Illinois Commerce Commission

Assessment of Commonwealth Edison Company

Reliability Report and Reliability Performance

for Calendar Year 2009

Pursuant to 83 Ill. Adm. Code 411.140

Public

[redacted]

December 31, 2010

1. Executive Summary

In compliance with Section 16-125 of the Public Utilities Act and the Illinois Commerce Commission's ("Commission's") electric reliability rules as found in 83 Illinois Administrative Code, Part 411, Commonwealth Edison Company ("ComEd") prepared and filed its "2009 Electric Power Delivery Reliability Report" ("Reliability Report") on Tuesday, June 1, 2010. ComEd divided its Reliability Report by referencing the applicable subparts of Part 411. Staff commends ComEd's extra efforts in organizing the Reliability Report so that information is easily located.

ComEd's overall reliability performance has improved from 2008 to 2009.

- In 2009 only 273 customers experienced 11 or more interruptions -- which is substantially below the five year average of 1,631.
- ComEd has returned to system total interruption levels more in line with the 2000-2005 time period.
- The total of 182 customers exceeding service reliability targets is the best performance of the last five years.

ComEd attributes its reliability performance in 2009 to both reliability programs and decreased storm activity. It is evident the most dramatic improvement was in weather related interruptions followed by reductions in tree and overhead equipment related interruptions. Animal related interruptions were the only major cause category showing an increase, 9%, from 2008 to 2009. Staff believes that another contributing factor to ComEd's performance was the low load demand compared to the projected 90/10 loads used to prepare the reliability infrastructure. The 2009 actual demand, 21,218 MW, was 18% below the 2006 projected 90/10 load used to prepare the reliability infrastructure for the summer of 2009. The 90/10 load forecasts, used for planning substation capacity expansion, in the 2005-2007 reliability reports each terminate at about the 26,000 MW level in the third year of their forecast.

Some of Staff's concerns:

- The performance of ComEd's distribution worst-circuit in relation to the worst-circuit of the other jurisdictional utilities remains a matter of concern.
- In constant dollars only the 1998 expenditures are lower than the 2009 expenditures for distribution construction and maintenance.
- Tree trimming problem areas still exist where ComEd needs to investigate and modify its programs to advance *and maintain* a four-year (minimum) tree trimming cycle that is in compliance with NESC Rule 218. The perception that tree trimming performance has room for improvement could also be concluded from customer survey results.
- ComEd's projected "Inspection and Maintenance" expenditures for 2010-2012 are below actual spending levels for the period 2005-2008. Staff is concerned, in this instance, that it is very difficult to achieve a decrease in maintenance expense without adversely impacting reliability.
- Total O&M dollars spent per ComEd customer declined in 2009, though not down to 1997-1998 levels.
- The number of company employees declined by 22% from 1999 to 2009 while the number of contract employees decreased by 48% for a total decrease over that period of 26%.
- The turnover rate is very high for the people who have held the position of ComEd executive responsible for energy delivery reliability, starting with Paul McCoy on October 22, 1997, up through the current executive, Anne R. Pramaggiore. Staff is concerned that the lack of management continuity in this and other positions could and already may have had a detrimental impact on reliability and/or efficiency.
- Planned preventive maintenance expenditures dropped 31% from 2008 to 2009 and the current plan is for increases of 8%, 4% and 0% for 2010, 2011, and 2012.
- End of the year backlogs for distribution corrective maintenance continue to increase.

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2. Introduction

Beginning with the year 1999, and at least every three years thereafter, 83 Ill. Adm. Code 411.140 ("Part 411.140") requires the Commission to assess the annual reliability report of each jurisdictional entity ("utility") and evaluate its reliability performance. Part 411.140 requires the Commission to:

A) Assess the reliability report of each utility.

B) Assess the utility's historical performance relative to established reliability targets.

C) Identify trends in the utility's reliability performance.

D) Evaluate the utility's plan to maintain or improve reliability.

E) Include specific identification, assessment, and recommendations pertaining to any potential reliability problems and risks that the Commission has identified because of its evaluation.

F) Include a review of the utility's implementation of its plan for the previous reporting period.

This document assesses ComEd's "2009 Electric Power Delivery Reliability Report" ("Reliability Report"), filed on Friday, May 28, 2010, and evaluates ComEd's reliability performance.

In producing this document, Staff relies on everything that may come to light during the review period up to the date of this document, in addition to the Reliability Report itself.

3. ComEd's 2009 Customer Base and Service Territory

ComEd provides electric service to roughly 3.8 million customers. ComEd's service territory encompasses over 400 municipalities in northern Illinois, including the City of Chicago.

4. ComEd's Electric Distribution System

Part 411.120(b)(3)(G) states that the utility is to report on the age, current condition, reliability and performance of its existing distribution and transmission system. To comply with the requirement that a utility report on the age of its existing distribution and transmission systems, ComEd provided age data on various types of equipment. The age data reported for the equipment included information on the median age, age distribution, and quantity by age. Table 1 lists the median age of some of the equipment that ComEd reported in the last five reports (2005 through 2009).

Table 1. Median Age[1] (in years) of Typical Equipment

	2009	2008	2007	2006	2005
Lightning arresters					
Distribution	16	14	14	13	13
Transmission	7	4	15	14	13
Substation	10	11	12	10	16
Underground cables	18	17	18	17	17
Direct Buried	16	16	17	16	16
Cables in Conduit	22	23	32	31	31
Conductors					
Distribution Copper & Other	57	55	58	57	56
Distribution Aluminum	35	33	33	32	31
Transmission	39	37	36	35	34
Poles & Towers					
Distribution (mostly wood)	41	39	38	37	36
Transmission Steel poles	29	27	26	25	24
Transmission Wood poles	42	40	39	38	37
Transmission Towers	43	41	40	39	38
Distribution crossarms	34	32	32	31	30
Meters	11	13	13	13	13
Distribution transformers	16	15	15	15	15
Substation Transformers	32	31	30	30	29

Staff believes that the increasing median age of the existing equipment in service does not provide, by itself, an indication of possible reduction in reliability performance of the distribution or transmission systems. Staff recognizes that, in some circumstances, older equipment can be more robust if it has been well maintained. For that reason, among others, Staff believes that a better determinant of future reliability performance is how consistently the equipment is maintained on a regular basis. An increase in the number of interruptions due to equipment failures or malfunction would provide a stronger basis, either due to aging or inadequate maintenance, to determine if equipment is deteriorating to the point that it is reducing the reliability of the electric system.

5. Assessment of ComEd's 2009 Reliability Report

ComEd filed its 2009 Reliability Report and its supplemental report in compliance with Section 16-125 of the Public Utilities Act and the Commission's electric reliability rules as found in 83 Illinois Administrative Code, Part 411.

This was ComEd's 12th annual reliability report filed pursuant to Code Part 411.

ComEd divided its Reliability Report by referencing the applicable subparts of Part 411.120 and 411.210. Staff commends ComEd extra efforts in organizing the Reliability Report so that information is easily located.

[1] Page G-3 through G-5 of ComEd's Reliability Reports for 2009 thru 2005 – Due to the refunctionalization of a portion of ComEd's equipment and enhancements in their data ComEd believes this analysis may not be directly comparable between some historical years.

6. ComEd's Historical Performance Relative to Established Reliability Targets

Part 411.140(b)(4)(A-C) establishes electric service reliability targets that a utility 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. Code Part 411.120(b)(3)(L) requires each utility to provide a list of every customer, identified by a unique number, who experienced controllable 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, ComEd, along with all other 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. In January 2008, ComEd and the other utilities agreed to extend the agreement through the 2012 reporting period.

Table 2 summarizes the reliability targets defined in Part 411.140(b)(4)(A-C) and the number of ComEd customers exceeding Service Reliability Targets in 2009, 2008, 2007, 2006 and 2005 per Part 411.120(b)(3)(L) and the April 2004 & January 2008 agreements[2].

Table 2. Service Reliability Targets

Immediate primary source of service operation level	i. Maximum number of interruptions in each of the last three consecutive years	ii. Maximum hours of total interruption duration in each of the last three years	Customers exceeding Service Reliability Targets (i. &/or ii.) in **2009**[3]	Customers exceeding Service Reliability Targets (i. &/or ii.) in **2008**	Customers exceeding Service Reliability Targets (i. &/or ii.) in **2007**	Customers exceeding Service Reliability Targets (i. &/or ii.) in **2006**	Customers exceeding Service Reliability Targets (i. &/or ii.) in **2005**
69kV or above	3	9	0/0	0/0	0/0	0/0	0/0
Between 15kV & 69kV	4	12	0/0	0/1	0/0	0/0	0/0
15kV or below	6	18	67/115	896/1,925	137/332	125/261	262/343
Total			182	2,822	469	386	605

As summarized in Table 2, ComEd reported in the supplemental report that 67 customers (whose immediate primary source of service operates at 15kV or below) exceeded the maximum number of six interruptions in each of the last three consecutive years while 115 customers (whose immediate primary source of service operates at 15kV or below) exceeded the eighteen hour maximum of total interruption duration in each of the last three years. The total of 182 customers exceeding service reliability targets (per Part 411.120(b)(3)(L) and the April 2004 & January 2008 agreements) is the best performance of the last five years and represents less than half the customers exceeding target levels in 2006 – the previous best year in the five year period.

For the above-mentioned customers, ComEd identified in the 2009 Supplemental Report[4] various actions the company plans or has taken to address their reliability concerns. In many instances ComEd indicated that repairs were completed at the time of the interruptions and no further work was required. Additionally ComEd has taken actions including installing wildlife protection, tree trimming at various

[2] 2009 Reliability Report, Supplemental Report, Customers Experiencing Interruptions (controllable and uncontrollable).
[3] Pages 1 thru 5, ComEd's 2009 Reliability Report, Supplemental Report.
[4] Page 6, 2009 Supplemental Report.

locations, reconductoring overhead wire, and replacing and/or upgrading various overhead equipment at multiple locations.

Part 411.140(b)(4)(D) states that "Exceeding the service reliability targets is not, in and of itself, an indication of unreliable service, nor does it constitute a violation of the Act or any Commission order, rule, direction, or requirement." ComEd appears to have a process in place to identify, analyze, and correct service reliability for customers who experienced a number or duration of interruptions that exceeds the targets in 411.140(b)(4)(A-C). For the years 2004 through 2007 the total number of customers exceeding the reliability targets was relatively constant in the 400-600 customer range until 2008 when the number increased roughly 500% to 2,822 customers, up from 469 in 2007. In 2009 ComEd experienced a 91% reduction, compared to 2008, in the number of customers, with only 182[5], exceeding reliability targets.

As is evident in Table 3 the most dramatic improvement[6] was in weather related interruptions followed by reductions in tree and overhead equipment related interruptions. Animal related interruptions were the only major cause category showing an increase, 9%, from 2008 to 2009. On page 1 of the supplemental report ComEd attributes much of the decrease in interruptions from 2008 to 2009 to the execution of reliability and vegetation management programs. Staff is encouraged by the improvements in the number of customers exceeding service reliability targets in 2009.

The number and causes of interruptions for Part 411.120(b)(3)(D) are shown for the ComEd system in Table 3. Interruptions in Table 3 were as defined in 411.20[7].

Table 3. Interruptions

Interruption Cause Category	2009 Interruptions	2008 Interruptions	2007 Interruptions
Animal Related	2,990	2,747	2,815
Customer	-	-	7
Intentional	2,247	2,865	3,083
Other	497	400	514
Overhead Equipment Related	5,794	6,994	6,953
Public	1,566	1,974	2,516
Tree Related	5,096	8,127	8,331
Transmission & Substation Equip	78	62	90
Weather Related	3,395	6,100	7,330
Underground Equipment Related	7,264	7,486	7,900
Unknown	1,050	1,063	544
ComEd/Contractor Errors	260	287	283
Total	**30,237**	**38,105**	**40,366**

[5] For customers to show up in the customer counts in the supplemental reports those customers had to exceed the target levels in Part 411.140(b)(4)(D) in each of the last three consecutive years.

[6] As a percent of 2008 category totals reductions in weather related outages, 44%, exceeded tree related outages, 37%, reductions even though tree related outages saw the greatest reduction in raw numbers.

[7] The difference between the total of interruptions in Table 3 versus other parts of the Report can be traced to the differences in the definition of "Interruption" in Part 411.20 for scheduled interruptions initiated by a utility for purposes of the targets set forth in Section 411.140(b)(4) and calculating reliability indices and scheduled interruptions that are reportable under Section 411.120(b)(3)(C).

7. Analysis of ComEd's Year 2009 Reliability Performance

In Section C Tables 5-9 (pages C-4 through C-13) of ComEd's 2009 Reliability Report ComEd broke out the 2009 planned and unplanned interruptions into 61 separate cause categories in detail for the system as a whole and also for each of ComEd's four operating regions. Table 4 below compares, for the last three years, aggregations under leading cause categories that together represented roughly three-quarters of total annual interruptions.

Table 4. Leading Causes of Unplanned Interruptions[8]

	2009 Interruptions	% Improvement from 2008 to 2009	2008 Interruptions	% Improvement from 2007 to 2008	2007 Interruptions	% Improvement from 2006 to 2007
Weather Related	3,395	44%	6,100	17%	7,330	(15%)
Animal Related	2,990	(9%)	2,747	2%	2,816	(14%)
Tree Related	5,096	37%	8,127	2%	8,331	(13%)
Overhead Equipment Related	5,794	17%	6,994	(1%)	6,954	2%
Underground Equipment Related	7,264	3%	7,486	5%	7,900	(12%)

Staff believes that a large number of the weather-, tree- or animal-related interruptions in Table 4 could be eliminated or moderated by effective tree & vegetation management programs in addition to effective animal protection programs. Table 4 documents ComEd's successful efforts to execute existing and new reliability programs moderating weather-, tree-, overhead equipment- and underground equipment-related areas. Only animal-related interruptions increased (worsen), at 9% over 2008's levels, to the highest level of the last three years. ComEd succinctly described their achievement as:

> *"…Executing ComEd's reliability programs has resulted in the reduced interruptions related to weather, tree, overhead equipment and underground equipment related outages. Weather related interruptions decreased 44 percent from 6,100 to 3,395. Tree related interruptions decreased 37 percent from 8,127 to 5,096 and are the lowest since 2005. The improved tree related performance is attributed to vegetation programs such as distribution cyclic trim and 34kV overhang removal along with a contracting strategy enhancing the focus on quality assurance and reliability. The contracting strategy provided incentives for quality, tree removals, and meeting reliability targets. Additionally, 100 percent of cyclic, mid-cycle and transmission trim had quality inspections to ensure completion to plan."*[9]

Staff will continue to follow the progress of these and other trends in interruptions.

Part 411.120(b)(3)(G)(v) states that the utility is to perform a satisfaction survey covering reliability, customer service and customer understanding of the utility's services and prices. Through a rulemaking, the Commission designed and approved a single customer survey applicable to each Illinois utility on a yearly basis starting in 2000. The utilities joined forces and, through a competitive bidding process, selected Opinion Dynamics Corporation ("ODC") to implement the study. ODC asked customers to rate ComEd's performance on a scale of zero to ten where zero means the utility is doing a poor job and ten means the utility is doing an excellent job. The mean or (average) rating from the responses to each question is presented on pages G-10 through G-13 of ComEd's 2009 Reliability Report. A summary of some ratings is shown in Table 5.

[8] Page C-4 & C-5, Table 5: 2009 Planned and Unplanned Interruptions – System, 2009 ComEd Reliability Report.
[9] Page 1, Supplemental Report, 2009 ComEd Reliability Report

Table 5. Summary of Customer Survey Responses
(average rating on the zero-to-ten scale)

Customer Class		2009	2008	2007	2006	2005
Residential	Providing electric service overall (Overall Service)	8.51	8.30	8.13	8.27	8.39
	Providing reliable electric service (Service Reliability)	8.49	8.32	8.17	8.30	8.41
Non-Residential	Providing electric service overall (Overall Service)	8.67	8.49	8.54	8.41	8.65
	Providing reliable electric service (Service Reliability)	8.58	8.57	8.51	8.41	8.69

All of the measures in Table 5 showed improvement from 2008 to 2009, though only the Residential measure "Providing electric Service overall (Overall Service)" is considered significant[10]. Of the 14 Residential measures included in the survey, six improved significantly from 2008 to 2009, while 13 of the 14 measures improved significantly from 2000 to 2009[11]. The one Residential measure that did not improve significantly from 2000 to 2009 was: *"Trimming trees and clearing branches away from power lines to reduce the occurrence of power outages."*[12] [13]. Of the 14 Non-Residential measures, two improved significantly from 2008 to 2009, while 12 of the 14 measures improved significantly from 2000 to 2009[14]. The two Non-Residential measures that did not improve significantly from 2000 to 2009 were: 1) *"Trimming trees and clearing branches away from power lines to reduce the occurrence of power outages"* and 2) "*Communicating the need for trimming trees*".[15]

Table 6 provides another perspective on customer satisfaction from the viewpoint of customer reliability complaints[16] when values from this year's Reliability Report are compared to previous years. The bottom line of the table shows the calculated number of complaints per 1,000 customers and provides a relative measure of complaints from the years 2005 through 2009 for the system. Table 6 shows that the number of complaints per 1,000 customers was lower in 2009 than in any previous years.

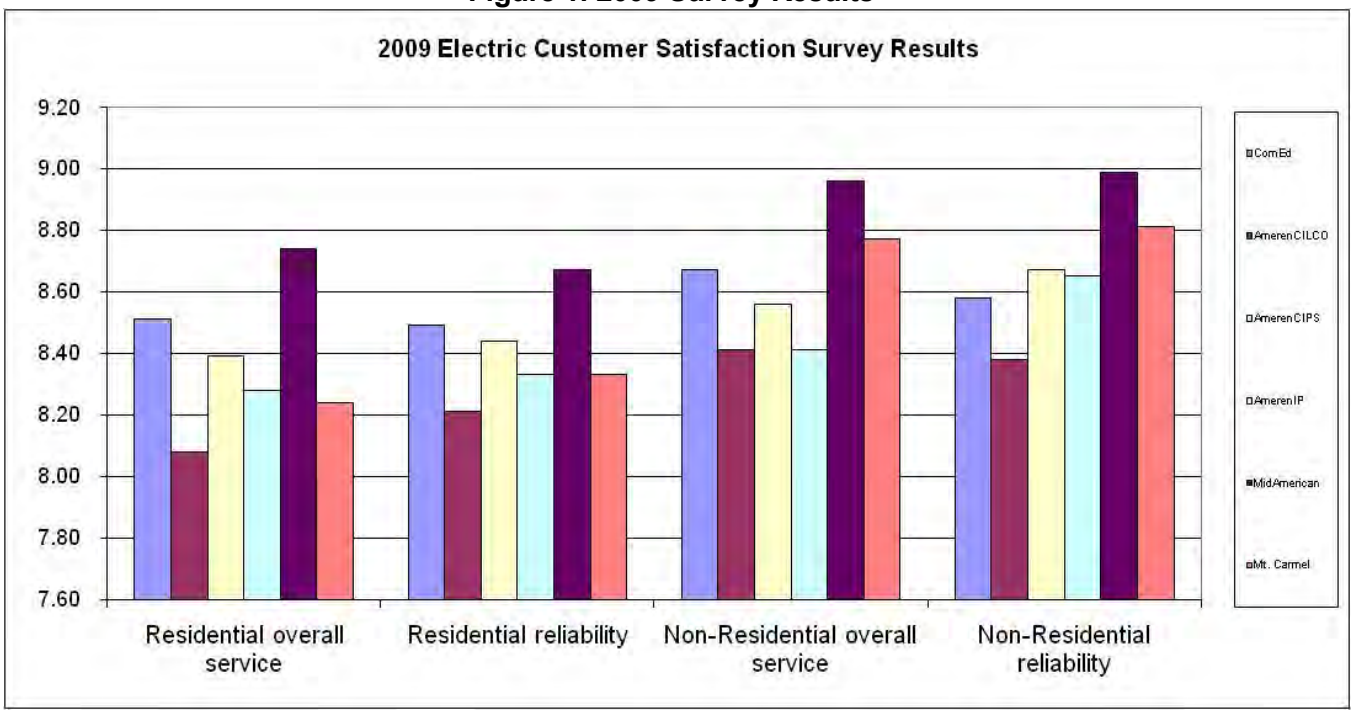
[10] Customer Satisfaction Survey Results for 2009, Pages G-12 & G-13, ComEd's 2009 Reliability Report.
[11] Page G-10, ComEd's 2009 Reliability Report
[12] Page G-12, ComEd's 2009 Reliability Report
[13] Customer Satisfaction Survey Results for 2009, Pages G-12 & G-13, ComEd's 2009 Reliability Report.
[14] Page G-10, ComEd's 2009 Reliability Report
[15] Page G-13, ComEd's 2009 Reliability Report
[16] Table 17, Page G-14, ComEd's 2009 Reliability Report

Table 6. Customer Complaints: System Total

	2009	2008	2007	2006	2005
Nature of Complaints	System Total	System Total	System Total	System Total	System Total
Sustained Interruptions	1,598	1,995	2,784	2,579	2,685
Momentary Interruptions	201	286	374	346	377
Total Low/High Voltage	370	450	631	635	790
Totals	2,169	2,731	3,789	3,560	3,852
Customers Served	**3,769,233**	**3,781,274**	**3,775,345**	**3,731,505**	**3,684,662**
Complaints per 1000 Customers	0.58	0.72	1.00	0.95	1.05

Figure 1 compares ComEd's 2009 customer satisfaction ratings to those of the other reporting utilities utilities. In 2009 ComEd's survey results were consistently as good as or better than the Ameren utilities but worse than MidAmerican and, in the case of Non-Residential reliability, ComEd's survey results were also worse than Mt Carmel. While Staff commends ComEd's continued improvements in customer satisfaction, Staff recommends that ComEd remain focused on improving customer service overall while directing additional attention on better communicating the need for tree trimming to customers.

Figure 1: 2009 Survey Results



Part 411.120(b)(3)(K) requires the utility to report the total number of customers that experienced a set number of interruptions during 2009. Figure 2 shows ComEd customer interruption experience for the last five years. In Figure 2, the height of the bars indicate the number of customers who experienced a given number of interruptions during the year. It is readily apparent in Figure 2 that the declining number of customers in 2006 & 2007 that had experienced no interruptions reversed in 2008. Additional improvement resulted in 2009 being the best year for customer interruption experience in the last five years. This clearly improving trend is apparent in Figure 3 where the number of customers

experiencing five or more interruptions has declined below 2004 and 2005 levels. It was ComEd's position that the poor experience in 2007 was due, in part, to unusually extreme weather conditions in 2007, in particular the August 23 & 24, 2007, storms. The 2008-2009 improvements apparent in Figures 2 & 3 tend to support that argument, at least in part, as well as Staff's position that insights from multi-year trends are more valuable than year-to-year variations. In 2009, only 273 customers experienced 11 or more interruptions -- which is substantially below the five year average of 1,631. Staff will closely monitor customers interruption experiences in the future.

Figure 2: Customers Interruption Experience

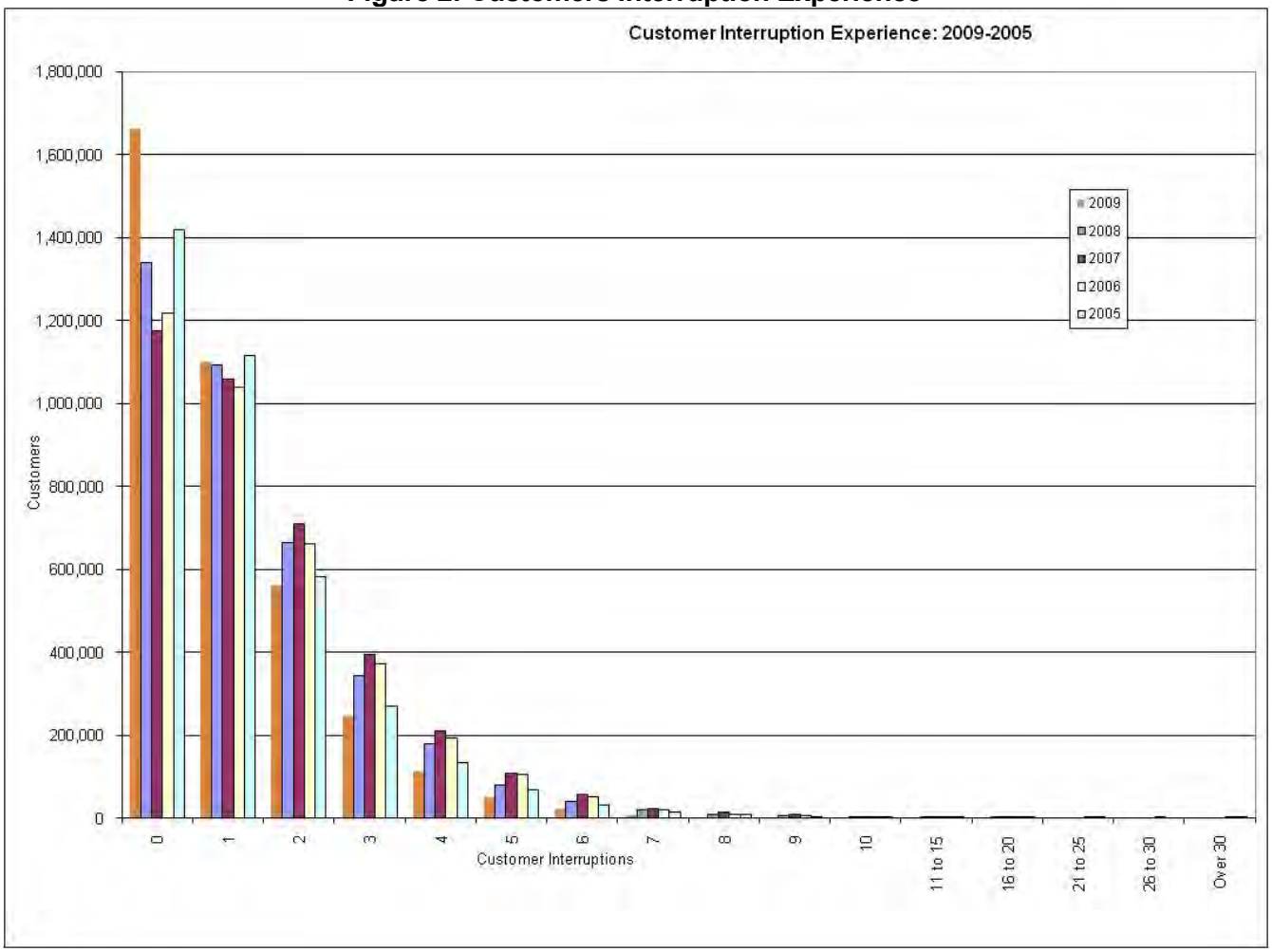
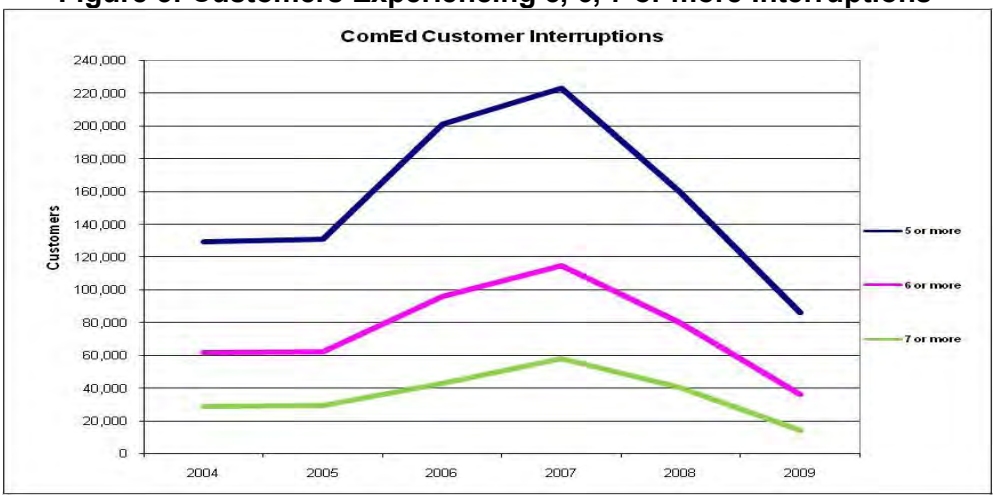


Figure 3: Customers Experiencing 5, 6, 7 or more Interruptions



Part 411.120(b)(3)(I)&(J) requires the reporting utility to list its worst performing circuits ("WPC") (subsection I) and then state (subsection J) what corrective actions are planned to improve those circuits' performance. ComEd selected its WPCs from those distribution circuits with the worst performance (highest reliability index scores) from each of its four operating areas and for each of the three reliability indices. This list totaled 127 circuits, and ComEd classified them as its worst 1% performers. Per subsection J, ComEd listed the date, number of customers affected, length of time, and cause of each interruption for each of these 127 circuits. All of the work planned for these 127 circuits was completed by December 31, 2010.

Worst Performing Circuit Repeats from Previous Reports

Of the 127[17] WPCs in ComEd's 2009 Reliability Report, ten (Table 7) represented repeats from one or more of the years 2005 through 2008[18].

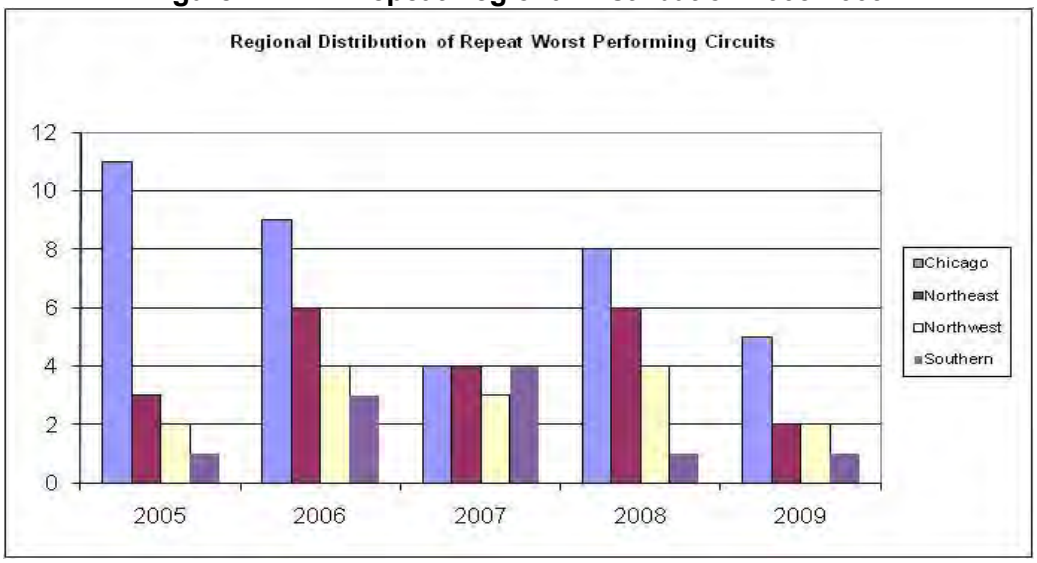
[17] 127 represents approximately 2.3% of all ComEd distribution circuits.
[18] For the years 1998 through 2008 there are 31 repeat worst performing circuits.

Table 7. 2009 Worst performing circuit repeats within the last 5-years[19]

Feeder ID & Customers Served on 12/31	Region	Communities Served	Year Repeated From	Predominantly Urban/Rural Underground (UG) or Overhead (OH)
C8514 3,233	Chicago	Chicago	SAIFI/CAIFI-2007	Urban UG
MFLD145 572	Chicago	Chicago	SAIFI/CAIFI-2006 SAIFI/CAIFI 2005	Urban OH
Z13758 180	Chicago	Chicago	CAIDI 2006	Urban UG
Z15091 2,872	Chicago	Chicago	SAIFI/CAIFI-2008	Urban OH
Z4349 36	Chicago	Chicago	SAIFI/CAIFI-2007 SAIFI/CAIFI 2005	Urban OH
C518 457	Northeast	Des Plaines	CAIDI-2007	Urban OH
W9510 1,280	Northeast	Wayne Twp., Carol Stream, Bloomingdale Twp.	SAIFI/CAIFI 2006	Rural UG
B703 922	Northwest	Freeport, Loran Twp., Harlem Twp., Florence Twp., Silver, Creek Twp	SAIFI/CAIFI 2007	Rural OH
E933 1,376	Northwest	McHenry, Ringwood, McHenry Twp., McCullom Lake	SAIFI/CAIFI-2008	Urban OH
D512 61	Southern	McCook, Hodgkins	SAIFI/CAIFI-2006	Rural OH

Figure 4 illustrates the distribution of these WPC repeats in ComEd's regions. Figure 4 shows WPC repeats are down from the previous year in all of ComEd's regions.

Figure 4: WPC Repeat Regional Distribution 2005-2009



ComEd has a finite number of distribution circuits in it's system and, with the selection of the worst performing circuits each year out of that finite pool, Staff is not surprised that there would be a small number of repeat circuits from the previous four years each assessment year. Staff reviews the trending of these repeat circuits because there is a concern that the number of repeats from previous years may be indicative of (1) inadequacies in inspections and/or (2) non-completion of needed corrective actions and/or (3) non-completion of subsequent regular preventive maintenance for worst

[19] See Table 10 for a definition of each reliability statistic

performing circuits from 2005 through 2008. Staff will continue to closely follow this trend in future reports.

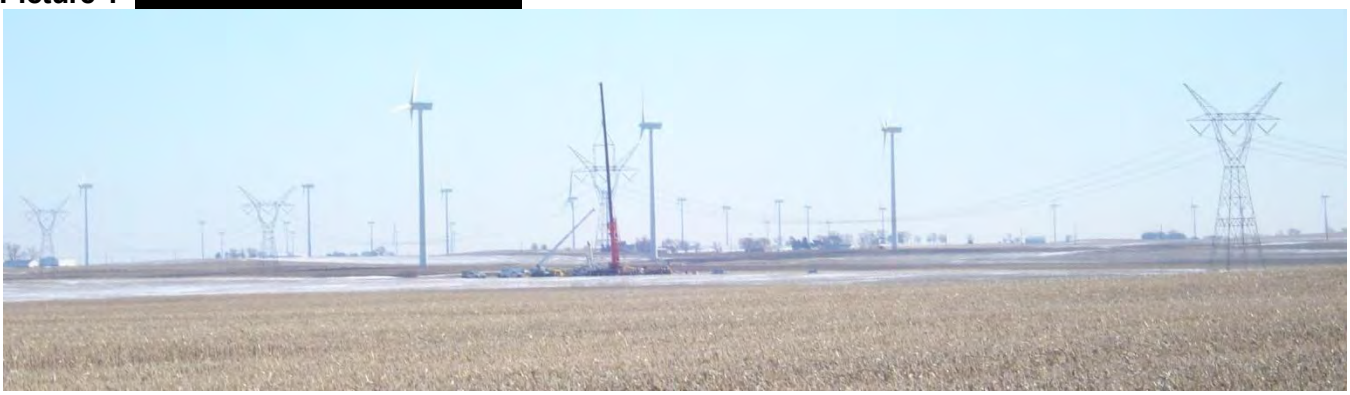
Field Inspections

Commission Staff conducted two field inspections in 2010 to observe ComEd work [redacted]

[redacted] Thursday, February 25, 2010

Staff present were: H. Stoller and J. Stutsman

Picture 1 [redacted]



Picture 2 [redacted]

Picture 3 [redacted]

Picture 4 [redacted]

[redacted] Monday, March 1, 2010
[redacted]

ICC Personnel present were: Chairman M. Flores, Commissioner J. Colgan, A. Mejia, T. Anderson, G. Beyer, and J. Stutsman

Picture 5 [redacted]

Picture 6 [redacted]

Picture 7 [redacted]

Picture 8 [redacted]

Picture 9 [redacted]

Tree Conditions

"…[I]t is generally accepted that the single largest cause of electric power outages occurs when trees, or portions of trees, grow or fall into overhead power lines. The odds are that every single electric customer in the US and Canada has, at one time or

> another, experienced a sustained electric outage as a direct result of a tree and power line conflict."[20]

Tree conditions near ComEd's overhead electric distribution lines are required to meet NESC Rule 218(A)(1) as adopted from the 2002 NESC by the Commission in Illinois Administrative Code 305.20 on June 15, 2003.

NESC Rule 218(A)(1) and its associated note state the following:

> "Trees that may interfere with ungrounded supply conductors should be trimmed or removed.
>
> *NOTE:* Normal tree growth, the combined movement of trees and conductors under adverse weather conditions, voltage, and sagging of conductors at elevated temperatures are among the factors to be considered in determining the extent of trimming required."

As discussed in section 7 of this report, ComEd experienced a 37 percent reduction in distribution tree related interruptions during 2009. Even though Staff notes the significant improvement in ComEd's tree trimming program in recent years from what it once was, problem areas still exist as was demonstrated on Wednesday, May 26, 2010, when tree contact interrupted service to nearly a thousand customers. This event resulted in a momentary outage at Wrigley Field while ComEd equipment automatically transferred service to an alternate feed. This caused the field lights to trip (turn) off. This caused an 18 minute delay of a nationally televised baseball game at Wrigley Field due to the time required for the field lights to restrike. Staff recommends ComEd continue to investigate problem areas and modify programs to advance *and maintain* a four-year (minimum) tree trimming cycle throughout its service territory that is in compliance with NESC Rule 218.

Staff continues to recommend that, as ComEd makes additional progress in re-establishing the trim zones and removing dead wood above conductors of its distribution circuits, ComEd investigate more ways to address problem trees. Problem trees are those under the conductors that are fast-growing candidates for removal or hazard[21] trees. By addressing problem trees sooner rather than later, ComEd can moderate future costs of vegetation management while improving reliability. Staff recommends ComEd pursue more opportunities to educate customers on the reliability consequences of planting some types of vegetation beneath or near ComEd's distribution equipment.

8. Trends in ComEd's Reliability Performance

This is ComEd's twelfth annual reliability report filed pursuant to code part 411. Listed in Table 9 are ComEd's reliability indices as reported in the 2009 Reliability Report (for all interruptions) for ComEd's overall system as well as each region in comparison to the system values reported by the other utilities for 2009. ComEd's system CAIDI was third best to Mt. Carmel's and MidAmerican's performance while ComEd's CAIFI and SAIFI reliability performances were second to AmerenIP's performance of the six utilities[22].

[20] U.S.-Canada Power System Outage Task Force, Final Report on the August 14th Blackout in the United States and Canada: Causes and Recommendations (April 2004) (Final Blackout Report).
[21] Trees that are outside the trim zone but could affect reliability.
[22] Based on 2008 performance, ComEd system ranked fourth in all categories of the six utilities.

Of ComEd's four regions, ComEd's Southern Region has historically underperformed the other three regions. ComEd's Southern Region experienced a 50 percent improvement in 2009 over 2008's CAIDI performance -- beating the 2009 performance of the Northeast and Northwest Regions. While ComEd's Southern Region's SAIFI performance improved significantly from 1.69 to 1.25, or 26%, the Southern Region's SAIFI performance was in last place of the four regions. It should be noted that ComEd's Southern Region out performed the other utilities except for AmerenIP, which scored a SAIFI of 0.99 in 2009.

ComEd attributes its reliability performance in 2009 to both reliability programs[23] and decreased storm activity.

The reliability performance of ComEd's four regions is nearly as good as, and in many cases better than, the reliability performance of the other five utilities.

Table 9 Comparison of reliability indices for 2009

	CAIDI (minutes)	CAIFI (interruptions)	SAIFI (interruptions)
ComEd System Total	**112**	**1.84**	**1.01**
ComEd Chicago Region	76	1.59	0.77
ComEd Northeast Region	127	1.73	0.96
ComEd Southern Region	110	1.99	1.25
ComEd Northwest Region	134	2.06	1.23
AmerenCILCO	**197**	**2.01**	**1.37**
AmerenCIPS	**462**	**2.25**	**1.51**
AmerenIP	**187**	**1.83**	**0.99**
MidAmerican	**106**	**3.01**	**2.51**
Mt. Carmel	**75.88**	**2.36**	**2.32**

CAIDI: Customer Average Interruption Duration Report (cay' dee). This represents, for the group of customers that actually had one or more interruptions, how long, on average, the interruptions lasted.

CAIFI: Customer Average Interruption Frequency Index (cay' fee). This represents the interruption frequency for the group of customers that had interruptions. **A CAIFI index much higher than SAIFI suggests that subsets of customers experienced significantly more frequent interruptions than the overall system average.**

SAIFI: System Average Interruption Frequency Index (say' fee). This represents the number of customer interruptions divided by total system customers.

The reliability indices required by the Commission rules and provided by ComEd include storm related interruptions. Staff expects that, the better designed and maintained an electric system is, the smaller the number (CAIFI & SAIFI indices) or magnitude of storm related problems and the quicker the restoration of the electric system would be, also resulting in a lower average customer interruption time (CAIDI index).

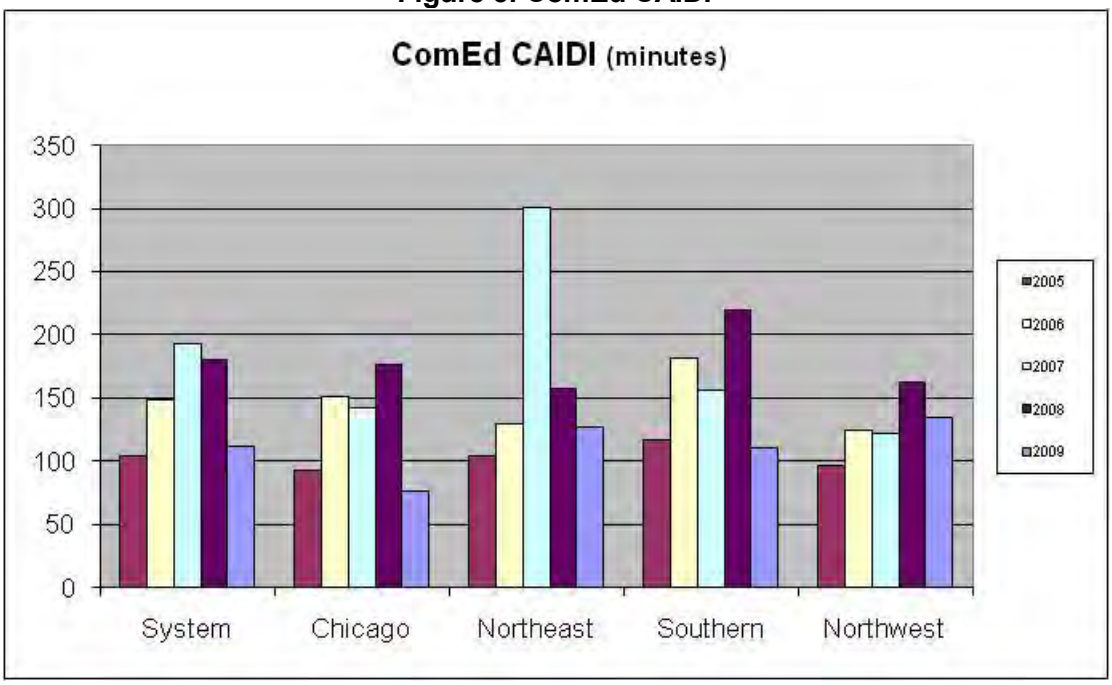
[23] ComEd's 2009 Reliability Report, Page H-2, "ComEd's multi-year reliability programs that are based on extensive analysis of failure modes contributed to the positive improvement in reliability performance."

In Table 18b, page H-2, of ComEd's 2009 Reliability Report ComEd listed reliability indices that excluded reportable events[24] as defined in 83 Illinois Administrative Code Part 411.120(a). On pages H-3 and H-4 ComEd discusses their use of IEEE's[25] 1366 Standard 2003 ("1366") method. ComEd has been using the 1366 method internally since 2005. ComEd believes that the additional information gained by 1366 helps in the design and targeting of programs to reduce or eliminate the impact of major events.[26] Staff applauds the use by ComEd's engineers and planners of all available tools for their own analyses and reliability improvement purposes, if they find it appropriate in some special circumstances; however, Staff believes the IEEE 1366 methodology is not appropriate for use by the Commission. While Staff does look at storms and company-generated statistics that exclude purported storms to help explain year to year variations in reliability indices, Staff believes the long term trends of indices with all available data included are the least potentially problematic performance indicators. In Dockets 07-0066, 07-0067, and 07-0068 Staff demonstrated how reliability indices that attempt to exclude storm periods could be misleading[27] and unsuitable[28] for Commission use. Staff used the reliability indices as required by the Commission rules.

Figure 5 illustrates ComEd's CAIDI indices over the last five years in each region. Note that **lower** bar sizes in Figure 5 represent **better** performance.

[24] For a discussion of reportable events see Staff's Assessment of Commonwealth Edison Company Reliability Report and Reliability Performance for Calendar Year 2008, page 19. Docket 09-0379.
[25] Institute of Electrical and Electronics Engineers, Inc.
[26] ComEd's 2009 Reliability Report, Page H-3.
[27] "… Utilities that choose to adequately maintain their electric delivery facilities and workforces might significantly reduce the number and duration of electric service interruptions that their customers experience during storms. The reductions could cause Standard 1366 to identify fewer Major Event Days. Conversely, utilities that fail to adequately maintain their electric delivery systems and workforces might increase the number and duration of electric service interruptions that their customers experience during storms and cause Standard 1366 to identify more Major Event Days. With a larger number of Major Event Days, the utility with the inferior maintenance programs or too-small workforce might appear in the resulting reliability statistics to be performing better than the utility with the superior maintenance program and bigger workforce. …" Docket No. 07-0066 Attachment Q to Order dated January 24, 2007; Docket No. 07-0067 Attachment B to Attachment to Order dated January 24, 2007, Docket No. 07-0068 Attachment Q to Attachment to Order dated January 24, 2007.
[28] "…If Ameren utilities could classify a significant number of the electric service interruptions their customers experience as caused by the weather and use a method … to make many of those weather interruptions disappear from their statistics, then they could report reliability to the Commission that their customers could only wish for, but had never actually seen. … The disturbing possibility that Standard 1366 could alter reliability statistics to favor utilities with poor maintenance programs and inadequate workforces seems to Staff to make Standard 1366 unsuitable for Commission use. …" Docket No. 07-0066 Attachment Q to Order dated January 24, 2007; Docket No. 07-0067 Attachment B to Attachment to Order dated January 24, 2007, Docket No. 07-0068 Attachment Q to Attachment to Order dated January 24, 2007.

Figure 5: ComEd CAIDI



In Figure 5 above, CAIDI performance has improved substantially in the Chicago and Southern regions while the other regions also show improved performance over 2008. For the Chicago and Southern regions, 2009 was the best performing year in the five-year period.

Figure 6: CAIDI by Utility

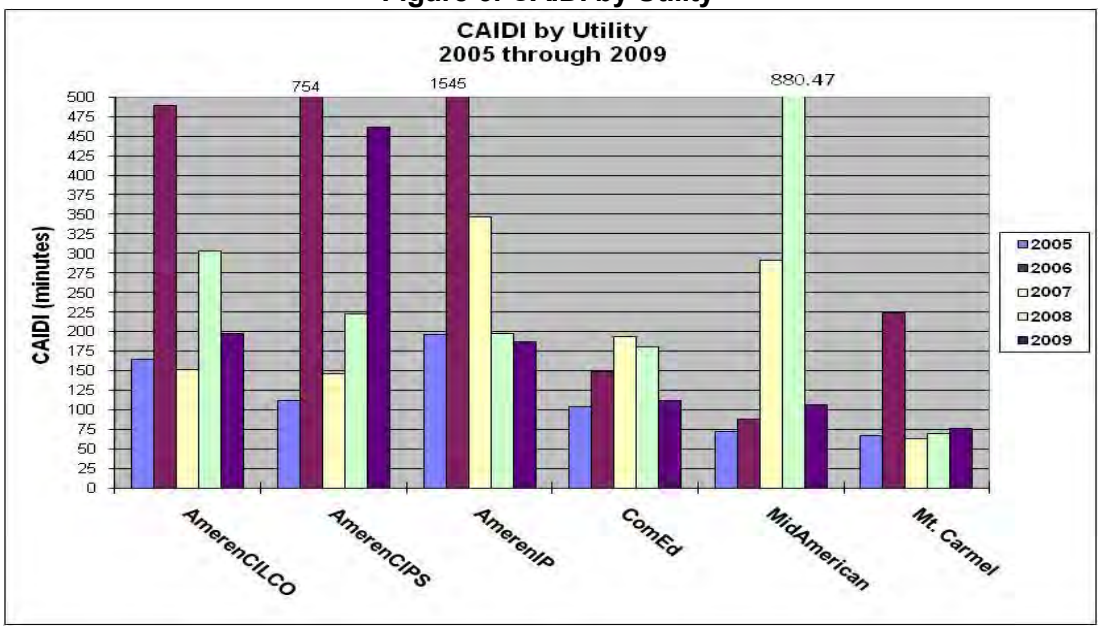


Figure 6 shows a comparison of CAIDI values reported for the years 2005 through 2009 by the utilities. In 2009, ComEd's performance ranked third behind Mt. Carmel and MidAmerican. Of the four largest utilities (AmerenCILCO, AmerenCIPS, AmerenIP, and ComEd) ComEd continues in first place for the second year in a row.

Figure 7: Worst-Circuit CAIDI by Utility

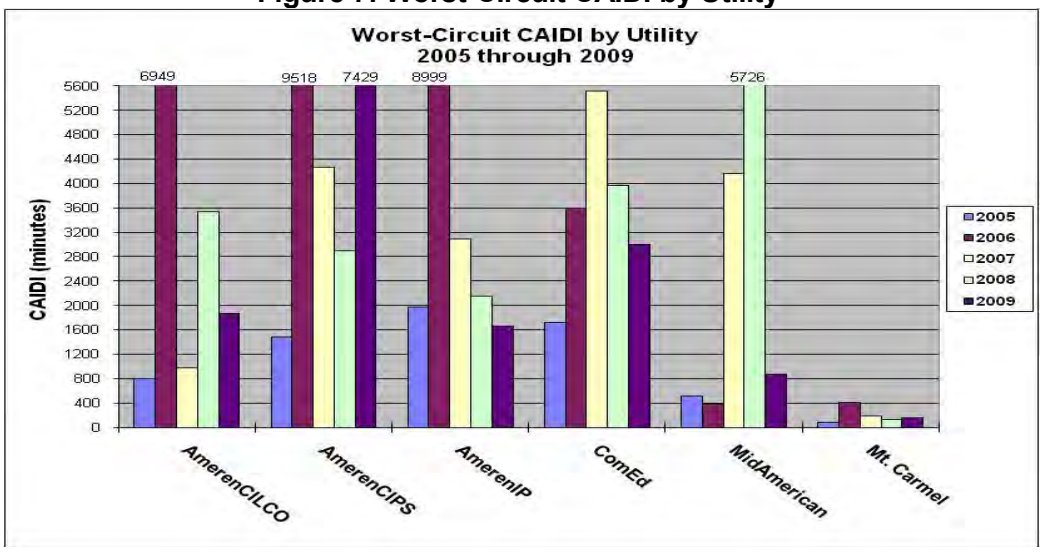


Figure 7 shows a comparison of CAIDI values for the worst circuit for each of the utilities from 2005 through 2009. In 2009, ComEd's worst-circuit[29] CAIDI performance is worse than all other utilities in Illinois except AmerenCIPS.

Figure 8: ComEd CAIFI

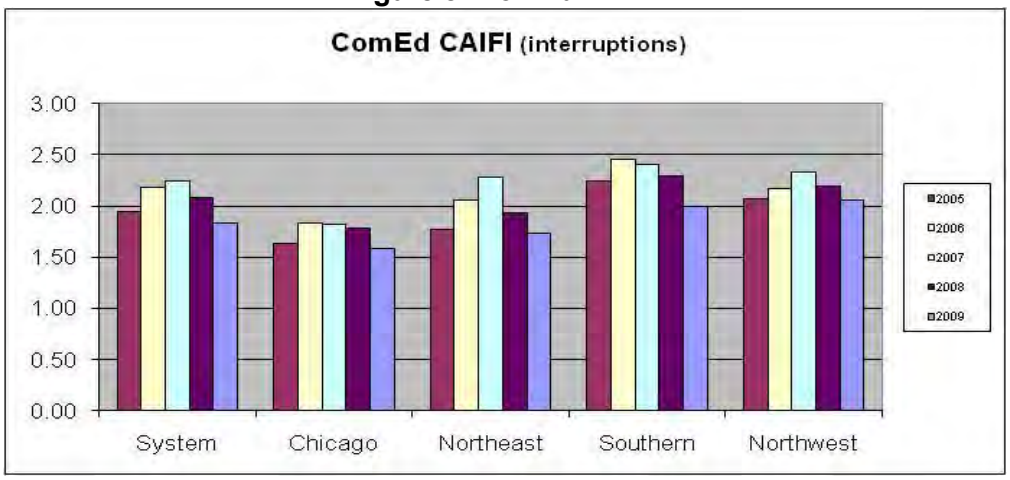


Figure 8 shows CAIFI improving for all ComEd Regions in 2009. In each of the five years 2005 through 2009 the Chicago Region demonstrated the best CAIFI performance while in 2005 through 2008 the Southern Region demonstrated the worst CAIFI performance and in 2009 the Northwest Region demonstrated the worst CAIFI performance. Note that the taller the CAIFI bar in Figure 8, the worse the CAIFI performance.

[29] ComEd's worst performing CAIDI circuit in 2009 is circuit H565 in the Northwest Region – see page J-44 of ComEd's 2009 Reliability Report

Figure 9: CAIFI by Utility

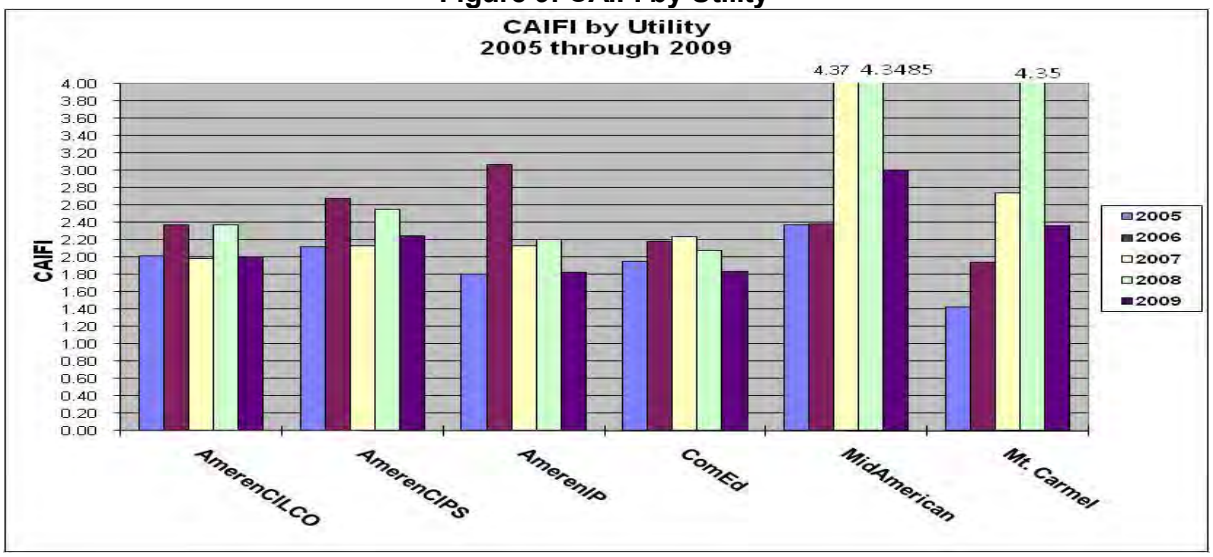


Figure 9 shows a comparison of CAIFI values reported for the years 2005 through 2009 by the utilities. In 2009, ComEd barely lost their first place CAIFI ranking to AmerenIP, 1.83 versus 1.84, amongst the utilities.

Figure 10: Worst-Circuit CAIFI by Utility

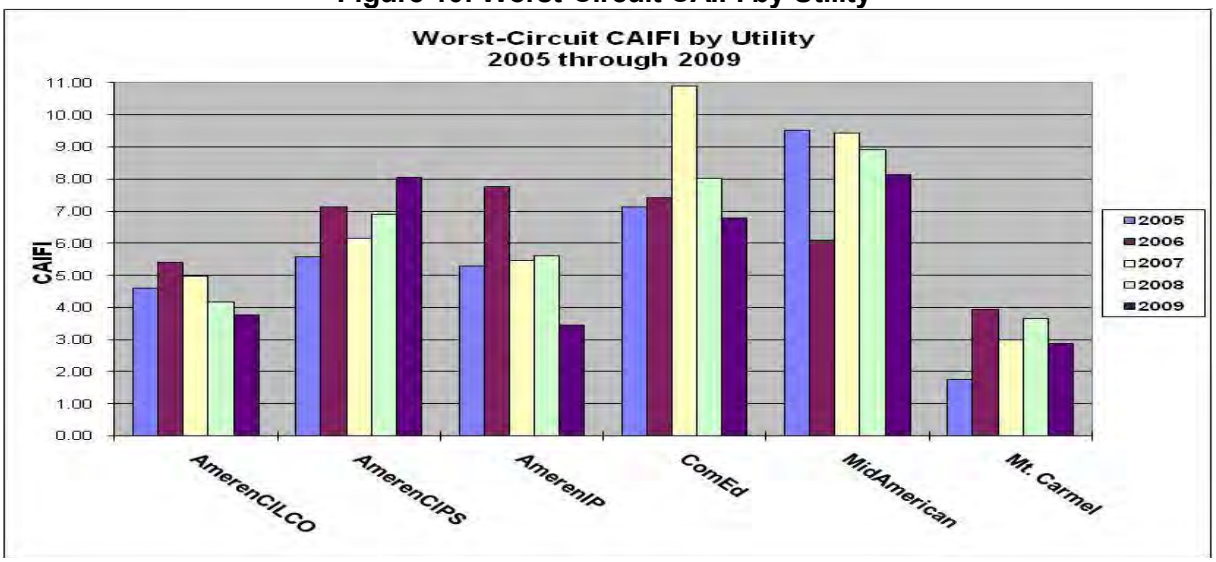
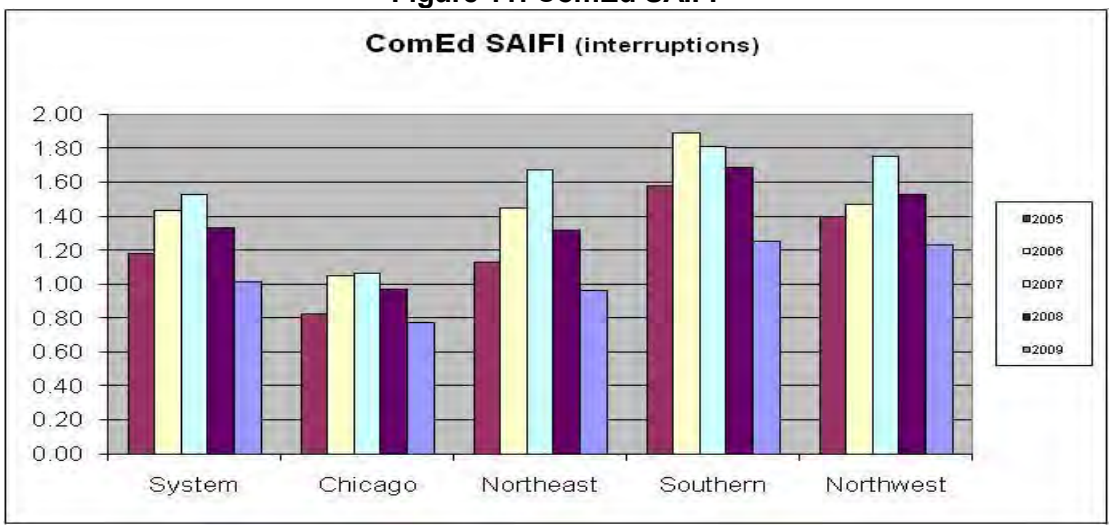


Figure 10 shows a comparison of CAIFI values for the worst-circuit[30] for each of the utilities in 2005 through 2009. ComEd moved from the second worst CAIFI performing circuit in 2008, of the six utilities, to the third worst CAIFI performing circuit in 2009.

[30] ComEd's worst performing CAIFI circuit in 2009 was circuit 750Y50 in the Chicago Region – see page J-8 of ComEd's 2009 Reliability Report

Figure 11: ComEd SAIFI



In Figure 11, all regions improved their SAIFI performance in 2009. ComEd's Southern Region's SAIFI performance improved for the third year in 2009 but it's overall 2009 performance is worse than that of the other Regions.

Figure 12: SAIFI by Utility

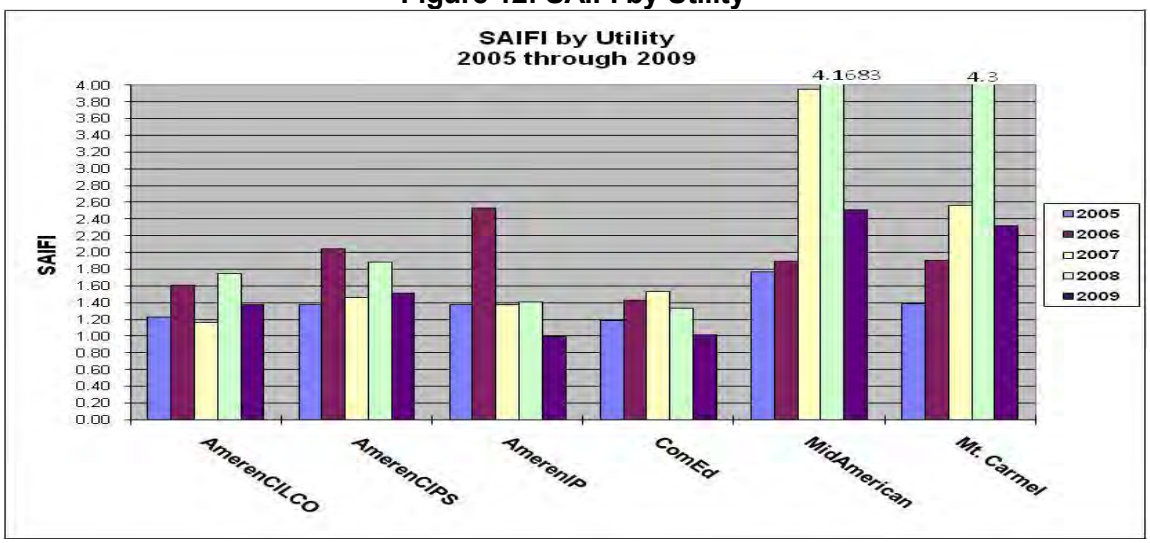


Figure 12 above shows a comparison of SAIFI values reported for the years 2005 through 2009 by the six utilities. In 2009, ComEd's SAIFI performance was second behind AmerenIP's, 1.01 versus 0.99. Two of ComEd's regions outperformed AmerenIP at 0.77[31] and 0.96[32] versus 0.99.

[31] ComEd Chicago Region 2009 SAIFI performance
[32] ComEd Northeast Region 2009 SAIFI performance

Figure 13: Worst-Circuit SAIFI by Utility

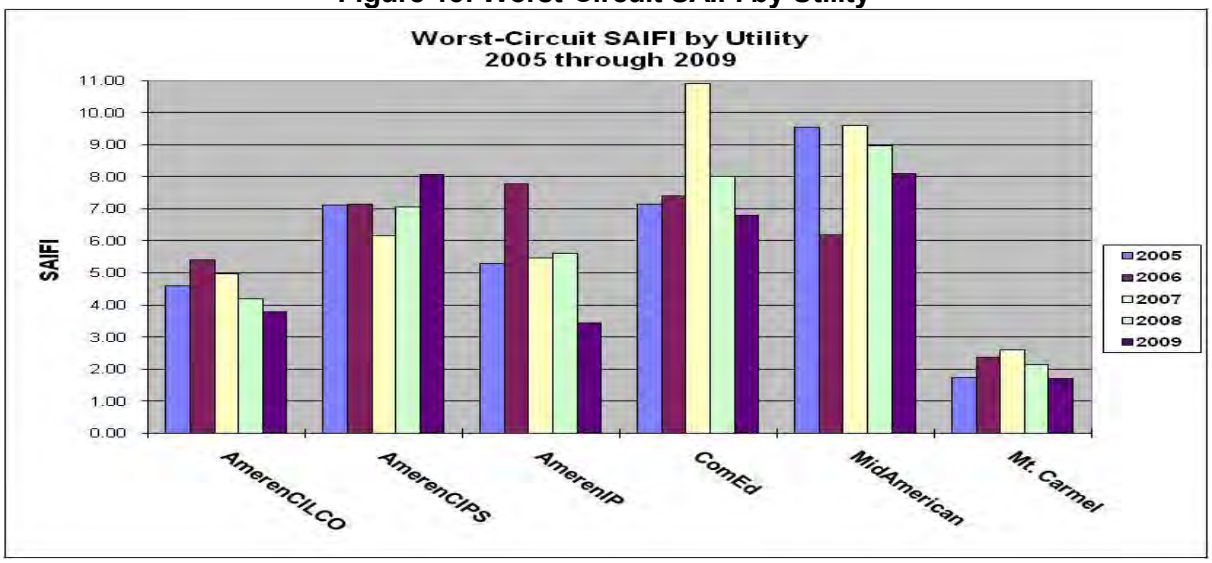


Figure 13 shows a comparison of SAIFI values for the worst circuit for each of the six utilities for 2005 through 2009. ComEd[33] moved from the second worst SAIFI performing circuit in 2008, of the six utilities, to the third worst SAIFI performing circuit in 2009.

The performance of ComEd's worst circuit in relation to the worst circuit of the other utilities for 2009 in Figures 7, 10, and 13 remains a matter of concern for Staff. While ComEd has improved over years past, Figures 7, 10, and 13 clearly show that potential exists for reliability improvement while demonstrating the existence of significant risk for future reliability problems. Staff will continue to closely follow developments in this area.

Part 411.210(b)(3) states that each utility having 1,000,000 or more customers is to provide a list of substation transformers that had a peak loading that equaled or exceeded 90% of their rated normal capacity.

[33] ComEd's worst performing SAIFI circuit in 2009 was circuit 750Y50 in the Chicago Region – see page J-8 of ComEd's 2009 Reliability Report

Figure 14: Distribution Substation Transformer Loadings

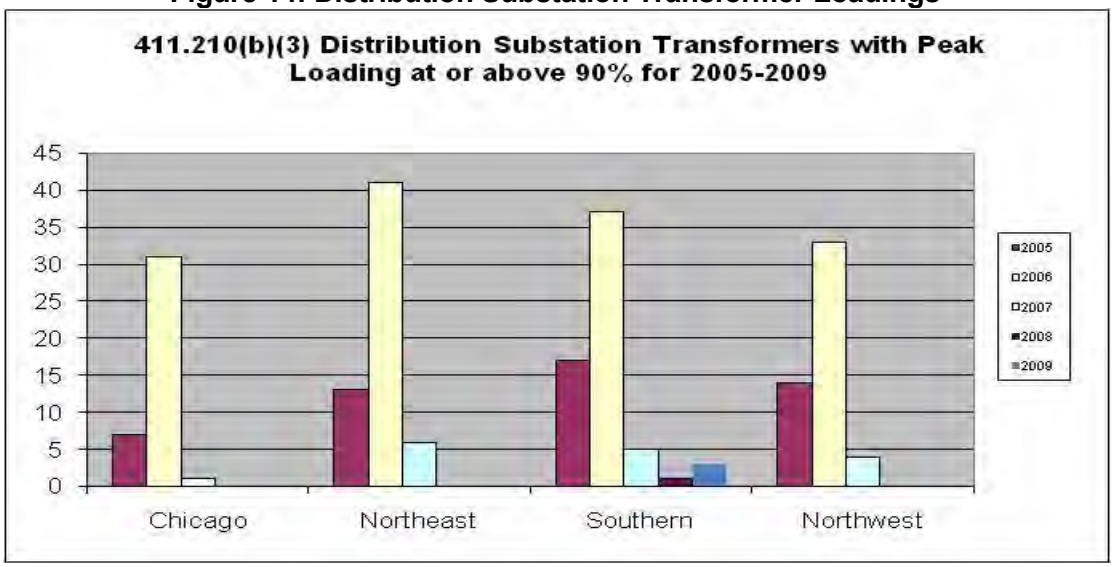
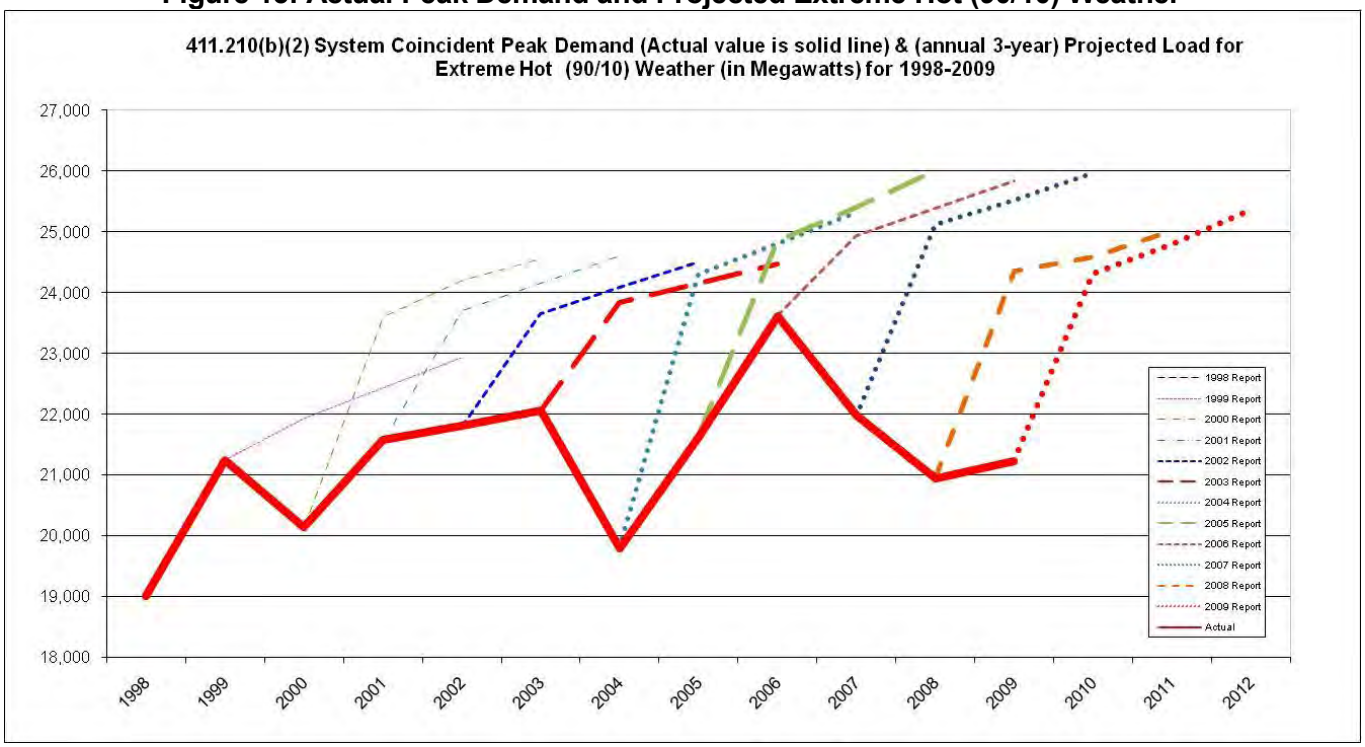


Figure 14 shows the historical distribution, by region, of substation transformers with a peak loading at or above 90% in the last 5 years, 2005-2009. To better understand this trend one needs to first study Figure 15.

Figure 15: Actual Peak Demand and Projected Extreme Hot (90/10) Weather



The system peaks in 2004, 2007, 2008 and 2009, illustrated by the solid red line in Figure 15, are significantly below the overall trend for actual demand, illustrated by the dashed lines in Figure 15. The lighter dashed lines in Figure 15 represent the projected extreme hot weather load forecast (this is the projected load level where actual peak demand will be at or below nine out of ten years) that was adopted in 2000 as a more conservative policy regarding the weather condition ComEd will plan on for its

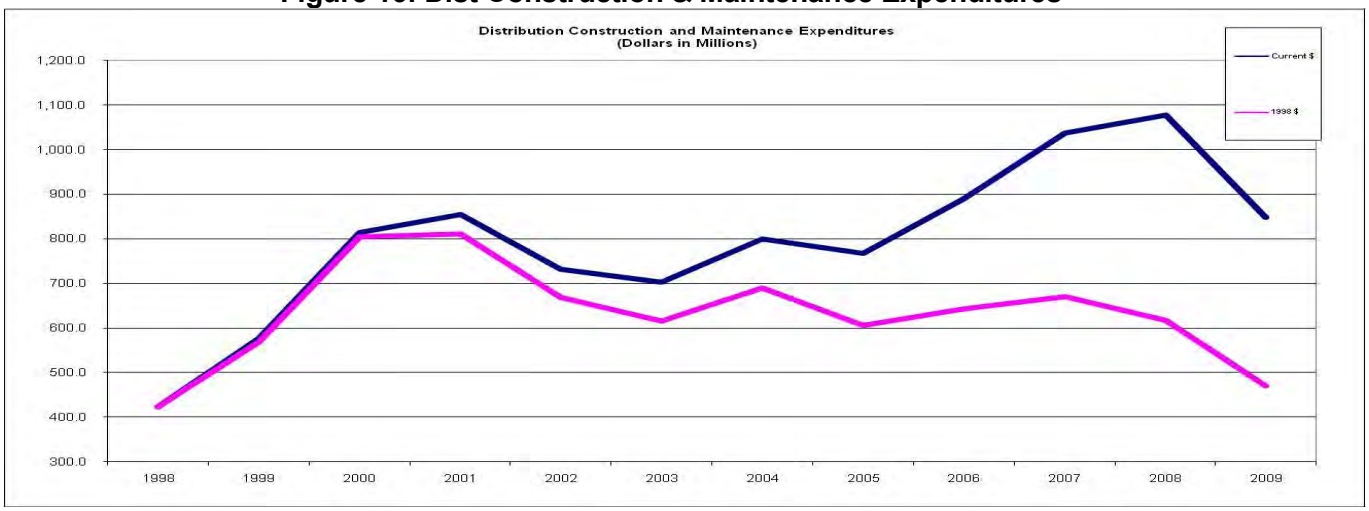
distribution system for. In 2009 the actual demand was 13% below the 2008 projected 90/10 load used to prepare the reliability infrastructure for the summer of 2009. Additionally, the 2009 actual demand was 18% below the 2006 projected 90/10 load used to prepare the reliability infrastructure for the summer of 2009. The trends of transformer loadings are an important indicator of how well capacity additions are keeping up with demand growth. When the system load realized in 2009 was much lower than that planned for capacity additions it should be no surprise that transformer loadings were as low as they were in 2009. The 90/10 load forecasts, used for planning substation capacity expansion, in the 2005-2007 reliability reports each terminate at about the 26,000 MW level in the third year of their forecast. Based on the 2009 lower forecasted 90/10 load levels it is likely that the number of distribution substation transformers with peak loading at or above 90% will remain at counts lower than were typical in the past except in areas where load growth rates are still high – such as parts of the Southern region.

In the past Staff has been concerned by the high number of ComEd's transformers that exceed the criterion in Part 411.210(b)(3) when system loading is near projected levels, and how ComEd's system may respond when demand is at extreme levels due to unusually hot weather or renewed and accelerated economic activity. A rising number of transformers exceeding the criterion in Part 411.210(b)(3) could be a sign of increasing reliability risks in the future. High transformer loadings can impact reliability in three ways: (1) when a substation transformer is loaded over its normal capacity rating for a length of time, the likelihood that the transformer may fail increases[34] due to the cumulative thermal deterioration from overloading; (2) when a transformer is highly loaded, this reduces system reconfiguration flexibility when other failures occur in the system or when greater-than-expected load growth occurs; and (3) a trend toward a higher number of transformers exceeding the criterion in Part 411.210(b)(3) at or below planning criterion load levels may signify inadequate substation capacity expansion planning. Staff will continue to closely follow these trends in the future.

9. ComEd's Plan to Maintain or Improve Reliability

To understand the trend in real dollars for expenditures, Staff turned to the information from Part 411.120(b)(3)(G)(iii & iv). Figures 16 and 17 display "Construction and Maintenance Expenditures" in current and constant dollars for Distribution and Transmission, respectively.

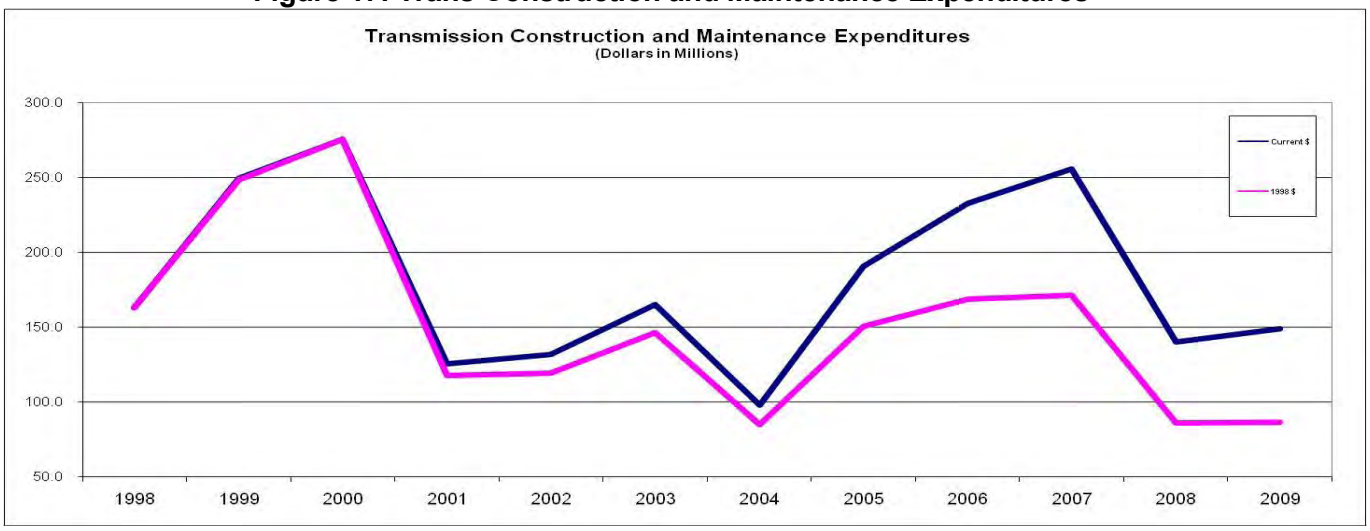
Figure 16: Dist Construction & Maintenance Expenditures



[34] Higher operating temperatures, dependent in part on loading, shorten transformer life.

When comparing ComEd's annual expenditures for the years 1998 through 2009, in constant dollars only the 1998 expenditures are lower than the 2009 expenditures for distribution construction and maintenance, with 2009 expenditures 10.9% higher than 1998 levels. As a result, from 1998 to 2009, distribution construction and maintenance expenditures do show a positive real growth rate (an annual compound rate of 0.95%[35] based on constant 1998 dollars from 1998 to the 2009 level – Figure 16). When compared to constant dollar 2000 expenditure levels the 2009 expenditure levels are down by 41.5% (or -5.8% compounded). The overall trend from the low 1998 levels is illustrated by the line in Figure 16 that represents annual expenditures in constant 1998 dollars, with the heavy ramp up of activity visible in 1999 through 2001 followed by a decline to the present level of expenditure.

Figure 17: Trans Construction and Maintenance Expenditures



Transmission construction and maintenance expenditures (Figure 17) exhibit a negative overall growth rate (annual -5.6% compound growth rate) from 1998 to 2009 in constant 1998 dollars. In constant 1998 dollars the 2009 expenditures are 47% lower than the 1998 levels. From the peak spending levels in 2000, transmission construction and maintenance expenditures were 68.6% lower (-12.1% annual compound growth rate) in 2009. Figure 17 does illustrates the sizable buildup of expenditures in 1999 and 2000 before trailing off to below 1998 levels in constant 1998 dollars.

Part 411.120(b)(3)(A) states that the utility is to include a future investment plan within its report. Pages A-1 through A-7, including Table 1 on pages A-4 through A-7, of the 2009 Reliability Report detail ComEd's plans for future investment. A summary of the current plan is shown in Table 10 along with total variances from previous plan years. Table 10 shows that the planned future investment level for 2010 is lower (by $111 million) than what had been planned for that year in the 2007 report but is higher (by $44 million) than what had been planned for that year in the 2008 report. Table 10 also shows for the planned investment level for 2011 the amount currently planned is $40 million higher than the amount planned in the 2008 Report. Portions of the plan reductions from the 2007 report can reasonably be attributed to declining load projections and the deferral of associated capital additions. Maintenance is one activity that may not decline and would thus be one area where cost moderation or even reductions are difficult to achieve. This is discussed further in Section 10.

[35] Down from 3.8% in the 2008 assessment and 5.2% in the 2007 assessment.

Table 10 Future Investment Plan ($'s in Millions)

	Plan 2010	Plan 2011	Plan 2012
Transmission System Improvements [see page A-4 of 2009 Report]	99	80	67
Distribution Capacity [see page A-5 of 2009 Report]	55	69	69
Substation [see page A-5 of 2009 Report]	53	45	39
4kv, 12kv, & 34kv Ckt. Improvements [see page A-6 of 2009 Report]	73	75	77
Inspection and Maintenance [see page A-7 of 2009 Report]	100	107	109
	380	**376**	**361**
Variance from plan in 2008 Report	**44**	**40**	
Variance from plan in 2007 Report	**-111**		

A detailed analysis of actual (using information from Part 411.120(b)(3)(B)) and projected investment plans (Part 411.120(b)(3)(A) information from the 2002 through 2009 Reliability Reports) is illustrated in Figures 18 through 23.

Figure 18: Comparison of Actual vs Plan for Future Investment

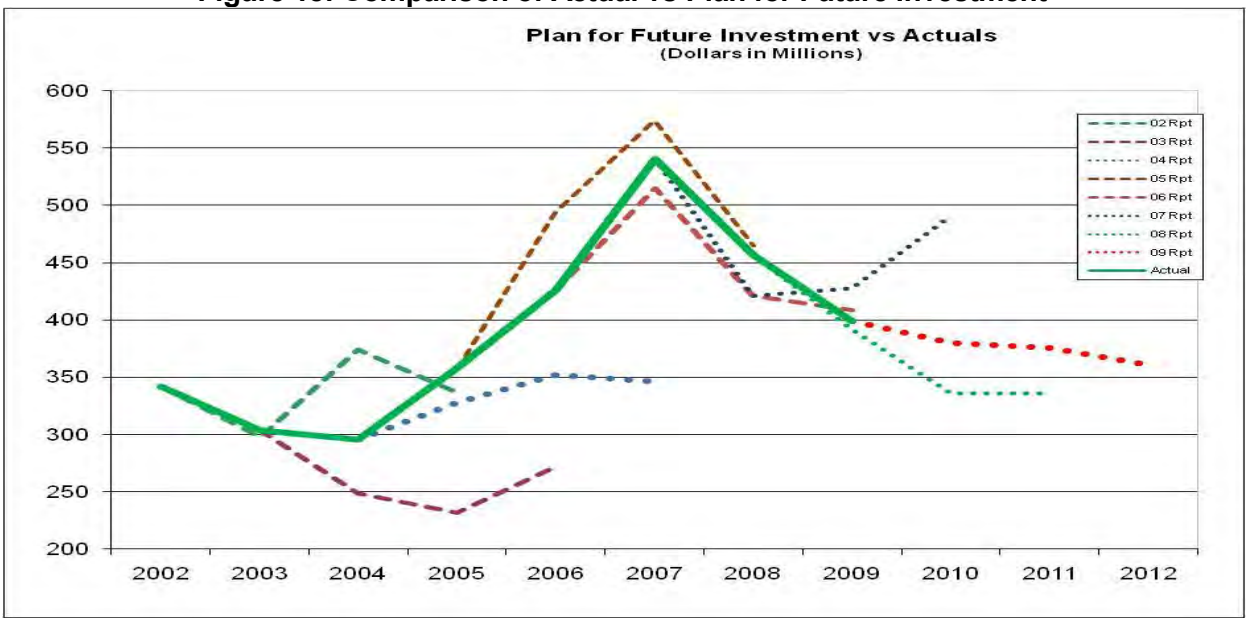
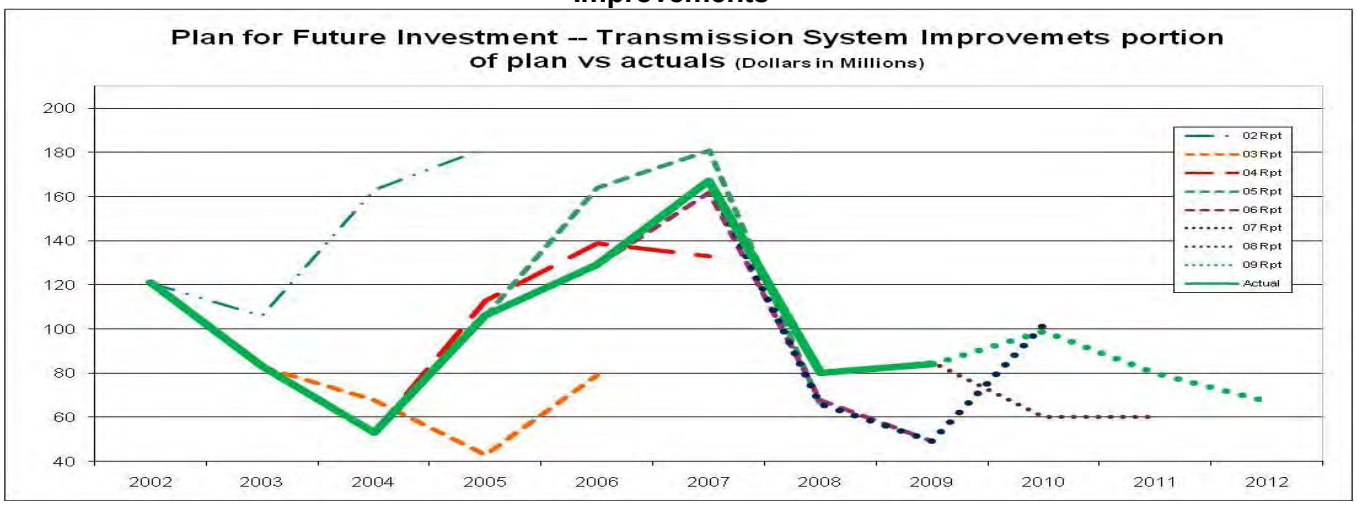


Figure 18 shows the actual 2009 investment level being lower than the plans in the 2006 and 2007 reports but slightly higher than the plan in the 2008 report. On pages A-1 through A-3 of the 2009 Reliability Report, ComEd describes its plan for future investment.

Figure 19: Comparison of Actual vs Plan for Future Investment – Transmission System Improvements



Transmission System Improvements spending levels are described by ComEd on page A-4 of the Report. ComEd reported that "[p]lanned expenditures for Transmission System Improvements in 2010 and 2011 are more than reported in the 2009 plan [the plan in the 2008 report filed in 2009] due to ComEd's decision to commit additional resources to fiber optic communication system and various 138kV and 345kV line upgrades."

Figure 20: Comparison of Actual vs Plan for Future Investment – Distribution Capacity

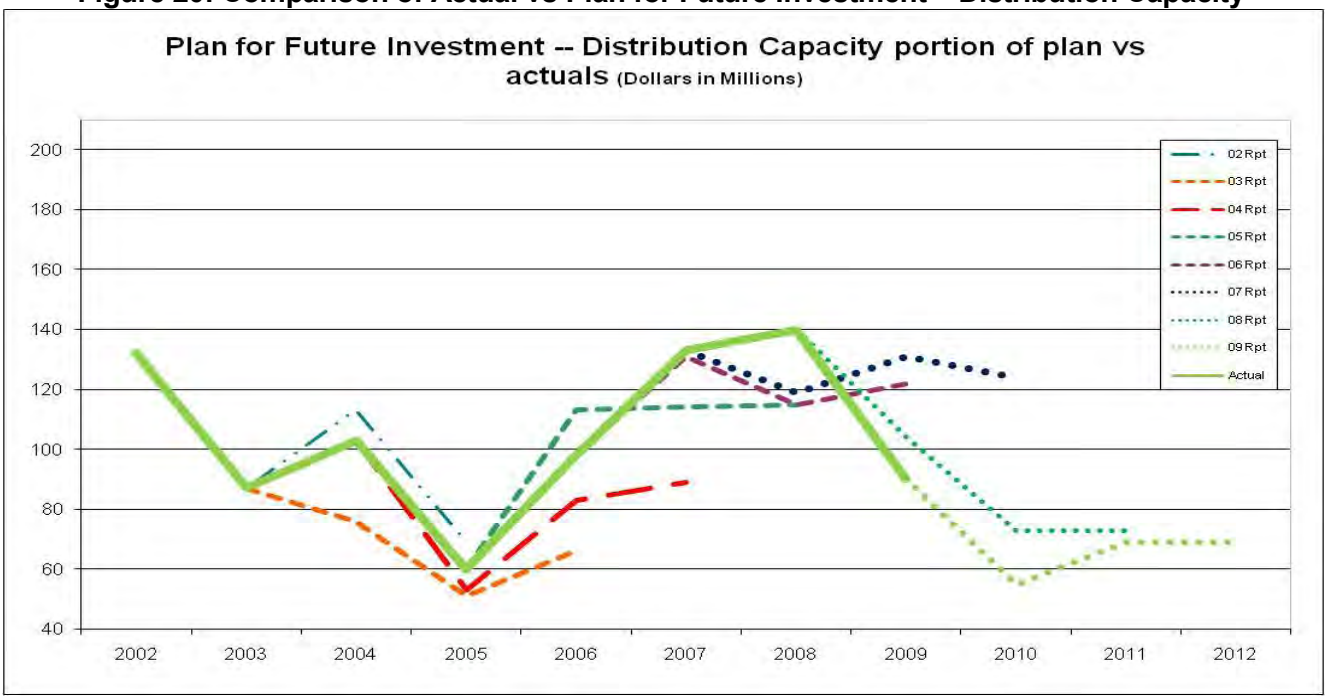


Figure 20 shows that current planned investments in distribution capacity expansion are reduced from previous years due to current economic conditions requiring fewer capacity additions in the near future as described by ComEd on page A-5 of the Report.

Figure 21: Comparison of Actual vs Plan for Future Investment – Substation

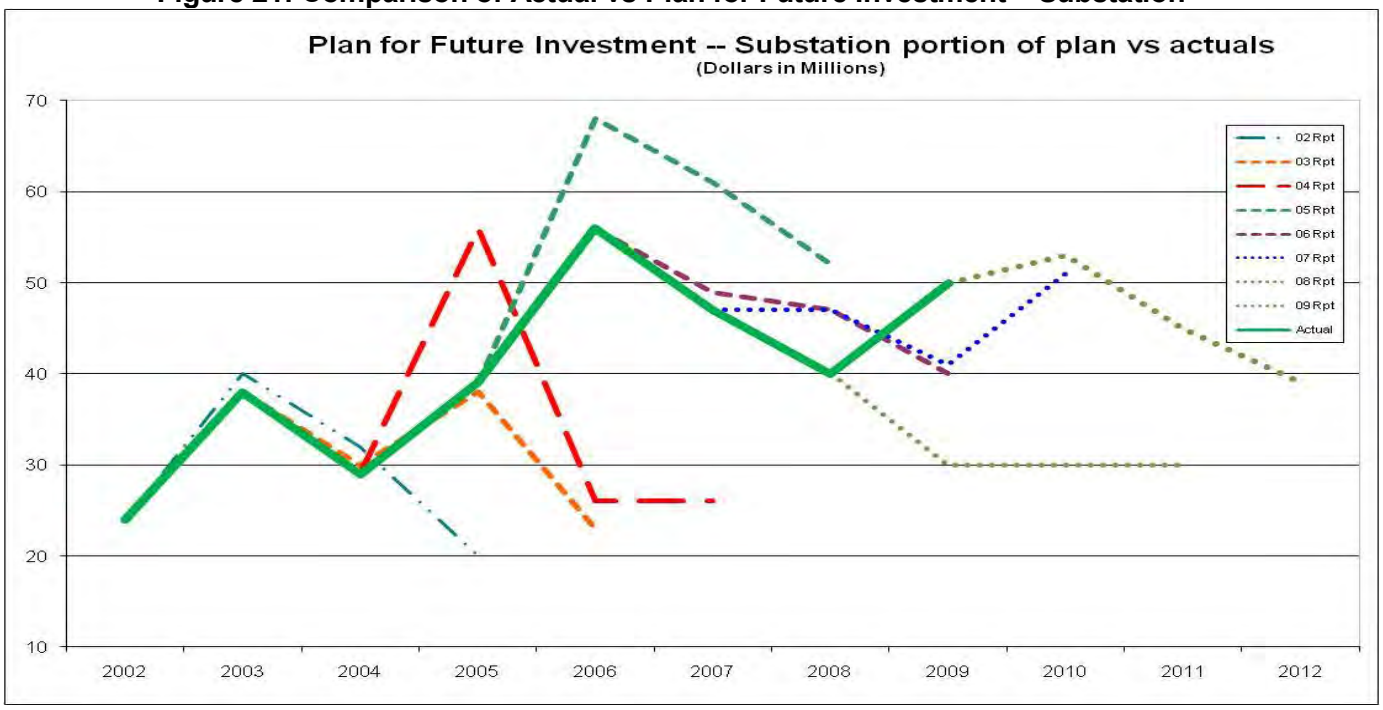


Figure 21 illustrates that current planned investment for maintenance and improvement of substations, discussed on page A-5 of the report, is more than last year due to ComEd's decision to commit additional resources to various proactive breaker and transformer replacements.

Figure 22: Comparison of Actual vs Plan for Future Investment – 4kv, 12kv, & 34kv Circuit Improvements

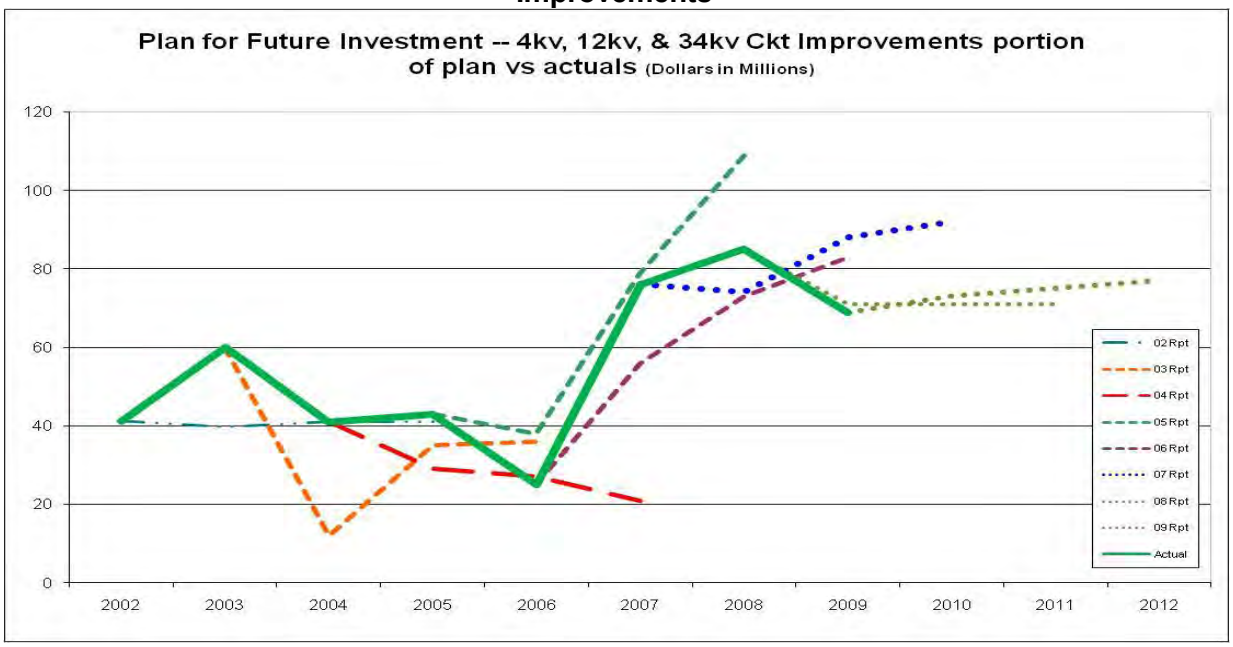


Figure 22 shows that, after a decrease in spending in 2006, actual spending increased substantially in 2007 and 2008 with a decline in 2009 followed by moderate increases over the next three years in

distribution circuit improvements to reduce interruption frequency and duration and to address line disturbances as discussed on page A-6 of ComEd's Report.

Figure 23: Comparison of Actual vs Plan for Future Investment – Inspection and Maintenance

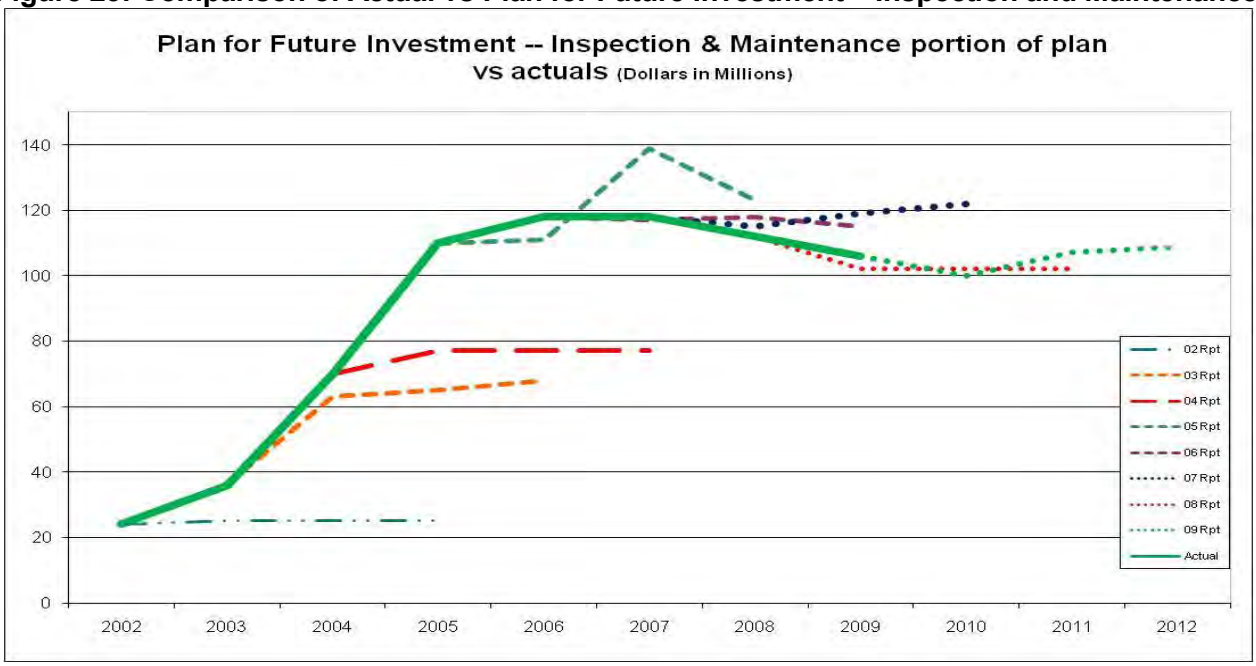


Figure 23 shows that the current planned investment level will continue to decline slightly in 2010 before beginning moderate increases in 2011 and 2012 for inspection and maintenance.

Trends in spending levels alone do not tell the Commission how well ComEd is addressing reliability issues unless the Commission has some indication of how efficiently those spending patterns are being applied. For example, if all else were equal, then spending patterns similar to those in the mid 1990's would be a cause for alarm because the spending patterns of the mid-1990's were a precursor to the reliability problems of 1999. However, rarely are all things equal and a good example of this would be to look at the strides made over the past 15 years in capabilities of distribution and substation automation technologies and costs.

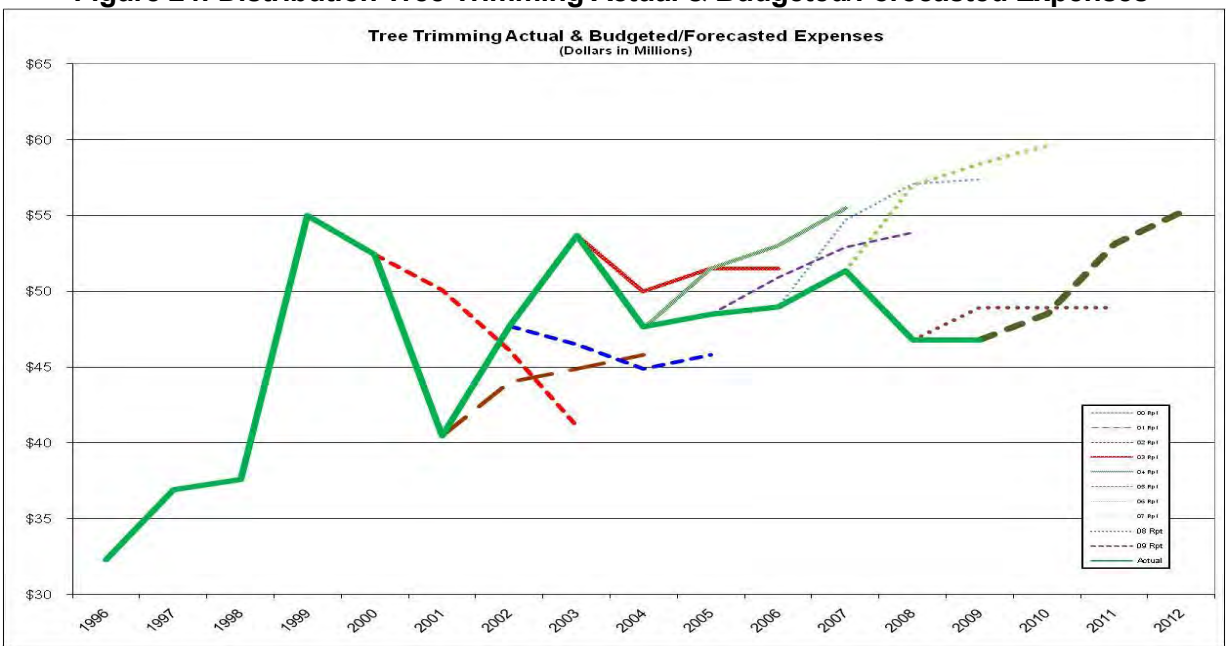
On page A-1 of the reliability report, ComEd states that it "…is continually identifying and evaluating ways to improve operating efficiencies and internal processes. …" Indicators of efficiency, coupled with reviews of spending patterns, spending levels and inspections by Staff of actual conditions in the field with their assessment of whether the work that should be done is actually getting done is the most effective way to determine the status of plans to improve reliability. Staff recommends that in the future Staff continue regular inspections of conditions in the field coupled with monitoring emerging spending patterns as well as indicators of efficiency improvements.

Figure 24 illustrates the actual distribution tree trimming (vegetation management) expenditures from 1996 through 2009 as well as the three-year budget/forecasts[36] associated with the current and previous report analyses. The quality as well as quantity of vegetation management can significantly impact the number of customer-experienced interruptions during adverse weather conditions as well as more normal conditions. The overall distribution spending trend of Figure 24 has been upward with

[36] The first year in the future is a budget number followed by two forecast numbers.

four-year cyclical spending peaking in 1999, 2003, and 2007. The current distribution budgeted and forecasted spending levels are up 4% from the actual 2009 spending levels and substantially below what appeared to be the trend of past projections, but they do appear consistent with the actual amounts spent in 2003 through 2008 in that they are approximately the average of the amount spent in that time period.

Figure 24: Distribution Tree Trimming Actual & Budgeted/Forecasted Expenses



Since May 18, 2000, ComEd has claimed to be on a four-year tree trimming cycle. Figure 25 indicates, based on most recent four year rolling totals of reported circuits trimmed, that ComEd has been on a four-year cycle since the year 2000. As noted in Section 7, problem areas still exist that ComEd needs to investigate and modify programs to advance *and maintain* a four-year (minimum) distribution tree trimming cycle throughout its service territory that is in compliance with NESC Rule 218.

Figure 25: Rolling Average Distribution Tree Trimming Cycle Based on Most Recent Four Year Totals

10. Potential Reliability Problems and Risks

Adequate preventive and corrective maintenance programs, which include a well-planned vegetation management program, are the most important factors that influence long-term customer reliability. Unfortunately, maintenance programs are one area where a company can cut spending quickly and have an immediate impact on short-term income statement performance with minimal impact on short-term reliability performance[37]. ComEd's projected and actual spending pattern for "Inspection and Maintenance" is apparent in Figure 23[38]. The projected inspection and maintenance expenditures for 2010-2012 are below actual spending levels for the period 2005-2008. Staff has always encouraged ComEd to improve efficiencies and economies of maintenance and operations but Staff is concerned, in this instance, that it is very difficult to achieve a decrease in maintenance expense without adversely impacting reliability. On page A-2 of the report ComEd stated:

> "In 2009, ComEd increased efficiency by continuing to implement process improvements such as increased utilization of internal resources, reduced outsourcing, renegotiated contractor costs and material costs, as well as use of a risk based decision-making process. These planning and process improvements enabled ComEd to plan and execute reliability improvement programs with equivalent benefits at lower costs."

While Staff found the above statement reassuring, along with other program descriptions and discussion in section A of the report, Staff would continue to recommend that ComEd work to explain further in future reports how savings in maintenance expense as well as efforts to moderate the future growth of maintenance expense may impact current and future reliability performance.

[37] Staff would expect a delay of up to several years between when maintenance expenditures are cut and when material impacts will be apparent in reliability performance. An analogy would be the depressed spending levels for distribution in 1995-1998 and the service reliability problems of 1998 and 1999.

[38] The data that makes up Figure 23 is collected from pages A-7 and B-6 of the current and previous ComEd Reliability Reports.

Figure 26: Total O&M Spent by ComEd per Customer

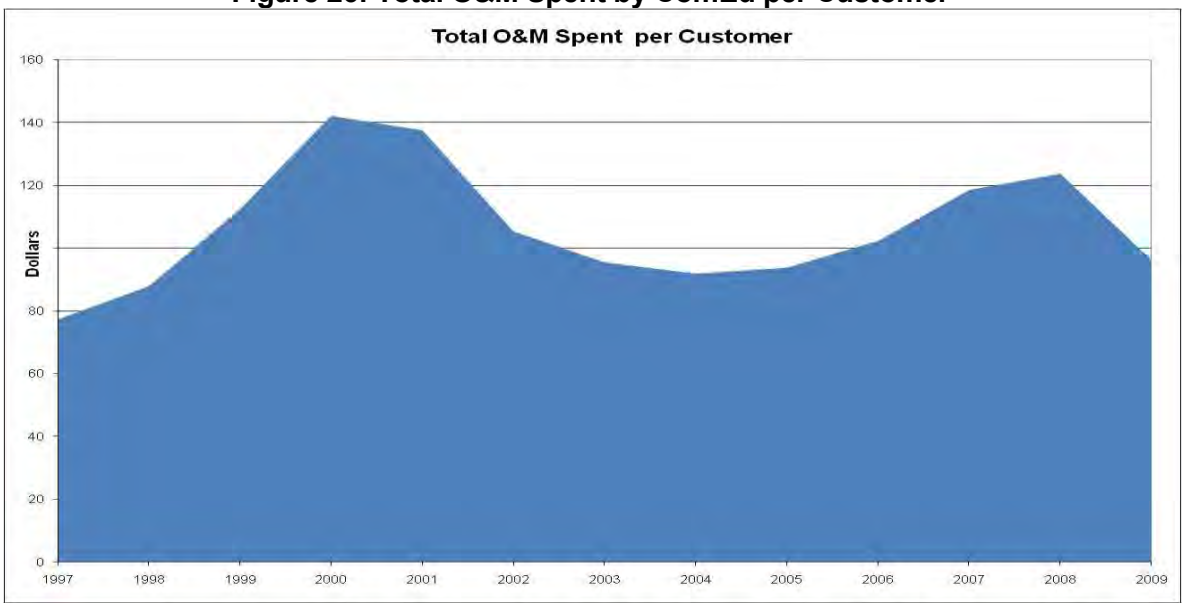


Figure 26 shows that total O&M dollars spent per ComEd customer had bottomed in 2004 after which it steadily increased to another peak in 2008 before a significant decline in 2009, though not down to 2003-2005 or 1997-1998 levels. Staff will continue to follow this closely.

Figure 27: Annual Interruption totals

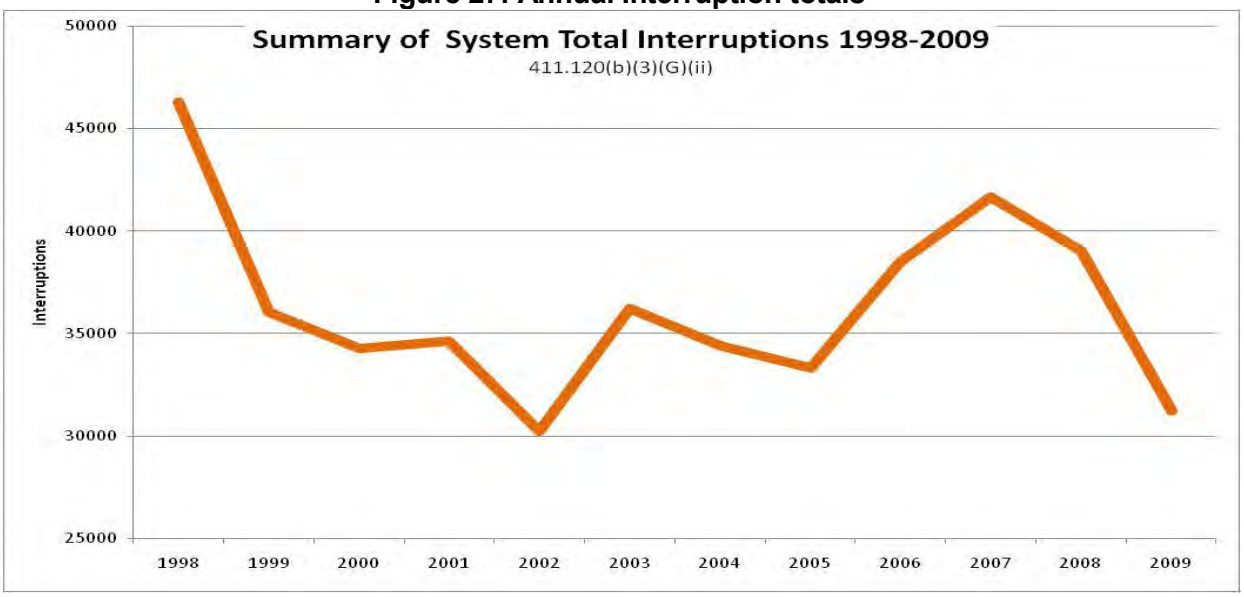


Figure 27 shows the trend in total annual system interruptions from 1998 through 2009 as identified in ComEd's responses to Section 411.120(b)(3)(G)(ii)[39]. The highest number of interruptions (46,286 interruptions) are seen in 1998 which corresponds to the time when ComEd's distribution system unavailability became so conspicuously apparent. For 2002, after ComEd spent a few years improving its system, ComEd reported only 30,548 interruptions in response to 411.120(b)(3)(G)(ii). Staff is encouraged that ComEd has returned to system total interruption levels more in line with the 2000-2005

[39] The 2009 System Total of 31,253 interruptions is from Table 12 on Page G-8 of ComEd's 2009 Report.

time period. On page 1 of the report, ComEd attributed the improved 2009 reliability performance to both reliability programs and decreased storm activity. ComEd stated that its "reliability programs are based on extensive analysis of failure modes and have contributed to the positive improvement in reliability performance." On page 2 of the report ComEd noted some of the improvements that have been made to its tree and vegetation management programs. ComEd further noted its continued implementation of its multi-year comprehensive fire protection program which improves future reliability by vastly minimizing the occurrence and impact of future substation fires. Staff will continue to follow these issues closely.

Figure 28: Company and Contract Employees – End of Year Totals

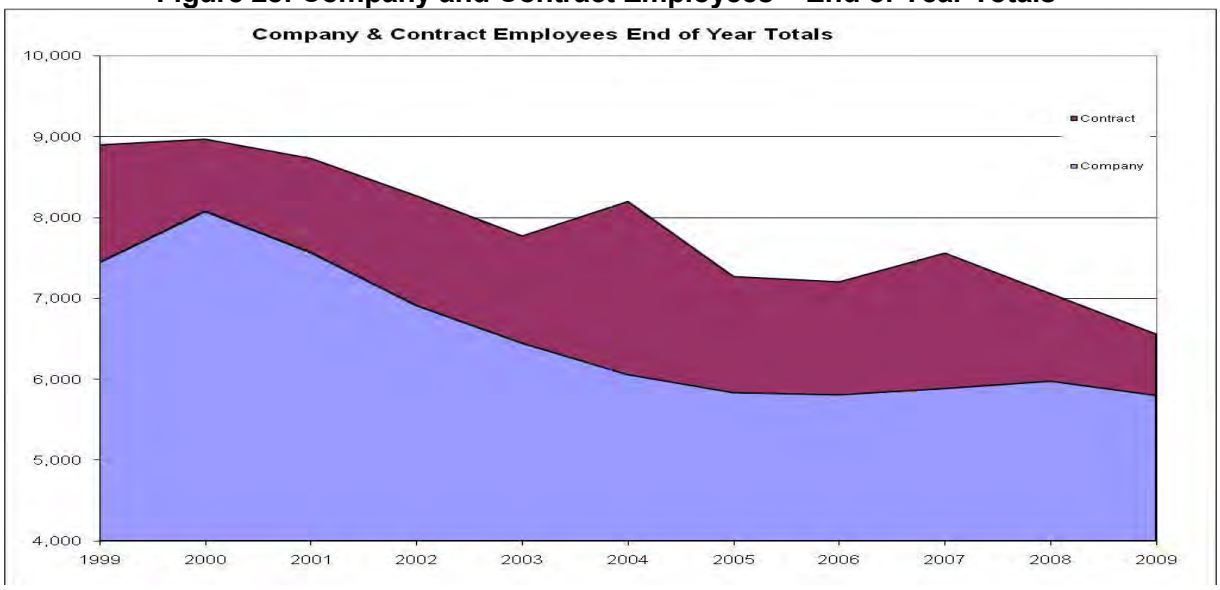


Figure 28 shows that the number of company employees declined by 22% from 1999 to 2009 while the number of contract employees decreased by 48% for a total decrease over that period of 26%. The impact that this total employee decrease may have on reliability has yet to be determined, but Staff will continue to follow developments in this area for signs of direct or indirect impacts.

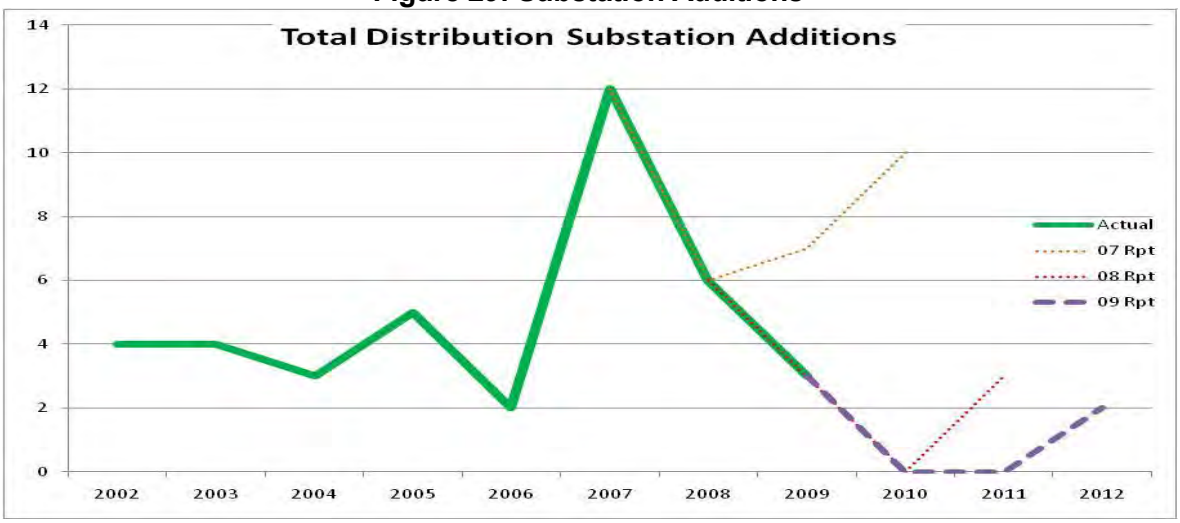
Table 11 indicates the term lengths that a number of people have held the position of ComEd executive responsible for energy delivery reliability, starting with Paul McCoy on October 22, 1997, up through the current executive, Anne R. Pramaggiore, the position of ComEd executive responsible for energy delivery reliability. Staff is concerned that the lack of management continuity in this and other positions could and already may have had a detrimental impact on reliability and/or efficiency. Staff notes that Mr. Costello is the only person to have held that position for two years or more since October 1997. Staff will continue to follow developments in this area.

Table 11 Management Term Lengths

	Name	Approx Yrs in Position
1	Paul McCoy	1.8
2	David Helwig	0.1 (Interim)
3	Carl Croskey	1.3
4	David Helwig	1.4
5	Gregory N. Dudkin	1.3
6	Carl Segneri	0.1 (Interim)
7	Preston Swafford	1.7
8	John Costello	2.3
9	Barry Mitchell	1.7
10	Anne R. Pramaggiore	1.6[40]

Figure 29 illustrates actual substation additions through 2009 as well as planned additions through 2012. Staff believes that it is reasonable for substation additions planned in ComEd's 2007 and 2008 Reports to have been deferred in ComEd's 2008 and 2009 Reports because of the drop-off in economic activity and the resultant decreased load forecast.

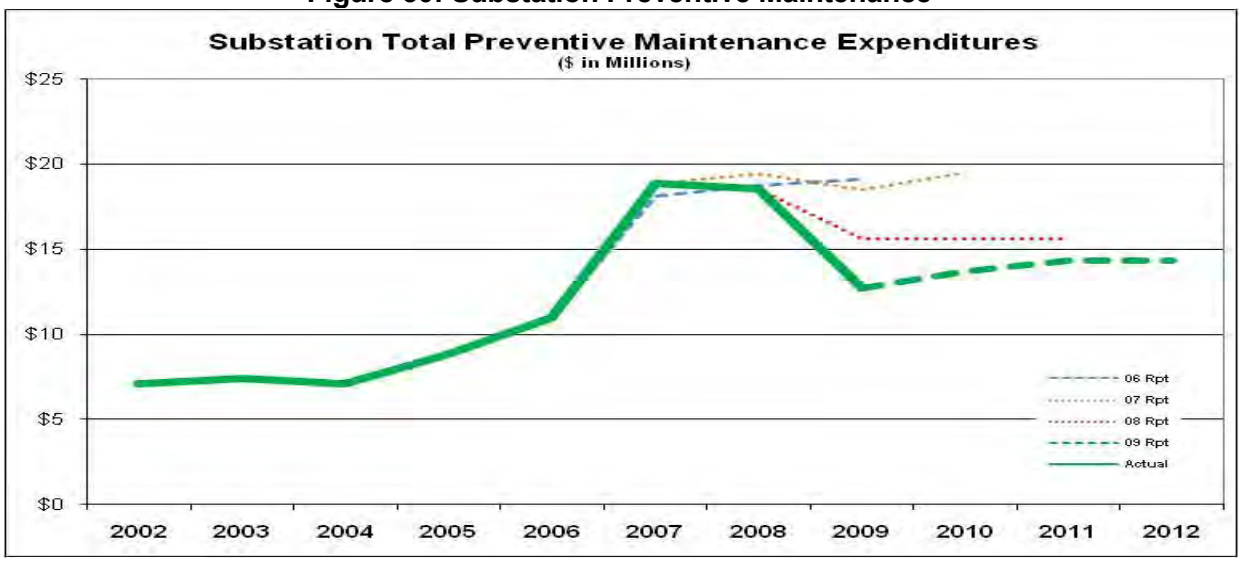
Figure 29: Substation Additions



In addition to building new substations to meet increased demand and to improve customer reliability, it is important that maintenance be scheduled and completed in substations to insure maximum capability, flexibility and reliability during periods of high demand. Figures 30 and 31 show the trends in spending on preventive and corrective maintenance expenditures.

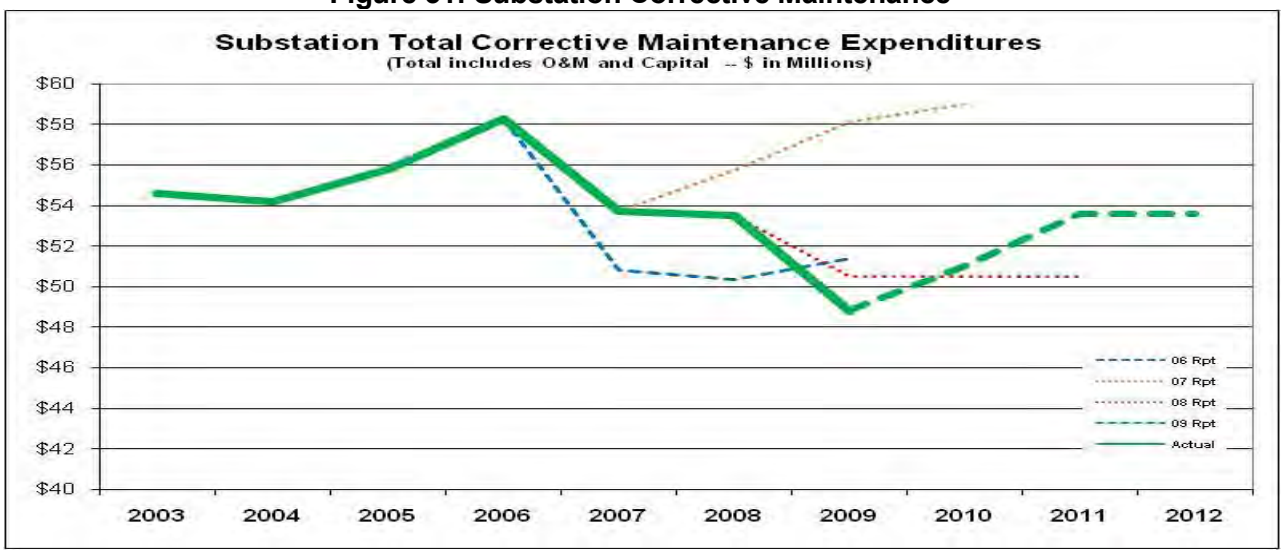
[40] As of December 31, 2010

Figure 30: Substation Preventive Maintenance



Spending more on preventive maintenance, all other things being equal, should result in improved equipment reliability and availability. In Figure 30 the planned preventive maintenance expenditures dropped 31%[41] from 2008 to 2009 and the current plan is for increases of 8%, 4% and 0% for 2010, 2011, and 2012.. Corrective maintenance expenditures also dropped 9% from 2008 to 2009 but are projected to rise 5%, 5%, and 0% in 2010, 2011, and 2012 as shown in Figure 31.

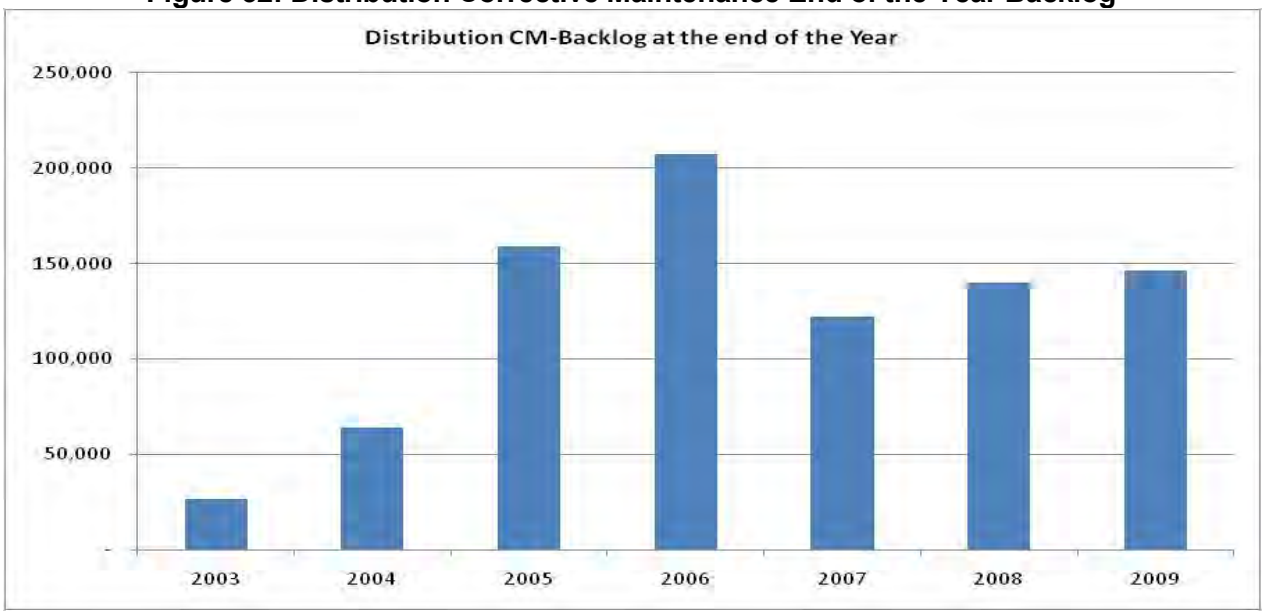
Figure 31: Substation Corrective Maintenance



Another way to gauge progress in energy delivery systems reliability and availability improvements is to analyze distribution corrective maintenance backlogs. Figure 32 tracks the end of the year backlogs for distribution corrective maintenance which increased 14% in 2008 and 4% in 2009.

[41] In the 2008 plan it was expected to drop 16% from 2008 to 2009 and remain at a constant level of expenditures from 2009 through 2011.

Figure 32: Distribution Corrective Maintenance End of the Year Backlog

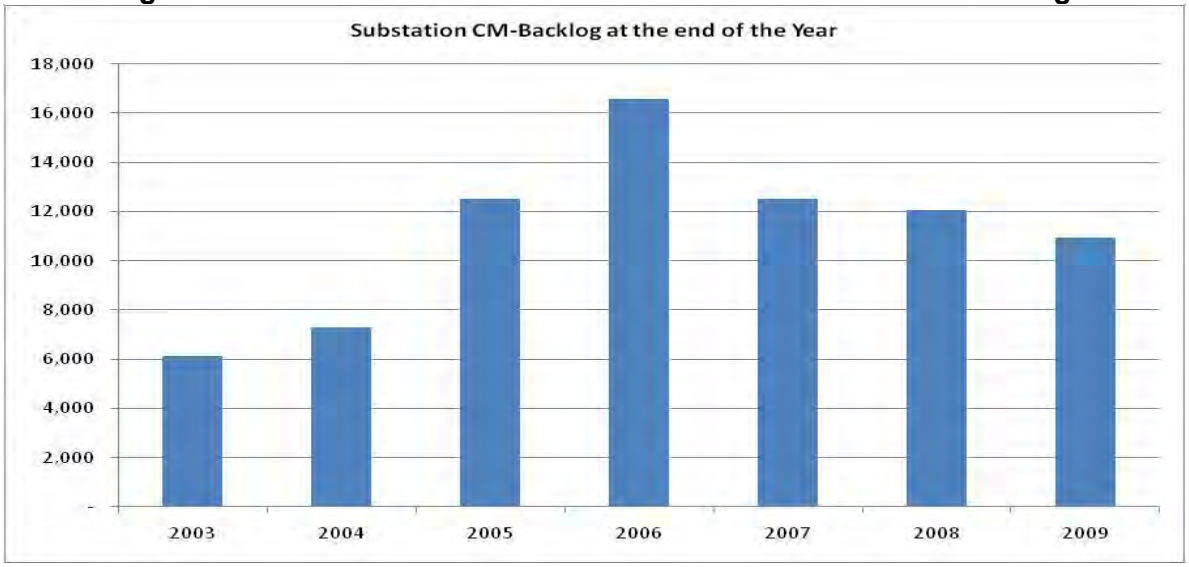


As noted in previous assessments, beginning in 2003 expenditures for inspection and maintenance climbed sharply and, according to ComEd,[42] the Company expected distribution corrective maintenance backlogs to increase over their four-year distribution inspection cycle because inspectors were looking harder and identifying more corrective maintenance items than would have been previously noted. As Figure 32 shows, after the first-four year cycle distribution corrective maintenance backlogs declined 41% in 2007, but this has been followed by 14% increase in 2008 and a 4% increase in 2009. In 2008 ComEd attributed much of the distribution corrective maintenance backlog increase to a significant increase number of cable faults due to storms & flooding and a reduction of resources due to the mutual assistance provided in Louisiana & Kentucky. In 2009 ComEd attributed much of the distributed corrective maintenance backlog increase to focusing on getting the higher priority corrective maintenance work done and addressing the lower priority maintenance work "whenever they were part of a bundled task, or when it was opportunistic to do so".[43] ComEd note that "[i]n 2009, C&M saw an increase in the number of Services and Streetlight cable faults, which contributed towards the overall rise in the number of Corrective Maintenance tasks." Staff believes that if the backlog decline is not re-established soon, it would indicate that insufficient resources have been allocated to this maintenance function. Staff will be closely monitoring this trend.

Figure 33 illustrates end of the year backlogs for Substation Corrective Maintenance. Since 2006 Substation Corrective Maintenance end of the year backlogs have been declining.

[42] Statement by Preston Swafford at Liberty Verification Close-Out meeting January 11, 2005.
[43] ComEd response to data request ENG_2.05.

Figure 33: Substation Corrective Maintenance End of the Year Backlog



During Staff's field inspections, in previous years, Staff found instances of NESC violations. Violations were found specifically in the areas of guy wire insulator placement (NESC 279.A.2), Grade B Crossings (NESC 261.D.4.c), and line clearance issues associated with Primary, Secondary, Neutral or Services. Staff is encouraged that ComEd is actively looking for and beginning to address these NESC violations as part of its regular inspection[44] cycle. Staff was further encouraged to learn that ComEd found and is correcting line clearance issues associated with its transmission system. Staff conducted a number of field visits, discussed earlier, to observe work being done to correct NESC transmission line clearance issues. Staff will follow progress in this area and other NESC type violations as ComEd works through its inspection cycles.

11. Review of ComEd's Implementation Plan for the Previous Reporting Period

A report on the significant deviations from ComEd's 2008 plan for 2009 from 2009 actuals was included in ComEd's 2009 reliability report in pages B-1 through B-6. Table 12 summarizes the data from ComEd's plan and shows a significant [i.e. ~10% or more] variance in two categories, Distribution Capacity and Substation, while overall the 2009 actual was 1.8% above the 2008 plan for 2009.

Table 12 Comparison of 2008 plan for 2009 to 2009 actual (in $ Million's)

	2008 Plan for 2009	Actual 2009	Var	% Var
Transmission System Improvements [see page B-3]	85	84	-1	-1.2%
Distribution Capacity [see page B-4]	104	90	-14	-13.5%
Substation [see page B-4]	30	50	20	66.7%
4kv, 12kv, & 34kv Circuit Improvements [see page B-5]	71	69	-2	-2.8%
Inspection and Maintenance [see page B-6]	102	106	4	3.9%
	392	**399**	**7**	**1.8%**

[44] "… The thorough inspection of 34kV lines are performed every 2 years and 4kV and 12kV lines are inspected every 4 years. …" ComEd response to Staff DR, ENG 2.09.

Figure 19 summarizes a comparison of actual versus planned investment for "Transmission System Improvements" from the Reliability Reports from 2001 up to the present day. Page B-3 of the Reliability Report summarizes the work done in this function.

Figure 20 summarizes a comparison of actual versus planned investment for "Distribution Capacity" from the Reliability Reports from 2001 up to the present day. Page B-4 of the Reliability Report summarizes the work done in this function.

On page B-4 regarding the "Distribution Capacity" -13.5% variance, ComEd noted that variances were: "… primarily driven by the realized project savings and the deferral and reduction of the 2010 projects due to the updated load growth forecast …"

Figure 21 summarizes a comparison of actual versus planned investment for "Substation" from the Reliability Reports from 2001 up to the present day. Page B-4 of the Reliability Report summarizes the work done in this function.

On page B-4 regarding the "Substation" 66.7% variance, ComEd noted that variances were: "… primarily due to additional spare transformer purchases, emergent and planned transformer replacements, replacement of substation components (i.e.: breakers, circuit switchers, batteries) and PCB capacitor bank replacements. …"

Figure 22 summarizes a comparison of actual versus planned investment for "4kV, 12kV, & 34kV Circuit Improvements" from the Reliability Reports from 2001 up to the present day. Page B-5 of the Reliability Report summarizes the work done in this function.

Figure 23 summarizes a comparison of actual versus planned investment for "Inspection and Maintenance" from the Reliability Reports from 2001 up to the present day. Page B-6 of the Reliability Report summarizes the work done in this function.

ComEd's explanations for their major variances in response to 411.120(b)(3)(B) appear reasonable.

12. Summary of Recommendations

Staff recommends the following actions:

- ComEd continue its focus on improving customer service overall while directing additional attention on better communicating the need for tree trimming to customers. (Section 7)
- ComEd investigate the problem areas and modify programs to advance and maintain a four-year (minimum) tree trimming cycle throughout its service territory that is in compliance with Admin Code Part 305.20. (Section 7)
- ComEd investigate more ways to address problem trees. (Section 7)
- ComEd pursue more opportunities to educate customers on the reliability consequences of planting some types of vegetation beneath or near ComEd's distribution equipment. (Section 7)
- ComEd work to explain further in future reports how savings maintenance expense as well as efforts to moderate the future growth of maintenance expense impacts current and future reliability performance. (Section 10)

In addition, Staff should continue regular inspections in 2011 of conditions in the field coupled with monitoring emerging spending patterns as well as indicators of efficiency improvements.