are and when they need us. This includes having call center and program representatives, most of which were transitioned to work from home, ready to answer and make calls to walk customers through options. Minnesota Power, like many other utilities, also created a COVID-19 section on its web site to ensure customers could quickly and readily access the most current information regarding protections, services, and answers to other questions they may have related to services during the pandemic. In addition, Minnesota Power has continued to utilize news releases, radio advertisements, emails, bill inserts, on-bill messaging, the MyAccount customer portal, the outage app, social media, and collaboration with community and regional partners to provide timely updates and share

³ In the Matter of the Emergency Petition of Minnesota Power for Approval to Move Asset-Based Wholesale Sales Credits to the Fuel Adjustment Clause and Resolve Rate Case in Docket Nos. E015/M-20-429 and E015/GR-19-442.

messages. Further, Minnesota Power has seen incredible community volunteerism through its employees with contributions ranging from dollars to blood donations and food drives to offering talents for making masks and much, much more.

While Minnesota Power is proud to provide these services and precautions to customers and employees during this unprecedented time, it is important to note the effects it had on business operations in 2020, and subsequently the effects it has on reporting in the filing. These effects are wide ranging in nature, but encompass challenges that are new and evolving. The Company transitioned a large portion of its workforce to work from home and needed to further embrace technology for day to day operations and services. For those needed in the office and in the field to deliver and support essential services, stringent protocol changed work practices. For example, when the company needs to respond to a call in which more than one service technician is needed, the Company must send more than one vehicle in order to maintain proper distance between individuals. Taking these measures increases fuel expenses and vehicle costs for the Company. Additionally, internal COVID-19 cases, though very limited, caused challenges for line work teams. COVID-19 exposures resulted in having to use line workers outside of specified service areas. This, coupled with an increase in customer requests to either build or upgrade their existing service to their home or cabin, likely had a significant impact on total outage durations.

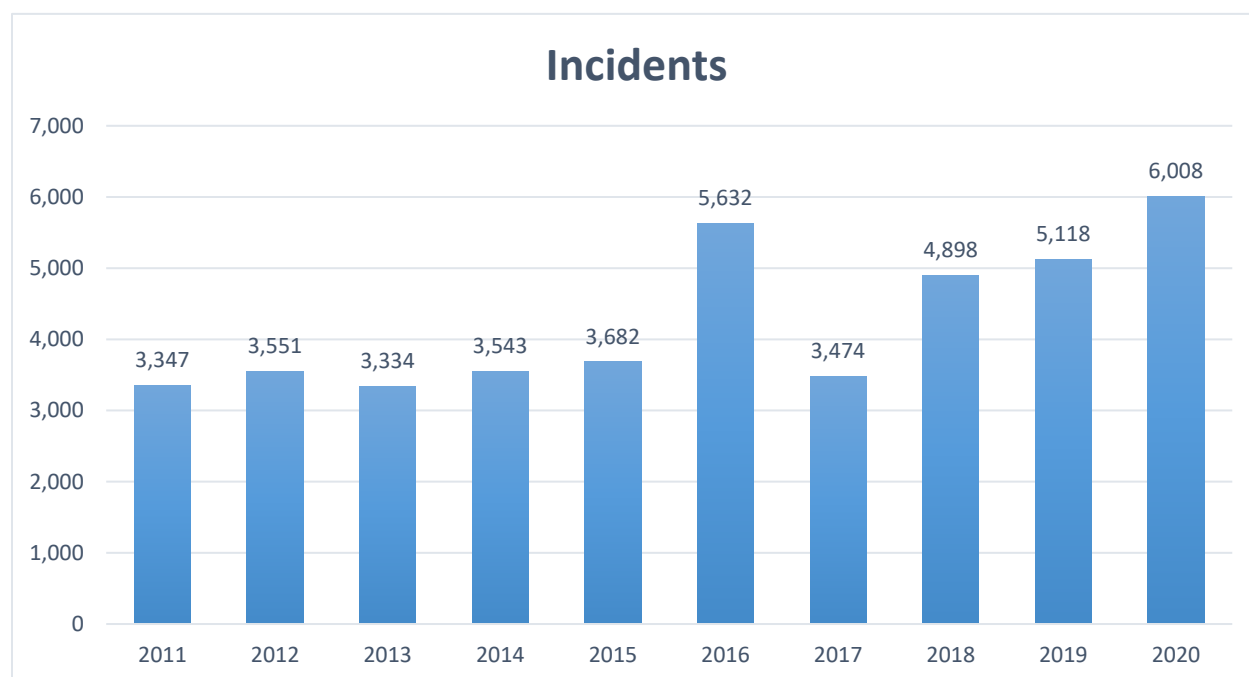
For similar reasons as past years, and in addition to challenges presented by the COVID-19 Pandemic, Minnesota Power did not meet any of the Service Reliability Standards set in Order Point 8 of the 2020 SRSQ Order. The Commission recognized in its January 28, 2020 Order that some metrics, including the method by which it currently sets reliability goals, may need to be modified and agreed that benchmarking provides a better way to understand how utilities are performing in relation to peer utilities. Based on these standards, the Company met these major event-excluded IEEE 2nd quartile target goals for System Average Interruption Duration Index (“SAIDI”) by 2.29 minutes and the Customer Average Interruption Duration Index (“CAIDI”) by 9.3 minutes but failed to meet its goals for System Average Interruption Frequency Index (“SAIFI”) by 0.10. As shown in Figure 2 below, for 2020, the Company experienced its highest number of outage

events in the last decade. The number of outage events in 2020 was more than 29 percent higher than the historical average. For all SAIDI values throughout 2020, including the three major event-excluded days, there were more than 6,000 unique events, of which 126 major events (greater than 50,000 Customer Minutes of Interruption (“CMI”)) contributed more than 62 percent of overall SAIDI. The Company is experiencing a greater number of significant weather events which do not rise to the level of the major event exclusion rule threshold. These non-excluded events account for the majority of the Company’s SAIDI minutes.

In short, 2020 was by no means typical and should not serve as a representative baseline or comparison year, but in many ways has set the stage for a yet-to-be-defined new normal.

Incidents and Reliability

Figure 2: Incidents 2011-2020



Minnesota Power's reliability results for 2020:

Table 2: 2020 Reliability Results

	SAIDI	SAIFI	CAIDI
2020 Standard	124.8	1.12	109.8
2020 Results	122.51	1.22	100.50

For major event-excluded SAIDI data, weather events attributed to 31 percent, vegetation attributed 16 percent, overhead equipment attributed 14 percent, and unknown 8 percent. The remaining outage minutes consisted of incidents related to people (car accidents, etc.), animals, underground equipment, planned outages and other causes. (More on causes of outages can be found in Section VIII of this Report.)

Weather was the largest reliability factor in 2020. Wind storms occurred at a higher frequency throughout the year. Snow and wind in March and a large tree falling through a bulk feeder in October of 2020 contributed significantly to overall outage totals. Minnesota Power is continually developing solutions and is executing several reliability initiatives to help minimize weather related outages. Trip savers are being installed across Minnesota Power's service territory to clear temporary faults resulting from tree contacts and lightning. Strategic undergrounding was rolled out in 2020 and will continue on some of the Company's worst performing overhead lines. The Company is targeting areas where customers do not allow access to vegetation management, such as tree trimming, and areas where overhead lines are installed cross-country in inaccessible areas with heavy vegetation.

Equipment failure was also a contributing factor to reliability results in 2020. Asset renewal programs such as switch and cutout replacements, along with Trip Savers, to replace porcelain cutouts are expected to aid improvement of this category. The Company is continuing the implementation of its Preventative Maintenance ("PM") program on substation and distribution equipment. This PM program includes replacement of switches, capacitor banks, and reclosers. In the future, the program will

focus on transformers and regulators. By focusing on this PM program, the Company can verify at any time that system equipment is functioning. PM reviews will also more readily identify equipment that needs to be replaced or updated as part of larger asset renewal programs.

As communicated in Minnesota Power's 2019 Integrated Distribution Plan ("IDP"),⁴ Minnesota Power also maintains a substation modernization program that is anticipated to include individual projects with a total cost of greater than two million dollars. The estimated cost and expected benefits of these projects are discussed in Table 3. All of these projects are asset renewal projects where the main driver is age-related replacement of end-of-life equipment. The Company's second IDP will be submitted in November of 2021. Any new projects will be identified in that filing.

Table 3: 5-Year Distribution Projects

Project Name	Preliminary Projected Costs	Anticipated In-Service - Date	Project Area	Project Description
Colbyville Switchgear Replacement	\$3.2M	2022	East Duluth & surrounding areas	The switchgear and outdoor breakers at the Colbyville Substation provide protection and isolation for the 13.8 kV feeders interconnected at the substation. Much of the existing distribution equipment at Colbyville has been in service for several decades and is nearing or beyond the end of its useful life. The Colbyville Switchgear Replacement Project involves coordinated replacement of end-of-life assets and modernization improvements designed to extend the life of the substation for the next several decades. Planned age-related replacements include switchgear, outdoor breakers, one transformer and associated equipment.

⁴ In the Matter of Minnesota Power's 2019 Integrated Distribution Plan (Docket No. E015/M-19-684).

Gary Switchgear Replacement	\$3.0M	2023	West Duluth	The switchgear at the Gary Substation provides protection and isolation for the 13.8 kV feeders interconnected at the substation. Much of the existing distribution equipment at Gary has been in service for several decades and is nearing or beyond the end of its useful life. The Gary Switchgear Replacement Project involves coordinated replacement of end-of-life assets and modernization improvements designed to extend the life of the substation for the next several decades. Planned age-related replacements include switchgear, one transformer and associated equipment.
Haines Rd Switchgear Replacement	\$4.5M	2024	Hermantown & Central Duluth, Miller Hill Mall Area	The switchgear at the Haines Road Substation provides protection and isolation for the 13.8 kV feeders interconnected at the substation. Much of the existing distribution equipment at Haines Road has been in service for several decades and is nearing or beyond the end of its useful life. The Haines Road Switchgear Replacement Project involves coordinated replacement of end-of-life assets and modernization improvements designed to extend the life of the substation for the next several decades. Planned age-related replacements include two switchgear buses, two transformers and associated equipment.
Substation Modernization Program	\$4.3M \$2.8M \$4.2M \$2.0M	2021 2022 2023 2024	<i>Anticipated Substations*</i> : Meadowlands, Long Prairie, Verndale, Little Falls, Nashwauk, Wrenshall	Across Minnesota Power's system there are many transmission-to-distribution substations that require age-related upgrades. Much of the original equipment in these substations is nearing or beyond the end of its useful life. Minnesota Power's Substation Modernization Program involves coordinated

			*subject to change based on asset renewal project prioritization	replacement of end-of-life assets and modernization improvements designed to extend the lives of these substations for the next several decades. Planned age-related replacements include outdoor breakers, transformers, switches and associated equipment. The Program will take a holistic, site-by-site approach to facilitating the coordinated and efficient modernization of the many aging substations throughout the system.
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Grid Modernization

Grid modernization is and has been a priority for Minnesota Power and will be used to improve reliability throughout the service territory. Minnesota Power has developed a plan to modernize the system and ensure reliability of service. With many assets more than 40 years old, asset management programs and investments have become an area of significant focus for the Company. Asset renewal programs have been bolstered in recent years in an effort to target areas known to impact customer reliability and system resiliency. The Company has taken a strategic approach that targets key feeder and substation connected assets that are both at end of life and contributing negatively to reliability. At the substation level, programs have been integrated into a single substation modernization project designed to efficiently address all of the asset renewal needs at once, as outlined in Table 3.

Reliability improvements will continue to be implemented using equipment such as Trip Savers, storm hardening the system via strategic undergrounding, and utilizing Fault Location, Isolation, and Service Restoration or FLISR technology utilizing a secure fiber-optic network to quickly isolate and restore customers through the use of intelligent reclosers, smart sensors, and motor operated equipment. The Company will expand the use of Trip Savers in 2021 and beyond. The Trip Savers are maintenance free and significantly cheaper than traditional oil filled reclosers that have been historically used for similar applications. Trip Savers are also being installed to replace porcelain fused

cutouts which will reduce failures and clear temporary faults, resulting in improved reliability and reduced incidents where a technician is dispatched to perform a service. In 2020, over 70 Trip Savers and 11 reclosers were installed or replaced across the Minnesota Power system.

The Company has made several advancements in tracking and improving the frequency of failed equipment. Minnesota Power recently developed a Mobile Workforce application that allows all employees to identify areas of concern on the system. In the last 3.5 years, the Company has received over 4,600 observations and has remedied over 74 percent of those observations. Maintenance work identified by the program is prioritized and executed daily. The Company expects to see rates of failed equipment decrease in future years as these issues are resolved. In 2020, this program has also been expanded to employees within vegetation management, power delivery, and transmission departments to enter and react to issues discovered in the field. Minnesota Power began accelerating the use of Mobile Workforce starting in 2017. The first phase has created paperless processing for nearly 30,000 customer orders annually. The second phase--which started in late 2018 and went live in 2019--focused on bringing trouble tickets from the Outage Management System into the Mobile Workforce application. This will allow an additional 4,000 tickets annually to be processed electronically within that application. The third and final phase of Minnesota Power's Mobile Workforce program for distribution, currently scheduled to begin later in 2021, will focus on the integration of work and asset management systems.

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

Lastly, an inspection app was created for line personnel to actively inspect and address issues on distribution feeders. This app tracks issues identified and which areas still

require inspection. By proactively identifying and fixing issues such as cracked insulators, cutouts, crossarms, and damaged poles, the Company expects reliability to improve as all feeders are inspected. In 2020, work orders were created to inspect 30 feeders.

III. 5-Year Rolling Average Metric & IEEE Benchmarking

The Commission has kept major event excluded SAIDI, SAIFI, and CAIDI targets at 2017 levels (SAIDI at 98.19, SAIFI at 1.02. and CAIDI at 96.26) through 2020. The 2017 numbers have been challenging to achieve based on the increased larger non-excluded related outages the Company has experienced in four of the last five years. As mentioned earlier, during years 2016, 2018, 2019, and 2020, the Company has seen more than a 25 percent increase of outage events compared to historical data. In 2020, the Commission allowed Minnesota Power to submit performance metrics using the five-year average for IEEE second quartile data based on medium sized utilities. The Company would like to continue using this benchmark for future filings. The IEEE data will be available in the third quarter and a supplemental filing will be submitted with updated numbers for the following tables.

Prior to 2017, the Company followed the established five-year rolling average targets for reliability, the five-year rolling average numbers for 2016-2020 are listed below for reference.

Table 4: 2016-2020 5-Year Rolling Averages

YEAR	SAIDI	SAIFI	CAIDI
2016	122.6924	1.2861	95.3958
2017	108.0604	1.0401	103.8968
2018	134.0037	1.3886	96.4998
2019	144.0182	1.3545	106.3233
2020	122.5095	1.2190	100.4990
Averages	126.2568	1.2577	100.3871

For comparison, IEEE 2nd quartile numbers for similar sized companies (100,000 -1 million customers) are listed below.

Table 5: IEEE 2nd Quartile for Medium sized companies

YEAR	SAIDI	SAIFI	CAIDI
2015	118	1.14	112
2016	124	1.14	111
2017	128	1.11	115
2018	133	1.1	109
2019	140	1.17	124
Averages	128.6	1.13	114.20

Minnesota Power is also moving from one reporting center to three separate reporting centers – Central, Northern, and Western. Similarly, Minnesota Power would like to benchmark each reporting center to the IEEE 2nd quartile data, based on the benchmark of small sized companies.

Table 6: 2016-2020 5-Year Rolling Averages for each work center

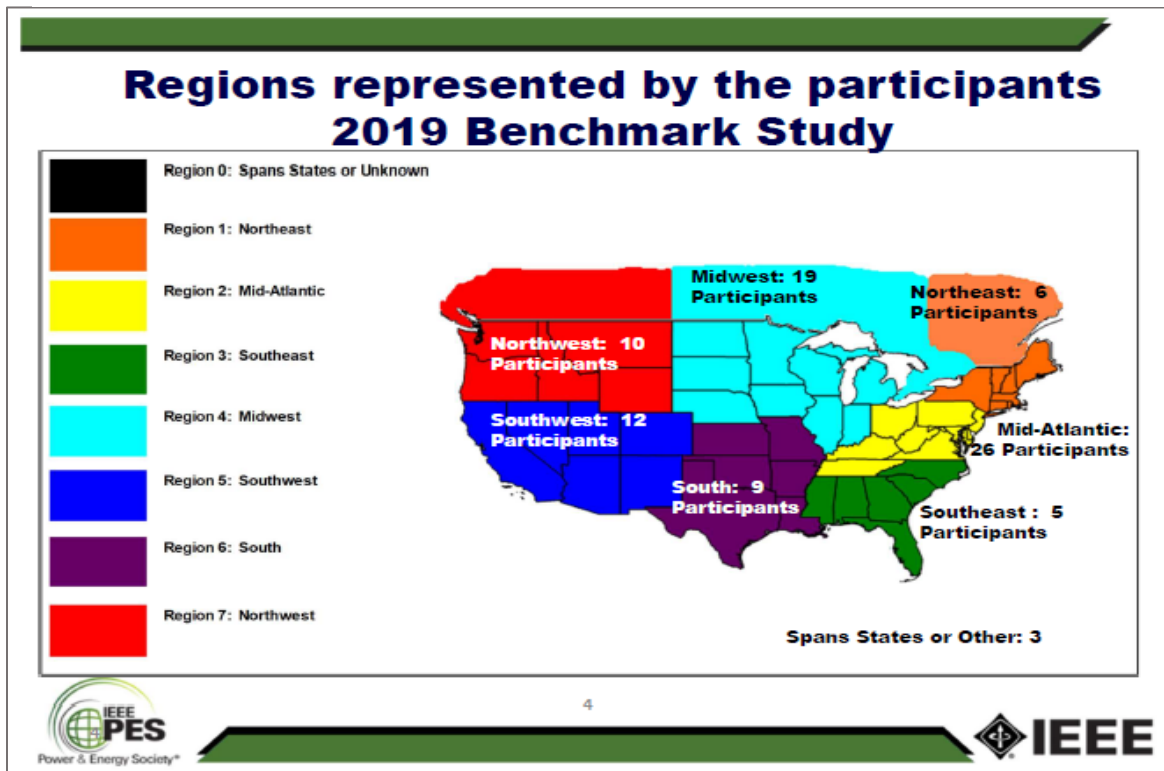
YEAR	Central			Northern			Western		
	SAIDI	SAIFI	CAIDI	SAIDI	SAIFI	CAIDI	SAIDI	SAIFI	CAIDI
2016	107.64	1.25	85.85	182.04	1.32	138.03	114.11	1.31	86.82
2017	105.45	1.05	100.2	116.98	1.03	113.27	107.95	1.02	105.68
2018	128.15	1.35	94.88	169.38	1.45	116.92	125.33	1.43	87.93
2019	108.68	1.1	98.9	169.75	1.33	127.67	194.63	1.83	106.22
2020	90.42	1.21	74.98	184.82	1.17	158.58	184.82	1.27	115.4
Averages	108.07	1.19	90.64	164.59	1.26	130.73	137.78	1.37	100.33

For comparison, IEEE 2nd quartile numbers for small sized companies (less than 100,000 customers) are listed below.

Table 7: IEEE 2nd Quartile data for Small sized companies

YEAR	SAIDI	SAIFI	CAIDI
2015	138	1.22	106
2016	149	1.34	112
2017	92	1.21	78
2018	98	1.1	85
2019	103	1.32	71
Average	116.0	1.24	90.4

Figure 3: IEEE Benchmark Participants



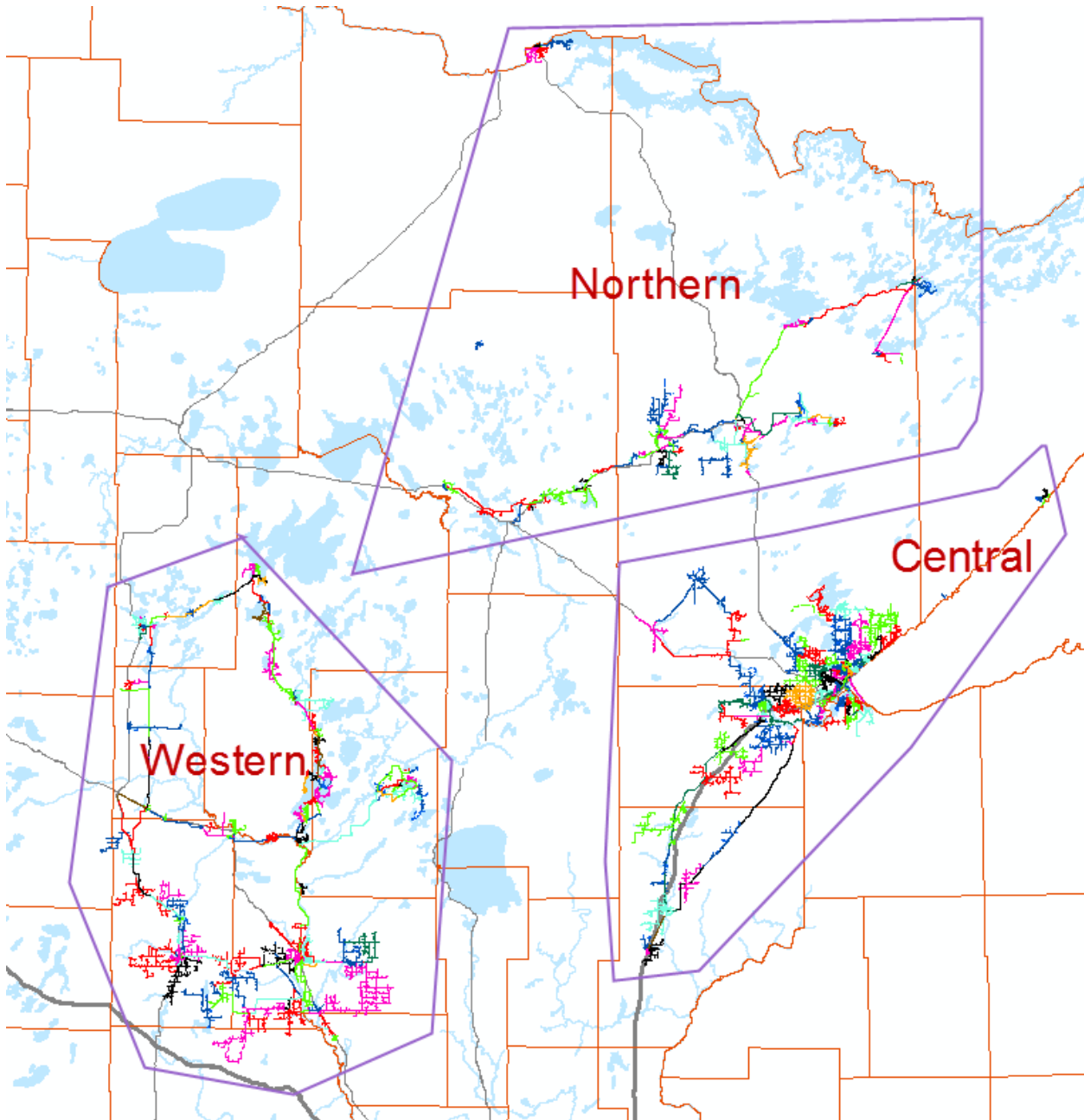
As shown in Table 5 above, the Company's reliability results (shown in Table 2) trend significantly closer to the five-year average of IEEE 2nd quartile numbers. These reliability metrics take into consideration varying reporting methods, system terrain and age, and

customer mix, among other factors. This depiction of reliability metrics is a more holistic view of what is happening on electric distribution systems nationwide. The Company has actively participated in the IEEE Transmission and Distribution (“T&D”) Reliability Working Group over the last several years, gaining valuable insights. Minnesota Power views this committee as working towards a consistent application of the IEEE 1366 standard⁵ with other industry partners and appropriately benchmarking regionally with others of similar size on reliability measurements and efforts. Based on these experiences with IEEE, the Company proposes using the IEEE 2nd quartile numbers as reliability targets starting with Minnesota Power’s 2020 Report.

⁵ <https://standards.ieee.org/project/1366.html>.

IV. Work Centers

For past SRSQ reports, Minnesota Power has responded as one work center. After discussing with Commission Staff, the Company will report three (3) working centers (Central, Northern, and Western) moving forward.



The Central work center includes service centers in Duluth, Cloquet, and Sandstone, with a customer count of 77,381. This area is by far the most populous and contains the largest city within the Company's service territory, Duluth. It includes the customers from Floodwood to Silver Bay and Meadowlands to Hinckley.

Table 8: Central Work Center Reliability Data

Area	SAIDI	SAIFI	CAIDI	MAIFI	CUSTOMERS
Central	90.42	1.21	74.73	4.93	77,381

The Northern work center includes service centers in Eveleth, Coleraine, and International Falls. This area has the least amount of customers, with a count of 23,353, but contains all of Minnesota Power's largest mining customers and two major paper customers. This area also serves many wholesale municipal customer accounts. It includes the customers from Deer River to Winton and International Falls to Cohasset.

Table 9: Northern Work Center Reliability Data

Area	SAIDI	SAIFI	CAIDI	MAIFI	CUSTOMERS
Northern	184.82	1.17	157.97	2.56	23,353

The Western work center includes services centers in Little Falls, Long Prairie, Pine River, and Park Rapids. This area has about 42,203 customers and covers the Brainerd Lakes area and rural farming communities, along with a couple of municipal accounts. It includes customers from Verndale to Deerwood and Walker to Upsala.

Table 10: Western Work Center Reliability Data

Area	SAIDI	SAIFI	CAIDI	MAIFI	CUSTOMERS
Western	146.86	1.27	115.64	4.32	42,203

V. Customer Service Data

Minnesota Power recognizes that, above all else, customers expect reliable, safe, and affordable electricity, as illustrated in Figure 4. Inherent to each of these are quality customer interactions through a variety of channels (i.e. in person, in writing, via email, over the phone, online, through social media, and in the field). Further, convenience, transparency about services, timely updates regarding interruption to services, and clarity about costs and program offerings are essential to the customer experience.

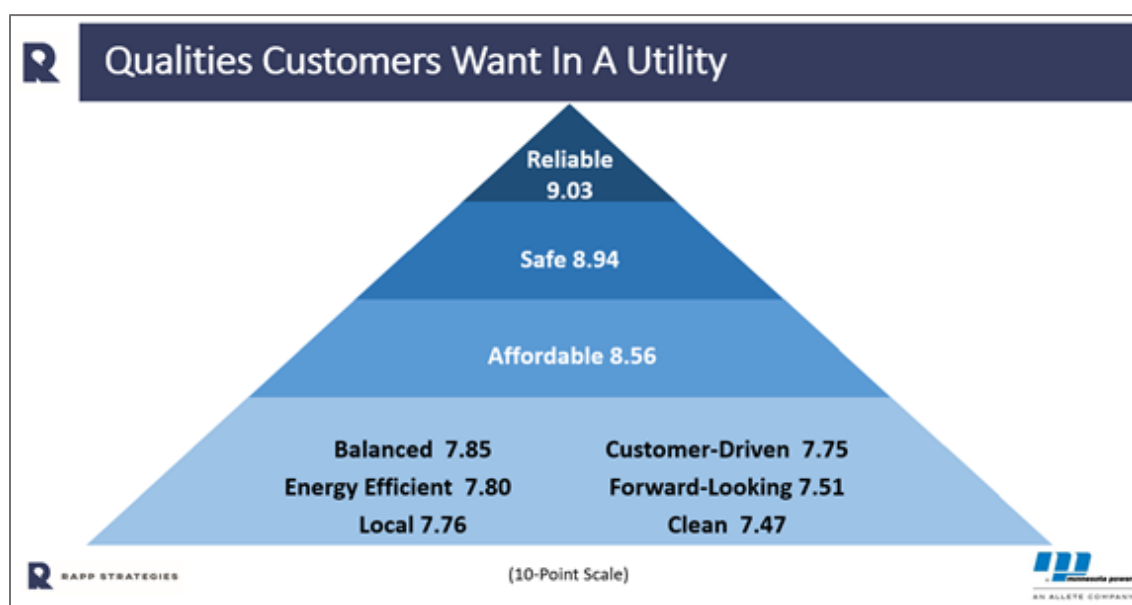


Figure 4: Customer Expectations

Customer Care

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

Minnesota Power also seeks to leverage technology advances where applicable and practical to improve convenience and ensure a positive experience for our customers, which means customer relations and the customer experience are always evolving. This

is inclusive of day-to-day interactions between the Company and its customers through traditional channels such as the Company's Call Center, billing services, and in the field. It is also inclusive of emerging channels such as online tools, apps, and social media, all of which have proven to be effective for requesting services and for receiving updates affecting services such as outages.

Customer Communication

In this section, Minnesota Power provides responses to the additional data request from Order Point 14 of the 2019 SRSQ Order. The Company appreciates the interest in other customer communication channels, particularly self-service options. This is something the Company commented on in its previous SRSQ filings under Docket Nos. E015/M-18-250 and E015/M-19-254, where Minnesota Power suggested that customer expectations and preferences regarding communication channels will ultimately need to be a point of consideration and reviewed as part of service quality reporting. These options will impact the types of calls the Call Center receives and challenge traditional response metrics such as Call Center response times. The tables below summarize yearly total of web site visits, including Facebook daily page engaged users; yearly total number of logins via electronic customer communications platforms, including MyAccount logins, app installations, and app pageviews; and yearly total number of emails received, as determined by the Customer Service email address and related tracking tool. Categorization by email subject is also provided using consistent wrap codes as those used for calls to the Call Center. The fuel assistance wrap code is indicative of energy assistance inquiries. There are also Customer Affordability of Residential Electricity ("CARE") affordability program and disconnect/reconnect wrap codes, but these were nominal (less than 100) in 2020.

Table 11: Web Site Pageviews - www.mnpower.com

WEB SITE	2020 Pageviews
January	93,579
February	91,157
March	110,031
April	104,377
May	107,352
June	103,852

July	141,340
August	130,847
September	101,438
October	118,890
November	103,135
December	108,542
Total	1,314,540

Table 12: Facebook Daily Page Engaged Users

FACEBOOK	2020 Daily Page Engaged Users
January	2400
February	2749
March	4531
April	4117
May	2381
June	3055
July	2679
August	3363
September	999
October	1585
November	3208
December	4044
Total	35,111

Table 13: MyAccount Electronic Self Service Logins

MyAccount	2020 Logins
January	33,207
February	30,836
March	25,798
April	24,010
May	26,806
June	23,606
July	26,240
August	27,810
September	30,575
October	29,778
November	29,301
December	31,275
Total	339,242

Table 14: Mobile App Installations

Mobile App	2020 Installations
January	433
February	408
March	557
April	454
May	497
June	491
July	714
August	535
September	282
October	1078
November	528
December	591
Total	6,568

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

Table 15: Emails

	2020 Emails
January	1,126
February	1,128
March	933
April	1,257
May	1,047
June	1,185
July	1,009
August	677
September	877
October	1,140
November	1,095
December	1,248
Total	12,722

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

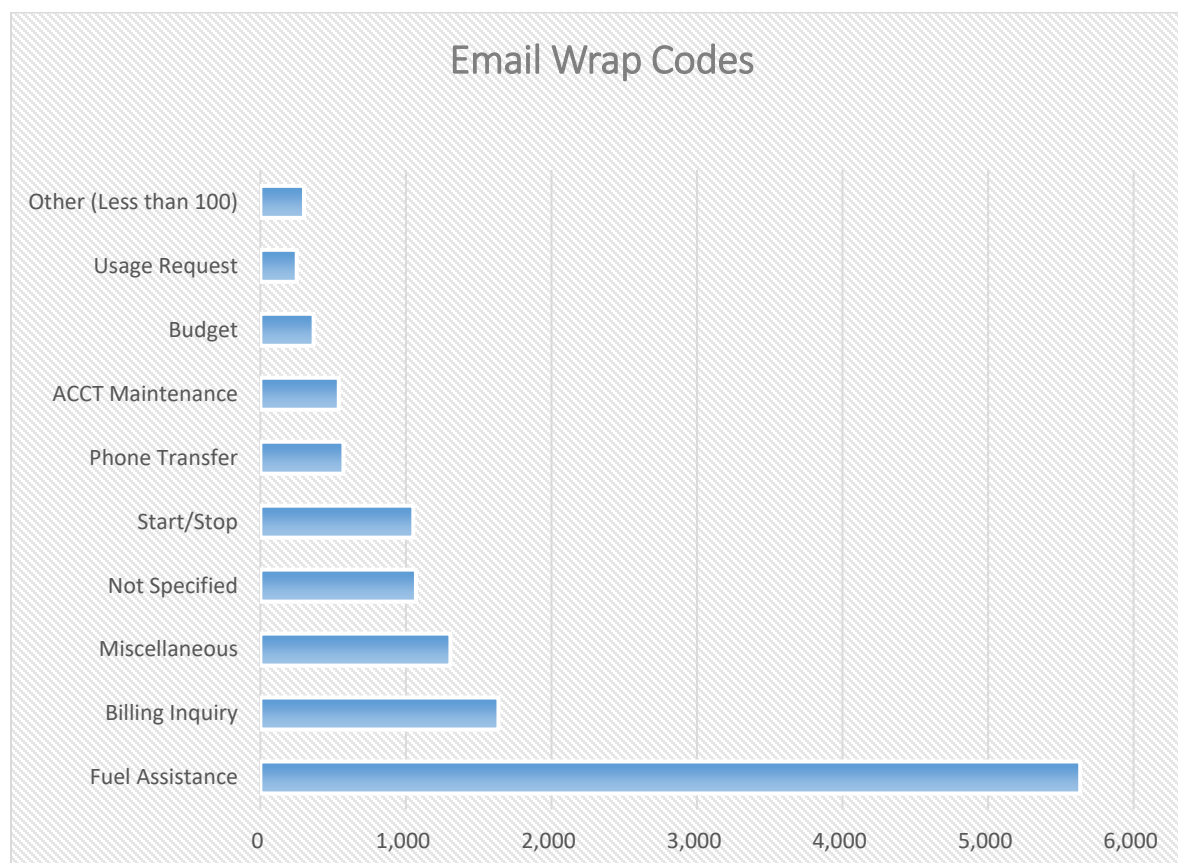


Figure 5: Email Wrap Codes

Customer Complaint Categories

Regarding Order Point 16 of the 2019 SRSQ Order, Commission Staff, including the Consumer Affairs Office, convened a work group meeting on Monday, March, 1, 2021, with the Department of Commerce, Xcel Energy, Minnesota Power, and Otter Tail Power to review and discuss current complaint categories used in annual SRSQ reports. Minnesota Rule 7826.2000 was reviewed along with the current categories used by each of the utilities and the Consumer Affairs Office. The group agreed to work together to further refine definitions for existing categories to allow for greater specificity and seek consistency, where possible. As part of this review, additional categories may be considered based on emerging topics of interest. Quarterly meetings will continue in 2021

with the objective of establishing a recommendation for use with the next calendar year (2022) to align with SRSQ reporting cycles.

VI. Remote Reconnect Program

On December 2, 2019, Minnesota Power filed a new petition for a three-year remote reconnect pilot program in Docket No. E-015/M-19-766. This proposal was approved by the Commission on December 9, 2020. Importantly, the COVID-19 pandemic significantly changed the landscape in 2020 and led to several necessary changes to normal operating conditions, including disconnections and reconnections for customers. As referenced earlier in this filing, in March 2020, Minnesota Power voluntarily took several proactive measures to provide protections and enhance safety during the peacetime emergency, following the issuance of the Governor's Emergency Executive Order.⁶ These actions included immediate suspension of disconnections for residential customers facing financial hardship in relation to the coronavirus pandemic; voluntary extension of Minnesota's Cold Weather Rule through May 31, 2020; encouraging customers to reach out regarding payment plans and options that reflect their unique financial resources and circumstances; and suspension of all non-emergency customer site visits. On March 30, 2020, these protective measures were expanded to include waiving late payment charges for residential and small business (general service) customers; suspending disconnections for small business (general service) customers facing financial hardship in relation to the coronavirus pandemic; and waiving reconnection fees during normal business hours for residential and small business (general service) customers previously disconnected for non-payment. In its August 13, 2020 Order under Docket No. E,G-999/CI-20-375, the Commission formally ordered suspension of disconnections for residential customers; suspension of negative reporting to credit agencies for residential customers; and waiving reconnection, service deposits, late fees, interest, and penalties for residential customers. Per the Commission's August 13, 2020 Order, these protections

⁶ On March 13, 2020, Governor Tim Walz signed Emergency Executive Order 20-01, Declaring a Peacetime Emergency and Coordinating Minnesota's Strategy to Protect Minnesotans from COVID-19, as most recently extended through April 14, 2021 in Emergency Executive Order 21-12, https://mn.gov/governor/assets/EO%2021-12_tcm1055-472035.pdf

are to remain in effect for the duration of the peacetime emergency with 60 days' notice before resuming these activities.⁷

Due to the timing of the approval order for this pilot and the peacetime emergency that continues into 2021, the timing for implementation of this voluntary three-year pilot program will be deferred until there is a resumption of normal operations where residential customer disconnections for non-payment may occur. Once implemented, residential electricity customers will have the option to participate. Participating customers whose service has been disconnected for non-payment will have the option to have their service reconnected remotely after meeting reconnection requirements. This is contingent on them having a remote-capable meter. These customers will be reconnected within minutes after calling customer service, which eliminates the need for Minnesota Power to send staff to the customer's location to reconnect service in person. The remote reconnection is accomplished through advanced metering infrastructure equipped with remote technology. Participating residential customers will have remote-capable meters over the duration of the pilot and become eligible. For any pilot participant without a remote-capable meter, the Company will provide the necessary meter upgrade at no additional charge upon request by the customer and contingent on meter stock availability.

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

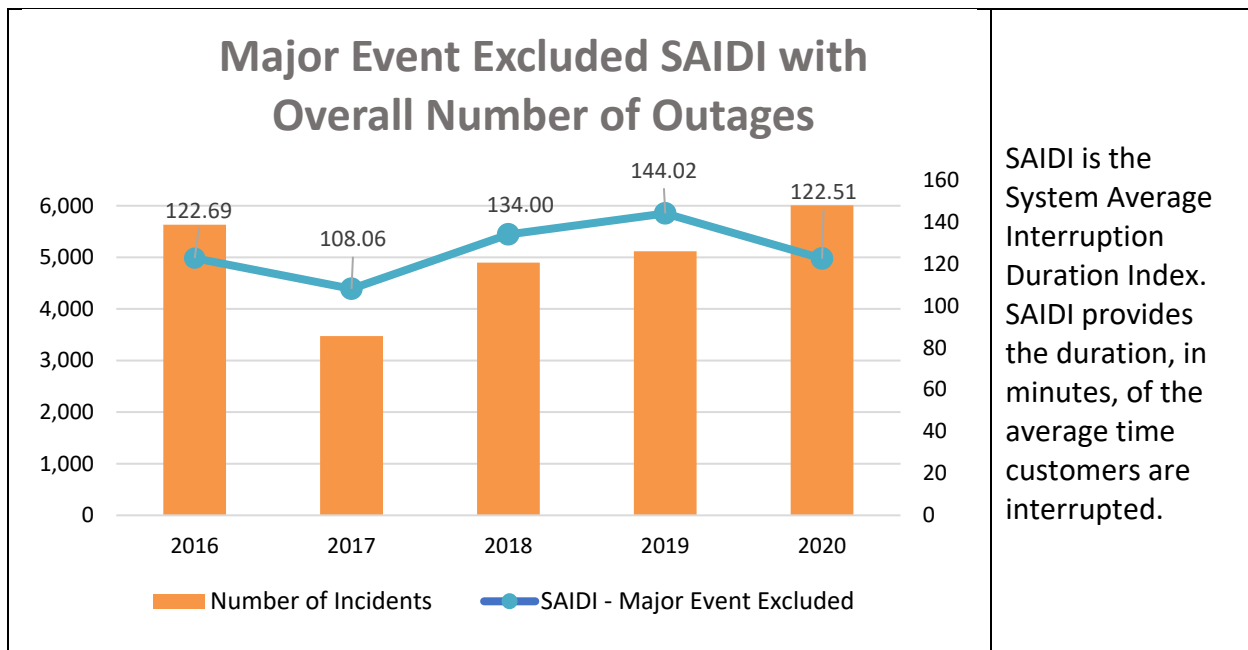
When implemented, the pilot will be offered on a voluntary basis to any residential customer whose service has been disconnected for non-payment. However, Minnesota

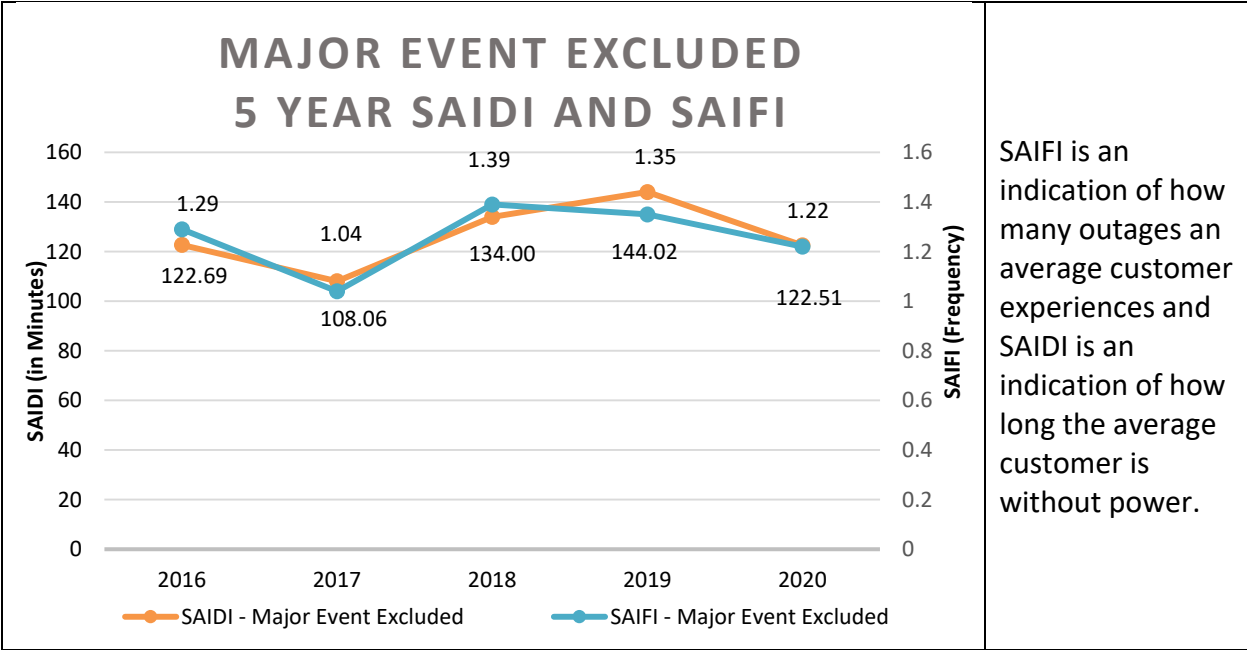
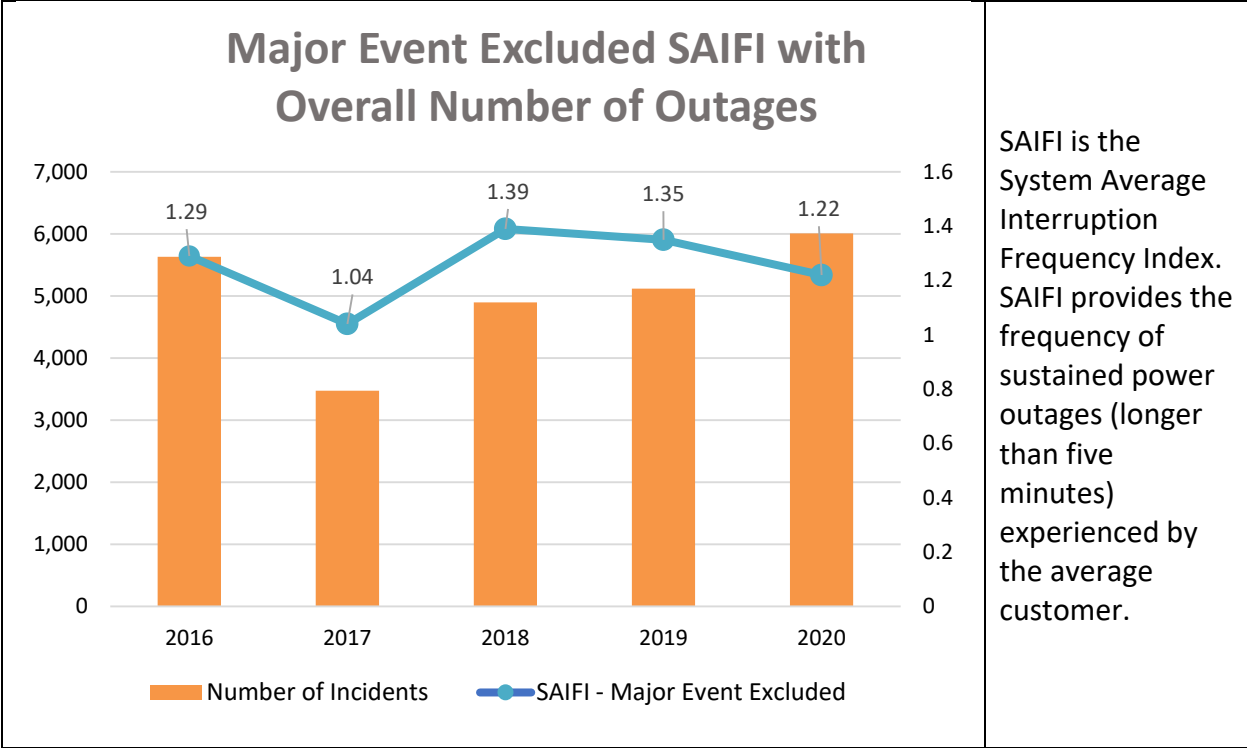
⁷ Per the Commission's March 25, 2021 Notice, Minnesota Power will file a transition plan in Docket No. E,G999/CI-20-375 on or before April 1, 2021. This matter is expected to be heard at the April 15, 2021 Commission Hearing.

Power will prioritize customers and locations with frequent disconnections, difficult access, location hazards, or unsafe conditions, because remote reconnection offers greater opportunities for cost savings and safety benefits in such locations. Minnesota Power has agreed to include pilot-related information as part of its annual service quality reporting; however, no such information is applicable for the 2020 calendar year for the reasons described above.

VII. 2020 Reliability Summary Graphs

Minnesota Power is committed to maintaining safe, reliable and cost effective electricity Service. Minnesota Power strives to provide high quality customer service. Further details on 2020 performance results are provided in this section beginning with graphs of the safety, reliability and service quality issues, using the IEEE 2.5 Beta method, which impact Minnesota Power customers. The IEEE data will be available in the third quarter and a supplemental filing will be submitted with updated numbers for the following graphs.





Minnesota Power resolves power quality issues on a case by case basis. When a customer calls with a complaint or questions regarding a power quality issue, Minnesota Power investigates and resolves all problems found to be caused by the Company. In the event of complaints regarding low voltage or high voltage, Minnesota Power will do an

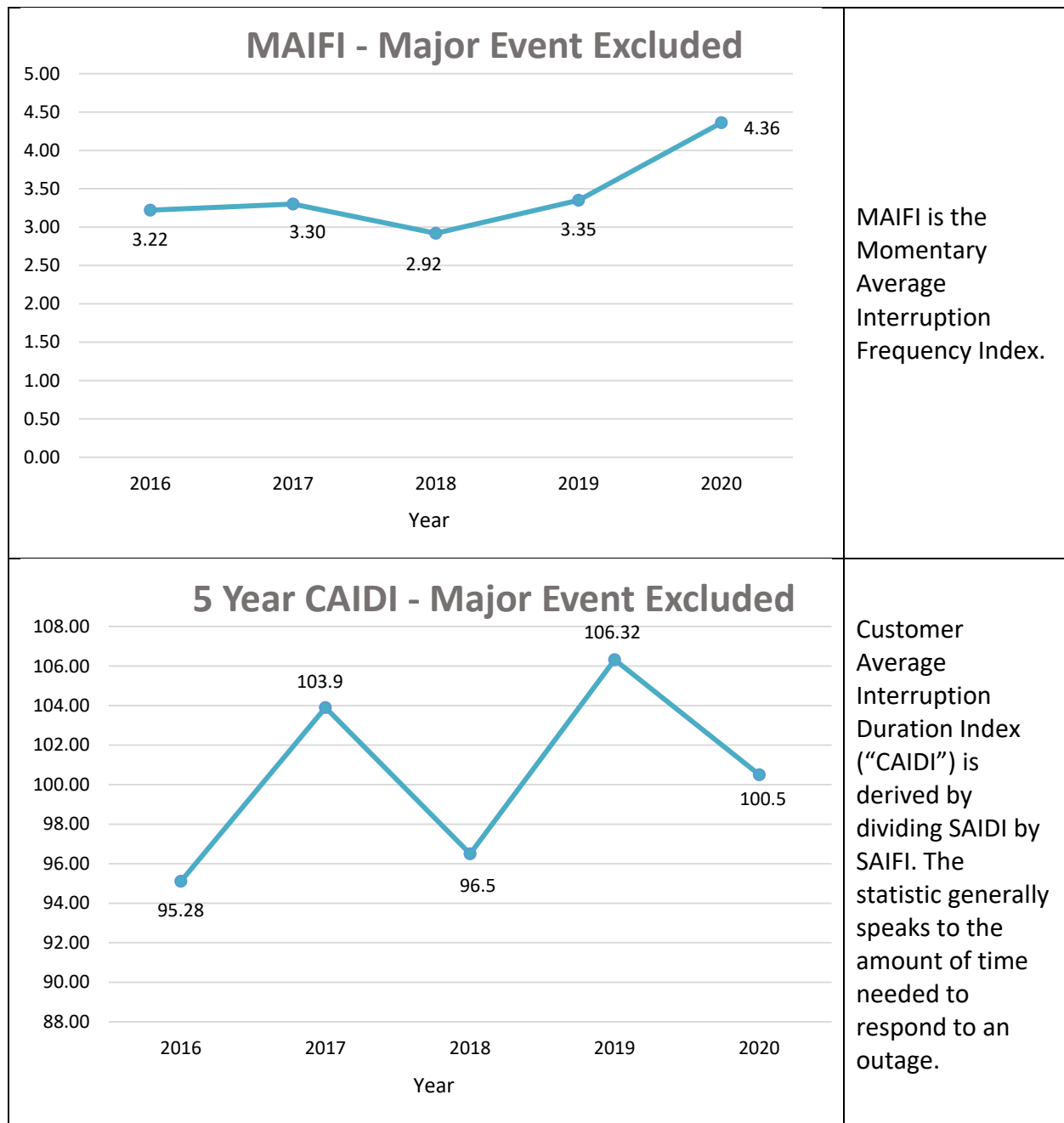
investigation of the customer's service and check for loose or overheated connections. If no problem is found or if the problem is intermittent, the Company will install a recording voltmeter. This meter allows for monitoring of the voltage over time and under various customer and system loading conditions. If those recordings demonstrate that the Company is not meeting its prescribed voltage standards, Minnesota Power performs the required maintenance in order to bring the voltage within the limits stated in its Distribution Standards. There are seldom requests from customers for power quality studies. The Company has observed that customers seem to experience fewer power quality issues than in years past.

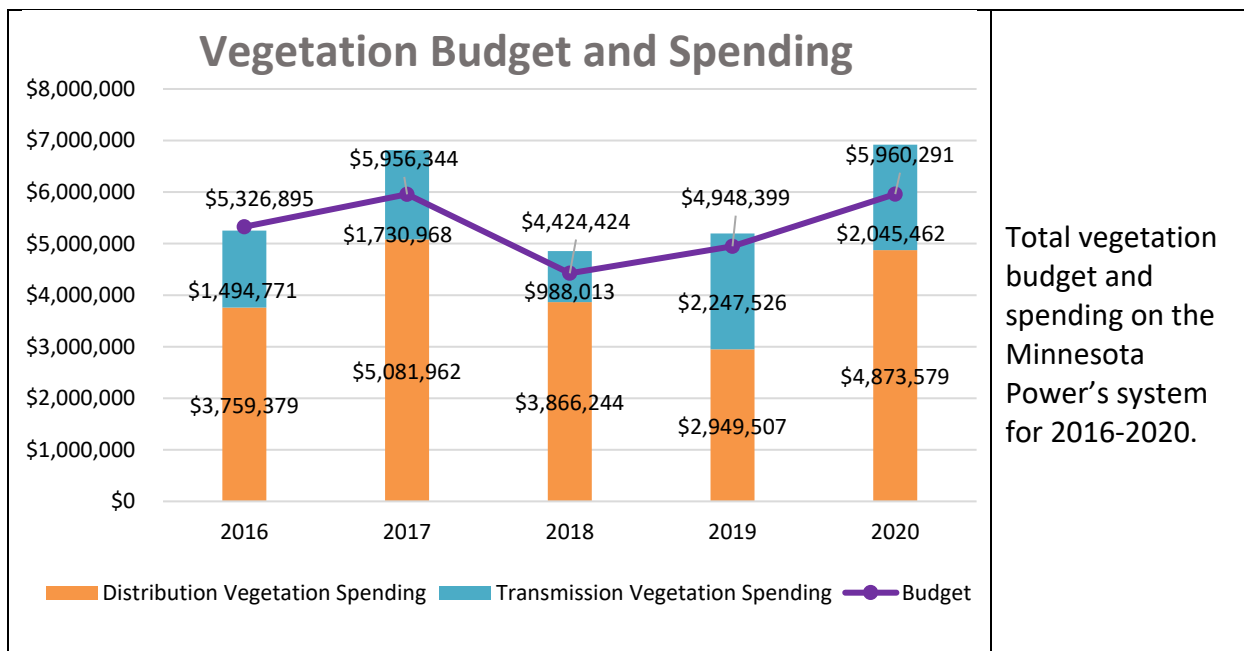
MAIFI

The Momentary Average Interruption Frequency Index ("MAIFI") index provides a measure of the average number of short outages, an interruption of electrical service that Minnesota Power defines as lasting less than five minutes that an average customer experiences in a year. While Minnesota Power has tracked MAIFI statistics for the last decade, it has done so with the knowledge that the Company's MAIFI data collection is and will continue to be incomplete without a significant investment in the technology necessary to enable Minnesota Power to collect and report all momentary outages. The accuracy of the MAIFI index will increase as incident tracking technologies continue to develop and are deployed across the distribution system. The Company continues to evaluate the cost of implementation versus the potential benefits. As the capability to collect momentary information improves, the performance trend of the statistics may likely appear to degrade.

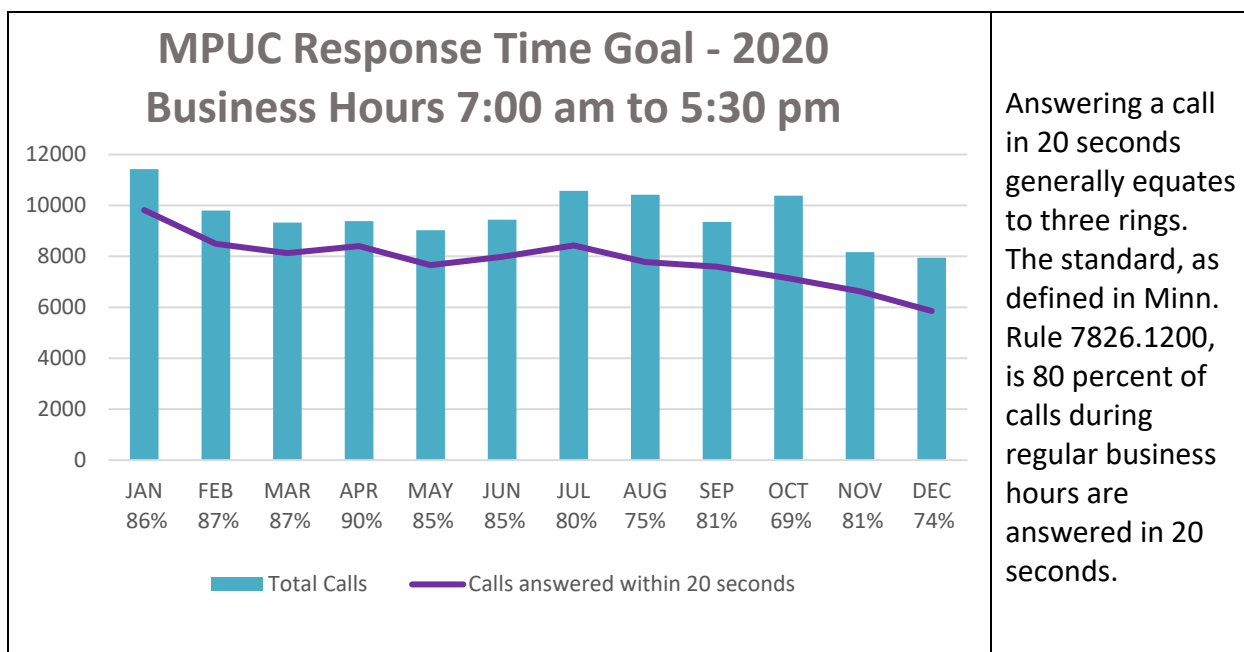
Momentary outage data is collected in a few ways. About 50 percent of Minnesota Power's systems report through supervisory control and data acquisition ("SCADA"). The Company has also rolled out Smart Sensors on all feeders that do not have SCADA. This information is now collected and included with momentary outage data. Some data is also collected manually in order to satisfy a specific customer request, and some information is collected when a device requires maintenance and a momentary count is

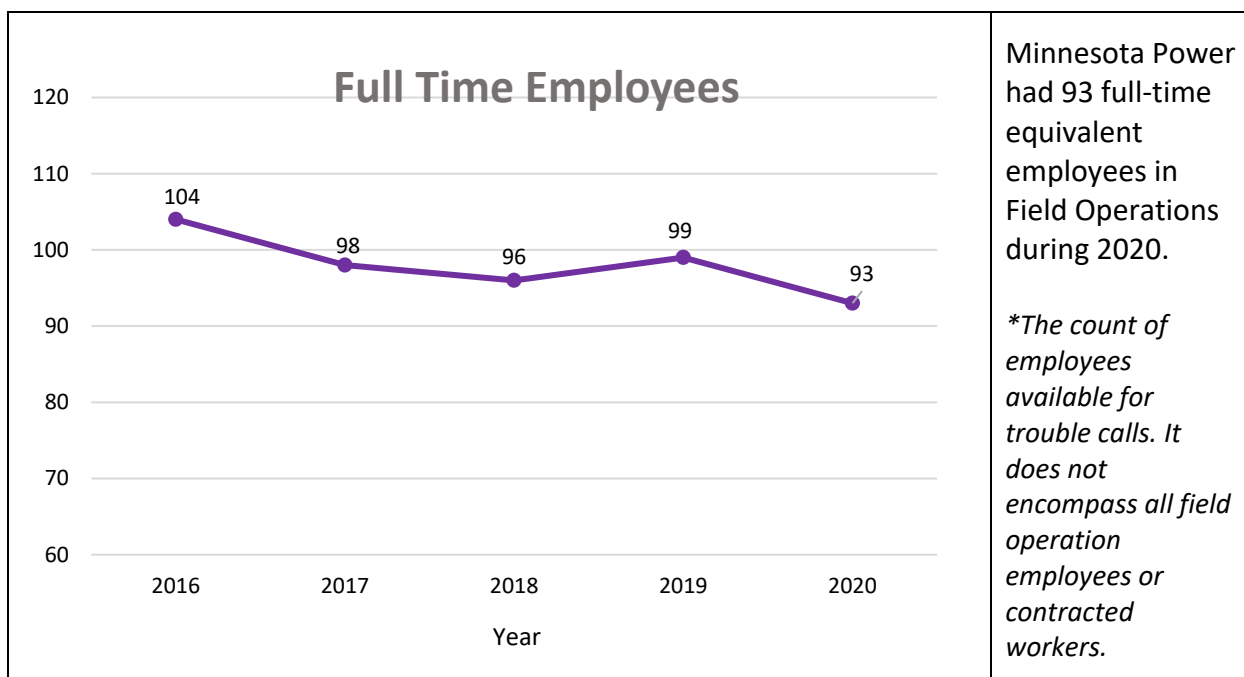
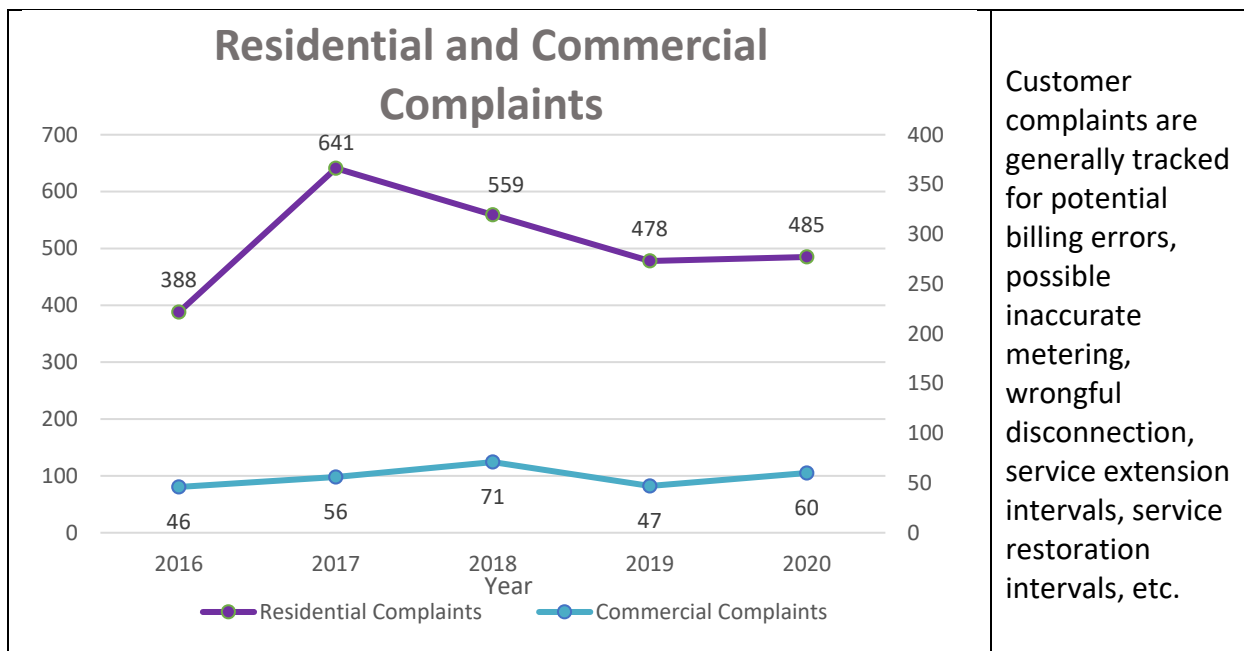
collected. Lastly data is collected in the Outage Management System (“OMS”) from customer phone calls reporting a brief interruption.



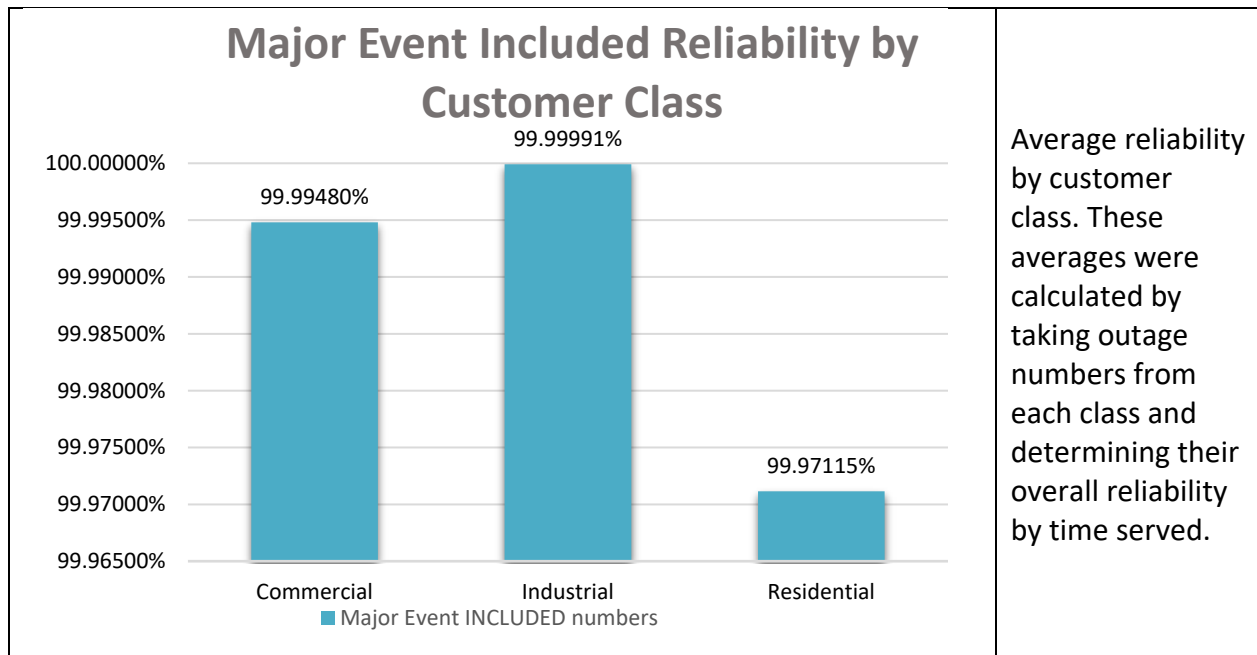


The following tables outline information related to customer care and response. Detailed information can be found in Appendix A of this Report.





Line Operations has seen a reduction in work force primarily due to the pandemic and inability to conduct non-virtual job interviews where technical skill assessment is required. The Company expects to resume hiring in 2021 when CDC restrictions are lifted. In the interim, the Company is supplementing with contractors when needed.



Major Service Interruptions

In Order Point 4 of the 2020 SRSQ Order the Commission granted a variance to Minn. R. 7826.0500, subp. 1, item G, no longer requiring utilities to provide certain information specific to major service interruptions. Rather, utilities are now required to file a summary table that includes the information contained in the reports in a similar format to Attachment G of Xcel Energy’s 2020 SRSQ Report.⁸ The required information is provided in the Table 16.

⁸ Docket No. E002/M-20-406.

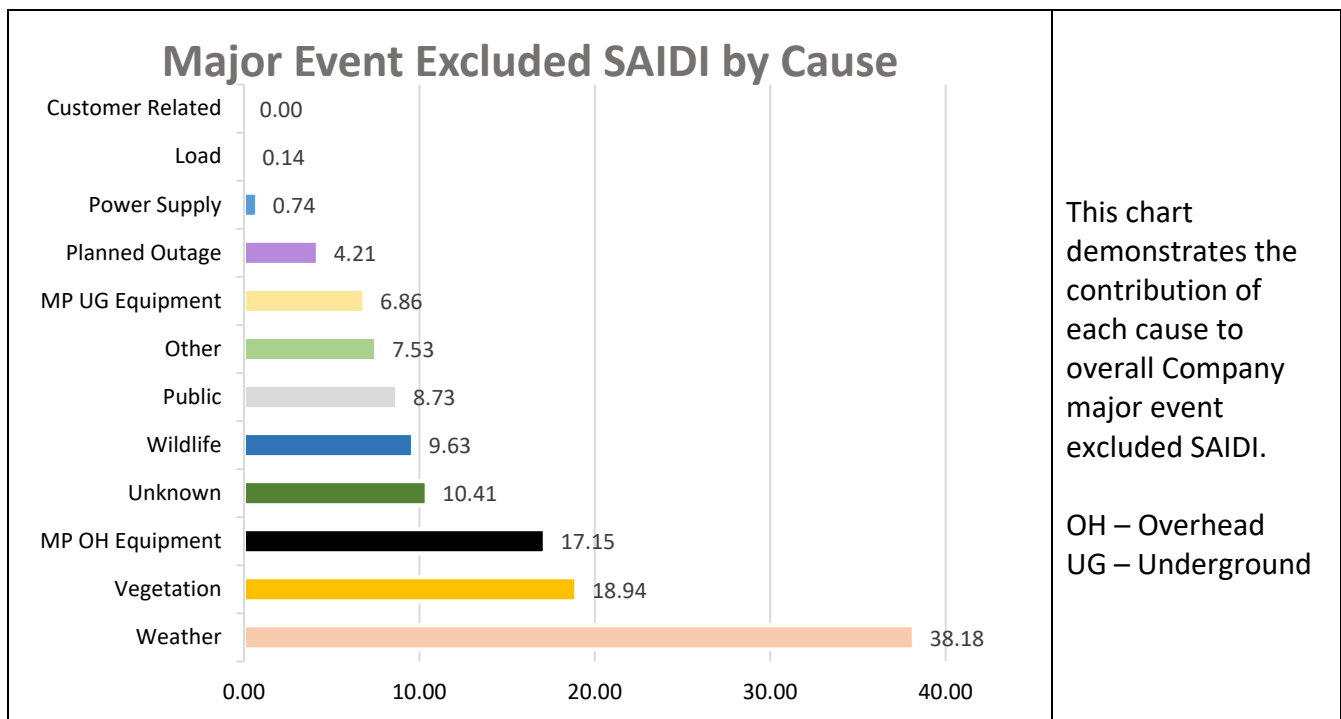
Table 16: Major Service Interruptions Data

January = 0 Qualifying Events, 0 Events with no email						
Event ID	Time Off	Time In	Duration	Customers Affected	AREA	Email Sent
February = 4 Qualifying Events, 1 Events with no email						
202058412	2/14/20 15:20	2/14/20 16:32	72	569	Western	
202058559	2/22/20 13:58	2/22/20 15:12	76	617	Northern	x
202058482	2/28/20 10:44	2/28/20 11:56	74	862	Central	x
202058479	2/28/20 10:44	2/28/20 12:06	82	3240	Central	x
March = 0 Qualifying Events, 0 Events with no email						
April = 0 Qualifying Events, 0 Events with no email						
May = 4 Qualifying Events, 0 Events with no email						
202059606	5/4/20 15:09	5/4/20 21:39	390	737	Northern	x
202059706	5/14/20 1:54	5/14/20 3:48	114	609	Western	x
202059707	5/14/20 1:54	5/14/20 3:48	114	657	Western	x
202059704	5/14/20 1:54	5/14/20 3:48	114	695	Western	x
June = 7 Qualifying Events, 0 Events with no email						
202060073	6/9/20 2:01	5/14/20 3:39	97	720	Western	x
202060146	6/10/20 3:49	6/10/20 6:41	172	593	Northern	x
202060149	6/10/20 3:49	6/10/20 6:41	172	998	Northern	x
202060150	6/10/20 3:49	6/10/20 6:41	172	1017	Northern	x
202060545	6/29/20 9:40	6/29/20 11:06	86	593	Northern	x
202060548	6/29/20 9:40	6/29/20 11:06	86	998	Northern	x
202060549	6/29/20 9:40	6/29/20 11:06	86	1017	Northern	x
July = 12 Qualifying Events, 0 Events with no email						
202060979	7/6/20 15:30	7/6/20 19:19	229	617	Northern	x
202060882	7/8/20 6:34	7/8/20 7:44	70	1007	Western	x
202061028	7/8/20 6:22	7/8/20 7:29	67	1115	Western	x
202060933	7/9/20 2:48	7/8/20 5:19	151	1300	Western	x
202060920	7/9/20 1:38	7/9/20 4:25	167	698	Western	x
202060936	7/9/20 3:41	7/9/20 4:54	88	1942	Central	x
202061223	7/17/20 20:36	7/17/20 22:20	104	567	Western	x
202061235	7/17/20 23:17	7/17/20 3:48	271	698	Western	x
202061561	7/21/20 1:21	7/21/20 3:32	131	698	Western	x
202061575	7/25/20 15:26	7/25/20 19:07	221	1857	Central	x
202061577	7/25/20 15:26	7/25/20 19:07	222	2717	Central	x
202061576	7/25/20 15:26	7/25/20 19:08	221	2309	Central	x
August = 9 Qualifying Events, 2 Events with no email						
202061841	8/6/20 23:55	8/7/20 1:03	68	1063	Northern	x
202061842	8/6/20 23:55	8/7/20 1:09	74	1280	Northern	x
202061847	8/7/20 23:58	8/8/20 1:23	88	1482	Central	x

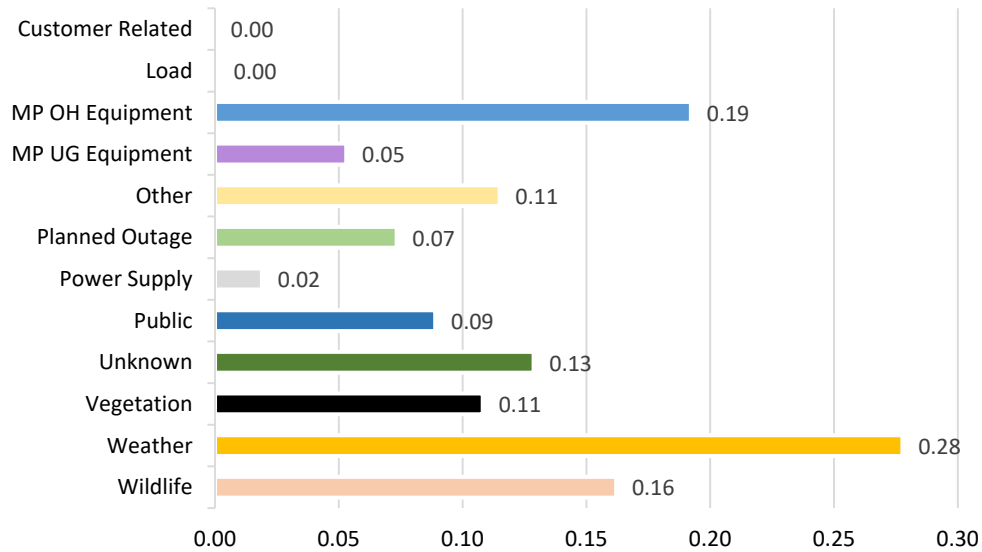
Event ID	Time Off	Time In	Duration	Customers Affected	Area	Email Sent
202061856	8/8/20 13:31	8/8/20 15:26	115	569	Western	
202061976	8/9/20 12:29	8/9/20 14:04	95	1254	Central	x
202062146	8/13/20 10:48	8/13/20 17:32	404	1254	Central	x
202062072	8/14/20 16:52	8/14/20 17:52	60	1224	Northern	x
202062086	8/14/20 19:59	8/14/20 23:02	183	550	Central	
202062325	8/21/20 12:24	8/21/20 13:27	63	2239	Central	x
September = 3 Qualifying Events, 0 Events with no email						
202062618	9/2/20 23:36	9/3/20 0:56	80	1251	Central	x
202062770	9/12/20 10:38	9/12/20 11:46	68	617	Northern	x
202062963	9/26/20 13:38	9/26/20 15:42	124	607	Western	x
October = 6 Qualifying Events, 1 Events with no email						
202063227	10/8/20 10:53	10/8/20 12:13	79	549	Central	x
202063225	10/8/20 10:54	10/8/20 11:55	61	571	Central	x
202063442	10/24/20 15:59	10/25/20 5:27	804	503	Northern	x
202063441	10/24/20 15:59	10/25/20 5:27	804	724	Northern	x
202063599	10/30/20 5:47	10/30/20 6:57	70	550	Central	
202063674	10/31/20 23:24	11/1/20 0:25	61	695	Western	x
November = 2 Qualifying Events, 0 Events with no email						
202063805	11/9/20 7:00	11/9/20 8:09	69	698	Western	x
202064034	11/22/20 3:49	11/22/20 1545	451	683	Western	x
December = 3 Qualifying Events, 0 Events with no email						
202064172	12/2/20 14:30	12/2/20 1540	70	724	Northern	x
202064242	12/11/20 15:25	12/11/20 1657	92	1203	Western	x
202064402	12/23/20 19:02	12/23/20 1447	1305	1136	Central	x

VIII. Reliability Cost Matrix

In section VIII Minnesota Power has provided summary information to assist stakeholders in understanding the Company's overall system reliability and the main factors that affect reliability. The Company has prepared the charts and graphs below in an effort to convey what it believes are the main contributing factors that can impact the long-term reliability metrics of the distribution system. The graphs and charts below show the contributing factors to SAIDI and SAIFI and the relationship between operational performance and cost. The Company strives to provide information in an easily understandable format.



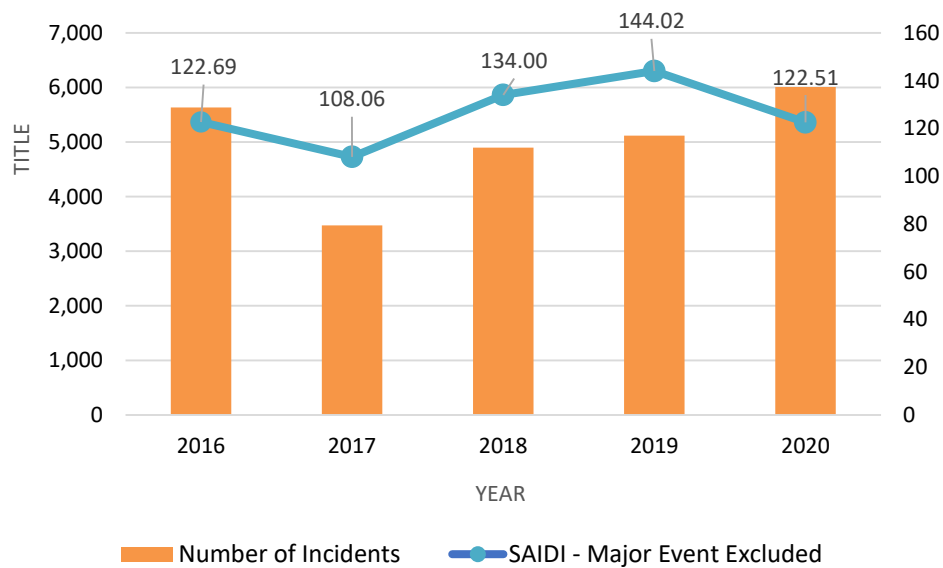
Major Event Excluded SAIFI by Cause



This chart demonstrates the contribution of each cause to overall Company major event excluded SAIFI.

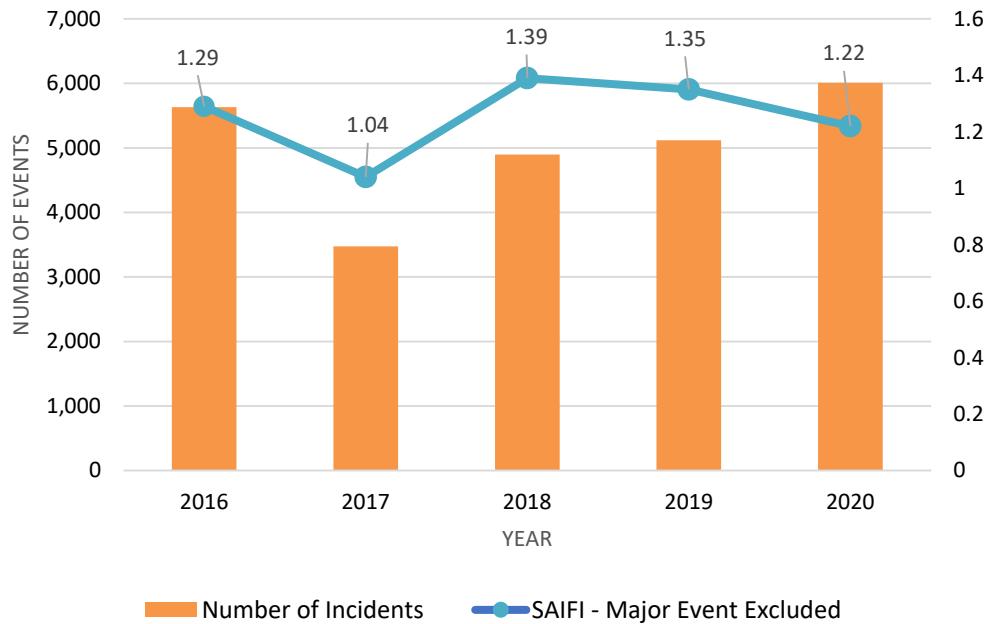
OH – Overhead
UG – Underground

Major Event Excluded SAIDI with Overall Number of Outages



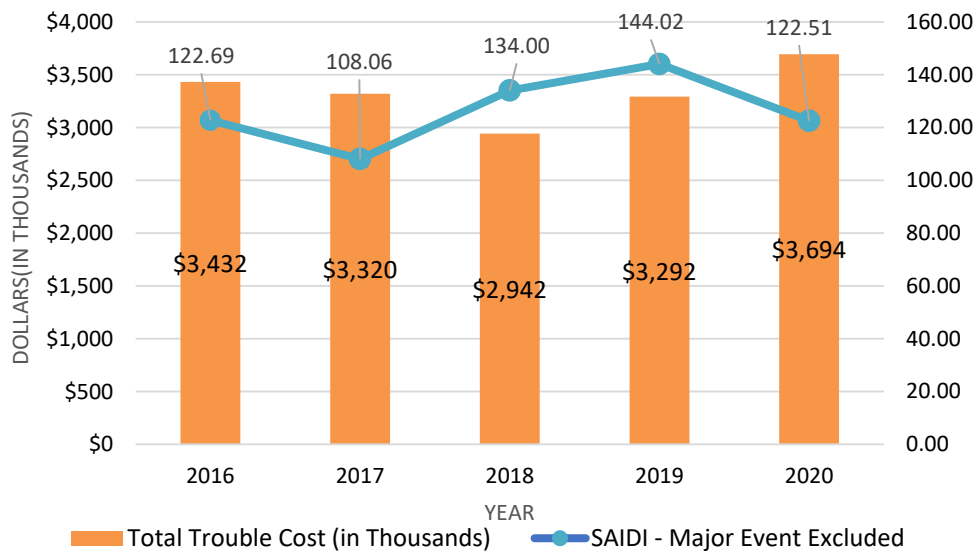
This chart presents SAIDI against Minnesota Power's historic number of outages 2016-2020.

Major Event Excluded SAIFI with Overall Number of Outages



This chart presents SAIFI against Minnesota Power's historic number of outages 2016-2020.

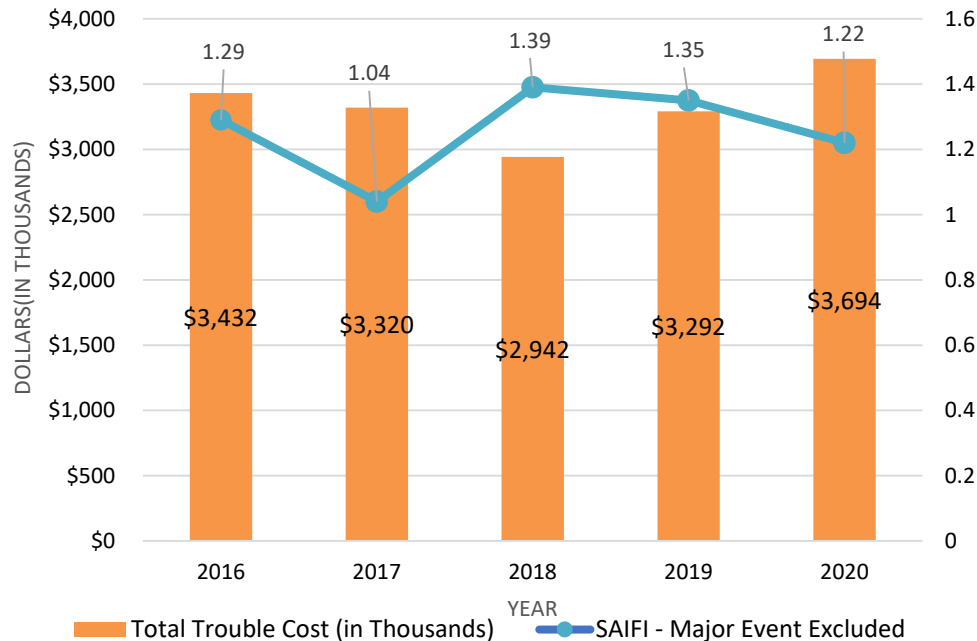
SAIDI with Trouble Costs (\$ in Thousands)



This chart shows SAIDI with operation & maintenance dollars spent on trouble calls 2016-2020.

This is unplanned work done without the replacement of capital assets.

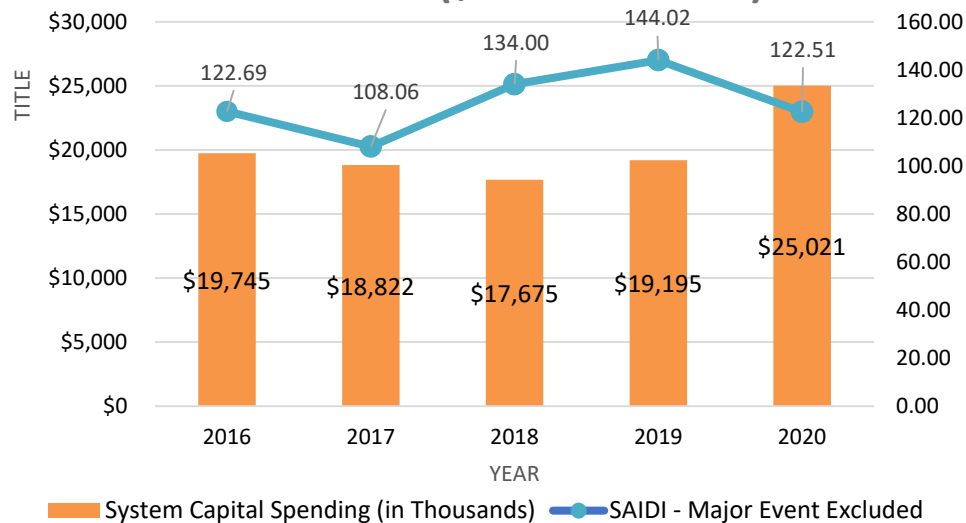
SAIFI with Trouble costs (\$ in Thousands)



This chart shows SAIFI with operation & maintenance dollars spent on trouble calls 2016-2020.

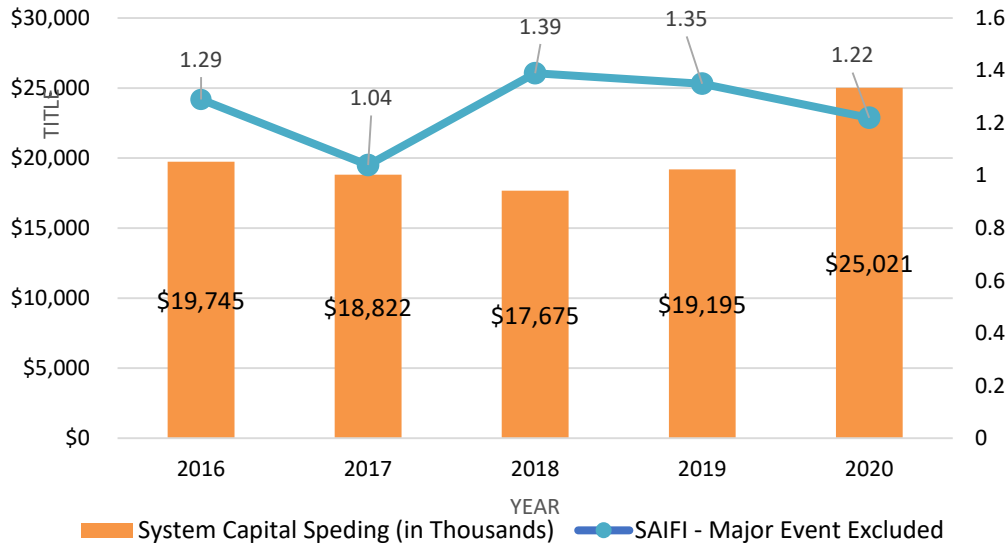
This is unplanned work done without the replacement of capital assets.

Major Event Excluded SAIDI with Capital Spending (\$ in Thousands)



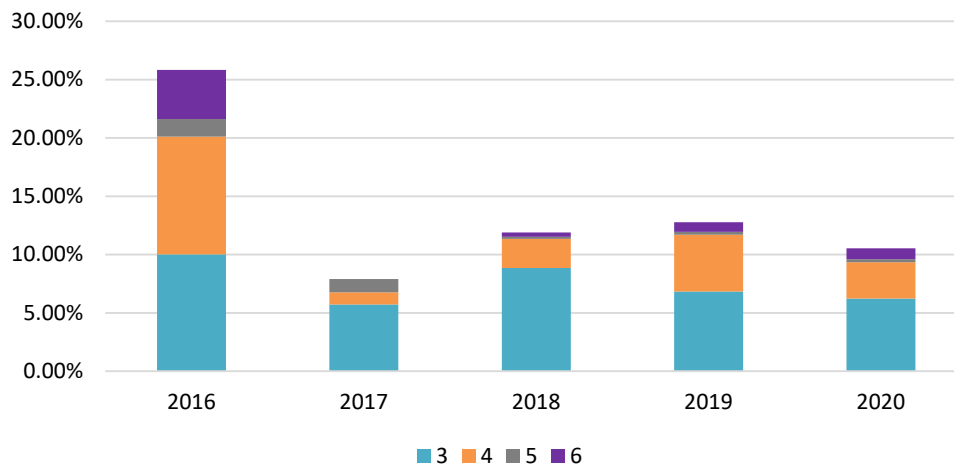
This chart shows SAIDI compared to capital dollars spent on distribution system 2016-2020.

Major Event Excluded SAIIFI with Capital Spending (\$ in Thousands)



This chart shows SAIIFI compared to capital dollars invested on distribution system 2016-2020.

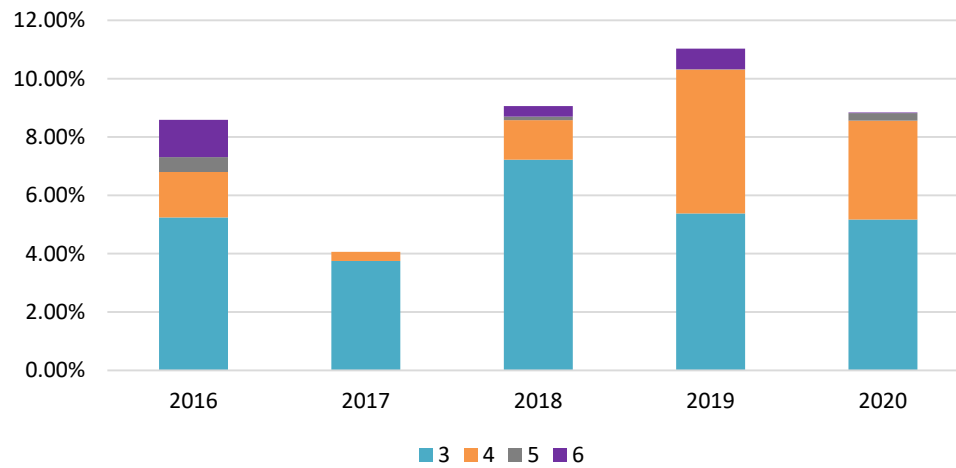
CEMI Major Event Included



Customers experiencing multiple interruptions (CEMI) measures the percent of overall customers that have experienced more than a specific number of interruptions. This includes major events.

	2016	2017	2018	2019	2020
6+	4.21%	0.00%	0.36%	0.83%	0.93%
5+	1.51%	1.14%	0.18%	0.24%	0.26%
4+	10.09%	1.04%	2.50%	4.87%	3.12%
3+	10.02%	5.73%	8.85%	6.84%	6.23%

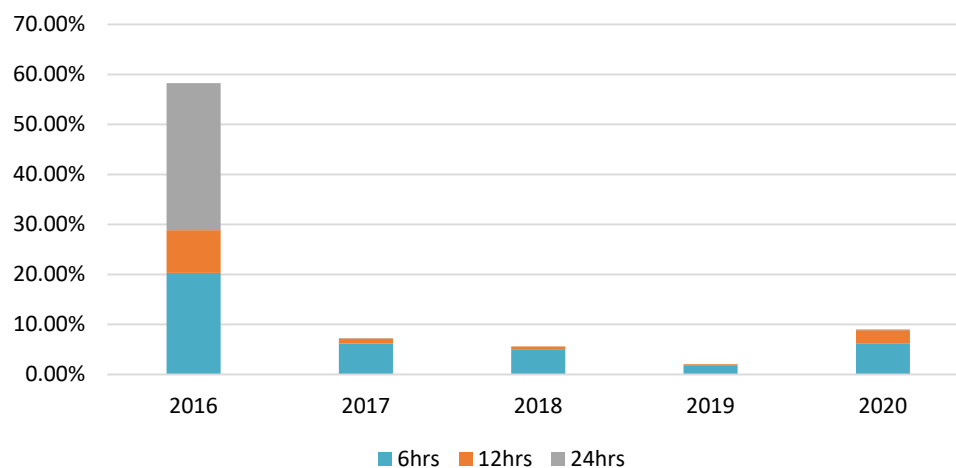
CEMI Major Event Excluded



Customers experiencing multiple interruptions measures the percent of overall customers that have experienced more than a specific number of interruptions.

	2016	2017	2018	2019	2020
6+	1.28%	0.00%	0.36%	0.71%	0.02%
5+	0.51%	0.00%	0.12%	0.01%	0.26%
4+	1.56%	0.31%	1.36%	4.93%	3.39%
3+	5.24%	3.75%	7.22%	5.38%	5.17%

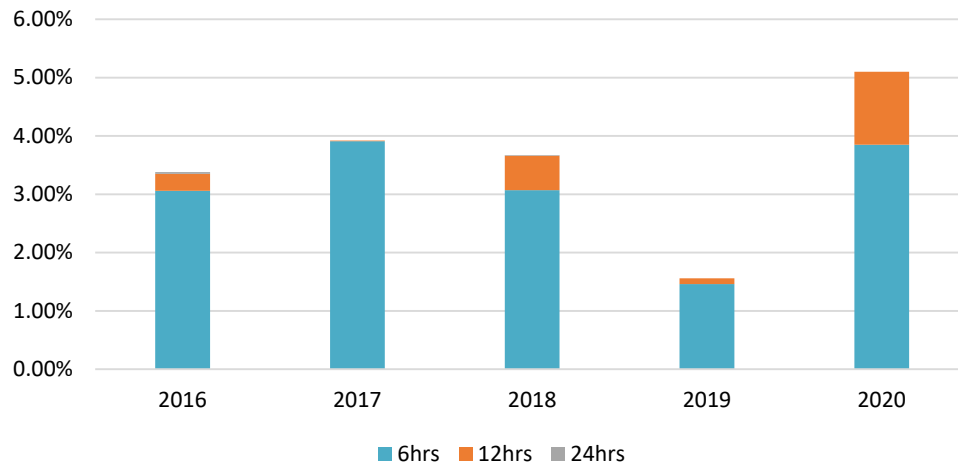
CELI Major Event Included



Customers experiencing lengthy interruptions (CELI) provides insight into the number of customers who experience an outage greater than 6, 12, 24 hours, including major events.

	2016	2017	2018	2019	2020
6hrs	20.31%	6.17%	4.93%	1.86%	6.14%
12hrs	8.56%	1.01%	0.66%	0.19%	2.71%
24hrs	29.40%	0.11%	0.01%	0.02%	0.16%

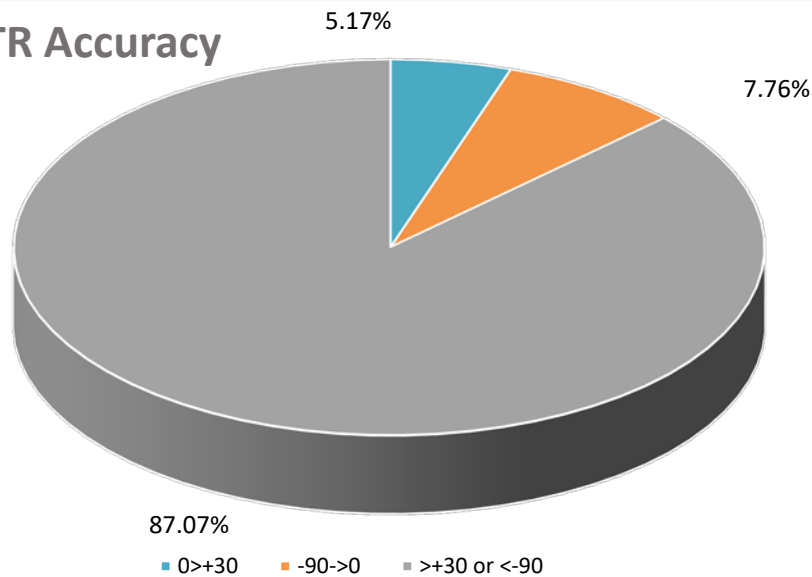
CELI Major Event Excluded



Customers experiencing lengthy Interruptions provides insight into the number of customers who experience an outage greater than 6, 12, 24 hours.

	2016	2017	2018	2019	2020
6hrs	3.06%	3.91%	3.07%	1.46%	3.85%
12hrs	.29%	.01%	.59%	.10%	1.25%
24hrs	.03%	.00%	.01%	.00%	0.00%

ETR Accuracy



Estimated Restoration Time Accuracy

+ is over estimation
- is under estimation

0>+30	-90->0	>+30 or <-90
426	640	7177
5.17%	7.76%	87.07%

IX. System Construction and Protection

Voltage Monitoring

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

Vegetation Management

Vegetation Management is a cost effective and essential way in which to improve reliability and reduce momentaries on the distribution system. System reliability can be adversely impacted by many external environmental factors. Vegetation encroachments are one of the more significant factors that can impact the Company's system. A coordinated and systematic vegetation management program is a key component of Minnesota Power's distribution reliability effort. Minnesota Power has designed a vegetation management program to address each distribution line approximately every six years and transmission lines every seven years. Vegetation management benefits the system in various ways.

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

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

maintained; the actual maintenance schedule may be longer or shorter than six calendar years.

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

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

Table 17 lists the individual circuits scheduled to receive routine maintenance that have not had vegetation maintenance in the six years prior to December 31, 2020. Together, they represent 3.9 percent of the Company's total distribution system by line miles. All of these circuits will be completed in 2021.

Table 17: Circuits outside of 6-year trimming cycle

Substation	Feeder	Mileage	Last Don	Schedule	Years
FLF-402	Floodwood 402	23.8	2014	2021	7
MDL-401	Meadowlands 401	52.6	2014	2021	7
MHR-451	Moorhead Road	12.1	2013	2021	8
SAW-6311	Sawyer 6311	18.8	2013	2021	8
TML-1	Ten Mile Lake 1	22.0	2013	2021	8
TMS-412	Thompson H.E. 412	18.9	2013	2021	8
WAK-1	Walker A	10.2	2013	2021	8
WBK-1	Walker B	13.4	2013	2021	8
WYE-1	Walker Sub 3	6.7	2013	2021	8
LGL-1	Long Lake 1 (Park Rapids)	1.1	2014	2021	7
LNG-540	Long Lake 540	5.1	2014	2021	7
LNG-545	Long Lake 545	4.4	2014	2021	7

Line Inspection Program

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

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

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

age of a replaced pole is approximately 50 years old. Minnesota Power has found this to be a prudent and logical way of evaluating and replacing the poles on its system.

Emergency Preparedness and Mutual Aid

Mutual aid is the cooperation between utilities to provide labor and vehicles to a utility so profoundly affected by outages that it is unlikely they will have the ability to restore power to all of their customers within four to seven days. A robust protocol has been developed between the Midwest Mutual Assistance Group (“MMAG”) which is comprised of 34 investor owned utilities. Generally, a utility calls upon Mutual Aid when they face a week or more of outage times and multiple weeks of restoration work; although regionally, neighboring mutual aid partners, when able, are responding to outages and restoration work estimated in the 36 to 48 hour timeframe.

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

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

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

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

Table 18: Mutual Aid Events

Ameren Illinois Derecho	La Salle, IL	8/11 – 8/14/2020
Xcel Energy Storm	Minneapolis / St. Paul	8/10/2020

Ameren Illinois Derecho – La Salle, Illinois

Line crews from Minnesota Power and Superior Water, Light and Power (“SWL&P”) traveled to La Salle, Illinois to assist Ameren in restoring power after a derecho with wind gusts of more than 80 miles an hour produced widespread severe wind damage across Iowa, northern Illinois, and northern Indiana on August 10, 2020. A derecho is a well-organized and long-lived complex of storms that can develop in an environment with very warm and moist air at the surface, colder air aloft, and moderate to strong winds at upper levels of the atmosphere. A derecho produces a swath of particularly damaging thunderstorm winds primarily classified as straight-line winds although wind speeds in a derecho can exceed 100 mph which is equivalent to that of an EF-1 tornado, but over a vastly larger area than a tornado would impact.

Eighteen Minnesota Power lineworkers, two SWL&P lineworkers, two supervisors and two fleet mechanics were among the mutual aid workers joining the storm response. Ameren reported more than 15,000 customers in central and southern Illinois were without power in the area the Minnesota Power and SWL&P line crews were working.

Each crew member from Minnesota Power and SWL&P traveled to La Salle on Aug. 11th in a separate bucket truck or other vehicle in compliance with safety protocols in place because of the COVID-19 pandemic. In addition, lineworkers adhered to company and electric industry guidelines to maintain the health and safety of employees and the public. Those guidelines included social distancing and limiting contact with others.



Above: Line workers Jeff Cochran, Chase Ballard, Ben Michaud, Supervisor Troy Lindsay and Fleet Mechanic Mike Poissant ready to leave from our Herbert Service Center, Duluth, MN.

To the right: One of our crews works to restore power in Ottawa, Illinois on Wednesday, Aug 12th.



Xcel Energy Storms

Line crews from Minnesota Power traveled to the Minneapolis area to assist Xcel Energy in restoring power after several rounds of storms brought large hail, damaging winds and torrential rain to the Twin Cities metro area in the early hours of August 10. Xcel Energy reported thousands of customers were without power mid-morning. Eighteen linemen and one supervisor traveled to the Minneapolis area to assist with restoring power.

Mutual Aid Recognition

On Jan. 14, 2021, EEI presented Minnesota Power and SWL&P with the EEI “Emergency Assistance Award” for their mutual aid response in assisting Ameren in restoring power to thousands of customers after a derecho caused widespread severe wind damage across Iowa, northern Illinois, and northern Indiana in August. The Emergency Assistance Award is given to select EEI member companies to recognize their outstanding efforts to assist other electric companies with power restoration after service has been disrupted by severe weather conditions or other major incidents. The winners are chosen by a panel of judges following an international nomination process.

Minnesota Power and SWL&P crews have assisted on many natural disaster-related outages over the years, and have received several Emergency Assistance Awards for their service. In 2019, Minnesota Power and SWL&P assisted Manitoba Hydro in restoring power after Manitoba was hit with heavy snow and high winds in a slow-moving storm. Crews also have joined hurricane responses six times in the past 15 years, including in Florida, Ohio, Maryland, New Jersey; and in Puerto Rico from late 2017 into early 2018 after Hurricanes Irma and Maria. Additionally, in 2018, Minnesota Power foresters helped Pacific Gas and Electric inspect and clear burned and dangerous trees from power line easements in the area affected by the Camp Fire, the deadliest wildfire in California history.

X. Conclusion

Minnesota Power respectfully submits information on its Safety, Reliability and Service Quality metrics. Minnesota Power's objective has always been to ensure that even during these unprecedented times, the focus remains on providing the safe and reliable service that customers, communities and employees count on, while also ensuring manageable balances after the expiration of peacetime emergency-related customer protections. The Company appreciates the opportunity to provide relevant information regarding its distribution system and customer care efforts. This information can be utilized by the Commission and stakeholders to gain a better understanding of the Company's distribution system and the holistic planning that goes into maintaining the system's robustness and resilience, while remaining responsive to customers and their expectations. This year presented a multitude of factors that affect the system processes and influenced customer expectations and outcomes. 2020 saw pandemic impacts from increased arrears to a record number of customer service requests as many Minnesotans "worked from home" at their vacation properties through the summer months and remodeled or updated their electrical facilities. Other impacts included crew separation and transition to remote work for many of our field support staff that necessitated new processes to avoid direct customer contact. Minnesota Power acknowledges the Commission's concern surrounding the Company's reliability metrics and has in turn enacted a robust and aggressive investment plan to increase resiliency and executed this plan well despite the current pandemic challenges. This investment plan will serve to increase reliability and resiliency on the Company's system in coming years. Minnesota Power continually strives to meet customer needs while also maintaining the core tenets of a reliable, safe and affordable grid.

STATE OF MINNESOTA)
) ss
COUNTY OF ST. LOUIS)

AFFIDAVIT OF SERVICE VIA
ELECTRONIC FILING

Tiana Heger of the City of Duluth, County of St. Louis, State of Minnesota, says that on the 1st day of April, 2021, she served Minnesota Power's 2020 Safety, Reliability and Service Quality Standards Report in **Docket No. E-15/M-21-_____** on the Minnesota Public Utilities Commission and the Energy Resources Division of the Minnesota Department of Commerce via electronic filing. The persons on E-Docket's Official Service List for this Docket were served as requested.



Tiana Heger