

**Minnesota Public Utilities Commission**  
*Staff Briefing Papers*

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Meeting Date: **December 4, 2014** .....\*Agenda Item #6

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Companies: Northwestern Wisconsin Electric Company

Docket No. E016/M-14-666

In the Matter of the Northwestern Wisconsin Electric Company (NWEC)  
2013 Annual Safety, Reliability, Service Quality Report, and Proposed Annual  
Reliability Standards for 2014.

Issues: Should the Commission Accept NWEC's Safety, Reliability, service Quality  
Reports for 2013 and Its Proposed Annual Reliability Standards for 2014?

Staff: Marc Fournier .....651-201-2214

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***Relevant Documents***

Commission Order Approving Reports, Setting 2013  
Reliability Standards, Docket No. E016/M-13-379 ..... January 13, 2014

NWEC Initial Filing 2013 Electric  
Distribution Reliability Report. .... August 6, 2014

Comments of the Minnesota Department of Commerce  
Division of Energy Resources. .... October 3, 2014

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The attached materials are workpapers of the Commission Staff. They are intended for use by the Public Utilities Commission and are based upon information already in the record unless noted otherwise.

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### **Statement of the Issues**

Should the Commission accept NWEC's Safety, Reliability, and Service Quality Reports for 2013?

Should the Commission accept NWEC's proposed annual reliability standards for 2014?

### **Background**

Minnesota Statute §216B.029, Standards for Distribution Utilities stipulates that the Commission shall adopt standards for safety, reliability, and service quality for distribution utilities.

Minnesota Rules Chapter 7826 were developed as a means for the Commission to establish safety, reliability, and service quality standards for electric distribution utilities and to monitor the performance of each utility as measured against those standards. There are three main annual reporting requirements set forth in the rule. These are:

1. The annual safety report (Minnesota Rules Part 7826.0400);
2. The annual reliability report (Minnesota Rules Parts 7826.0500, subp.1 and 7826.0600, subp. 1); and
3. The annual service quality report (Minnesota Rules Part 7826.1300).

These rules became effective on January 28, 2003. On April 1, 2014, NWEC filed its annual Electric Safety, Reliability, and Service Quality Performance Report and its request for approval of proposed reliability standards.

#### *Reliability Report*

Minnesota Rules part 7826.0500 require NWEC's reliability report to include, among other requirements:

- A. the utility's SAIDI for the calendar year, by work center and for its assigned service area as a whole;
- B. the utility's SAIFI for the calendar year, by work center and for its assigned service area as a whole;
- C. the utility's CAIDI for the calendar year, by work center and for its assigned service area as a whole;
- D. an explanation of how the utility normalizes its reliability data to account for major storms; and

- E. an action plan for remedying any failure to comply with the reliability standards set forth in part 7826.0600 or an explanation as to why noncompliance was unavoidable under the circumstances.

Recognizing that not all utilities would have the complete information required by the rules available for the first year the reports were due on April 1, 2003, the rules allowed for more limited initial reporting requirements. Utilities were required to file historical data and proposed reliability standards for SAIDI, SAIFI, and CAIDI, and the Commission established performance standards based on those initial reports.

### **Reliability Definitions:**

**SAIDI** means the System Average Interruption Duration Index and measures the average customer minutes of interruptions per customer. It is derived by dividing the annual sum of customer minutes of interruption by the average number of customers served during the year.

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

**SAIFI** means the System Average Interruption Frequency Index and measures the average number of interruptions per customer per year. It is derived by dividing the total annual number of customer interruptions by the average number of customers served during the year.

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

**CAIDI** means Customer Average Interruption Duration Index and is measured by the average customer minutes of interruption per customer interruption. It approximates the average length of time required to complete service restoration.

$$\text{CAIDI} = \text{Total Customer Minutes of Sustained Outages} \div \text{Total number of Sustained Customer Interruptions} = \text{SAIDI} \div \text{SAIFI}$$

**Interruption** means an interruption of electricity service to a customer greater than five minutes in duration.

**Major Service Interruption** means an interruption of service at the feeder level or above and affecting 500 or more customers for one or more hours.

**Storm-normalized data** means data that has been adjusted to neutralize the effects of outages due to major storms.

Since 2003, the Commission has adopted measures to make the annual reports more comprehensive and useful for the Commission and the utilities. Staff has been focused especially on measures that will lead to improved service quality and reliability and that will allow improvements to be monitored.

## **NWEC'S 2013 ELECTRIC SAFETY, RELIABILITY AND SERVICE QUALITY REPORT AND COMMISSION CONSIDERATION OF PROPOSED RELIABILITY STANDARDS FOR 2014**

The Department's July 31, 2013 comments provide a thorough summary and analysis of NWEC's filing, most of which will not be repeated here. Staff will focus primarily on the Reliability portion of NWEC's report.

In its January 13, 2014 Order, the Commission set NWEC's 2013 reliability standards. NWEC's Reliability Report provided the following information in regard to NWEC's 2013 reliability performance in comparison to the 2013 standard:

	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
2013 Standard	197.02	1.22	162.13
Actual 2013 Performance	309.36	2.95	104.85

### ***Storm Normalization Methodology***

NWEC reported that it did not apply a storm normalization method to its outage data. There were no major storms that affected the Company's Minnesota service area in 2013.

### ***Action Plan to Improve Reliability***

NWEC met its CAIDI goal but missed its SAIDI and SAIFI reliability goals for 2013. Given the high level of variability in NWEC's reliability statistics, due in large part to the nature and size of the Company's Minnesota service area, identifying performance trends is very difficult. In its 2013 Annual Report, the Company indicated that the cause for each of the 9 outages in 2013 was unknown.<sup>1</sup>

Since 2013, the Company has met 55% of its SAIDI goals, 64% of its SAIFI goals, and 55% of its CAIDI goals. As stated above, the high level of variability in reliability metrics from year to year make further analysis or drawing conclusions difficult. According to NWEC, downed trees on power lines cause the majority of their outages, including most storm related outages. NWEC provided a general discussion of its tree trimming policies and procedures in the report. A more aggressive action plan does not appear to be necessary at this time. The DOC will continue to closely monitor NWEC's performance for signs of declining performance.<sup>2</sup>

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1 NWEC's system in Minnesota (two distribution lines serving 101 customers), is subject to large variations in reliability performance measures depending largely on which line is affected most often.

2 This compares to 37% for IPL, 55% for OTP, 73% for MP, and 57% for Xcel over similar

***Commission Consideration of NWECC's Proposed 2013 Reliability Standards***

NWEC did not propose any changes to its reliability goals for 2014. However, the DOC proposed the following standards update for NWEC's standards for 2014:

	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
2014 Standard	212.55	1.52	154.88

**DOC**

The Department recommends that the Commission accept NWEC's filing in fulfillment of the requirements of Minnesota Rules, Chapter 7826 and the Commission's January 13, 2013 Order. The Department also recommends that the Commission set the Company's 2013 reliability goals based on a five-year performance average as follows:

SAIDI = 212.55

SAIFI = 1.52

CAIDI = 154.88

**Staff Analysis**

The DOC examined all the factors required by the rules. Staff believes the DOC did an outstanding job in analyzing and reviewing the information contained in the submitted annual reports and will not repeat its efforts here.

NWEC's reliability report shows that the Company met its CAIDI goal but missed its SAIDI and SAIFI goals in the current reporting year. There were no major storms in NWEC service territory during 2013. The Company reports the following 2013 reliability Performance versus the standards:

	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
2013 Standard	197.02	1.22	162.13
Actual 2013 Performance	309.36	2.95	104.85

Staff believes that NWEC's August 6, 2014 filing complies with the applicable rules and Commission Order. The purpose of the reliability statues is to assure the Commission that reasonable standards of reliability performance are being properly measured and maintained.

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periods.

Further, since the reliability reporting is a relatively new reporting requirement, it is incumbent upon each utility to report the required data in a format that is consistent, from one reporting year to the next. Staff believes significant progress has been made and the overall standard of reliability has improved for NWECC in 2013.

The DOC recommended that the Commission adopt the following for 2014 reliability standards:

	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
2013 Standard DOC (Recommended)	212.55	1.52	154.88

Staff agrees with the DOC's analyses that due to the nature of NWECC's system in Minnesota (two distribution lines serving 100 customers), large variations in reliability performance measures occur depending largely on which line is affected most often. NWECC did not propose any changes to its reliability goals for 2014. Based on NWECC's 2013 performance, the DOC concludes that it is reasonable to set 2014 goals based on a five-year (2009 through 2013) performance average.

These goals are higher (easier to achieve) than the 2013 goals set by the Commission. However, the 2013 goals represent an improvement over the 2013 reliability performance.

The table below depicts NWECC's past standards and performance:

Year	SAIDI		SAIFI		CAIDI	
	Performance	Standard	Performance	Standard	Performance	Standard
2003	64.22	64.22	0.49	0.49	131.29	131.29
2004	<b>202.92</b>	64.22	<b>2.91</b>	0.49	69.64	131.29
2005	<b>621.09</b>	133.57	<b>4.57</b>	1.70	<b>136.05</b>	78.59
2006	<b>362.63</b>	296.08	<b>2.98</b>	2.65	<b>121.75</b>	111.53
2007	52.79	296.08	1.05	2.40	50.15	111.53
2008	231.70	260.73	1.42	2.59	<b>163.55</b>	108.69
2009	148.80	294.23	1.76	2.36	84.53	113.82
2010	261.11	283.40	1.03	1.65	<b>253.43</b>	120.34
2011	69.09	211.41	0.63	1.65	110.32	128.28
2012	<b>274.40</b>	211.41	1.24	1.30	<b>221.29</b>	128.28
2013	<b>309.36</b>	152.70	<b>2.95</b>	1.30	104.85	117.46
2014 Proposed		212.55		1.52		154.88
2009 – 2013 Average		212.55		1.52		154.88

The numbers in bold indicate performance that did not meet the Commission Standard. NWECC met 19 out of 33 performance metrics from 2003 to 2013, which represents a 57.5% success rate. For 2013, NWECC missed the standard for SAIDI and SAIFI, but met the performance standard for CAIDI.

The Commission has set performance standards at the Company's proposed levels since 2004. NWECC calculated its performance targets as an average of the previous five years of actual SAIDI and SAIFI performance.

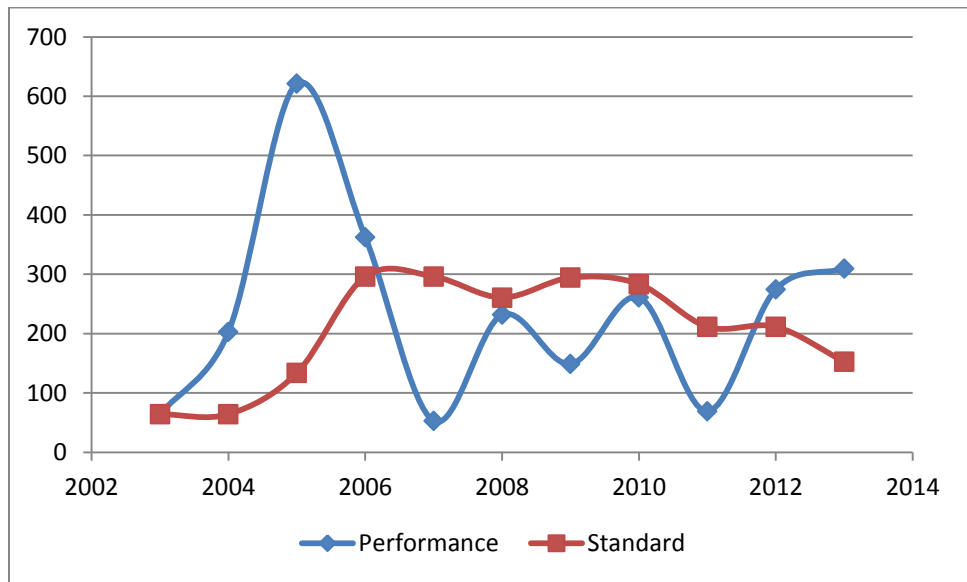
When Minnesota Rules, Chapter 7826 first went into effect in 2003, the Commission recognized that Utilities would not have complete information to implement performance standards. The Commission required utilities to file historical data in regard to SAIDI, SAIFI, and CAIFI, and the Commission established performance standards based on those initial reports. Staff agrees that using a five year rolling average provided a useful baseline of information for initial reports, and as long as performance standards are coming down or stabilizing each year, may continue to be appropriate for setting the performance standards. However, Staff does not know what



constitutes the optimal standard.

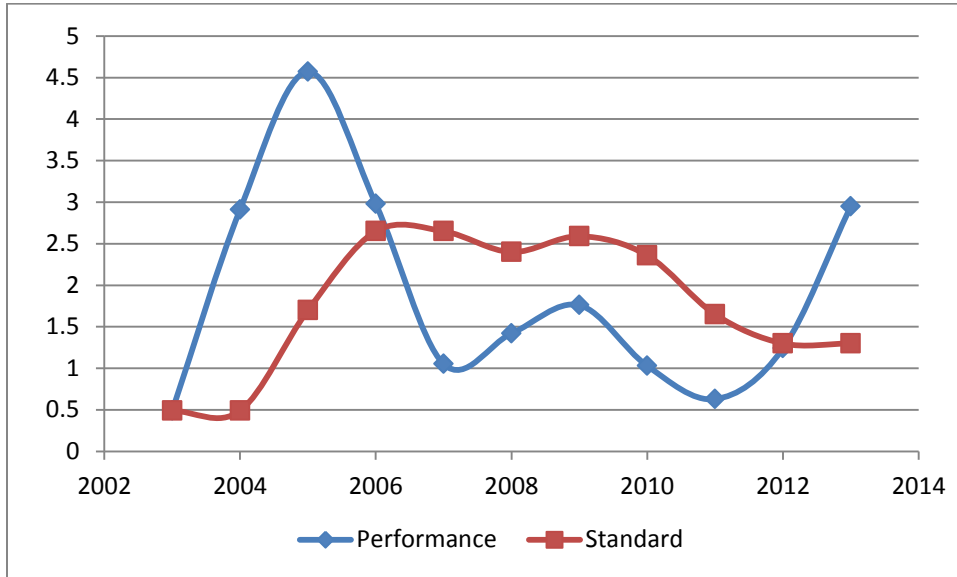
Up until 2012, NWECC has consistently met its targets over the past five years. In addition, the last five years of observations have yielded a lower average SAIFI and a SAIFI that is more consistent with less variation than the SAIFI observations in the first five years of observations. The trends in SAIFI performance and standards can be seen below in the following diagram.

**SAIFI Performance and Standard**



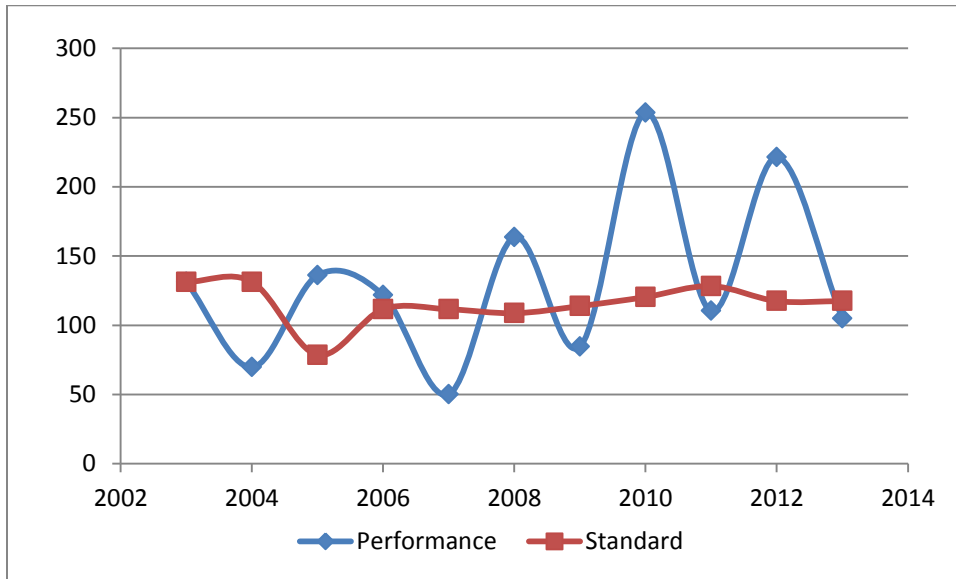
Likewise SAIFI Performance and Standards has shown a similar trend. In most years, NWECC met the SAIFI performance standard set by the Commission. However, the improvement in SAIFI performance and standards has been significant over the ten-year period. The following diagram shows improvement in the number of customer interruption experienced by a typical customer over the ten-year period.

**SAIFI Performance and Standards**



Also, NWECC has met the performance standard for most years in the same period for CAIDI. The performance standard for CAIDI has remained relatively stable since 2003. During the first ten years of observations, it appears that NWECC met the CAIDI standard in roughly alternating years. The following diagram shows NWECC met the standard in roughly alternating years in the number of customer minutes of outages per outage over the ten-year period.

**CAIDI Performance and Standards**



NWEC has 101 customers in Minnesota and two small distribution lines in the State. It operates primarily in rural Wisconsin and it is a relatively small electric utility overall. Staff agrees with the Department that NWEC has submitted the required reports in Minnesota. However, the Commission may wish to consider setting NWEC’s 2014 reliability standards based upon the previous 5-year average as an incentive for NWEC to maintain reliability performance on a going forward basis as recommended by the DOC.

Considering the relatively small service area and small number of customers, Staff believes NWEC’s narrative adequately complies with the Commission order. However, there are many factors that impact the reliability performance of each utility, which NWEC could include in its next annual report. Each utility service area has its own unique characteristics and it is not practical to take a one size fits all approach in evaluating effective next steps on reliability improvement.

**Commission Options**

- I. Whether the Commission should accept NWECC’s Reports on 2013 Results?
  - A. Accept NWECC’s August 6, 2014 safety, reliability and service quality reports, as complying with Minn. Rules, Chapter 7826 and relevant Commission orders.
  - B. Do not accept NWECC’s August 6, 2014 safety, reliability and service quality reports, as complying with Minn. Rules, Chapter 7826 and relevant Commission orders.
  
- II. Whether the Commission should Accept NWECC’s proposed reliability standards for 2013?
  - A. Accept the 2014 proposed reliability standards at the levels indicated below as recommended by the DOC:

	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
2013 Standard DOC (Recommended)	212.55	1.52	154.88

- B. Accept the existing 2013 reliability standards as the 2014 standards:

	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
2013 Standard	197.02	1.22	162.13

- C. Approve some other reliability standard for 2014.

**Recommendation**

Staff recommends I A and II A.