

Minnesota Public Utilities Commission
Staff Briefing Papers

Meeting Date: **December 12, 2013** *Agenda Item # 6

Companies: Northern States Power Company dba Xcel Energy

Docket No. E002/M-13-255

In the Matter of Xcel Energy's (Xcel) 2012 Annual Safety, Reliability, Service Quality Report, and Proposed Annual Reliability Standards for 2013.

Issues: Should the Commission Accept Xcel's Safety, Reliability, service Quality Reports for 2012 and Its Proposed Annual Reliability Standards for 2013?

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Relevant Documents

Commission Order Approving Reports,
Setting 2012 Reliability Standards, and
Setting Filing Requirements Docket No. E002/M-12-313 December 20, 2012

Xcel Energy's Initial Filing
2012 Safety, Reliability and Service Quality
Standards Report and Proposed
SAIFI, SAIDI, and CAIDI Indices for 2013..... April 1, 2013

Comments of the City of Minneapolis..... June 28, 2013

Comments of the Minnesota Department of Commerce
Division of Energy Resources. July 1, 2013

Reply Comments Xcel Energy..... July 31, 2013
Reply Comments of the Minnesota Department of

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 Xcel's Safety, Reliability, and Service Quality Reports for 2012?

Should the Commission accept Xcel's proposed annual reliability standards for 2013?

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, 2013, XCEL 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 XCEL'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.

On December 20, 2012, in Docket No. E-002/M-12-313, the Commission ordered, in regard to the reliability report due April 1, 2013, that XCEL shall include:

- a. a description of the policies, procedures, and actions that it has implemented, and plans to implement, to assure reliability, including information demonstrating proactive management of the system as a whole, increased reliability, and active contingency planning;
- b. a summary table (or summary information in some other format) that allows the reader to more easily assess the overall reliability of the system and identify the main factors that affect reliability;
- c. a report on the major causes of outages for major event days.

Xcel’s 2012 ELECTRIC SAFETY, RELIABILITY AND SERVICE QUALITY REPORT AND COMMISSION CONSIDERATION OF PROPOSED RELIABILITY STANDARDS FOR 2013

The Department’s July 1, 2013 comments provide a thorough summary and analysis of Xcel’s filing, most of which will not be repeated here. Staff will focus primarily on the Reliability portion of XCEL’s report.

In its December 20, 2012 Order, the Commission set XCEL’s 2012 reliability standards at the following levels:

Work Center	SAIDI	SAIFI	CAIDI
Metro East	84.99	0.97	87.27
Metro West	99.98	1.02	98.29
Northwest	101.53	0.91	111.97
Southeast	86.62	0.81	107.31

Xcel’s Reliability report provided the following information regarding Xcel’s 2012 reliability performance:

Work Center	SAIDI		SAIFI		CAIDI	
	Standard	Performance	Standard	Performance	Standard	Performance
Metro East	84.99	98.35	0.97	0.91	87.27	108.36
Metro West	99.98	103.98	1.02	0.98	98.29	105.93
Northwest	101.53	106.07	0.91	0.84	111.97	125.62
Southeast	86.62	71.54	0.81	0.59	107.31	120.50

The numbers in bold indicate where Xcel did not meet its goals. Xcel missed SAIDI and CAIDI in

all four of its work centers, except the Southeast work center where Xcel missed only its CAIDI goal. However, Xcel achieved the goal or standard for SAIFI in all four work centers.

Storm Normalization Methodology

For 2012, the Company used the following storm day threshold calculation procedures:

- Using the previous five years of outage history for each region, Xcel:
 - Calculate the number of sustained outages per day;
 - Calculate the average number of sustained outages per day; and
 - Calculate the standard deviation of sustained outages per day.
- Based on the above methodology, Xcel sets a unique storm day threshold for each region. A storm day is defined as any day meeting or exceeding the average number of sustained outages per day plus three standard deviations.

Action Plan to Improve Reliability

Xcel indicated that its 2012 performance was impacted much by the weather, mostly in late spring and early summer. There were quite a few storms, high winds, and lightning, and many of these events caused widespread customer outages but fell far below the level of qualifying for a storm day. Overall, the outages caused by weather in 2012 qualified for just over 51 percent of the storm days we had in 2011 across all four work centers (14 storm days across all regions in 2012 as compared to 27 storms days in 2011).

Due to the fact that these goals are five-year averages, the expectation is to achieve target results 50 percent of the time and miss the target 50 percent of the time. Taken together, several days of storms that cause extensive outages but do not qualify for storm days can quickly erode a standard that is based on average performance.

In 2012, Xcel achieved its targets five out of 12 times, or 42 percent of the time. Over the five-year reference period, Xcel achieved our targets 35 of 60 times, or 58 percent - exceeding the average over time.

Based on these underlying facts for 2012, the Company does not believe an action plan to improve performance for any specific work center is warranted at this time. Regardless, as described in Xcel's Distribution System Performance Summary provided as Attachment M to its Annual Report, Xcel will continue its on-going assessments of reliability, seeking to implement system improvements and maintenance to achieve the largest improvements in reliability measurements.

Commission Consideration of XCEL's Proposed 2013 Reliability Standards

XCEL agrees with the DOC's recommendations to set XCEL's performance standards for 2013 SAIDI, SAIFI, and CAIDI at the same levels as those set for 2008 through 2012.

Work Center	SAIDI	SAIFI	CAIDI
Metro East	85.44	0.94	90.75
Metro West	97.92	0.98	100.17
Northwest	102.56	0.87	117.94
Southeast	78.16	0.71	109.97

DOC

As noted above, the Department provided a thorough summary and analysis of Xcel's Electric Safety, Reliability and Service Quality Performance Report and Petition. The Department appreciates the additional information on provided by Xcel in response to its concerns and concludes that the Company provided reasonable discussions regarding each of the identified issues. However, the Department will continue to monitor Xcel's CAIDI performance in all four work centers, as well as the Company's performance in its Northwest work center for signs of declining performance trends.

The Department recommends that the Commission accept Xcel's filing in fulfillment of the requirements of Minnesota Rules, Chapter 7826 and the Commission's December 20, 2012 Order, pending the submission of additional information. Additionally, the Department recommends that the Commission set the Company's reliability standards for 2013 at the levels proposed by the Company.

In reply comments, the DOC indicated its appreciation for the additional information provided by Xcel.

City of Minneapolis

Since weather is a large factor with respect to Xcel's reliability, the City would appreciate more specific information from Xcel on weather related reliability impacts.

The City is interested in how Xcel is planning on adapting its infrastructure to meet significantly increased penetration of distributed generation within the City limits, and its plan to implement "smarter" technology within the city limits to better manage distributed energy resources in the City and maintain reliability.

XCEL Reply

Xcel provided the following information in reply comments in response to the DOC's requests:

1. further information regarding what, if any, action was taken by Xcel to prevent similar electrical shock incidents in the future;
2. additional discussion regarding what factors could be driving the decline in CAIDI performance in all four work centers and what specifically Xcel is doing to reduce the duration of individual outages experienced by its customers;
3. additional discussion regarding Xcel's performance in the Northwest work center, as well as any specific measures it is taking to improve performance in this work center;
4. further discussion regarding two recurring worst-performing feeders and the likelihood of related issues occurring in the future;
5. discussion regarding:
 - a. why there is such a large difference between the 1,592,544 meters read in December 2012 and the 2,258,245 meters installed as of December 31, 2012;
 - b. the number of meters installed for each month of 2012 as requested by the Department in Docket No. G002/M-12-440; and
 - c. how the "Total of All Readings" numbers on Attachment F, page 1 are calculated; and
6. a discussion regarding whether the Company considered other factors, in addition to historical data, on which to base its reliability indices for 2013 in an effort to demonstrate its commitment toward improving reliability performance, as required by the Commission's Order in Docket E002/M-12-313.

Xcel thanked the City of Minneapolis for their letter in this docket and note that it has begun working with the city to determine how we can meet their requests and plan to continue meeting with them to provide them meaningful reliability data and information.

Staff Analysis

Staff appreciates the effort by Xcel in its 2012 Annual Safety, Reliability and Service Quality Reports which continues to provide informative data that promotes focused decision making as it

Relates to reliability. Staff believes that Xcel's April 1, 2013 filing of its Safety, Reliability, and Service Quality Reports for 2012 complies with the applicable rules and Commission Orders.

The Department examined all the factors required by the rules. Staff will concentrate its comments on the reliability factors. Staff believes the Department did an outstanding job in analyzing and reviewing the information contained in the submitted annual reports and will not repeat those efforts here. Staff concurs with the findings by Department.

The purpose of the reliability statues is to assure the Commission that reasonable standards of reliability performance are being properly measured and maintained. 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.

Xcel has noted its improvement in terms of reliability over the past five years stating it met the standards 35 of 60 times, or 58 percent. In 2012, Xcel stated it met the standards 5 out of 12 times, or 42 percent of the time.¹

Xcel based its proposed standards on the past five year rolling average for each work center, and, as noted above, Xcel stated that “[d]ue to the fact that these goals are five-year averages, we would expect to achieve target results 50 percent of the time and miss the target 50 percent of the time.” Staff notes that the Commission should expect performance from Xcel to meet the standards 50 percent of the time only in the case where there is no more room for improvement in reliability. It is possible that based on current circumstances, the point of diminishing improvements to reliability may be approaching.

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 CAIDI, 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 but suggests that more meaningful reliability standards may be achieved by evaluating factors outside of historical results.

Xcel recommended and DOC agreed the Commission adopt the following for 2013 reliability standards:

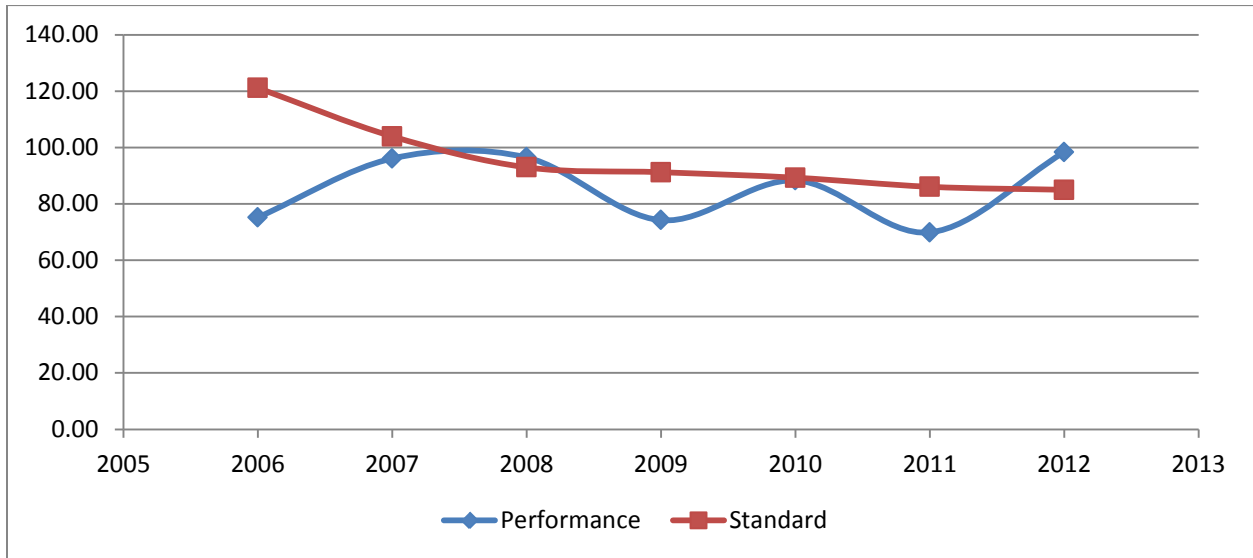
Work Center	SAIDI	SAIFI	CAIDI
Metro East	85.44	0.94	90.75
Metro West	97.92	0.98	100.17
Northwest	102.56	0.87	117.94

¹ This compares to 38% for IPL, 60% for OTP, 60% for NWECC, and 80% for MP over similar periods.

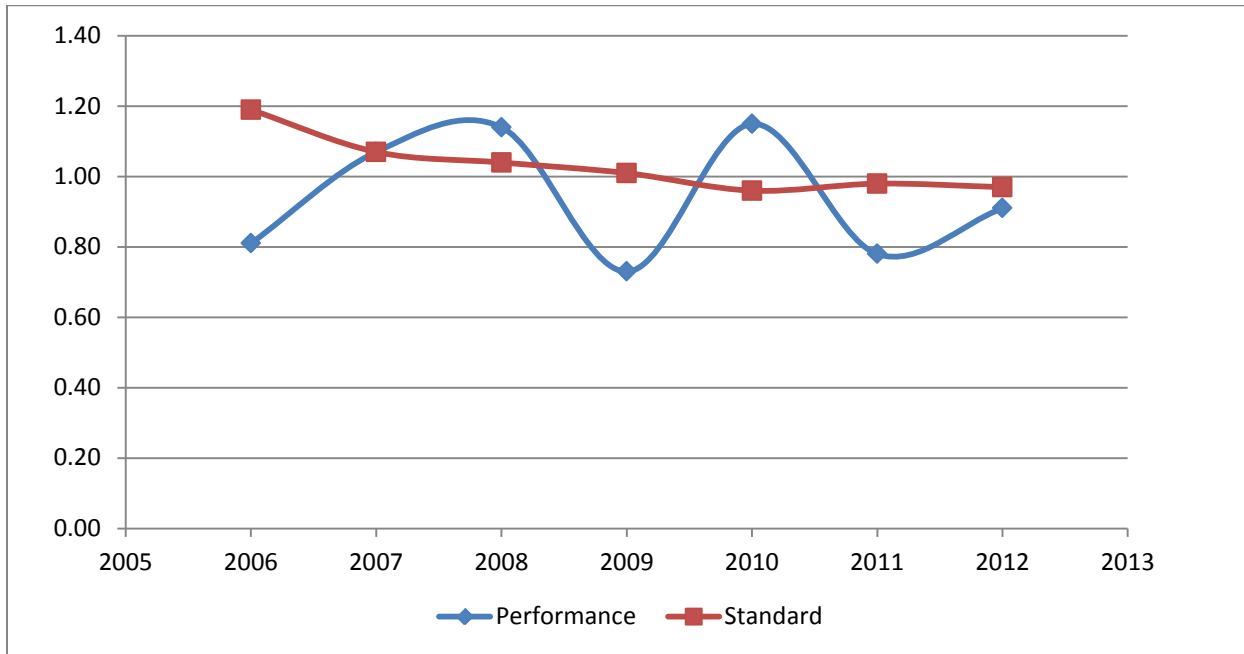
Southeast	78.16	0.71	109.97
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The graphs below depict Xcel's past performance versus standards since 2003 for Metro East work centers:

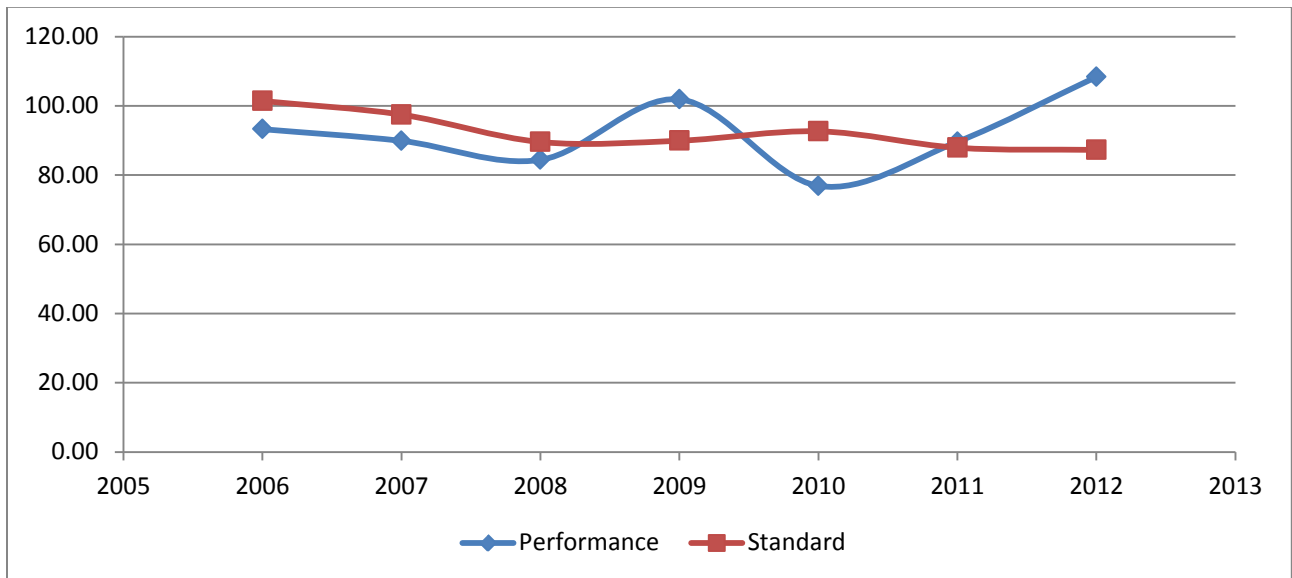
Metro East SAIDI Performance and Standards



Metro East SAIFI Performance and Standards



Metro East CAIDI Performance and Standards



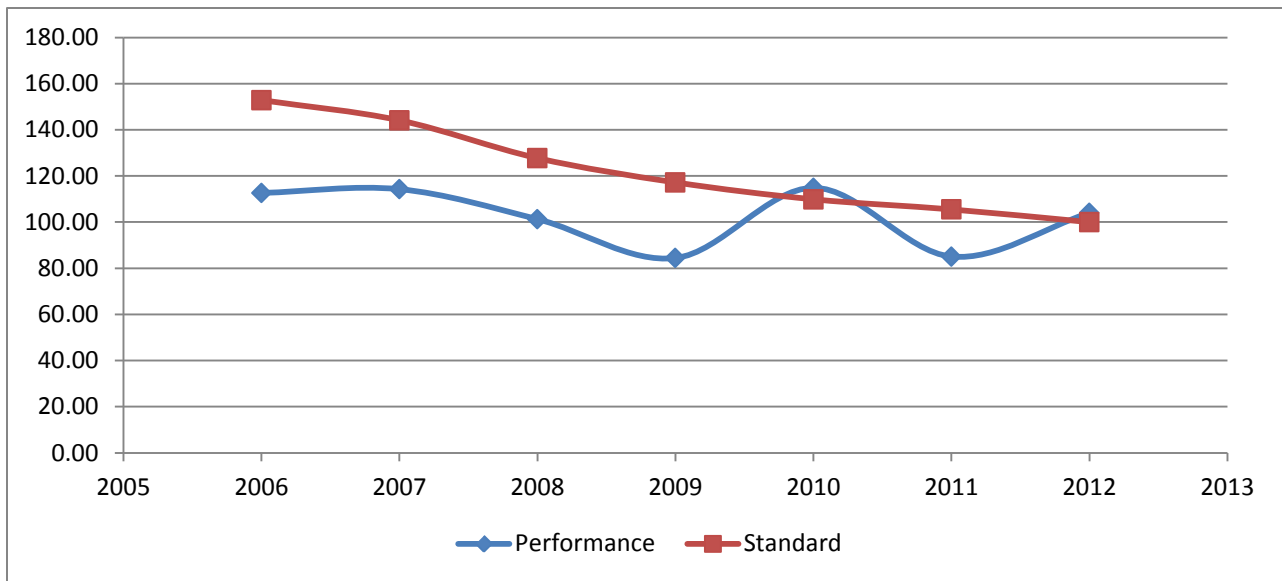
Xcel’s SAIDI for the Metro East work center exceeded the threshold by 13.36 minutes. In addition, CAIDI exceeded the threshold by 21.09 minutes. In examining the outages in the Metro East work center, which caused these thresholds to be exceeded, Xcel identified one event to be noteworthy.

On November 10, 2012 the region experienced a wind and lightning storm. Several poles broke as a result, and the Company took an intentional outage to allow crews to safely fix equipment and

restore the power. This day contributed to 12.12 SAIDI minutes and 10.50 CAIDI minutes. This is more than 90 percent of the SAIDI threshold gap and nearly 50 percent of the CAIDI threshold gap.

In 2012, the storm threshold for Metro East was 97 outages per day. The storm on November 10, 2012 caused 95 outages – narrowly missing exclusion.

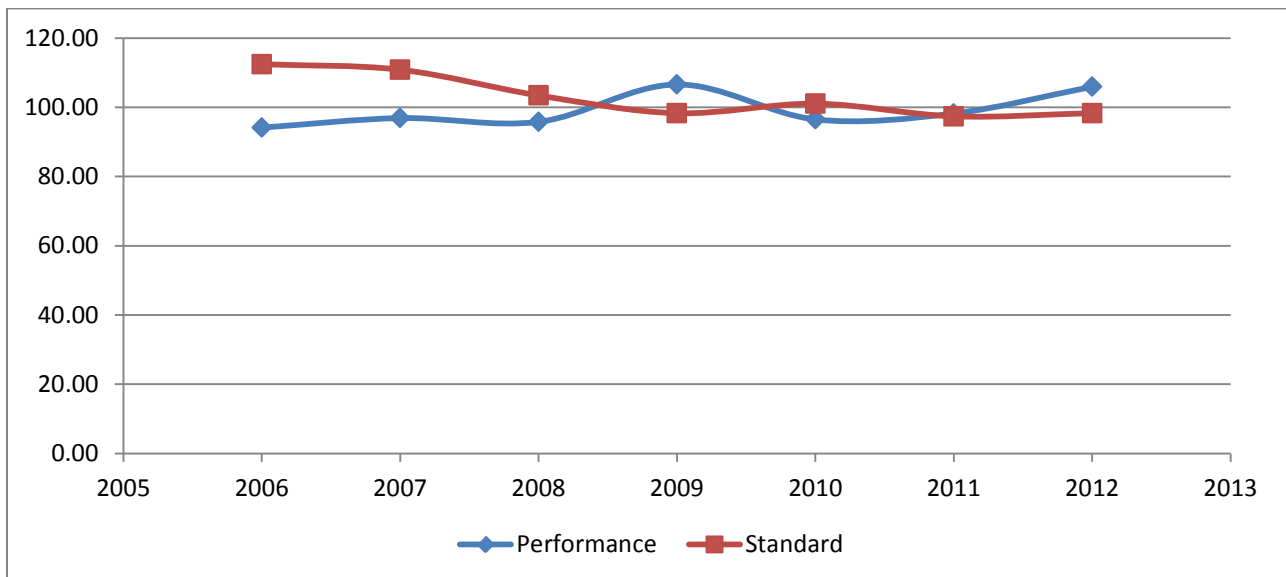
Metro West SAIDI Performance and Standard



Metro West SAIFI Performance and Standard

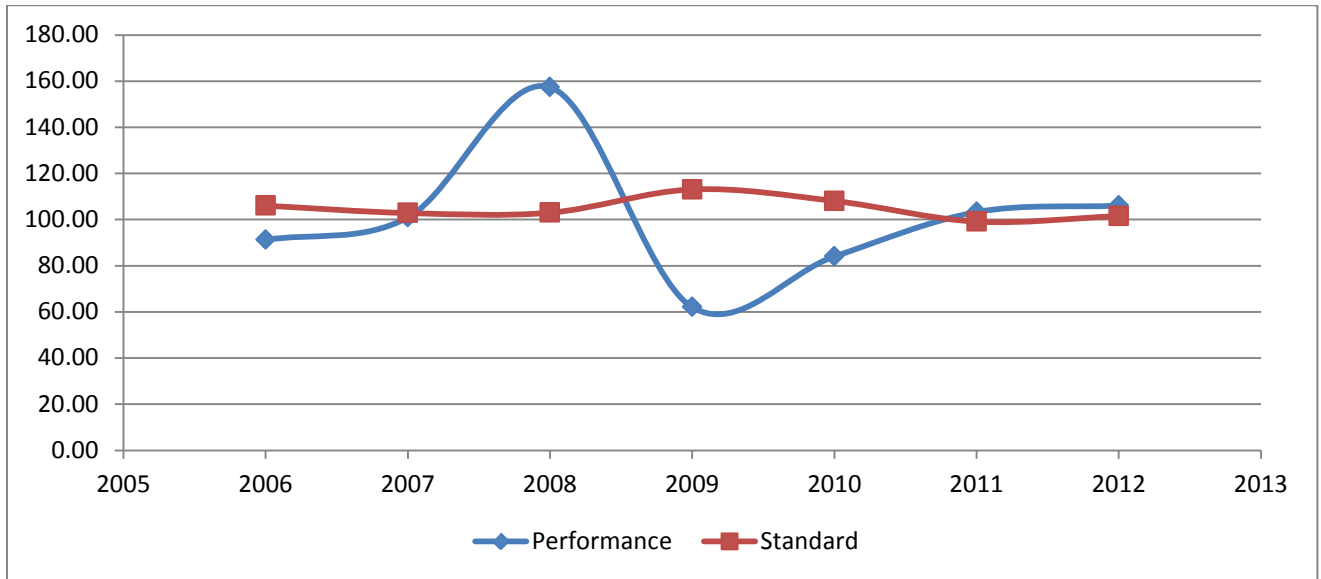


Metro West CAIDI Performance and Standard

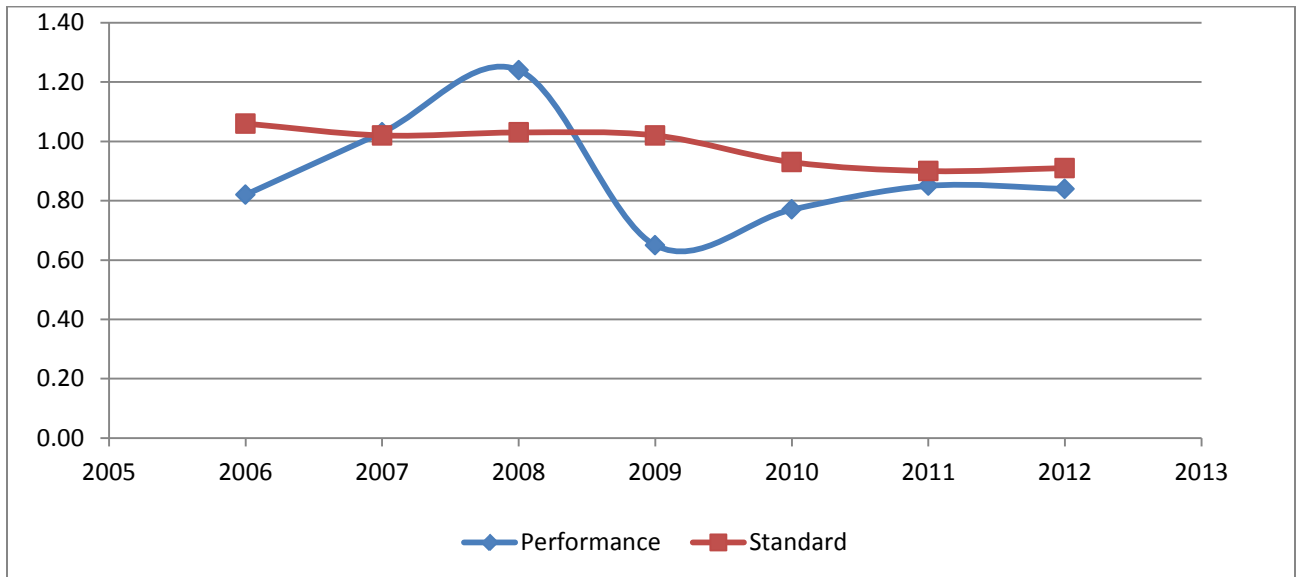


Xcel’s SAIDI performance in the Metro West work center exceeded the threshold by 4 minutes and its CAIDI by 7.64 minutes. Much of this impact can be attributed to six days in the months of June and July. These ranged from events caused by public damage to lighting strikes.

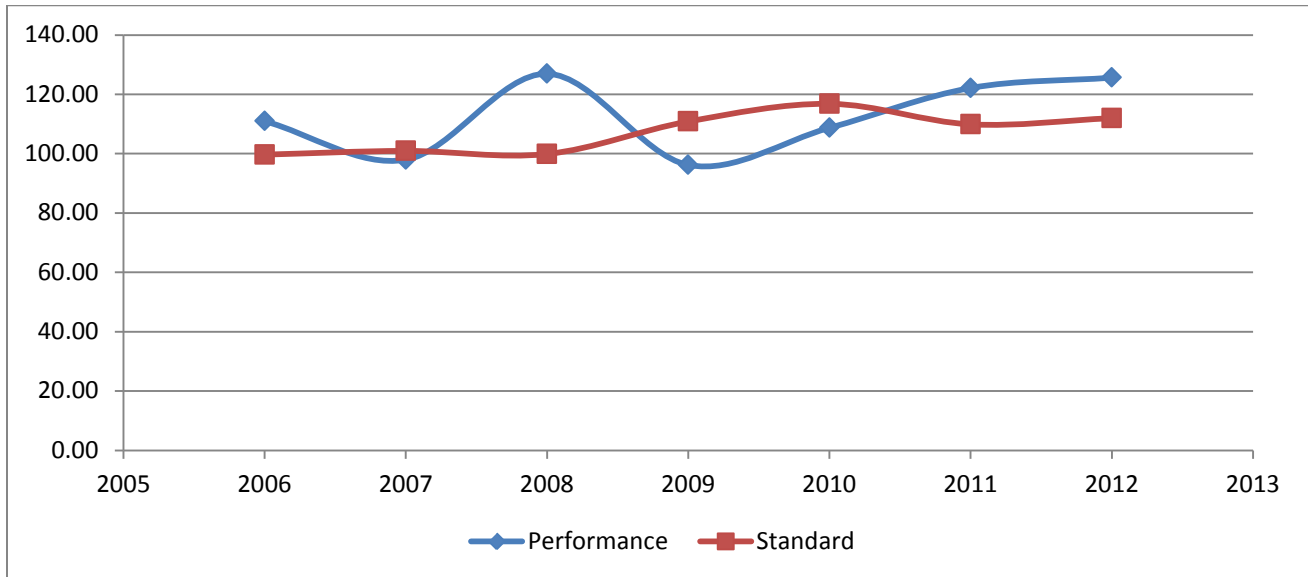
Northwest SAIDI Performance and Standards



Northwest SAIFI Performance and Standards



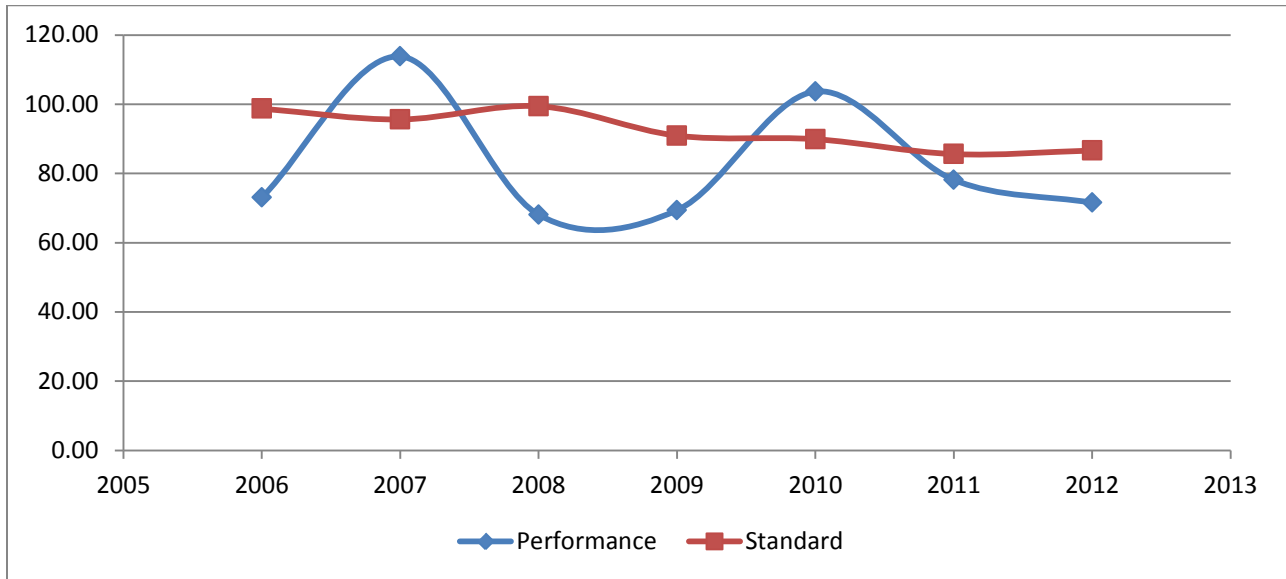
Northwest CAIDI Performance and Standards



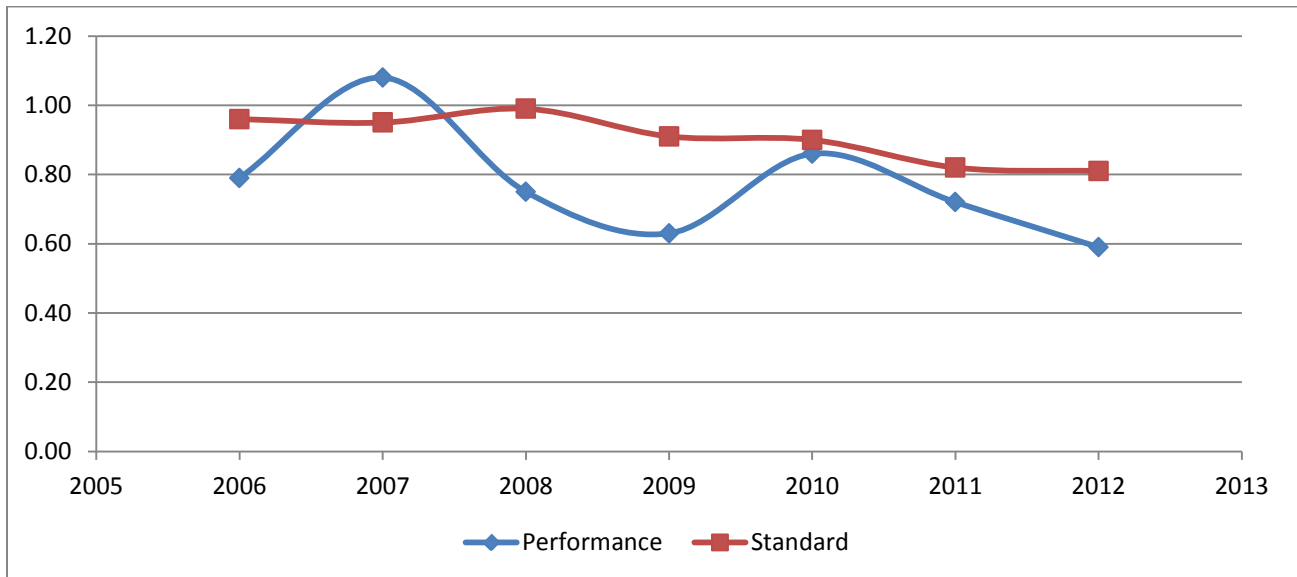
SAIDI and CAIDI for the Northwest work center region exceeded the threshold by 4.53 minutes and 13.65 minutes respectively. Xcel noted that again there was one day that was a major factor in this work center not meeting the standards.

On June 17, 2012, Xcel had two transmission level events caused by a broken pole and a broken cross arm on 69KV lines. These outages contributed to 83 percent of the CAIDI threshold gap and were more than three times over the SAIDI threshold gap or 14.67 SAIDI minutes. Much of the remaining CAIDI impact can be attributed to other storms in the region that did not qualify for a storm day.

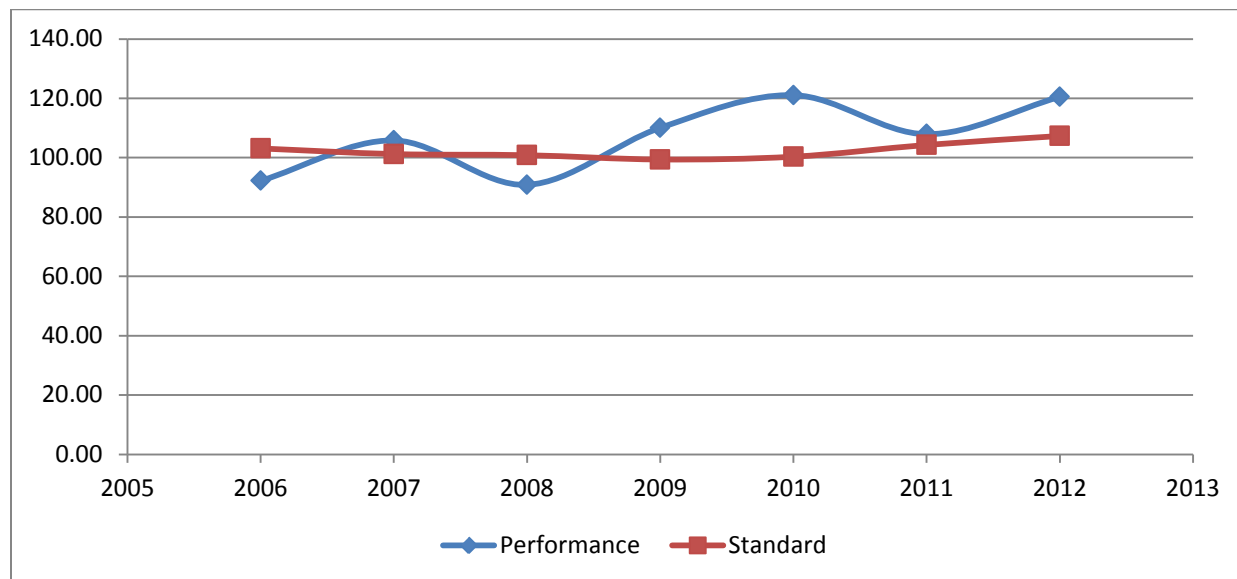
Southeast SAIDI Performance and Standards



Southeast SAIFI Performance and Standards



Southeast CAIDI Performance and Standards



Xcel's CAIDI performance in the Southeast work center exceeded our threshold by 13.19 minutes. As was the case with the Metro West work center, there is not one large event that caused this but several small weather-related events over the course of late spring and early summer.

In Xcel's 2011 Annual Service Quality Report under the Minnesota Rules, the Department requested the Company develop a plan to improve our CAIDI in the Southeast work center. Xcel acknowledged that it did not achieve the standard set by average historical performance in 2012. Xcel reiterated its previous comments that SAIDI is the industry indicator of reliability as it is a system measure, as opposed to CAIDI which is an individual customer indicator. Xcel noted that it achieved the SAIDI standard in 2012 for the Southeast work center by over 15 minutes. Xcel has met the SAIDI goal three out of the last four years.

Staff suggests one additional filing requirement. The issues raised by the city of Minneapolis, such as additional reliability data and information on distributed generation, are not limited by city boundaries. As the agency charged with regulating service quality, the Commission needs to be aware of reliability discussions occurring within the state. Staff recommends that any documentation provided to the city of Minneapolis related to this docket also be filed with the Commission under the current docket. Staff does not contemplate any action being taken on the filings; rather, they would be informational.

Commission Options

- I. Whether the Commission should accept Xcel's Reports on 2012 Results?
 - A. Accept Xcel's April 1, 2013 safety, reliability and service quality reports,

as complying with Minn. Rules, Chapter 7826 and relevant Commission orders.

- B. Do not accept Xcel’s April 1, 2013 safety, reliability and service quality reports, as complying with Minn. Rules, Chapter 7826 and relevant Commission orders.

II. Whether the Commission should Accept Xcel’s proposed reliability standards for 2013?

- A. Accept Xcel’s 2013 proposed reliability standards at the levels indicated below:

Work Center	SAIDI	SAIFI	CAIDI
Metro East	85.44	0.94	90.75
Metro West	97.92	0.98	100.17
Northwest	102.56	0.87	117.94
Southeast	78.16	0.71	109.97

- B. Accept some other reliability standard for 2013.

III. Additional Issues for Reports due April 1, 2014

The Commission could adopt all, some, or none of the following:

- A. Continue to require Xcel to augment their next filing to include a description of the policies, procedures and actions that it has implemented, and plans to implement, to assure reliability, including information on how it is demonstrating pro-active management of the system as a whole, increased reliability and active contingency planning;
- B. Continue to require Xcel to incorporate into its next filing a summary table that allows the reader to more easily assess the overall reliability of the system and identify the main factors that affect reliability;
- C. Continue to require Xcel to report on the major causes of outages for major event days.
- D. Continue to require Xcel to consider other factors, in addition to historical data, on which to base its reliability indices for 2013 in an effort to demonstrate its commitment toward improving reliability performance; and
- E. Require Xcel to continue its efforts in the reporting of major service interruptions to the Commission’s CAO.
- F. Require Xcel to file any documentation provided to the city of Minneapolis related to the issues raised in this docket as an informational filing.

Recommendation

Staff recommends I A, II A, III A, B, C, D, E, and F.