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March 31, 2017

Daniel P. Wolf  
Executive Secretary  
Minnesota Public Utilities Commission  
121 7<sup>th</sup> Place East, Suite 350  
St. Paul, MN 55101-2147

**RE: In the Matter of Otter Tail Power Company 2016 Annual Safety, Reliability and Service Quality Report and Proposed SAIFI, SAIDI and CAIDI Reliability Standards for 2017  
Docket No. E017/M-17-**

Dear Mr. Wolf:

Otter Tail Power Company (Otter Tail) submits the enclosed Annual Report pursuant to Minn. Rules 7826.0400, 7826.0500, and 7826.1300. This Annual Report presents our safety, reliability, and service quality performance for the year 2016 and proposed reliability standards for 2017 pursuant to Minn. R. 7826.0600. Otter Tail's proposed reliability standards for 2017 are found in Table 1 in Section IV, of the attached 2016 Report and Proposed 2017 Reliability Standards Petition.

Otter Tail has electronically filed this document with the Commission. In compliance with Minn. Rule 7829.1300, subp. 2, Otter Tail is serving a copy of this filing on the Department of Commerce – Division of Energy Resources and Office of Attorney General – Antitrust & Utilities Division. A Summary of the filing has been served on all persons on Otter Tail's general service list. A Certificate of Service is also enclosed.

We are available to provide any additional information or respond to any questions you may have. Feel free to contact me at (218) 739-8395 or email me at [jfyhrie@otpco.com](mailto:jfyhrie@otpco.com).

Sincerely,

/s/ JESSICA FYHRIE  
Jessica Fyhrie  
Supervisor, Regulatory Proceedings

ljh  
Enclosures  
By electronic filing  
c: Service List

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

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In the Matter of Otter Tail Power  
Company's 2016 Annual Safety,  
Reliability and Service Quality Report and  
Proposed SAIFI, SAIDI and CAIDI  
Reliability Standards for 2017

Docket No. E017/M-17-

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**2016 REPORT AND PROPOSED 2017 RELIABILITY STANDARDS**

**Summary of Filing**

Please take notice that on March 31, 2017, Otter Tail Power Company (Otter Tail or the Company), filed with the Minnesota Public Utilities Commission (Commission) its annual Safety, Reliability and Service Quality Report for 2016 pursuant to Minnesota Rules 7826.0400, 7826.0500 and 7826.1300. Pursuant to Minnesota Rule 7826.0600, subp. 1, Otter Tail proposes SAIFI, SAIDI and CAIDI reliability standards for 2017.

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

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In the Matter of Otter Tail Power  
Company's 2016 Annual Safety,  
Reliability and Service Quality Report and  
Proposed SAIFI, SAIDI and CAIDI  
Standards for 2017

Docket No. E017/M-17-

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**2016 REPORT AND PROPOSED 2016 RELIABILITY STANDARDS**

**I. INTRODUCTION**

Otter Tail Power Company (Otter Tail or the Company), submits this filing in compliance of Minnesota Rules 7826.0400, 7826.0500, 7826.0600, subp. 1, and 7826.1300.

**II. GENERAL FILING INFORMATION**

Pursuant to Minnesota Rule 7829.1300, subp. 4, Otter Tail provides the following general information.

**A. Name, Address, and Telephone Number of Utility**

Otter Tail Power Company  
215 South Cascade Street  
P. O. Box 496  
Fergus Falls, MN 56538-0496  
(218) 739-8200

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

Bruce Gerhardson  
Associate General Counsel  
Otter Tail Power Company  
215 South Cascade Street  
P. O. Box 496  
Fergus Falls, MN 56538-0496  
(218) 739-8475

**C. Date of Filing and Effective Date**

This Report is being filed on March 31, 2017. The proposed reliability standards will be effective for the calendar year 2017.

**D. Title of Utility Employee Responsible for Filing**

Jessica Fyhrie  
Supervisor, Regulatory Proceedings  
Otter Tail Power Company  
215 South Cascade Street  
P. O. Box 496  
Fergus Falls, MN 56538-0496  
(218) 739-8395

**III. MISCELLANEOUS INFORMATION**

**A. Service on Other Parties**

Pursuant to Minn. Rule 7829.1300, subp. 2 and Minn., Stat. §216.17, subd. 3, Otter Tail has electronically filed this Report and Proposed 2017 Reliability Standards. A summary of the filing has been served on all parties on the attached service list.

**B. Summary of Filing**

A one-paragraph summary of the Report is attached pursuant to Minnesota Rule 7829.1300, subp. 1.

**IV. DESCRIPTION AND PURPOSE OF FILING**

**A. Annual Reporting**

Minnesota Commission Rules 7826.0400, 7826.0500 and 7826.1300 require electric utilities to file reports on safety, reliability, and service quality performance for the prior year. Otter Tail's 2016 Safety, Reliability, and Service Quality Report is attached.

**B. Proposed reliability standards for 2017**

Minnesota Commission Rules 7826.0600 subp. 1, requires electric utilities to propose reliability performance standards for each of its work centers. The rule requires the performance

standards be filed on or before April 1 of each year. The utility is to propose standards for the following reliability indices:

1. System average interruption duration index or SAIDI
2. System average interruption frequency index or SAIFI
3. Customer average interruption duration index or CAIDI

In compliance with the Commission Rules 7826.0600 Subpart 1, Otter Tail’s proposed 2017 reliability performance standards for each of Otter Tail’s work centers. As ordered in **Docket No. E017/M-15-322 dated August 14, 2015**, Otter Tail’s reliability standards have been frozen at 2013 levels until the Company has shown sufficient improvement in indices’ performance. Otter Tail proposes to maintain the performance standards at the 2013 levels as shown in **Table 1** below.

**Table 1**

<b>Proposed 2017 Standards by CSC</b>			
<b>Work Center</b>	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
Bemidji	70.64	1.26	56.06
Crookston	69.33	1.19	58.26
Fergus Falls	66.97	1.11	60.33
Milbank	75.49	1.82	41.48
Morris	55.78	1.01	55.23
Wahpeton	57.24	1.13	50.65
<b>All MN Customers</b>	<b>64.95</b>	<b>1.13</b>	<b>57.48</b>

**V. CONCLUSION**

Otter Tail hereby submits its annual Safety, Reliability, and Service Quality Report for 2016, proposed reliability standards for 2017.

Date: March 31, 2017

Respectfully submitted,

By: /s/ JESSICA FYHRIE  
Jessica Fyhrie  
Supervisor, Regulatory Proceedings  
Otter Tail Power Company  
215 South Cascade St., PO Box 496  
Fergus Falls, MN 56537  
(218) 739-8395

**BEFORE THE  
MINNESOTA PUBLIC UTILITIES COMMISSION**

**Docket No. E017/M-17-**

**Otter Tail Power Company's  
Safety, Reliability, and Service Quality  
Report for 2016,  
and  
Proposed SAIFI, SAIDI, and CAIDI  
Reliability Standards for 2017,**

**Including Additional Information Required  
by Commission Orders**

**March 31, 2017**

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## I. OTTER TAIL EXECUTIVE MANAGEMENT'S VIEW OF RELIABILITY

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**This section provides the view of Otter Tail's executive management towards reliability and customer satisfaction.**

Reliability at Otter Tail Power Company (Otter Tail) continues to be best summarized in the Company's mission statement:

*"To produce and deliver electricity as reliably, economically, and environmentally responsibly as possible to the balanced benefit of customers, shareholders, and employees and to improve the quality of life in the areas in which we do business."*

Otter Tail provides electricity to 422 communities and to rural areas in western Minnesota, northeastern South Dakota, and the eastern two-thirds of North Dakota. The average population of the communities we serve is approximately 630, and over one-half of the communities we serve have populations of fewer than 200. Only three of our communities have populations exceeding 10,000: Fergus Falls, Minnesota (pop. 13,138), Bemidji, Minnesota (pop. 13,431), and Jamestown, North Dakota (pop. 15,427). We operate 9 Customer Service Centers (CSC) throughout our service territory. Otter Tail is committed to utilizing proactive efforts to communicate, investigate, and resolve reliability issues across our approximately 70,000 square-mile service territory. This is roughly the size of Wisconsin.

The integrity of Otter Tail's entire transmission and distribution system is directly related to interruption frequency; thus, the accountability lies within our Asset Management area. Otter Tail's Asset Management area is accountable for the quality, availability and delivery of materials and engineering associated with providing electric service to Otter Tail customers. At Otter Tail, we employ a system of Key Performance Indicators (KPIs), for the purpose of providing additional focus on achievement in particular areas of our operations. Two of Asset Management's KPIs are reliability indices dealing with interruption frequency: the Momentary Average Interruption Frequency Index (MAIFI) and System Average Interruption Frequency Index (SAIFI).

Otter Tail's Customer Service area is accountable for responding to all interruptions. Thus, Otter Tail's Customer Service area is accountable for the cost effective and efficient deployment of field personnel, trucks, and equipment as quickly and safely as possible, necessary for restoring service to customers when interruptions occur. One of the Customer Service area's KPIs is Customer Average Interruption Duration Index (CAIDI.) Additionally, the Reliability indices, SAIDI, SAIFI, CAIDI, and MAIFI are companywide KPI's. These indices are communicated and reviewed with all employees, on a monthly basis, with the expectation that all employees remain cognizant of our company's reliability performance.

The Asset Management and Customer Service areas have a common goal, which is to improve the overall system reliability. Each area recognizes the overall system improvement cannot be accomplished without collaboratively working with the other area. Each area also recognizes system reliability improvements are based on cost effective decisions and overall system improvements over longer periods of time.



Our KPI's help us measure the success and effectiveness of our company. Through the efforts of our dedicated employees, in 2016 we achieved the lowest OSHA recordable injuries rate in company history and we maintained high customer satisfaction. With twelve recordable injuries we met our 2016 safety goal of no more than 15 OSHA recordable injuries. 2016 is the third time in nine years we've set new or tied past records for recordable injuries. Of note, several work groups finished the year with zero recordable injuries.

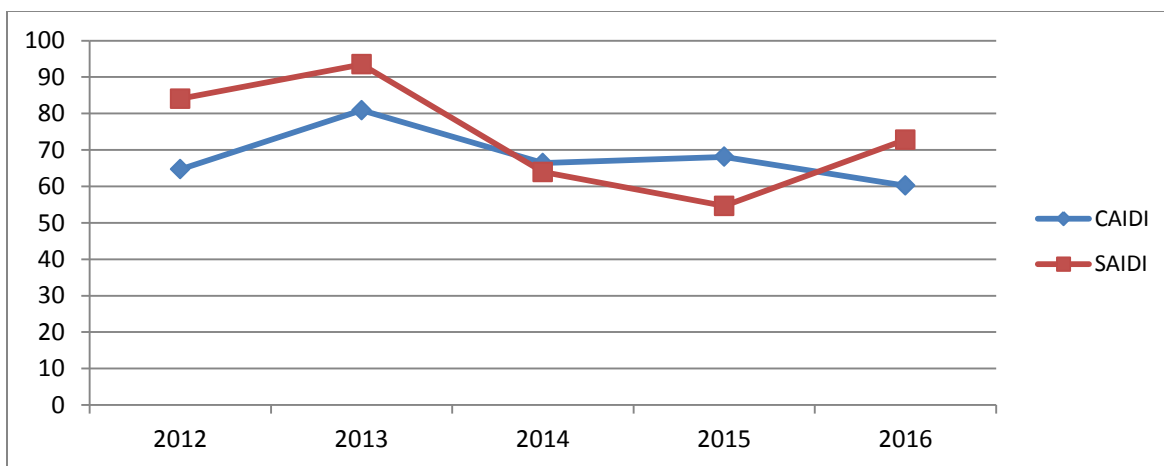
Customer experience (including service reliability) and satisfaction are among top priorities for our company. Otter Tail was the highest scoring utility among electric and gas-electric investor-owned utilities measured by the American Customer Satisfaction Index in 2016 with an overall Customer Satisfaction score of 84 (out of 100). The Reliability portion of the survey indicated a score of 91 compared to the average investor-owned utility score of 80. Survey results also show Otter Tail receiving the top scores from customers in Customer Restoration, Quality, Value, and Loyalty.

## II. OTTER TAIL 2016 SUMMARY GRAPHS

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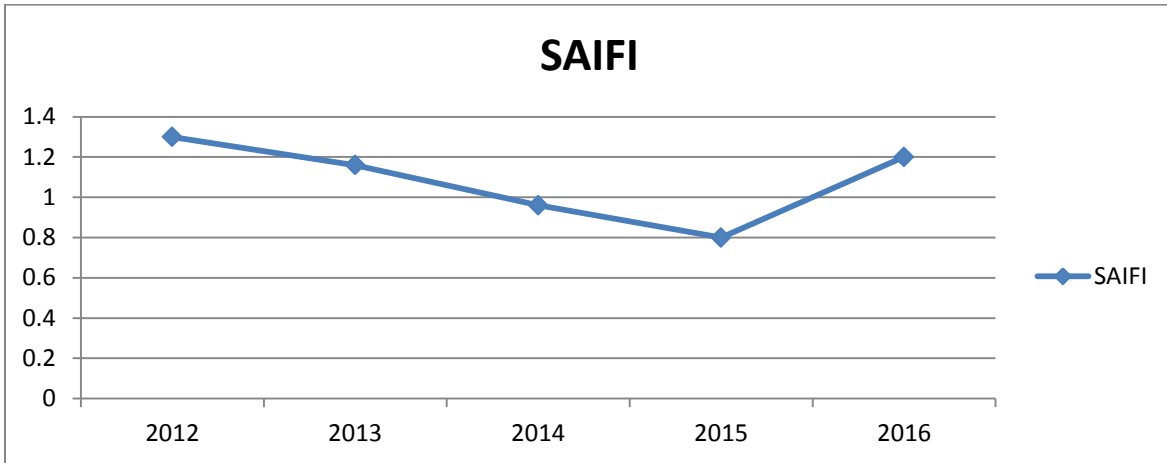
As previously included Otter Tail provides a summary table that allows the reader to more easily assess the overall reliability of the system and identify the main factors that affect reliability. Figure 1 through Figure 6 below provides a brief summary of Otter Tail's overall reliability and service quality for the years 2012 through 2016.

**Figure 1 - Historic Minnesota SAIDI and CAIDI**

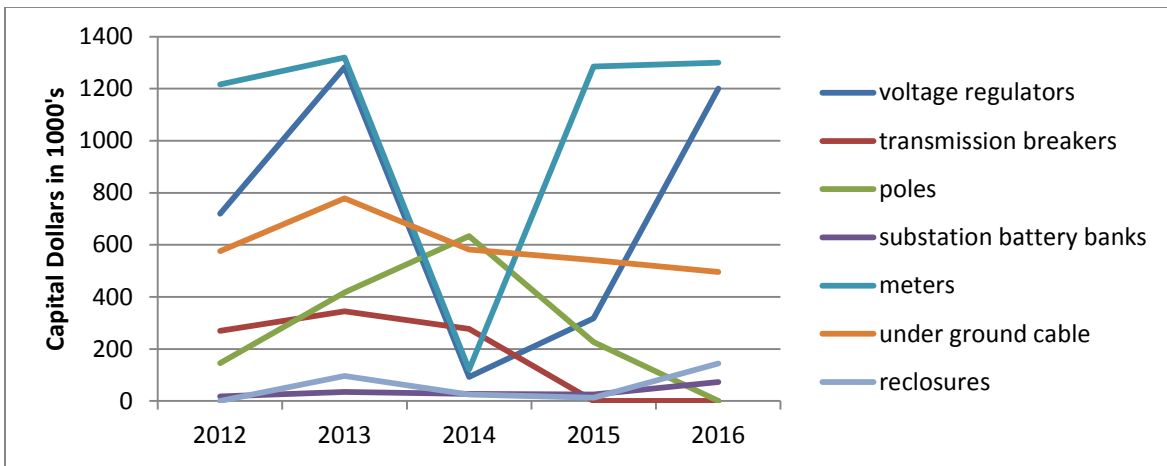


Otter Tail Power MN Customers saw improvement in CAIDI and an increase in SAIDI for 2016 compared to 2015 results.

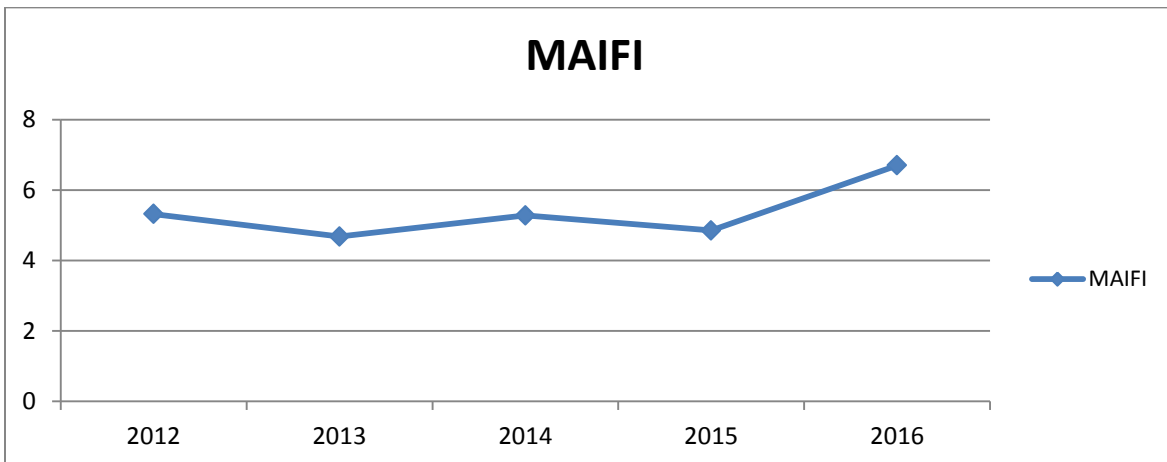
**Figure 2 - Minnesota Historic SAIFI**



**Figure 3 –Historic Expense of Major Critical System Infrastructure Items**



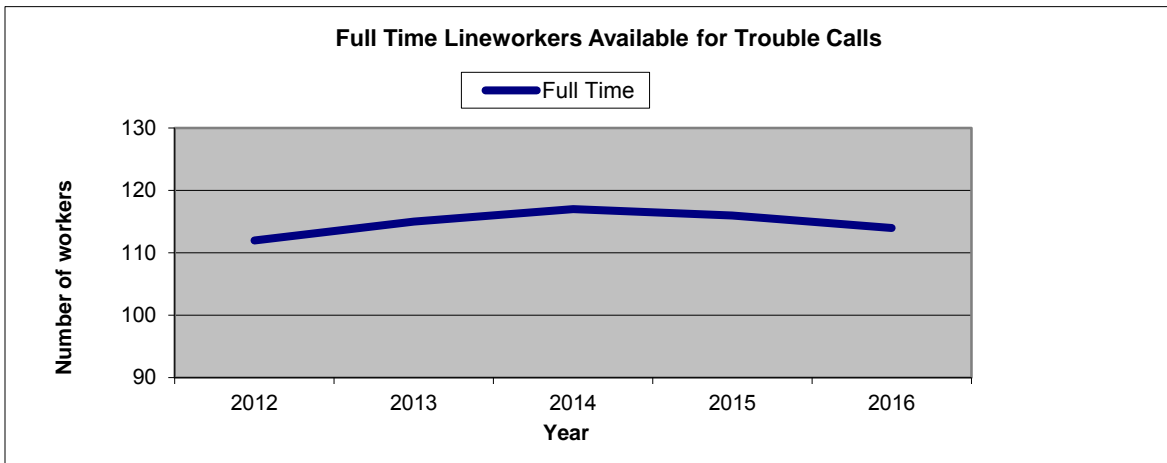
**Figure 4 – Minnesota Historic MAIFI**



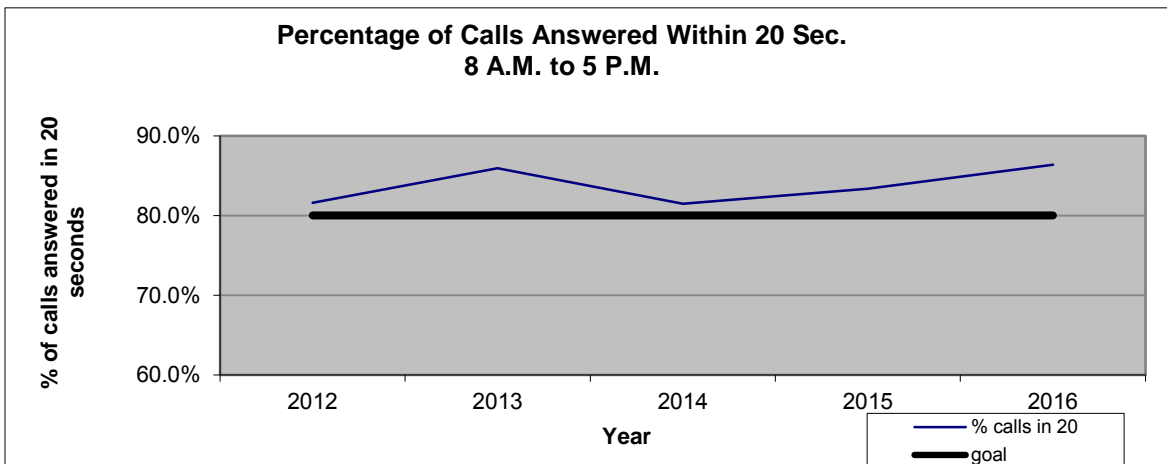
**Table 1**  
**MAIFI by Customer Service Center**

CSC 2016	MAIFI
Bemidji	4.9
Crookston	6.1
Fergus Falls	6.2
Milbank	12.8
Morris	9.1
Wahpeton	8.9
MN Total	6.7

**Figure 5 – Full Time Lineworkers available for trouble calls and for the operation and maintenance of Minnesota distribution lines**



**Figure 6 - Calls Answered within 20 Seconds**



### III. ANNUAL SAFETY REPORT 7826.0400

Pursuant to Minnesota Rule 7826.0400, ANNUAL SAFETY REPORT, each utility shall file a report on its safety performance during the last calendar year. This report shall include the following information.

- A. Summary 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 2016 Calendar year.

Table 2

NUMBER OF CASES				
Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases	
0	3	1	8	
NUMBER OF DAYS				
Total number of days of job transfer or restriction		Total number of days away from work		
240		10		
INJURY AND ILLNESS TYPES				
Injuries	Skin disorders	Respiratory conditions	Poisonings	All other illnesses
12	0	0	0	0

In 2016 we achieved the lowest OSHA recordable injuries rate in company history.

- 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 electric system failures and all remedial action taken as a result of any injuries or property damage described.

Table 3

ANNUAL SAFETY REPORT				
Date	Cause	Type	Action Taken	Expense
7/28/2016	Faulty Secondary Wire	Property damage	Paid for damages	\$277.50
<i>There were no instances of personal injury due to system failures in 2016.</i>				

## IV. RELIABILITY REPORTING REQUIREMENTS 7826.0500

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**Subpart 1. Annual reporting requirements.** On or before April 1 of each year, each utility shall file on its reliability performance during the last calendar year.

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### REPORT OF OTTER TAIL'S SAIDI, SAIFI, AND CAIDI FOR 2016 AND STORM NORMALIZATION OF RELIABILITY DATA

**Minnesota Rule 7826.0500, Subparts 1a, 1b, 1c, and 1d requires the utility to file a report on its SAIDI, SAIFI and CAIDI for the calendar year, by work center and for its assigned service area as a whole. Additionally, this rule requires the utility to provide an explanation of how the utility normalized its reliability data to account for major storms.**

In 2009, Otter Tail worked with Sensus, Otter Tail's current Interruption Monitoring System (IMS) provider and the underlying software for the system, to make necessary changes to implement the IEEE 2.5 beta method process to normalize reliability data. Otter Tail's 2.5 Beta process is based on the following assumptions:

- Sensus calculates annual system  $T_{med}$  (SAIDI/Day threshold) based on the previous five years of data.
- The system  $T_{med}$  is utilized to run our indices for Minnesota and individual Minnesota Customer Service Centers (CSCs).

For 2016 data, the 2.5 beta parameters were as follows:

**2.5 Beta Parameters:**

Alpha	Beta	Major Event Day
-2.096281864	1.856049299	12.728472122

After applying 2.5 Beta Parameters for 2016, three days met the criteria to be considered a Major Event Day. Those days were July 21, December 25, and December 26. The Commission's **December 12, 2014 Order in Docket E017/M-14-279**, required Otter Tail report on the major causes for the major event days.

- On July 21, 2016, high-intensity storms with winds reaching 105 mph struck the northeast region of Otter Tail Power Company's Minnesota service area. This storm system caused significant damage to the company's electrical equipment in the Bemidji area. Restoration efforts were complex. Otter Tail had roughly 60 employees deployed for the restoration efforts, including lineman, technicians and supervisory personnel in an area that typically employs sixteen linemen. Additionally, there were 50-100 employees who supported the repair work, including material handlers, line switching efforts, customer interface employees, and repair trucks, to name a few. Otter Tail had the assistance of 5 tree removal crews, providing about 18 personnel. We noted 300 customer requests for downed trees, thousands of topped or cut down trees. Otter Tail replaced many poles, cross arms and pounds of hardware just for this storm.

- On December 25 and 26, severe winds, blinding snow and frightening ice took their toll on our company’s lines during the widespread storm that hit our service territory. The storm broke power lines and laid flat many poles. Over 100 minutes in SAIDI were accumulated due to this event over the two-day span. During this holiday storm we peaked at 92 linemen deployed for the restoration effort; that’s about one-third of our total company linemen. Throughout the restoration efforts our social media posts, including Facebook and Twitter appeared in more than 132,450 newsfeeds and received 914 reactions, 740 shares, and 159 comments. While our crews worked diligently to restore power, our customers responded with an outpouring of support for our employees. They sent words of appreciation, confidence, safety, love and prayers.

**Table 4** below shows Otter Tail’s 2016 SAIFI, CAIDI and SAIDI results based on the IEEE 2.5 Beta Method for each CSC and the entire Minnesota system. The goals used for 2016 are the standards set in 2013 consistent with the previous four years. Following the Commissions review and setting of our 2016 goals in **Docket E017/M-16-276**, we will adjust this information accordingly. Based on Otter Tail’s proposed 2016 standards **we met 39 percent of our targets in 2016, compared to 61 percent in 2015.**

**Table 4**

2.5 Beta				
CSC	2016	SAIFI	CAIDI	SAIDI
<b>Bemidji</b>	Goal	1.26	56.06	70.64
	Actual	<b>0.97</b>	<b>47.6</b>	<b>46</b>
<b>Crookston</b>	Goal	1.19	58.26	69.33
	Actual	<b>1.62</b>	54.53	<b>88.6</b>
<b>Fergus Falls</b>	Goal	1.11	60.33	66.97
	Actual	0.98	52.5	51.3
<b>Milbank</b>	Goal	1.82	41.48	75.49
	Actual	<b>2.18</b>	<b>146.74</b>	<b>320</b>
<b>Morris</b>	Goal	1.01	55.23	55.78
	Actual	<b>1.3</b>	<b>77.1</b>	<b>99.8</b>
<b>Wahpeton</b>	Goal	1.13	50.65	57.24
	Actual	<b>2.33</b>	<b>55.52</b>	<b>129.21</b>
<b>MN Total</b>	Goal	1.13	57.48	64.95
	Actual	<b>1.2</b>	<b>60.2</b>	<b>72.8</b>

Below Otter Tail provides a description of events that had the greatest impact on SAIDI, SAIFI and CAIDI indices in 2016.

**Otter Tail’s 2016 SAIDI standards** – In 2016, Crookston, Milbank, Morris and Wahpeton CSCs, failed to meet the proposed 2016 SAIDI reliability standards.

**Crookston CSC:** The Crookston CSC experienced 86 sustained interruptions in 2016, after storm normalization. Resulting in a SAIDI of 88.6 minutes compared to the goal of 69.33. The greatest impact to the SAIDI results in the Crookston CSC was an interruption lasting six hours and 31 minutes on July 19<sup>th</sup>. This major storm system took down eight OTP/Minnkota 115KV transmission structures, impacting 227 customers feed

off the Oslo – Main Feeder. This feeder was Crookston CSC’s worst performing feeder for 2016.

**Milbank CSC:** The Milbank CSC experienced seven sustained interruptions in 2016, resulting in a SAIDI of 320 minutes compared to the goal of 75.49. There are five feeders serving Minnesota customers out of this service center. The greatest impact to the SAIDI results in the Milbank CSC was an interruption lasting nine hours and 32 minutes on July 10<sup>th</sup>. This storm caused damage to the Browns Valley – North Feeder impacting 214 customers. The damage included several broken poles and cross arms, damaged transformers, damage insulators, as well as several services being torn off area homes. This feeder was Milbank CSC’s worst performing feeder for 2016.

**Morris CSC:** The Morris CSC experienced 114 sustained interruptions in 2016, resulting in a SAIDI of 99.8 minutes compared to the goal of 55.78. The greatest impact to the SAIDI results in the Morris CSC was an interruption occurring on November 18<sup>th</sup> impacting 371 customers. On November 18<sup>th</sup> a storm system with high winds and ice resulted in 38 sustained interruptions across the Morris CSC region. The Dawson – West Feeder was interrupted for three hours and 34 minutes, impacting 371 customers. The storm caused significant ice buildup on the 115KV Ortonville to Canby line resulting in galloping lines and breaker trips. Due to the extreme weather conditions and dangerous travel conditions, the patrol process took an extended amount of time.

**Wahpeton CSC:** The Wahpeton CSC experienced 15 sustained interruptions in 2016, resulting in a SAIDI of 129.2 minutes compared to the goal of 57.24. There are six feeders serving Minnesota customer out of this service center. Wahpeton CSC’s worst performing feeder for 2016 was the greatest contributor to SAIDI results. The Wheaton – North and West Feeder experienced two interruptions in 2016, both due to birds in the distribution buss, impacting 628 customers. The interruptions were 19 minutes and one hour and 25 minutes. This situation is currently under investigation with future preventative solutions being studied for application in this situation.

**Otter Tail 2016 SAIFI standards** –The Crookston, Milbank, Morris, and Wahpeton CSC’s failed to meet the proposed 2016 SAIFI reliability standards.

**Crookston CSC:** The Crookston CSC experienced 86 sustained interruptions in 2016, resulting in a SAIFI of 1.62 interruptions compared to a goal of 1.19.

**Milbank CSC:** The Milbank CSC experienced seven sustained interruptions in 2016, resulting in a SAIFI of 2.18 interruptions compared to a goal of 1.82.

**Morris CSC:** The Morris CSC experienced 115 sustained interruptions in 2016, resulting in a SAIFI of 1.32 interruptions compared to a goal of 1.01.

**Wahpeton CSC:** The Wahpeton CSC experienced 15 sustained interruptions in 2016, resulting in a SAIFI of 2.33 interruptions compared to a goal of 1.13.

**Otter Tail 2016 CAIDI standards** – The Milbank, Morris and Wahpeton Customer Service Centers failed to meet the proposed 2016 CAIDI reliability standards.

**Milbank CSC:** The Milbank CSC experienced seven sustained interruptions in 2016, resulting in a CAIDI of 146.74 minutes compared to a goal of 41.48 minutes. Four of these interruptions had durations of greater than the goal of 41.48 minutes. The two having the largest contribution to CAIDI results were due to the same event. As described in the SAIDI analysis, a storm system caused extensive damage to both of Brown Valley’s feeders resulting in a nine hours and 32 minute interruption to the North Feeder and a five hour and 39 minute interruption to the South Feeder. The Browns Valley - North Feeder is identified as Milbank CSC’s worst performing feeder for 2016.

**Morris CSC:** The Morris CSC experienced 115 sustained interruptions in 2016, resulting in a CAIDI of 80.44 minutes compared to a goal of 55.23 minutes. Fifty-nine of these interruptions had durations of greater than the goal of 55.23 minutes. The two interruptions having the largest contribution to CAIDI results were due to the same event. On December 30<sup>th</sup>, 2016, the Taunton Substation had a transformer fail causing a nine hour and 42 minute interruption on the Taunton – Town Feeder and an eight our and 32 minute interruption on the Taunton – St Leo Feeder.

**Wahpeton CSC:** The Wahpeton CSC experienced 15 sustained interruptions in 2016, resulting in a CAIDI of 55.52 minutes compared to a goal of 50.65 minutes. Eight of these interruptions had durations of greater than the goal of 50.65 minutes. The most impactful interruption occurred on August 10, 2016. On that day a strong storm system passed the service center taking down several power poles. As a result, the Havana – Main Feeder had a two hour and 56 minute interruption.

### **Reliability Standard Summary:**

When compared to 2015, Otter Tail’s 2016 overall Minnesota reliability performance realized an improvement in CAIDI. However, SAIDI, SAIFI, and MAIFI saw an increase when compared to 2015 results.

Reliable service continues to be one of Otter Tail’s top priorities and we are cognizant that ongoing improvements in reliability will continue to happen over time and must be done cost effectively. We believe the continued maturity of our current processes and the application of new technologies and tools will provide good results.

**Table 5** provides a summary of the different types of interruption causes that affect overall system reliability.



**Table 5**

**2016 MN Sustained Interruption Summary  
by CSC and cause**

	<b>Bemidji</b>	<b>Crookston</b>	<b>Fergus Falls</b>	<b>Milbank</b>	<b>Morris</b>	<b>Wahpeton</b>	<b>Work Center Totals</b>
Bulk Power Loss	0	0	0	0	0	0	0
Transmission	0	0	4	0	2	2	8
Flood	0	0	0	0	0	0	0
Animal	9	6	0	0	2	2	19
Vehicle Accident	5	0	0	0	2	2	9
Equipment Failure	14	45	5	0	4	2	70
Vandalism	0	0	0	0	0	0	0
Trees	1	2	0	0	3	1	7
Overload	0	0	0	0	0	0	0
Human error	1	2	0	0	2	0	5
Underground	1	2	0	0	1	0	4
Bird	0	0	2	0	1	2	5
Arrestor/Insulator failure	1	3	4	4	1	0	13
Fuse	0	0	0	0	0	0	0
Weather related	17	17	3	3	84	2	126
Investigated and unknown	0	1	0	0	4	2	7
Other	0	3	0	0	4	0	7
Unknown	0	5	67	0	5	0	77

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**ACTION PLAN FOR REMEDYING ANY FAILURE TO COMPLY WITH  
RELIABILITY STANDARDS**

**Minnesota Rule 7826.0500, Subpart 1e, requires utilities to file an action plan for remedying any failure to comply with reliability standards set forth in part 7826.0600 or an explanation as to why non-compliance was unavoidable under the circumstances.** Overall, Otter Tail Minnesota Customers experienced 428 (357 storm normalized) sustained interruptions in 2016. Otter Tail provides the following information regarding its 2016 results.

In compliance with the Commissions **December 20, 2012 Order in Docket No. E017/M-12-325**, Otter Tail submitted a compliance filing on February 4, 2013 describing Otter Tail's action plans to address not meeting the 2011 reliability standards set by the Commission. In that filing, Otter Tail described several enhanced or new processes adopted by the Company to improve system reliability performance. The following is an update of our action plan:

1. **Reliability Improvement Initiative Team Meetings:** Otter Tail's Reliability Improvement Initiative cross functional team continues to meet monthly for a comprehensive overview of our system's reliability. This process has provided increased awareness, focus and attention to reliability related issues.
2. **Electronic Tracking Process for Transmission Patrol Reports and Maintenance Activities:** Otter Tail continues to improve electronic tracking of internal reports generated from our GIS system. Allowing the Company to more effectively schedule and manage maintenance activities based on historic and current maintenance data. This lends itself for a more efficient prioritization of resources.
3. **Lightning Tracking System:** Otter Tail implemented a lightning tracking system four years ago. It tracks lightning activity within Otter Tail's service territory. This tool has been beneficial in identifying remote areas hit by lightning, assisting in follow-up patrols and inspections to identify damaged equipment. In 2017, we will be integrating the lightning data with our GIS system providing strike location for patrols and post event analysis.
4. **GIS Data Integration:** Otter Tail has begun integrating critical system data into its GIS. Underground fault data, patrol information, SEL distance relay data, and pole inspection data will all be integrated into GIS providing an optimized approach to reliability related activities in the future.
5. **Fault Indicator Installations at Transmission Line Junctions:** In 2014, Otter Tail began installing fault indicators on transmission line junctions (line splits). OTP will continue to install, monitor, and investigate improvements this equipment has made in our abilities to identify fault location detection.
6. **Installation of Remote Real-Time Voltage, Current, and Power Monitors:** In 2014 Otter Tail began installing remote real-time power monitors in the field to assist with investigating interruption events. Data provided is real-time and displayed via a web browser. Continued deployment of this equipment has improved Otter Tail's efforts in identifying problems and issues in the field.
7. **Fleet Vehicle Tracking:** Through our pilot (implemented in 2012) we have learned the fleet tracking system without the aid of a larger outage management system will not render added efficiencies. Otter Tail continues to evaluate various solution providers of service vehicle tracking options.

Otter Tail believes this action plan will provide continued contribution towards cost-effective improvement of the Company's overall system reliability. Overall system improvements will be

realized over longer periods of time. These improvements will come through new technology, improved efficiencies, disciplined primary cause investigation and analysis, situational awareness, and attention to overall cross-functional accountabilities.

### INTERRUPTION OF BULK POWER SUPPLY FACILITY

**Pursuant to Minnesota Rule 7826.0500, Subpart 1f, 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.** For the 2016 calendar year Otter Tail reports that there were no sustained interruptions to a Minnesota Bulk Power Supply Facility.

### REPORTING MAJOR SERVICE INTERRUPTIONS

**Minnesota Rule 7826.0500, Subpart 1g, requires utilities to file a copy of each report filed under part 7826.0700, reporting major service interruptions.**

Pursuant to Minnesota Rule 7826.0500, Subpart 1g, Otter Tail provides as Attachment 1, a copy of each report filed under part 7826.0700, reporting major service interruptions.

### CIRCUIT INTERRUPTION DATA

**Minnesota Rule 7826.0500, Subparts 1h, requires utilities, to the extent technically feasible, to file 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.** In compliance with this rule, **Table 6** below shows the worst performing circuit for each of Otter Tail’s six CSC’s. For the purpose of identifying the worst performing circuit, we defined a circuit as a distribution feeder and the criterion that was used to identify the worst performing circuit was total customer minutes. **Table 7** below shows the interruptions that contributed to the feeders being the worst performing circuit for each CSC.

**Table 6  
MN Worst Performing Feeders**

Service Center	Substation Name	Feeder Description	Customer Count	Total Sustained Customer Minutes	SAIFI	CAIDI	SAIDI
BEMIDJI	BIRCHMONT	NORTH FEEDER OCR#25 (31567)	339	96970.95	4	71.5	286.1

CROOKSTON	OSLO	MAIN FEEDER (17644)	227	180529.32	6	132.5	795.3
FERGUS FALLS	FERGUS NORTHEAST	SPRINGEN AVENUE (32121)	584	163578.4	3	93.4	280.1
<b>Service Center</b>	<b>Substation Name</b>	<b>Feeder Description</b>	<b>Customer Count</b>	<b>Total Sustained Customer Minutes</b>	<b>SAIFI</b>	<b>CAIDI</b>	<b>SAIDI</b>
MILBANK	BROWNS VALLEY	NORTH FEEDER (32994)	214	136153.93	4	159.1	636.2
MORRIS	DAWSON	BOYD 255 (26394)	190	126429.17	4	166.4	665.4
WAHPETON	WHEATON	NORTH AND WEST FEEDER (27004)	628	65364.33	2	52	104.1

**Table 7  
MN Worst Performing Feeders Details**

<b>Interruption Date</b>	<b>State</b>	<b>Service Center</b>	<b>Substation</b>	<b>Feeder Name</b>	<b>Cause</b>	<b>Duration</b>	<b>Customer Count</b>	<b>Customer Minutes</b>
8/4/2016 3:41	MN	BEMIDJI	BIRCHMONT	NORTH FEEDER OCR#25 (31567)	Weather - includes: rain, lightning, wind, storm, etc.	1:40:49	339	34,176.85
7/19/2016 22:03	MN	BEMIDJI	BIRCHMONT	NORTH FEEDER OCR#25 (31567)	Weather - includes: rain, lightning, wind, storm, etc.	1:44:00	339	35,256.00
7/3/2016 6:15	MN	BEMIDJI	BIRCHMONT	NORTH FEEDER OCR#25 (31567)	Equipment Failure	0:39:19	339	13,328.35
6/20/2016 11:42	MN	BEMIDJI	BIRCHMONT	NORTH FEEDER OCR#25 (31567)	Trees	0:41:55	339	14,209.75
10/17/2016 11:51	MN	CROOKSTON	OSLO	MAIN FEEDER (17644)	Equipment Failure	0:13:15	227	3,007.75

<b>Interruption Date</b>	<b>State</b>	<b>Service Center</b>	<b>Substation</b>	<b>Feeder Name</b>	<b>Cause</b>	<b>Duration</b>	<b>Customer Count</b>	<b>Customer Minutes</b>
7/19/2016 19:42	MN	CROOKSTON	OSLO	MAIN FEEDER (17644)	Weather - includes: rain, lightning, wind, storm, etc.	6:31:55	227	88,965.08
6/17/2016 9:04	MN	CROOKSTON	OSLO	MAIN FEEDER (17644)	Weather - includes: rain, lightning, wind, storm, etc.	3:33:51	227	48,543.95
5/23/2016 14:02	MN	CROOKSTON	OSLO	MAIN FEEDER (17644)	Other	0:12:19	227	2,795.88
5/23/2016 10:39	MN	CROOKSTON	OSLO	MAIN FEEDER (17644)	Other	1:02:15	227	14,130.75
1/23/2016 20:08	MN	CROOKSTON	OSLO	MAIN FEEDER (17644)	Trees	1:41:42	227	23,085.90
8/10/2016 4:55	MN	FERGUS FALLS	FERGUS NORTHEAST	SPRINGEN AVENUE (32121)	Weather - includes: rain, lightning, wind, storm, etc.	1:03:17	584	36,957.47
8/4/2016 1:22	MN	FERGUS FALLS	FERGUS NORTHEAST	SPRINGEN AVENUE (32121)	Weather - includes: rain, lightning, wind, storm, etc.	1:52:36	584	65,758.40
5/31/2016 2:15	MN	FERGUS FALLS	FERGUS NORTHEAST	SPRINGEN AVENUE (32121)	Weather - includes: rain, lightning, wind, storm, etc.	1:44:13	584	60,862.53
7/10/2016 18:51	MN	MILBANK	BROWNS VALLEY	NORTH FEEDER (32994)	Weather - includes: rain, lightning, wind, storm, etc.	0:05:56	214	1,269.73

<b>Interruption Date</b>	<b>State</b>	<b>Service Center</b>	<b>Substation</b>	<b>Feeder Name</b>	<b>Cause</b>	<b>Duration</b>	<b>Customer Count</b>	<b>Customer Minutes</b>
7/10/2016 1:43	MN	MILBANK	BROWNS VALLEY	NORTH FEEDER (32994)	Weather - includes: rain, lightning, wind, storm, etc.	9:32:32	214	122,522.13
6/15/2016 5:19	MN	MILBANK	BROWNS VALLEY	NORTH FEEDER (32994)	Arrester/Insulator failure	0:47:47	214	10,225.63
5/5/2016 14:31	MN	MILBANK	BROWNS VALLEY	NORTH FEEDER (32994)	Arrester/Insulator failure	0:09:59	214	2,136.43
11/22/2016 23:36	MN	MORRIS	DAWSON	BOYD 255 (26394)	Storm/event Analysis Code	1:02:04	190	11,792.67
11/18/2016 6:42	MN	MORRIS	DAWSON	BOYD 255 (26394)	Weather - includes: rain, lightning, wind, storm, etc.	2:57:45	190	33,772.50
7/10/2016 2:58	MN	MORRIS	DAWSON	BOYD 255 (26394)	Weather - includes: rain, lightning, wind, storm, etc.	4:05:36	190	46,664.00
2/19/2016 8:30	MN	MORRIS	DAWSON	BOYD 255 (26394)	Other	3:00:00	190	34,200.00
7/13/2016 8:52	MN	WAHPETON	WHEATON	NORTH AND WEST FEEDER (27004)	Bird	0:18:56	628	11,890.13
6/22/2016 6:48	MN	WAHPETON	WHEATON	NORTH AND WEST FEEDER (27004)	Animal	1:25:09	628	53,474.20

**Bemidji CSC:**

The North Feeder fed from the Birchmont Substation was the worst performing feeder in 2016 for the Bemidji CSC. This feeder experienced four sustained interruptions, impacting 339 customers, due to four separate events. On June 20, 2016, a tree fell into the line resulting in a 42 minute interruption. On July 3, 2016, the feeder breaker failed causing a 39 minute interruption. On July 19, 2016, a severe weather system began to hit the area, with winds up to 105 mph caused much damage in the area. This storm continued to effect this area for two days, resulting in July 21, 2016 being a MED. The distribution system suffered much damage during this storm including several downed trees and power poles, resulting in a one hour and 44 minute interruption on the Birchmont North Feeder. Another strong storm hit the area on August 4, 2016, resulting in a one hour and 41 minute interruption.

This region is heavily covered with forest and timber. Vegetation was last cleared in 2013 on this feeder as part of a five year trimming cycle. Due to the weather systems that passed through the Bemidji CSC in 2016, Otter Tail has conducted an extensive inspection of the battered system and replaced damage assets as needed. Analysis will continue into 2017 to ensure the feeder's performance is functioning at its potential.

**Crookston CSC:**

The Main Feeder fed out of the Oslo Substation was the worst performing feeder in 2016 for the Crookston CSC. This feeder experienced six interruptions impacting 227 customers due to five different events. On January 23, 2016 a tree limb broke off and fell into the distribution, breaking the lines and causing a one hour and 42 minute interruption. On May 23, 2016 a construction contractor made contact with the distribution lines, pushing the neutral into the primary, resulting in two interruptions, totaling one hour and fourteen minutes. On June 17, 2016 some of North Dakota and western Minnesota was hit by a severe storm with winds exceeding 90 mph. This system resulted in a three hour and 34 minute interruption to the Oslo Main Feeder due to multiple downed trees. On July 19, 2016, the same storm system that wreaked havoc on the Bemidji CSC (and later resulted in 7/21 MED), caused a six hour and 32 minute interruption due to down lines and poles. On October 17, 2016 a distribution arrester failed, causing a thirteen minute interruption.

Vegetation was last cleared on the Oslo Main Feeder in April 2016 as part of a five year trim cycle. This feeder has been patrolled to identify any additional damaged assets due to the events in 2016. Continued analysis will be conducted on this feeder in 2017 to ensure optimum reliability results are achieved.

**Fergus Falls CSC:**

The Springen Ave. Feeder fed out of the Fergus Northeast Substation was the worst performing feeder in 2016 for the Fergus Falls CSC. This feeder experienced three sustained interruption, impacting 584 customers, due to three separate weather events. The first interruption occurred on May 31, 2016 lasting one hour and 44 minutes. The second interruption occurred on August 4, 2016 lasting one hour and 52 minutes, followed by the third on August 10, 2016 which lasted one hour and three minutes.

Vegetation was last cleared in 2014 on this feeder as part of a five year trim cycle. Due to the weather systems that passed through the Fergus Falls CSC in 2016, Otter Tail has conducted an

extensive inspection and replaced all damaged assets as needed. System analysis of this feeder will continue into 2017 to ensure the feeder's performance is functioning at its potential.

**Milbank CSC:**

The North Feeder fed from the Browns Valley Substation was the worst performing feeder (feeding Minnesota customers) in 2016 for the Milbank CSC. This feeder experienced four interruptions, impacting 214 customers, due to three events. On May 5, 2016, this feeder experienced a 10 minute interruption. On June 15, 2016 the feeder experienced a 47 minute interruption. Both of these interruptions were due to arrester failures. On July 10, 2016 a major storm caused heavy damage to the Browns Valley distribution system. Damage included broken/downed poles, broken cross arms, and failed transformers and insulators. As a result of the damage, this feeder experienced two sustained interruptions totaling nine hours and 38 minutes.

Following the major storm on July 10, Otter Tail conducted an extensive inspection of the damages and replaced and repaired assets needed. Analysis of this feeder system will continue into 2017 to ensure the feeder's performance is functioning at its potential

**Morris CSC:**

The Boyd Feeder fed from the Dawson Substation was the worst performing feeder in 2016 for the Morris CSC. This feeder experienced four interruptions, impacting 190 customers, due to three separate events. On February 19, 2016 a pole top fire, due to high winds, dislodged a phase causing a three hour interruption. On July 10, 2016 multiple trees and branches were blown down. The resulting damage to the distribution system caused a 4 hour and five minute interruption. On November 18 and 22, 2016, an ice storm resulted in ice loading and galloping 115KV lines between Ortonville and Canby. The event on the 18<sup>th</sup> resulted in a two hour and 57 minute interruption. Restoration duration was extended due to the time associated with patrolling the long circuit. The event on the 22<sup>nd</sup> was a planned interruption to repair damages to the underbuilds that occurred during the icing event on the 18<sup>th</sup>. This interruption lasted one hour and two minutes.

Vegetation was cleared on this feeder in the fall of 2016 as part of a five year trim cycle. Evaluations of this feeder's performance will continue in 2017 to ensure it is performing at its designed potential.

**Wahpeton CSC:**

The North and West Feeder fed from the Wheaton Substation was the worst performing feeder (serving Minnesota customers) for the Wahpeton CSC. This feeder experienced two sustained interruptions, due to one event, impacting 628 customers. On June 22, 2016, a large bird got into the substation, burning up the disconnect, which opened the circuit switcher, resulting in one hour and 25 minute interruption. On July 13, 2016 there was a planned interruption to replace the damaged disconnect from the previous event, resulting in a 19 minute interruption.

Otter Tail is actively investigating commercially available technologies and components that can be utilized to prevent bird/raptor interruptions and subsequent equipment damage for use in our system. The Wheaton North and West Feeder is a repeat worst performer from 2015 (one of six feeders serving MN customers). Otter Tail will actively monitoring this feeder's performance in 2017.



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## REPORT OF NOMINAL ELECTRIC SERVICE VOLTAGES

**Minnesota Rule 7826.0500, Subpart 1i, requires that utilities shall file a report providing data on all known instances in which nominal electric service voltages on the utility’s side of the meter did not meet the stands of the American National Standards Institute for nominal system voltages greater or less than voltage range B. Otter Tail provides, in Table 8 below, the feeders and number of occurrences where the voltage fell outside the ANSI voltage range B. Most of the feeders, with numerous occurrences, are feeders with a single large customer that has a very large load and are mostly pipelines.**

**Table 8  
Feeders and Number of Occurrences – Voltage fell outside the ANSI Voltage Range**

Unit ID	CSC	Feeder	Mid UV Count	Low OV Count
23638	BEMIDJI	SOUTH FEEDER	3	0
26389	MORRIS	EAST 2	0	19
26999	BEMIDJI	MAIN FEEDER	0	377
27001	CROOKSTON	BELTRAMI RURAL EAST	1	0
27014	MORRIS	ST LEO	17	0
27075	BEMIDJI	MAIN FEEDER	0	457
27683	MORRIS	SOUTH FEEDER	0	2
27687	CROOKSTON	BELTRAMI RURAL NORTH	1	0
31561	BEMIDJI	SOUTH FEEDER OCR1	1	0
31586	BEMIDJI	DOWNTOWN OCR #75	0	37
31598	CROOKSTON	MAIN FEEDER	0	353
32130	CROOKSTON	MAIN FEEDER	0	85
32131	CROOKSTON	NORTH OCR 1	0	3
32137	CROOKSTON	MAIN FEEDER	0	191
32183	CROOKSTON	MAIN FEEDER	0	581
32210	CROOKSTON	MAIN FEEDER	0	685
32260	FERGUS FALLS	MAIN-SF885	0	291
32264	MORRIS	MAIN FEEDER	0	1
32272	FERGUS FALLS	#4-OCR TUFFYS	0	2
32286	BEMIDJI	MAIN FEEDER	0	17
32304	FERGUS FALLS	MAIN FEEDER	0	4
32307	FERGUS FALLS	MAIN FEEDER	0	2
32308	FERGUS FALLS	NORTH FEEDER	0	16
32323	FERGUS FALLS	SOUTH FEEDER	0	2
32952	MORRIS	MAIN FEEDER	0	1
32954	MORRIS	MAIN FEEDER	0	3
34348	CROOKSTON	MAIN FEEDER	157	0
34356	BEMIDJI	MAIN FEEDER	0	86

**STAFFING LEVELS AT EACH WORK CENTER**

**Minnesota Rule 7826.0500, Reliability Reporting Requirements, Subpart 1j, requires utilities to file a report providing 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.** In compliance with this rule, Otter Tail reports staffing levels by CSC 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. The staffing levels of Otter Tail’s Minnesota CSCs as of December 31, 2016 are shown in **Table 9** below.

**Table 9**

	Department	Type	Total
	Bemidji	Field	16
		Office	6
	<b>Bemidji Total</b>		<b>22</b>
	Crookston	Field	15
		Office	2
	<b>Crookston Total</b>		<b>17</b>
	Delivery Maintenance*	Field	7
		Office	1
	<b>Delivery Maintenance Total</b>		<b>8</b>
	Fergus Falls	Field	23
		Office	10
	<b>Fergus Falls Total</b>		<b>33</b>
	Milbank**	Field	18
		Office	6
	<b>Milbank Total</b>		<b>24</b>
	Morris	Field	19
		Office	4
	<b>Morris Total</b>		<b>23</b>
	Operations Support	Field	4
		Office	1
	<b>Operations Support Total</b>		<b>5</b>
	Wahpeton	Field	14
		Office	2
	<b>Wahpeton Total</b>		<b>16</b>
<b>12/31/2016 Total</b>			<b>148</b>

\*Delivery Maintenance is a department with employees that work in substations and with substation related equipment. During trouble, they are dispatched to do switching and other work associated with substation equipment.

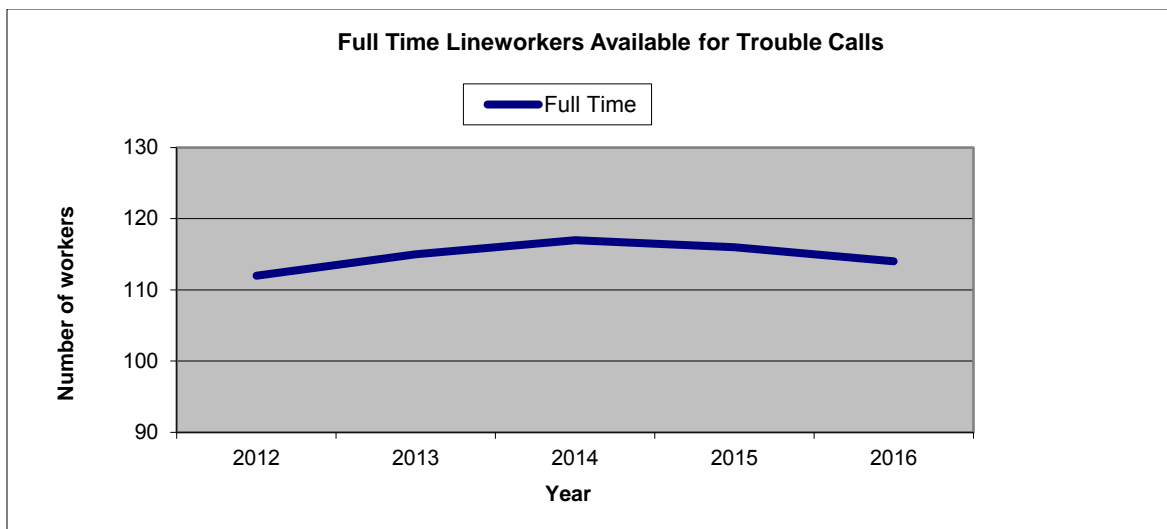
\*\*The Milbank CSC serves customers in both Minnesota and South Dakota and the number of employees indicated represents all employees located in the CSC.

\*\*\*Operations Support is based in Fergus Falls and the field employees are dispatched to assist CSC's in need throughout the entire system. The office employees coordinate resources.

\*\*\*\*The Wahpeton CSC serves customers in Minnesota, North Dakota, and South Dakota and the number of employees indicated represents all employees located in the CSC.

**Figure 7** below depicts by year the number of full time line workers available for trouble and for the operation and maintenance of distribution lines.

**Figure 7**



Otter Tail also has a reliability engineer who supports system reliability related functions. This individual is not included in the above staffing level information. Additionally, Otter Tail has engineers in its Asset Management area who, due to the nature of their roles, support reliability on a daily, weekly, monthly, and annual basis.

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### **OTHER INFORMATION RELEVANT IN EVALUATING RELIABILITY PERFORMANCE**

**Minnesota Rule 7826.0500, Subpart 1k, requires utilities to file any other information the utility considers relevant in evaluating its reliability performance over the calendar year.** Otter Tail fully implemented an Interruption Monitoring System (IMS) in 2005. Since then, subsequent upgrades and enhancements to the system have increased its capabilities. Due to

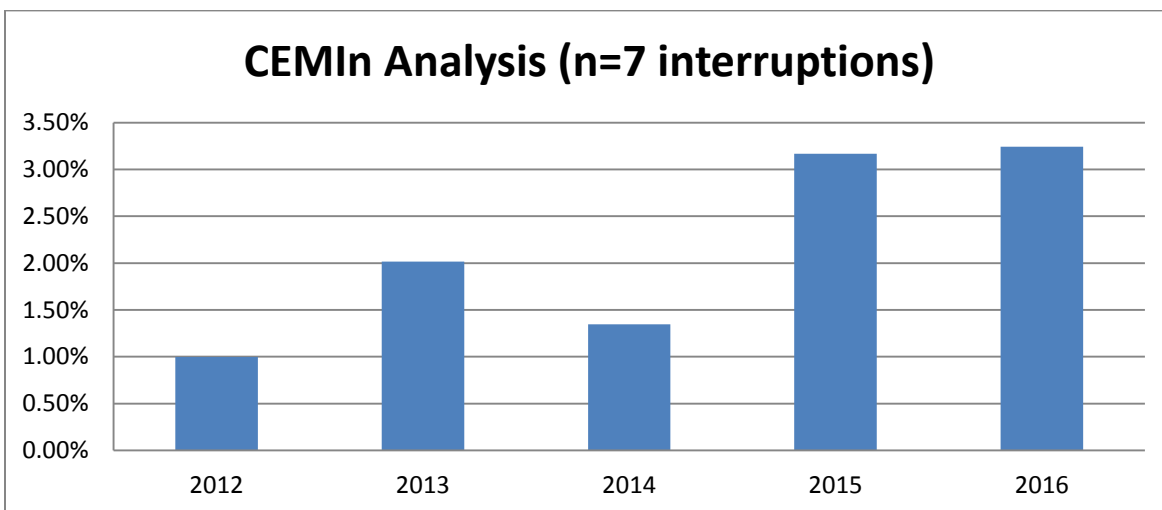
communication limitations and equipment obsolescence, Otter Tail's IMS has begun to reach its "end of life". On January 1, 2017, AT&T shut down its 2G network, disabling many voltage monitors in North Dakota. Sometime around 2018, Verizon's CDMA 1XRTT, will be disabled, shutting down the IMS in both Minnesota, South Dakota, and what's left of North Dakota.. Otter Tail has begun to install the next generation of interruption monitoring solution (NextGen IMS) in North Dakota. Installation in Minnesota and South Dakota will follow prior to 2018 yearend. Otter Tail provides the following information relating to its IMS and overall reliability.

- 1. IMS obsolescence status and efforts to implement the NextGen IMS:** Due to the planned shutdown of cellular 2G service and Sensus's decision to discontinue production of the monitors currently used in our system, Otter Tail Power has begun a project to replace its current IMS. Our plan is to implement a new system in North Dakota mid to late 2017, while utilizing those components replaced in North Dakota to maintain our current systems in both Minnesota and South Dakota. Once the new system is implemented and meets all necessary requirements (late 2017), the plan is to scale up the new system in the other two states. The new system will provide added tools and analysis features that will allow Otter Tail to continue its reliability focus and efforts in the future.

Otter Tail continues to install and utilize wireless power quality monitors in identified problem areas. These devices monitor voltage, current, power, voltage unbalance, histograms, profiles, etc.in near real-time. These monitors have greatly improved our ability to monitor, identify, and analyze issues in the field. This tool will also be utilized to fill short term gaps/pockets created during our NextGen IMS implementation during installation and system transfer.

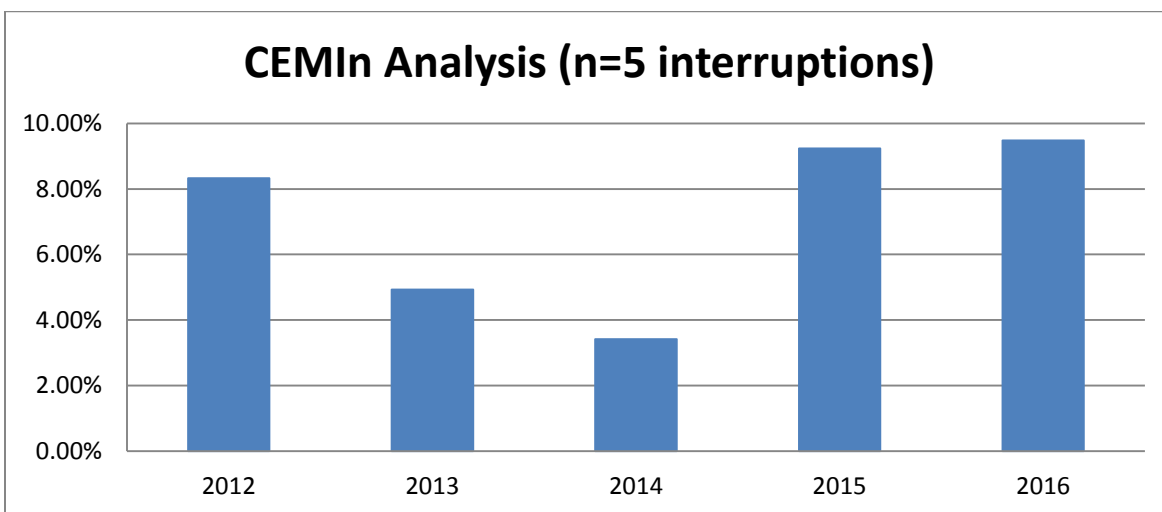
- 2. Challenges in achieving reliability:** Otter Tail has the unique challenge of delivering reliable services to its customers across a large rural service territory, which has tremendous exposure to hazards such as vegetation, lightning, wind, and other weather related issues. Our current IMS, the use of power quality meters, and implementation of our NextGen IMS, will continue to provide optimized and focused deployment of our vegetation management and maintenance resources to specific areas that are identified through the outage data collected.
- 3. Measuring reliability:** Otter Tail continues to calculate the Customers Experiencing Multiple Interruptions (CEMIn) index. The CEMIn index is an excellent indicator of how system improvements directly affect customer service. Deployment of resources on worst performing circuits has direct effects on the reliability indices and customer reliability. **Figure 8** shows the system CEMIn (n = 7 interruptions) results from 2012 to 2016. This graph shows how many customers on a company-wide basis experienced seven or more interruptions. For example in 2016 the percentage of customers experiencing seven or more interruptions was just over 3.24 percent, compared to 2015, which was 3.17 percent.

**Figure 8**



**Figure 9** below shows the percentage of customers on a company-wide basis who have experienced five or more sustained interruptions.

**Figure 9**



**Figures 10, 11, and 12.** The following graphs show Otter Tail’s SAIDI, SAIFI and CAIDI for the period of 2012 through 2016. When compared to 2015 results, Minnesota customers experienced an increase in overall SAIDI and SAIFI, while CAIDI was slightly lower.

Figure 10

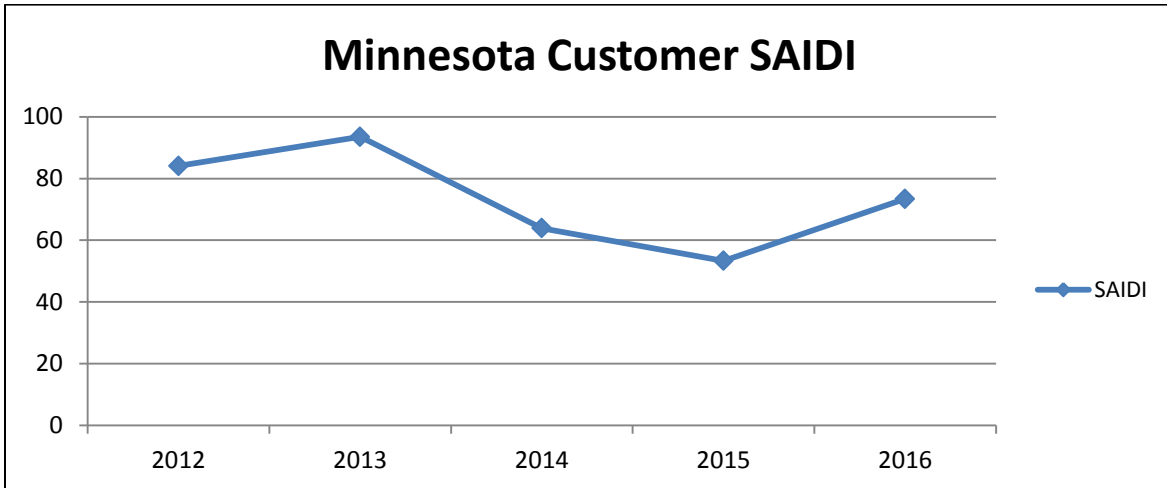


Figure 11

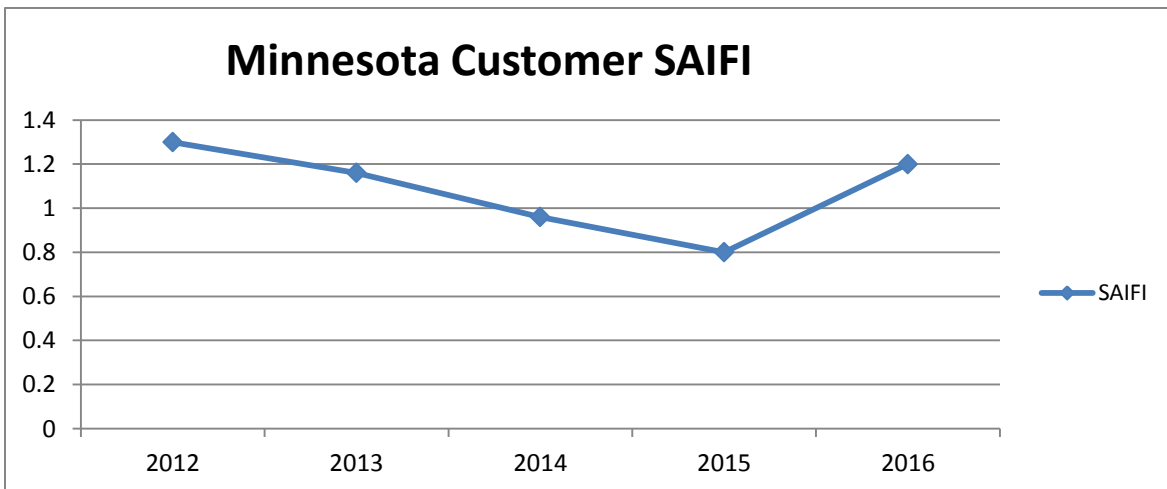
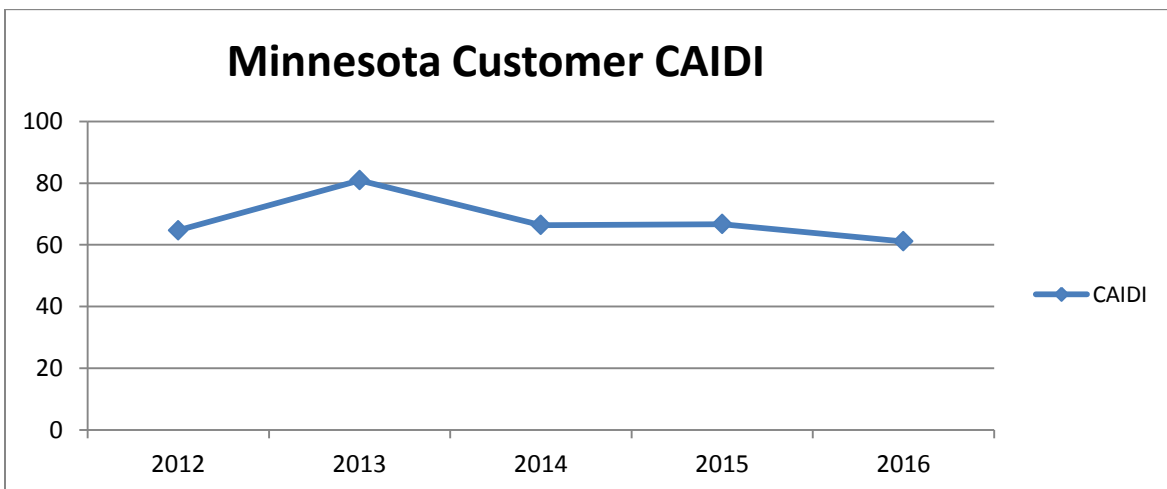


Figure 12



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## OTTER TAIL POLICIES, PROCEDURES, AND ACTIONS

Otter Tail provides the following description of the policies, procedures, and actions that it has previously implemented, and continues to utilize to improve reliability.

The following is a list of reports that continue to be distributed internally. These reports ensure that Otter Tail employees are aware of issues in the system on a timely basis and can respond quickly to maintain and improve overall system reliability.

1. Internal Reporting:
  - a. **Monthly Reliability Report:** Otter Tail distributes to all employees an overall summary of system performance as compared to internal KPI's. This report shows SAIDI, SAIFI, CAIDI, and MAIFI for the system, as well as each CSC.
  - b. **Additional reporting:** Otter Tail also tracks CEMI on an annual basis and has internal KPI's that are reported and published to Otter Tail's Asset Management department.
  
2. Proactive Inspections and Testing:
  - a. **Field Inspections:** Otter Tail conducts several periodic patrols and inspections throughout the transmission and distribution system. Transmission substations and lines are inspected and patrolled on an annual basis and more often when issues are identified. Distribution substations are inspected for safety and equipment concerns on a periodic basis. The oil in substation transformers are sampled and tested for dissolved gas. Transformers greater than 10 MVA are tested annually and transformers less than 10 MVA are tested every three years.
  - b. **Pole integrity testing:** Otter Tail currently contracts for ground line inspections and treatment work of aged transmission poles for replacement identification.
  - c. **Underground Replacement:** Otter Tail continues its focus on replacing outdated and failing underground conductors. The Area Engineers proactively identify areas of concern and budget for replacement during the following year. Potential replacement candidates are identified and included in Otter Tail's Proactive UG Replacement project listing.

**Additional Items:** In addition to the above-mentioned items, Otter Tail also employs a number of other policies, procedures, and committees to evaluate reliability and safety concerns that include, but are not limited to:

Distribution Standards Committee  
Line inspections  
Workforce Planning Committee  
Transformer Installation and Change-out Loading Guide  
Voltage upgrades and evaluations as needed  
Mobile underground fault locating vans and associated equipment  
Wildlife protection and deterrent devices

## V. RELIABILITY STANDARDS 7826.0600

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### PROPOSED RELIABILITY PERFORMANCE STANDARDS

Minnesota Rule 7826.0600, Subpart 1, requires utilities to file proposed reliability performance standards in the form of proposed numerical values for the SAIDI, SAIFI, and CAIDI for each of its work centers.

As ordered in Docket No. E017/M-15-322 dated August 14, 2015, Otter Tail's reliability standards have been frozen, until the company has shown sufficient improvement in indices' performance. OTP proposes to maintain the performance standards at 2013 levels until further improvement is achieved.

Table 10  
Proposed Reliability Standards for 2016

Work Center	SAIDI	SAIFI	CAIDI
Bemidji	70.64	1.26	56.06
Crookston	69.33	1.19	58.26
Fergus Falls	66.97	1.11	60.33
Milbank	75.49	1.82	41.48
Morris	55.78	1.01	55.23
Wahpeton	57.24	1.13	50.65
All MN Customers	64.95	1.13	57.48

## VI. REPORTING METER-READING PERFORMANCE 7826.1400

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Minnesota Rule 7826.1400, Reporting Meter Reading Performance, requires utilities to provide a detailed report on the utility's meter-reading performance. In compliance with this rule, Otter Tail provides Tables 11-15 for its meter reading performance for 2016.

**A & B. The number and percentage of customer meters read by utility personnel and the number and percentage of customer meters self-read by the customer.**



**Table 11**  
 Otter Tail Power Company Meter Reading Performance  
 January 1, 2016 to December 31, 2016  
 Residential – MN

<b>Residential</b>							
<b>Month</b>	<b>Meters Read</b>	<b>%</b>	<b>Meters Estimated</b>	<b>%</b>	<b>Self Read</b>	<b>%</b>	<b>Total Meters</b>
1	60,876	97.0%	1,058	1.7%	839	1.3%	62,773
2	60,275	96.0%	1,699	2.7%	813	1.3%	62,787
3	60,537	96.4%	1,465	2.3%	800	1.3%	62,802
4	61,041	97.0%	1,006	1.6%	861	1.4%	62,908
5	61,291	97.1%	993	1.6%	845	1.3%	63,129
6	62,258	97.0%	1,107	1.7%	828	1.3%	64,193
7	61,076	95.2%	2,224	3.5%	831	1.3%	64,131
8	62,373	97.1%	991	1.5%	860	1.3%	64,224
9	62,223	96.8%	1,201	1.9%	825	1.3%	64,249
10	61,677	96.7%	1,221	1.9%	860	1.3%	63,758
11	59,450	94.2%	2,807	4.4%	860	1.4%	63,117
12	60,627	96.2%	1,575	2.5%	789	1.3%	62,991
	<i>733,704</i>	<i>96.4%</i>	<i>17,347</i>	<i>2.3%</i>	<i>10,011</i>	<i>1.3%</i>	<i>761,062</i>

**Table 12**  
 Otter Tail Power Company Meter Reading Performance  
 January 1, 2016 to December 31, 2016  
 Small Commercial – MN

<b>Small Commercial</b>							
<b>Month</b>	<b>Meters Read</b>	<b>%</b>	<b>Meters Estimated</b>	<b>%</b>	<b>Self Read</b>	<b>%</b>	<b>Total Meters</b>
1	13,884	96.1%	217	1.5%	349	2.4%	14,450
2	13,783	95.3%	356	2.5%	326	2.3%	14,465
3	13,946	96.5%	169	1.2%	341	2.4%	14,456
4	13,961	96.4%	165	1.1%	357	2.5%	14,483
5	14,614	96.8%	136	0.9%	344	2.3%	15,094
6	14,622	96.5%	196	1.3%	341	2.2%	15,159
7	14,410	94.9%	432	2.8%	348	2.3%	15,190
8	14,679	96.2%	237	1.6%	339	2.2%	15,255
9	14,718	96.5%	187	1.2%	341	2.2%	15,246
10	14,625	96.1%	247	1.6%	344	2.3%	15,216
11	14,352	94.7%	469	3.1%	341	2.2%	15,162
12	13,840	95.1%	377	2.6%	331	2.3%	14,548
	<i>171,434</i>	<i>95.9%</i>	<i>3,188</i>	<i>1.8%</i>	<i>4,102</i>	<i>2.3%</i>	<i>178,724</i>

**Table 13**  
 Otter Tail Power Company Meter Reading Performance  
 January 1, 2016 to December 31, 2016  
 Large Commercial – MN

<b>Large Commercial</b>							
<b>Month</b>	<b>Meters Read</b>	<b>%</b>	<b>Meters Estimated</b>	<b>%</b>	<b>Self Read</b>	<b>%</b>	<b>Total Meters</b>
1	1,394	99.5%	7	0.5%	.		1,401
2	1,378	99.1%	13	0.9%	.		1,391
3	1,390	99.7%	4	0.3%	.		1,394
4	1,394	100.0%		0.0%	.		1,394
5	1,393	99.9%	1	0.1%	.		1,394
6	1,383	99.6%	6	0.4%	.		1,389
7	1,376	99.0%	14	1.0%	.		1,390
8	1,386	99.6%	6	0.4%	.		1,392
9	1,390	99.8%	3	0.2%	.		1,393
10	1,391	99.9%	2	0.1%	.		1,393
11	1,358	97.8%	31	2.2%	.		1,389
12	1,316	97.4%	35	2.6%	.		1,351
	<i>16,549</i>	<i>99.3%</i>	<i>122</i>	<i>0.7%</i>	.		<i>16,671</i>

**Table 14**  
 Otter Tail Power Company Meter Reading Performance  
 January 1, 2016 to December 31, 2016  
 Total – MN

<b>System</b>							
<b>Month</b>	<b>Meters Read</b>	<b>%</b>	<b>Meters Estimated</b>	<b>%</b>	<b>Self Read</b>	<b>%</b>	<b>Total Meters</b>
1	76,154	96.9%	1,282	1.6%	1,188	1.5%	78,624
2	75,436	95.9%	2,068	2.6%	1,139	1.4%	78,643
3	75,873	96.5%	1,638	2.1%	1,141	1.5%	78,652
4	76,396	97.0%	1,171	1.5%	1,218	1.5%	78,785
5	77,298	97.1%	1,130	1.4%	1,189	1.5%	79,617
6	78,263	96.9%	1,309	1.6%	1,169	1.4%	80,741
7	76,862	95.2%	2,670	3.3%	1,179	1.5%	80,711
8	78,438	97.0%	1,234	1.5%	1,199	1.5%	80,871
9	78,331	96.8%	1,391	1.7%	1,166	1.4%	80,888
10	77,693	96.7%	1,470	1.8%	1,204	1.5%	80,367
11	75,160	94.3%	3,307	4.2%	1,201	1.5%	79,668
12	75,783	96.1%	1,987	2.5%	1,120	1.4%	78,890
	<i>921,687</i>	<i>96.4%</i>	<i>20,657</i>	<i>2.2%</i>	<i>14,113</i>	<i>1.5%</i>	<i>956,457</i>

**C. The number and percentage of customer meters that have not been read by utility personnel for periods of 6 to 12 months and for periods of longer than 12 months, and an explanation as to why they have not been read.**

In 2016, Otter Tail Power had a total of 13 meters that were not read for a period of 6-12 months. Those meters were on four separate accounts where there was no access to read the meters. On each account, steps were taken to communicate with the customer and readings were ultimately obtained. There were no meters that were not read for a time period of greater than 12 months.

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

**Table 15**

Count of Location	Column Labels											
	Jan - 16	Feb - 16	Mar - 16	April - 16	May - 16	June - 16	July - 16	Aug - 16	Sep - 16	Oct - 16	Nov - 16	Dec - 16
<b>Row Labels</b>												
<b>Bemidji</b>	9	9	9	9	9	9	9	9	9	9	9	9
Service Representative	9	9	9	9	9	9	9	9	9	9	9	9
<b>Crookston</b>	9	9	9	9	9	9	9	9	9	9	9	9
Service Representative	9	9	9	9	9	9	9	9	9	9	9	9
<b>Fergus Falls</b>	15	15	15	15	15	15	15	15	15	16	15	15
Service Representative	15	15	15	15	15	15	15	15	15	16	15	15
<b>Milbank</b>	12	12	12	12	12	12	14	15	15	15	15	14
Apprentice Service Rep	1	1	1	1			2	3	3	3	3	3
Service Representative	11	11	11	11	12	12	12	12	12	12	12	11
<b>Morris</b>	14	14	14	14	14	14	14	14	14	14	14	14
Apprentice Service Rep		1	1	1	1	1	1					
Journeyman Meter Reader	1	1	1	1	1	1	1	1	1	1	1	1
Service Representative	13	12	12	12	12	12	12	13	13	13	13	13
<b>Wahpeton</b>	10	10	10	10	10	10	10	10	10	10	10	10
Service Representative	10	10	10	10	10	10	10	10	10	10	10	10
<b>Grand Total</b>	<b>69</b>	<b>69</b>	<b>69</b>	<b>69</b>	<b>69</b>	<b>69</b>	<b>71</b>	<b>72</b>	<b>72</b>	<b>73</b>	<b>72</b>	<b>71</b>

Note: Milbank - The Milbank CSC serves customers in both Minnesota and South Dakota and the number of employees represents all employees for the CSC.

Note: Wahpeton - The Wahpeton CSC Center serves customers in Minnesota, North Dakota and South Dakota and the number of employees represents all employees for the CSC.

Otter Tail utilizes its Service Representatives to read its meters on a monthly basis except in the following towns where a third party reads the Company's meters:

- |                 |                  |                    |
|-----------------|------------------|--------------------|
| Argyle, MN      | Erskine, MN      | Pelican Rapids, MN |
| Audubon, MN     | Fergus Falls, MN | Perham, MN         |
| Battle Lake, MN | Fertile, MN      | Shevlin, MN        |

Bejou, MN	Fisher, MN	Solway, MN
Bemidji, MN	Frazee, MN	Tenney, MN
Campbell, MN	Gonvick, MN	Trail, MN
Clearbrook, MN	Gully, MN	Twin Valley, MN
Climax, MN	Hallock, MN	Ulen, MN
Clitherall, MN	Kent, MN	Vergas, MN
Crookston, MN	Mahnomen, MN	Vining, MN
Detroit Lakes, MN	McIntosh, MN	Waubun, MN
Doran, MN	Oklee, MN	Wilton, MN
Eldred, MN	Oslo, MN	Winger, MN

## VII. REPORTING INVOLUNTARY DISCONNECTIONS 7826.1500

**Minnesota Rule 7826.1500, Reporting Involuntary Disconnections, requires utilities to provide a detailed report on involuntary disconnections of service.** In compliance with this rule, Otter Tail provides its report of involuntary disconnections of service.

### A. Number of customers who received disconnection notices.

Table 16

<b>Table 16Month</b>	<b><u>Large</u> Commercial</b>	<b><u>Residential</u></b>	<b><u>Small</u> Commercial</b>	<b><u>Grand</u> Total</b>
<b>January</b>	27	3849	333	4209
<b>February</b>	25	4816	379	5220
<b>March</b>	24	4848	415	5287
<b>April</b>	24	4218	365	4607
<b>May</b>	31	4509	365	4905
<b>June</b>	24	3425	305	3754
<b>July</b>	25	3625	323	3973
<b>August</b>	35	4450	333	4818
<b>September</b>	23	4133	326	4482
<b>October</b>	21	4367	324	4712
<b>November</b>	23	3533	314	3870
<b>December</b>	25	3595	312	3932
<b>Grand Total</b>	307	49368	4094	53769

### B. Number of customers who sought cold weather rule protection under Minnesota Statutes §216B.096 and §216B.097 and the number who were granted cold weather rule protection.

**Table 17**

Month	Customers who sought Cold Weather Rule Protection in 2016	Number Granted Cold Weather Protection in 2016
January	148	148
February	121	121
March	84	84
April	30	30
May	0	0
June	0	0
July	0	0
August	0	0
September	0	0
October	203	200
November	189	188
December	157	157

**C. Total number of customers whose service was disconnected involuntarily and the number of these customers restored to service within 24 hours.**

**Table 18**

7826.1500 Subpart C - Customers involuntarily disconnected in 2016				
Month	Customer Class	Disconnected For more than 24 hours	Service Restored within 24 hours	Grand Total
January	Residential	7	5	12
	Small Commercial	0	0	0
<b>January Total</b>		7	5	12
February	Residential	8	9	17
	Small Commercial	0	3	3
<b>February Total</b>		8	12	20
March	Residential	21	9	30
	Small Commercial	2	0	2
<b>March Total</b>		23	9	32
April	Residential	40	24	64
	Small Commercial	3	0	3
<b>April Total</b>		43	24	67
May	Residential	103	56	159
	Small Commercial	1	4	5
<b>May Total</b>		104	60	164
June	Residential	127	45	172
	Small Commercial	5	2	7
<b>June Total</b>		132	47	179
July	Residential	60	25	85
	Small Commercial	5	1	6
<b>July Total</b>		65	26	91
August	Residential	75	38	113
	Small Commercial	8	1	9
<b>August Total</b>		83	39	122

7826.1500 Subpart C - Customers involuntarily disconnected in 2016				
Month	Customer Class	Disconnected For more than 24 hours	Service Restored within 24 hours	Grand Total
September	Residential	89	35	124
	Small Commercial	8	1	9
<b>September Total</b>		97	36	135
October	Residential	50	31	81
	Small Commercial	2	1	3
<b>October Total</b>		52	32	84
November	Residential	37	14	51
	Small Commercial	2	2	4
<b>November Total</b>		39	16	55
December	Residential	6	10	16
	Small Commercial	0	0	0
<b>December Total</b>		6	10	16
<b>Grand Total</b>		659	316	975

**D. Number of disconnected customers restored to service by entering into a payment plan.**

**Table 19**

Month	Residential	Small Commercial	Large Commercial	Total
January	3	0	0	3
February	1	0	1	1
March	4	0	0	4
April	4	0	0	4
May	12	0	0	12
June	3	0	0	3
July	1	0	0	1
August	3	0	0	3
September	2	0	0	2
October	3	0	0	3
November	5	0	0	5
December	1	0	0	1
<b>Totals</b>	42	0	0	42

**VIII. REPORTING SERVICE EXTENSION REQUEST RESPONSE TIMES 7826.1600**

Minnesota Rule 7826.1600, Reporting Service Extension Request Response Times, requires utilities to provide a report on service extension request response times. In compliance with

this rule, Otter Tail provides in **Table 20** below its report of service extension request response times by customer class for each calendar month, in the following categories:

- A. The number of customers requesting service to a location not previously served by Otter Tail 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.**
- 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.**

**Table 20**

<b>7826.1600 - Otter Tail Power Company Service Extension Request Response Time report - 2016</b>						
<b>Month</b>	<b>Request Type</b>	<b>Days</b>	<b>Large Commercial</b>	<b>Residential</b>	<b>Small Commercial</b>	<b>Grand Total</b>
<b>January</b>	<b>Locations not previously served</b>	0		4	13	17
		3			1	1
	<b>Locations previously served</b>	0	1	54	14	69
		1		1		1
<b>January Total</b>			<b>1</b>	<b>59</b>	<b>28</b>	<b>88</b>
<b>February</b>	<b>Locations not previously served</b>	0		4	4	8
		(1)		1		1
	<b>Locations previously served</b>	0		59	4	63
		3		1		1
<b>February Total</b>				<b>65</b>	<b>8</b>	<b>73</b>
<b>March</b>	<b>Locations not previously served</b>	0		6	5	11
		(4)		1		1
	<b>Locations previously served</b>	(2)		1		1
		0		91	12	103
<b>March Total</b>				<b>99</b>	<b>17</b>	<b>116</b>
<b>April</b>	<b>Locations not previously served</b>	0		13	12	25
		0		178	35	213
	<b>Locations previously served</b>	2			1	1
<b>April Total</b>				<b>191</b>	<b>48</b>	<b>239</b>
<b>May</b>	<b>Locations not previously served</b>	0		16	16	32
		0		221	41	262
	<b>Locations previously served</b>	1		2	2	4
<b>May Total</b>				<b>239</b>	<b>59</b>	<b>298</b>

7826.1600 - Otter Tail Power Company Service Extension Request Response Time report - 2016						
Month	Request Type	Days	Large Commercial	Residential	Small Commercial	Grand Total
June	Locations not previously served	0		56	15	71
	Locations previously served	0		220	15	235
		1		2		2
<b>June Total</b>				<b>278</b>	<b>30</b>	<b>308</b>
July	Locations not previously served	0		13	19	32
	Locations previously served	0		171	17	188
<b>July Total</b>				<b>184</b>	<b>36</b>	<b>220</b>
August	Locations not previously served	(6)		1		1
		0	2	24	15	41
	Locations previously served	0		205	17	222
		1		1		1
<b>August Total</b>			<b>2</b>	<b>231</b>	<b>32</b>	<b>265</b>
September	Locations not previously served	0		21	13	34
	Locations previously served	(41)		1		1
		0		192	11	203
		3		1		1
<b>September Total</b>				<b>215</b>	<b>24</b>	<b>239</b>
October	Locations not previously served	0	4	50	31	85
	Locations previously served	0	1	174	13	188
		1		1		1
<b>October Total</b>			<b>5</b>	<b>225</b>	<b>44</b>	<b>274</b>
November	Locations not previously served	0		57	15	72
	Locations previously served	0		114	14	128
<b>November Total</b>				<b>171</b>	<b>29</b>	<b>200</b>
December	Locations not previously served	0		16	16	32
	Locations previously served	0		90	13	103
<b>December Total</b>				<b>106</b>	<b>29</b>	<b>135</b>
<b>Grand Total</b>			<b>8</b>	<b>2,063</b>	<b>384</b>	<b>2,455</b>

## IX. REPORTING CALL CENTER RESPONSE TIMES 7826.1700

Minnesota Rule 7826.1700, Reporting Call Center Response Times, requires utilities to provide 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 information.** In compliance with this rule, Otter Tail provides its report of call center response times for 2016 in **Table 21**. **Figure 13** shows a historical graph showing the percent of Minnesota calls answered within 20 seconds.

**Table 21**

	(A)	(B)	(C)	(D)	(E)
<b>Month</b>	<b>Offered</b>	<b>Calls Abandoned</b>	<b>Calls Answered after 20 Seconds</b>	<b>Answered within 20 Seconds</b>	<b>Percent Answered within 20 seconds<sup>1</sup></b>
January-2016	1,335	22	238	1,075	80.52%
February-2016	1,306	23	217	1,066	81.62%
March-2016	1,444	42	306	1,096	75.90%
April-2016	3,213	82	644	2,487	77.40%
May-2016	3,600	113	726	2,761	76.69%
June-2016	3,538	18	369	3,151	89.06%
July-2016	3,737	114	863	2,760	73.86%
August-2016	3,405	29	484	2,892	84.93%
September-2016	2,816	42	315	2,459	87.32%
October-2016	2,232	20	260	1,952	87.46%
November-2016	3,629	22	432	3,175	87.49%
December-2016	2,966	47	348	2,571	86.68%
Total	33,221	574	5,202	27,445	82.61%

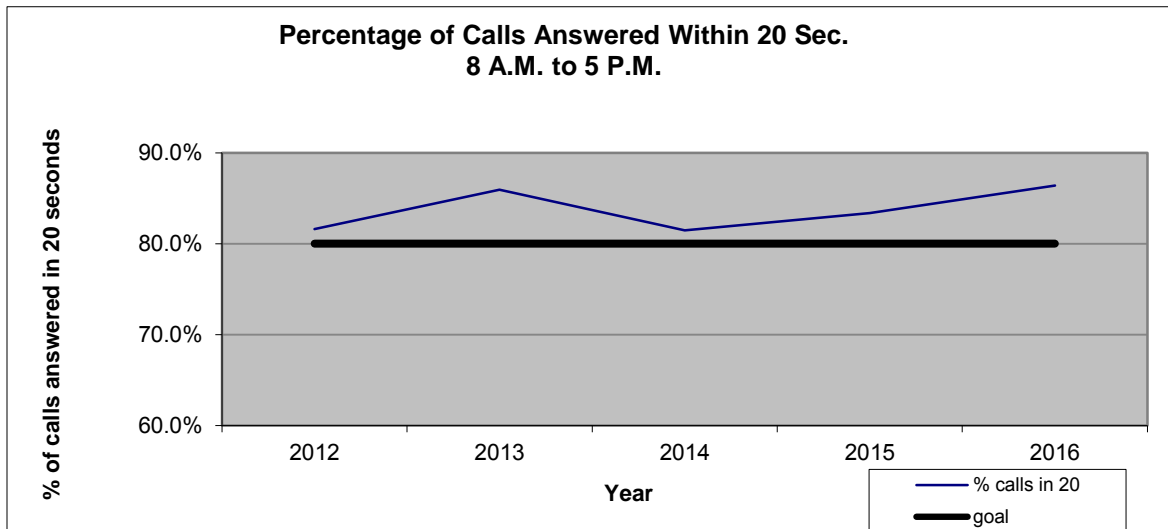
<sup>1</sup>Column (D) / Column (A) = Percent answered within 20 Seconds

Otter Tail operates a call center using agents located in nine office locations across our entire service territory. Agents in these office locations answer calls from our Minnesota, North Dakota and South Dakota customers.

Beginning in 2015, Otter Tail saw a decrease in the Minnesota customer call volume as reported by our telecommunication call reporting software. Believing there was an issue with the collection of call data for purposes of tracking and not being able to identify the root cause. Otter Tail began investigating options to replace our current telecommunications system and call reporting software. In 2016 we moved forward to purchase and began implementing a new telecommunications system. The new system was fully operational in March 2017.

With the new telecommunications system, we implemented an auto attendant that allows customers to select the state in which the account or service the customer is calling to inquire about. The auto attendant for selecting the state is for reporting purposes only. All calls to our customer service number are answered in order in which they are received. We believe the process of the customer selecting the state in which they are calling about will improve the accuracy of Otter Tail's call center response time reporting.

Figure 13



## X. REPORTING EMERGENCY MEDICAL ACCOUNT STATUS 7826.1800

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Minnesota Rule 7826.1800, Reporting Emergency Medical Account Status, requires utilities to provide a report that includes 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 reason for each denial. In compliance with this rule, Otter Tail reports that during 2016 Otter Tail had 23 Minnesota customers request emergency medical account status. Otter Tail granted this status to all 23 customers.

## XI. REPORTING CUSTOMER DEPOSITS 7826.1900

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Minnesota Rule 7826.1900, Reporting Customer Deposits, requires utilities to provide a report on the number of customers who were required to make a deposit as a condition of receiving service. In compliance with this rule, Otter Tail reports that 715 customers were required to make a deposit as a condition of receiving service during 2016. The number of deposit requests increased by 118 when compared to 2015.

## XII. REPORTING CUSTOMER COMPLAINTS 7826.2000

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Minnesota Rule 7826.2000, Reporting Customer Complaints, requires utilities to provide a detailed report on complaints by customer class and calendar month. In compliance with this rule, Otter Tail provides the following information on complaints the Company received during 2016.

**A & 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 the customer complaints.**

**Table 22**

<b>Complaint Type</b>	<b>Total</b>	<b>Percent of Total</b>
Alleged Billing Errors	4	14.3%
Inaccurate Metering	1	3.6%
Inadequate Service	1	3.6%
Inadequate Service – Reliability	3	10.7%
Wrongful Disconnection	2	7.1%
Payments	2	7.1%
Walk-in Service	5	17.9%
Other	10	35.7%
	28	100%

\*Other – this category contains any complaints not included within the various complaint sections in our Customer Information System. The types of complaints included in the “Other” category include such things as property damage, tree trimming, and third party meter readers.

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

**Table 23**

2016		
Resolved by	Total	Percentage
(1) Resolved on Initial Inquiry	26	93%
(2) Resolved within 10 days	2	7%
(3) Resolved in greater than 10 days	0	0%
Grand Total	28	100.00%

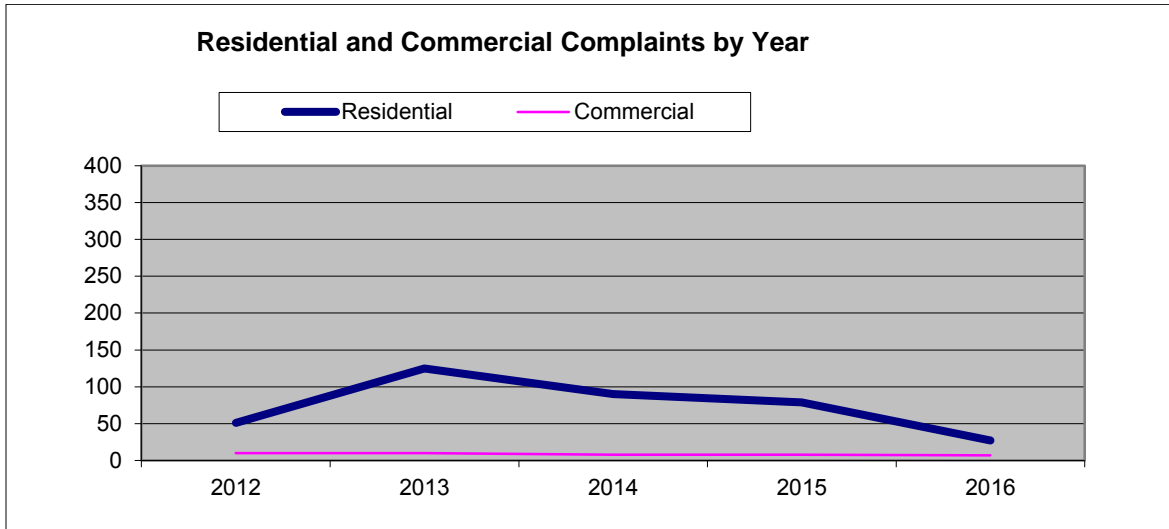
**D. The number and percentage of all complaints resolved by taking any of the following actions: (1) taking the action the customer requested; (2) taking an action the customer and the utility agree is an acceptable compromise, (3) providing the customer with information that demonstrates that the situation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

**Table 24**

Action Taken	Total	Percentage
(1) Took action the Customer requested	15	53.57%
(2) Provided the customer with information that demonstrates that the situation complained of is not reasonably within the control of Otter Tail	5	17.86%
(3) Took an action the customer and the utility agree is an acceptable compromise	2	7.14%
(4) Refused to take action the customer requested	6	21.43%
Grand Total	28	100.00%

Figure 14 below is a graph showing complaints by customer class for the previous five years.

**Figure 14**



**E. The number of complaints forwarded to the utility by the Commission’s Customer Affairs Office for further investigation and action.**

Otter Tail received two customer complaints in 2016 that were forwarded from the Commission’s Consumer Affairs Office, both of which have been resolved. The number of complaints received in 2016 decreased by two when compared to 2015.

**From:** Olson, Wendi  
**Sent:** Wednesday, May 25, 2016 11:02 AM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory  
**Subject:** Otter Tail Power Company Major Service Interruption Report - Appleton, MN

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Minnesota

### **Otter Tail Power Company Major Service Interruption Report – Appleton, MN**

Date: May 25, 2016

Location: Appleton MN

Feeder: North Hering Feeder

Customers Affected: Total affected was 238

Duration: 225 customers were out for about 50 minutes and the remaining 18 customers were out for about 3 ½ hours. (The rep was dispatched at 3:39 AM and the power was restored about 7:00 a.m.)

Cause: UG primary fault- OCR #1 went to lockout

Let me know if you have any questions or concerns.

Thank you,

*Wendi A. Olson*

*Otter Tail Power Company | Regulatory Compliance Specialist  
215 South Cascade Street | Fergus Falls, MN 56538-0496  
Phone: 218-739-8699 | [wolson@otpco.com](mailto:wolson@otpco.com)*

If this is not intended for your use, please destroy immediately and contact the sender of this message.

**From:** Olson, Wendi  
**Sent:** Wednesday, June 22, 2016 10:53 AM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory  
**Subject:** Otter Tail Power Company Major Service Interruption Report - Wheaton, MN

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Minnesota

**Otter Tail Power Company Major Service Interruption Report – Wheaton, MN**

Date: June 22, 2016

Location: Wheaton, MN

Feeders: North and West – 628 Customers  
South and East – 311 Customers

Customers Affected: Total affected was 939

Duration: 939 customers were out for 1 hr and 25 minutes (6:48 a.m. to 8:13 a.m.)

Cause: An animal got into the distribution in the substation and the circuit switcher opened up.

Let me know if you have any questions or concerns.

Thank you,

*Wendi A. Olson*

*Otter Tail Power Company | Regulatory Compliance Specialist  
215 South Cascade Street | Fergus Falls, MN 56538-0496  
Phone: 218-739-8699 | [wolson@otpco.com](mailto:wolson@otpco.com)*

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**From:** Olson, Wendi  
**Sent:** Wednesday, July 13, 2016 8:19 AM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory  
**Subject:** Otter Tail Power Company Major Service Interruption Report - Ottertail City, MN

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Minnesota

### **Otter Tail Power Company Major Service Interruption Report**

Location: Ottertail, MN

Feeder: Ottertail – North Feeder

Date: July 10, 2016

Cause: A bad storm rolled through this area with high winds. Our crews found a tree that had fallen on an overhead service to a house.

Customers affected: 549

Duration: 3 hours and 18 minutes (12:14 a.m. to 3:32 a.m.)

I apologize for the delay in reporting this outage. Let me know if you have any questions.

Thank you,

*Wendi A. Olson*

*Otter Tail Power Company | Regulatory Compliance Specialist  
215 South Cascade Street | Fergus Falls, MN 56538-0496  
Phone: 218-739-8699 | [wolson@otpc.com](mailto:wolson@otpc.com)*

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**From:** Olson, Wendi  
**Sent:** Thursday, July 21, 2016 11:36 AM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory  
**Subject:** Otter Tail Power Company Major Service Interruption Report - July 20, 2016

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Minnesota

### **Otter Tail Power Company Major Service Interruption Report - July 20, 2016**

Location: Fergus Falls, MN  
Feeder: Springen Avenue – Feeder  
Date: July 20 2016  
Cause: Storms  
Customers affected: 584  
Duration: 1 hour and 57 minutes

Location: Ottertail, MN  
Feeder: Ottertail – North Feeder  
Date: July 20 2016  
Cause: Storms  
Customers affected: 549  
Duration: 1 hour and 20 minutes

Let me know if you have any questions or concerns.

Thank you,

*Wendi A. Olson*

*Otter Tail Power Company | Regulatory Compliance Specialist  
215 South Cascade Street | Fergus Falls, MN 56538-0496  
Phone: 218-739-8699 | [wolson@otpco.com](mailto:wolson@otpco.com)*

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**From:** Olson, Wendi  
**Sent:** Thursday, July 21, 2016 3:22 PM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory  
**Subject:** Otter Tail Power Company Major Service Interruption Report - July 21, 2016

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Minnesota

## Otter Tail Power Company Major Service Interruption Report

**Location:** Bemidji, MN

**Date:** July 21, 2016

**Time of Outage:** Between 1:10 and 1:20 a.m.

**Cause:** A strong storm rolled through the area. The damage was significant and caused downed trees, trees on lines, lines on streets, etc.

Sub	Feeder	No. of Customers	Duration in Minutes
Bemidji 25 <sup>th</sup> St Sub	Mall OCR #15	712	475.63
Bemidji 25 <sup>th</sup> St Sub	Hospital OCR #25	839	384.75
Bemidji 115kv Sub	Downtown OCR #25	636	85.77
Bemidji 25 <sup>th</sup> St Sub	East OCR #55	984	61.03
Bemidji 25 <sup>th</sup> St Sub	North OCR #45	1013	60.17

Let me know if you have any questions.

Thank you,

*Wendi A. Olson*

*Otter Tail Power Company | Regulatory Compliance Specialist  
215 South Cascade Street | Fergus Falls, MN 56538-0496  
Phone: 218-739-8699 | [wolson@otpco.com](mailto:wolson@otpco.com)*

If this is not intended for your use, please destroy immediately and contact the sender of this message.

**From:** Olson, Wendi  
**Sent:** Thursday, August 04, 2016 8:17 AM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory  
**Subject:** Otter Tail Power Company Major Service Interruption Report - August 4, 2016

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Minnesota

### **Otter Tail Power Company Major Service Interruption Report**

Location: Fergus Falls, MN  
Feeder: Fergus Springen Feeder  
Date: August 4, 2016  
Cause: A storm that moved through the service territory.  
Customers affected: 584  
Duration: 1 hour and 52 minutes (1:22 a.m. to 3:14 a.m.)

Let me know if you have any questions.

Thank you,

*Wendi A. Olson*

*Otter Tail Power Company | Regulatory Compliance Specialist  
215 South Cascade Street | Fergus Falls, MN 56538-0496  
Phone: 218-739-8699 | [wolson@otpco.com](mailto:wolson@otpco.com)*

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**From:** Olson, Wendi  
**Sent:** Wednesday, August 10, 2016 7:50 AM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory  
**Subject:** Otter Tail Power Company Major Service Interruption Report - August 10, 2016

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

### **Otter Tail Power Company Major Service Interruption Report – August 10, 2016**

Location: Fergus Falls, MN  
Feeder: Springen Avenue – Feeder  
Date: August 10, 2016  
Cause: Storm  
Customers affected: 584  
Duration: 1 hour and 4 minutes (4:55 a.m. – 5:59 a.m.)

Let me know if you have any questions or concerns.

Thank you,

*Wendi A. Olson*

*Otter Tail Power Company | Regulatory Compliance Specialist  
215 South Cascade Street | Fergus Falls, MN 56538-0496  
Phone: 218-739-8699 | [wolson@otpco.com](mailto:wolson@otpco.com)*

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**From:** Olson, Wendi  
**Sent:** Thursday, September 08, 2016 8:42 AM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory  
**Subject:** Otter Tail Power Company Major Service Interruption Report - September 7, 2016

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Minnesota

### **Otter Tail Power Company Major Service Interruption Report**

Location: Rothsay, Erhard, Elizabeth, Fergus Falls rural

Date: September 7, 2016

Cause: A storm moved through and caused a down distribution transformer pole in Rothsay

Customers affected: 585 (Approximate)

Duration: 1 hour and 5 minutes (7:20 p.m. to 8:25 p.m.)

Let me know if you have any questions.

Thank you,

*Wendi A. Olson*

*Otter Tail Power Company | Regulatory Compliance Specialist  
215 South Cascade Street | Fergus Falls, MN 56538-0496  
Phone: 218-739-8699 | [wolson@otpco.com](mailto:wolson@otpco.com)*

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**From:** Olson, Wendi  
**Sent:** Monday, September 12, 2016 4:56 PM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory  
**Subject:** Otter Tail Power Company Major Service Interruption Report - September 11, 2016

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Minnesota

### **Otter Tail Power Company Major Service Interruption Report**

Location: Rural North Fergus Falls, Carlisle, Rothsay, Erhard & Elizabeth

Date: September 11, 2016

Cause: Equipment failure (Floater on 40,000 line at Rothsay Junction)

Customers affected: Approximately 584 customers (All the customers in these locations)

Duration: 2 hours and 30 minutes (5:10 a.m. to 7:40 a.m.)

Let me know if you have any questions.

Thank you,

*Wendi A. Olson*

*Otter Tail Power Company | Regulatory Compliance Specialist  
215 South Cascade Street | Fergus Falls, MN 56538-0496  
Phone: 218-739-8699 | [wolson@otpco.com](mailto:wolson@otpco.com)*

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**From:** Olson, Wendi  
**Sent:** Tuesday, September 20, 2016 1:53 PM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory  
**Subject:** Otter Tail Power Company Major Service Interruption Report - September 21, 2016  
Planned Outage

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Minnesota

### Otter Tail Power Company Major Service Interruption Report

Location: Wheaton, MN

Date: September 21, 2016

Cause: Planned outage to change out faulty equipment

Customers affected: 939

Duration: Estimated - 1 hour and 30 minutes (5:00 a.m. – 6:30 a.m.)

**\*Customers have been notified.**

Let me know if you have any questions.

Thank you,

*Wendi A. Olson*

Otter Tail Power Company | Regulatory Compliance Specialist  
215 South Cascade Street | Fergus Falls, MN 56538-0496  
Phone: 218-739-8699 | [wolson@otpco.com](mailto:wolson@otpco.com)

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**From:** Olson, Wendi  
**Sent:** Tuesday, October 18, 2016 1:10 PM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory  
**Subject:** Otter Tail Power Company Major Service Interruption Report - October 20, 2016  
Planned Outage

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Minnesota

### **Otter Tail Power Company Major Service Interruption Report**

Location: Fertile, MN

Date: October 20, 2016

Cause: Planned outage to perform substation equipment repair

Customers affected: 564

Duration: Estimated - 4 hours (6:00 p.m. – 10:00 p.m.)

**\*Customers have been notified.**

Let me know if you have any questions.

Thank you,

*Wendi A. Olson*

*Otter Tail Power Company | Regulatory Compliance Specialist  
215 South Cascade Street | Fergus Falls, MN 56538-0496  
Phone: 218-739-8699 | [wolson@otpc.com](mailto:wolson@otpc.com)*

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**From:** Olson, Wendi  
**Sent:** Friday, November 18, 2016 10:00 AM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory  
**Subject:** Otter Tail Power Company Major Service Interruption Report - November 18, 2016

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Minnesota

### **Otter Tail Power Company Major Service Interruption Report**

Location: Amiret, MN; Appleton, MN; Bellingham, MN; Boyd, MN; rural Canby, MN; Correll, MN; Danvers, MN; Dawson, MN; Holloway, MN; Louisburg, MN; Milan, MN; Odessa, MN

Substation: Ortonville 115kV 620216 to Canby 115kV 620111

Date: November 18, 2016

Cause: Blizzard conditions including high winds and heavy snowfall caused a 115kV circuit to open. No known mechanical issues existed. Cause of the outage is attributed to lines galloping.

Customers affected: 3,183

Duration: 2 hours (6:40 a.m. – 8:40 a.m.)

Let me know if you have any questions.

Thank you,

*Wendi A. Olson*

*Otter Tail Power Company | Regulatory Compliance Specialist  
215 South Cascade Street | Fergus Falls, MN 56538-0496  
Phone: 218-739-8699 | [wolson@otpc.com](mailto:wolson@otpc.com)*

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**From:** Spangler, Ron  
**Sent:** Monday, December 26, 2016 2:27 PM  
**To:** consumer.puc@state.mn.us  
**Cc:** Regulatory; Olson, Wendi; Van Voorhis, Mike; Johnson, Tom D.  
**Subject:** Otter Tail Power Company Major Service Interruption Report - December 25, 2016

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Minnesota

### **Otter Tail Power Company Major Service Interruption Report**

Location: **Parkers Prairie**

Date: December 25, 2016

Cause: Snow and ice storm in caused a tree to come into contact with a primary line

Customers affected: 585 (Approximate)

Duration: 1 hour and 30 minutes (11:25 p.m. 12/25/2016 to 12:55 a.m. 12/26/2016)

Location: **Dumont and Wheaton**

Date: December 25, 2016

Cause: Snow and ice storm in caused issues on the transmission system in the area

Customers affected: 1020 (Approximate)

Duration: 1 hour and 21 minutes (1:45 p.m. to 3:06 p.m.)

Please let me know if you have any questions.

Thank you,

**Ron Spangler Jr.**

Manager, Customer Care and Relations

Otter Tail Power Company

Phone: 218-739-8838

Cell Phone: 218-205-8687

Email: [rlspangler@otpc.com](mailto:rlspangler@otpc.com)

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## **CERTIFICATE OF SERVICE**

**RE: In the Matter of Otter Tail Power Company 2016 Annual Safety, Reliability and Service Quality Report and Proposed SAIFI, SAIDI and CAIDI Reliability Standards for 2017**  
**Docket No. E017/M-17-**

I, Lindsay Hauer, hereby certify that I have this day served a copy of the following, or a summary thereof, on Daniel P. Wolf and Sharon Ferguson by e-filing, and to all other persons on the attached service list by electronic service or by First Class Mail.

**Otter Tail Power Company**  
**2016 Annual Safety, Reliability and Service Quality Report and Proposed SAIFI, SAIDI and CAIDI Reliability Standards for 2017**

Dated this **31st** day of **March, 2017**.

/s/ LINDSAY HAUER

Lindsay Hauer, Regulatory Filing Coordinator  
Otter Tail Power Company  
215 South Cascade Street  
Fergus Falls MN 56537  
(218) 739-8376

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Christopher	Anderson	canderson@allete.com	Minnesota Power	30 W Superior St  Duluth, MN 558022191	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
Ray	Choquette	rchoquette@agp.com	Ag Processing Inc.	12700 West Dodge Road PO Box 2047 Omaha, NE 68103-2047	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
James C.	Erickson	jericksonkbc@gmail.com	Kelly Bay Consulting	17 Quechee St  Superior, WI 54880-4421	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280  Saint Paul, MN 551012198	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
Jessica	Fyhrie	jfyhrie@otpc.com	Otter Tail Power Company	PO Box 496  Fergus Falls, MN 56538-0496	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
Bruce	Gerhardson	bgerhardson@otpc.com	Otter Tail Power Company	PO Box 496 215 S Cascade St Fergus Falls, MN 565380496	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
Lindsay	Hauer	lhauer@otpc.com	Otter Tail Power Company	215 S. Cascade St  Fergus Falls, MN 56537	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
Shane	Henriksen	shane.henriksen@enbridge.com	Enbridge Energy Company, Inc.	1409 Hammond Ave FL 2  Superior, WI 54880	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
James D.	Larson	james.larson@avantenergy.com	Avant Energy Services	220 S 6th St Ste 1300  Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Douglas	Larson	dlarson@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
John	Lindell	john.lindell@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
Kavita	Maini	kmairi@wi.rr.com	KM Energy Consulting LLC	961 N Lost Woods Rd Oconomowoc, WI 53066	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
Larry L.	Schedin	Larry@LLSResources.com	LLS Resources, LLC	332 Minnesota St, Ste W1390 St. Paul, MN 55101	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
Stuart	Tommerdahl	stommerdahl@otpc.com	Otter Tail Power Company	215 S Cascade St PO Box 496 Fergus Falls, MN 56537	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	GEN_SL_Otter Tail Power Company_2016 SRSQ Report