

MEMORANDUM

To: Commissioners Christmann, Fedorchak and Kroshus
From: Sara Cardwell ^{SC}
Date: May 5, 2017
Re: Case No. PU-12-813
Northern States Power Company
Outage Credits – Miscellaneous Tariff Compliance Filing

On April 21, 2017, the Company filed to remove its tariff provision that provides credits to customers after they have experienced three qualifying outages. The Company states that the agreement between the Commission and the Company requiring them to have this credit obligation has expired. The Company is not opposed to extending this provision but because the agreement has expired, they are currently under no obligation to continue it.

Attached are the relevant pages from the Company's 2016 annual report regarding its outage record from 2012 through 2016. As shown on page E-5, the Company's average annual number of outages per customer (SAIFI) was 0.91 in 2016, which is higher than the four previous years. Additionally if you look at the data for the five largest substations, you will see that the SAIFI for the Red River substation in Fargo is the highest in 2016 over the past five years. Turning to page E-6, you can see that underground cable is still the major reason for outages. Turning to page E-7, you can see that the number of failures is lower than it has been since 2013; it still has not dropped significantly. On page E-8, you can see that on line 2, the actual SAIDI result in 2016 is higher than it has been in the last five years.

On the positive side, the credits issued in 2016 are at the lowest point over the past five years and the Company is continuing its efforts to improve reliability as described on page E-9.

In summary, I would recommend that the Commission extend the requirement to offer credits to customers that experience three or more outages in a year. While we are seeing a lower credit amount, the Company still has some bad cable in the ground and it seems like the outages become more prevalent on warm summer days just when you would least expect them. Outages are inconveniences for customers and the credit provides recognition of this. It also helps demonstrate that the Commission is continuing to monitor the Company in regards to this continuing outage issue.

Please let me know if you agree to extend the credit. I can either add an order requiring the Company to continue the credit on next week's agenda or at the meeting on May 31. I am copying Stacy on this memo in case she wishes to opine on this issue seeing she is the one that hears about it from customers.

311 PU-12-813 Filed: 5/5/2017 Pages: 7
Memorandum

Public Service Commission Advocacy Staff

Sara Cardwell, Advocacy Staff

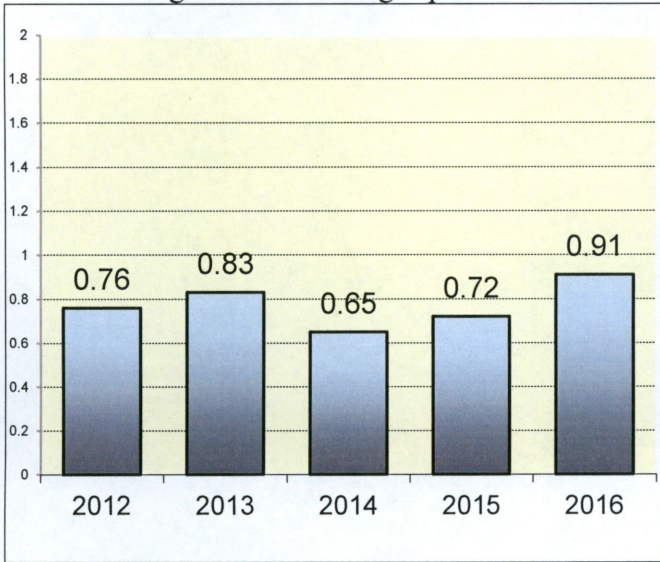
Please let me know if you have any questions.

C: Stacy Eberl
Dave Sederquist

**Northern States Power Company
Electric Utility - North Dakota
Outage Frequency and Duration Indices - 2016**

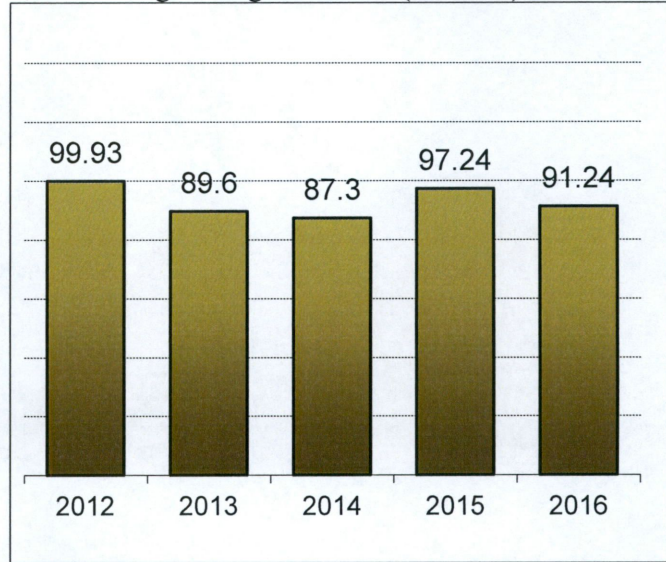
System Avg Interruption Frequency Index (SAIFI)

Average annual # outages per customer



Customer Avg Interruption Duration Index (CAIDI)

Average outage duration (minutes)



SAIFI (Interruption Frequency) - Largest Five Substations

	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>5 Yr. Avg</u>
Cass County (Fgo)	0.71	0.90	0.36	0.42	0.56	0.59
Souris (Mnt)	0.36	1.08	0.40	0.44	0.75	0.61
Nordic (GF)	1.01	0.58	0.41	0.88	0.51	0.68
Red River (Fgo)	0.70	0.86	0.78	0.93	1.29	0.91
Gateway (GF)	0.59	0.54	1.74	0.62	1.60	1.02

CAIDI (Interruption Duration) - Largest Five Substations

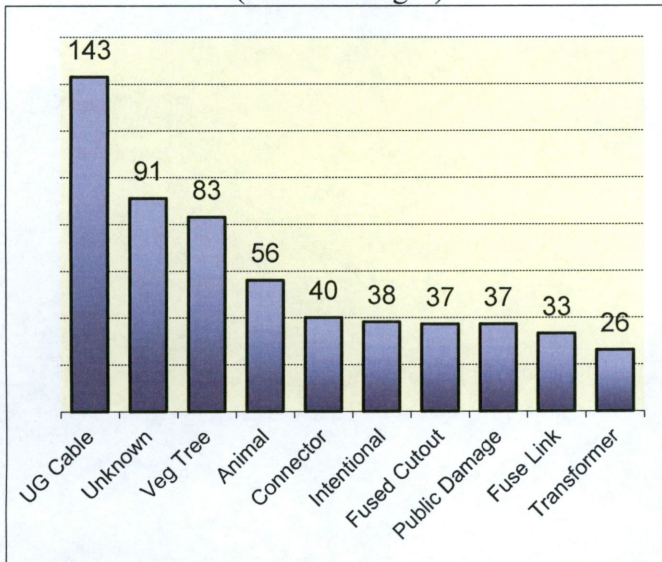
	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>5 Yr. Avg</u>
Gateway (GF)	89.1	100.3	54.9	75.1	71.5	78.2
Red River (Fgo)	110.1	88.7	88.7	75.8	98.2	92.3
Nordic (GF)	74.1	104.7	97.6	98.8	115.0	98.0
Souris (Mnt)	105.8	72.4	80.5	166.3	67.1	98.4
Cass County (Fgo)	78.6	109.3	158.7	104.7	120.9	114.4

Data reflects normalized outages lasting 5 minutes or longer. In 2016 one Major Event Day (May 22) was excluded.

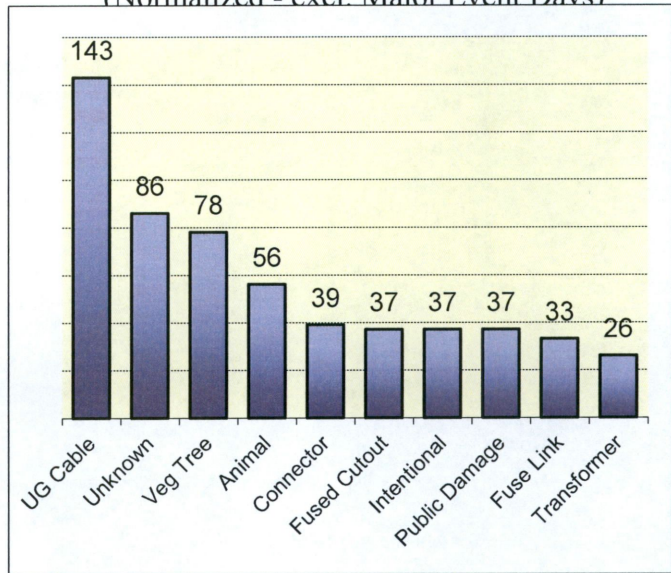
**Northern States Power Company
Electric Utility - North Dakota
Most Common Outage Causes - 2016**

Top 10 Outage Causes

(Actual outages)



(Normalized - excl. Major Event Days)

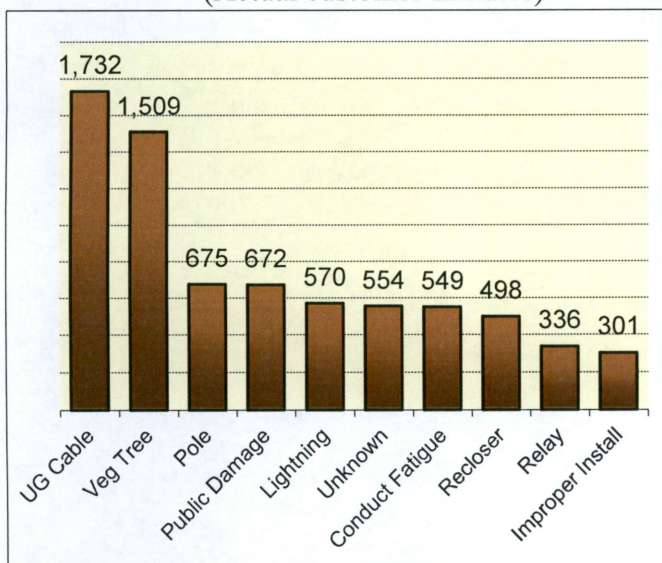


Total outage events: 665

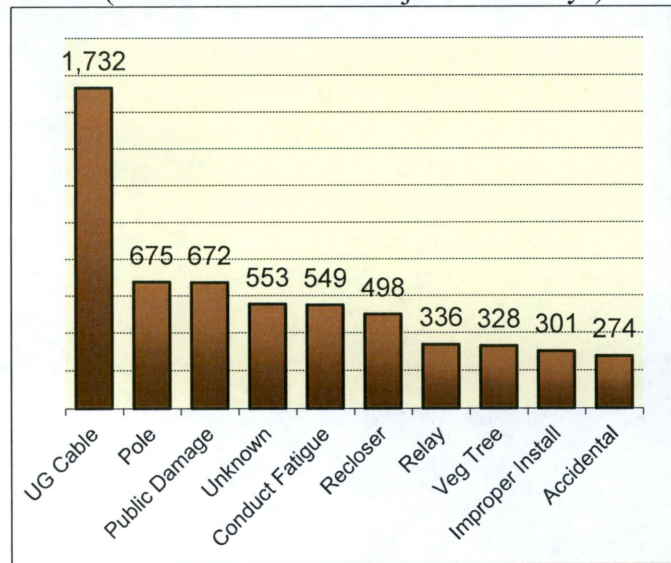
Top 10 Causes of Lengthy or Wide-spread Interruptions

(measured in customer-minutes without power - 000's)

(Actual customer-minutes)



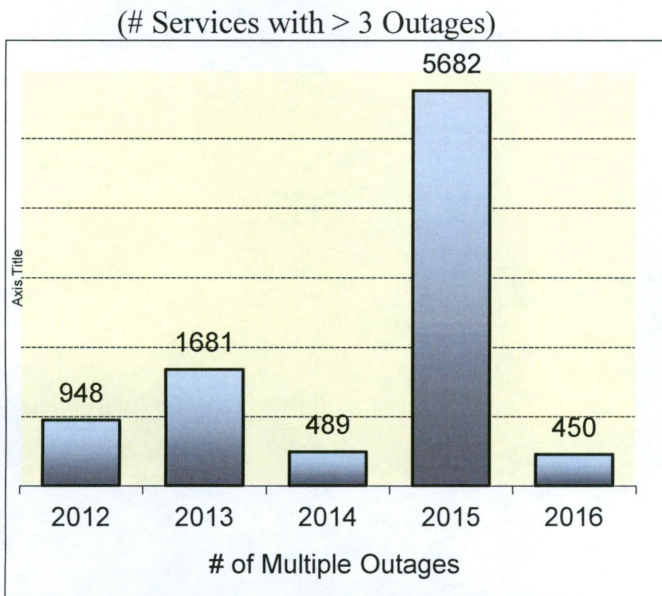
(Normalized - excl. Major Event Days)



Note: Date reflects outages lasting 5 minutes or longer.

**Northern States Power Company
Electric Utility - North Dakota
CEMI, Feeder Outages, and Underground Cable Failures - 2016**

**Customers Experiencing Multiple Interruptions
(CEMI)**



Note: The 2012 CEMI count is an approximation.

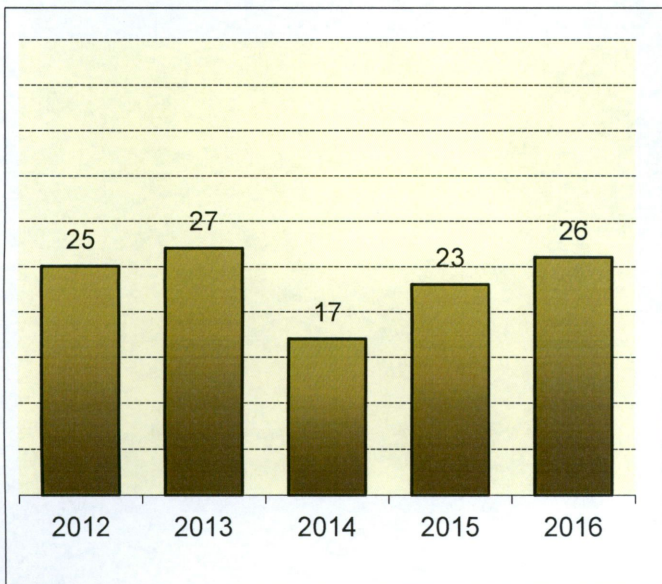
Breakdown of 2016 CEMI Levels

# Outages	Customers
4	382
5	32
6+	36
	450

CEMI Credits Issued

2013	\$84,050
2014	\$24,650
2015	\$284,100
2016	\$22,350

Feeder-Level Outages



Underground Cable Failures

Year	UG Cable Failures
2012	139
2013	159
2014	155
2015	147
2016	143

(reflects primary, secondary cable failures)

Data reflects outages lasting 5 minutes or longer; Major Event Day (May 22) & public damage events excluded.

**Northern States Power Company
Electric Utility - North Dakota
Reliability Performance Plan Results**

A. SAIDI (System Average Interruption Duration Index)

	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
1 Excellence Threshold (minutes):	57.0	57.0	57.0	57.0
2 Actual SAIDI Result (minutes):	74.3	57.1	69.7	83.0
3 Base Award:	\$0	\$0	\$0	\$0
4 Authorized Return on Equity:	9.75%	10.00%	10.00%	10.25%
5 Actual Return on Equity:	9.19%	8.99%	8.15%	9.14%
6 Revenue Deficiency:	\$1,856,153	\$3,910,149	\$8,121,692	\$5,047,170
7 Final SAIDI Award:	\$0	\$0	\$0	\$0

B. CEMI (Customers Experiencing Multiple Interruptions)

	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
8 # Customers receiving credits:	1,681	489	5,682	450
9 Total CEMI Payout:	\$84,050	\$24,650	\$284,100	\$22,350

C. Reliability Satisfaction Survey

	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016*</u>
10 % Customers Rating "Positive" (6-10):	97%	98%	98%	95%
11 % Customers Rating "Excellent" (8-10):	86%	88%	91%	82%

* 2016 survey results are based on an extrapolation of XE Relationship scores using JDPower survey results, and are not directly comparable to past results. The Company stopped conducting its "relationship" surveys in 2015.

Xcel Energy

Electric Utility - State of North Dakota

2016 RELIABILITY PLAN SUMMARY

Ongoing Reliability Improvement Efforts

Overhead System Upgrades – 2017 Budget: \$1,800,000

Xcel Energy's electric overhead system capital budget includes replacing failed devices, installing upgrades so the "backbone system" can continue to serve new customers, and making improvements to enhance reliability. This budget funds maintenance of our Reliability Exception Monitoring System ("REMS"), a computer outage tracking and reporting system. REMS prompts engineering reviews of our system by flagging devices that have tripped more than twice in a rolling 12 month period. Following such a review, corrective actions are identified and implemented where appropriate.

These funds also reflect efforts to expand automation, add lightning arresters, and mitigate pole fires as part of the 2016 reliability enhancement plan (see below).

Infrared scanning is performed on our ND system. This process includes early detection of failing components within our overhead distribution system. The infrared scanner identifies "hot spots" on equipment so they can be replaced prior to failure.

Distribution pole testing is also performed on our ND system. Xcel Energy's pole replacement plan includes an O&M expense for testing 1,600 wood distribution poles in North Dakota. The testing methodology conforms to an industry standard procedure. If a pole is identified as having strength characteristics below acceptable standards, the pole is scheduled for replacement or reinforcement.

Underground System Upgrades - \$3,063,000

In 2017, Xcel Energy is continuing its efforts to upgrade its underground cable system in North Dakota. About \$680,000 will be spent replacing cables that have failed but for which repairs are not a viable option.

Underground system upgrades also reflect the Company's accelerated efforts to locate and remove all existing non-jacketed 500 MCM cable. This effort began as part of an initial 3 year (2012-2014) program committed to in a prior Settlement (Case No. PU-10-657). In a more recent rate Settlement (Case No. PU-12-813) the project timeline was extended. In 2016, the company outlined a reliability enhancement plan to complete the removal (see below).

2016-18 Reliability Enhancement Plan - \$5,300,000

In 2017 the Company will continue implementation of its 2016-18 reliability enhancement commitment to the NDPSC. The plan includes: 1) Complete removal of known non-jacketed 500 MCM underground cable, 2) nearly doubling the number of Intelliteam switches in ND, 3) retrofitting 130 poles with fiberglass cross-arms and taller insulators to combat pole fires, and 4) installing additional pole top and 3-phase lightning arrester sets on all 18 Fargo mainline feeders along with areas in Minot and Grand Forks.