

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

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Meeting Date: **December 4, 2014** .....\*Agenda Item #9

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Companies: Interstate Power and Light Company

Docket No. E001/M-14-282

In the Matter of Interstate Power and Light Company (IPL) 2013 Annual Safety, Reliability, Service Quality Report, and Proposed Annual Reliability Standards for 2014.

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

Should the Commission accept IPL’s proposed annual reliability standards for 2014?

Should require a IPL to file its 2014 safety, reliability and service quality reports on April 1, 2015?

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

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***Relevant Documents***

Commission Order Approving Reports, Setting 2013 Reliability Standards, and Setting Filing Requirements Docket No. E001/M-13-249 ..... January 13, 2014

Interstate Power and Light’s (IPL) Initial Filing 2013 Safety, Reliability and Service Quality Standards Report and Proposed SAIFI, SAIDI, and CAIDI Indices for 2014..... April 1, 2014

Comments of the Minnesota Department of Commerce

Division of Energy Resources. .... June 30, 2014

Reply Comments of Interstate Power and Light ..... July 21, 2014

Response to Reply Comments of the Minnesota Department of Commerce  
Division of Energy Resources. .... September 8, 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**

1. Should the Commission accept IPL's Safety, Reliability, and Service Quality Reports for 2013?
2. Should the Commission accept IPL's proposed annual reliability standards for 2014?
3. Should require a IPL to file its 2014 safety, reliability and service quality reports on April 1, 2015?

### **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, IPL 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 IPL'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 January 13, 2014, in Docket No. E-001/M-13-249, the Commission ordered, in regard to the reliability report due April 1, 2014, that IPL 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. The Company shall incorporate into its next annual 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. The Company shall include in its next annual filing a report on its review of its life extension guidelines with its field engineering and construction crews. The review should ensure that wildlife protection is installed in all projects and that lightning protection is installed as designed by the project engineer.
- d. The Company shall include in its next annual filing the reports required under Minn. R. 7826.0500, subp. 1G and the performance data for its worst-performing circuits, as required under Minn. R. 7826.0500, subp. 1H.

**IPL’S 2013 ELECTRIC SAFETY, RELIABILITY AND SERVICE QUALITY REPORT AND COMMISSION CONSIDERATION OF PROPOSED RELIABILITY STANDARDS FOR 2014**

The Department’s June 30, 2014 comments provide a thorough summary and analysis of IPL’s filing, most of which will not be repeated here. Staff will focus primarily on the Reliability portion of IPL’s report.

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

Work Center	SAIDI		SAIFI		CAIDI	
	Standard	Performance	Standard	Performance	Standard	Performance
Winnebago	59.81	<b>86.44</b>	0.90	0.76	66.17	<b>113.54</b>
Albert Lea	80.30	<b>136.14</b>	1.02	<b>1.16</b>	78.44	<b>117.51</b>

The numbers in bold indicate performance that did not meet the Commission Standard. IPL stated it did not meet the standards for SAIDI, or CAIDI for the Winnebago Zone. It did achieve the the SAIFI standard. It did not achieve the standards for SAIDI, SAIFI, or CAIDI for 2013. Although IPL missed some goals as established in the Commission's Order, IPL strives to provide reliable power to its customers.

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

IPL stated it uses the IEEE 1366 standard for defining a major event, as follows:

1. Assign each outage to the date it started;
2. Calculate daily SAIDI for the five years prior to the current year;
3. Calculate natural log of each daily SAIDI, using the lowest daily SAIDI figure in place of zero, since zero is indeterminate;
4. Calculate mean and standard deviation of log data;
5. Set threshold equal to mean + 2.5 x standard deviation;
6. Convert log threshold back to SAIDI per day threshold; and
7. Exclude events from all days with SAIDI per day over threshold.

The Winnebago zone experienced a major ice storm April 9-12, 2013, accounting for 92 outage events. This event accumulated 13,393,845 outage minutes and 97% of the total 13,858,439 outage minutes for the entire zone. This event qualified for exclusion under the Beta 2.5 method for calculating reliability indices.

In the Albert Lea operating zone, outage events occurring on May 2, 2013 qualified for exclusion under the Beta 2.5 method. On May 2nd a record breaking late season snowstorm created significant damage and outages in the Albert Lea area.

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

#### Albert Lea Zone

IPL did not meet the reliability goals in the Albert Lea operating zone for 2013. IPL attributes the SAIFI result of 1.16 versus the goal of 1.02 to continued use of small duration planned outages to facilitate life extension and substation maintenance work as reported in IPL's 2012 filing.

IPL attributes the SAIDI result of 136.14 versus the goal of 80.3 and the CAIDI result of 117.51 versus the goal of 78.44 partially to the planned outages discussed above. Although total annual outage events are trending downwards over time, longer average repair times for events in 2013 also attributed to IPL missing the SAIDI and CAIDI goals. One factor in the longer repair times was that fewer responders were available due to a number of reasons. IPL has hired four apprentice Line Workers, however, they are not yet qualified to be responders. Three of the four line mechanic apprentices in the zone will be qualified for responding to outage events in late 2014.

Also affecting responder numbers was the extended illness in 2013 for a Journeyman Worker in Albert Lea and unexpected vacancies caused by Journeyman Workers leaving IPL. The journeyman Worker who was ill has returned to full duty and is available to respond to outage events as of January 2014.

### Winnebago Zone

In 2013 IPL met the SAIFI goal but not the SAIDI or CAIDI in the Winnebago Zone. The SAIDI result of 86.44 versus the goal of 59.81 is due largely to two outages in the Wabasso area. One outage was the result of a failed insulator and the second outage was due to a loose wire, both of which have been repaired. In addition, the Wabasso system is presently undergoing reconstruction and reconfiguration that will replace older equipment. Tree trimming has been completed and line construction is scheduled for completion in the summer of 2014. The system upgrades will also provide more flexibility for switching and restoring power to customers should an outage occur.

### *Commission Consideration of IPL's Proposed 2014 Reliability Standards*

IPL agrees with the DOC's recommendations to set IPL's performance standards for 2014 SAIDI, SAIFI, and CAIDI at the same levels as those set for 2008 through 2013.

<b>Work Center</b>	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
Winnebago	59.81	0.90	66.17
Albert Lea	80.30	1.02	78.44

### **DOC**

In the Winnebago work center, IPL has achieved its SAIFI goals six out of the last 10 years. However, the SAIDI goal was only met four times in the past ten years and the CAIDI goal was met only once.

Considering the declining trend in SAIDI performance and the difficulty IPL appears to be having in meeting its CAIDI goals, it appears to the DOC that goals that continue to exert a downward pressure on SAIDI and CAIDI would be more desirable for 2014 than a stricter SAIFI goal. As such, the Department recommends that the Commission set IPL's 2014 goals in the Winnebago work center at the same level as those set for 2008 through 2013.

In the Albert Lea work center, IPL has only achieved its SAIFI goal two times and SAIDI and CAIDI goals three times each over the last ten years. In addition, there appears to be a slight declining trend in SAIFI performance and a more pronounced decline in SAIDI performance since 2004. The 2013 goals if maintained for 2014, would place slightly more downward pressure on SAIDI and SAIFI while maintaining a CAIDI goal closer to the 5-year average. As such, the Department recommends that the goals for the Albert Lea work center be maintained at the same level for 2014 as were approved by the Commission for 2008 through 2013.

The Department recommends that the Commission accept IPL's filing in fulfillment of the requirements of Minnesota Rules, Chapter 7826 and the Commission's January 13, 2014 Order. Additionally, the Department recommends that the Commission set the Company's reliability standards for 2014 as were approved by the Commission for 2008 through 2013.

The Department recognizes that, if the sale of electric assets to SMEC is approved by the Commission and closes by December 31, 2014, beginning in 2015 IPL would no longer be a distribution utility subject to Minnesota Rules Chapter 7826. However, while the next Annual Safety, Reliability, and Service Quality Report is not due until April 1, 2015, the reporting period for that report is calendar year 2014, for which the reliability goals set in this docket apply. If the sale is approved and finalized by December 31, 2014, the Department recommends that, at a minimum, IPL file an informational report by April 1, 2015 containing 2014 safety, reliability, and service quality data, in order to ensure that the Commission is able to review the service provided to Minnesota ratepayers served by IPL during 2014.

### **IPL Reply**

IPL agrees with the Department recommendations to set IPL's performance goals for 2014 SAIDI, SAIFI, and CAIDI at the same level as those set for 2008 through 2013.

With respect to the report to be filed on April 1, 2015, assuming the electric transaction closes on December 31, 2014, IPL's Minnesota retail electric customers would become SMEC customers effective January 1, 2015. Consequently, under this example, IPL would not propose to file an electric service quality report in 2015.

### **Staff Analysis**

Staff appreciates the effort by IPL in its 2013 Annual Safety, Reliability and Service Quality Reports which continues to provide informative data that promotes focused decision making as it relates to reliability.

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.

Staff believes that IPL's April 1, 2014 filing complies with the applicable rules and Commission Order. The purpose of the reliability statutes 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.

Staff concurs with the findings by the DOC and shares the DOC's concern over IPL's reliability



performance since 2003 and that current strategies may not be sufficient to improve IPL's overall performance.

DOC recommended and IPL agreed the Commission adopt the following for 2014 reliability standards:

<b>Work Center</b>	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
Winnebago	59.81	0.90	66.17
Albert Lea	80.30	1.02	78.44

The tables below depicts IPL's past performance and standards since 2003 for Winnebago and Albert Lea work centers:

### Winnebago Work Center

Year	SAIDI		SAIFI		CAIDI	
	Performance	Standard	Performance	Standard	Performance	Standard
2003	53.46	73.72	<b>1.28</b>	0.91	41.69	81.13
2004	44.66	57.13	0.59	1.01	<b>75.39</b>	56.57
2005	<b>95.30</b>	54.34	<b>1.12</b>	0.89	<b>84.80</b>	61.33
2006	29.20	65.27	0.51	0.91	57.70	72.04
2007	<b>76.45</b>	56.55	<b>1.02</b>	0.85	<b>75.10</b>	66.19
2008	49.30	59.81	0.47	0.90	<b>103.99</b>	66.17
2009	32.63	59.81	0.39	0.90	<b>84.59</b>	66.17
2010	<b>110.40</b>	59.81	<b>1.20</b>	0.90	<b>88.74</b>	66.17
2011	<b>90.07</b>	59.81	0.72	0.90	<b>124.40</b>	66.17
2012	<b>99.31</b>	59.81	<b>0.95</b>	0.90	<b>105.03</b>	66.17
2013	<b>86.44</b>	59.81	0.76	0.90	<b>113.54</b>	66.17
2014 Proposed		59.81		0.90		66.17

### Albert Lea Work Center

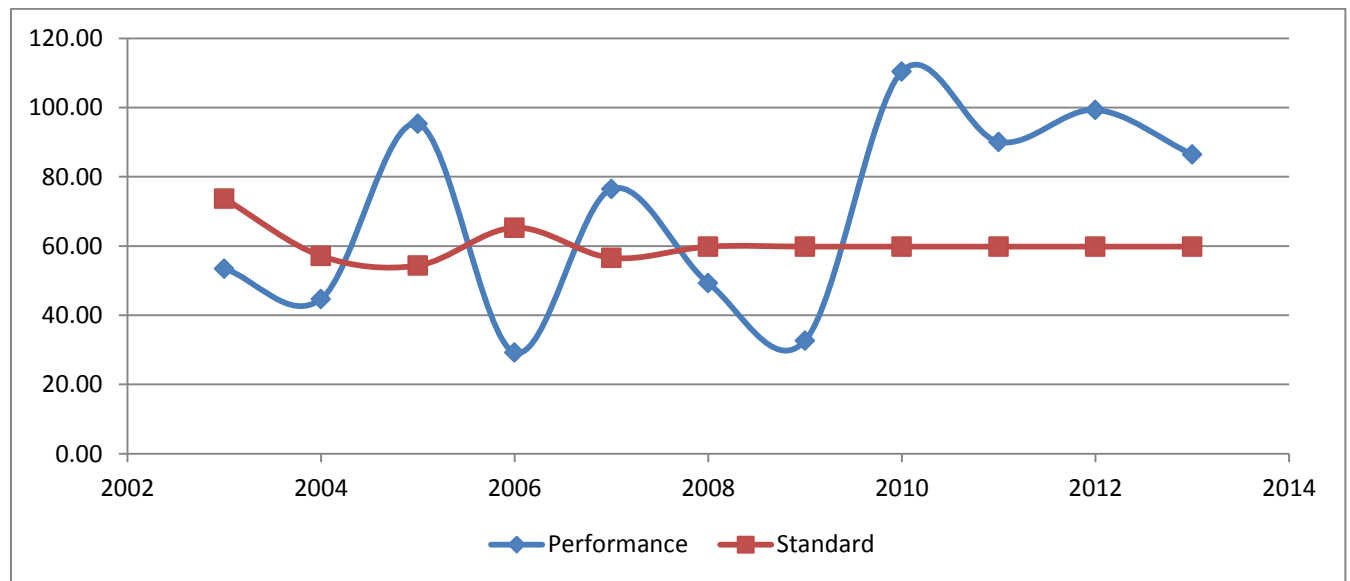
Year	SAIDI		SAIFI		CAIDI	
	Performance	Standard	Performance	Standard	Performance	Standard
2003	72.91	134.90	1.20	1.74	60.45	77.74
2004	<b>60.80</b>	47.58	<b>0.83</b>	0.76	<b>73.10</b>	62.28
2005	<b>101.00</b>	52.28	<b>1.06</b>	0.80	<b>95.70</b>	65.68
2006	<b>89.80</b>	67.75	<b>0.90</b>	0.93	<b>99.70</b>	73.17
2007	77.08	77.39	<b>1.13</b>	0.97	68.25	80.18
2008	<b>115.00</b>	80.30	<b>1.29</b>	1.02	<b>89.30</b>	78.44
2009	68.31	80.30	<b>1.09</b>	1.02	62.52	78.44
2010	<b>125.70</b>	80.30	<b>1.60</b>	1.02	<b>78.90</b>	78.44

2011	<b>81.83</b>	80.30	1.01	1.02	<b>80.81</b>	78.44
2012	75.41	80.30	<b>1.14</b>	1.02	65.98	78.44
2013	<b>136.14</b>	80.30	<b>1.16</b>	1.02	<b>117.51</b>	78.44
2014 Proposed		80.30		1.02		78.44

The numbers in bold indicate performance that did not meet the Commission Standard. As noted by the Department in its Comments, IPL met only 24 out of 66 performance metrics from 2003 to 2013, which represents a 36.4% success rate.<sup>1</sup> For 2013, IPL did meet any of the standards for SAIDI, SAIFI, or CAIDI in the Albert Lea work center. IPL did not meet the standard for SAIDI and CAIDI in the Albert Lea work center. However, it did meet SAIFI in the Winnebago works center.

IPL has not consistently met its targets over the 10 year period. In both work stations, IPL has not shown any significant improvement in SAIDI performance. In fact, the trends in SAIDI performance and standards, observed in the following diagrams, appear to reflect inconsistent reliability performance at least in the Winnebago work center. The Albert Lea work center shows years of achieving the standard and missing the standard. The following two diagrams appear to demonstrate an increasing rate of customer minutes of interruptions per customer over the nine year period.

**Winnebago SAIDI Performance and Standard**



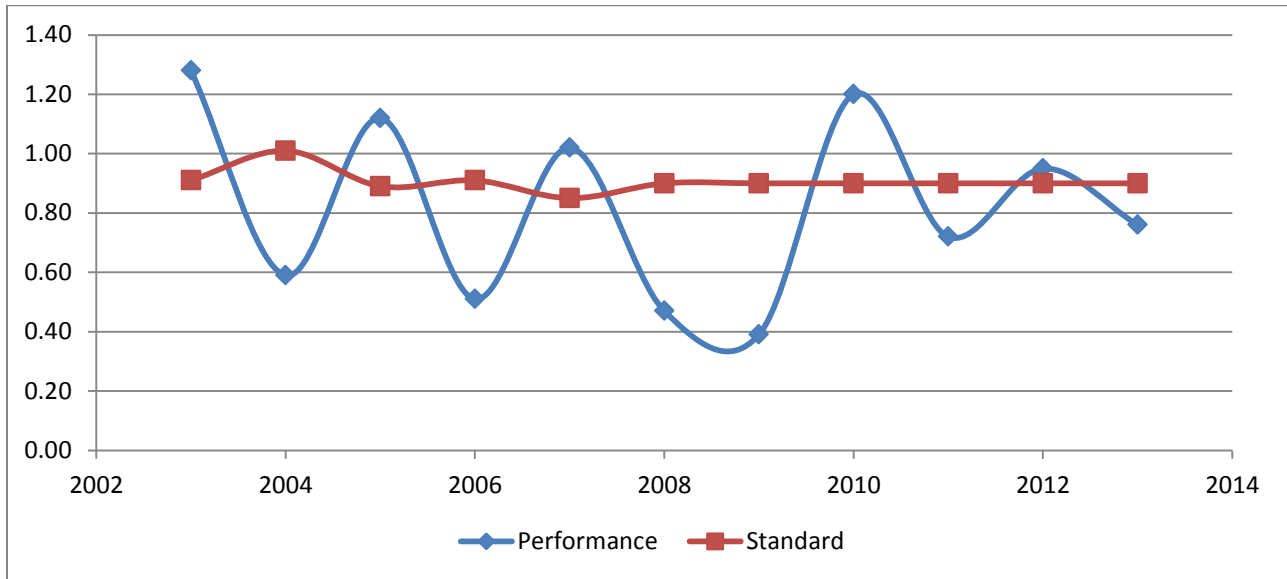
This compares to 73% for MP, 55% for OTP, 58% for NWECC, and 57% for Xcel over similar periods.

**Albert Lea SAIDI Performance and Standard**

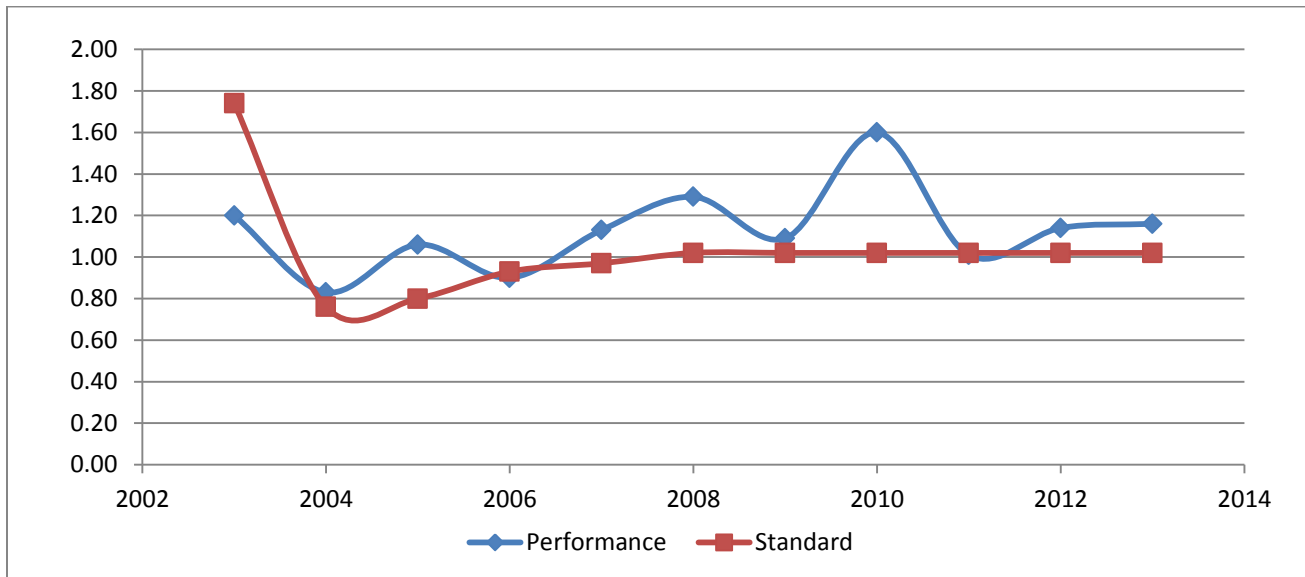


SAIFI Performances and Standards have shown similar trends in both work stations. The diagrams below show no significant improvement in the number of customer outages experienced by the typical customer between 2003 and 2013. Over that time, it appears that IPL has generally had alternating years of achieving and not achieving the standard.

**Winnebago SAIFI Performance and Standards**

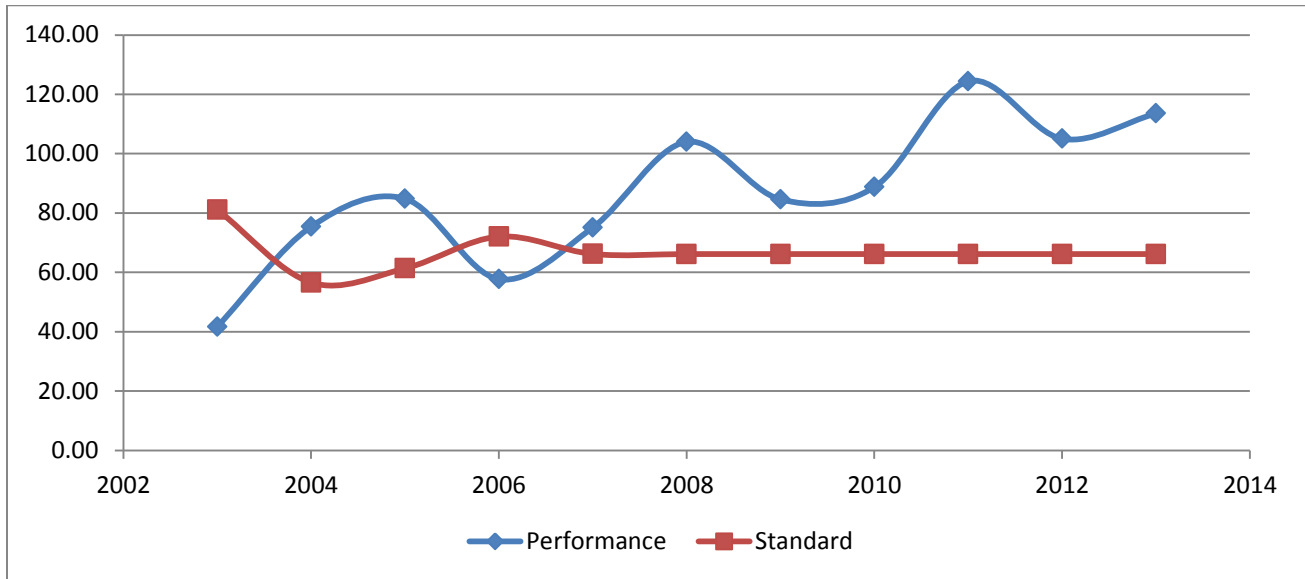


**Albert Lea SAIIFI Performance and Standards**



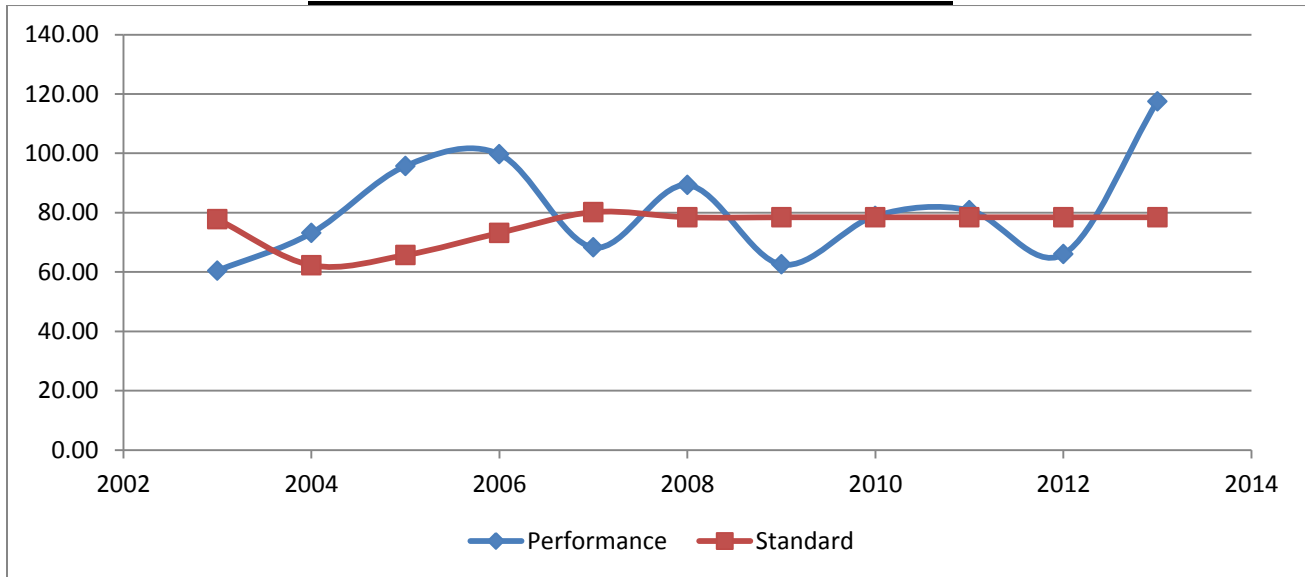
Likewise, for CAIDI performance over the same time period, IPL has demonstrated no significant improvements in customer minutes of interruption per customer interruption. The following diagrams appear to indicate increasing trends in customer minutes of interruption per customer interruption over the ten year period in the Winnebago work center.

**Winnebago CAIDI Performance and Standards**



For the Albert Lea work center, it appears that IPL has generally alternated years of achieving the and not achieving the goal or standard.

**Albert Lea CAIDI Performance and Standards**



Since 2009, IPL has proposed standards based on a methodology that calculates the mean and median of the previous five years of data and also the mean of the previous five years with the highest and lowest figures excluded and then choosing the most favorable customer service standard among the three calculations for each reliability metric. IPL used the same methodology

in proposing reliability standards in 2014.

Had IPL's goals been set at rolling five-year averages since 2009, the Company would have met three additional goals over what was reported. Taking these three hypothetically-met goals into account, IPL's overall success rate in meeting goals since 2004 would have increased to 37%. This would make it appear that the Company's Albert Lea work center reliability has improved in recent history. However, IPL's SAIDI and SAIFI performance in the Albert Lea work center has declined slightly and CAIDI performance has remained relatively stable. The DOC noted that freezing IPL's goals has not always resulted in goals that were harder to achieve than had they been set at the five-year average.

In the Albert Lea work center, IPL has only achieved its SAIFI goal two times and SAIDI and CAIDI goals three times each over the last ten years. In addition, there appears to be a slight declining trend in SAIFI performance and a more pronounced decline in SAIDI performance since 2004. The 2013 goals, if maintained for 2014, would place slightly more downward pressure on SAIDI and SAIFI while maintaining a CAIDI goal closer to the 5-year average. As such, Staff agrees with the DOC's recommendation that the goals for the Albert Lea work center be maintained at the same level for 2014 as were approved by the Commission for 2008 through 2013.

In the Winnebago work center, the DOC illustrated the high performance variability that has occurred in this relatively small. While IPL has achieved its goals six out of the last ten years on SAIFI, the SAIDI goal was only met four times in the past ten years and the CAIDI goal was only met once.

Considering the declining trend in SAIDI performance and the difficulty IPL appears to be having in meeting its CAIDI goals, it appears that goals that continue to exert a downward pressure on SAIDI and CAIDI would be more desirable for 2014 than a stricter SAIFI goal. As such, Staff agrees with the DOC's recommendation that the Commission set IPL's 2014 goals in the Winnebago work center at the same level as those set for 2008 through 2013.

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. Using a five year rolling average provided useful baseline information for initial reports, and as long as performance standards are coming down each year, may continue to be appropriate for setting the performance standards. However, Staff agrees with the Department recommendation to set IPL's 2014 reliability performance standards for SAIDI, SAIFI, and CAIDI at the same level as those set for 2008, 2009, 2010, 2011 2012, and 2013. As noted above, IPL also agreed with the DOC's recommendation in its reply comments.

**Commission Options**

- I. Whether the Commission should accept IPL’s Reports on 2013 Results?
  - A. Approve IPL’s April 1, 2014 safety, reliability and service quality reports, as complying with Minn. Rules, Chapter 7826 and relevant Commission orders.
  - B. Do not approve IPL’s March 30, 2014 safety, reliability and service quality reports, as complying with Minn. Rules, Chapter 7826 and relevant Commission orders.
- II. Whether the Commission should Accept IPL’s proposed reliability standards for 2014?
  - A. Approve DOC’s 2014 proposed reliability standards at the levels indicated below:

<b>Work Center</b>	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
Winnebago	59.81	0.90	66.17
Albert Lea	80.30	1.02	78.44

- B. Approve reliability standards based on IPL’s previous five years of performance calculated by determining the mean, the median and the mean with the highest and lowest performance indices excluded for 2014.

<b>Work Center</b>	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
Winnebago	83.80	0.80	102.4
Albert Lea	81.80	1.13	75.20

- III. Should require a IPL to file its 2014 safety, reliability and service quality reports on April 1, 2015?<sup>2</sup>
  - A. Require IPL to file its reports as usual.
  - B. Require IPL to file an informational filing
  - C. Do not require IPL to make a filing.

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2 The Commission is currently considering IPL’s request for approval of the asset purchase and sale agreement between Interstate Power and Light Company and Southern Minnesota Energy Cooperative, Docket No. E-001 et.al./PA-14-322 (sale docket). At this time, it appears unlikely to Staff that this matter will achieve a final resolution before December 31, 2014. The DOC’s October 6, 2014 comments in that docket state that service quality may improve as a result of the sale. In the event the Commission wants to require service quality compliance filings sometime after the sale to determine if service quality has improved, that decision can be made as part of the record in the sale docket.

***Recommendation***

Staff recommends I A, II A, III A.