

Illinois Commerce Commission
Assessment of
Interstate Power and Light Company's
Annual Reliability Report and
Electric Service Reliability
For Calendar Year 2004

Pursuant to 83 Ill. Adm. Code 411.140

2005

1. Executive Summary

Pursuant to Section 16-125 of the Illinois Public Utilities Act and the Commission's electric reliability rules as found in 83 Illinois Administrative Code, Part 411 ("Part 411") Interstate Power and Light Company ("IPL"), Alliant Energy Corporation's utility subsidiary, filed its annual electric reliability report for the 2004 calendar year. The annual reliability report IPL filed for calendar year 2004 was organized to sequentially follow the reporting requirements of Part 411, and complied with the requirements found therein.

Though most of IPL's customers are in Iowa, IPL also supplies electricity to customers in the northwestern corner of Illinois. For 2004, IPL's system reliability indices continued to be some of the lowest (best) among reporting utilities. IPL's system average interruption frequency index ("SAIFI"), customer average interruption frequency index ("CAIFI"), and customer average interruption duration index ("CAIDI") all improved from 2003 values. These improved indices show that IPL's customers, on average, experienced fewer and shorter interruptions in 2004. Staff found that IPL's plan to maintain or improve reliable service that it included in its 2004 reliability report was acceptable.

During the summer of 2004, Staff inspected three distribution circuits in IPL's Illinois jurisdiction: one in IPL's Clinton Zone and two in its Dubuque Zone. Staff noted that IPL had done a good job keeping the trees trimmed from the distribution circuits that Staff inspected except for some line sections on Circuit ELIZ8372 near the substation. Staff was also pleased to find that IPL had installed animal guards and tap fusing throughout the circuits Staff inspected. Staff observed one National Electrical Safety Code clearance violations that IPL promptly corrected. Staff conveyed its findings from the circuit inspections to IPL.

Though IPL's distribution facilities performed well during 2004, and most of its customers experienced reliable service, Staff was concerned that IPL had allowed trees to contact its lines near the substation outlet of a 2004 worst performing circuit, and that it had allowed high weeds to grow around its facilities within its Mt. Carroll Substation.

Among its recommendations, Staff suggests IPL: conduct more frequent distribution line inspections with prompt remedial action where appropriate; keep vegetation away from its lines and outside its substations; and expand its use of overhead fault indicators on circuits with cross-country line sections.

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2. Introduction

This document assesses the reliability report that Interstate Power and Light Company ("IPL") filed, and evaluates IPL's reliability performance for the 2004 calendar year.

Beginning with the year 1999 and at least every three years thereafter, Section 411.140 requires the Commission to assess the annual reliability report of each jurisdictional entity and evaluate the entity's reliability performance. Section 411.140 requires the Commission evaluation to:

- A) Assess the reliability report of each entity.
- B) Assess the jurisdictional entity's historical performance relative to established reliability targets.
- C) Identify trends in the jurisdictional entity's reliability performance.
- D) Evaluate the jurisdictional entity's plan to maintain or improve reliability.
- E) Identify, assess, and make recommendations pertaining to any potential reliability problems and risks that the Commission has identified as a result of its evaluation.
- F) Include a review of the jurisdictional entity's implementation of its plan for the previous reporting period.

3. Customers and Service Territory

IPL provided electric service to approximately 10,480 customers in Jo Daviess, Carroll, and Whiteside counties, in the northwest corner of Illinois. The bulk of IPL's customers are in Iowa, and IPL has additional electric customers in Minnesota.

4. Description of Distribution System

IPL's Illinois jurisdiction consists of parts of its Dubuque Zone to the north and parts of its Clinton Zone to the south. IPL's Dubuque and Clinton Zones also extend into Iowa. IPL's Illinois facilities include 3 transmission and 18 distribution substations and 38 distribution circuits consisting of nearly 600 miles of line. IPL also operates and maintains 34kV, 69kV, and 161kV lines in Illinois to supply its distribution substations.

Subsection 411.120(b)(3)(G) requires each utility to report on the age and current condition of its distribution equipment. IPL stated that its records indicate the average age of its 15,900 distribution poles in Illinois is 13 years, and that none are over 50 years old. IPL also stated its 71 miles of underground cable in Illinois has an average age of 8 years. IPL asserts both its overhead and underground distribution systems are in good condition.

5. Assessment of Company's Reliability Report

Subsection 411.120(b) requires each non-exempt jurisdictional entity to file an annual reliability report for the previous calendar year by June 1 of the current year. Section 411.160 specifies that both a paper copy and an electronic copy be filed. IPL filed a paper copy of its reliability report by June 1, 2005, and in response to Staff's request,

filed an electronic copy on June 8. IPL's 2004 reliability report contained all the information Subsection 411.120(b) requires.

6. Historical Performance Relative to Established Reliability Targets

Subsections 411.140(b)(4)(A-C) establish electric service reliability targets that jurisdictional entities (utilities) must strive to meet. These targets specify limitations on customer interruptions as well as hours of interruption that a utility must strive not to exceed on a per customer basis. Subsection 411.120(b)(3)(L) requires each utility to provide a list of every customer, identified by a unique number, who experienced interruptions in excess of the service reliability targets, the number of interruptions and interruption duration experienced in each of the three preceding years, and the number of consecutive years in which the customer has experienced interruptions in excess of the service reliability targets.

In April 2004, all regulated Illinois electric utilities agreed to report on all interruptions (controllable and uncontrollable) in relation to the service reliability targets for the reporting periods of 2003 through 2007, and to include the specific actions, if any, that the utility plans or has taken to address the customer reliability concerns. The customer service reliability targets are listed in Table 1:

Table 1: Service Reliability Targets

Immediate primary source of service operation voltage	Maximum number of interruptions in each of the last three years	Maximum hours of total interruption duration in each of the last three years
69kV or above	3	9
Between 15kV & 69kV	4	12
15kV or below	6	18

IPL reported that none of its customers experienced interruptions in excess of the service reliability conditions described by the targets.

7. Analysis of Reliability Performance

Reliability indices can be used to compare the reliability performance of various utilities, and provide an indication of whether a given utility's performance is improving or degrading over time. Since each reporting utility uses its own reporting and recording methods, direct reliability index comparisons between utilities are not exact, but can still be informative. When comparing the indices reported by all the utilities that filed reliability reports for 2004, Staff observed:

- IPL's SAIFI of .64 was the 2nd lowest reported for 2004: about 60% lower than the average of the values reported by the other eight utilities.
- IPL's CAIDI of 77 was the 2nd lowest reported for 2004: about 56% lower than the average of the values reported by the other eight utilities.
- IPL's CAIFI of 1.40 was the 2nd lowest reported for 2004: about 35% lower than the average of the values reported by the other eight utilities.

Table 2 (a-c) shows the SAIFI, CAIDI, and CAIFI indices for 2004 as submitted by each reporting utility. Each index table is sorted from best to worst:

Table 2 (a-c): Year 2004 Reliability Indices for Reporting Utilities

a) SAIFI		b) CAIDI		c) CAIFI	
UTILITY	SAIFI	UTILITY	CAIDI	UTILITY	CAIFI
South Beloit	0.61	MidAmerican	70	South Beloit	1.35
IPL	0.64	IPL	77	IPL	1.40
ComEd	1.21	South Beloit	96	ComEd	2.00
AmerenCILCO	1.45	ComEd	128	AmerenCIPS	2.01
AmerenIP	1.49	AmerenCIPS	143	AmerenCILCO	2.03
AmerenCIPS	1.66	Mt. Carmel	177	AmerenUE	2.05
AmerenUE	1.69	AmerenCILCO	247	AmerenIP	2.26
MidAmerican	2.03	AmerenIP	268	MidAmerican	2.72
Mt. Carmel	2.69	AmerenUE	278	Mt. Carmel	2.86

$$\text{SAIFI} = \frac{\text{Total \# Customer Interruptions}}{\text{Total \# Customer Served}}$$

$$\text{CAIDI} = \frac{\text{Sum of all Interruption Durations}}{\text{Total \# Customer Interruptions}}$$

$$\text{CAIFI} = \frac{\text{Total \# Customer Interruptions}}{\text{Total \# Customers Affected}}$$

IPL had no customers receiving power from an alternative retail electric supplier ("ARES") during 2004, so a comparison of interruption frequency and duration for customers buying from IPL versus buying from an ARES is not feasible.

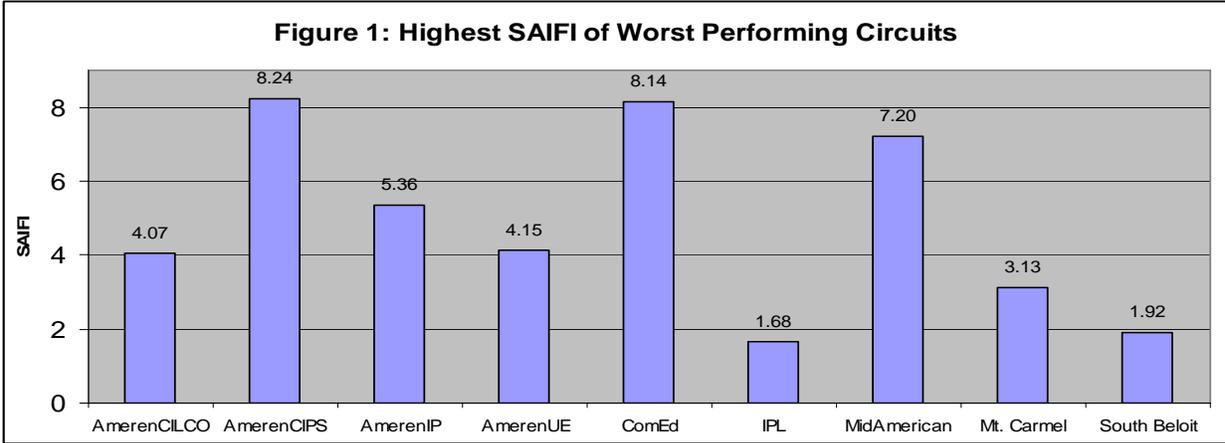
The results of an annual independent survey indicate that IPL's residential customers gave IPL a reliability score of 8.81 out of 10, and its non-residential customers gave IPL a reliability score of 8.93 out of 10. IPL stated that during 2004 it received three reliability complaints from Illinois customers relating to outage frequency.

Worst Performing Circuits

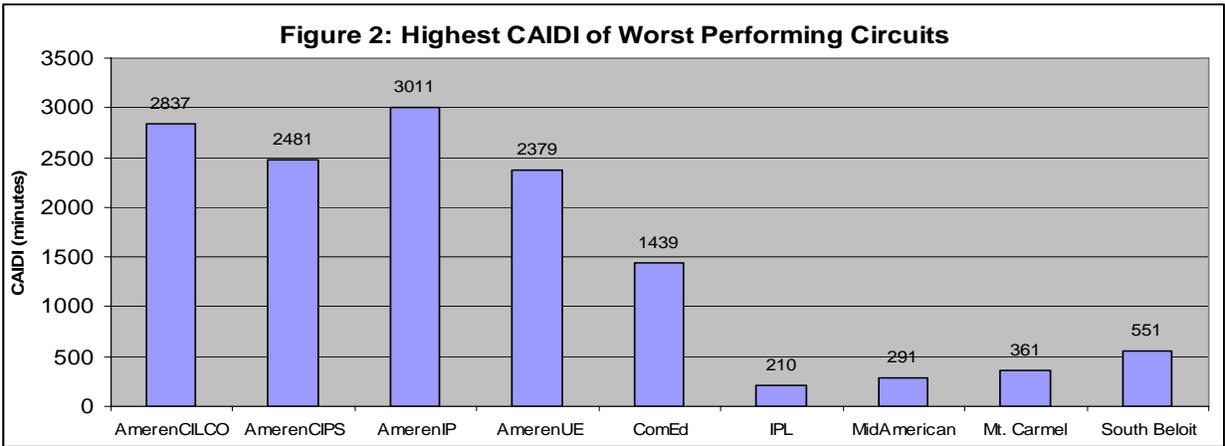
Section 411.120 requires utilities to report worst performing circuits and state corrective actions taken or planned to improve the performance of those circuits. Worst performing circuits are the 1% of circuits for each reporting utility that had the highest SAIFI, CAIDI, and CAIFI during the report year. Due to the relatively small number of circuits within IPL's operating area, IPL reported only six worst performing circuits: three circuits with the worst SAIFI, CAIDI, or CAIFI from its Dubuque Zone, and three from its Clinton Zone.

A utility must report worst performing circuits even if all its circuits performed well during the year: the Part 411 requirement is simply that the utility report its circuits that performed the worst based on each index. Therefore, comparing the index values for worst-case circuits from utility to utility can be useful when attempting to assess the relative performance of several utilities.

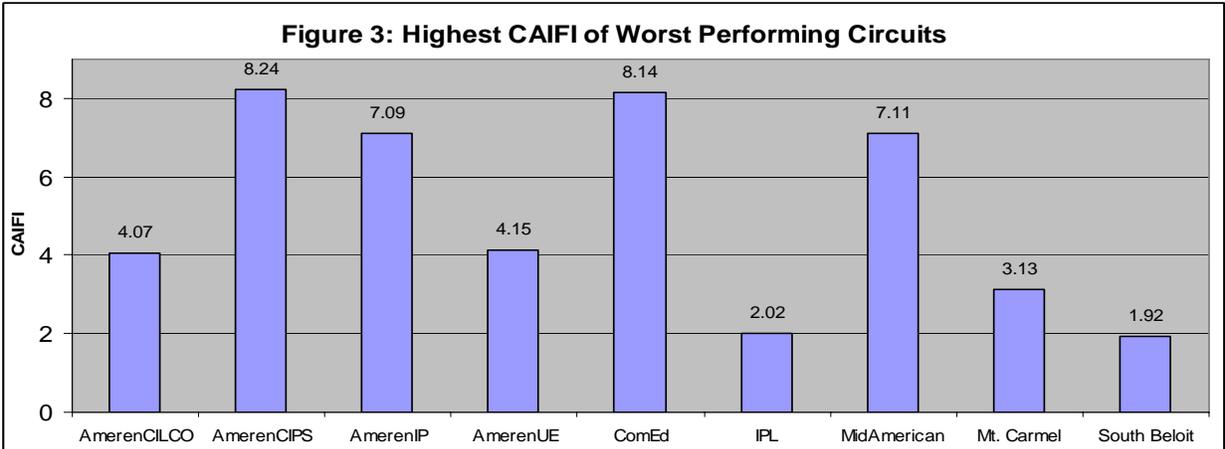
- The highest values of SAIFI reported for an individual distribution circuit during 2004 ranged from 1.68 (IPL) to 8.24 (AmerenCIPS), as illustrated by Figure 1. IPL's highest SAIFI for an individual circuit in 2004 was the lowest value (best) reported.



- The highest value of CAIDI reported for an individual distribution circuit during 2004 ranged from 210 (IPL) to 3011 (AmerenIP), as illustrated by Figure 2. IPL's highest CAIDI for an individual circuit in 2004 was the lowest (best) value reported.



- The highest value of CAIFI for an individual distribution circuit during 2004 ranged from 1.92 (South Beloit) to 8.24 (AmerenCIPS), as illustrated by Figure 3. IPL's highest CAIFI for an individual circuit in 2004 (2.02) was the 2nd lowest (best) value reported.



IPL included statements in its reliability report regarding the operating and maintenance history of its circuits designated as worst performing circuits during 2004, and the corrective actions taken in response to interruptions on these circuits. Given the nature of the interruptions, Staff agrees with IPL that the corrective actions taken at the time of service restoration were adequate.

Staff's Circuit Inspections

During June of 2005, Staff inspected three of IPL's distribution circuits that were either worst performing circuits during 2004, or had SAIFI indices that were higher than IPL's average for the year. An IPL representative accompanied Staff during inspection of Circuit MTCL8114 (Clinton Zone) on June 21, and inspection of Circuits GALW8314 and ELIZ8372 (Dubuque Zone) on June 22.

Staff noted relatively few threats to reliable service on the three circuits inspected. The items Staff did note were sent to IPL as an attachment to a June 29, 2005 email (see Attachment A). Additional information regarding each of the circuits that Staff inspected follows:

- *Circuit MTCL8114 (13.8 kV): (SAIFI=1.37; CAIDI=108; CAIFI=1.95)*

Circuit MTCL8114 is a fairly short circuit that serves part of the Community of Mount Carroll as well as rural areas to the west. In addition to being a worst performing circuit in 2004, MTCL8114 had higher than average SAIFI and CAIFI values during both 2002 and 2003. Much of this distribution circuit's main-feeder is built under the transmission line and/or along railroad right-of-way. In addition to six weather related interruptions on the circuit, IPL reported 3 animal-related interruptions, 2 interruptions caused by failure of overhead equipment, and 1 interruption caused by the public. IPL indicated it completed several improvement projects on Circuit MTCL8114 during the past few years, including replacing poles, adding fuses, and replacing lightning arresters. IPL stated it has no additional projects planned for the circuit at this time. Tree trimming on Circuit MTCL8114 was last completed in 2003, and is scheduled again for 2007.

Staff observed trees close to the distribution lines in only a couple locations, and none contacting, but was concerned that the source substation for the circuit was overgrown with weeds (see Photo 1). Such a condition could be an impediment to IPL's employees trying to work inside the substation to restore service during an interruption. Along the distribution circuit, the very few visible threats to reliable service that Staff observed included a splitting cross arm, a lightning damaged pole top, and two damaged down guys. Generally the circuit appeared to be in good shape, and Staff saw no reason to expect it to be a worst performing circuit in 2005.

Photo 1: Weeds Growing within IPL's Mt. Carroll Substation (MTCL8114)



- *Circuit GALW8314 (13.8 kV): (SAIFI=1.32; CAIDI=123; CAIFI=1.43)*

Many of the facilities that make up Circuit GALW8314 are not accessible from roads because the distribution facilities are routed cross-country to supply customers in the rural rolling areas north of Galena. Staff inspected much of the line through binoculars, and some portions were not inspected at all. Though it was not listed as a worst performing circuit in 2004, Circuit GALW8314's SAIFI was higher than IPL's average. Circuit GALW8314 was a worst performing circuit due to SAIFI during 2003 and due to CAIDI in 2002. IPL reported 11 sustained interruptions on this circuit during 2004: 3 were due to trees, 2 were animal related, 2 were weather related, 1 was due to overhead equipment failure, 1 due to overload, and 2 were due to unknown causes. IPL stated it plans no major improvements for this circuit, but indicated that tree trimming was completed in 2004, and will be performed again in 2008.

When inspecting GALW8314, Staff observed only one tree contact. Other facility problems Staff observed included 2 failing cross arms, 3 deteriorated pole-tops (see Photo 2), and several adjacent poles on a cross-country line section that were leaning fairly severely. Though some facilities on this circuit appeared to be quite old, the circuit appeared to be well maintained, with good use of animal guards. Staff noted hit and miss lightning arrester coverage, with signs of minor lightning damage on several poles. This circuit might benefit from more arresters. Staff also believes GALW8314 would be a good circuit on which to install overhead fault indicators since much of it was constructed away from roadways and would be hard to patrol when trying to locate an outage cause.

Photo 2: Deteriorated pole top (GALW8314)



- *Circuit ELIZ8372 (SAIFI=1.30; CAIDI=9909; CAIFI=1.51)*

Circuit ELIZ8372 (13.8 kV) supplies a mostly rural area east of the community of Elizabeth. It was a worst performing circuit during 2004 due to CAIDI, and had a SAIFI that was higher than average in 2002. Of the 8 interruptions on this circuit during 2004, 4 were weather related, 2 were due to trees, and 2 were due to unknown causes. IPL has no plans for major improvements to this circuit. Tree trimming was last completed during 2003, and is scheduled again in 2007.

During its inspection Staff observed seven locations where trees were contacting the power lines (Photo 3): many more than on the other IPL circuits Staff inspected. Some of these locations were near the substation outlet. Staff also noted 4 deteriorated pole tops (Photo 4), and a span with inadequate ground clearance. Staff was pleased with IPL's promptness in reporting it had removed enough slack from the primary and neutral at this location so that National Electrical Safety Code requirements were met. Staff believes mid-cycle tree trimming and selectively installing overhead fault indicators would improve the reliability of this circuit.

Photo 3: Tree into primary (ELIZ8372)



Photo 4: Deteriorated Pole Top (ELIZ8372)

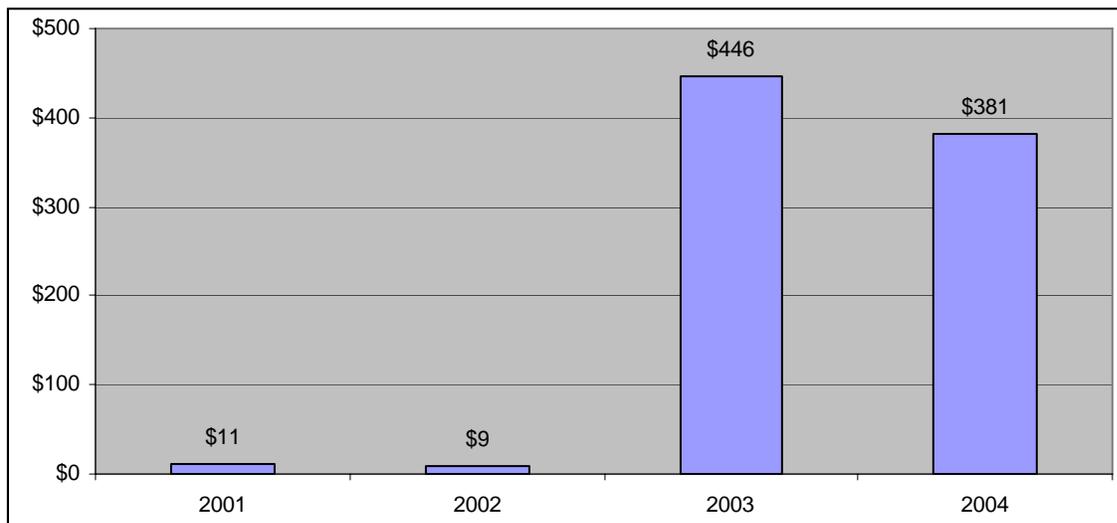


Tree Trimming:

IPL completed tree trimming on nearly all its circuits during 2003 and 2004. The few tree contacts Staff noted during its 2005 inspections of IPL's circuits appeared to be due to new growth on fast-growing trees, though Staff was concerned that several of these tree contacts were near the substation outlet of Circuit ELIZ8372. IPL indicated it has been trimming trees along its circuits on a four-year cycle.

IPL's annual tree trimming budget fluctuates dramatically due to IPL's practice of trimming trees along most of its Illinois distribution circuits in two consecutive years, then focusing on mid-cycle trimming for the next two years. IPL indicated that in 2004 it trimmed trees along 17 circuits, compared to 19 circuits in 2003, 2 circuits in 2002, and 2 circuits in 2001. Figure 4 illustrates IPL's expenditures for tree trimming for the years 2001-2004.

Figure 4: IPL's Distribution Tree Trimming Expenditures (\$ X 1000)



According to data in IPL's reliability report, IPL's customers experience 34 tree related interruptions during 2004: a reduction from 46 in 2003. In addition, interruptions categorized as unknown, and weather-related, both of which Staff believes are often tree-related, decreased slightly in 2004. Other than the few exceptions previously mentioned, including the trees contacting Circuit ELIZ8372 near the substation outlet, Staff was generally pleased with IPL's tree trimming efforts.

8. Trends in Reliability Performance

IPL's reliability indices for 2004 compared to 2003 indicate that, on average, IPL's customers experienced fewer and shorter interruptions during 2004.

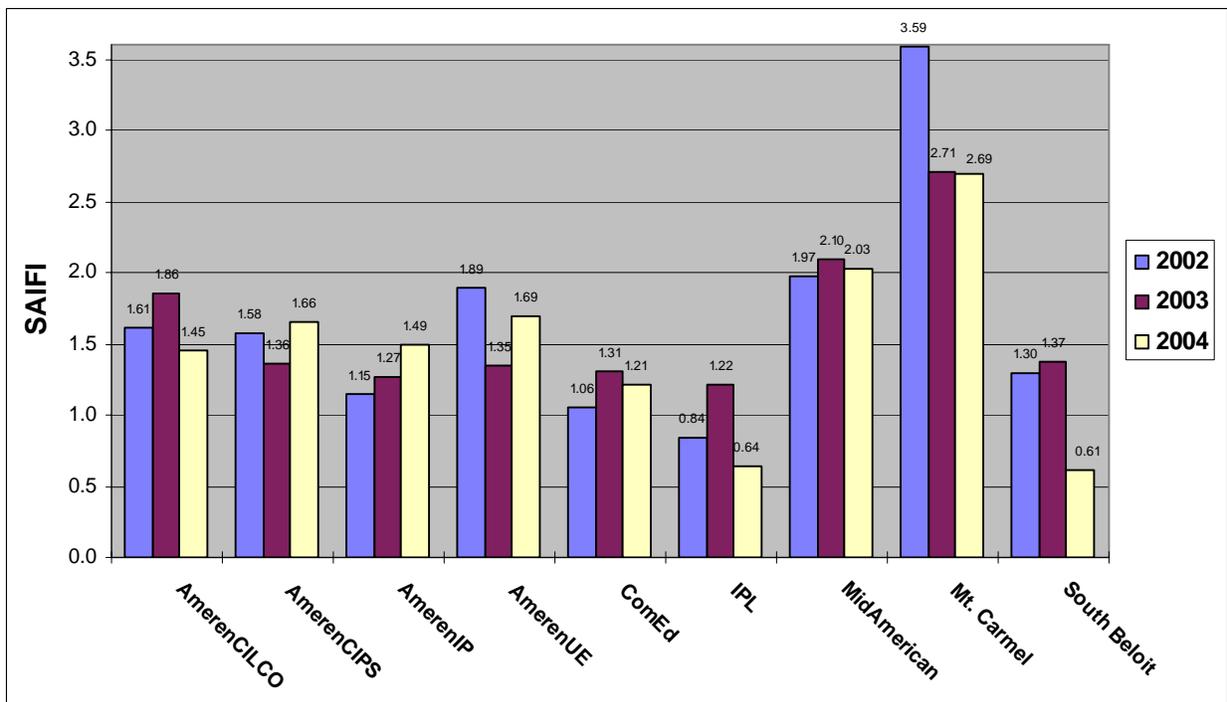
A comparison between the changes in IPL's 2004 reliability indices to changes in the average of the 2004 indices from all reporting utilities illustrates IPL's excellent reliability performance during 2004:

- IPL's SAIFI decreased 48%; the average of the SAIFI values from all reporting utilities decreased 7%.
- IPL's CAIDI decreased 23%; the average of the SAIFI values from all reporting utilities increased 3%.
- IPL's CAIFI decreased 20%; the average of the SAIFI values from all reporting utilities decreased 7%.

IPL's performance improvements noted above are based upon IPL's 2003 reliability indices which were already better than those reported by most other utilities.

➤ SAIFI: Figure 5 shows 2002-2004 SAIFI values for reporting electric utilities:

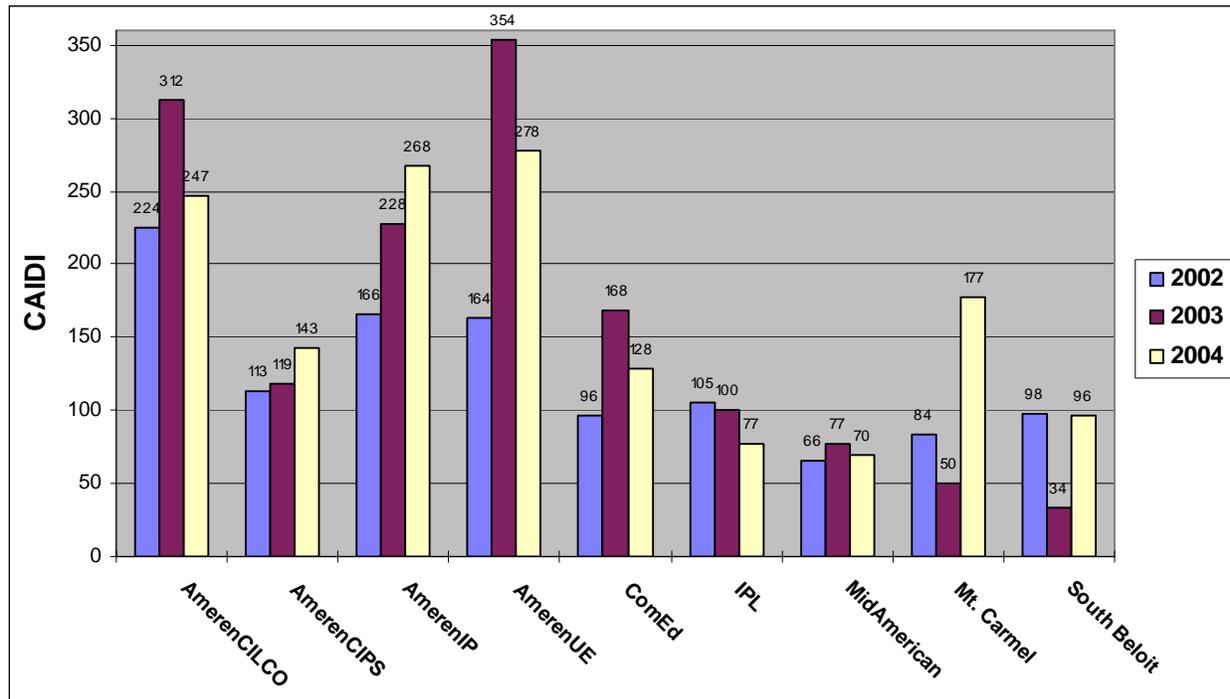
Figure 5: SAIFI by Utility 2002-2004



- In 2002, IPL's SAIFI was the lowest (best) reported: about 53% lower than the average of the SAIFI values reported by the eight other reporting utilities (IPL's 2002 SAIFI=.84).
- In 2003, IPL's SAIFI increased approximately 45%, but was still the lowest reported: about 27% lower than the average of the SAIFI values reported by the eight other reporting utilities (IPL's 2003 SAIFI=1.22).
- In 2004, IPL's SAIFI decreased approximately 48%, and was the second lowest value reported: about 60% lower than the average of the SAIFI values reported by the eight other reporting utilities (IPL's 2004 SAIFI=.64).

➤ CAIDI: Figure 6 shows 2002-2004 CAIDI values for reporting electric utilities:

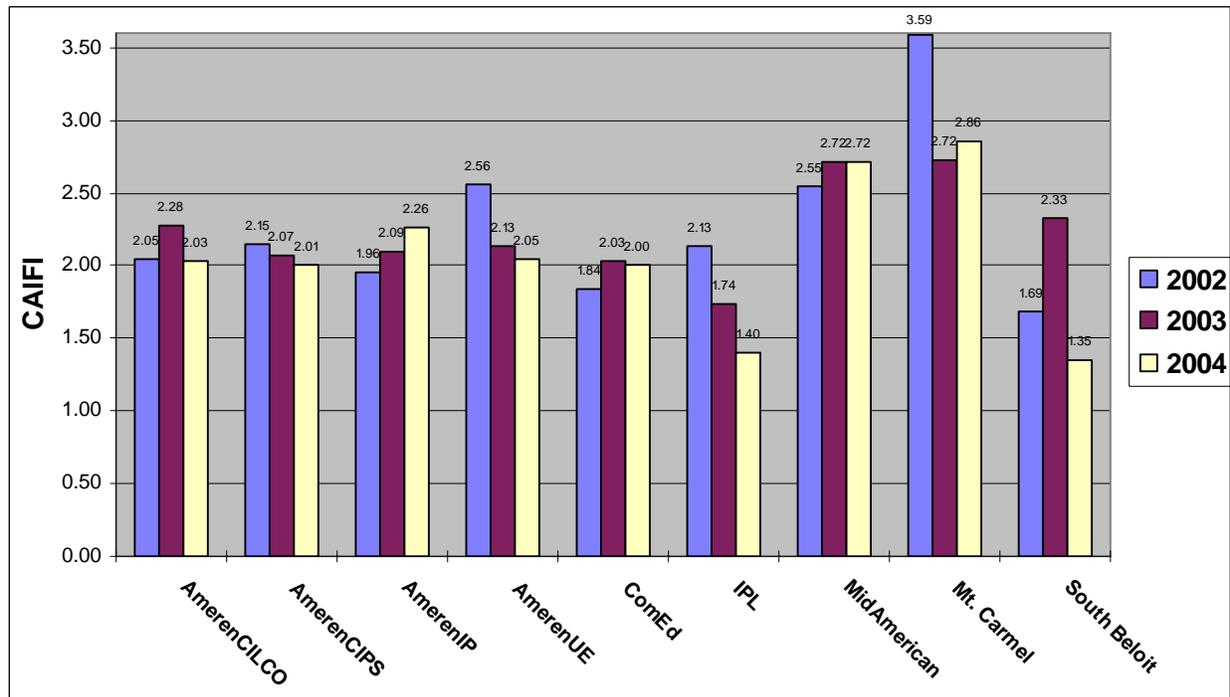
Figure 6: CAIDI by Utility 2002-2004



- In 2002, IPL's CAIDI was approximately 17% lower (better) than the average of the CAIDI values reported by the eight other reporting utilities (IPL's 2002 CAIDI=105).
- In 2003, IPL's CAIDI decreased by approximately 4%, and was about 40% lower than the average of the CAIDI values reported by the eight other reporting utilities (IPL's 2003 CAIDI=100).
- In 2004, IPL's CAIDI, which decreased by approximately 23%, was the second lowest value reported: about 56% lower than the average of the CAIDI values reported by the eight other reporting utilities (IPL's 2004 CAIDI=77).

➤ CAIFI: Figure 7 shows 2002-2004 CAIFI values for reporting electric utilities:

Figure 7: CAIFI by Utility 2002-2004



- In 2002, IPL's CAIFI was about 7% lower (better) than the average of the CAIFI values reported by the eight other reporting utilities (IPL's 2002 CAIFI=2.13).
- In 2003, IPL's CAIFI decreased approximately 18%, and was about 24% lower than the average of the CAIFI values reported by the other eight reporting utilities (IPL's 2003 CAIFI=1.74).
- In 2004, IPL's CAIFI, which decreased approximately 20%, was the second lowest value reported: about 34% lower than the average of the CAIFI values reported by the eight other reporting utilities (IPL's 2003 CAIFI=1.40).

Interruptions to Individual Customers

IPL's 2004 reliability report listed the number of customers that experienced various quantities of interruptions during the year. This data allows Staff to monitor the level of reliability each utility provides to its individual customers.

- *Zero interruptions:* During 2004, 55% of IPL's customers experienced zero interruptions. During 2003 and 2002 this value was 30% and 61%, respectively.
- *3 or Fewer Interruptions:* During 2004, more than 99% of IPL's customers experienced 3 or fewer interruptions. During both 2002 and 2003, this value was 96%.
- *More than six Interruptions:* During 2004, only one IPL customer experienced more than 6 interruptions. During 2003, no IPL customers experienced more than six interruptions, and in 2002, 24 customers did.

Figure 8 illustrates that IPL and its Alliant Energy Corporation affiliate, South Beloit Water, Gas, and Electric Company, had the highest percentage of customers that were affected by zero interruptions, and by 3 or fewer interruptions during 2004:

Figure 8: Percentage of Customers with Zero and 3 or Fewer Interruptions in 2004

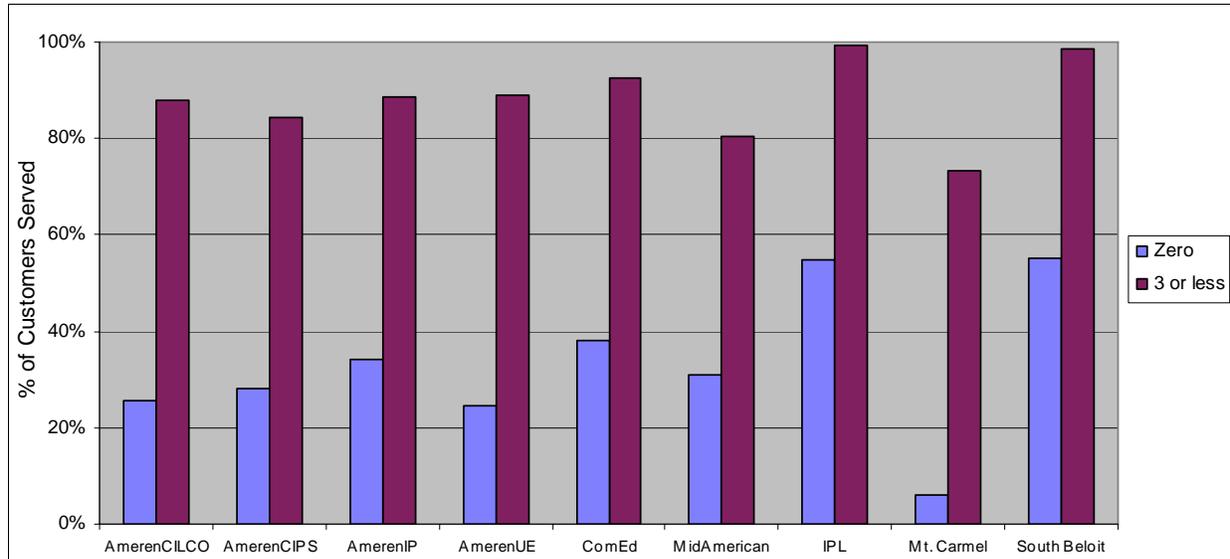


Table 3 indicates the number and percentage of customers that experienced more than 6 interruptions during 2002-2004 for each reporting utility. As Table 3 indicates, IPL performed exceptionally well in this area.

Table 3: Customers with more than 6 Interruptions:

Utility	2002		2003		2004	
	Customers	Customers	Customers	Customers	Customers	Customers
	#	%	#	%	#	%
South Beloit	74	0.90%	8	0.10%	0	0.00%
IPL	26	0.20%	0	0.00%	1	0.01%
Mt. Carmel	298	5.00%	38	0.70%	85	1.48%
AmerenCILCO	2,335	1.20%	5,340	2.60%	1,613	0.78%
AmerenUE	1,292	2.10%	624	1.00%	1,724	2.76%
MidAmerican	874	1.10%	3,082	3.70%	5,331	6.37%
AmerenIP	2,731	0.50%	4,473	0.80%	7,713	1.28%
AmerenCIPS	6,343	1.90%	2,662	0.80%	7,846	2.38%
ComEd	12,419	0.40%	24,321	0.70%	29,087	0.80%

Utilities can minimize reliability complaints by monitoring interruptions to individual customers and taking prompt corrective action when the same customer(s) experience multiple interruptions. IPL appears to be doing a very good job in monitoring and controlling the number of repeat interruptions to individual customer(s).

Customer Interruption Cause Categories

The number and duration of IPL's interruptions for 2002-2004 attributed to each interruption category listed in Table A of Part 411 is shown in Table 4:

Table 4: IPL's Interruptions by Various Causes during 2004

Cause	# Of Interruptions			Duration of Interruptions (customer-minutes)		
	2004	2003	2002	2004	2003	2002
Animal	57	60	47	48,707	33,352	31,243
Weather	44	73	141	168,504	381,479	579,071
Tree	34	46	24	165,379	434,803	124,956
Overhead Equip.	19	29	24	10,647	104,697	66,497
Unknown	18	19	8	12,175	64,829	6,485
Public/Other	11	3	8	63,667	6,753	72,663
Intentional	5	16	1	9,429	15,185	2,192
Underground Equip.	4	2	6	4,214	10,177	4,607
Jurisdictional Entity/ Contractor Personnel - Errors	4	4	0	30,390	45,350	0
Transmission and Substation Related	2	1	2	1,482	49,496	88,593
Total	198	253	261	514,594	1,146,121	976,307

IPL's system performed more reliably in 2004 than in either of the previous two years. Staff noted that weather-related interruptions accounted for 33% of outage durations on IPL's distribution system during both 2004 and 2003. Despite the fact that there were even more animal related interruptions than weather related interruptions, Staff was pleased with IPL's use of animal guards on the circuits Staff inspected.

IPL reported no major storms in its service area for the period 2002-2004. IPL defines a major storm as any time wind gust speeds reach 90 MPH or more, or ½" of ice is present with wind gust speeds of 40 MPH or more, or more than 10% of an operating zone's customers are out of service due to the storm.

9. Plan to Maintain or Improve Reliability

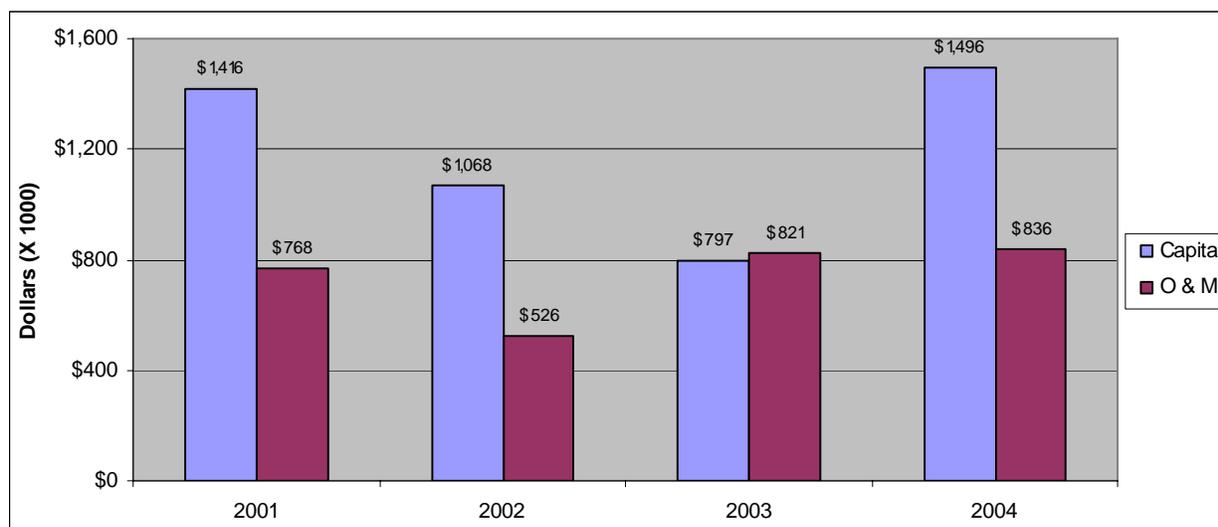
IPL stated its reliability plan consists of two parts:

1. Recurring engineering, maintenance, and operations activities, and
2. Unique projects developed to address specific situations.

Examples of IPL's recurring activities include practices such as tree trimming, line inspections, load reviews, substation predictive maintenance, zone reliability team meetings, and periodic review of historical outages for targeted maintenance or operations efforts. In addition to listing these on-going activities in its reliability report, IPL stated it planned to complete several specific projects to improve reliability and included its estimated costs and timetables for completion of each. In the Dubuque Zone the specific projects generally are geared to enable IPL to provide an alternative source of electricity should the normal distribution circuit source be lost. In the Clinton Zone the planned specific projects appear to focus on replacement or upgrade of existing facilities.

IPL's actual distribution expenditures for Illinois operations for the years 2001-2004 are illustrated in Figure 9. IPL stated it does not budget separately for its Illinois jurisdiction, but that it anticipates 2005 distribution O&M spending will be similar to 2004 levels. IPL stated distribution capital spending is likely to be much lower in 2005 because some large distribution projects were completed in 2004. Information about future transmission O&M and capital spending specific to Illinois was not available.

Figure 9: IPL's Distribution Expenditures for 2001-2004



Most IPL customers experienced reliable service during 2004 (and previous years), and Staff observed relatively few visible threats to reliable service during inspection of IPL's distribution circuits. Except for Staff's concerns listed in the next section of this assessment report, the processes and projects described within IPL's plan appear to be adequate to maintain the reliability of IPL's distribution system.

10. Potential Reliability Problems and Risks

Though the level of reliable service IPL provided to most customers during 2004 was very good, Staff has the following concerns about the reliability of IPL's distribution system and operations:

- IPL's inspections of its overhead distribution facilities, which are scheduled on a 10-year cycle, are too infrequent. There is a significant risk that reliable service will be compromised because visible problems on IPL's distribution facilities might remain undetected because of such a long inspection cycle. IPL should conduct distribution circuit inspections more frequently so that it can stay aware of the operating condition of its facilities, and schedule prompt follow-up corrective action, when appropriate.
- On Circuit ELIZ8372, which was a worst performing circuit in 2004, Staff is concerned that several trees were observed contacting the primary conductor near the substation outlet. This condition could cause additional momentary and/or sustained service interruptions for all customers on this distribution circuit.
- High weeds in IPL's Mt. Carroll Substation, in addition to being unsightly, could slow down service restoration and potentially become a hazard (cause tripping, obstruct equipment or dropped tools, contribute to fire, etc.) to IPL's employees.
- IPL should use more overhead fault indicators in strategic locations to help shorten the time needed to locate outage causes on hard to access line sections. Some of the terrain IPL's circuits traverse is relatively rugged. Many line sections are visible only if patrolled by walking the line (for example, on Circuit GALW8314). It could take IPL a long time to locate a downed or faulted line in such areas during a severe storm or other emergency, resulting in long interruptions to its customers. Staff is very encouraged by a new section in IPL's construction standards that discusses the application and installation of overhead fault indicators for both permanent and temporary locations, and encourages IPL to expand its use of this helpful tool.

11. Implementation of the Plan Listed in the Previous Reliability Report

IPL's 2004 reliability report indicated that during 2004 it completed 4 specific projects in its Dubuque Zone that had been included in its plan listed in its 2003 reliability report: rebuilding 2 sections of line, and replacing 2 regulators. IPL also expended funds on various maintenance and operations activities throughout 2004. IPL stated it completed two transmission projects in its Clinton Zone. At the time its 2003 reliability report was produced IPL indicated it planned no additional remedial work on its 2003 worst-performing circuits during 2004.

12. Summary of Recommendations

- IPL should inspect its distribution circuits more frequently to find and correct threats to reliable service. Rather than once every ten years, Staff suggests that IPL inspect its circuits, at a minimum, approximately halfway through each tree trimming cycle.

- IPL should reinforce with its tree trimmers the need to keep trees clear of the power lines for the entire time between tree trimming cycles, or return to trim specific trees between cycles.
- IPL should take steps so weed growth such as occurred within Mt. Carroll Substation will not occur, so that maintenance or emergency restoration efforts are not hampered by such vegetation.
- IPL should install overhead fault indicators on both sides of line sections that would be difficult or time consuming to patrol during a storm or other emergency.

From: Rockrohr, Greg
Sent: Wednesday, June 29, 2005 2:01 PM
To: 'JillBosch@alliantenergy.com'
Cc: Stoller, Harry; Buxton, Roy; 'chuckjohnson@alliantenergy.com'; 'lindsayjohnson@alliantenergy.com'
Subject: Staff inspection of IPL distribution circuits

Attachments: 2005_IPL Summary of Field Inspection.xls

On June 21 & 22, I inspected 3 distribution circuits that Interstate Power and Light operates in Illinois. Company representative Chuck Johnson accompanied me on June 21, and company representative Lindsay Johnson accompanied me on June 22. Both representatives were extremely helpful, and I appreciated their cooperation very much.

I have attached worksheets that summarize notes I took during the inspections for your company's review/use. These worksheets are not represented as capturing all of the potential reliability problems that may exist on the circuits that I inspected. In many cases, there were portions of the circuits that I did not see. My inspections are not intended to take the place of the thorough, detailed inspections that your company should periodically perform.

I request that your company provide me additional information concerning an apparent National Electric Safety Code ("NESC") clearance violation on Circuit ELIZ8372 (shown in bold font on the worksheet). This line crosses over an area where horses are kept. Please provide the actual measured height of the conductor above the ground (at its closest point). If the vertical clearance is found to be less than that shown in NESC Table 232-1(4), please provide IPL's plan, including a schedule, for modifying the facilities so that they comply with NESC requirements. Please provide this information to me no later than July 29, 2005.

If you have any questions about the information contained in the attached summaries, or about the additional information I have requested, please contact me.

Greg Rockrohr
Illinois Commerce Commission
Engineering Department -Energy Division
217-524-0695

Summary of Distribution Circuit Field Inspection by ICC Staff			
Utility:	IPL	Date:	6/21/05
Circuit:	MTCL8114	Inspector:	Rockrohr(ICC)/C. Johnson(IPL)
Gen. Notes: West side of Mt. Carroll -mostly rural. Significant portions of main-feeder underbuilt & along RR R/W. IPL completed several projects on cct. Few problems observed. Tree trimming completed 2003, scheduled for 2007-looked pretty good. IPL patrolled 5/04. 2004 worst performing circuit, 2003 & 2002 next 10 worst performing. Weather most common outage cause.			
Map No.	Item Description	Photo(s)	Location
12	Weeds very heavy in substation yard	1 & 2	Mount Carroll Substation
13	Cross arm splitting	N/A	Old Mill Rd. -S/Hwy 52 (just north of RR tracks)
14	Lightning damaged pole top	3	Preston Rd. -S/Hwy 52 (just north of recent rebuild)
10	Broken off down guy	4	Quarry Rd. -N/Hwy 52 (adjacent to quarry's stone pile)
8	Maple tree very close to primary	5	West end of Becker Rd. (frontage road)
9	Tree very close to primary	N/A	Getz Rd. -N/Hwy52 (at first curve)
21	Down guy missing anchor	N/A	Wacker Rd. -E/Seven Hill Rd.

Summary of Distribution Circuit Field Inspection by ICC Staff			
Utility:	IPL	Date:	6/22/05
Circuit:	GALW8314	Inspector:	Rockrohr(ICC)/L. Johnson(IPL)
Gen. Notes: Galena-rural. Much of line is X-country: viewed with binoculars -Lots of applications for OH fault indicators. Good animal guard coverage. Lightning arrester installation infrequent. Tree trimming completed 2004, scheduled for 2008-only 1 contact observed. IPL patrolled 7/03. 2004 Next 10 worst performing circuit, 2003 & 2002 worst performing circuit. (Much of line was converted from 34kV)-varied outage causes.			
Map No.	Item Description	Photo(s)	Location
2	Cross arm failing and pole shell rot	3 & 4	Council Hill Rd. -NE/Meridian Rd.
2	Tree contacting primary	5	Council Hill Rd. -NE/Meridian Rd. (N/UG tap to west)
4	Split pole top with apparent temporary repair	6 & 7	W/Ensch Rd. -S/Kennedy Rd. (+/-5th pole W/Ensch)
5	Failing cross arm	8	11802 Valley Rd. (where main-feeder turns north)
5	Split pole top	N/A	2 poles from end/tap NE/High Ridge&SE/Creek Valley
5	Several poles leaning severely	N/A	Cross-country portion of main feeder E/Hill Rd.
6	Lightning damaged pole top	9	1st pole S/Creek Valley Rd. on lane -W/High Ridge

Summary of Distribution Circuit Field Inspection by ICC Staff			
Utility:	IPL	Date:	6/22/05
Circuit:	ELIZ8372	Inspector:	Rockrohr(ICC)/L. Johnson(IPL)
Gen. Notes: Elizabeth rural. Lots of X-country viewed with binoculars -Lots of applications for OH fault indicators. Tree contacts near station outlet. Tree trimming compl. '03, scheduled for '07. IPL patrol completed 12/00. Lightning arrester coverage good in rebuilt areas, elsewhere spotty. 2004 worst performing circuit, 2002 next 10 worst performing circuit. Weather, trees, & unknown causes in 2004.			
Map No.	Item Description	Photo(s)	Location
24SE	Willow into primary	2	Outlet from substation -SE of Sycamore & Ash
24SE	Willow into primary	3	Just N/Sycamore & Washington
24SE	Pine very close to primary	N/A	Sycamore near Madison
19	Willow into primary	4	Sapple River Rd. -N/Burke Rd.
19	Tree contacting primary (new growth)	N/A	Burke Rd. -E/Sapple River Rd.
29	Maple tree very close to primary	N/A	Derinda Rd. -S/Hwy 20
29	Tree contacting primary with wind	N/A	Bethel Rd. -E/Derinda Rd.
33	Failing cross arm and pole top	7	NE/Derinda Rd. on lane to 6033 Derinda (5th pole)
4	Split pole top with leaning pin	N/A	1 span E/tap to 6209 Derinda
20	Failing pole top	N/A	Becker Rd. -S/Krohmer (S/3026 Becker)
11	Apparent NESC Violation: Low sagging neutral	5	Tap to 1737 Scout Camp Rd.
11	Failing pole top	6	Evans Rd. -5th pole N/Hwy 20