*Review of Florida's*
*Investor-Owned Electric Utilities' Service Reliability*
*In 2008*

Florida Public Service Commission
Division of Service Quality, Safety and Consumer Assistance

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## Terms and Acronyms

| | |
|---|---|
| CAIDI | Customer Average Interruption Duration Index |
| CI | Customer Interruption |
| CME | Customer Momentary Events |
| CMI | Customer Minutes of Interruption |
| EOC | Florida's Emergency Operation Center |
| F.A.C. | Florida Administrative Code |
| FPL | Florida Power & Light Company |
| FPUC | Florida Public Utilities Company |
| GIS | Geographic Information System |
| Gulf | Gulf Power Company |
| IEEE | The Institute of Electrical and Electronics Engineers, Inc. |
| IOU | The five investor-owned electric utilities: FPL, PEF, TECO, Gulf, and FPUC |
| L-Bar | Average of customer service outage events lasting a minute or longer |
| MAIFIe | Momentary Average Interruption Event Frequency Index |
| N | Number of outage events |
| NWS | National Weather Service |
| PEF | Progress Energy Florida, Inc. |
| SAIDI | System Average Interruption Duration Index |
| SAIFI | System Average Interruption Frequency Index |
| TECO | Tampa Electric Company |

## Reliability Metrics Used in this Review

Rule 25-6.0455, Florida Administrative Code, requires Florida's IOUs to report data pertaining to distribution reliability in their Annual Distribution Reliability Reports. The following 10 indices are utilized in the reports or are derived from the filed data.

1. *Average Duration of Outage Events* (L-Bar) is the simple average of customer service outage events lasting a minute or longer.

2. *Customer Average Interruption Duration Index* (CAIDI) is an indicator of average interruption duration, or the time to restore service to interrupted customers. CAIDI is calculated by dividing the total system customer minutes of interruption by the number of customer interruptions. (CAIDI = CMI ÷ CI, also CAIDI = SAIDI ÷ SAIFI)

3. *Customers Experiencing More Than Five Interruptions* (CEMI5) measures the percent of customers that have experienced more than five service interruptions. (CEMI5 is a customer count shown as a percentage of total customers.)

4. *Customer Interruption* (CI) is the number of customer service interruptions which lasted one minute or longer.

5. *Customer Minutes of Interruption* (CMI) is the number of minutes that a customer's electric service was interrupted for one minute or longer.

6. *Customer Momentary Events* (CME) is the number of customer momentary service interruptions which lasted less than one minute measured at the primary circuit breaker in the substation.

7. *Momentary Average Interruption Event Frequency Index* (MAIFIe) is an indicator of average frequency of momentary interruptions or the number of times there is a loss of service of less than one minute. MAIFIe is calculated by dividing the number of momentary interruption events recorded on primary circuits by the number of customers served. (MAIFIe = CME ÷ C)

8. *Number of Outage Events* (N) measures the primary causes of outage events and identifies feeders with the most outage events.

9. *System Average Interruption Duration Index* (SAIDI) is a composite indicator of outage frequency and duration and is calculated by dividing the customer minutes of interruptions by the number of customers served on a system. (SAIDI = CMI ÷ C, also SAIDI = SAIFI x CAIDI)

10. *System Average Interruption Frequency Index* (SAIFI) is an indicator of average service interruption frequency experienced by customers on a system. It is calculated by dividing the number of customer interruptions by the number of customers served. (SAIFI = CI ÷ C, also SAIFI = SAIDI ÷ CAIDI)

# Executive Summary

The purpose of the 2008 review is to assess trends in the reliability of service provided by Florida's investor owned electric utilities. Observations and trends that suggest declines in service reliability may require additional scrutiny or emphasis by the Commission and remedial actions may be required by the individual companies.

## *Assessing Service Reliability*

The assessment of an investor-owned utility's (IOU) electric service reliability is made primarily through a detailed review of established service reliability metrics pursuant to Rule 25-6.0455, Florida Administrative Code (F.A.C.).[1] Reliability metrics or indices are intended to reflect changes over time in system average performance, regional performance, and sub-regional performance. Reliability metrics are measures of unreliability such that as the indices increase, reliability becomes increasingly worse. Comparison of the year-to-year levels of the reliability metrics may reveal changes in performance which indicate the need for additional work in one or more areas. The review also examines a utility's level of storm hardening activity in order to gain insight into factors contributing to the observed trends in the performance metrics.[2, 3] Inter-utility comparisons of reliability data and reliability related complaints by the Commission provide additional insight into reliability. Finally, audits may be performed where additional scrutiny is required based on the observed patterns and to ensure the reported data are reliable.

Prior to 2006, Rule 25-6.0455, F.A.C., required the IOUs to file distribution reliability metrics to track adjusted performance that excluded events such as planned outages for maintenance, generation disturbances, transmission disturbances, wildfires, and extreme acts of nature such as tornadoes and hurricanes. The "adjusted" data provides an indication of the distribution system performance on a normal day-to-day basis but the adjusted data did not reveal the impact of excluded events on reliability performance.

The importance of collecting reliability data that would reflect the total or "actual" reliability experience from the customer perspective became apparent following the active hurricane years of 2004 and 2005. Unadjusted service reliability data was needed to assess service performance during hurricanes. In June 2006, Rule 25-6.0455, F.A.C., was revised to require each IOU to provide both "actual" and "adjusted" performance data for the prior year. The scope of the IOUs' Annual Distribution Service Reliability Report was expanded to include status reports on the various storm hardening initiatives required by the Commission.[4]

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[1]The Commission does not have rules requiring municipal electric utilities and rural electric cooperative utilities to file service reliability metrics.
[2]Rule 25-6.0342, F.A.C., effective February 5, 2007, requires investor-owned electric utilities to file comprehensive storm hardening plans at least every three years.
[3]Rule 25-6.0343, F.A.C., effective December 12, 2006, requires municipal electric utilities and rural electric cooperative utilities to report annually, by March 1, the extent to which their construction standards, policies, practices, and procedures are designed to storm-harden their transmission and distribution facilities.
[4]Wooden Pole Inspection Orders: Order No. PSC-06-0144-PAA-EI, issued February 27, 2006, in Docket No. 060078-EI; and Order Nos. PSC-06-0778-PAA-EU, issued September 18, 2006, PSC-07-0078-PAA-EU, issued January 29, 2007, in Docket No. 060531-EU.

The reports filed on March 2, 2009, included: (1) storm hardening activities; (2) actual 2008 service reliability data; (3) adjusted 2008 distribution service reliability data; and (4) actual and adjusted 2008 performance assessments in five areas: system-wide, operating region, feeder, cause of outage events, and customer complaints.

## *Conclusions*

The comprehensive March 2009 reports of Florida Power & Light Company (FPL), Progress Energy Florida, Inc., (PEF), Tampa Electric Company (TECO), Gulf Power Company (Gulf) and Florida Public Utilities Company (FPUC) were sufficient to perform the 2008 review.

Storm hardening activities and associated programs have become an on-going part of the annual reliability reports required from each IOU since rule changes in 2006. Based on the reliability reports filed in 2007 and the data filed from 2008, staff has not observed any trends in service reliability requiring an increased level of investigation such as a focused audit, investigation or other formal proceeding before the Commission at this time. Staff will continue to monitor and engage each company on service reliability matters. The following company specific summaries provide highlights of the observed patterns.

**Service Reliability of Florida Power & Light Company**

FPL's 2008 allowable exclusions for outage events accounted for approximately 80 percent of all customer interruptions with 64 percent of the allowable exclusions being attributed to named storms. FPL reported a massive blackout on February 26, 2008, as the cause for a decrease in overall service reliability for two reliability metrics in 2008. The results of the blackout added nine minutes to the adjusted system average interruption duration index (SAIDI), and the customer average interruption duration index (CAIDI) in 2008. Equipment failure has been the leading cause of the number of outage events per customer for the past five years, and FPL's CAIDI value has risen consistently for the past five years, indicating an increase in the service interruption durations and equipment failures. Staff will continue to monitor the CAIDI index to determine if there is a need for a focused audit or other formal proceeding before the Commission.

On an adjusted basis, FPL's 2008 system average frequency of service interruptions (SAIFI) decreased by 13 percent, indicating that FPL's customers were experiencing fewer interruptions on a system-wide basis. These improvements in the SAIDI and SAIFI indices are reflected by the decrease in FPL's adjusted average duration of outage events (L-Bar) index which decreased from 211 minutes in 2007 to 199 minutes in 2008.

FPL's average number of reliability related complaints in 2008 decreased to 13 per 10,000 customers, the smallest number of reliability related complaints compared to the other four IOU's.

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Storm Hardening Initiative Orders: PSC-06-0351-PAA-EI, issues April 25, 2006; PSC-06-0781-PAA- EI, issued September 19, 2006; PSC-06-0947-PAA-EI, issued November 13, 2006; and PSC-07-0468-FOF-EI, issued May 30, 2007, in Docket No. 060198-EI.

**Service Reliability of Progress Energy Florida**

PEF's 2008 allowable exclusions for outage events were approximately 56 percent of all customer interruptions with severe weather accounting for 37 percent of the allowable exclusions. On a system-wide basis, PEF has shown little change over the past five years in the system average interruption duration index (SAIDI) and a 13 percent improvement or decrease in the number of interruptions per customer (SAIFI) from 2004 to 2008. Much of PEF's adjusted data supports a conclusion that average service reliability in recent years remains stable. The L-Bar (average length of outage events) is decreasing indicating that PEF is spending less time recovering from outage events. In general, PEF's service reliability shows stability with some small improvements.

The category of unknown causes still remains as a high number within the top five outage causes. PEF had a 40 percent increase in outages caused by unknown causes from 2007 to 2008. Staff will continue to monitor the top five outage causes to determine if increased levels of investigation are necessary. The unknown outage cause has fluctuated substantially from 2004 to 2008 and is the second highest reason in the top five causes of outages for PEF.

PEF's average number of reliability related complaints decreased by approximately 30 percent from 2007 to 2008.

**Service Reliability of Tampa Electric Company**

TECO's allowable exclusions for outage events are approximately 28 percent of the customer interruptions. Nineteen percent of the allowable exclusions were related to the distribution substations.

The adjusted SAIDI, SAIFI, and CAIDI indices all showed decreases in duration and frequency of interruptions indicating an overall improvement. This is reflected in the 13 percent improvement in the L-Bar between 2007 and 2008. TECO has shown its continued commitment to improving the three primary indices used in assessing average system reliability.

However, there appears to be a widening difference between the levels of service reliability TECO provides in each of its seven regions. The number of service interruptions in TECO's Dade City and Plant City regions remains an area of concern. These two regions were identified in previous reliability reports and improvement in reliability continues to remain unchanged. TECO maintains that the long circuits in Dade City and Plant City regions contribute to the increased number of service interruptions in their respective regions.

TECO's average number of reliability related complaints per customer served declined by 40 percent from 2007 to 2008.

**Service Reliability of Gulf Power Company**

The allowable exclusions for Gulf are the smallest percentage of all of the IOUs. Approximately 19 percent of customer interruptions were allowable exclusions with 7 percent of the allowable exclusions being planned outages.

Gulf's service reliability has continued to decline since 2006. Gulf's 2008 data shows a marked increase in the reliability index for both the system average interruption index (SAIDI) and system average interruption frequency index (SAIFI), denoting decreasing service reliability. Gulf's adjusted customer average interruption index (CAIDI) decreased by 14 percent in 2008, showing a slight improvement from the 2007 distribution reliability report. Gulf's reporting of the three percent of feeders with the most feeder outage events increased from 3 percent in 2005 and 2006 and five percent in 2007 to ten percent in 2008, showing no signs of improvement in Gulf's feeders. This suggests that no improvement has been made in the feeder network for the past three years. Gulf reported that all of the nine feeders on the three percent feeder report will have corrective action completed by December 2009.

The number of reliability related complaints filed against Gulf in 2008 increased sharply in comparison to the 2004 through 2007 complaints. Service interruption and quality of service reliability complaints topped the customer dissatisfaction list with repair service reliability complaints coming in third.

**Service Reliability of Florida Public Utilities Company**

FPUC's allowable exclusions for 2008 accounted for over 60 percent of the customer minutes of interruption. The "named storms" category accounted for 38 percent of the allowable exclusions.

The overall adjusted 2008 service reliability has declined over the past five year period. FPUC's system average interruption index (SAIDI) was twice as high in 2008 when compared to the 2007 results. The system average interruption frequency index (SAIFI) had a 70 percent increase from 2007 to 2008 and the customer average interruption duration index (CAIDI) was approximately 16 percent higher from 2007 to 2008. FPUC's decreased reliability was also demonstrated by its L-Bar, which increased by almost 30 percent from 77 minutes in 2007 to 100 minutes in 2008. All of these factors combined, suggest a significant decrease in service reliability for FPUC's distribution system from 2007 to 2008. FPUC reports that the recent activation of an Outage Management System (OMS), installed in the Northwest Division, has caused the increase in the reliability indices. FPUC stated that the OMS provided significant improvement in data collection and retrieval capability for analyzing and reporting reliability indices, thus the improved data collection resulted in worse reliability numbers.

FPUC's top five outages included corrosion related events which increased significantly from 74 events in 2007 to 102 events in 2008; however, the percentage of corrosion outage events only accounted for 8 percent of the adjusted number of outage events. FPUC has so few feeders that the data in the report has not been statistically significant. There are only two feeders on the three percent feeder report, one in each FPUC division. Neither of these feeders was listed in the report in 2007.

Reliability related complaints against FPUC are infrequent, in part, because FPUC has less than 50,000 customers. The percentage of reliability related complaints remained stable from 2007 to 2008.

# Introduction

The Florida Public Service Commission (Commission) has the jurisdiction to monitor the quality and reliability of electric service provided by Florida's investor-owned electric utilities (IOUs) for maintenance, operational, and emergency purposes.[5]

Monitoring service reliability is achieved through a review of service reliability metrics provided by the IOUs pursuant to Rule 25-6.0455 F.A.C.[6] Service reliability metrics are intended to reflect changes over time in system average performance, regional performance, and sub-regional performance. For a given system, increases in the value of a given reliability metric denote declining reliability in the service being provided. Comparison of the year-to-year levels of the reliability metrics may reveal changes in performance which indicate the need for additional investigation or work in one or more areas.

A utility's level of storm hardening activity contributes to both day-to-day service reliability and emergency response. Thus, a review of a utility's storm hardening activities can provide insight into factors contributing to the observed trends in the performance metrics. Additional insight into potential changes in service reliability can be found through inter-utility comparisons of reliability data and reliability related complaints addressed by the Commission. Finally, audits will be performed where additional scrutiny is needed based on the observed patterns and to ensure the reported data are reliable.

Throughout this review, emphasis is placed on observations that suggest declines in service reliability and areas where additional scrutiny or remedial action may be required by the company.

## *Background*

Prior to 2006, Rule 25-6.0455, F.A.C., required the IOUs to file distribution reliability metrics to track adjusted performance that excluded events such as planned outages for maintenance, generation disturbances, transmission disturbances, wildfires, and extreme acts of nature such as tornadoes and hurricanes. The "adjusted" data provides an indication of the distribution system performance on a normal day-to-day basis but does not reveal the impact of excluded events on reliability performance.

With the active hurricane years of 2004 and 2005, the importance of collecting reliability data that would reflect the total or "actual" reliability experience from the customers' perspective became apparent. Complete unadjusted service reliability data was needed to assess service performance during hurricanes. In June 2006, Rule 25-6.0455, F.A.C., was revised to require each IOU to provide both "actual" and "adjusted" performance data for the prior year. The

[5] Sections 366.04(2)c and 366.05, Florida Statutes

[6] The Commission does not have rules or statutory authority requiring municipal electric utilities and rural electric cooperative utilities to file service reliability metrics.

scope of the IOUs' Annual Distribution Service Reliability Report was expanded to include status reports on the various storm hardening initiatives required by the Commission.[7]

The reports filed on March 2, 2009, included: (1) actual 2008 service reliability data; (2) adjusted 2008 distribution service reliability data; (3) actual and adjusted 2008 performance assessments in five areas: system-wide, operating region, feeder, cause of outage events; and (4) complaints. The reports also summarized the storm hardening activities for the IOU. The most recent March 2009 filings by the IOU's have been consistent with this standard of reporting.

## *Review Outline*

This review relies primarily on the March 2, 2009 Reliability Report for recent reliability performance data and storm hardening activities for each IOU. A section addressing trends in reliability related complaints is also included. Staff's review consists of five sections.

Section 1: Addresses storm hardening activities which include each IOU's Eight-Year Wooden Pole Inspection Program and Ten Initiatives.

Section 2: Addresses each utility's actual 2008 distribution service reliability and support for each of its adjustments to the actual service reliability data.

Section 3: Addresses each utility's 2008 distribution service reliability based on adjusted service reliability data and staff's observations of overall service reliability performance.

Section 4: Addresses inter-utility comparisons and the volume of reliability related customer complaints for 2004 through 2008.

Section 5: Appendices containing detailed utility specific data.

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[7]Wooden Pole Inspection Orders: Order No. PSC-06-0144-PAA-EI, issued February 27, 2006, in Docket No. 060078-EI; and Order Nos. PSC-06-0778-PAA-EU, issued September 18, 2006, PSC-07-0078-PAA-EU, issued January 29, 2007, in Docket No. 060531-EU.
Storm Hardening Initiative Orders: PSC-06-0351-PAA-EI, issues April 25, 2006; PSC-06-0781-PAA- EI, issued September 19, 2006; PSC-06-0947-PAA-EI, issued November 13, 2006; and PSC-07-0468-FOF-EI, issued May 30, 2007, in Docket No. 060198-EI.

## Section I. Storm Hardening Activities

The hurricanes of 2004 and 2005 caused extensive damage resulting in significant storm restoration costs and prolonged electric service interruptions to millions of Florida's electric utility customers. On January 23, 2006, the Commission conducted a workshop to discuss the damage to electric utility facilities from these hurricanes and to explore ways of minimizing future storm damage and customer outages. State and local government officials, independent technical experts, and Florida's electric utilities participated in the workshop.

On February 7, 2006, the Commission voted to require the IOUs and local exchange telephone companies to begin implementing an eight-year inspection cycle of their respective wooden poles.[8, 9] On February 27, 2006, at an Internal Affairs Conference, the Commission was briefed on additional recommended actions to address the effects of extreme weather events on electric infrastructure. The Commission also heard comments from interested persons and Florida's electric utilities regarding staff's recommended actions. Ultimately, the Commission made the following decisions:

(1) All Florida electric utilities, including municipal utilities and rural electric cooperative utilities, would provide an annual Hurricane Preparedness Briefing.

(2) Staff would file a proposed agency action recommendation for the April 4, 2006 Agenda Conference requiring each IOU to file plans and estimated implementation costs for ongoing storm preparedness initiatives.

(3) A docket would be opened to initiate rulemaking to adopt distribution construction standards that are more stringent than the minimum safety requirements of the National Electrical Safety Code (NESC).

(4) A docket would be opened to initiate rulemaking to identify areas and circumstances where distribution facilities should be required to be constructed underground.

On April 25, 2006, the Commission issued Order No. PSC-06-0351-PAA-EI, requiring the IOUs to file plans and estimated implementation costs for ten ongoing storm preparedness initiatives (Ten Initiatives) on or before June 1, 2006.[10] The current status of these initiatives is discussed in each IOU's reports for 2008.

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[8]Order No. PSC-06-0144-PAA-EI, issued February 27, 2006, in Docket No. 060078-EI, In re: Proposal to require investor-owned electric utilities to implement ten-year wood pole inspection program. Order No. PSC-06-0168-PAA-TL, issued March 1, 2006, in Docket No. 060077-TL, In re: Proposal to require local exchange telecommunications companies to implement ten-year wood pole inspection program.
[9]Rule 25-6.0343, F.A.C., effective December 12, 2006, requires municipal electric utilities and rural electric cooperative utilities to report annually, by March 1, their standards, policies, practices, and procedures regarding storm hardening, including wooden pole inspections.
[10]Docket No. 060198-EI, In re: Requirement for investor-owned electric utilities to file ongoing storm preparedness plans and implementation cost estimates.

The Ten Initiatives are:

(1) A three-year vegetation management cycle for distribution circuits
(2) An audit of joint-use attachment agreements
(3) A six-year transmission structure inspection program
(4) Hardening of existing transmission structures
(5) A transmission and distribution geographic information system
(6) Post-storm data collection and forensic analysis
(7) Collection of detailed outage data differentiating between the reliability performance of overhead and underground systems
(8) Increased utility coordination with local governments
(9) Collaborative research on effects of hurricane winds and storm surge
(10) A natural disaster preparedness and recovery program

These Ten Initiatives were not intended to encompass all possible ongoing storm preparedness activities. Rather, the Commission viewed these initiatives as the starting point of an ongoing process. [11, 12]

Separate from the Ten Initiatives, the Commission established rules addressing storm hardening of transmission and distribution facilities for all of Florida's electric utilities.[13, 14, 15] Each IOU, pursuant to Rule 25-6.0342(2), F.A.C., must file a plan and the "plan shall be updated every three years. On May 7, 2007, the four major IOUs filed storm hardening plans that included the wooden pole inspection program and the Ten Initiatives. However, FPUC requested to file its storm hardening plan as part of its petition for a general rate increase. This request was approved by Order No. PSC-08-0327-FOF-EI, and FPUC's storm hardening plan was addressed in Docket No. 070304-EI.

A consolidated public hearing was held on October 3-4, 2007, to address the storm hardening plans of the four major IOUs. On December 28, 2007, the Commission voted to approve the storm hardening plans and required updates to be filed by May 1, 2010.[16]

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[11]See page 2 of Order No. PSC-06-0947-PAA-EI, issued November 13, 2006, in Docket No. 060198-EI, In re: Requirement for investor-owned electric utilities to file ongoing storm preparedness plans and implementation cost estimates.

[12]The Commission addressed the adequacy of the IOUs' plans for implementing the Ten Initiatives by Order Nos. PSC-06-0781-PAA-EI, PSC-06-0947-PAA-EI, and PSC-07-0468-FOF-EI. In 2006, the municipal and rural electric cooperative utilities voluntarily provided summary statements regarding their implementation of the Ten Initiatives. Prospectively, reporting from these utilities is required pursuant to Rule 25-6.0343, F.A.C.

[13]Order No. PSC-06-0556-NOR-EU, issued June 28, 2006, in Docket No. 060172-EU, In re: Proposed rules governing placement of new electric distribution facilities underground, and conversion of existing overhead distribution facilities to underground facilities, to address effects of extreme weather events, and Docket No. 060173-EU, In re: Proposed amendments to rules regarding overhead electric facilities to allow more stringent construction standards than required by National Electric Safety Code.

[14]Order Nos. PSC-07-0043-FOF-EU and PSC-07-0043A-FOF-EU.

[15]Order No. PSC-06-0969-FOF-EU, issued November 21, 2006, in Docket No. 060512-EU, In re: Proposed adoption of new Rule 25-6.0343, F.A.C., Standards of Construction - Municipal Electric Utilities and Rural Electric Cooperatives.

[16] Order No. PSC-07-0573-PCO-EI, issued July 10, 2007, in Docket No. 070297-EI, 070298-EI, 070299-EI, and 070301-EI, In re: Review of 2007 Electric Infrastructure Storm Hardening Plan filed pursuant to Rule 25-6.0342, F.A.C.

The following subsections provide a summary of each IOU's programs addressing an eight-year wooden pole inspection program and the Ten Initiatives.

## *Eight-Year Wooden Pole Inspection Program*

Order Nos. PSC-06-0144-PAA-EI and PSC-07-0078-PAA-EI require each IOU to inspect 100 percent of their installed wooden poles every eight years. FPUC's implementation of the eight-year wooden pole inspection program was approved on May 19, 2008, by Order No. PSC-08-0327-FOF-EI filed in Docket No. 070304-EI, FPUC's request for a general rate increase.

Table 1-1 shows a summary of the quantities of wooden poles inspected by all IOUs in 2008.

**Table 1-1. 2008 Wooden Pole Inspection Activity Summary**

| | | | 2008 Pole Inspections | |
|---|---|---|---|---|
| | | | Planned | Completed |
| IOU | 2008 Installed Wooden Poles | Average Annual Inspections to Meet 8-Year Cycle | Volume | Volume |
| FPL | 1,051,469 | 131,434 | 133,480 | 131,554 |
| PEF | 764,899 | 95,612 | 96,000 | 96,054 |
| TECO | 299,150 | 37,394 | 38,205 | 38,202 |
| Gulf | 258,404 | 32,301 | 32,000 | 35,482 |
| FPUC | 26,701 | 3,338 | 1,849 | 1,849 |

Table 1-2 indicates the projected wooden pole inspection requirements for the IOUs.

**Table 1-2. Projected 2009 Wooden Pole Inspection Activity Summary**

| | | 2009 Planned Inspections | |
|---|---|---|---|
| IOU | 2008 Installed Wooden Poles | Volume | % of 2009 Planned Inspections in Relation to an 8-Year Plan |
| FPL | 1,051,469 | 126,388 | 96% |
| PEF | 764,899 | 96,000 | 100% |
| TECO | 299,150 | 38,895 | 104% |
| Gulf | 258,404 | 27,500 | 85% |
| FPUC | 26,701 | 3,550 | 13% |

The annual variances shown in Tables 1-1 and 1-2 are allowable so long as each utility achieves 100 percent inspection within an eight-year period. Staff will continue to monitor each utility's performance.

## *Ten Initiatives*

### (1) Three-Year Vegetation Management Cycle for Distribution Circuits

Since feeder circuits are the main arteries from the substations to the local communities, these circuits are targeted for frequent vegetation management. The approved plans of all IOUs require a maximum of a three-year trim cycle for overhead feeder circuits and a six-year trim cycle for lateral circuits.

Table 1-3 is a summary of 2008 and projected 2009 feeder vegetation management activities.

**Table 1-3. 2008-2009 Vegetation Clearing from Feeder Circuits**

| IOU | Plan Trim Cycle (Years) | Total Miles | Average Annual Miles | 2008 Miles | | Projected 2009 Miles | |
|---|---|---|---|---|---|---|---|
| | | | | Miles Trimmed | % of Annual Cycle | Estimated Trim Miles | % of Annual Cycle |
| FPL | 3 | 13,469 | 4,490 | 4,262 | 95% | 4,224 | 94% |
| PEF | 3 | 3,800 | 1,267 | 708 | 56% | 331 | 26% |
| TECO | 3 | 1,724 | 575 | 374 | 63% | 489 | 85% |
| Gulf | 3 | 1,878 | 626 | 821 | 131% | 816 | 130% |
| FPUC | 3 | 164 | 55 | 59 | 36% | 53 | 96% |

Table 1-4 is a summary of 2008 and projected 2009 lateral vegetation management activities.

**Table 1-4. Vegetation Clearing from Lateral Circuits**

| IOU | Plan Trim Cycle (Years) | Total Miles | Plan Average Annual Miles | 2008 Miles | | Projected 2009 Miles | |
|---|---|---|---|---|---|---|---|
| | | | | Miles Trimmed | % of Annual Cycle | Estimated Trim Miles | % of Annual Cycle |
| FPL | 6 | 22,444 | 3,741 | 2,078 | 56% | 2,746 | 73% |
| PEF | 5 | 14,200 | 2,840 | 2,544 | 90% | 2,542 | 90% |
| TECO | 3 | 4,397 | 1,466 | 806 | 55% | 1,265 | 86% |
| Gulf | 6 | 3,981 | 664 | 980 | 148% | 816 | 123% |
| FPUC | 6 | 491 | 82 | 86 | 105% | 82 | 100% |

In addition to the planned trimming cycle, each IOU performs "hot-spot" tree trimming[17] and mid-cycle trimming to address rapid growth problems. Tables 1-3 and 1-4 do not reflect hot-spot trimming and mid-cycle trimming activities. An additional factor to consider is that not all miles of overhead distribution circuits require vegetation clearing. Factors such as hot-spot

[17] "Hot spot" tree trimming occurs when an unscheduled tree trimming crew is dispatched or other prompt tree trimming action is taken at one specific location along the circuit. For example, a fast growing tree requires 'hot spot' tree trimming in addition to the cyclical tree trimming activities.

trimming and open areas contribute to the apparent variances from the approved plans. Annual variances as seen in Tables 1-3 and 1-4 are allowable as long as each utility achieves 100 percent completion within the cycle-period stated in its approved plan for feeder and lateral circuits.

## (2) Audit of Joint Use Agreements

The Commission requires each IOU to actively monitor the impact of attachments by other parties to ensure the attachments conform to the IOU's strength and loading requirements without compromising storm performance. All IOUs perform pole strength and loading assessments in conjunction with their eight-year wooden pole inspection programs. Additionally, field surveys are performed to verify that the third-party attachments comply with the terms and conditions of existing joint use agreements. These field surveys typically focus on discovering attachments that were previously not known or are inconsistent with the joint use agreements. On average, field surveys occur on a five-year cycle. The following are some 2008 highlights:

- FPL audits approximately 20 percent of its joint use poles annually. The 2008 audit revealed 57 unauthorized attachments. FPL strength tested 92,088 poles, of which 2,631 were found to be overloaded.

- PEF audited approximately 5.8 percent of its joint use poles in 2008 and found no unauthorized attachments. PEF strength tested 53,273 distribution poles, of which 273 were found to be overloaded.

- TECO audited 75 percent of its jointly used distribution system in 2008. TECO's audit disclosed 1,855 unauthorized attachments. TECO strength tested 658 poles, of which 552 were found to be overloaded.

- As Gulf reported in 2007, it audited its entire joint use overhead distribution system in 2006. Gulf's joint use audit occurs on a five-year basis and Gulf's next entire-system audit is scheduled for 2011. In 2008, Gulf reported strength testing 513 poles, of which one was found to be overloaded.

- FPUC reported 14 poles being overloaded with another 162 being rejected due to quality failure. All of the rejected poles will be replaced by the end of 2009.

## (3) Six-Year Transmission Inspections

The Commission required each IOU to develop a plan to fully inspect, on a six-year cycle, all transmission structures and substations, and all hardware associated with these facilities. Approval of any alternative to a six-year cycle must be shown to be equivalent or better than a six-year cycle in terms of cost and reliability in preparing for future storms. The approved plans for FPL, TECO, and Gulf require full inspection of all transmission facilities within a six-year cycle. On an annual average basis, a full inspection means inspecting 16.7 percent of the system. PEF, which already had a program indexed to a five-year cycle, continues with its five-year program. Such variances are allowed so long as each utility achieves 100 percent completion within a six-year period, as outlined in Order No. PSC-06-0198-EI dated April 4, 2006.

- FPL reported inspecting 100 percent of its transmission circuits and 100 percent of its transmission substations in 2008.

- PEF reported inspecting 104 of its 431 (24 percent) transmission circuits and 100 percent of its 461 transmission substations in 2008.

- TECO reported inspecting 17 percent of its transmission circuits and 100 percent of its transmission substations in 2008.

- Gulf reported inspecting 100 percent of its 33 transmission substations in 2008. Furthermore, Gulf reports strength testing all of its 2,787 transmission poles, of which 287 transmission poles were replaced.

- FPUC reported inspecting 100 percent of its transmission circuits and transmission substations in 2008.

## (4) Hardening of Existing Transmission Structures

The Commission required IOUs to show the extent of the utility's efforts in this area, including the scope of activity and the criteria used for selecting transmission upgrades and replacements. No specific activity was ordered other than developing a plan and reporting on storm hardening of existing transmission structures. In general, all IOUs' plans continued pre-existing programs that focus on upgrading older wooden transmission poles. Below are some 2008 highlights and projected 2009 activities for each IOU.

- FPL targeted the replacement of 294 single pole un-guyed wood (SPUW) structures and replaced 487 SPUW structures under its hardening program and other programs. FPL replaced a total of 1,966 wood transmission structures during 2008. These structures were replaced with spun concrete poles. In 2009, FPL plans on replacing 944 wood transmission structures and the continued replacement of ceramic post line insulators with polymer post line insulators.

- PEF reported hardening a total of 1,962 structures in 2008. PEF's 2009 goal is to harden 1,750 transmission structures as part of routine business expenditures for a budgeted $99.7 million.

- TECO reported replacing 789 structures in 2008. TECO's 2009 goal is to replace 683 structures for a budgeted $10.7 million.

- Gulf Power reported hardening 312 transmission structures in 2008. Gulf's 2009 goal is to continue its program to storm harden 300 transmission structures.

- FPUC is participating in research conducted by the Public Utilities Research Center (PURC) regarding hurricane winds and storm surge within the state. It hopes to use this information to develop specifications for mitigation of damage to its underground and overhead distribution and transmission facilities.

## (5) Transmission and Distribution Geographic Information System

## (6) Post-Storm Data Collection and Forensic Analysis

## (7) Collection of Detailed Outage Data Differentiating Between the Reliability Performance of Overhead and Underground Systems

These three initiatives are addressed together because effective implementation of any one initiative is dependent on effective implementation of the other two initiatives. The five IOUs have geographic information system (GIS) programs and programs to collect post-storm data on competing technologies, perform forensic analysis, and assess the reliability of overhead and underground systems on an ongoing basis. Differentiating between overhead and underground reliability performance and costs is still difficult because underground facilities are typically connected to overhead facilities and the interconnected systems of the IOUs address reliability on an overall basis. Below are some 2008 highlights and projected 2009 activities for each IOU.

- FPL reports that no storms impacted its service areas in 2008; therefore, no forensic collection/analysis was required. All pole inspection data is now loaded through automation.

- PEF has enhanced its GIS mapping system to an asset-based system from a location-based system. PEF is planning to upgrade its work management system, which will include a compliance tracking capability. This program is still in the design phase with implementation scheduled for 2011.

- TECO is participating in a collaborative research effort with the state's other investor-owned electric utilities and several municipals and cooperatives to further the development of storm-resilient electric utility infrastructure and technologies that reduce storm restoration costs and outages to customers. This research is being facilitated by the Public Utility Research Center (PURC) at the University of Florida. The areas of research for 2008 included the economics of undergrounding, granular analysis and modeling of hurricane winds, vegetation management, and a review of the forensic data gathering process. For 2009, work will continue on the economics of undergrounding and the analysis and modeling of hurricane winds.

- Gulf's transmission group has now completed entering all transmission system data into the GIS format ahead of schedule. During 2008, the data collection and transfer process was tested by Gulf's post-storm forensic team contractors in Panama City following Tropical Storm Fay. Damage was insignificant as a result of this storm; however, the data collection crews still collected information on a sample of poles and transferred this data to the data analysis agent. This test was performed to ensure that there were no problems with the data transfer and that all systems were functioning properly. The test was successful and Gulf is prepared for forensic data collection and analysis following the next major storm.

- FPUC has implemented a GIS mapping system to accurately maintain the location of its physical assets. The system enhances FPUC's ability to record and retrieve up-to-date information on all assets throughout the system. This system is also interfaced with the company's Customer Information System and Customer Outage Management System (OMS). The OMS was fully implemented on January 1, 2009.

## (8) Increased Utility Coordination with Local Governments

The Commission's goal with this program is to promote ongoing dialogue between IOUs and local governments on matters such as vegetation management and underground construction, in addition to the general need to increase pre- and post-storm coordination. The increased coordination and communication is intended to promote IOU collection and analysis of more detailed information on the operational characteristics of underground and overhead systems. This additional data is also necessary to more fully inform customers and communities who are considering converting existing overhead facilities to underground facilities (undergrounding), as well as to assess the most cost-effective storm hardening options.

Each IOU's external affairs representatives or designated liaisons are responsible for engaging in dialog with local governments on issues pertaining to underground issues, vegetation management, public rights-of-way use, critical infrastructure projects, other storm-related topics, and day-to-day matters. Additionally, each IOU assigns staff to each county emergency operations center (EOC) to participate in joint training exercises and actual storm restoration efforts. The IOUs now have outreach and educational programs addressing underground construction, tree placement, tree selection, and tree trimming practices. Below are some 2008 highlights for each utility.

- In 2008, FPL worked to improve local government coordination by conducting meetings with county emergency operations managers to discuss critical infrastructure locations in each jurisdiction. The company reviewed and enhanced its E-mail distribution process and network to provide key messages to all governmental audiences. FPL's Community Outreach Teams and Customer Service Field Organization provided information on storm readiness at over 250 community presentations in 2008.

- PEF proactively works with local governments to inform them of its available programs to help them in their planning process. PEF's representatives continued to hold various meetings and expositions with local government, county EOCs, and first responders in 2008. These events included discussions to coordinate emergency planning activities, training activities, and community education seminars.

- TECO conducted workshops in 2008 with local government and county EOCs to discuss pre-storm preparedness and hazard mitigation, and to set common priorities during emergency events. TECO also conducted damaged facility reporting training, as well as sharing information on the costs and benefits of undergrounding its electric facilities.

- Gulf continued its coordination with local governments and EOCs in 2008. Gulf also hosts community leader forums each year to update local government and community leaders on Gulf's storm plans and to seek comment on community-specific issues.

- FPUC continued coordination with local city/county emergency service agencies within its service areas. FPUC also reports participating in regularly scheduled communication events with county emergency response organizations within its service territory.

## (9) Collaborative Research on Effects of Hurricane Winds and Storm Surge

Prior to 2006, the Commission observed that the utilities appeared to be unaware of work being done by universities to study the effects of hurricane winds and storm surge in Florida. Each utility appeared engaged in independent efforts to gather its own data with little, if any, coordination of resources and information. The Commission found that Florida would be better served by consolidating utility resources through a centrally coordinated research and development effort with universities as well as research organizations. The same data is needed by the utility to address storm hardening options that reduce storm damage, storm restoration costs, and customer outages.

In response to Commission directives, the electric utilities established a non-profit, member-financed organization to coordinate all research efforts through the Public Utility Research Center (PURC), located in the Warrington College of Business at the University of Florida. The members include all electric municipal utilities, retail electric cooperative utilities, and IOUs within Florida. The administrative requirements were codified in a memorandum of understanding. The resulting collaborative research programs address three areas: hurricane wind effects, vegetation management, and undergrounding of electric utility infrastructure.

<u>Hurricane Wind Effects:</u> The wind research project is a long-term effort that will collect data on hurricane force wind impacts on electric facilities through observations of actual events and experimentation. The wind information is needed to fill a gap in current utility knowledge. Absent the research effort, each utility would have very little objective wind data which is essential for effective forensic assessments. The knowledge developed through wind research will enable future utility planners to evaluate storm hardening alternatives prior to implementation, thereby avoiding a potentially costly trial-by-error approach. No end date for the wind research program has been set.

<u>Vegetation Management:</u> The vegetation management research project is directed at improving vegetation management practices so that outages, post-storm restoration efforts, and overall vegetation management costs are reduced. PURC is responsible for coordinating industry workshops addressing best practices in vegetation management.

<u>Undergrounding of Electric Utility Infrastructure</u>**:** The undergrounding research project was structured in three phases: Phase 1 combined and analyzed the results of existing research, reports, and case studies; Phase 2 examined Florida-specific case studies of actual projects in which overhead facilities were converted to underground; and Phase 3 developed and tested a methodology for identifying and evaluating costs and benefits of underground-specific facilities in Florida.

Phase 1 was completed on February 28, 2007;[18] Phase 2 was completed on August 6, 2007;[19] and Phase 3 was completed on May 21, 2008.[20] As with the Phase 1 and Phase 2 reports, the Phase 3 report noted that the conversion of overhead to underground is costly and these costs almost always exceed the quantifiable benefits of reduced operation and maintenance costs and reduced hurricane damage costs. The report also noted that there has been no consistent approach to computing costs and benefits of proposed undergrounding projects, making studies difficult to interpret and use for making decisions. The Phase 3 report presents a methodology for estimating the costs and benefits of potential undergrounding projects and other activities that have an impact on hurricane performance, such as the hardening of overhead systems. The methodology is specific to Florida and is based on a detailed simulation of the following components: hurricane model, equipment damage model, restoration model, and cost-benefit model.

The spreadsheet application allows a range of options to be considered and compared based on their incremental costs and benefits. The Phase 3 report concludes that the methodology presented attempts to add consistency in analyzing costs and benefits. The methodology can provide insights into how different variables affect costs and benefits of undergrounding.

## (10) A Natural Disaster Preparedness and Recovery Program

Each IOU is required to maintain a copy of its current formal disaster preparedness and recovery plan with the Commission. A formal disaster plan provides an effective means to document lessons learned; improve disaster recovery training; pre-storm staging activities and post-storm recovery; collect facility performance data; and improve forensic analysis. Additionally, the IOUs participate in the Commission's annual pre-storm preparedness briefing which focuses on the extent to which all Florida electric utilities and telecommunications companies are prepared for potential hurricane events.

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[18] Undergrounding Assessment Phase 1 Report, *Literature Review and Analysis of Electric Distribution Overhead to Underground Conversion,* issued February 28, 2007, <http://www.psc.state.fl.us/utilities/electricgas/EIProject/docs/InfraSourcePhase1FinalReport20070228.pdf>.

[19] Undergrounding Assessment Phase 2 Report, *Undergrounding Case Studies,* issued August 6, 2007, <http://www.psc.state.fl.us/utilities/electricgas/EIProject/docs/InfraSourcePhase2FinalReport6AUG07.pdf>.

[20] Undergrounding Assessment Phase 3 Report, *Ex Ante cost and Benefit Modeling,* issued May 21, 2008, < http://www.cba.ufl.edu/purc/docs/initiatives_UndergroundingAssessment3.pdf>

# Section II. Actual Distribution Service Reliability and Exclusions of Individual Utilities

Retail electric utility customers are affected by all outage events and momentary events regardless of where problems originate. For example, generation events and transmission events, while electrically remote from the distribution system serving a retail customer, impact the distribution service reliability experience of customers. This total service reliability experience is intended to be captured by the "actual" reliability data.

The actual reliability data includes two subsets of outage data: data on excludable events and data pertaining to normal day-to-day activities. Rule 25-6.0455(4), F.A.C., explicitly lists outage events that may be excluded:

(1) Planned service interruptions
(2) A storm named by the National Hurricane Center
(3) A tornado recorded by the National Weather Service
(4) Ice on lines
(5) A planned load management event
(6) Any electric generation or transmission event not governed by subsections 25-6.018(2) and (3), F.A.C.
(7) An extreme weather or fire event causing activation of the county emergency operation center

This section provides an overview of each IOU's actual 2008 performance data and focuses on the exclusions allowed by the rule. The year 2006 was the first year for which actual reliability data has been provided.

## *Florida Power & Light Company: Actual Data*

Table 2-1 provides an overview of key FPL metrics: Customer Minutes of Interruption (CMI) and Customer Interruptions (CI) for 2008. Excludable outage events accounted for approximately 80 percent of service interruptions experienced by FPL's customers. FPL reported tornadoes in February, March, August, and November of 2008 that were the cause of some of the severe weather outages. There were reported fires in North Florida in May 2008 and fires in Naples in May and June 2008, which caused outages. Tropical Storm Fay caused outages in August 2008.

**Table 2-1. FPL's 2008 Customer Minutes of Interruption and Customer Interruptions***

| 2008 | Customer Minutes of Interruption (CMI) | | Customer Interruptions (CI) | |
|---|---|---|---|---|
| | **Value** | **% of Actual** | **Value** | **% of Actual** |
| *Reported Actual Data | 536,103,804 | | 5,625,062 | |
| Documented Exclusions | | | | |
| Named Storm Outages | 191,052,355 | 35.64% | 626123 | 11.13% |
| Fires | 20,996,044 | 3.92% | 29766 | 0.53% |
| Planned Outages | 9,710,497 | 1.81% | 89,427 | 1.59% |
| Customer Request | 3,572,921 | 0.67% | 33,333 | 0.59% |
| Tornadoes | 11,882,887 | 2.22% | 92,147 | 1.64% |
| Other | n/r | | n/r | |
| Reported Adjusted Data | 298,889,100 | 55.75% | 4,754,266 | 84.52% |

FPL provided adequate support for its excludable event adjustments allowed by Rule 25-6.0455(4), F.A.C., for calendar year 2008.

*Fig 2.1 revised October 7, 2010 due to Scribner's error

### *Progress Energy Florida, Inc.: Actual Data*

Table 2-2 provides an overview of PEF's CMI and CI figures for 2008. Excludable outage events accounted for approximately 57 percent of the minutes of interruption experienced by PEF's customers. PEF reported that tornadoes were the cause of outages in January, February, March, April, July, and August of 2008. PEF had outages due to Tropical Storm Fay in August 2008. Hurricane Ike caused outages in September 2008 and PEF reported that a water spout caused outages in October 2008.

**Table 2-2. PEF's 2008 Customer Minutes of Interruption and Customer Interruptions**

| | Customer Minutes of Interruption (CMI) | | Customer Interruptions (CI) | |
|---|---|---|---|---|
| | **Value** | **% of Actual** | **Value** | **% of Actual** |
| Reported Actual Data | 284,855,808 | | 3,036,385 | |
| Documented Exclusions | | | | |
| Severe Weather (Distribution) | 106,262,403 | 37.30% | 400,775 | 13.20% |
| Transmission (Severe Weather) | 7,043,188 | 2.47% | 29,796 | 0.98% |
| Transmission (Non Severe Weather) | 27,670,265 | 9.71% | 454,519 | 14.97% |
| Emergency Shutdowns (Severe Weather) | 5,210,864 | 1.83% | 45,071 | 1.48% |
| Emergency Shutdowns (Non Severe Weather) | 5,656,019 | 1.99% | 328,566 | 10.82% |
| Prearranged (Severe Weather) | 319,337 | 0.11% | 2,869 | 0.09% |
| Prearranged (Non Severe Weather) | 9,217,365 | 3.24% | 66,583 | 2.19% |
| Reported Adjusted Data | 123,476,367 | 43.35% | 1,708,206 | 56.26% |

PEF provided adequate support for its excludable event adjustments allowed by Rule 25-6.0455(4), F.A.C. for calendar year 2008.

## *Tampa Electric Company: Actual Data*

Table 2-3 provides an overview of TECO's CMI and CI figures for 2008. Excludable outage events accounted for approximately 28 percent of the minutes of interruption experienced by TECO's customers. TECO reported that it did not experience extreme weather events in 2008 that would cause outages.

**Table 2-3. TECO's 2008 Customer Minutes of Interruption and Customer Interruptions**

| | Customer Minutes of Interruption (CMI) | | Customer Interruptions (CI) | |
|---|---|---|---|---|
| | Value | % of Actual | Value | % of Actual |
| Reported Actual Data | 44,352,773 | | 638,217 | |
| Documented Exclusions | | | | |
| Transmission | 3,239,928 | 7.30% | 127,335 | 19.95% |
| Other Distribution | 570,773 | 1.29% | 39,988 | 6.27% |
| Distribution Substation | 8,560,460 | 19.30% | 187,630 | 29.40% |
| Reported Adjusted Data | 31,981,612 | 72.11% | 283,264 | 44.38% |

TECO provided adequate support for its excludable event adjustments allowed by Rule 25-6.0455(4), F.A.C., for calendar year 2008.

## *Gulf Power Company: Actual Data*

Table 2-4 provides an overview of Gulf's CMI and CI figures for 2008. Excludable outage events accounted for approximately 20 percent of the minutes of interruption experienced by Gulf's customers. Gulf reported tornadoes were the cause of outages in February 2008. Gulf also reported that Tropical Storm Fay and Hurricane Gustav caused outages. The months of the outages caused by the named storms were not reported.

**Table 2-4. Gulf's 2008 Customer Minutes of Interruption and Customer Interruptions**

| | Customer Minutes of Interruption (CMI) | | Customer Interruptions (CI) | |
|---|---|---|---|---|
| | **Value** | **% of Actual** | **Value** | **% of Actual** |
| Reported Actual Data | 70,414,078 | | 753,432 | |
| Documented Exclusions | | | | |
| Transmission Events | 2,558,026 | 3.63% | 87,524 | 11.62% |
| Planned Outages | 5,288,587 | 7.51% | 80,911 | 10.74% |
| Named Storm Outages | 4,001,985 | 5.68% | 27,822 | 3.69% |
| Tornado | 1,885,620 | 2.68% | 6,127 | 0.81% |
| Reported Adjusted Data | 56,679,860 | 80.50% | 551,048 | 73.14% |

Gulf provided adequate support for its excludable event adjustments allowed by Rule 25-6.0455(4), F.A.C., for calendar year 2008.

## *Florida Public Utilities Company: Actual Data*

Table 2-5 provides an overview of FPUC's CMI and CI figures for 2008. Excludable outage events accounted for approximately 61 percent of the minutes of interruption experienced by FPUC's customers. FPUC reported that Tropical Storm Fay in August 2008 was the cause of some outages. FPUC also reported Hurricane Gustav caused some outages in August and September 2008.

**Table 2-5. FPUC's 2008 Customer Minutes of Interruption and Customer Interruptions**

| | Customer Minutes of Interruption (CMI) | | Customer Interruptions (CI) | |
|---|---|---|---|---|
| | **Value** | **% of Actual** | **Value** | **% of Actual** |
| Reported Actual Data | 12,225,740 | | 91,978 | |
| Documented Exclusions | | | | |
| Transmission Events | 1,806,920 | 14.78% | 11,346 | 12.34% |
| Substation | 783,000 | 6.40% | 2,610 | 2.84% |
| Severe Storm | 261,111 | 2.14% | 5,791 | 6.30% |
| Named Stormed | 4,666,466 | 38.17% | 16,255 | 17.67% |
| Reported Adjusted Data | 4,708,243 | 38.51% | 55,976 | 60.86% |

FPUC provided adequate support for its excludable event adjustments allowed by Rule 25-6.0455(4), F.A.C., for the calendar year 2008.

# Section III. Adjusted Distribution Service Reliability Review of Individual Utilities

The adjusted distribution reliability metrics or indices provide insight into potential trends in a utility's daily practices and maintenance of its distribution facilities. This section of the review is based on each utility's reported adjusted data.

## *Florida Power & Light Company: Adjusted Data*

Figure 3-1 shows the maximum, average, and minimum adjusted SAIDI (minutes of interruptions per customer) recorded across FPL's system that encompasses five management regions with seventeen service areas. The maximum and minimum SAIDI values are the values reported for a particular service area. While Figure 3-1 shows a general decrease in the minimum SAIDI to 49 minutes for the Pompano service area, there is also a significant increase in the maximum SAIDI to 129 minutes for the North Florida service area. Since 2004, FPL's system average has decreased slightly from 70 minutes to 67 minutes. FPL attributes the massive blackout on February 26, 2008, to adding nine minutes to the SAIDI reliability indicator for 2008.

**Figure 3-1. SAIDI Across FPL's 17 Regions (Adjusted)**

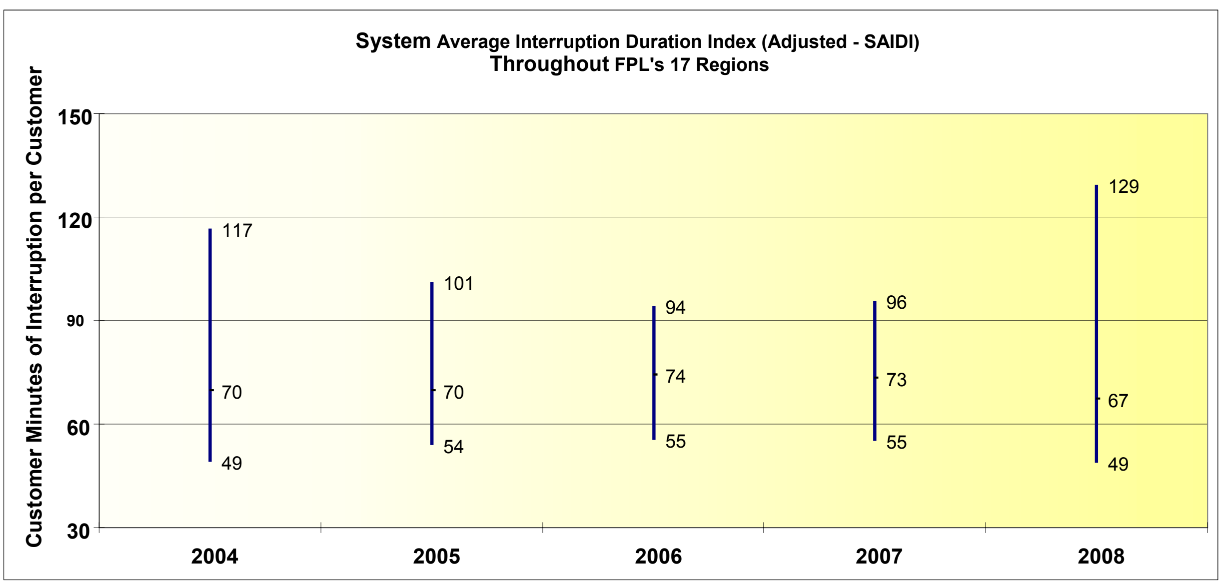



Figure 3-2 is a chart of the maximum, average, and minimum adjusted SAIFI (frequency or number of interruptions per customer) across FPL's system. FPL achieved its best SAIFI since 2004 with a system average of 1.07 service interruptions per customer in 2008. FPL reported a declining SAIFI for the Treasure Coast and Toledo Blade service areas, suggesting a general improvement in these areas which historically have received less reliable service compared to other FPL regions.

**Figure 3-2. SAIFI Across FPL's 17 Regions (Adjusted)**

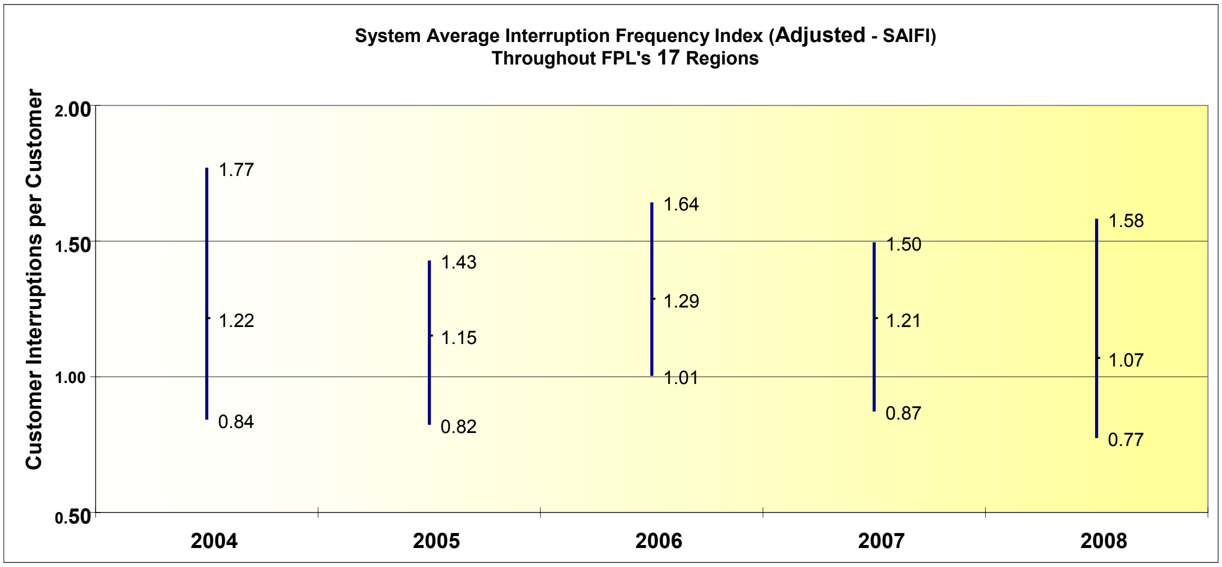
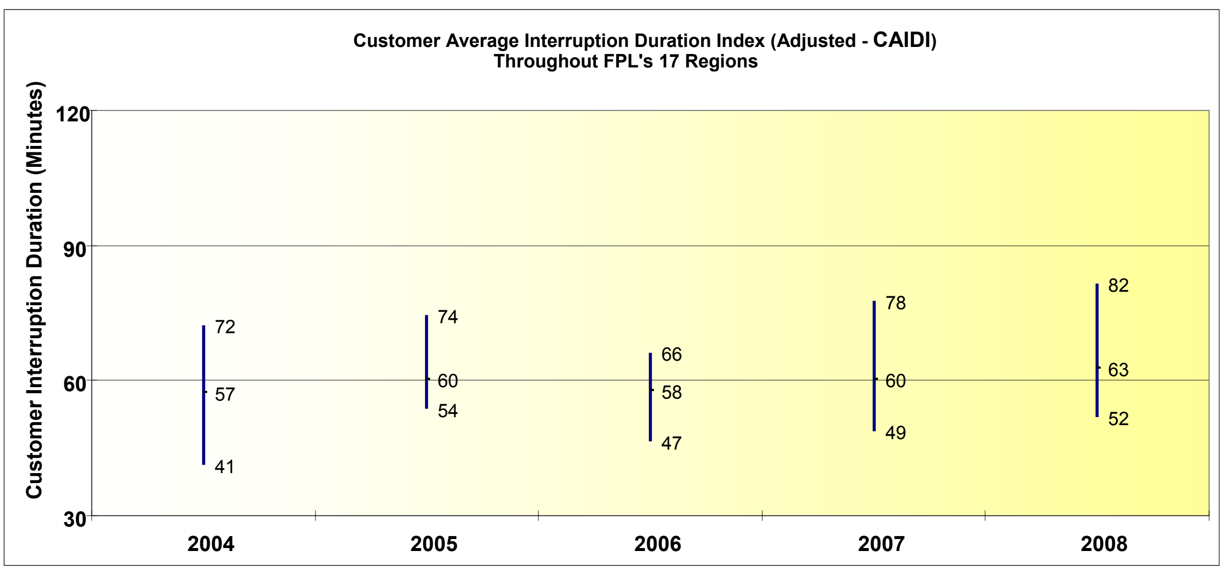


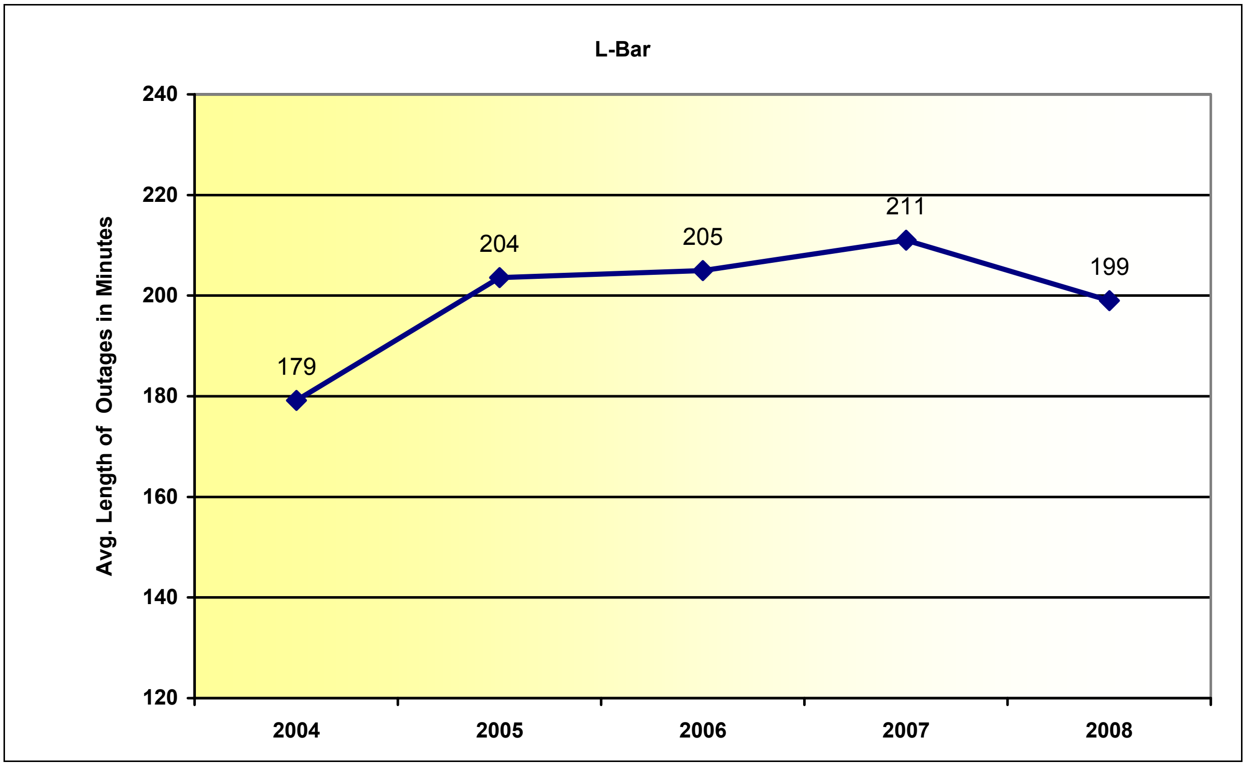

Figure 3-3 is a chart of the maximum, average, and minimum adjusted CAIDI (outage restoration time) across FPL's system. FPL's adjusted average CAIDI has risen from 57 minutes in 2004 to 63 in 2008. The massive blackout of February 2008 could be a high contributor to the rise in the CAIDI adjusted value for 2008. The average duration of CAIDI or customer service interruption has risen 11 percent since 2004.

**Figure 3-3. CAIDI Across FPL's 17 Regions (Adjusted)**



The average length of time that FPL spends recovering from outage events, excluding hurricanes and other extreme outage events, is the index known as L-Bar as shown in Figure 3-4. FPL made a 6 percent improvement in L-Bar (the time required to restore service) by decreasing from 211 minutes in 2007 to 199 minutes in 2008.

**Figure 3-4. FPL's Average Duration of Outages (Adjusted)**




Generally, frequent outage problems experienced by a subset of customers indicate an opportunity for improvement. However, such outage problems can be masked by the previously discussed indices of SAIDI, SAIFI, CAIDI, and L-Bar.

Figure 3-5 is the maximum, average, and minimum adjusted MAIFIe (frequency of momentary events on primary circuits per customer) recorded across FPL's system. FPL's 2008 results are the best for the five-year performance period reviewed. These momentary events often impact a small group of customers or even just one customer. FPL's North Florida service area has experienced a 24 percent increase in the MAIFIe reliability index since 2004 which suggests a declining reliability trend from 2004 thru 2008.

**Figure 3-5. MAIFIe Across FPL's 17 Regions (Adjusted)**

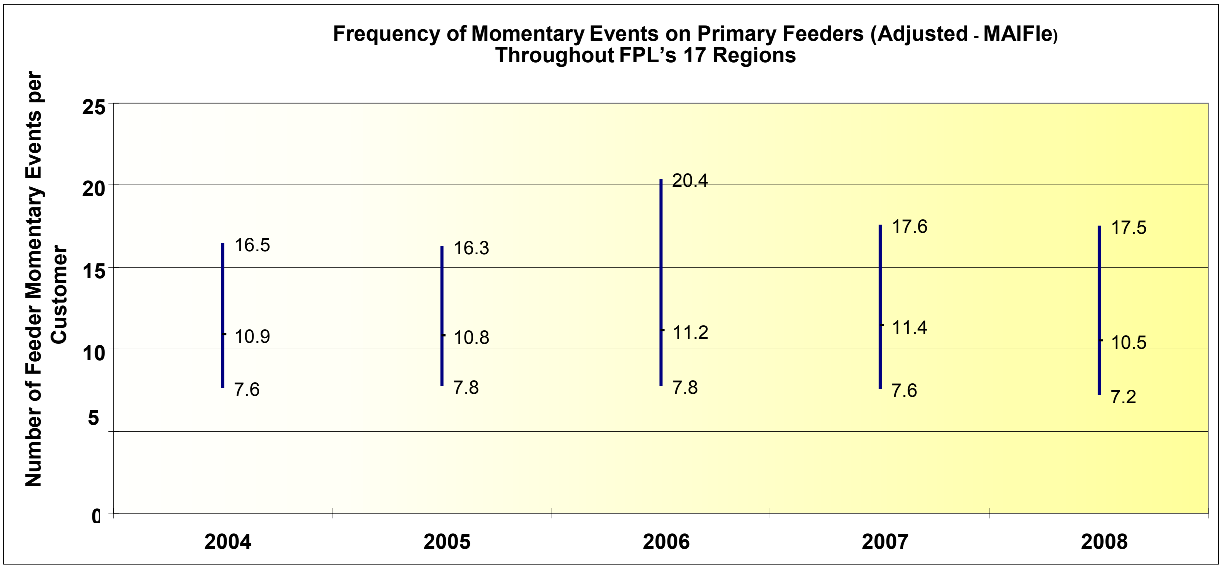
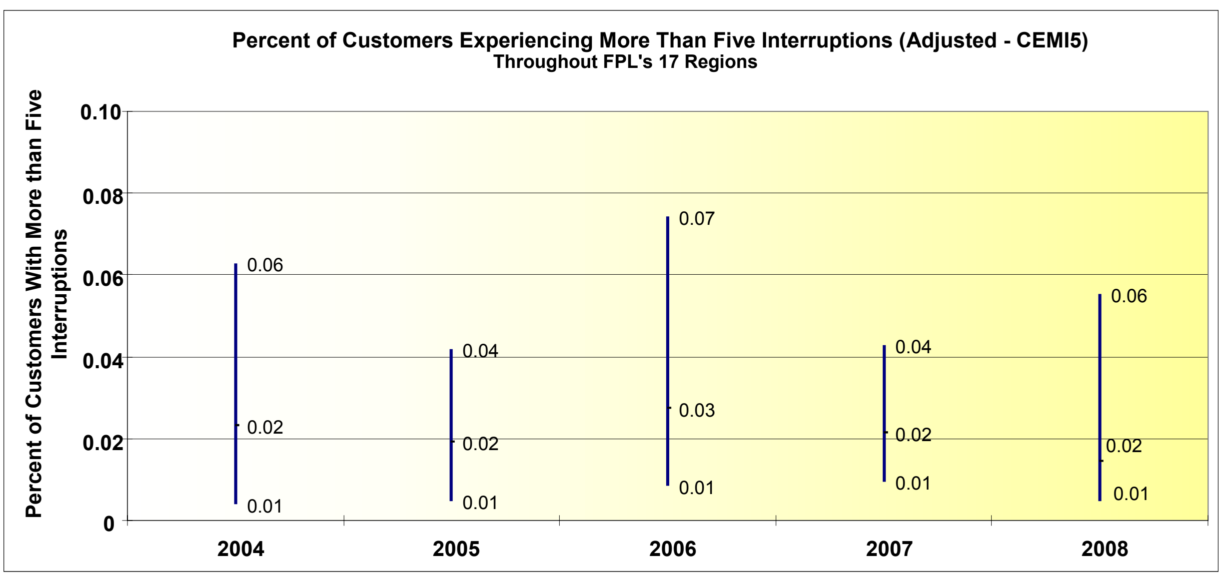



Figure 3-6 shows the maximum, average, and minimum adjusted CEMI5 (percent of customers experiencing more than five interruptions). FPL reported a declining CEMI5 for FPL's combined 17 service areas which suggest overall improvement for the past five years.

**Figure 3-6. CEMI5 Across FPL's 17 Regions (Adjusted)**



The Three Percent Feeder Report is a listing of the top three percent of feeders with the most feeder outage events. The fraction of multiple occurrences, Figure 3-7, is calculated from the number of recurrences divided by the number of feeders reported on a three-year and five-year basis. The three-year and five-year percentages of multiple occurrences have decreased since 2004 and remained steady for the past two years as shown in Figure 3-7.

**Figure 3-7. FPL's Three Percent Feeder Report (Adjusted)**

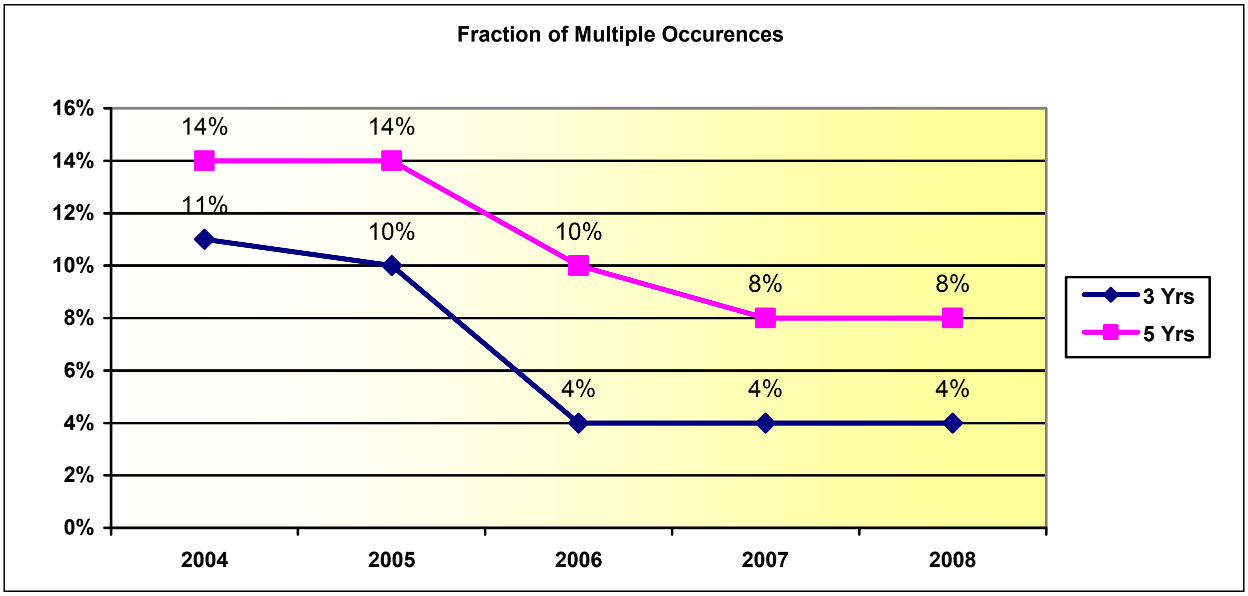
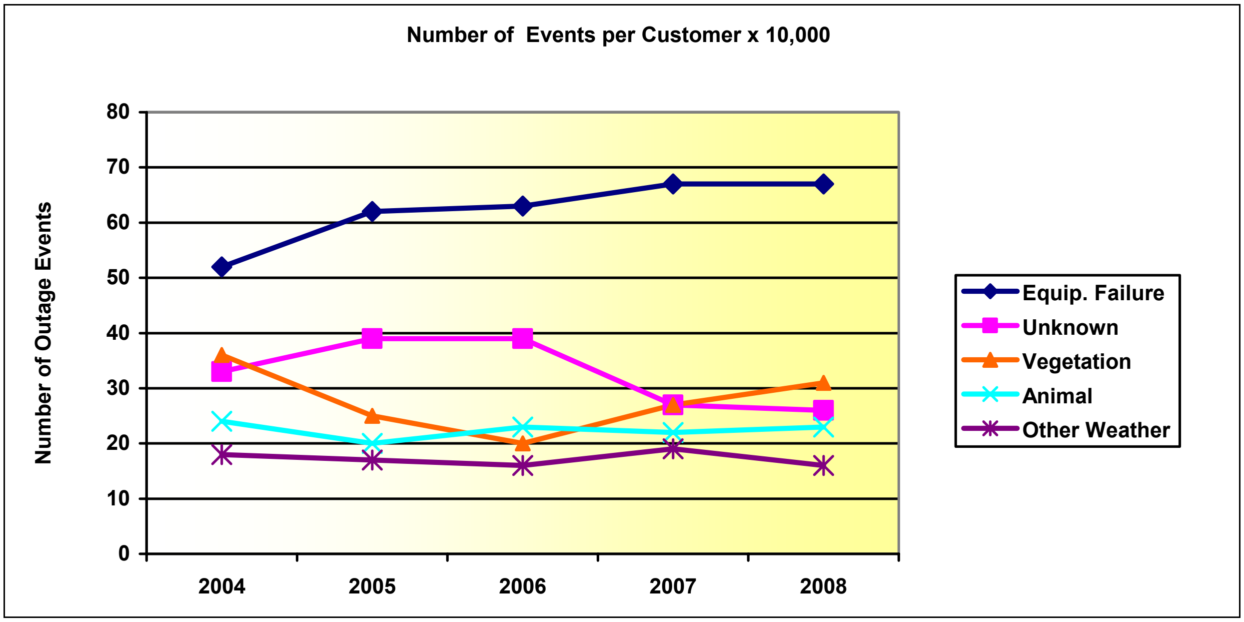



Figure 3-8 shows the top five causes of outage events on FPL's distribution system normalized to a 10,000 customer base. The graph is based on FPL's adjusted data of the top ten causes of outage events. In order to graphically present the data, staff performs a series of mathematical calculations. First, the total number of the utility's customers reported for the year is divided by 10,000. The result is then used as a divisor to produce the plotted point. For example, in 2008 FPL had 4,447,244 customers. Dividing the number of the customers by 10,000 produces the resultant 444.7244. The number is then used as the divisor for the category being plotted. FPL's Equipment Failure category in 2008 had 29,904 occurrences. Dividing 29,904 by 444.72444 yields the number 67.2 and it is plotted graphically in Figure 3-8. For the five-year period the five top causes of outage events included equipment failures (34 percent), unknown (13 percent), vegetation (15 percent), animals (11 percent), and all other (8 percent) on a cumulative basis. The data shows an increasing trend in outage events caused by equipment failure and vegetation with equipment failure continuing to dominate the highest percentage of outage causes throughout the FPL regions.

**Figure 3-8. FPL's Top Five Outage Causes (Adjusted)**




The review of FPL's supporting data, adjusted for customer growth, shows little change in the total number of outage events due to unknown, animal, and other weather over the five-year period. These results suggest FPL is implementing proactive measures that avoid outage events to its customers despite recent increases in vegetation and equipment failure reliability metrics.

## Observations: FPL's Adjusted Data

Overall, North Florida seems to have the least reliable service results compared to other FPL regions in SAIDI, SAIFI, CAIDI, MAIFIe, and CEMI5 with 12 percent of the total CEMI5 across the 17 service areas. Nevertheless, the service reliability provided by FPL has achieved improvements from 2007 to 2008 in specific service areas such as Treasure Coast and Toledo Blade which historically have had less reliability compared to FPL's other regions.

## *Progress Energy Florida, Inc: Adjusted Data*

Figure 3-9 charts the maximum, average, and minimum adjusted SAIDI recorded across PEF's system and the chart shows a general decrease in the maximum, average, and minimum SAIDI. PEF reported a declining SAIDI for the South Coastal region which has historically had higher SAIDI values compared to other regions. This change suggests a general improvement in PEF's South Coastal region. Additionally, PEF appears to be providing increasingly similar levels of reliability across most of PEF's service area. The North Coastal Region has had the least reliable SAIDI index for the five-year period reviewed. On a system average basis, PEF has shown little change in the average minutes of service interruption durations over the past five years.

**Figure 3-9. SAIDI Across PEF's Four Regions (Adjusted)**

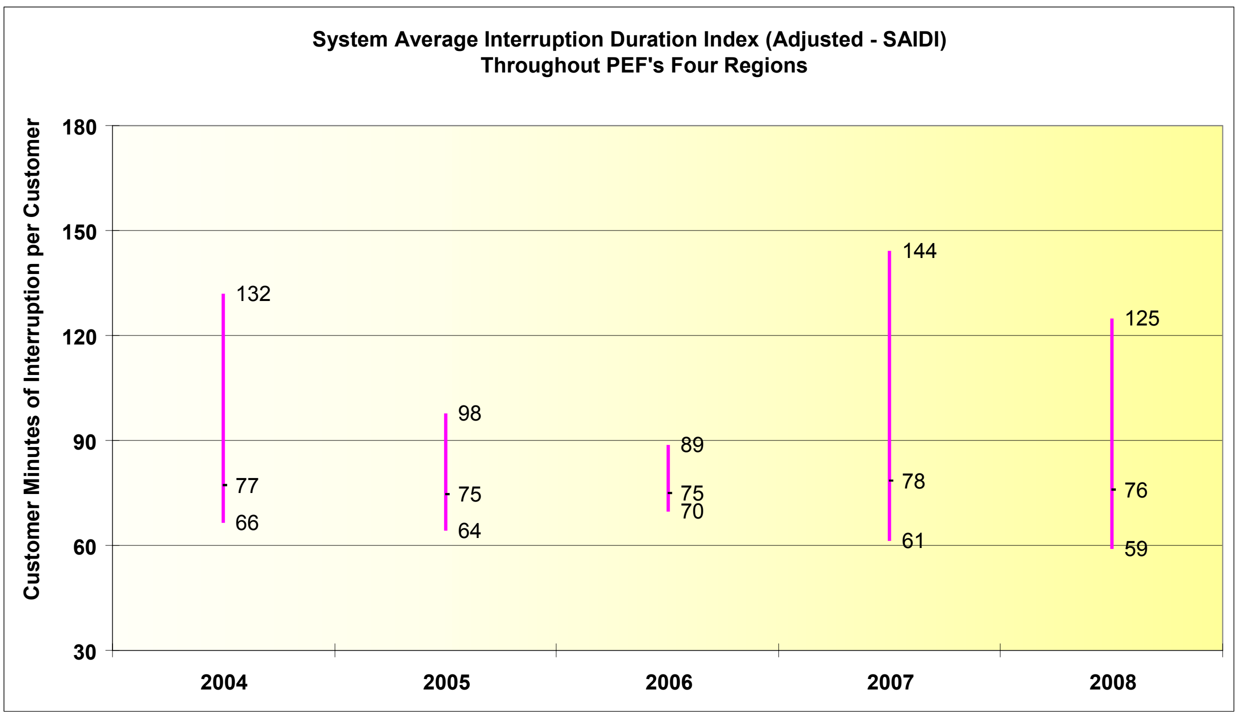



Figure 3-10 shows the maximum, average, and minimum adjusted SAIFI (number of interruptions per customer) across PEF's system. Overall, PEF has achieved a 13 percent improvement in SAIFI during the past five years. The review of supporting data shows PEF's South Coastal region had an 18 percent improvement in SAIFI from 2004 to 2008. Overall, the Southern regions have the most reliable SAIFI results over the five-year period as compared to the Northern regions.

**Figure 3-10. SAIFI Across PEF's Four Regions (Adjusted)**

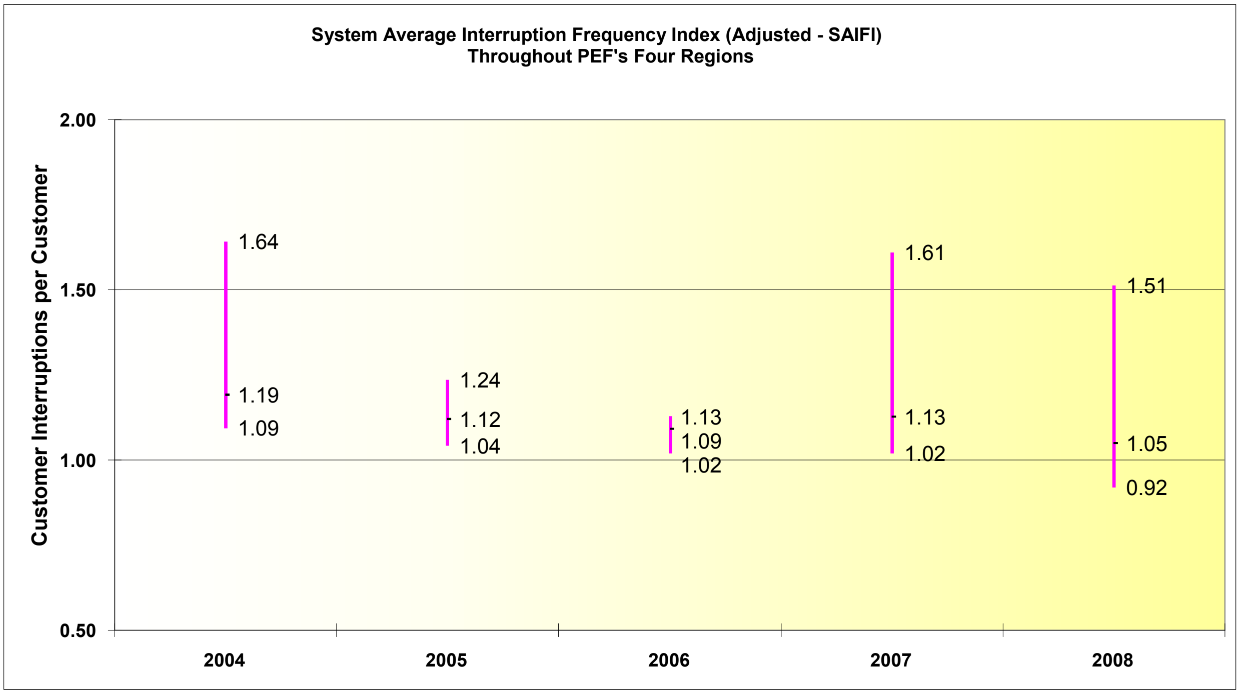
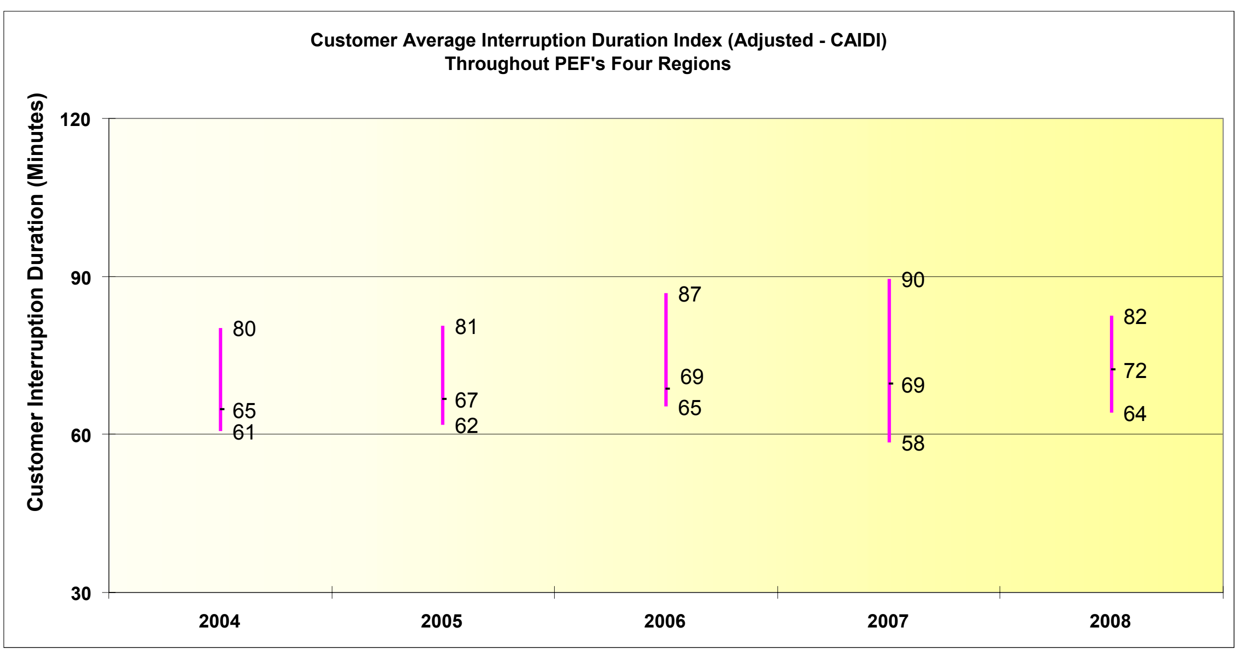



Figure 3-11 is the maximum, average, and minimum adjusted CAIDI (outage restoration time) across PEF's region. PEF's adjusted average duration of service interruption has risen approximately ten percent from 65 minutes in 2004 to 72 minutes in 2008. The North Coastal region has continued to have the highest CAIDI level for the past five years over all of PEF's regions, while the South Coastal region has maintained the lowest CAIDI level during the same period.

**Figure 3-11. CAIDI Across PEF's Four Regions (Adjusted)**



The average length of time PEF spends recovering from outage events, excluding hurricanes and other extreme outage events is the index known as L-Bar shown below in Figure 3-12. The data demonstrates a seven percent increase of outage durations compared with the outages recorded in 2004, with only a slight decline from 2007 of two percent in 2008.

**Figure 3-12. PEF's Average Duration of Outages (Adjusted)**

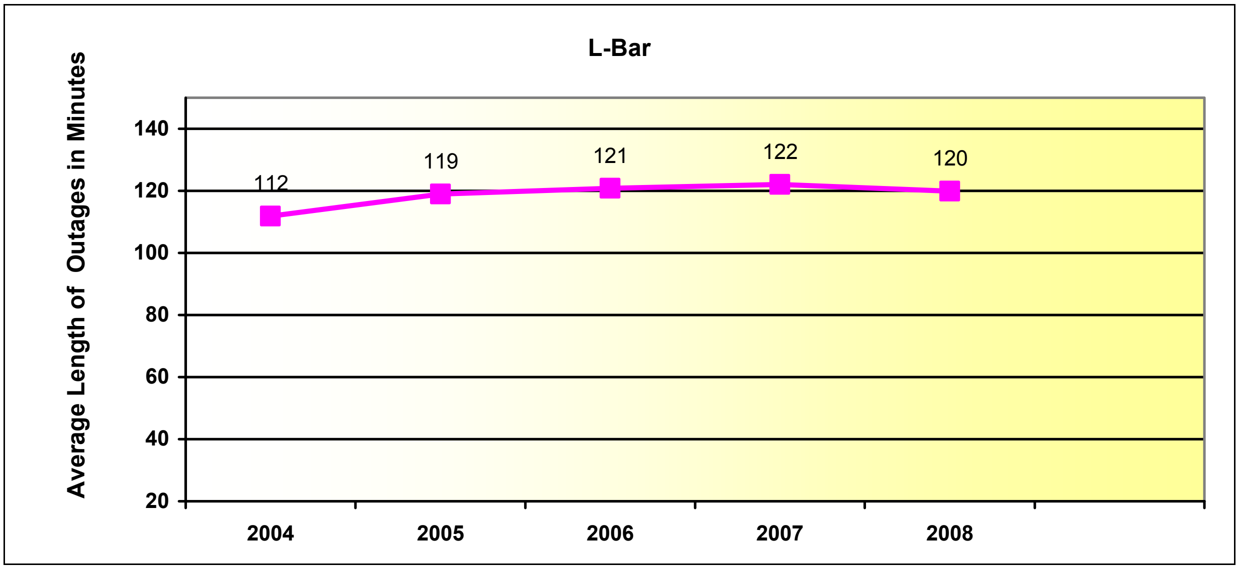



Figure 3-13 shows the maximum, average, and minimum adjusted MAIFIe (frequency of momentary events on primary circuits per customer) recorded across PEF's system. A review of supporting data shows that PEF's South Coastal region typically has the largest MAIFIe while PEF's North Central region has the lowest MAIFIe, which suggests that PEF needs to place more emphasis on the problems with primary circuits in the South Coastal region in order to improve the reliability in this region.

**Figure 3-13. MAIFIe Across PEF's Four Regions (Adjusted)**

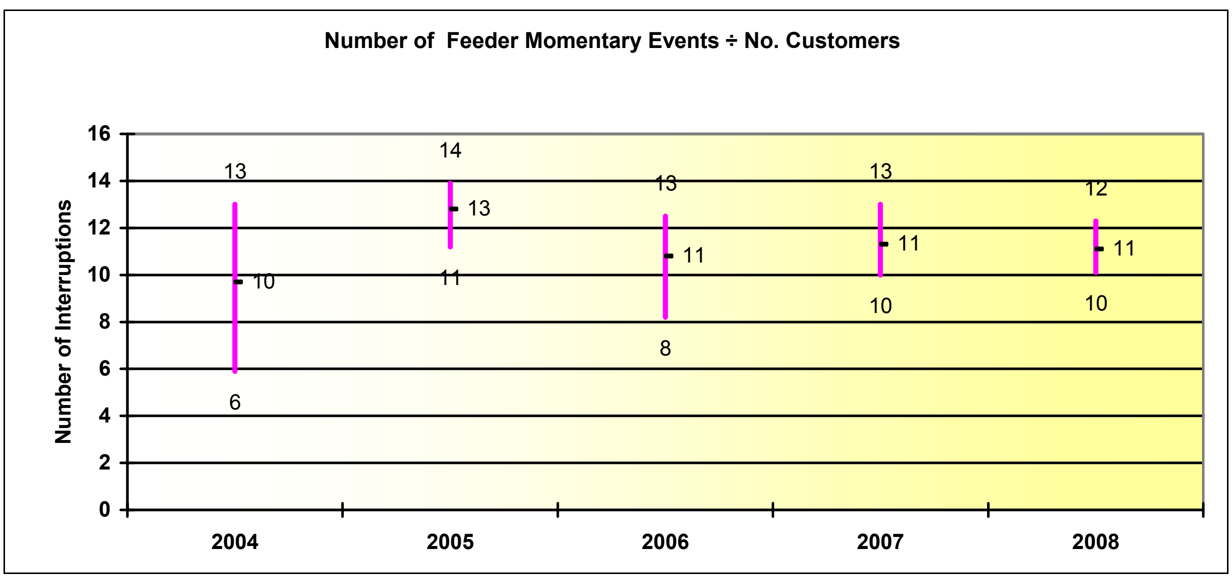
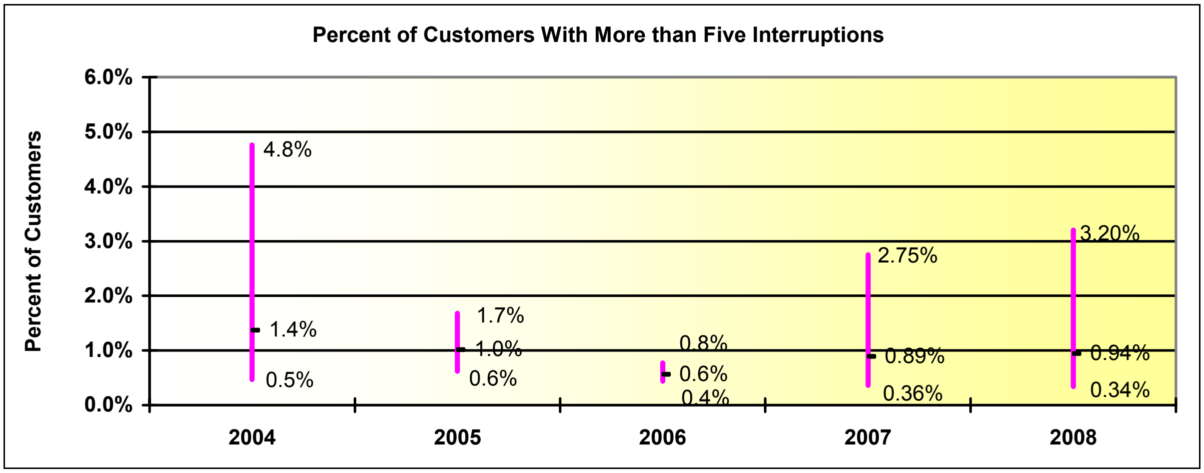


Figure 3-14 charts the maximum, average, and minimum adjusted CEMI5 (percent of customers experiencing more than five interruptions). PEF has experienced little change in the average CEMI5 performance over the past three years. An increasing CEMI5 for the North Coastal and North Central regions indicate a decline in service reliability in these two regions. The North Coastal region has had the highest CEMI5 performance for all four regions over the five-year evaluation period. However, PEF reported declining CEMI5 for its Southern regions, suggesting general improvement in both the South Coastal and South Central Regions.

**Figure 3-14. CEMI5 Across PEF's Four Regions (Adjusted)**




The Three Percent Feeder Report lists the top three percent of feeders with the most feeder outage events. The fraction of multiple occurrences, Figure 3-15, is calculated from the number of recurrences divided by the number of feeders reported. Figure 3-15 shows the fraction of multiple occurrences of feeders using a three-year and five-year basis. In both cases, for the period reviewed, PEF's data shows a decreasing trend for the same feeders to be reported. The three-year feeder percentage has decreased by 65 percent, while the five-year feeder has decreased by 50 percent, thus indicating that PEF has identified the problems along certain feeders and addressed the issues providing greater reliability in the feeders affected.

**Figure 3-15. PEF's Three Percent Feeder Report (Adjusted)**

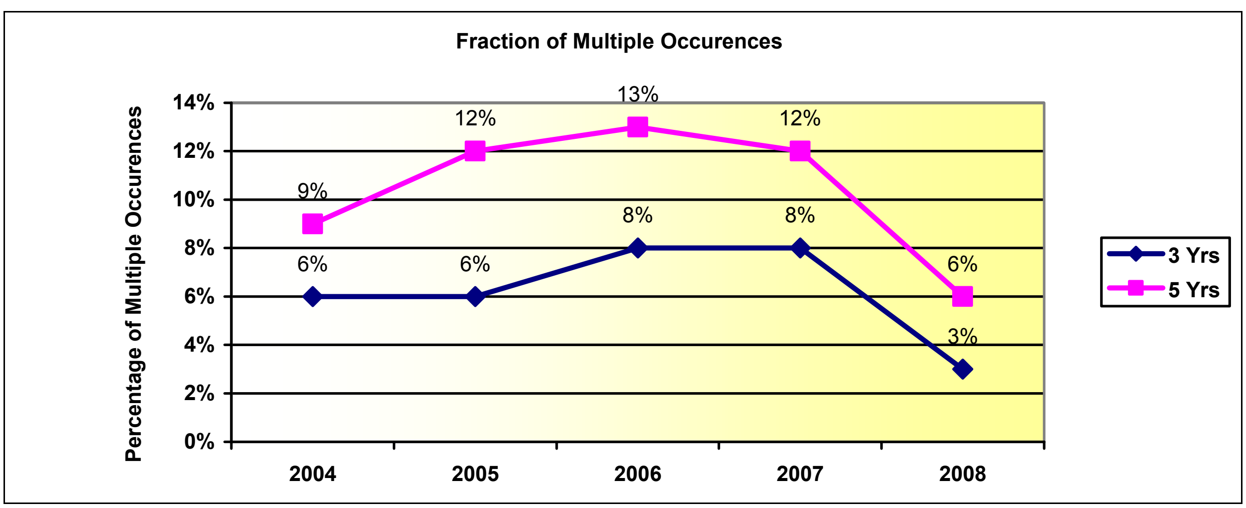
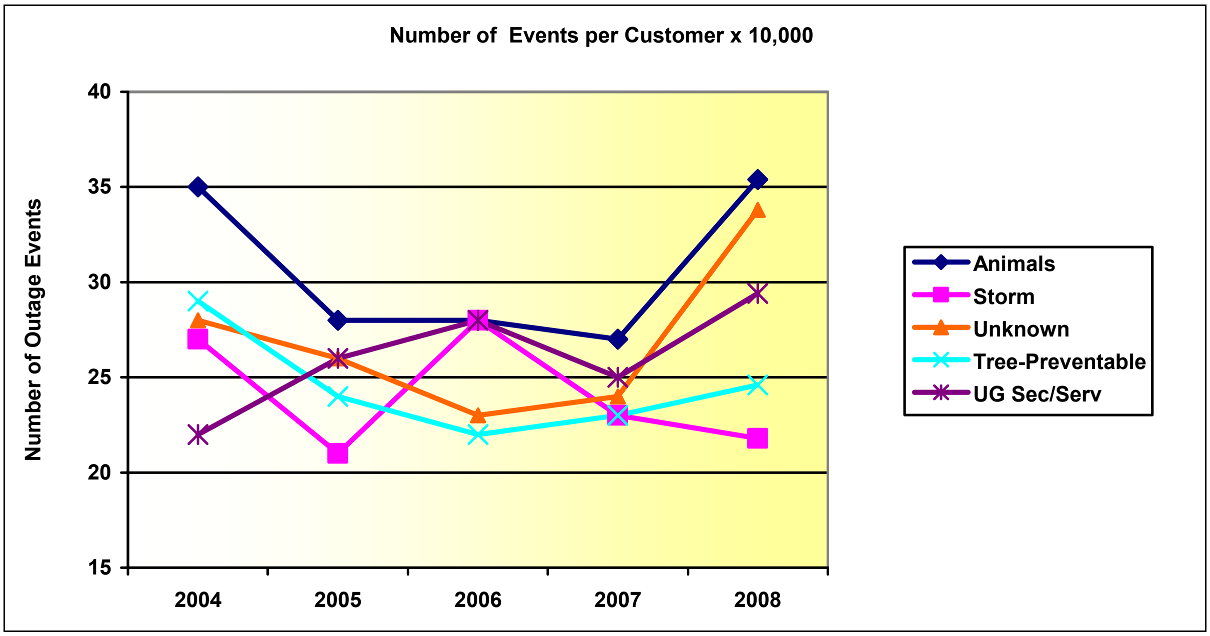


Figure 3-16 shows the top five causes of outage events on PEF's distribution system normalized to a 10,000 customer base. The figure is based on PEF's adjusted data of the top ten causes of outage events and represents 58 percent of the outage events that occurred during 2008. For the five-year period, the top five causes of outage events were: animals (13 percent), unknown (11 percent), UG secondary/service (11 percent), tree-preventable (10 percent), and storm (10 percent) on a cumulative basis. The number of outages experienced due to animals and unknown causes rose sharply from 2007 to 2008.

**Figure 3-16. PEF's Top Five Outage Causes (Adjusted)**



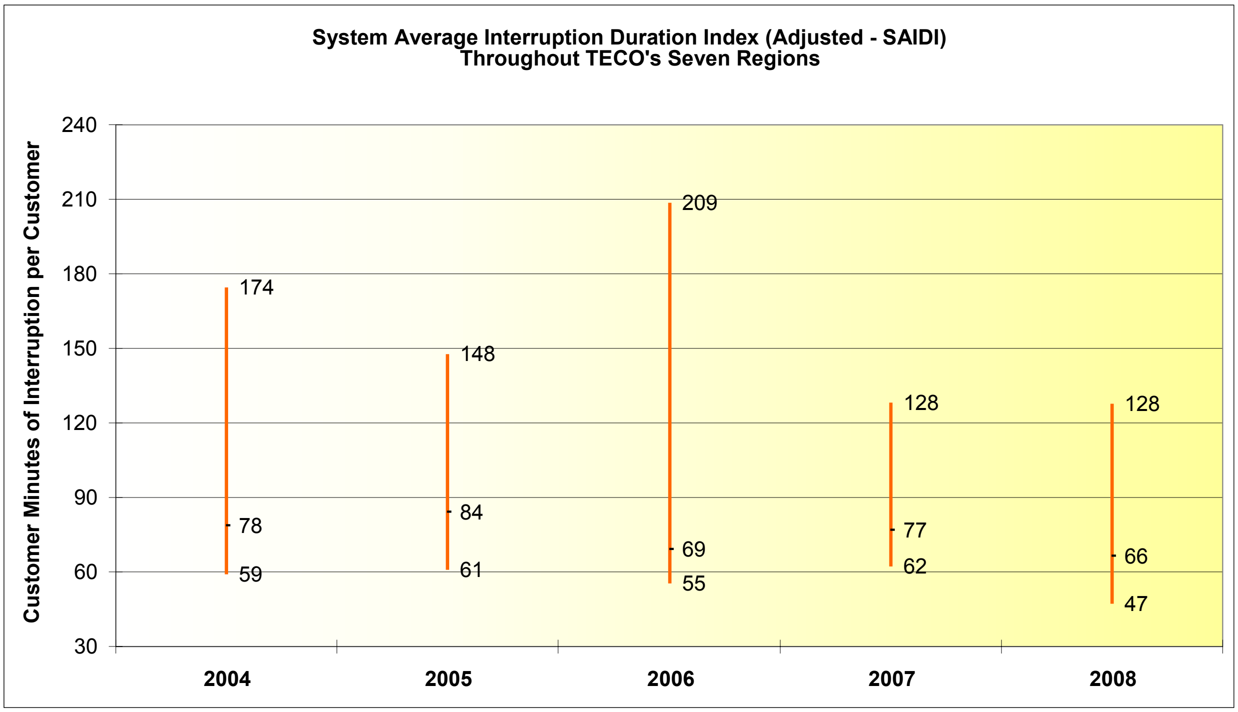

## Observations: PEF's Adjusted Data

In general, the overall service reliabilty provided by PEF in recent years is not declining, which possibly indicates minimal lingering effects of the 2004 and 2005 hurricanes. The increase in trends for the CAIDI index seems to relate directly to the results of the North Coastal Region which has the lowest service reliability of the four regions at PEF. The decrease in the trend for feeders on the Three Percent Feeder Report shows a considerable effort has been made for improvement in this area. However, there continues to be a high volume of outage events caused by animals and birds, 15 percent of the total outage causes. A tremendous portion of PEF's area in Florida is covered with forests and national parks where the above ground power equipment is in constant danger of squirrels causing damage to transformers, birds building nests, rodents, and other animals intruding onto lines and equipment, causing equipment failure. Currently, PEF utilizes different wildlife protectors for use on equipment to protect against damages from small mammals and birds, and is still pursuing a strategy to reduce these types of outages.

## *Tampa Electric Company: Adjusted Data*

Figure 3-17 shows the maximum, average, and minimum adjusted SAIDI recorded across TECO's system. TECO's average performance has improved by 18 percent over the past five-year period of 2004 through 2008. Figure 3-17 shows a general decrease in the average and minimum SAIDI recorded for all of TECO's regions combined, however, the supporting data confirms that TECO's Dade City region continues to show reliability declines while TECO's Central Region continues to show better overall performance. The supporting data suggests that TECO is not providing comparable reliability to all seven service regions.

**Figure 3-17. SAIDI Across TECO's Seven Regions (Adjusted)**




Figures 3-18 and 3-19 shows the maximum, average, and minimum adjusted SAIFI (number of interruptions per customer) and adjusted CAIDI (outage restoration time) across TECO's system. TECO's data shows improvement in both the average and minimum SAIFI results, with a 13 percent decrease in the SAIFI average. As noted in TECO's 2008 Reliability Report, all the service regions do not experience comparable reliability. TECO's Dade City and Plant City regions both have more service interruptions than TECO's other regions. TECO has maintained that the long circuits serving the Dade City region contribute to the increased number of service interruptions relative to other regions, but there seems to be no improvement over the years since this item has been identified. In addition, there seems to be no specific patterns concerning the regional CAIDI values.

**Figure 3-18. SAIFI Across TECO's Seven Regions (Adjusted)**

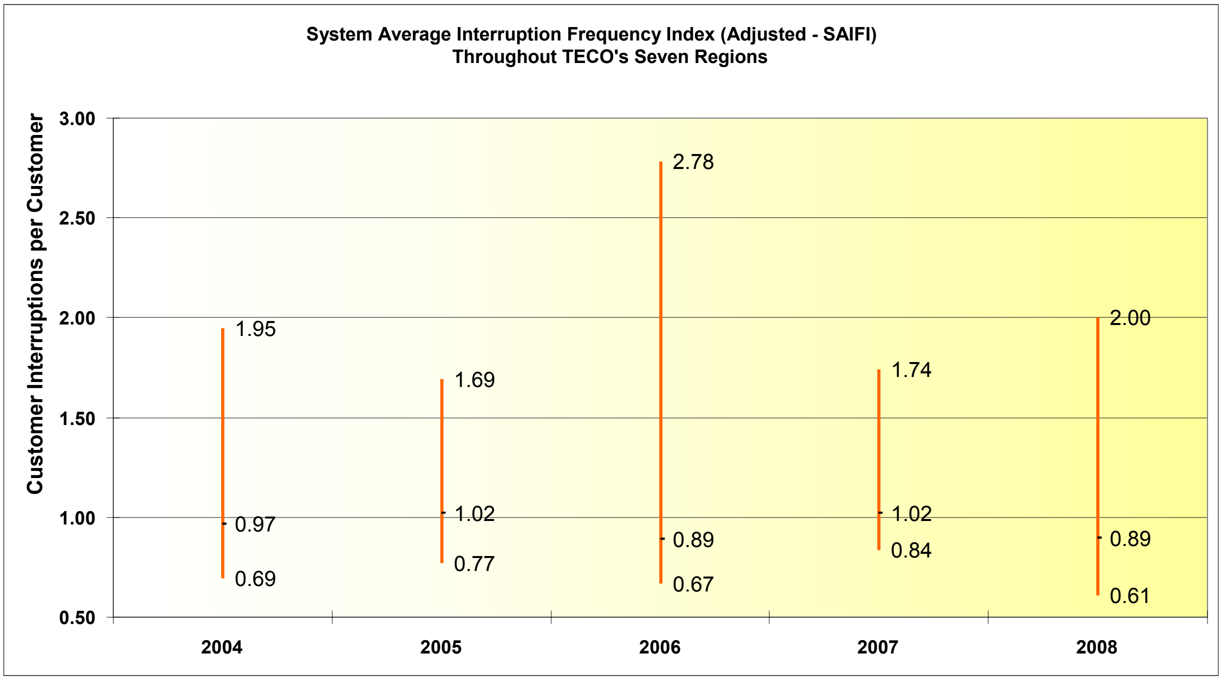
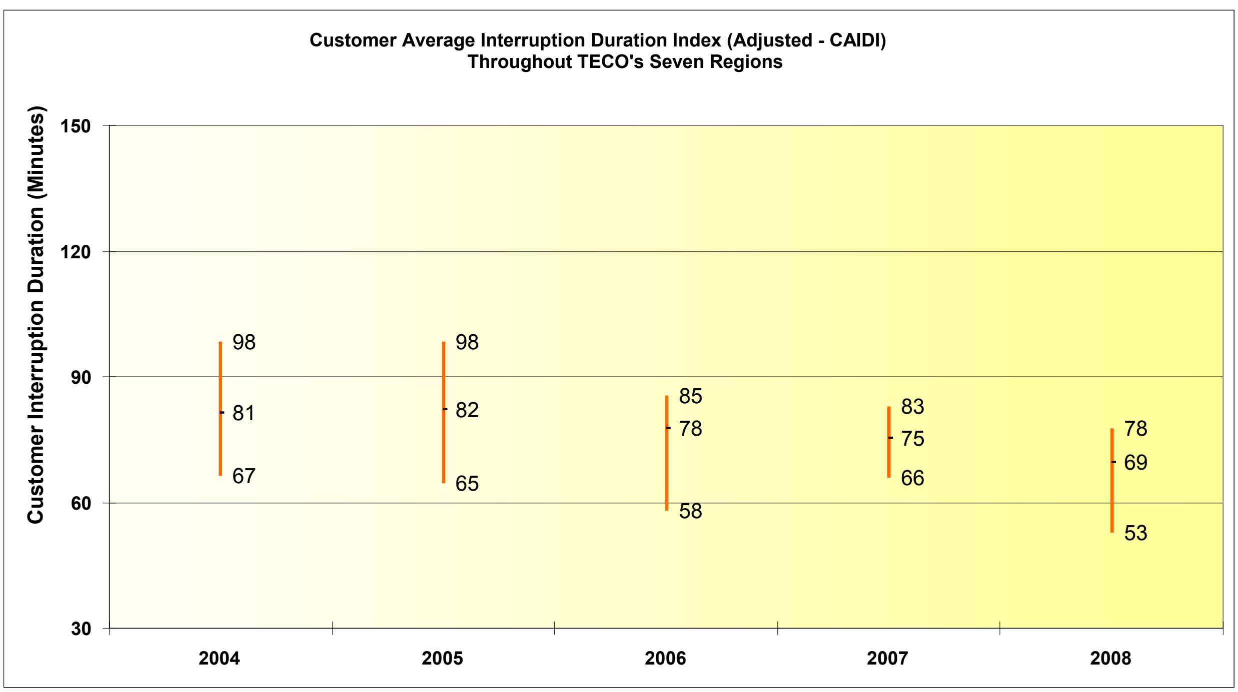



**Figure 3-19. CAIDI Across TECO's Seven Regions (Adjusted)**



The average length of time TECO spends recovering from outage events, excluding hurricanes and other extreme outage events is shown in the index L-Bar, Figure 3-20. The data demonstrates a general decrease in outage durations for the period reviewed. Many factors contribute to decreases in L-Bar, including decreased number of underground outages. TECO has made a 13 percent improvement in L-Bar since 2007, and a 24 percent improvement since 2004.

**Figure 3-20. TECO's Average Duration of Outages (Adjusted)**

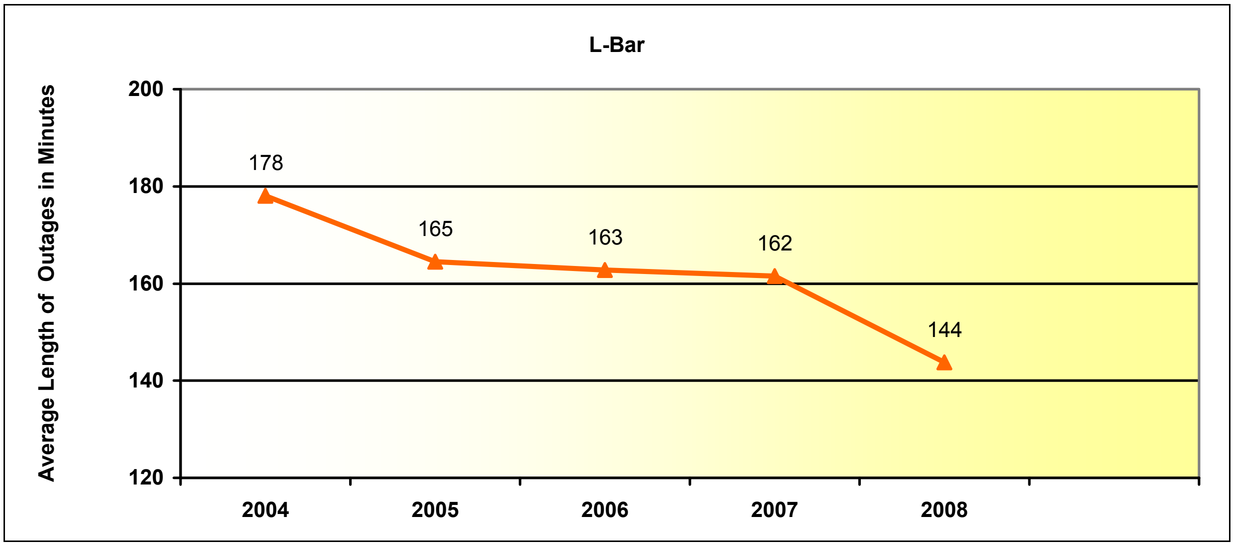



Figure 3-21 shows the maximum, average, and minimum adjusted MAIFIe (frequency of momentary events on primary circuits per customer) recorded across TECO's system. TECO reported a continued increasing MAIFIe in 2008, a trend suggesting an increase in the number of feeder momentary events compared to the prior two years.

**Figure 3-21. MAIFIe Across TECO's Seven Regions (Adjusted)**

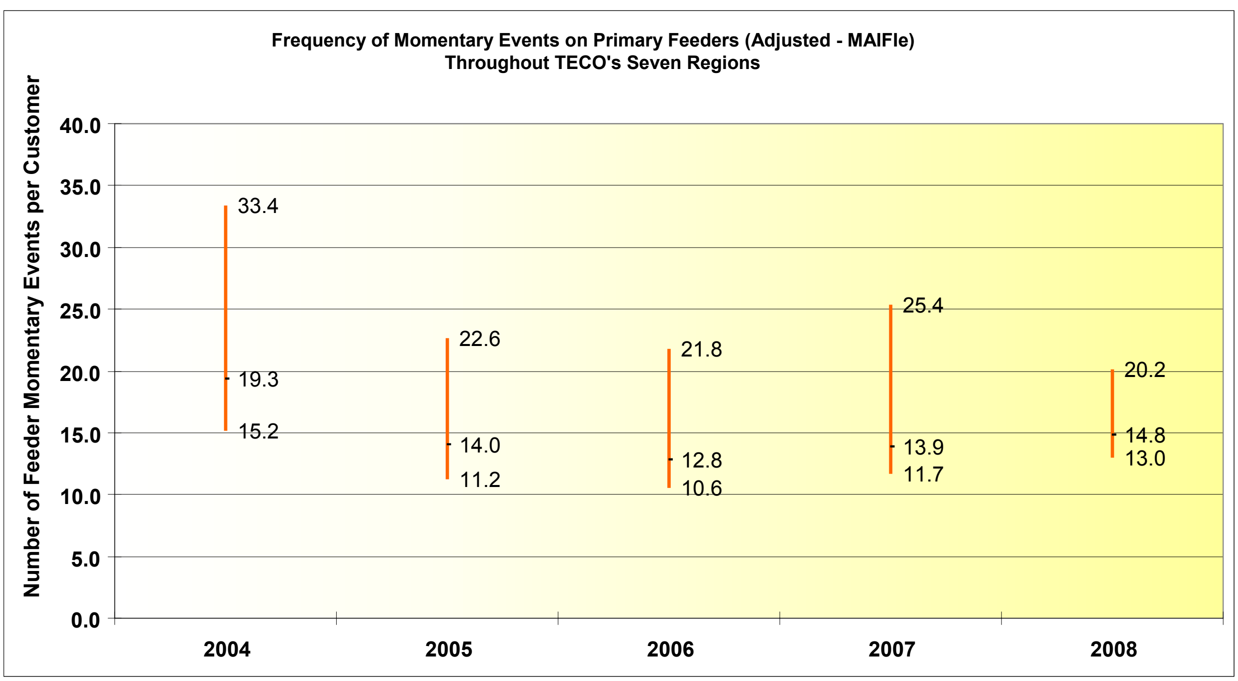
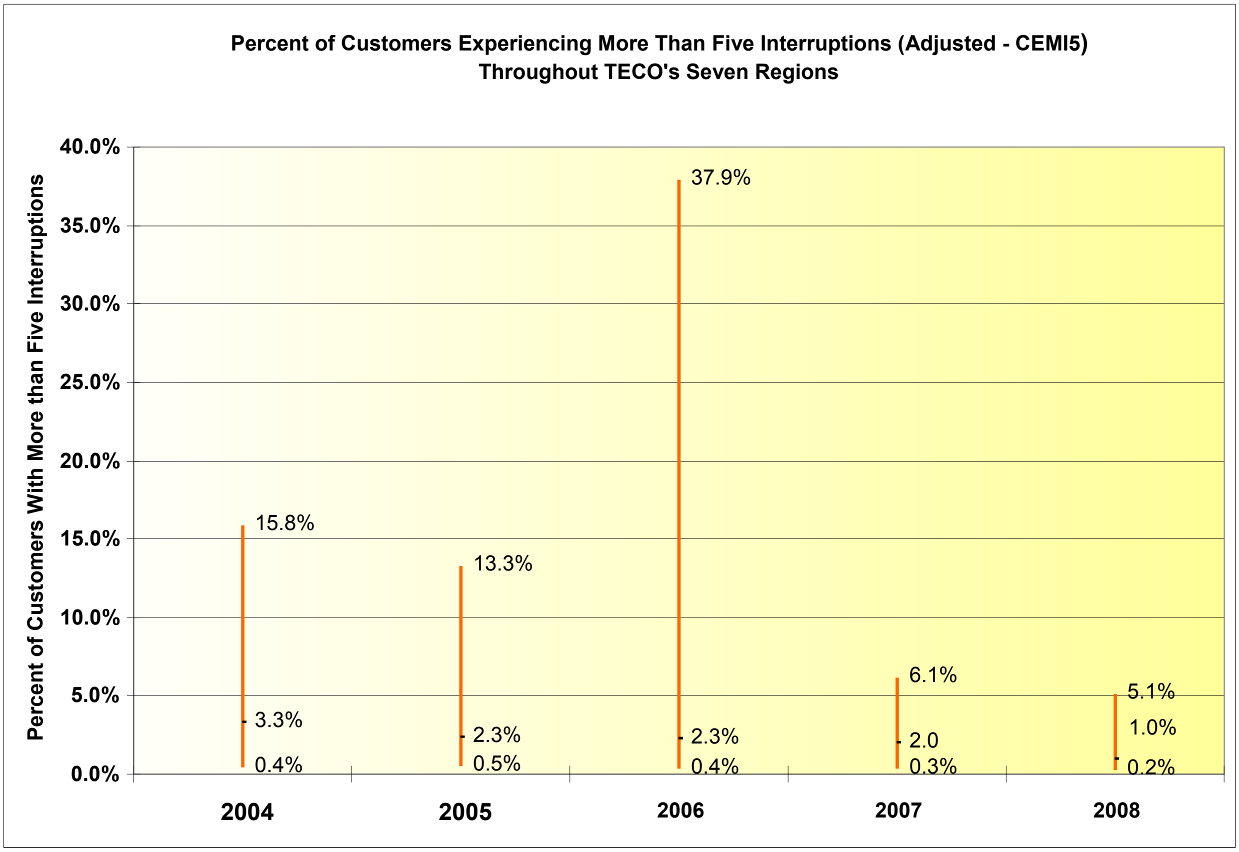


Figure 3-22 shows the maximum, average, and minimum adjusted CEMI5 and there appears to be an increasing difference between the average and the maximum levels of reliability to regions of customers throughout TECO's system. TECO's Dade City and Plant City regions had the highest recorded CEMI5 values, totaling 72 percent of the CEMI5 value for TECO's seven regions. In addition, these two regions have the highest SAIDI, SAIFI, and MAIFIe indexes of the seven regions.

**Figure 3-22. CEMI5 Across TECO's Seven Regions (Adjusted)**




The Three Percent Feeder Report is a listing of the top three percent of feeders with the most feeder outage events. The fraction of multiple occurrences, Figure 3-23, is calculated from the number of recurrences divided by the number of feeders reported. Figure 3-23 shows the fraction of multiple occurrences of feeders using a three-year and five-year basis. In both cases, TECO's data shows a decreasing trend, implying improved performance. TECO's supporting data shows that the duration of reported feeder outage events (3,257 minutes in 2008) has decreased by 33 percent of the reported duration of feeder outage events since 2004. This decrease in the duration of feeder outage events means the performance of TECO's primary circuits is improving. The five-year moving average of outages per feeder has improved by 21 percent, while the three-year moving average has improved by 13 percent. Figure 3-23 shows a tremendous improvement made in TECO's feeder performance.

**Figure 3-23. TECO's Three Percent Feeder Report (Adjusted)**

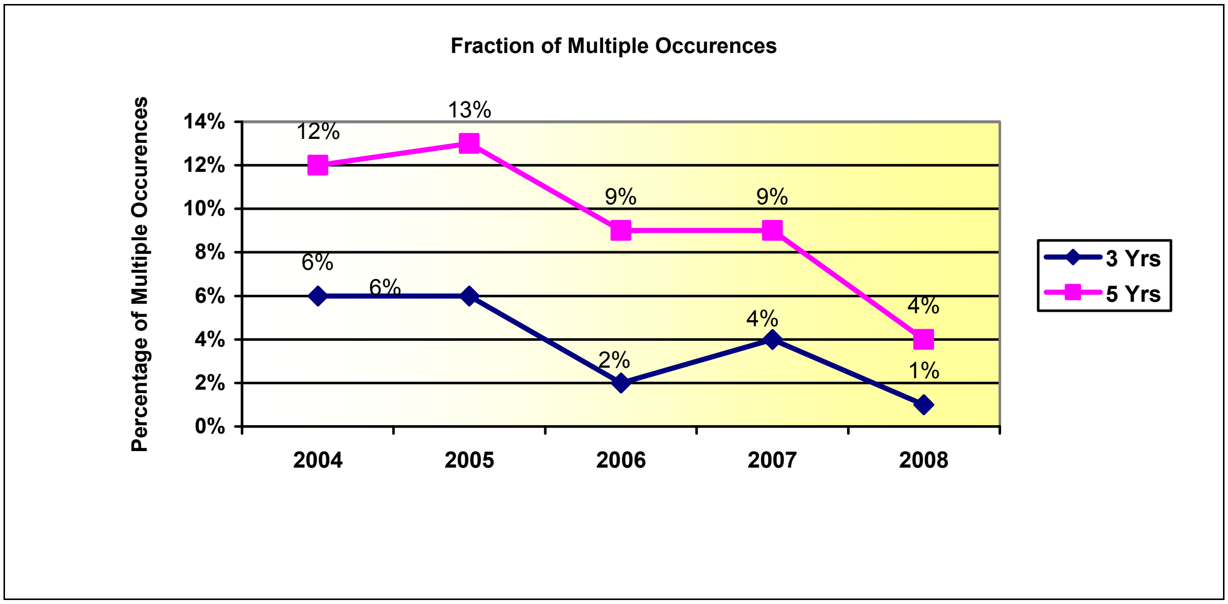
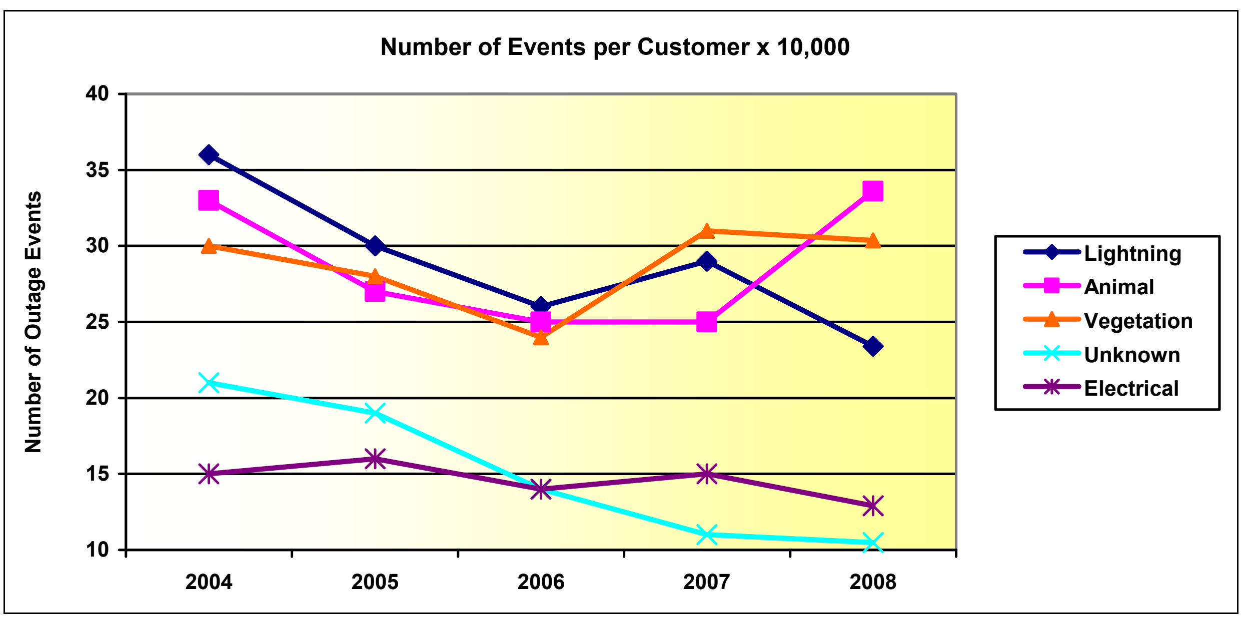



Figure 3-24 shows the top five causes of outage events on TECO's distribution system normalized to a 10,000 customer base. The figure is based on TECO's adjusted data of the top ten causes of outage events and represents 63 percent of the outage events that occurred during 2008. Animal and vegetation continue to be the leading causes of outages since 2006. The outages attributed to animals accounted for 22 percent of the total outages for 2008 which suggests an opportunity for improvement. The decreasing number of outages caused by vegetation, lightning, and electrical (equipment) causes, suggests that TECO has implemented proactive measures to avoid outages to its customers in those areas.

**Figure 3-24. TECO's Top Five Outage Causes (Adjusted)**



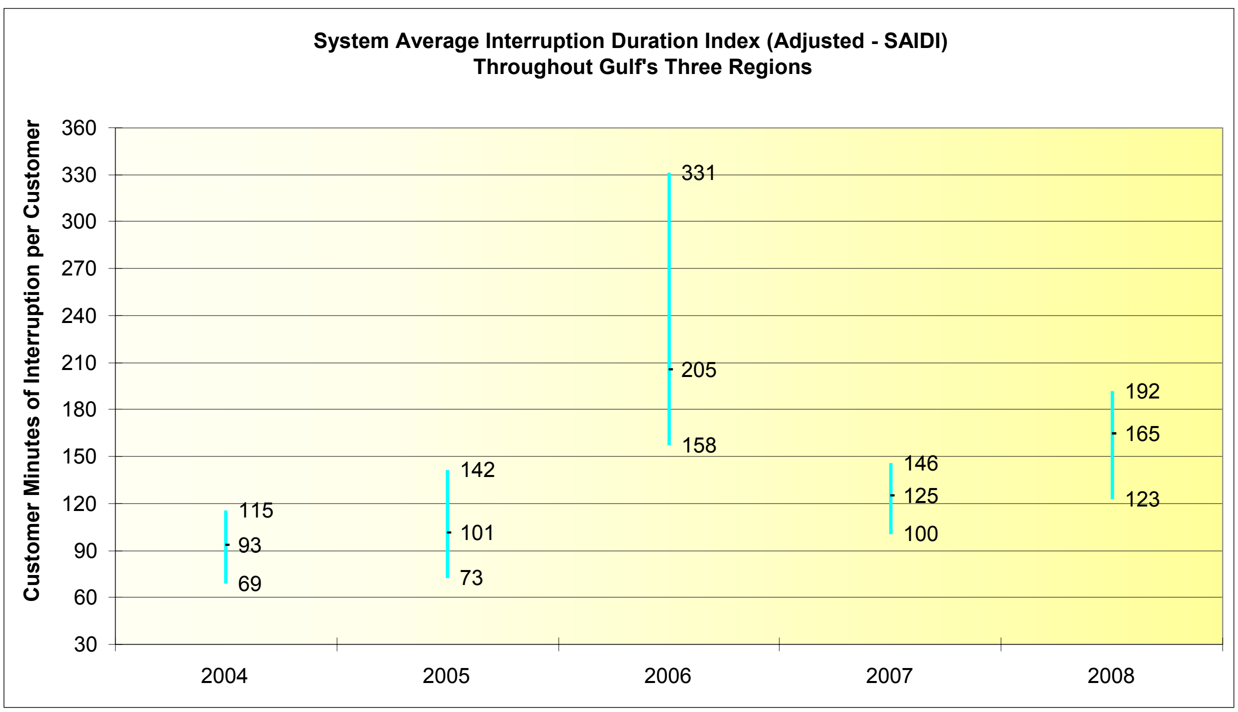
## Observations: TECO's Adjusted Data

Overall service reliability in SAIDI, SAIFI, and CAIDI indicate that TECO has made improvements on a system-wide basis. However, there is still decreasing reliability in remote, rural areas which have been identified; little or no improvement has been made in these regions. Frequent outage problems experienced by a subset of customers indicate an opportunity for improvement. Such outage problems can be masked by the previously discussed indices of SAIDI, SAIFI, CAIDI, and L-Bar. TECO should consider measures to reverse these observed trends, especially in the Dade City and Plant City regions. The level of reliable service should be comparable across all seven regions.

## *Gulf Power Company: Adjusted Data*

Figure 3-25 shows the maximum, average, and minimum adjusted SAIDI (minutes of interruption per customer) recorded across Gulf's system. The data shows an increasing trend in SAIDI values. A review of supporting data for the 5-year period indicates that Gulf's Central region typically receives the lowest SAIDI value, while Gulf's Western region typically has the highest SAIDI value for the same 5-year period. Gulf's 2008 average performance was 32 percent higher than the 2007 SAIDI results, and the system average has steadily increased since 2004 indicating a decrease in service reliability. Gulf reported that several outage events in 2008 were uncontrollable; including outages caused by a crane that collapsed on a feeder and an extreme weather event which was not excludable because it was not a named storm or National Weather Service recordable tornado. The total SAIDI impact for these events is 13.15 minutes, which would have decreased Gulf's adjusted minutes by five percent from the 2007 adjusted SAIDI values.

**Figure 3-25. SAIDI Across Gulf's Three Regions (Adjusted)**




Figures 3-26 and 3-27 show the maximum, average, and minimum adjusted SAIFI and adjusted CAIDI across Gulf's system. Again, Gulf's data shows marked increases in the 2008 reliability indices, the highest in the last five years. Gulf's Western region has the highest average SAIFI and CAIDI values for the five years under review. Overall, the 2008 regional values indicate a substantial increase in SAIFI, suggesting decreased reliability. However, in 2008, Gulf's CAIDI indicates a 12 percent improvement across the three regions.

**Figure 3-26. SAIFI Across Gulf's Three Regions (Adjusted)**

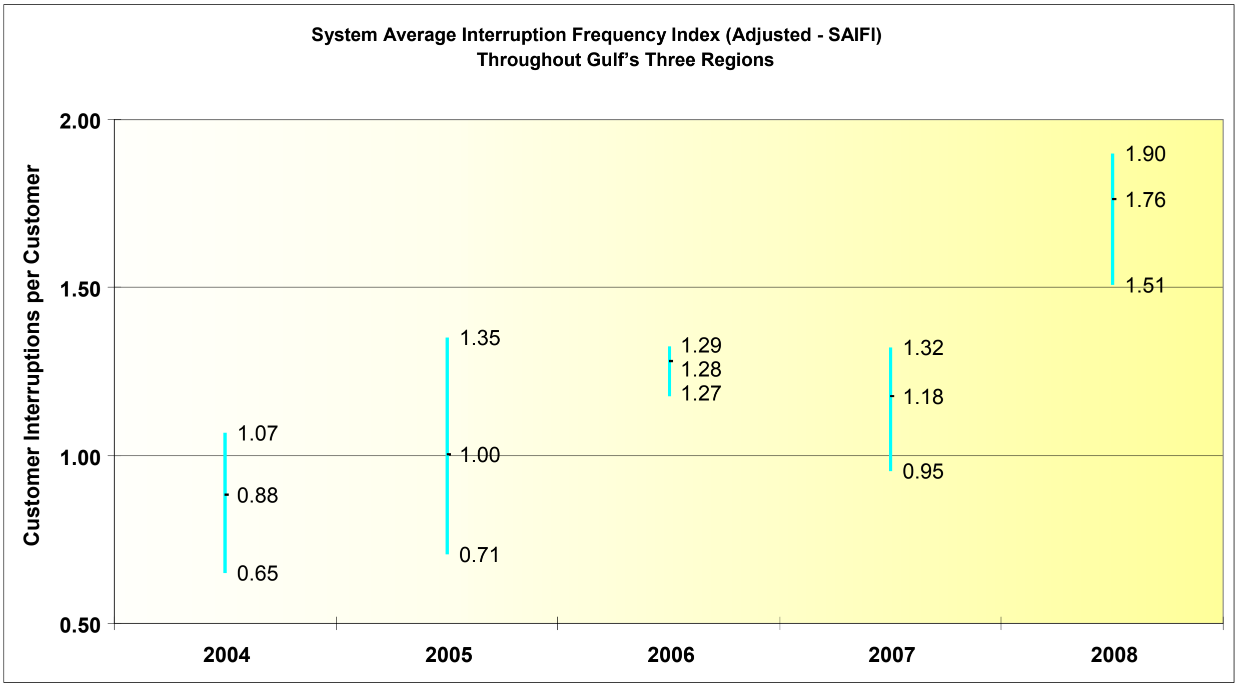
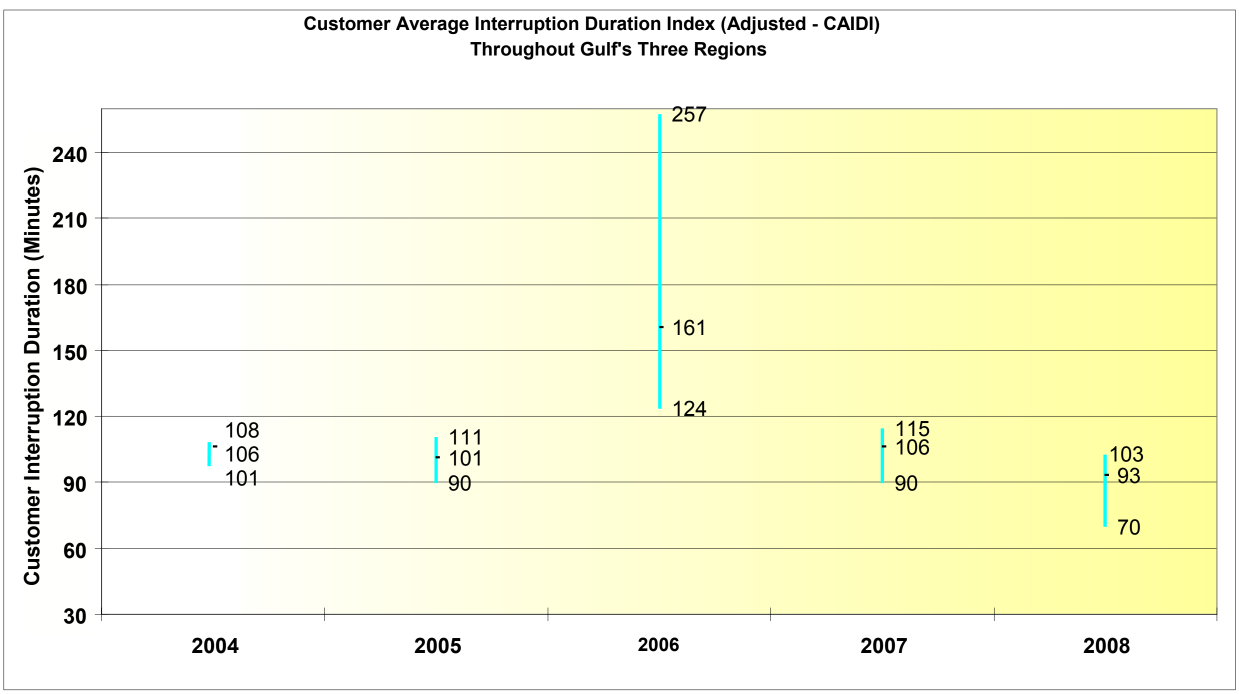



**Figure 3-27. CAIDI Across Gulf's Three Regions (Adjusted)**



The average length of time Gulf spends recovering from outage events, excluding hurricanes and other outage events is the index L-Bar shown in Figure 3-28. Gulf's L-Bar increased by 31 percent from 2004 to 2006, and began to decline in 2007, but is on the rise again in 2008. Even with adjustments, Gulf is spending more time restoring service every year since 2004. Many factors contribute to the increases in L-Bar, including increased number of underground outages, the cause and location of the outage event, the number of distribution facilities needing replacement or repair, and the number of available trained and equipped personnel. Gulf's report specifically addressed reasons for Gulf's increasing outage recovery time to the L-Bar. Overhead and underground outages show the underground outages last nearly twice as long as overhead outages, and require more time to locate the problem and restore power.

**Figure 3-28. Gulf's Average Duration of Outages (Adjusted)**

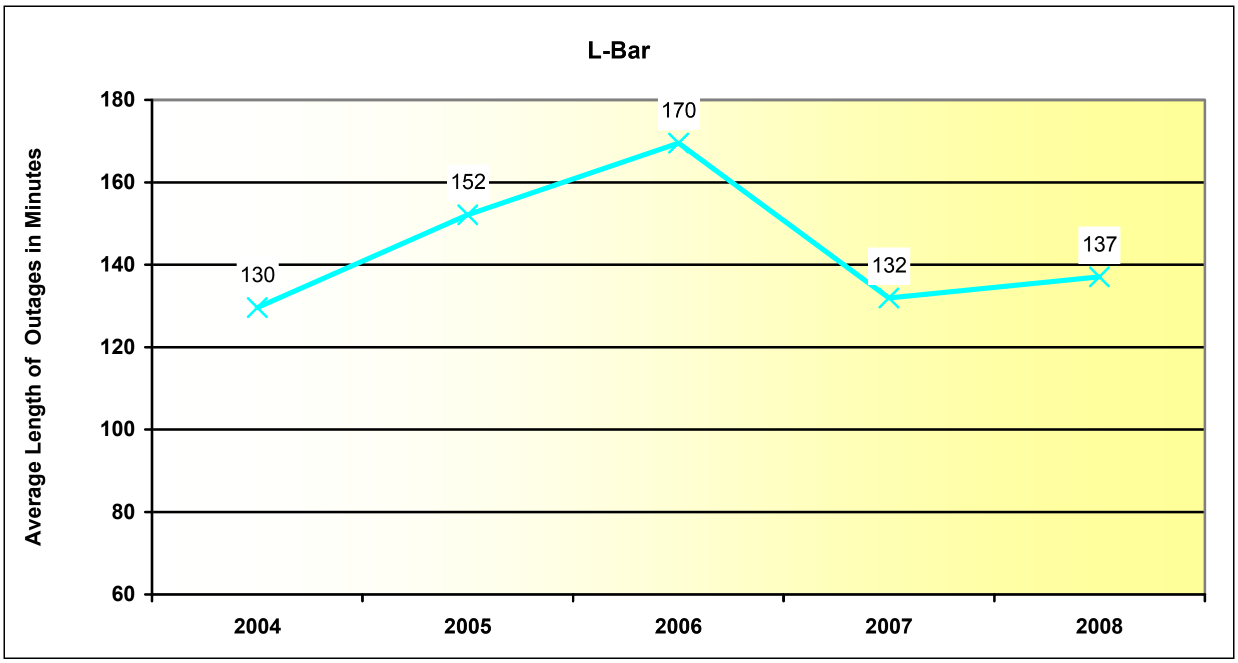



Figure 3-29 is the maximum, average, and minimum adjusted MAIFIe recorded across Gulf's system. From 2004 through 2008, Gulf has reported an increasing frequency of momentary events. Isolated momentary events also occur on segments of the distribution circuit remote from the substation where the MAIFIe data is measured. These remote momentary events often impact a small group of customers or even just one customer. Gulf's adjusted MAIFI results by region show that the Eastern region has the lowest frequency of momentary events on primary feeders from 2004 through 2008, with a combined average of 6.09. The Western region has the highest combined average of 9.35 over the same time period. The data suggests that the level of service reliability is not consistent throughout the three Gulf regions with the greatest need for improvement being in the Western region.

## Figure 3-29. MAIFIe Across Gulf's Three Regions (Adjusted)

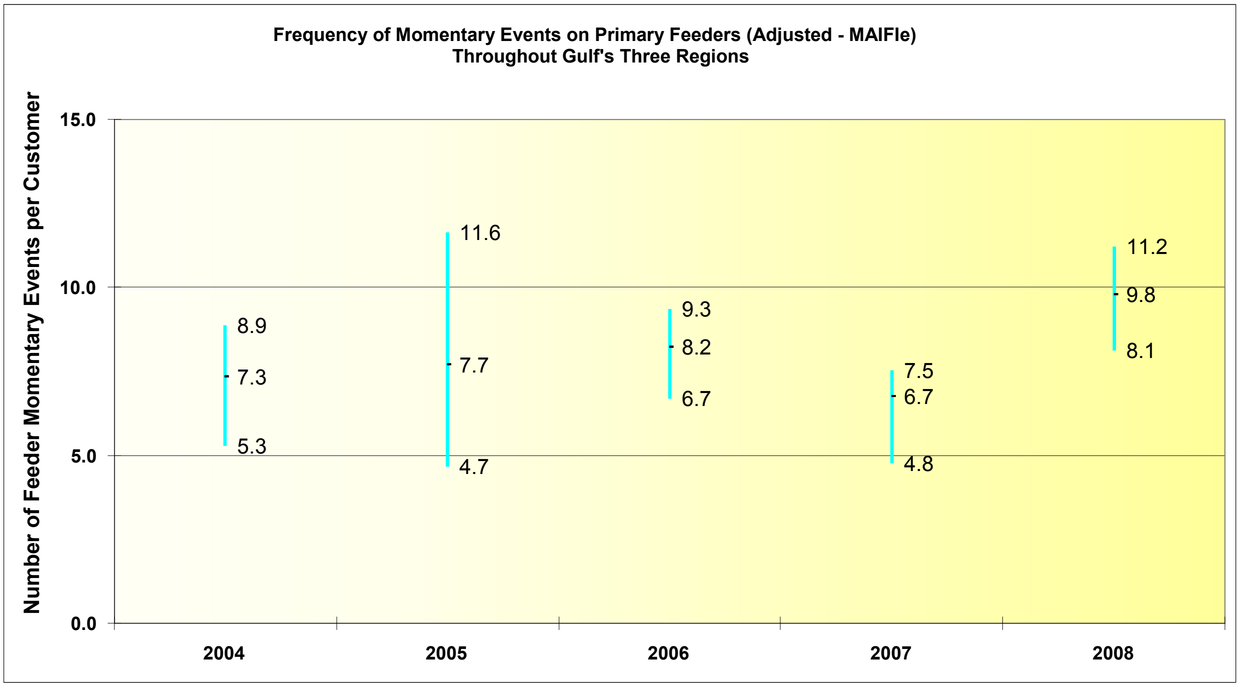
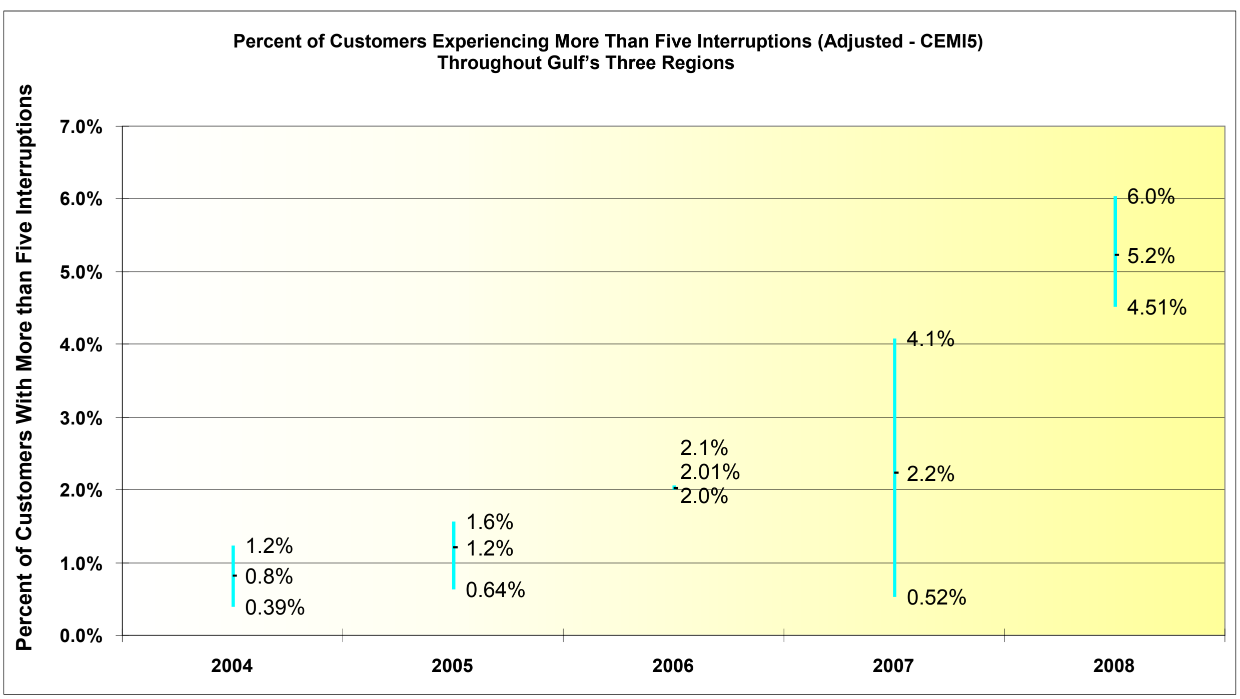



Figure 3-30 shows the maximum, average, and minimum adjusted CEMI5. In 2008, the Western region reported a 49 percent increase in the number of customers experiencing more than five outage events consistent with Gulf's MAIFIe data which shows the difference in service reliability between the three Gulf Regions.

## Figure 3-30. CEMI5 Across Gulf's Three Regions (Adjusted)



The Three Percent Feeder Report is a listing of the top three percent of feeders with the most feeder outage events. The fraction of multiple occurrences, Figure 3-31, is calculated from the number of recurrences divided by the number of feeders reported. Figure 3-31 shows the fraction of multiple occurrences of feeders using a three-year and-five year basis. The five-year multiple occurrences report shows an increasing trend which implies decreasing performance. The supporting data shows that the three-year multiple occurrences are still at four percent, showing no improvement in the three-percent worst feeder report for the second consecutive year. Gulf's adjusted three-percent feeder list has nine feeders with six of those feeders in the Western region and three in the Central region. All nine feeders have a corrective action completion date of December 2009.

**Figure 3-31. Gulf's Three Percent Feeder Report (Adjusted)**

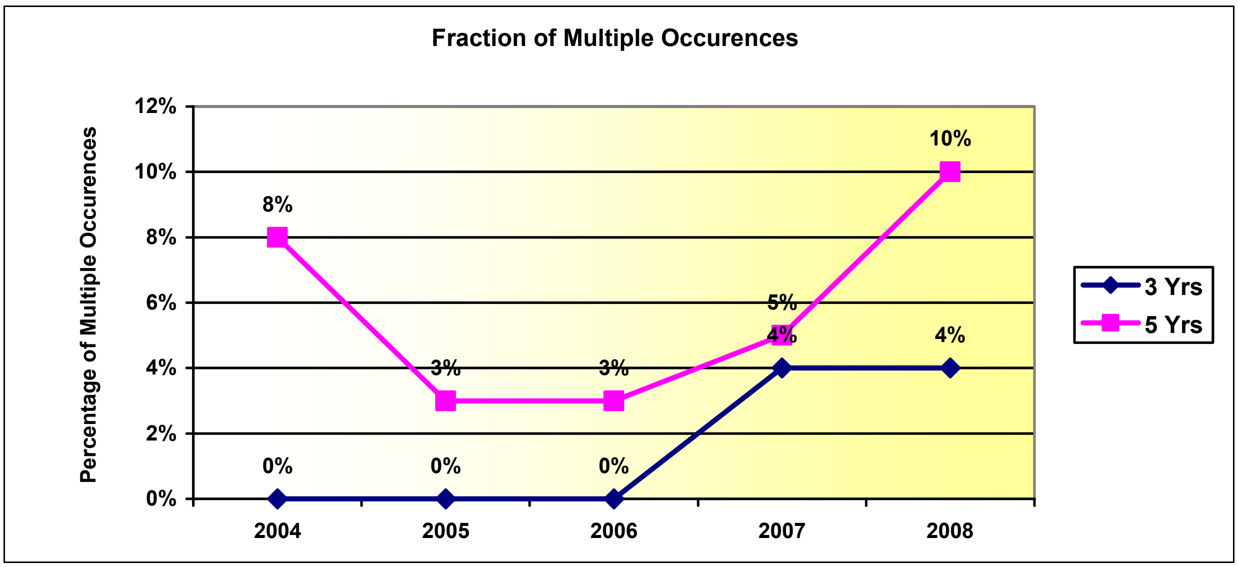
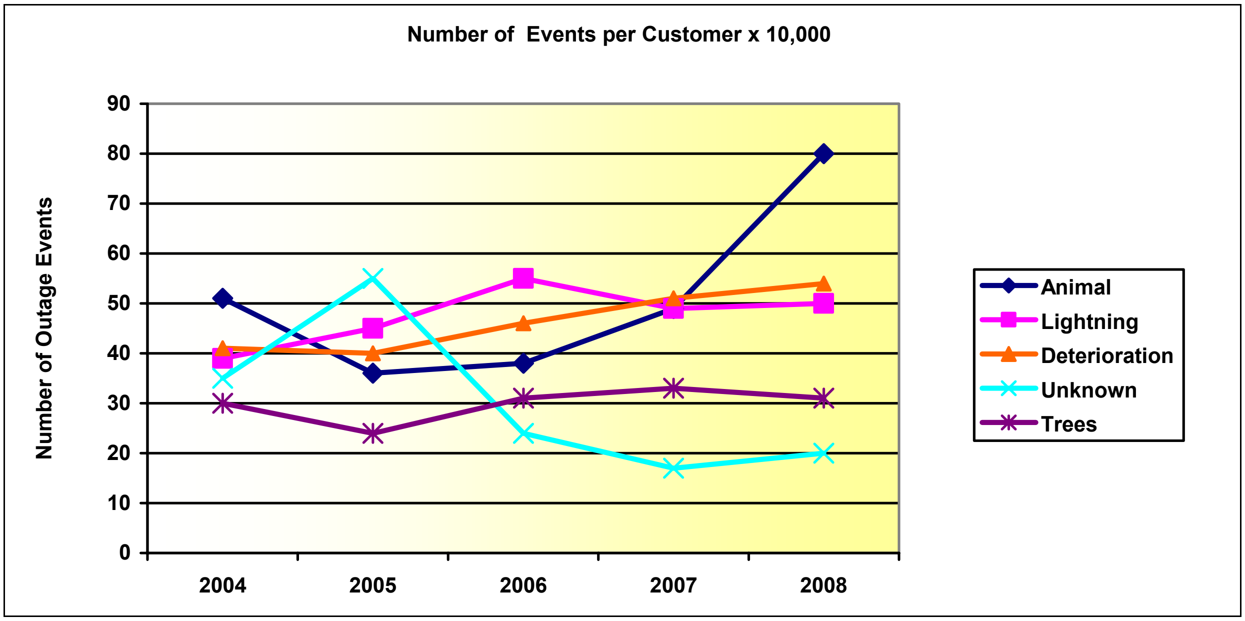



Figure 3-32 is a graph of the top five causes of outage events on Gulf's distribution system normalized to a 10,000 customer base. The figure is based on Gulf's adjusted data of the top ten causes of outage events and represents 88 percent of the total adjusted outage events that occurred during 2008. The top five causes of outage events were: animals (30 percent), deterioration (20 percent), lightning (19 percent), trees (11 percent), and unknown causes (8 percent). Relative to 2005, there is an increase in the number of outage events caused by lightning (24.6 percent), deterioration (17.1 percent) and animals (8.3 percent). The total number of outage events caused by animals in 2008 increased by 62 percent compared to 2007.

**Figure 3-32. Gulf's Top Five Outage Causes (Adjusted)**




## Observations: Gulf's Adjusted Data

Overall, service reliabilty provided by Gulf has declined since 2006. The frequency of customer service interruptions, the duration of service interruptions, and the length of outage events have increased for Gulf's customers. Service reliability was impacted by several outage events in 2008 that were uncontrollable. These outages were caused by others, including a crane that collapsed on a feeder, and an extreme weather event that was not excludable because it was not a named storm or NWS recordable tornado. The results in the Western region of Gulf's service area seems to have the worst impact on the overall 2008 results for this IOU. The Northwest Division has had an average SAIDI that is 16 percent greater than the Northeast Division.

## *Florida Public Utilities Company: Adjusted Data*

Figure 3-33 shows the maximum, average, and minimum adjusted SAIDI recorded across FPUC's system. The data shows an increasing trend in SAIDI from 2004 to 2008. FPUC's 2008 Reliability Report notes the recent installation of an Outage Management System (OMS) in the Northwest Division, which resulted in significant improvement in data collection and retrieval capability for analyzing and reporting reliability indices. However, the improved data collection resulted in higher reliability numbers. This was expected by FPUC and they attribute the higher number to better data, not necessarily a decline in system or personnel performance. A review of supporting data for the five-year period does not indicate that either of FPUC's regions typically receives the lowest or highest SAIDI values.

**Figure 3-33. SAIDI Across FPUC's Two Regions (Adjusted)**

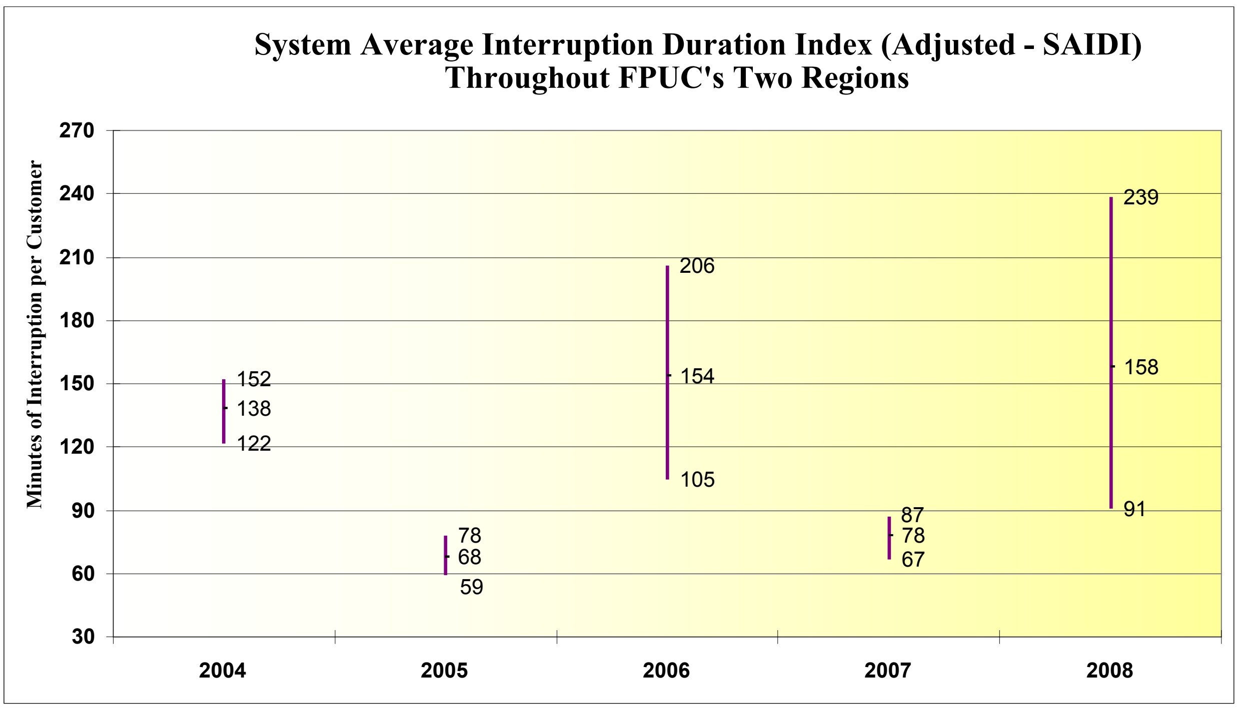



Figure 3-34 shows the maximum, average, and minimum adjusted SAIFI (number of interruptions per customer) across FPUC's system. FPUC's data shows marked increases in the 2008 reliability indices. Over the past five-year period, the Northwest Division averaged a 16 percent larger SAIDI index than the Northeast Division. The increase in SAIDI for the Northwest Division in 2008 can also be attributed to the installation of the OMS, which FPUC feels is better data, not necessarily poorer reliability. FPUC will have the same OMS installed in the Northeast Division by January 2009, which should result in better data for that region in the 2009 Reliability Report.

**Figure 3-34. SAIFI Across FPUC's Two Regions (Adjusted)**

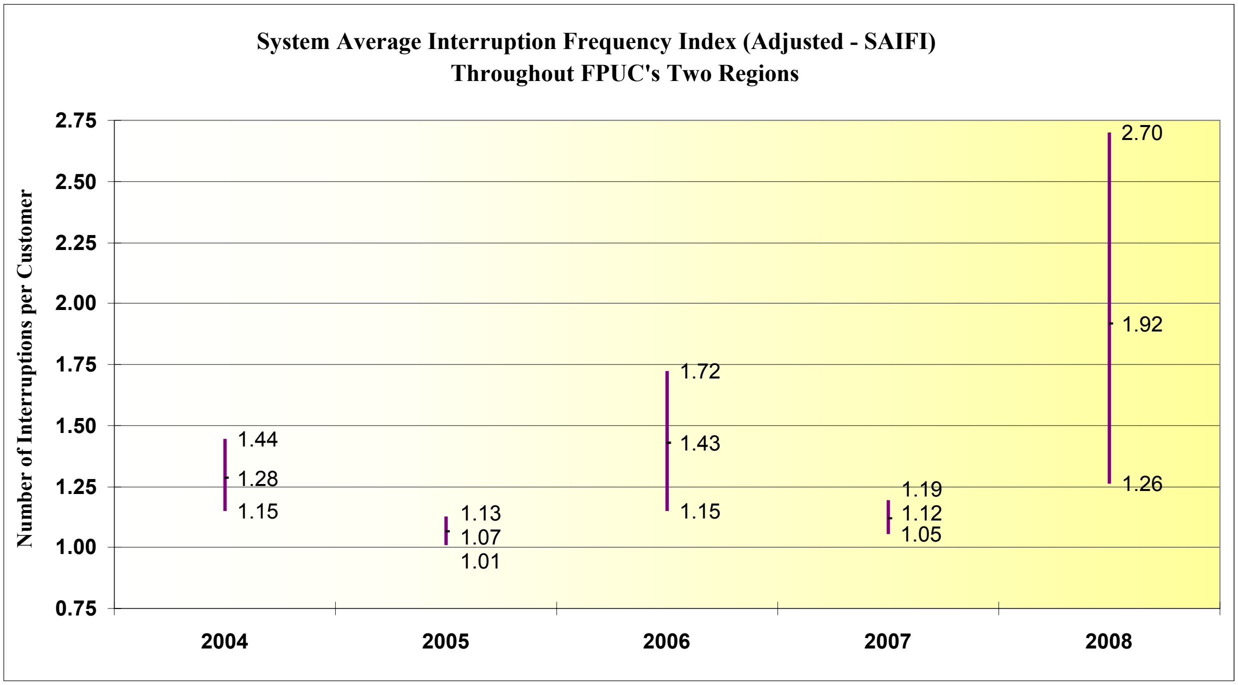
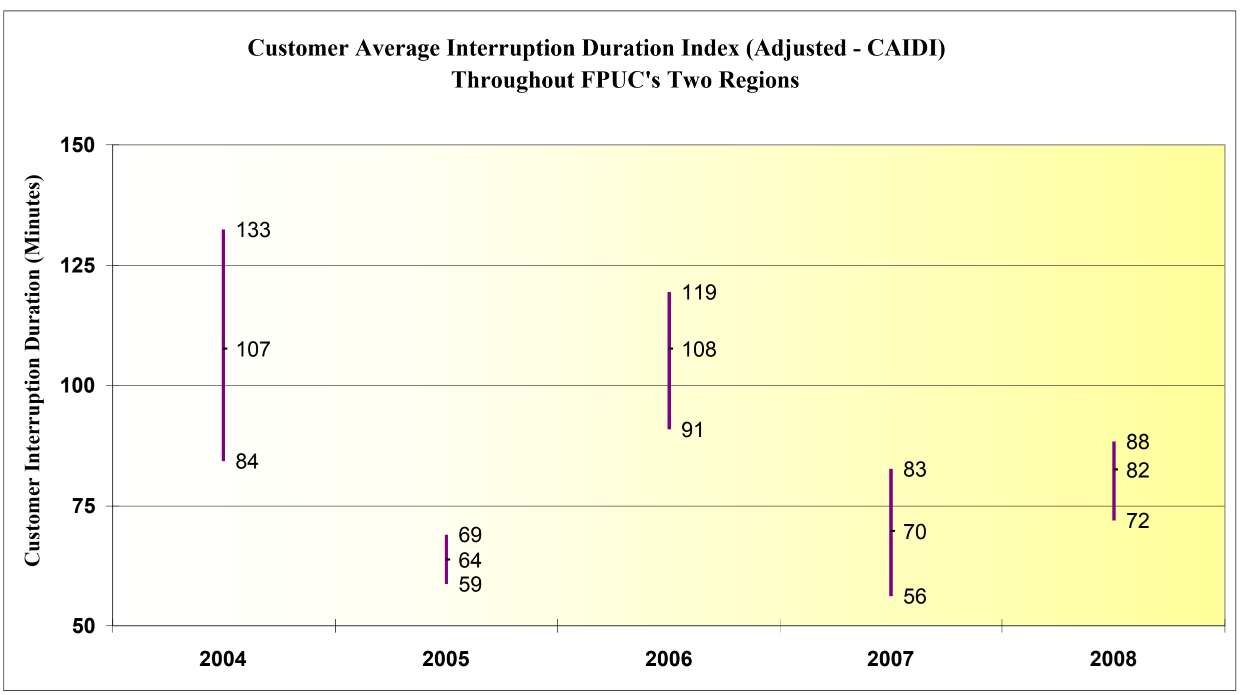



Figure 3-35 shows the maximum, average, and minimum adjusted CAIDI across FPUC's system. FPUC's data shows a 17 percent increase in the 2008 reliability indices relative to 2007 values. There is no specific pattern observed concerning the regional CAIDI values between the two divisions implying that FPUC's outage response process and location of service centers relative to affected customers are comparable in both divisions.

**Figure 3-35. CAIDI Across FPUC's Two Regions (Adjusted)**



The average length of time FPUC spends recovering from outage events (adjusted L-Bar), is shown in Figure 3-36. The data demonstrates variability and an increasing trend of longer outage recovery times. Many factors contribute to increases in L-Bar, including increased number of underground outages, the cause and location of the outage event, the number of distribution facilities needing replacement or repair, and the number of available trained and equipped personnel. The L-Bar for FPUC's Northwest Division had a 40 percent increase from 2007 to 2008, while the Northeast Division experienced a 10 percent increase in 2008. Weather and corrosion were the most pressing causes of the average duration of outages for 2008.

**Figure 3-36. FPUC's Average Duration of Outages (Adjusted)**

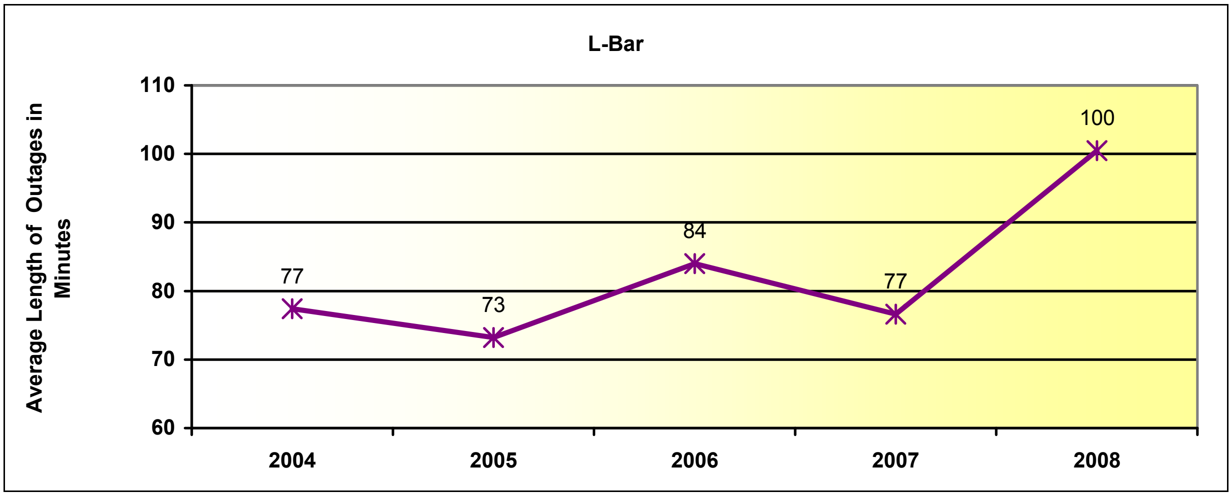
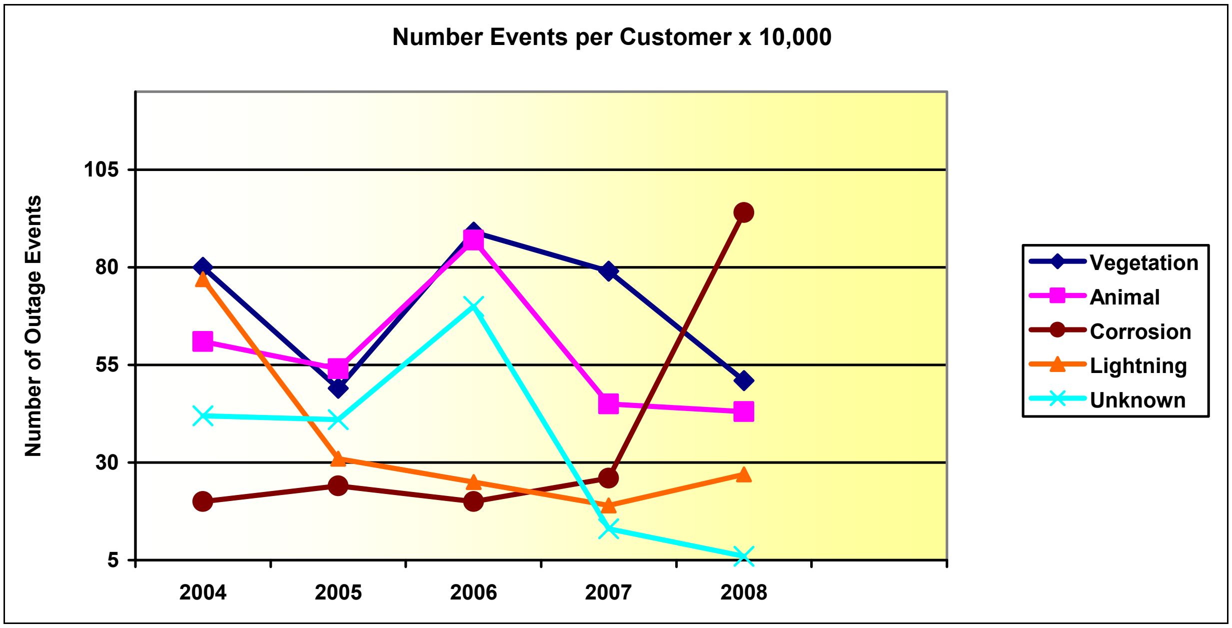



Figure 3-37 shows the top five causes of outage events on FPUC's distribution system normalized to a 10,000 customer base. The figure is based on FPUC's adjusted data of the top ten causes of outage. For the five-year period, the top five causes of outage events were corrosion (36 percent), vegetation (19 percent), animal (17 percent), lightning (10 percent) and vehicles (5 percent). These five factors represent 87 percent of the total outage causes in 2008. A decrease in vegetation and animal caused outages can be attributed to FPUC's commitment to better management of vegetation growth, continuance of its program of installing squirrel and animal guards, and insulating the primary taps of service transformers where the majority of damages occur from small animals. FPUC has a long range plan to address the corrosion issue by replacing sections of outdated underground cable. The cause of outages related to corrosion increased more than 300 percent from 2007 to 2008. In addition to the above, FPUC plans to continue to monitor the animal related issues to see if a trend develops or if it is just a temporary spike.

**Figure 3-37. FPUC's Top Five Outage Causes (Adjusted)**




FPUC filed a Three Percent Feeder Report listing the top three percent of feeders with the most feeder outage events. However, FPUC has so few feeders that the data in the report has not been statistically significant. There are two feeders on the Three Percent Feeder Report, one in each FPUC division. Neither feeder was listed on last years report. Beginning with FPUC's 2007 performance data filed in March 2008, and again in March 2009, an effort will be made to assess FPUC's Three Percent Feeder Report consistent with review of the Three Percent Feeder Reports provided by the other utilities beginning in the 2010 Reliability Report, as sufficient data should be available to make comparisons to the report.

## Observations: FPUC's Adjusted Data

FPUC does not have to report MAIFIe or CEMI5 because Rule 25-6.0455, F.A.C., waives the requirement to report information associated with metrics MAIFIe and CEMI5 for any utility with less than 50,000 customers. The cost for the information systems necessary to measure MAIFIe and CEMI5 has a higher impact on small utilities compared to large utilities on a per customer basis. Nevertheless, FPUC is implementing improvements one region at a time, which will enable its management to review detailed performance data such as MAIFIe and CEMI5 for the entire FPUC system.

The overall service reliabilty provided by FPUC in 2008, appears to have declined relative to prior years. The frequency of customer service interruptions, the duration of service interruptions, service restoration time, and the number of outage events increased for FPUC's customers. However, the implementation of the OMS system and its impact to the indices has not been determined. Staff believes further analysis is required and that better reporting may be the cultprit in FPUC's appearance of declining reliabilty in the indices.

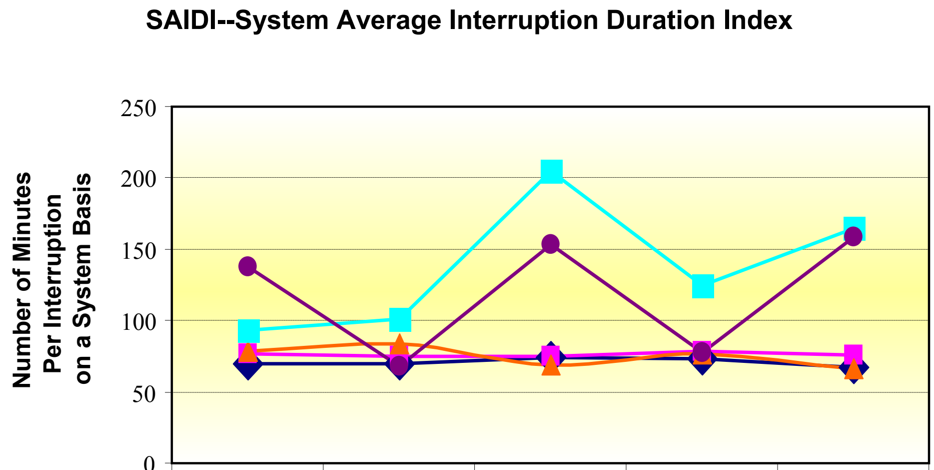
# Section IV. Inter-Utility Reliability Comparisons

## *Inter-Utility Reliability Trend Comparisons: Adjusted Data*

In order to gain a more comprehensive understanding of the various indices being reported, staff reviewed IEEE Standard 1366™ -2003. In Annex A of the standard, the IEEE conducted a nationwide survey of the various electric distribution indices utilized by the electric utilities and published the results.[21] The IEEE's purpose of the surveys was to determine electric industry usage of the various indices and the relative values for the indices. In performing its analysis, the IEEE divided the reported indices (SAIDI, SAIFI, and CAIDI) into quartiles and expressed them as percentages. The first quartile (known as Q1) indicates that 25 percent of the utilities have an index less than the value being analyzed; the second quartile (Q2) indicates 50 percent of the utilities have an index less than the analyzed value; Q3: 75 percent of the utilities have an index less than the analyzed value; and Q4: 100 percent of the utilities have an index less than the analyzed value. The ideal placement for each utility's indices would be the first quartile; however, due to Florida being a peninsular state and the impact of severe weather events, this may not be achievable. A comparison of Florida's five IOUs and their respective SAIDI, SAIFI, and CAIDI indices and the 1997 IEEE reported data follows.

[21] IEEE Std. 1366™-2003, IEEE Guide for Electric Power Distribution Reliability Indices.

**Figure 4-1. Average Interruption Duration (Adjusted SAIDI)**



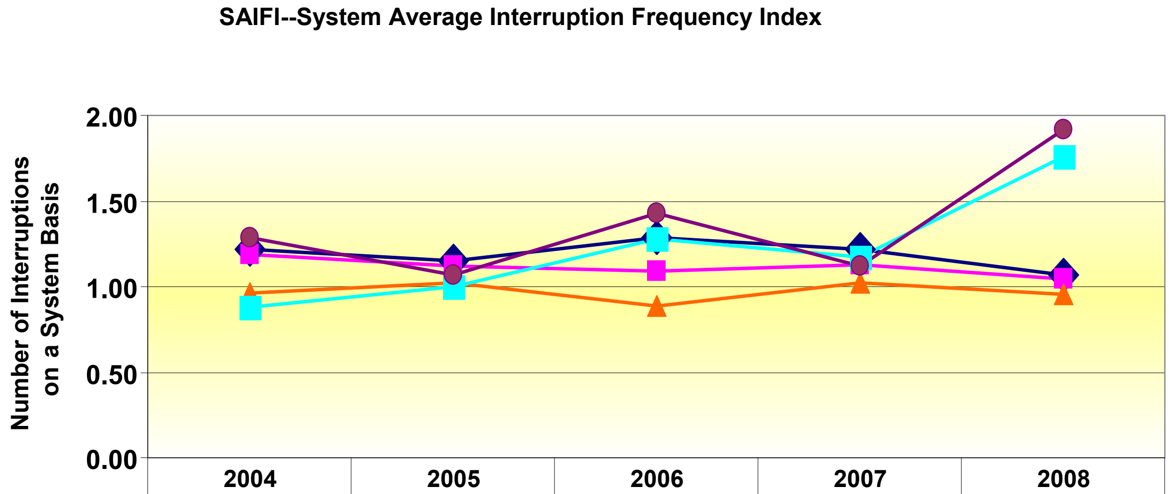

| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|
| FPL | 70 | 70 | 74 | 73 | 67 |
| PEF | 77 | 75 | 75 | 78 | 76 |
| TECO | 78 | 84 | 69 | 77 | 66 |
| Gulf | 93 | 101 | 205 | 125 | 165 |
| FPUC | 138 | 68 | 154 | 78 | 158 |

The 1997 IEEE data for SAIDI listed the first quartile or Q1 as 55 minutes. Figure 4-1 shows that none of Florida's IOUs fall within the top quartile for the five year period, beginning in 2004 and ending in 2008. The second quartile, Q2, was reported as 88 minutes. FPL, PEF, and TECO all fall within the second quartile for the IEEE SAIDI reliability index. Q3 was reported as 160 minutes and Q4 was 630 minutes. Gulf oscillates between the third and fourth quartile because none of the SAIDI values were below 88 minutes. FPUC on the other hand has SAIDI values between the second and third quartiles.

Figure 4-2 is a five-year graph of the adjusted SAIFI (system average frequency of interruptions per customer) for each IOU. In 2008, Gulf and FPUC recorded significantly higher values compared to the other IOU's.

The nationwide values for SAIFI reported by the IEEE for 1997 indicated the first quartile was 0.8 interruptions per year; Q2 was 1.16 interruptions per year; Q3 was 1.74 interruptions per year; and Q4 was 4.5 interruptions per year. Figure 4-2 indicates that none of Florida's IOUs fell within the first quartile. PEF fell within the second quartile four years out of five year period. In 2005 and 2008, FPL's SAIFI was within the second quartile and FPL's average interruptions were 1.15 and 1.07 respectively. For 2004, 2006 and 2007 FPL's SAIFI fell within the third quartile. For 2008, Gulf and FPUC fell within the fourth quartile since the indexes were reported as 1.76 and 1.92 interruptions per year.

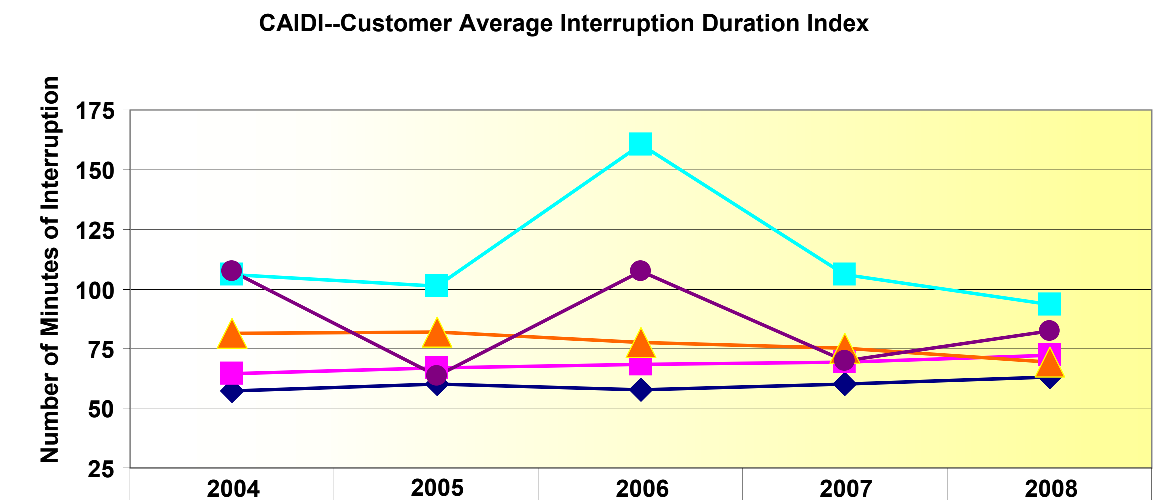
**Figure 4-2. Average Number of Service Interruptions (Adjusted SAIFI)**




| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|
| FPL | 1.22 | 1.15 | 1.29 | 1.21 | 1.07 |
| PEF | 1.19 | 1.12 | 1.09 | 1.13 | 1.05 |
| TECO | 0.97 | 1.02 | 0.89 | 1.02 | 0.96 |
| Gulf | 0.88 | 1.00 | 1.28 | 1.18 | 1.76 |
| FPUC | 1.28 | 1.07 | 1.43 | 1.12 | 1.92 |

Figure 4-3 is a five-year graph of the adjusted CAIDI (customer average interruption duration) for each IOU. FPUC attributes the rise in the CAIDI values to uncontrollable events which were not excluded from the adjusted values. Gulf and TECO report significant improvement in their CAIDI values for 2008.

**Figure 4-3. Average Service Restoration Time (Adjusted CAIDI)**

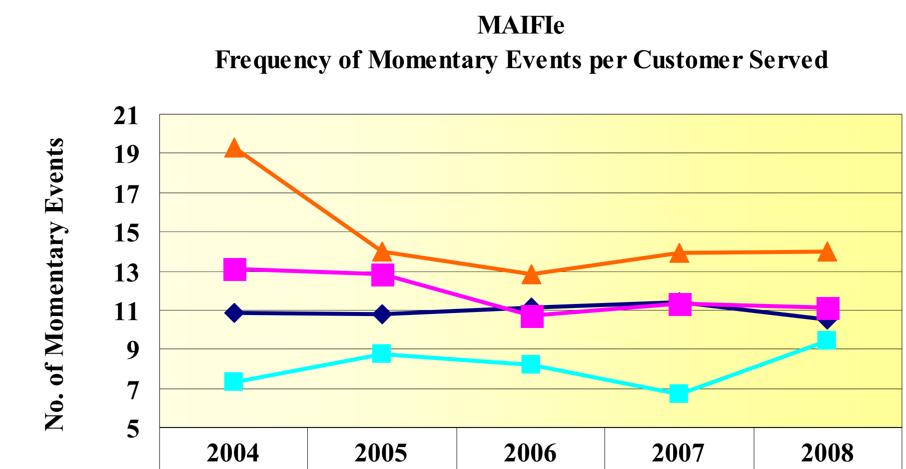



| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|
| FPL | 57 | 60 | 58 | 60 | 63 |
| PEF | 65 | 67 | 69 | 69 | 72 |
| TECO | 81 | 82 | 78 | 75 | 69 |
| Gulf | 106 | 101 | 161 | 106 | 93 |
| FPUC | 107 | 64 | 108 | 70 | 82 |

The 1997 IEEE CAIDI results and the quartiles were as follows: Q1 = 61 minutes; Q2 = 85 minutes; Q3 = 130 minutes; and Q4 = 825 minutes. All of the Florida IOUs range between the first and third quartile. FPL has more appearances in the first quartile for CAIDI than all of the other IOUs. PEF and TECO are found within the second quartile and Gulf has all of its CAIDI results for the five year period falling within the third quartile. FPUC has three appearances in the second quartile for the years 2005, 2007, and 2008. For the years 2004 and 2006, the CAIDI for FPUC falls within the third quartile.

Figure 4-4 is a five-year graph of the adjusted MAIFIe (system average frequency of momentary events on primary circuits per customer) for FPL, PEF, TECO and Gulf. Improvements were indicated by FPL and PEF in 2008 from their 2007 results and continued improvement throughout the five-year period. However, TECO and Gulf show decreased performance as compared to 2007. Throughout the following comparative discussion it is important to remember that FPUC is exempt from reporting certain indices (MAIFIe and CEMI5) because FPUC has fewer than 50,000 customers.

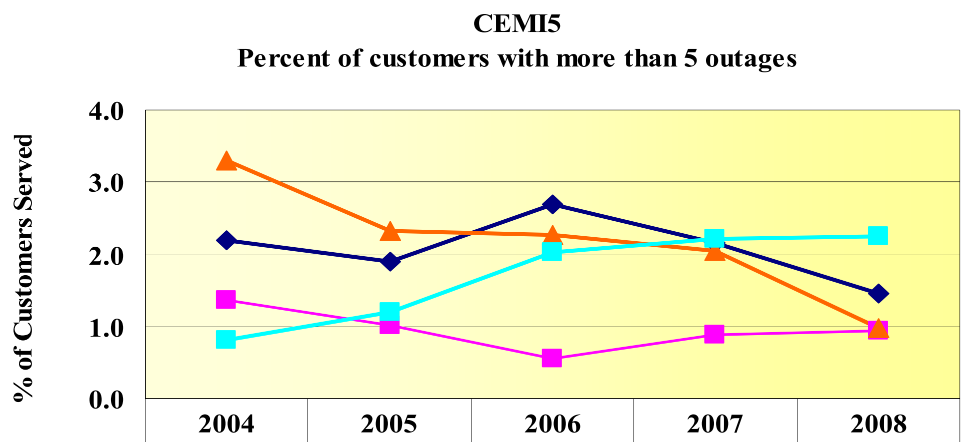
**Figure 4-4. Average Number of Feeder Momentary Events (Adjusted MAIFIe)**




| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|
| FPL | 10.9 | 10.8 | 11.1 | 11.4 | 10.5 |
| PEF | 13.1 | 12.8 | 10.7 | 11.3 | 11.1 |
| TECO | 19.3 | 14.0 | 12.8 | 13.9 | 14.0 |
| GULF | 7.3 | 8.7 | 8.2 | 6.7 | 9.4 |

Figure 4-5 is a five-year graph of the adjusted CEMI5 (percentage of customers experiencing more than five service interruptions) for FPL, PEF, TECO and Gulf. The Adjusted CEMI5 increased in 2008 for Gulf relative to 2004 through 2007, indicating that groups of customers experienced more outages in 2008 than in the previous four years on a hurricane adjusted basis. PEF, for the fourth consecutive year, reported the lowest adjusted CEMI5 and TECO had a 100 percent improvement over 2007 results.

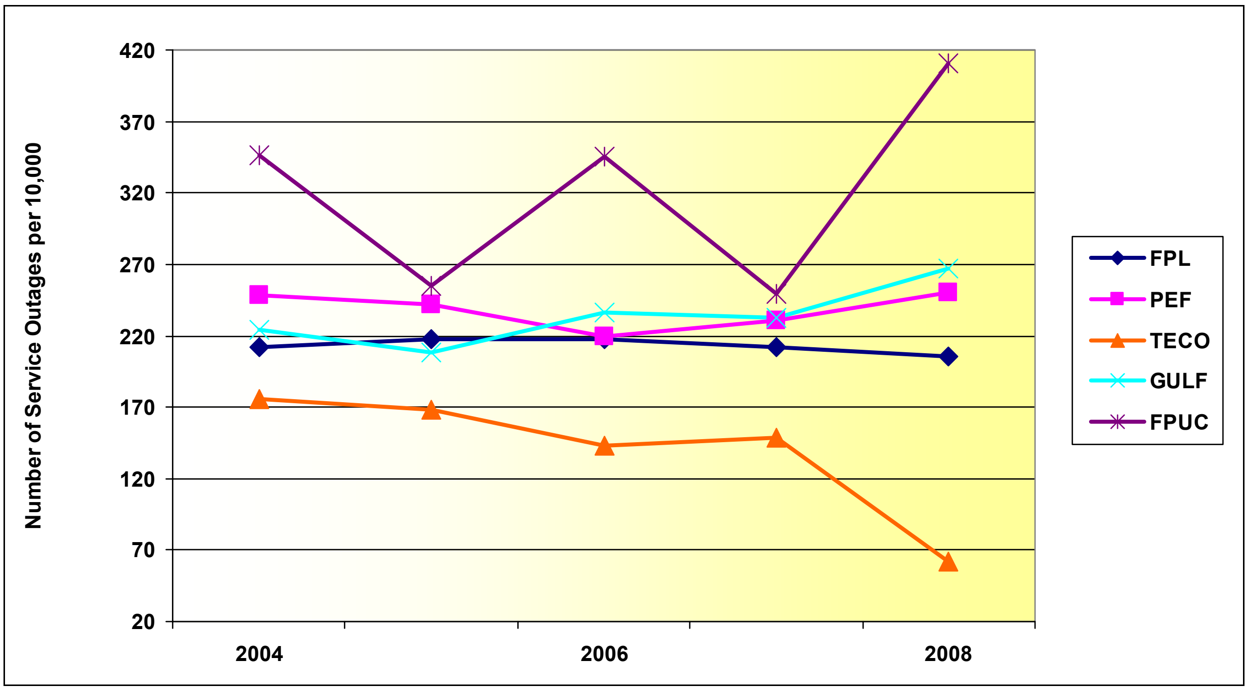
**Figure 4-5. Percent of Customers With More Than Five Interruptions (Adjusted CEMI5)**




| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|
| FPL | 2.2 | 1.9 | 2.7 | 2.2 | 1.5 |
| PEF | 1.4 | 1.0 | 0.6 | 0.9 | 0.9 |
| TECO | 3.3 | 2.3 | 2.3 | 2.0 | 1.0 |
| GULF | 0.8 | 1.2 | 2.0 | 2.2 | 2.3 |

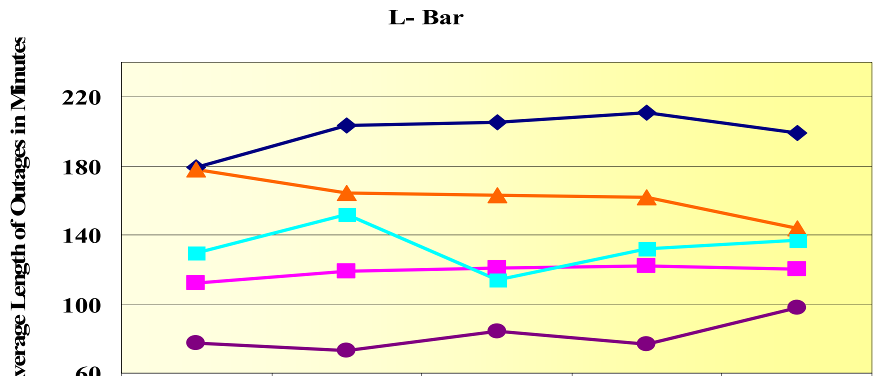
Figure 4-6 shows the number of outages per 10,000 customers on an adjusted basis for the five IOUs. The graph is developed from each utility's adjusted data concerning the number of outage events and the total number of customers on an annual basis. For example, FPL reported 91,647 outage events for 4,447,244 customers in 2008. Dividing the outage events by the number of customers and multiplying by 10,000 results in 206 outage events in 2008 per 10,000 customers. TECO has a declining outage percentage since 2004, while Gulf, PEF, and FPL continue to slowly rise. FPUC has implemented a new Outage Management System (OMS), which resulted in improvements to data retrieval for analyzing and reporting more accurate reliability numbers, but gives the impression that the reliability is decreasing, and that may not be the case due to better data, not less reliable service.

**Figure 4-6. Number of Outages per 10,000 Customers (Adjusted N)**



The average duration of outage events (Adjusted L-Bar) for each IOU is graphed in Figure 4-7. All of the IOU's, with the exception of Gulf and FPUC, had a decrease in the L-Bar value, demonstrating improvements in recovery time from outage events. FPUC attributes their higher readings to the recent installation of an Outage Management System (OMS) in the Northwest Division. This resulted in significant improvement in data collection and retrieval capability for analyzing and reporting reliability indices, not necessarily a decrease in service reliability.

**Figure 4-7. Average Duration of Outage Events (Adjusted L-Bar)**



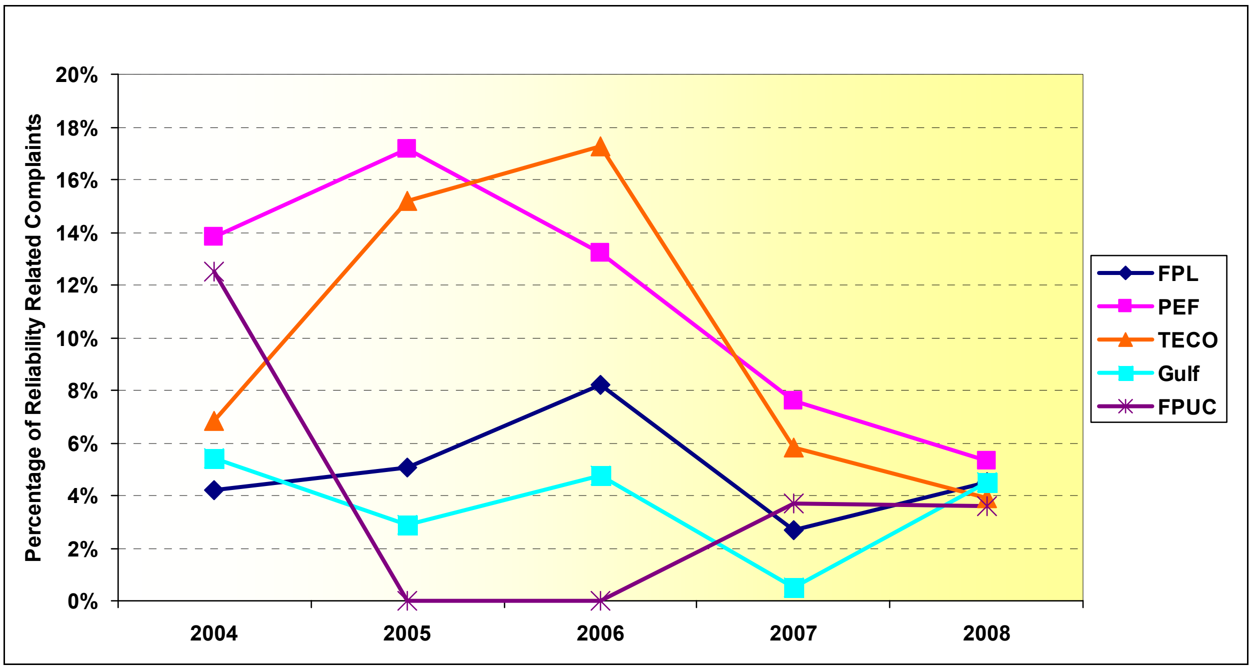

| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|
| FPL | 179 | 204 | 205 | 211 | 199 |
| PEF | 112 | 119 | 121 | 122 | 120 |
| TECO | 178 | 164 | 163 | 162 | 144 |
| GULF | 130 | 152 | 114 | 132 | 137 |
| FPUC | 77 | 73 | 84 | 77 | 98 |

## *Inter-Utility Comparisons of Reliability Related Complaints*

Each customer complaint received by the Commission is assigned a category after the complaint is resolved. Reliability related complaints are those pertaining to trees, safety, repairs, quality of service, and service interruptions.

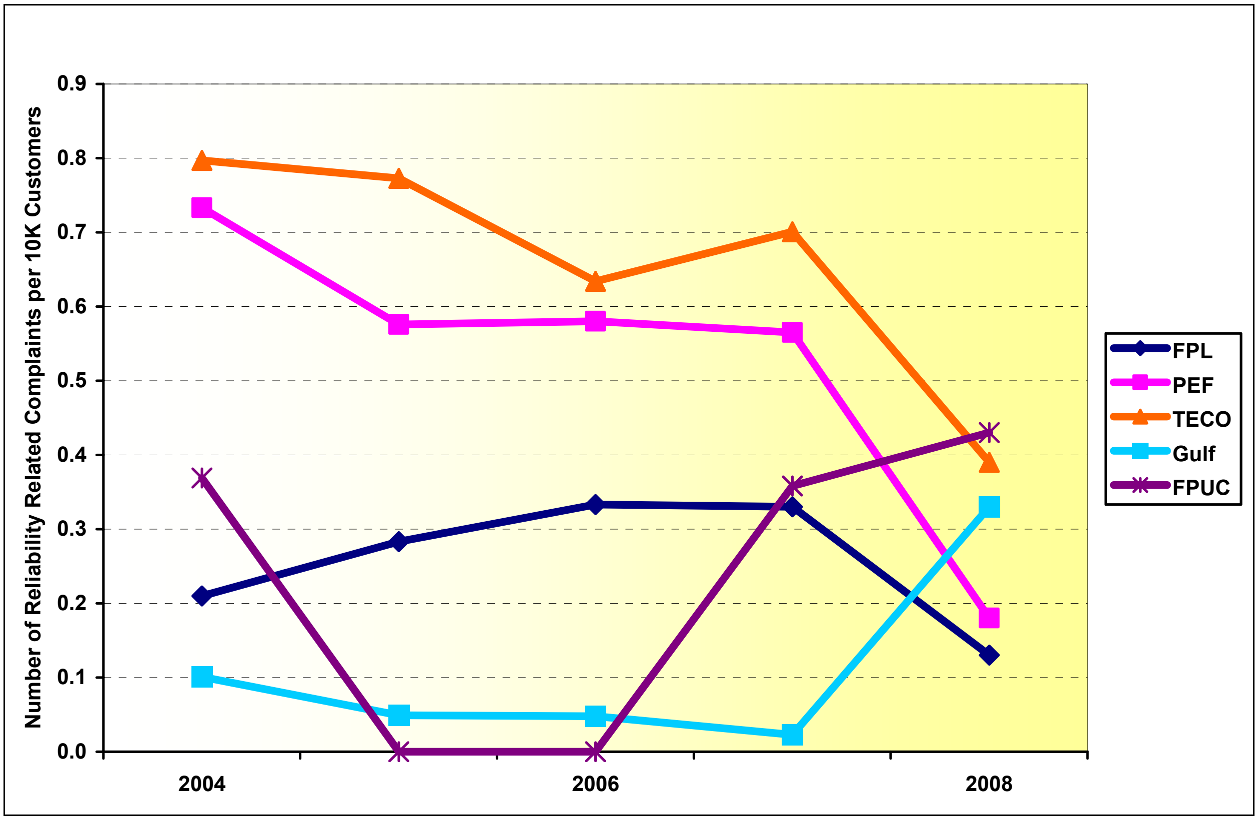
As shown in Figure 4-8, the percentage of reliability related customer complaints has decreased for PEF, TECO, and FPUC from 2007 to 2008, which shows an improvement in the percentage of customer satisfaction. FPL and Gulf experienced an increased percentage of reliability related complaints during the same time period.

**Figure 4-8. Percent of Complaints That Are Reliability Related**



As shown in Figure 4-9, the number of reliability related customer complaints per 10,000 customers has remained under one per 10,000 customers for the last five years. FPUC has experienced the highest increase in percentage of reliability complaints; however, the apparent volatility may be attributed to FPUC's small customer base which exaggerates the significance of one complaint in years 2004 and 2007 to two complaints in 2008.

**Figure 4-9. Service Reliability Related Complaints**



# Section V. Appendices

## Appendix A. Adjusted Service Reliability Data

### Florida Power & Light Company:

**Table A-1. FPL's Number of Customers (Year End)**

| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|
| Gulf Coast | 374,578 | 393,653 | 414,519 | - | - |
| Ft. Myers | - | - | - | 184,719 | 183,172 |
| Naples | - | - | - | 236,111 | 235,816 |
| Manasota | 342,322 | 351,134 | 358,098 | 360,152 | 358,368 |
| Boca Raton | 340,279 | 343,569 | 347,030 | 350,336 | 349,157 |
| West Palm | 322,670 | 332,194 | 337,612 | 340,513 | 339,105 |
| Gulf Stream | 310,684 | 313,158 | 316,390 | 318,594 | 315,782 |
| Pompano | 296,961 | 298,740 | 299,874 | 298,881 | 294,881 |
| S. Dade | 278,713 | 286,995 | 293,656 | 297,229 | 295,591 |
| Brevard | 264,851 | 272,758 | 281,090 | 284,097 | 282,691 |
| Treasure Coast | 237,794 | 252,063 | 264,835 | 270,525 | 268,713 |
| C. Florida | 241,517 | 253,134 | 261,990 | 265,365 | 264,699 |
| Wingate | 251,910 | 253,775 | 254,358 | 254,455 | 252,931 |
| Central Dade | 231,185 | 235,400 | 242,649 | 247,429 | 254,825 |
| N. Dade | 216,609 | 218,848 | 222,019 | 224,805 | 223,159 |
| W. Dade | 214,338 | 218,097 | 221,686 | 223,049 | 221,682 |
| Toledo Blade | 144,993 | 154,821 | 164,917 | 168,429 | 167,401 |
| N. Florida | 120,285 | 127,860 | 134,688 | 138,398 | 139,271 |
| FPL System | 4,189,689 | 4,306,199 | 4,415,411 | 4,463,087 | 4,447,244 |

## Table A-2. FPL's Adjusted Regional Indices SAIDI, SAIFI, and CAIDI

| | Average Interruption Duration Index (SAIDI) | | | | | Average Interruption Frequency Index (SAIFI) | | | | | Average Customer Restoration Time Index (CAIDI) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Gulf Coast | 64.2 | 71.0 | 79.7 | | | 1.22 | 1.26 | 1.53 | | | 52.7 | 56.4 | 52.2 | | |
| Ft. Myers | | | | 75.4 | 78.9 | | | | 1.26 | 1.24 | | | | 60.0 | 63.4 |
| Naples | | | | 59.4 | 64.5 | | | | 1.12 | 0.93 | | | | 53.2 | 69.3 |
| Manasota | 61.1 | 54.0 | 66.4 | 67.9 | 72.5 | 0.84 | 0.83 | 1.01 | 0.87 | 1.01 | 72.4 | 65.2 | 66.0 | 77.8 | 71.7 |
| Boca Raton | 61.5 | 77.8 | 74.7 | 68.3 | 53.8 | 1.23 | 1.35 | 1.39 | 1.23 | 1.04 | 49.9 | 57.8 | 53.9 | 55.7 | 51.8 |
| West Palm | 66.1 | 76.2 | 83.5 | 70.5 | 55.5 | 1.16 | 1.27 | 1.27 | 1.21 | 0.88 | 56.7 | 59.9 | 65.7 | 58.4 | 62.9 |
| Gulf Stream | 49.9 | 55.7 | 59.7 | 55.1 | 53.9 | 1.06 | 1.04 | 1.28 | 1.13 | 1.03 | 47.0 | 53.6 | 46.6 | 48.7 | 52.1 |
| Pompano | 53.5 | 55.2 | 67.7 | 61.4 | 48.9 | 0.86 | 0.88 | 1.16 | 1.03 | 0.91 | 62.4 | 62.8 | 58.2 | 59.3 | 53.8 |
| S. Dade | 65.6 | 74.2 | 83.1 | 95.7 | 88.8 | 1.25 | 1.27 | 1.25 | 1.42 | 1.35 | 52.3 | 58.6 | 66.2 | 67.2 | 65.7 |
| Brevard | 80.8 | 63.3 | 55.4 | 69.8 | 75.7 | 1.32 | 1.02 | 1.03 | 1.15 | 1.07 | 61.2 | 61.9 | 53.9 | 60.0 | 70.7 |
| Treasure Coast | 116.7 | 101.1 | 80.9 | 94.5 | 67.1 | 1.77 | 1.43 | 1.41 | 1.31 | 1.05 | 65.9 | 70.7 | 57.5 | 72.0 | 63.7 |
| C. Florida | 107.0 | 74.4 | 69.8 | 84.2 | 79.6 | 1.73 | 1.31 | 1.27 | 1.49 | 1.24 | 61.9 | 56.9 | 54.9 | 56.4 | 64.2 |
| Wingate | 55.0 | 74.6 | 82.7 | 76.3 | 71.0 | 1.33 | 1.39 | 1.51 | 1.50 | 1.35 | 41.2 | 53.8 | 54.6 | 51.0 | 52.6 |
| Central Dade | 59.6 | 46.7 | 49.1 | 90.3 | 82.7 | 1.22 | 0.94 | 0.91 | 1.20 | 0.94 | 49.0 | 49.7 | 54.2 | 75.6 | 88.0 |
| N. Dade | 60.3 | 63.3 | 74.0 | 58.4 | 80.7 | 1.07 | 1.10 | 1.13 | 1.13 | 0.83 | 56.4 | 57.5 | 65.2 | 51.2 | 97.4 |
| W. Dade | 62.4 | 55.7 | 64.3 | 77.8 | 66.4 | 1.14 | 1.20 | 1.10 | 1.40 | 1.17 | 54.9 | 46.3 | 58.4 | 55.6 | 56.7 |
| Toledo Blade | 76.1 | 61.4 | 93.3 | 74.3 | 60.0 | 1.53 | 1.00 | 1.44 | 0.96 | 0.77 | 49.8 | 61.5 | 64.7 | 77.1 | 77.6 |
| N. Florida | 89.1 | 117.4 | 96.3 | 94.3 | 129.3 | 1.46 | 1.90 | 1.61 | 1.38 | 1.58 | 61.2 | 61.9 | 59.9 | 68.5 | 81.6 |
| FPL Sys. | 68.2 | 68.2 | 69.7 | 73.2 | 67.2 | 1.29 | 1.35 | 1.22 | 1.21 | 1.07 | 52.8 | 50.5 | 57.3 | 60.3 | 62.9 |

## Table A-3. FPL's Adjusted Regional Indices MAIFIe and CEMI5

| | Average Frequency of Momentary Events on Feeders (MAIFIe) | | | | | Percentage of Customers Experiencing More than 5 Service Interruptions (CEMI5%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Gulf Coast | 8.8 | 8.7 | 9.8 | | | 1.6% | 2.4% | 3.1% | | |
| Ft. Myers | | | | 11.23 | 9.36 | | | | 1.08% | 2.26% |
| Naples | | | | 8.33 | 7.54 | | | | 4.29% | 1.21% |
| Manasota | 8.1 | 8.5 | 9.3 | 9.50 | 9.19 | 1.1% | 1.0% | 1.2% | 1.08% | 1.06% |
| Boca Raton | 9.7 | 8.2 | 8.8 | 9.64 | 8.90 | 1.2% | 1.1% | 2.1% | 2.28% | 0.71% |
| West Palm | 11.3 | 11.4 | 11.7 | 10.76 | 10.04 | 1.2% | 2.5% | 2.5% | 1.87% | 0.67% |
| Gulf Stream | 11.1 | 9.8 | 8.9 | 9.04 | 8.54 | 1.8% | 1.6% | 5.4% | 1.00% | 0.46% |
| Pompano | 7.6 | 7.8 | 7.8 | 7.56 | 7.21 | 0.4% | 0.6% | 2.3% | 1.59% | 0.92% |
| S.Dade | 11.5 | 11.9 | 10.3 | 10.25 | 8.93 | 2.1% | 3.1% | 2.3% | 3.32% | 2.30% |
| Brevard | 13.9 | 14.1 | 15.8 | 16.63 | 14.06 | 2.2% | 0.5% | 0.8% | 0.94% | 0.82% |
| Treasure Coast | 16.5 | 15.6 | 14.6 | 17.61 | 17.53 | 6.3% | 4.2% | 4.6% | 3.23% | 2.17% |
| C. Florida | 13.3 | 15.1 | 12.8 | 14.12 | 13.34 | 5.3% | 2.8% | 2.0% | 1.80% | 2.64% |
| Wingate | 11.2 | 12.0 | 12.8 | 13.11 | 11.03 | 2.7% | 2.2% | 2.3% | 3.01% | 2.02% |
| Central Dade | 9.0 | 7.8 | 8.9 | 10.25 | 8.48 | 2.0% | 2.1% | 1.2% | 1.11% | 1.16% |
| N. Dade | 9.4 | 8.8 | 9.7 | 10.01 | 7.77 | 3.1% | 1.1% | 2.5% | 2.75% | 1.19% |
| W. Dade | 11.2 | 9.8 | 10.6 | 10.01 | 9.04 | 2.1% | 2.0% | 7.4% | 2.89% | 1.45% |
| Toledo Blade | 13.9 | 16.3 | 20.4 | 17.08 | 16.53 | 4.6% | 1.9% | 2.9% | 3.00% | 0.67% |
| N. Florida | 12.8 | 13.2 | 12.5 | 12.95 | 15.90 | 3.6% | 1.9% | 1.4% | 2.42% | 5.54% |
| FPL System | 10.9 | 10.8 | 11.1 | 11.42 | 10.49 | 2.3% | 1.9% | 2.7% | 2.15% | 1.45% |

## Table A-4. FPL's Primary Causes of Outage Events

| | Adjusted Number of Outage Events | | | | | | Adjusted L-Bar - Length of Outages | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | Cumulative %ages | 2004 | 2005 | 2006 | 2007 | 2008 |
| Equip. Failure | 21,633 | 26,752 | 27,692 | 30,102 | 29,904 | 29% | 217 | 249 | 255 | 256 | 238 |
| Unknown | 13,811 | 16,970 | 17,273 | 12,016 | 11,639 | 15% | 149 | 149 | 183 | 170 | 164 |
| Vegetation | 15,225 | 10,571 | 8,911 | 12,201 | 13,916 | 13% | 174 | 199 | 192 | 206 | 205 |
| Animal | 10,153 | 8,711 | 10,006 | 9,655 | 10,297 | 10% | 79 | 113 | 113 | 115 | 113 |
| All Other | 6,261 | 5,842 | 5,318 | 7,343 | 6,940 | 7% | 287 | 223 | 203 | 191 | 191 |
| Other Weather | 7,413 | 7,250 | 7,148 | 8,318 | 6,903 | 8% | 132 | 144 | 156 | 164 | 148 |
| Other | 6,575 | 8,865 | 10,165 | 4,536 | 3,841 | 7% | 178 | 184 | 193 | 208 | 207 |
| Lightning | 4,212 | 4,682 | 4,575 | 6,059 | 4,431 | 5% | 262 | 289 | 301 | 306 | 277 |
| Equip. Connect | 1,932 | 2,288 | 2,925 | 2,631 | 2,442 | 3% | 171 | 217 | 227 | 228 | 208 |
| Vehicle | 1,751 | 1,905 | 2,181 | 1,678 | 1,334 | 2% | 204 | 236 | 231 | 228 | 236 |
| | | | | | | | | | | | |
| FPL System | 88,966 | 93,836 | 96,194 | 94,539 | 91,647 | 100.0% | 179 | 204 | 205 | 211 | 199 |

Notes:

(1) "Other" category is a sum of outage events that require a detailed explanation.

(2) "All Other" category is the sum of many diverse causes of outage events which individually are not among the top ten causes of outage events and excludes those identified as "Other".

(3) Blanks are shown for years where the number of outages was too small to be among the top ten causes of outage events.

## Progress Energy Florida, Inc:

### Table A-5. PEF's Number of Customers (Year End)

| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|
| S. Coastal | 638,170 | 647,997 | 651,800 | 651,029 | 652,167 |
| S. Central | 360,327 | 384,292 | 401,943 | 411,225 | 412,576 |
| N. Central | 366,161 | 363,656 | 371,357 | 373,325 | 373,050 |
| N. Coastal | 176,744 | 183,861 | 190,414 | 192,295 | 192,498 |
| PEF System | 1,541,402 | 1,579,806 | 1,615,514 | 1,627,874 | 1,630,291 |

### Table A-6. PEF's Adjusted Regional Indices SAIDI, SAIFI, and CAIDI

| | Average Interruption Duration Index (SAIDI) | | | | | Average Interruption Frequency Index (SAIFI) | | | | | Average Customer Restoration Time Index (CAIDI) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 |
| S. Coastal | 66 | 64 | 70 | 61 | 59 | 1.09 | 1.04 | 1.07 | 1.05 | 0.92 | 60.7 | 61.8 | 65.2 | 58.7 | 64.1 |
| S. Central | 68 | 82 | 75 | 72 | 74 | 1.10 | 1.24 | 1.12 | 1.02 | 0.96 | 62.0 | 66.7 | 66.5 | 69.9 | 77.0 |
| N. Central | 77 | 73 | 77 | 81 | 82 | 1.22 | 1.09 | 1.13 | 1.13 | 1.13 | 63.2 | 67.2 | 68.1 | 71.9 | 72.5 |
| N. Coastal | 132 | 98 | 89 | 144 | 125 | 1.64 | 1.21 | 1.02 | 1.61 | 1.51 | 80.3 | 80.7 | 86.9 | 89.7 | 82.5 |
| PEF Sys. | 77 | 75 | 75 | 78 | 76 | 1.19 | 1.12 | 1.09 | 1.13 | 1.05 | 64.7 | 66.7 | 68.6 | 69.5 | 72.3 |

### Table A-7. PEF's Adjusted Regional Indices MAIFIe and CEMI5

| | Average Frequency of Momentary Events on Feeders (MAIFIe) | | | | | %age of Customers Experiencing More than 5 Service Interruptions (CEMI5) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 |
| S. Coastal | 13.0 | 12.8 | 12.5 | 12.9 | 12.3 | 1.14% | 0.62% | 0.51% | 0.55% | 0.34% |
| S. Central | 8.3 | 13.9 | 10.6 | 10.1 | 10.5 | 0.47% | 1.68% | 0.44% | 0.36% | 0.42% |
| N. Central | 7.3 | 12.3 | 9.1 | 9.9 | 10.1 | 1.00% | 0.78% | 0.77% | 1.08% | 1.38% |
| N. Coastal | 5.9 | 11.2 | 8.2 | 11.5 | 10.5 | 4.76% | 1.48% | 0.60% | 2.75% | 3.20% |
| PEF System | 9.7 | 12.8 | 10.7 | 11.3 | 11.1 | 1.37% | 1.01% | 0.56% | 0.89% | 0.94% |

### Table A-8. PEF's Primary Causes of Outage Events

| | Adjusted Number of Outage Events | | | | | | Adjusted L-Bar - Length of Outages | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | Cumulative %ages | 2004 | 2005 | 2006 | 2007 | 2008 |
| Animals | 5,422 | 4,430 | 4,602 | 4,414 | 5,732 | 13% | 58 | 65 | 140 | 65 | 66 |
| Storm | 4,208 | 3,337 | 4,534 | 3,817 | 3,538 | 10% | 106 | 111 | 158 | 105 | 101 |
| Tree-preventable | 4,546 | 3,814 | 3,552 | 3,728 | 3,992 | 10% | 113 | 107 | 109 | 113 | 115 |
| Unknown | 4,362 | 4,058 | 3,685 | 3,973 | 5,472 | 11% | 73 | 74 | 74 | 74 | 77 |
| All Other | 3,285 | 3,946 | 3,064 | 3,101 | 3,168 | 9% | 107 | 115 | 138 | 119 | 113 |
| Defective Equip. | 3,289 | 3,694 | 3,317 | 3,144 | 2,991 | 8% | 165 | 180 | 181 | 186 | 181 |
| UG Secondary Service | 3,450 | 4,139 | 4,464 | 4,122 | 4,761 | 11% | 156 | 156 | 158 | 166 | 171 |
| Connector Failure | 2,830 | 2,853 | 2,967 | 3,010 | 2,982 | 8% | 95 | 102 | 106 | 102 | 103 |
| Tree Non-preventable | 2,247 | 2,044 | 1,823 | 3,197 | 3,347 | 7% | 116 | 112 | 119 | 133 | 131 |
| UG Primary | 2,323 | 2,586 | 2,735 | 2,566 | 2,506 | 7% | 176 | 198 | 184 | 188 | 209 |
| Lightning | 2,287 | 3,277 | 875 | 2,551 | 2,217 | 6% | 125 | 116 | 189 | 131 | 128 |
| PEF System | 38,249 | 38,178 | 35,618 | 37,623 | 40,706 | 100% | 112 | 119 | 121 | 122 | 120 |

Note: "All Other" category is the sum of diverse causes of outage events which individually are not among the top ten causes of outage events.

## Tampa Electric Company:

### Table A-9. TECO's Number of Customers (Year End)

| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|
| Western | 182,791 | 184,826 | 185,868 | 187,390 | 186,062 |
| Central | 171,187 | 175,919 | 179,020 | 180,380 | 179,224 |
| Eastern | 98,326 | 102,328 | 105,687 | 107,861 | 107,495 |
| Winter Haven | 63,013 | 64,981 | 67,362 | 67,775 | 67,243 |
| S. Hillsborough | 49,271 | 53,627 | 57,675 | 59,315 | 59,540 |
| Plant City | 50,032 | 51,633 | 53,081 | 53,612 | 93,925 |
| Dade City | 13,000 | 13,421 | 13,818 | 13,778 | 13,806 |
| TECO System | 627,620 | 646,735 | 662,511 | 670,111 | 667,295 |

### Table A-10. TECO's Adjusted Regional Indices SAIDI, SAIFI, and CAIDI

| | Average Interruption Duration Index (SAIDI) | | | | | Average Interruption Frequency Index (SAIFI) | | | | | Average Customer Restoration Time Index (CAIDI) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Western | 59 | 75 | 64 | 77 | 70 | 0.69 | 0.88 | 0.75 | 0.95 | 0.89 | 76 | 84 | 85 | 81 | 78 |
| Central | 82 | 61 | 55 | 62 | 47 | 0.84 | 0.77 | 0.67 | 0.84 | 0.61 | 93 | 79 | 83 | 75 | 76 |
| Eastern | 81 | 97 | 62 | 77 | 69 | 1.02 | 1.13 | 0.87 | 1.11 | 0.94 | 75 | 86 | 71 | 70 | 74 |
| Winter Haven | 71 | 65 | 58 | 66 | 52 | 1.04 | 1.01 | 1.00 | 0.91 | 0.97 | 68 | 65 | 58 | 72 | 53 |
| S. Hills. | 89 | 127 | 96 | 74 | 65 | 1.33 | 1.38 | 1.15 | 1.12 | 0.90 | 65 | 92 | 84 | 66 | 73 |
| Plant City | 105 | 130 | 96 | 128 | 108 | 1.58 | 1.69 | 1.25 | 1.54 | 1.37 | 64 | 77 | 77 | 83 | 79 |
| Dade City | 174 | 148 | 209 | 127 | 127 | 1.95 | 1.50 | 2.78 | 1.74 | 2.00 | 81 | 98 | 75 | 73 | 64 |
| TECO | 78 | 84 | 69 | 77 | 66 | 0.97 | 1.02 | 0.89 | 1.02 | 0.89 | 78 | 82 | 78 | 75 | 73 |

### Table A-11. TECO's Adjusted Regional Indices MAIFIe and CEMI5

| | Average Frequency of Momentary Events on Feeders (MAIFIe) | | | | | %age of Customers Experiencing More than 5 Service Interruptions (CEMI5) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Western | 15.2 | 11.4 | 12.6 | 12.1 | 12.6 | 0.44% | 0.57% | 0.61% | 1.97% | 0.82% |
| Central | 16.3 | 11.2 | 10.6 | 11.7 | 12.4 | 1.17% | 0.52% | 0.35% | 1.22% | 0.29% |
| Eastern | 20.7 | 15.5 | 12.6 | 15.8 | 15.3 | 3.57% | 1.20% | 0.66% | 2.98% | 0.23% |
| Winter Haven | 23.4 | 15.8 | 12.3 | 13.6 | 14.2 | 5.16% | 0.49% | 1.19% | 0.31% | 1.00% |
| S. Hillsborough | 26.6 | 19.4 | 15.4 | 14.7 | 15.3 | 3.69% | 8.52% | 1.05% | 2.45% | 1.20% |
| Plant City | 26.3 | 19.6 | 17.3 | 19.9 | 19.0 | 14.45% | 13.31% | 11.05% | 3.82% | 3.84% |
| Dade City | 33.4 | 22.6 | 21.8 | 25.4 | 16.9 | 15.85% | 0.63% | 37.90% | 6.13% | 5.12% |
| TECO System | 19.3 | 14.0 | 12.8 | 13.9 | 14.0 | 3.30% | 2.33% | 2.26% | 2.04% | 0.97% |

## Table A-12. TECO's Primary Causes of Outage Events

| | Adjusted Number of Outage Events | | | | | | Adjusted L-Bar - Length of Outages | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | Cumulative %ages | 2004 | 2005 | 2006 | 2007 | 2008 |
| Lightning | 2,284 | 1,962 | 1723 | 1,921 | 1,570 | 18% | 246 | 220 | 224 | 222 | 189 |
| Animal | 2,087 | 1,742 | 1656 | 1,708 | 2,252 | 18% | 93 | 91 | 82 | 81 | 79 |
| Vegetation | 1,919 | 1,797 | 1564 | 2,086 | 2,035 | 18% | 202 | 157 | 153 | 157 | 147 |
| Unknown | 1,349 | 1,243 | 895 | 727 | 703 | 10% | 146 | 130 | 123 | 113 | 113 |
| Other Weather | 977 | 930 | 703 | 578 | 645 | 7% | 187 | 161 | 163 | 151 | 143 |
| Electrical | 965 | 1,065 | 954 | 979 | 864 | 9% | 180 | 190 | 189 | 179 | 165 |
| Bad Connection | 702 | 917 | 704 | 726 | 785 | 7% | 179 | 182 | 186 | 188 | 181 |
| Human Interference | 223 | 266 | 223 | 195 | | 2% | 193 | 200 | | | |
| Vehicle | 235 | 349 | 334 | 261 | 220 | 3% | 169 | 182 | 180 | 184 | 181 |
| Defective Equip. | 213 | 291 | 441 | 508 | 511 | 4% | 207 | 217 | 209 | 219 | 202 |
| All Other | 45 | 81 | 41 | 59 | 249 | 2% | 187 | 174 | 177 | 152 | 151 |
| Down Wire | 192 | 230 | 237 | 249 | 264 | 2% | | | 197 | 170 | 158 |
| TECO System | 11,043 | 10,873 | 9,475 | 9,997 | 10,098 | 100% | 178 | 164 | 163 | 162 | 144 |

Notes:

(1) "All Other" category is the sum of many diverse causes of outage events which individually are not among the top ten causes of outage events.

(2) Blanks are shown for years where the number of outages was too small to be among the top ten causes of outage events.

## Gulf Power Company:

### Table A-13. Gulf's Number of Customers (Year End)

| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|
| Western | 194,705 | 184,826 | 205,779 | 208,436 | 208,570 |
| Central | 97,849 | 175,919 | 108,859 | 109,817 | 109,168 |
| Eastern | 103,220 | 102,328 | 104,254 | 109,410 | 110,191 |
| GULF System | 395,774 | 463,073 | 418,892 | 427,663 | 427,929 |

### Table A-14. Gulf's Adjusted Regional Indices SAIDI, SAIFI, and CAIDI

| | Average Interruption Duration Index (SAIDI) | | | | | Average Interruption Frequency Index (SAIFI) | | | | | Average Customer Restoration Time Index (CAIDI) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Western | 115 | 142 | 158 | 146 | 146 | 1.07 | 1.35 | 1.27 | 1.32 | 1.45 | 108 | 105 | 124 | 110 | 101 |
| Central | 69 | 73 | 174 | 109 | 99 | 0.65 | 0.81 | 1.28 | 0.95 | 1.14 | 105 | 90 | 136 | 115 | 87 |
| Eastern | 75 | 78 | 331 | 100 | 140 | 0.75 | 0.71 | 1.29 | 1.12 | 1.13 | 101 | 111 | 257 | 90 | 124 |
| GULF | 93 | 101 | 205 | 125 | 132 | 0.88 | 1.00 | 1.28 | 1.18 | 1.29 | 106 | 101 | 161 | 106 | 103 |

### Table A-15. Gulf's Adjusted Regional Indices MAIFIe and CEMI5

| | Average Frequency of Momentary Events on Feeders (MAIFIe) | | | | | %age of Customers Experiencing More than 5 Service Interruptions (CEMI5) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Western | 8.9 | 11.6 | 9.3 | 7.4 | 10.5 | 1.24% | 1.17% | 2.01% | 2.15% | 3.20% |
| Central | 5.3 | 4.7 | 7.5 | 7.6 | 8.6 | 0.39% | 1.56% | 2.01% | 0.52% | 0.42% |
| Eastern | 6.4 | 5.8 | 6.7 | 4.8 | 7.9 | 0.39% | 0.64% | 2.06% | 4.08% | 2.26% |
| GULF System | 7.3 | 7.7 | 8.2 | 6.7 | 9.4 | 0.81% | 1.20% | 2.02% | 2.22% | 2.25% |

### Table A-16. Gulf's Primary Causes of Outage Events

| | Adjusted Number of Outage Events | | | | | | Adjusted L-Bar - Length of Outages | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | Cumulative %ages | 2004 | 2005 | 2006 | 2007 | 2008 |
| Animal | 2,012 | 1,486 | 1,609 | 2,089 | 3,417 | 21% | 81 | 92 | 163 | 83 | 94 |
| Lightning | 1,541 | 1,851 | 2,307 | 2,112 | 2,154 | 20% | 151 | 192 | 170 | 151 | 165 |
| Deterioration | 1,611 | 1,634 | 1,914 | 2,188 | 2,300 | 19% | 162 | 188 | 174 | 165 | 172 |
| Unknown | 1,390 | 980 | 987 | 742 | 874 | 10% | 136 | 141 | 157 | 91 | 99 |
| Trees | 1,193 | 254 | 1,292 | 1,419 | 1,314 | 11% | 129 | 139 | 157 | 144 | 158 |
| Vehicle | 303 | 2,239 | 284 | 336 | 288 | 7% | 162 | 171 | 381 | 165 | 167 |
| All Other | 264 | 288 | 299 | 345 | 354 | 3% | 126 | 110 | 139 | | 152 |
| Wind/Rain | 118 | 235 | 680 | 175 | 169 | 3% | 125 | 146 | 219 | 160 | 170 |
| Overload | 212 | 129 | 223 | 271 | 198 | 2% | 125 | 108 | 156 | 99 | 109 |
| Vines/Dig-in | 117 | 424 | | | 162 | 1% | 98 | | | | 134 |
| Other | 121 | 129 | 144 | 130 | | 2% | 124 | 217 | | 96 | |
| Contamination / Corrosion | | 118 | 137 | 143 | 203 | 1% | | 194 | 182 | 127 | 134 |
| GULF System | 8,882 | 9,638 | 9,876 | 9,950 | 11,433 | 100% | 130 | 152 | 114 | 132 | 137 |

Notes:

(1) "All Other" category is the sum of many diverse causes of outage events which individually are not among the top ten causes of outage events.

(2) Blanks are shown for years where the number of outages was too small to be among the top ten causes of outage events.

## Florida Public Utilities Company:

### Table A-17. FPUC's Number of Customers (Year End)

| | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|
| Fernandina(NE) | 14,566 | 14,731 | 14,859 | 15,120 | 15,376 |
| Marianna (NW) | 12,528 | 12,661 | 13,934 | 12,846 | 12,822 |
| FPUC System | 27,094 | 27,392 | 28,793 | 27,966 | 28,198 |

### Table A-18. FPUC's Adjusted Regional Indices SAIDI, SAIFI, and CAIDI

| | Average Interruption Duration Index (SAIDI) | | | | | Average Interruption Frequency Index (SAIFI) | | | | | Average Customer Restoration Time Index (CAIDI) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 | 2004 | 2005 | 2006 | 2007 | 2008 |
| NE | 152 | 59 | 105 | 87 | 91 | 1.15 | 1.01 | 1.15 | 1.05 | 1.26 | 133 | 59 | 91 | 83 | 72 |
| NW | 122 | 78 | 206 | 67 | 239 | 1.44 | 1.13 | 1.72 | 1.19 | 2.70 | 84 | 69 | 119 | 56 | 88 |
| FPUC | 138 | 68 | 154 | 78 | 158 | 1.28 | 1.07 | 1.43 | 1.12 | 1.92 | 107 | 64 | 108 | 70 | 82 |

### Table A-19. FPUC's Primary Causes of Outage Events

| | Adjusted Number of Outage Events | | | | | | Adjusted L-Bar - Length of Outages | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2008 | Cumulative %ages | 2004 | 2005 | 2006 | 2007 | 2008 |
| Vegetation | 216 | 135 | 257 | 220 | 409 | 28% | 80 | 83 | 95 | 73 | 93 |
| Animal | 164 | 149 | 250 | 127 | 283 | 22% | 48 | 49 | 50 | 57 | 62 |
| Lightning | 208 | 84 | 72 | 52 | 71 | 11% | 81 | 72 | 99 | 60 | 82 |
| Unknown | 113 | 113 | 202 | 37 | 71 | 12% | 55 | 49 | 69 | 74 | 67 |
| Corrosion | 53 | 66 | 59 | 74 | 102 | 8% | 115 | 116 | 124 | 100 | 127 |
| All Other | 45 | 40 | 33 | 47 | 46 | 5% | 86 | 75 | 73 | 56 | 113 |
| Other Weather | 49 | 20 | 50 | 67 | 97 | 6% | 124 | 69 | 103 | 75 | 207 |
| Trans. Failure | 27 | 38 | 32 | 35 | 22 | 3% | 161 | 154 | 170 | 83 | 114 |
| Vehicle | 16 | 14 | 28 | 27 | 31 | 3% | 91 | 68 | 162 | 107 | 105 |
| Cut-Out Failure | 26 | 12 | 5 | 4 | 10 | 1% | 71 | 74 | 55 | 61 | 68 |
| Fuse Failure | 21 | 27 | 6 | 6 | 8 | 2% | 49 | 47 | 95 | 53 | 39 |
| | | | | | | | | | | | |
| FPUC Sys | 938 | 698 | 994 | 696 | 1150 | 100% | 77 | 73 | 84 | 77 | 98 |

Notes:

(1) "All Other" category is the sum of many diverse causes of outage events which individually are not one of the top ten causes of outage events.

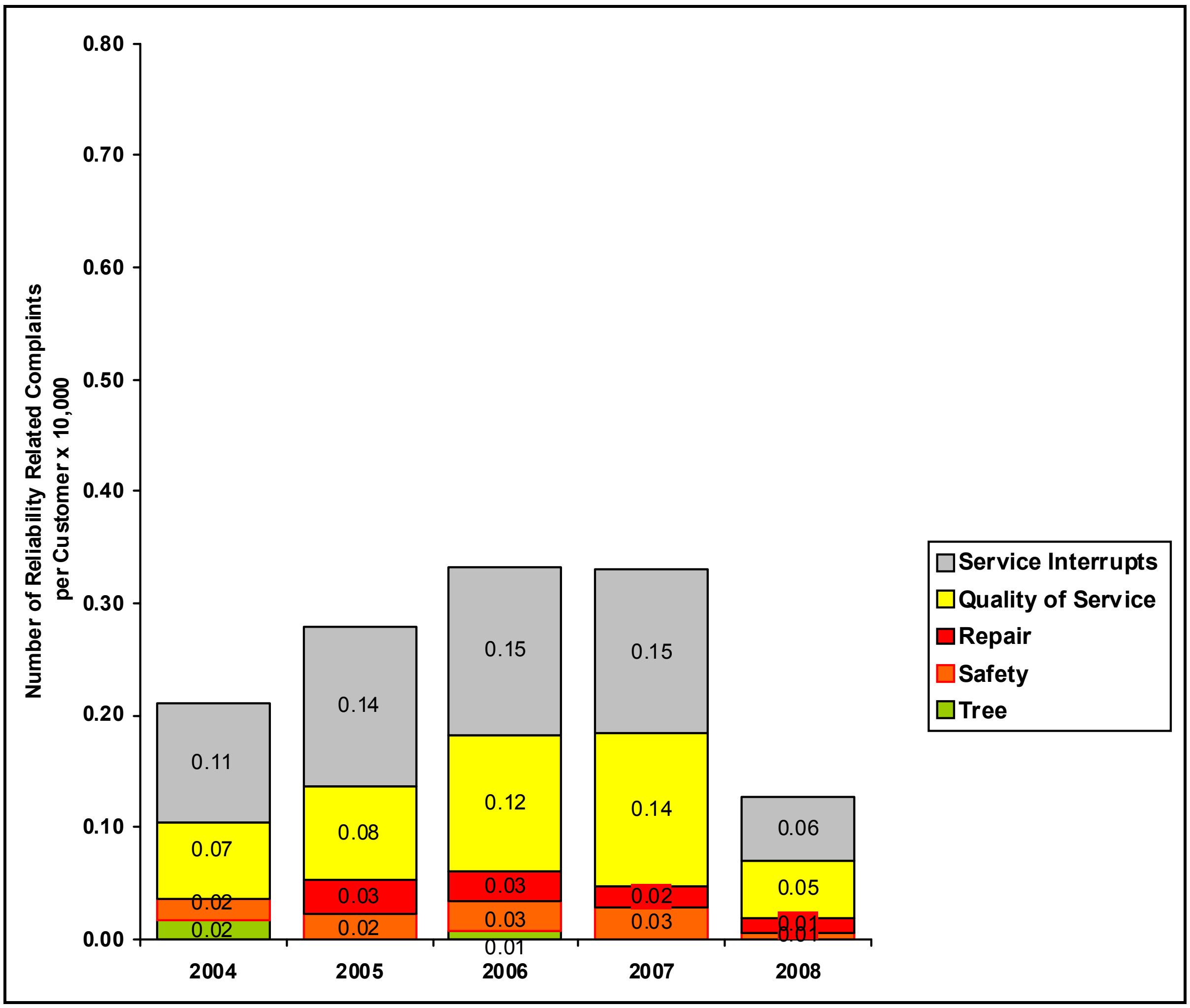
(2) Blanks are shown for years where the quantity of outages was less than one of the top ten causes of outage events.

## Appendix B. Service Reliability Customer Complaints

Each customer complaint received by the Commission is assigned a category after the complaint is resolved. Reliability related complaints are those pertaining to trees, safety, repairs, quality of service, or service interruptions.[22] The "quality of service" category was established in July 2003 resulting in a shift of some complaints that previously would have been coded in another complaint category. The volume of service reliability related complaints is normalized to a 10,000 customer basis for comparative purposes.

Figure B-1. FPL's Service Reliability Complaints

Revised 12/22/2009




[22] A quality of service customer complaint typically includes one or more aspect of service reliability (i.e., momentary events, service interruptions, trees, safety, or repairs) and possibly other matters such as a high bill.

Figure B-2. PEF's Service Reliability Complaints

Revised 12/22/2009

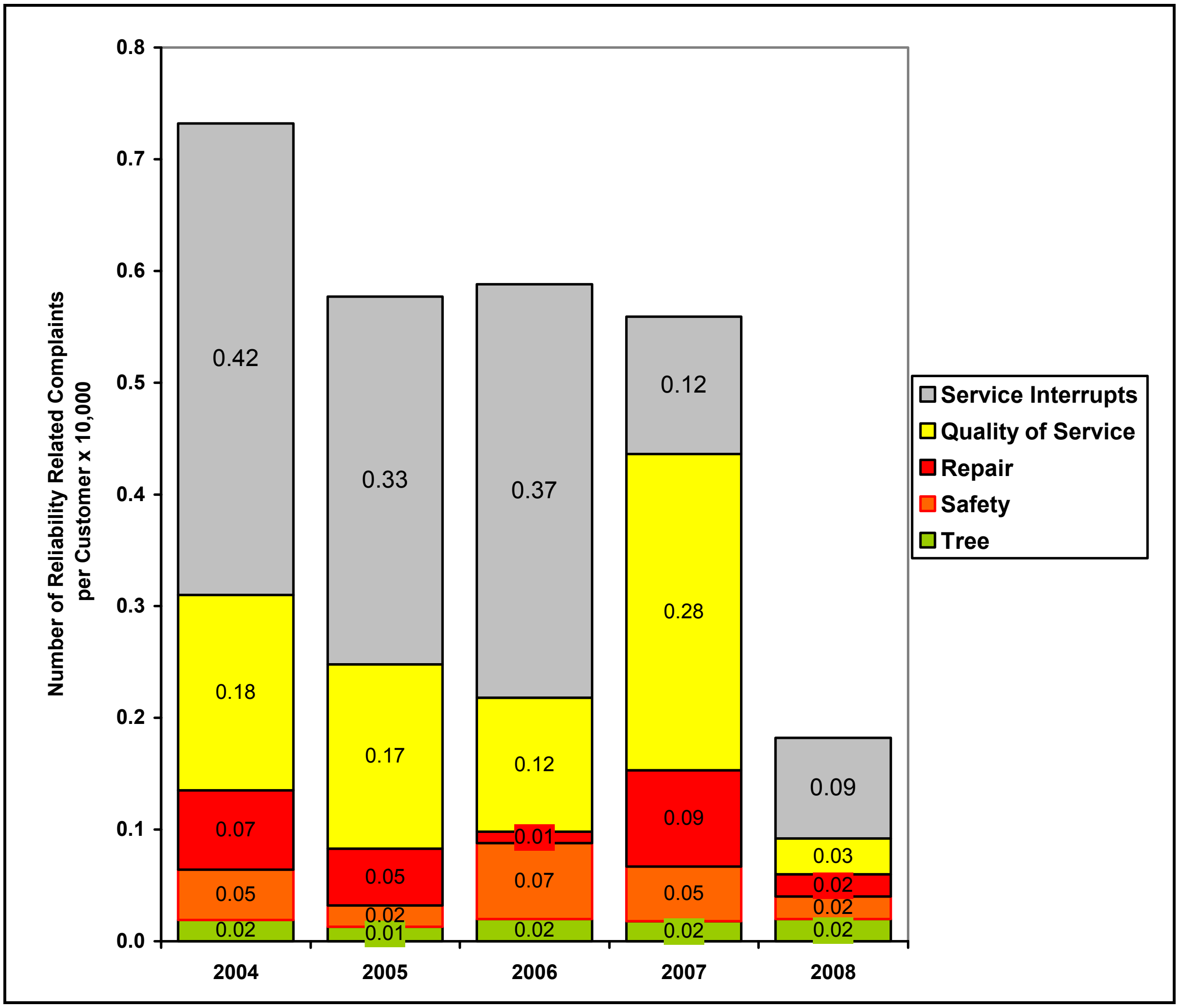


Figure B-3. TECO's Service Reliability Complaints

Revised 12/22/2009

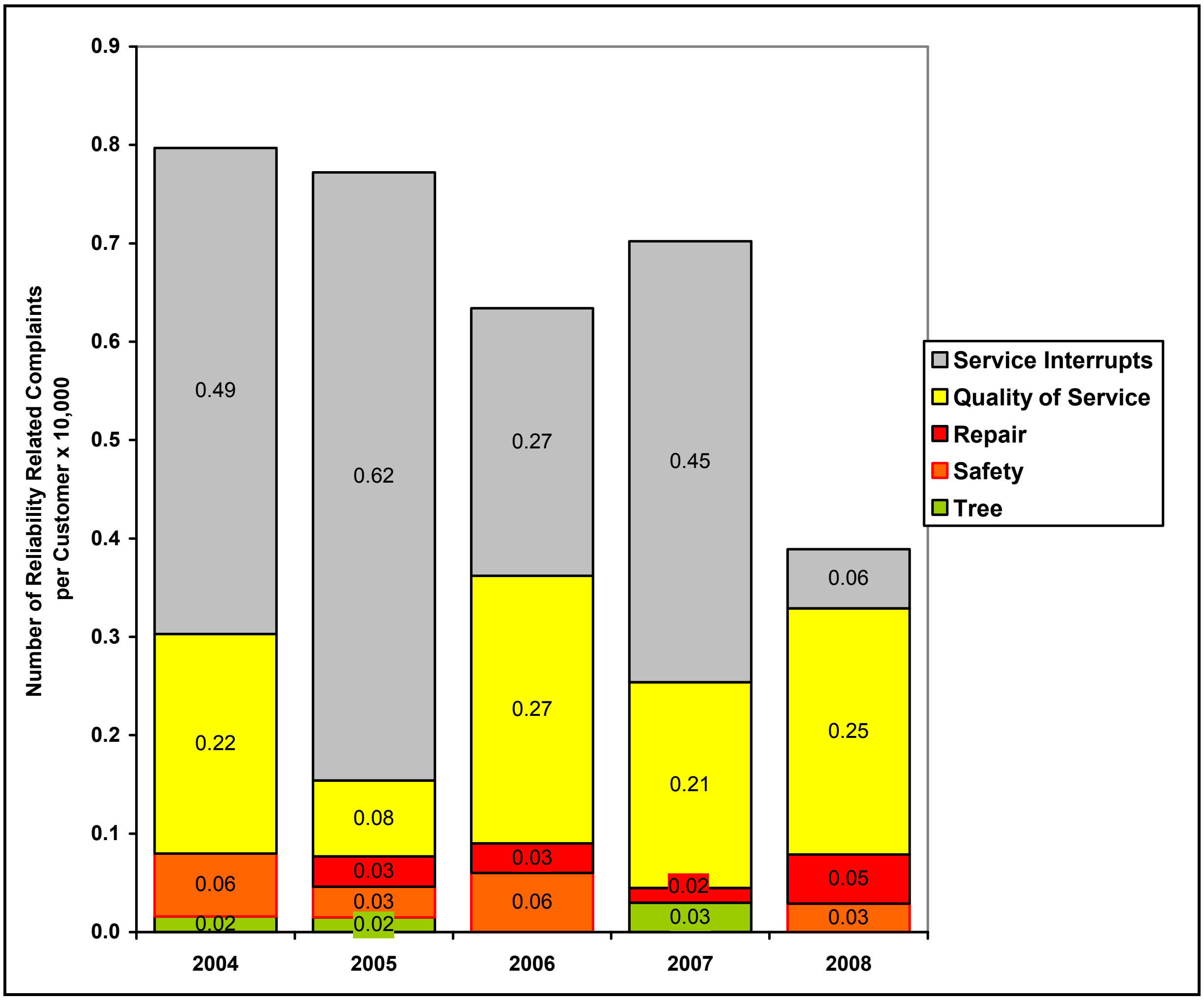


Figure B-4. Gulf's Service Reliability Complaints

Revised 12/22/2009

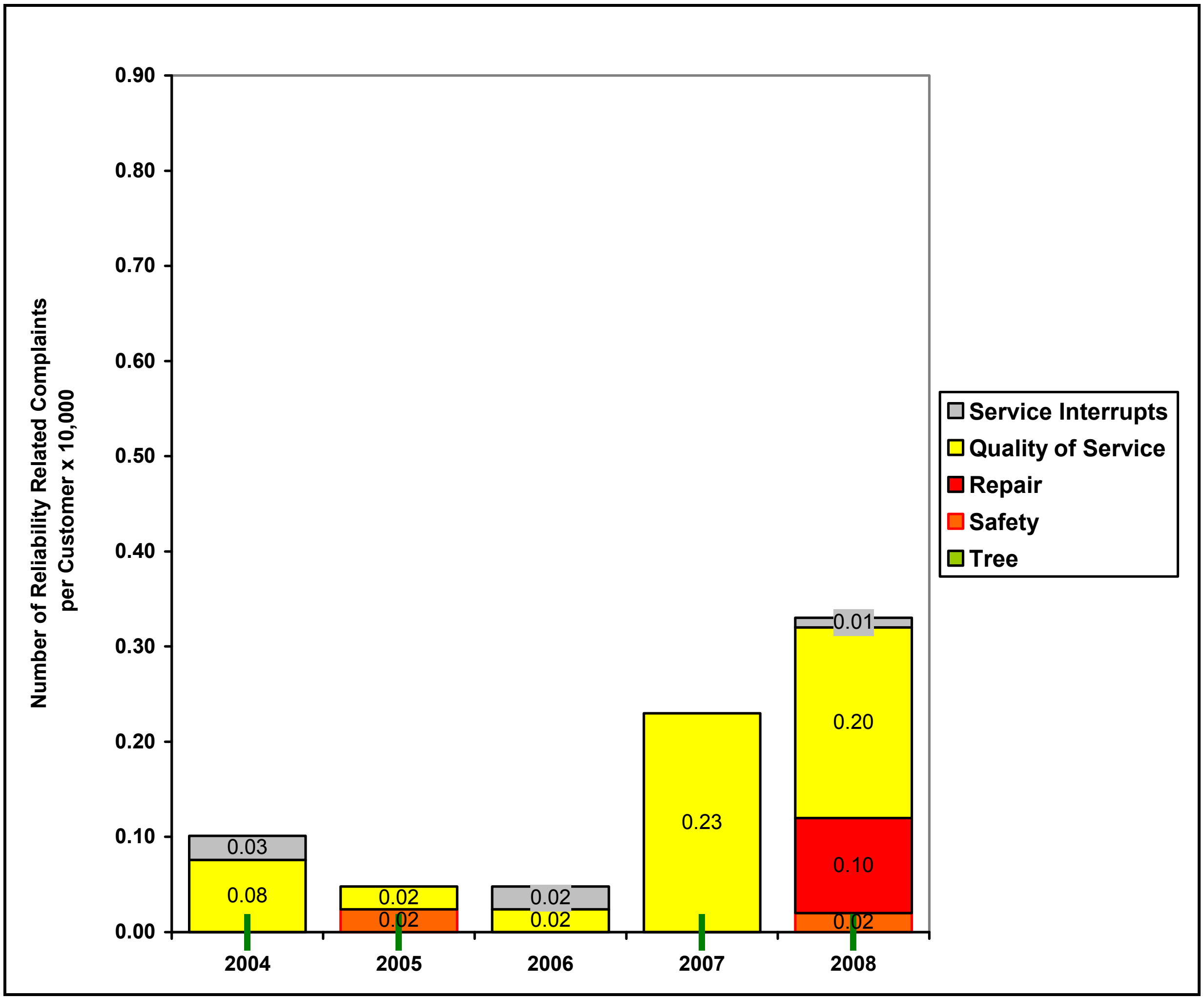
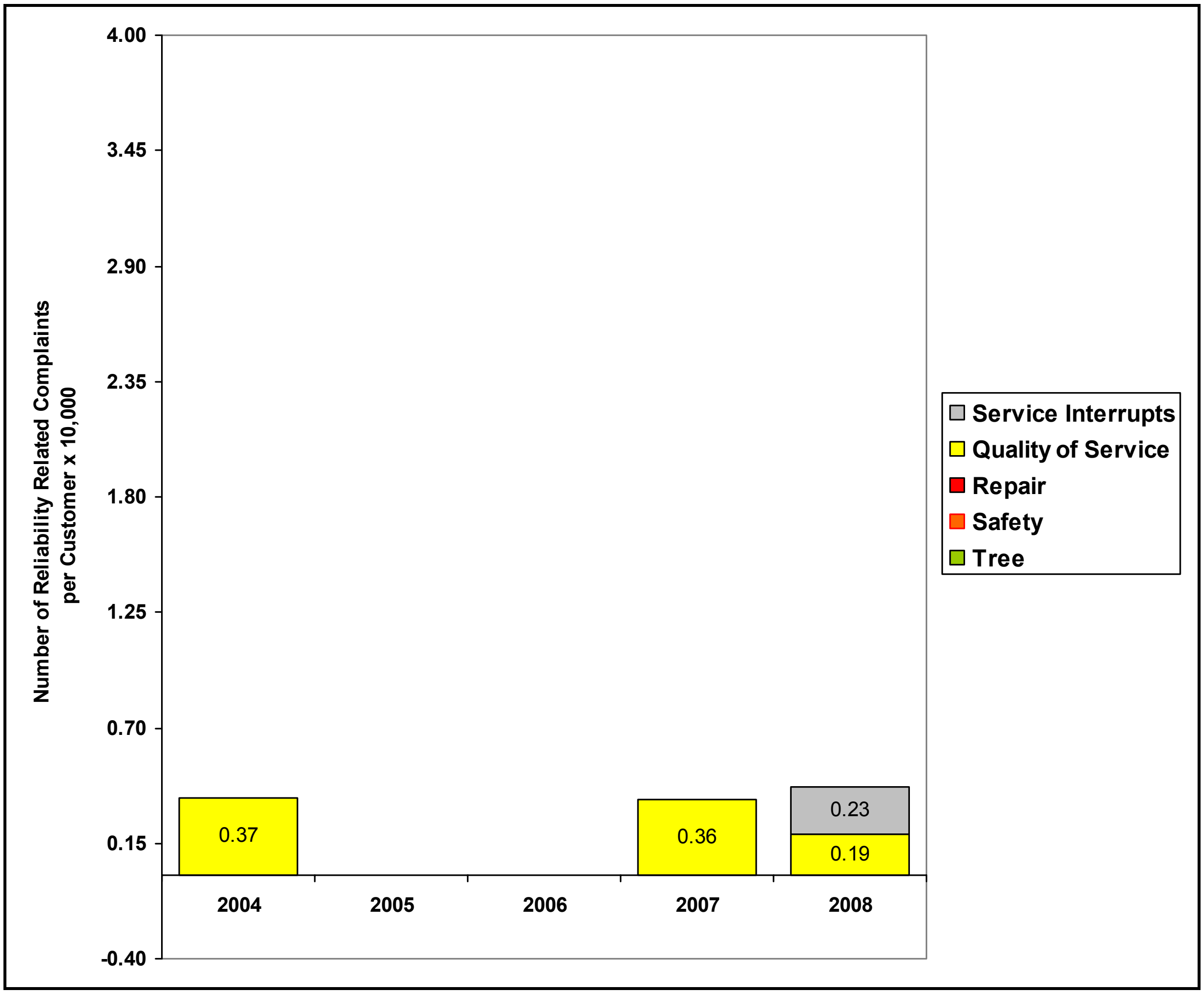


**Figure B-5. FPUC's Service Reliability Complaints**

**Revised 12/22/2009**



# Appendix C. Summary of Municipal Electric Utility Reports

## Pursuant to Rule 25-6.0343, F.A.C. — Calendar Year 2008

| Utility | The extent to which Standards of Construction address | | | | | | Transmission & Distribution Facility Inspections | | | | Vegetation Management | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Comply with the 2007 NESC on or after 02/01/07 | Guided by Extreme Wind Loading per Figure 250-2(d) | | Effects of flooding & storm surges on UG and OH distribution facilities | Placement of distribution facilities to facilitate safe and efficient access | Written safety, pole reliability, pole loading capacity and engineering standards for attachments. | Description of policies, guidelines, practices, procedures, cycles, and pole selection | Number and percent of poles and structures planned and completed | Number and percent of poles and structures failing inspections with reasons | Number and percent of poles and structures by class replaced or remediated with description | Description of policies, guidelines, practices, procedures, tree removals, with sufficient explanation | Quantity, level, and scope of planned and completed for transmission and distribution |
| | | Major Planned Work Expansion, Rebuild or Relocation | Targeted Critical Infrastructures and major thoroughfares | | | | | | | | | |
| Alachua, City of | Yes | Yes, follows guidelines in NESC standards per Figure 250-2(d) | Yes | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | Yes, 8-yr inspection cycle | D: 2802 wooden poles. 12.5% planned; 342 inspected, 12.2% achieved | D: 42 poles failed; 12.3% failure rate (16) shell rot, (11) split top, (9) decay top, (3) woodpecker holes, (2) rotten butt, (1) hazardous condition | 42 wooden Class 3 Poles replaced | Attended PURC Vegetation Mgmt.: Conference for additional information | 130 miles of OH distribution trimmed yearly. 3% in 2008 |
| Bartow, City of | Yes | Yes, follows guidelines in NESC standards per Figure 250-2(d). | Yes | Non-coastal utility | Yes | Yes | Yes, 8-yr inspection cycle | D: 12.5% planned for inspection | 465 or 24.8% failures. | 465 Class 1,2,3,4,or 5 poles replaced | 4-yr trim cycle. | 4-yr trim cycle |
| Beaches Energy Services | Yes | Yes<br>10 year Capital Funding Program in place | Yes | UG--eliminated "live front" connections on pad mounted transformers. | Yes | Yes | T: Inspected annually. D: Contracted with OSMOSE for wooden pole inspections | T: 100% planned and inspected. D: 100% planned and inspected in 2007. Next 8-yr cycle is 2015 | T: No failures. D: next inspection 2015. Replaced 140 wood poles | Not applicable | T: NERC Reliability Std. FAC-003-1. D: Lewis Tree Services 2-3 year trim cycle | FY 2008: FMEA and PURC report for vegetation mgmt. improvement |

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| Blountstown, City of | Yes | Not guided by Figure 250-2(d); however, has adopted larger minimum pole standard of class 3 | System is evaluated after every event for systemic problems. | Yes | Studying measures to flood proof substation. In talks with power provider. | Yes. | Under review. | Developing practical inspection system for 1,693 poles. | D: 100% planned inspection. 100% completed. | D: 8 class 5 poles failed; 0.5% failure rate. (8) Wood poles ground rot and clearance issues. | 8 class 5 poles replaced by class 3 poles. | Yes. | 4 year trim cycle with 25% trimmed yearly. |
| Bushnell, City of | Yes | Yes, after Oct. 1, 2007 | | Yes | Non-coastal utility; therefore, storm surge is not an issue | Prohibits back lot lines or inaccessible areas | No written standards. Relies on experienced staff | Comprehensive program with GIS pole database. 7-yr cycle | 65% poles inspected since 2007 | D: 8 poles failed; 2.5% failure rate. 8 poles with shell rot | D: 8 poles replaced | Tree trimming contract. Annual trimming in the spring. | PURC and FMEA conference notes used to improve vegetation mgmt. |
| Chattahoochee, City of | Yes | Yes | | Yes | Non-coastal utility; therefore, storm surge is not an issue | Targeted movement of inaccessible distribution to street side | Yes | Complete inspection every 3 years. | 1,957 poles or 100% inspected Jan 2009 | D: 58 poles failed; 3% failure rate. 16 class 6 30'; 13 class 6 35'; 26 class 4 40'; 3 class 4 45' | Replacement scheduled to begin Feb 2009 | Distribution system trimmed on an annual basis | PURC and FMEA conference notes used to improve vegetation management |
| Fort Pierce Utilities Authority | Yes | Yes, for new construction, expansion, relocation, & rebuild after 02/01/07 | Has targeted critical infrastructure | Yes | Standards address effects of flooding, etc. | Yes | Yes, includes an 8-year inspection cycle | T: inspected annually. D: contracted with OSMOSE for wooden pole inspections | T: 100% D: 100% | T: 4 poles or 1.6% failure; 3 from wood deterioration, 1 for woodpecker damage. D: 85 or 0.7% failures; sound, bore and excavation | 7 poles replaced. Balance to be replaced in FY 2009. Pole class ranges from 1 to 7 for all 85 poles | Tree trimming contract covering tree removal, power line trimming and right-of-way clearing. On a 3-yr cycle. Annual trimming in the spring | T: patrolled annually. D: 3-yr cycle. Only 5.4% of outages related to vegetation |

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| Gainesville Regional Utilities | Yes | Yes, for new construction, major planned work, including expansion rebuild or relocation on or after 12/01/06 | Yes | | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | T: 8-yr inspection cycle. Full visual inspection, sound and boring for unseen decay pockets. Treated with MITC-fume to prevent internal decay. D: 8-yr inspection cycle | T: 100% and D: 100% planned and completed | T: No failures D: 0.7% failure; cause shell rot, heart rot, decay, split pole top and carpenter ants | T: None Specified. D: 20 poles (100%) ranging in size from 30 to 50 ft, class 3 to 5 | 4-yr trim cycle, standards and practice include; NESC, ANSI (Tree care), Shigo Pruning, Matheny and Clark evaluation of hazardous trees in urban area | 560 miles of distribution lines on a 3-yr rotating cycle. Routine utility tree pruning, selective use of herbicides and selective tree removals based on hazardous conditions |
| Green Cove Springs, City of | Yes | Yes, for facilities constructed on or after 02/01/07 | Yes, participating in the PURC granular wind research study | Yes | Participating in PURC study on the conversion of overhead electric to underground | Yes | Yes | No transmission facilities owned or operated as defined by 69 KV and above. | Plans to upgrade 2 major sections of 4 KV in the next 4 yrs,,15% of distribution system | T: Replaced 9 poles (0.23%) which failed visual inspection. | T: 13 Class 3, 30-ft poles replaced due to vehicle impact, accidental damages, and rot | City contracts annually to trim 100% of entire system, includes sub-transmission and distribution feeder facilities. Trimmed 70% in 2008 | Scheduled trimming of 100% of entire system for 2009. Use PURC vegetation management report for vegetation management improvement |
| Havana, Town of | Yes | Not guided by Figure 250-2(d) | Participating in PURC granular wind research study and will continue to self-audit | Yes | Non-coastal area exposed to severe flooding or storm surge. | Yes | Yes | D: Electrical superintendent inspects distribution lines, poles and structures several times per year | 100% planned and completed in 2008 | 17 poles (1.5% of transmission poles and structures failed in 2008, some due to age, other reasons not reported | 8,300 ft. of overhead transmission lines replaced due to old age. 17 poles ranging in size from 30 to 50 ft, class 4 replaced | Formalized, written vegetation management policy and guidelines. Policy calls for 1/3 of entire system to be maintained each year | Entire system trimmed in 2007. Planned trimming of 1/3 of the system each year beginning in 2009 |

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| Homestead, City of | Yes | Yes, for new construction, major planned work, including expansion rebuild or relocation on or after 12/10/06 | | Yes | Yes | Yes | Yes | T: All transmission poles are concrete. D: Wooden pole inspections are performed on an 8-yr cycle. Class 2 poles are used for all new construction and Class 4 poles are used for poles needing replacement. | T: 100% inspected in 2005(all concrete). D: During calendar year 2008, 22% of distribution poles were inspected. | T: 287 failed inspection in 2008 due to decayed tops, shell rot above and below ground line, split tops, decay pockets, woodpecker holes, and excessive cracking or checking | T: None D: 22 class 4 and class 5 replaced or removed and no longer in need of replacement | The city uses a contracted tree trimming service and the entire system is trimmed on a two-year cycle. City code changes require property owners to keep vegetation on private property trimmed to maintain six feet of clearance from HES facilities | |
| JEA | Yes | Yes, for new construction, major planned work, including expansion rebuild or relocation on or after 12/10/2006. These standards primarily affect electric transmission structures 50 feet and taller, and require those structures to withstand winds up to 120 mph for JEA's service area | | | No. Storm policy exists to shut down specific generating plants when a Cat. 3 storm or greater causes flooding | Yes | Yes. Permits required for attachments by others | T: 4-yr. cycle with the exception of the "critical" N-1 240KV circuits which are inspected on a 2-yr. cycle. D: Inspection of 1/8 of the distribution system annually using the NESC standards for decay | Began a 4-yr. cycle in October 2006. In 2007, all 230KV circuits were inspected.: In 2008, all 69KV circuits were scheduled and completed | T: 118 wood poles failed, 24 have been replaced and the others are scheduled for replacement in 2009. D: 12% failed inspections | Poles listed as danger poles (1%) are replaced in a 15-day cycle. In 2008, 1,180 poles were replaced.: Poles that are not rejected per NESC but older than 15 years are ground treated | T: Line clearances and reporting in accordance with the NERC Reliability Standard FAC-003-1 requirements. D: 3-yr. trim cycle for more than 8 yrs. | Fully completed all 2008 vegetation management activities. Use the PURC vegetation management report for continued improvement in vegetation management practices |
| Keys Energy Services | Yes | Yes | Yes | Yes | Yes | Yes | Yes. Attachments inspected on an 8-yr. cycle | T: No wood transmission poles in KEYS area D: Detail testing of 100% of KEYS' utility poles completed by May, 2007. | Inspections and survey of concrete foundations in the water performed every 4 yrs. Helicopter inspections of concrete poles every 2 yrs. 100% infrared survey every 2 yrs. | T: 100% of total poles tested D: 18 concrete poles rejected, 2,232 wood poles rejected. Reasons include ground/shell rot | T: No transmission facilities failed inspections. D: In 2008, KEYS replaced 475 rejected/failed poles | Tree trimming is on a 2-yr trim cycle which has been in place since 2000. Quarterly maintenance of tree clearances | 216.3 miles of 3 phase Distribution lines and 66.3 miles of transmission lines. Continual use of PURC vegetation management practices contained in 2009 report |

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| Kissimmee Utilities Authority | Yes | Yes, for new construction, major planned work, including major expansion rebuild or relocation on or after 12/10/06 | Yes, main 3-phase underground riser poles, poles containing 3-phase transformer banks with 75KVA or larger transformers, and poles within main 3-phase feeders | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | D: 8-yr. cycle; includes sound and bore, ground-line excavation and treatment. Infrared scanning of all main distribution feeders conducted annually | T: All poles were inspected during 2007. D: planned for 1,000 distribution poles for 2008, completed 1,502 | T: No transmission poles inspected during 2008. D: A total of 45 (4.0%) of the 1,502 poles failed due to shell rot, rotten butt, enclosed pocket, split top, and exposed pocket | T: 32 poles, ranging in size from 35 go 60 feet, class 1 to 4, (71%) of poles have been replaced | Constructs all new distribution circuits of front lots and the majority of new distribution lines are constructed within dedicated utility easements. | T: 3-yr. cycle. 100% vegetation inspections complete. Corrective action identified, completed during the same time. D: Targeted areas included 50 pole miles of circuits |
| Lake Worth Utilities Dept.: | Yes | Not guided by Extreme Wind Loading per Figure 250-2(d) on a system wide basis | CLW is for new construction, major planned work including expansion, rebuild or relocation of existing facilities assigned on or after 12/10/06 | Practices require installation of dead front pad mounted equipment in areas susceptible to flooding and storm surges | Yes | Yes, construction practice is to provide sufficient pole strength capacity such as NESC strength requirements are met | T: Visual inspection annually. D: 8-yr. cycle. Tests consists of hammer sounding and pole prod penetration six inches below ground line | T: All transmission poles are concrete or steel and no pole testing is performed. D: Number and percent planned not reported | In 2008, 743 poles were inspected and 106 wood poles failed pole prod penetration testing, 56 poles were replaced. Remaining poles are scheduled to be replaced and continue during 2009 | Not reported | On-going management plan and line clearance contract to perform vegetation management on a 2-yr. cycle. Quantities not reported | |

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| Lakeland Electric | Yes | Yes, for new construction, major planned work, including expansion rebuild or relocation on or after 12/10/2006. These standards primarily affect electric transmission structures 60 feet and taller, and meet or exceed Grade B Construction below this height | | | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | Inspected on an 8-yr. cycle using visual and the sound and bore techniques with ground line excavation and strength calculations which include all attachments | T: 147, (12.5%) planned and 22 (1.9%) inspected.: D: 7,500 (12.5%) planned and 7.860 (13.1%) completed | No transmission poles which were inspected failed.: D: 246 poles (3.1%) failed to meet minimum strength requirements due to decay | T: Two (2) poles were replaced. D: 195 poles replaced, repaired, or removed. 37 poles were reinforced with struts. Working on 19 reject poles from 2007 and starting work on reported reject poles in 2008 inspection | Vegetation management entails circuit based maintenance. Species specific distance trimming and directional pruning techniques used to establish a 3-yr trim cycle on transmission circuits and a 3-1/2 yr. cycle | T: Goal of 40 miles, 38 completed. D: Goal of 345 miles, 310 completed. Distribution maintenance includes secondary voltage lines and service drops |
| Leesburg, City of | Yes | Yes | Yes. Standards require structures to withstand winds up to 100 mph within the City of Leesburg electric service territory | | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | Does not own or operate transmission facilities. All general pole inspection is done by contractors by sound and bore with excavation on wood poles using NESC standards | No poles inspected during 2008 due to inspection budget was spent in 2007 to take advantage of contractor crew availability | Not applicable. No inspections in 2008 | | Maintains a 4-yr. trim cycle for feeder and lateral circuits. Problem trees are trimmed or removed as identified | Vegetation management activities were completed as scheduled, but quantities, level, and scope not reported |
| Moore Haven, City of | Used by consulting engineers | Used by consulting engineers | Participating in PURC granular wind research study and will continue to self-audit | Yes | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | No reported written guidelines. Continuously inspects distribution lines, poles and structures. The city is one (1) square mile and easily inspected on a daily basis. There are no transmission lines or poles. There were four (4) poles replaced in 2008 | | | | All vegetation management is performed in-house | 100% distribution system trimmed every year |

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| Mount Dora, City of | No written documentation | No written documentation In 2008, developed a formalized annual field inspection program to evaluate compliance with the wind loading standards of the 2002 NESC | The City is participating the PURC granular wind research study through the Florida Municipal Electric Association and continue to self-audit | | Yes. Electrical standards, policies, guidelines, practices, and procedures address the effects of flooding on underground distribution facilities | Yes | No written standards. Relies on experienced staff | No transmission facilities owned. All transmission poles are owned by Progress Energy. Visual inspections are made annually of the six distribution feeders in the area | Six distribution feeders planned and completed (100%) | Eight (8), (5.3%)distribution poles failed inspection due to rot or damage | Forty (40), 1.9% wood poles, ranging in size from 35 to 35 ft were replaced with concrete poles | Tree trim on a 12-month cycle using outside contractor and one 2-man crew of company employees who trim on a continuous basis | PURC and FMEA conference notes used to improve vegetation mgmt. |
| New Smyrna Beach | Yes | Yes, for facilities constructed on or after 02/01/07 | Participating in the PURC granular wind research study | Yes | Install only stainless steel dead front pad mounted transformers, existing pad mounted transformers upgraded at time of replacement | Yes | Yes | T: Top to bottom inspection completed every 4-5 years.<br>D: Inspected as part of normal patrolling distribution feeders, generally completed every 7-9 yrs. Using the sound and spike method | T: No poles were inspected in 2008.<br>D: Inspected 840 poles (7%), Found 76 (9%) poles had reached end of life and were replaced | T: Zero (0%) D: Seventy-six poles, 9%. Sixty-five (65) poles were replaced due to decay, eleven (11) poles were replaced due to woodpecker damage | No records regarding class type or fail. Beginning in calendar year 2009, inspection contract with Osmose includes pole type and class, height, etc. and remediation | City maintains two (2) crews on a continual basis to trim vegetative growth. One crew for main feeders and the other for "hot spot" trimming as required | Trimmed approximately 20% of distribution system in FY2008. Mowing transmission lines is done on a yearly basis |
| Newberry, City of | Yes | Yes, for facilities constructed on or after 02/01/07 | Participating in the PURC granular wind research study | Yes | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | Yes, 3-yr inspection cycle. Inspected at ground level for deterioration, entire upper part for cracks and soundness of upper pole | D: None in FY2008. 1,007 poles inspected in 2006 and not due again until 2009. | D: 73 poles (7%) inspected and were found defective due to wood decay or structural cracks | D: 20 (29%) wood poles ranging in size from 30-45 ft, class 5 were replaced in 2008 | D: 3-yr. cycle with attention to problem trees during the same cycle. Trees not within right-of-way are given to the property owner | D: One-third of the facilities are trimmed every year to obtain 3 year cycle |

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| Ocala Electric Utility | Yes | Yes, ordinance passed 12/18/07 requiring all new developments to be underground | Yes, new ordinance helps lessen exposure to wind damage and speed of restoration efforts | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | Yes, 8-yr.inspection cycle. Pole selection based on geographical areas/age. Practices and procedures are above-ground inspection, excavation, sounding, boring, chipping, internal treatment, and evaluation to determine remaining strength and reject criteria | T: 100% inspected in 2007, on an 8-yr. inspection cycle.<br>D: 4,594 poles (14.5%) inspected | D: 480 poles (10.4%) failed due to shell rot or decayed tops | Of the 480 poles rejected, 338 (70.4%) will be replaced. The remaining 142 poles, 29.6%) will be braced using the Osmose C-Truss. Type and class range in size from 30-ft, class 5 to 45-ft, class 3 replaced | 3-yr trim cycle, which is augmented as needed between cycles. Complies with ANSI A300 Standards | Annual line clearance goal is 1/3 of the total system for overhead line miles, which is approx. 250 miles per year. Using PURC vegetation management report for continued improvement in vegetation practices |
| Orlando Utilities Commission & City of ST: Cloud | Yes | Yes, for facilities constructed on or after 02/01/07 | Yes; all new construction, planned work, expansion, rebuild, or relocation of existing facilities assigned on or after 12/10/06 | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | 8-yr. inspection cycle with annual inspections of essential distribution and transmission equipment. Visual, excavation, sounding and boring, remove decay, and ground line treatments | 6,400 (12%) planned distribution and transmission inspections, with 6,124 (12%) completed | 9 poles replaced, 82 poles restored (C-Truss), 98 work orders generated for replacement with0 completed in 2008. 189 failed inspection, reason not reported | 2008 Pole Remediation Action Report (not included) Type and class not reported | D: 4-yr. trim cycle T: 3-yr. trim cycle | D: 4-yr. cycle. Treatment objectives of 330 miles 100% complete.<br>T: 3-yr. cycle Treatment objective of 99 miles 100% complete |
| Quincy, City of | Yes | Guided by 2002 Figure 250-2(d) on or after 12/10/06 | Yes | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | Drive-by patrols on all poles monthly throughout 2008. Procedures implemented in 2008 to use sound and bore | T: 31 (100%) concrete;<br>D: 2,842 (100%) wood planned and completed | T: 0 defects;<br>D: 7, (0.07%) Pole damage and wood rot | 7 wood poles replaced. | T: not stated separately.<br>D: 4 yr cycle all circuits | T: 100% planned and completed<br>D: 25 miles (24%) planned and completed |

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| Reedy Creek Improvement District | Yes | Guided by 2002 Figure 250-2(d) on or after 12/10/06 | | Yes | Non-coastal utility; therefore, storm surge is not an issue | Yes | No foreign attachments | T: 69 KV, 5 wooden poles (2-yrs) remainder concrete/steel. D: 12.5KV. UG + 13 wooden poles (2-yr) remainder on concrete and steel | T: 5, D: 13 | T: None specified. Wooden poles treated in 2006. D: Not specified | T: None Specified D: None specified | T: Tree trimming (1-yr) each spring | 90% of plan (rights of way) for 2007 addressed and all completed for transmission right-of-ways by 2008 |
| Starke, City of | Yes | Yes | Yes | Yes | Non-coastal utility; therefore, storm surge is not an issue | Yes | No written policy. In the process of studying this issue | Poles inspected annually by City of Starke Electric Staff | Transmission and distribution inspections planned and completed were 3,409 (100%) | T: Have no transmission poles. 43 (1.26%) poles. | D: 0.54% 30 ft, class 2; 0.32% 35 ft, class 2; 0.68% 40 ft, class 2 poles replaced | Annual tree trimming and vegetation contract provides 8 weeks of annual tree trimming | D: 33% trimmed in 2008 |
| Tallahassee, City of | Yes | Yes, as specified by the 2007 edition of the National Electric Safety Code. The city also participates in the PURC granular wind research study through FMEA | | Yes | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | T & D: 8-yr. inspection cycle Climbing, physical, infrared and flying inspections of every transmission structure on 5 yr. cycle | T: 450 wood poles/structures inspected and completed D: Last inspection completed in 2007, next cycle scheduled for FY2013 | D: 19 poles rejected and replaced due to wood decay. T: 40 poles replaced due to various construction projects | T: Replaced 40 wood poles with spun concrete or hybrid poles, size 90 to 120 ft. D: Replaced 425 poles ranging, size 40 ft, class 3 to 65 ft, class 2 | City's design standards exceed the National Electric Safety Code for horizontal clearances. T: Managed on a 3-yr. trim cycle | T: Right-of-ways to be mowed FY2009. Lines running through rural areas managed with use of Jaraff mechanical trimmer in 2008. D: 18 month trim cycle |
| Vero Beach, City of | Yes, for facilities constructed on or after 02/01/08, the 2008 NESC applies | Yes, follows guidelines in NESC standards per Figure 250-2(d) | Yes, plans being made to make any changes necessary based on the 2008 NESC. Participates in the PURC granular wind research study through FMEA | | All facilities are installed a minimum of 8 inches above the roadway and grading to prevent corrosion | Yes | Yes | T: Driven and inspected once every 2-3 months. D: Inspected once every 5 yrs. Poles are inspected using sound and bore method with some excavation | T: Inspected 4 times in 2008 with no poles failing inspection. D: 200 of the distribution poles inspected and repairs made. Entire system will be inspected and repairs made within 5 yrs. | T: No poles which were inspected failed D: 1,794 poles inspected with 56 failures due to ground rot, rotten top, hit by vehicle, or cracked | T: N/A D: 75 poles replaced ranging in size from 40 ft., class 4 to 50 ft, class 3 Once a pole fails inspection it is replaced with a steel or concrete pole if it can easily be reached by a bucket truck | 3-yr trim cycle. If tree limbs get within 3 ft. of the neutral or 5 ft of the primary, it is cut back to the trunk or main limb | 40 square miles of service territory broken down into a grid system of 60 blocks of equal size. The goal is to complete all 60 blocks (1 grid) every three years. |

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| Wauchula, City of | Yes | Yes | Not addressed | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | Completes a sound and bore inspection. Cycle and pole selection not addressed | One-third of total lines of transmission and distribution inspections planned and completed in 2008 | Less than 1% failure (out of 1,800 poles) Failure due to pole rotting at ground line | One of the five transmission poles replaced in 2008 | Policy is tree trimming and herbicide for vines on a schedule of one-third per year | |
| Williston, City of | Yes | Yes, for facilities constructed on or after 01/01/07 | Participating in PURC granular wind research study | Non-coastal utility | Yes | No. Examining this issue in 2008 to establish pole loading rates | 3-yr cycle inspection by visual and sound inspection | 3-yr. inspection cycle completed 100% in 2008 | D: 3 poles failed, reason not addressed | 1 40 ft., class 5 pole replaced | 3-yr. trim cycle on all distribution lines | D: one-third (1/3) trimmed annually to obtain 3-yr. cycle |
| Winter Park, City of | Yes | Not designed to meet the extreme loading standards on a system wide basis. In January, 2008, the city began initiative to put its entire distribution system underground | | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes, implemented 2008 | Does not own or operate transmission facilities. All general pole inspection is done by contractors on an 8-yr. cycle (12.5% per year) beginning with 2008 | 8-yr. cycle began June, 2008 to sound and bore with excavation testing of 1002 wooden distribution poles. Completed by the end of July, 2008 | 122 rejected. 4 poles were non-restorable, replaced immediately; 48 poles failed as non-priority-restorable and are scheduled to be restored | 122 rejected poles; 84 Creosote treated, ranging in class from class 3 to class 6. The remaining 38 poles are pressure treated class 3 thru class 6 poles. Height not reported | 3-yr. trim cycle which is augmented as needed to maintain clearance between cycles. Trimming shall adhere with ANSI A300 standards for tree trimming | Completed approximately 45% of distribution system in current 3-yr. trim cycle |

**Appendix D. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. — Calendar Year 2008**

| Utility | The extent to which Standards of Construction address: | | | | | | Transmission & Distribution Facility Inspections | | | | Vegetation Management | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Comply with the 2007 NESC on or after 2/1/2007** | **Guided by Extreme Wind Loading per Figure 250-2(d)** | | **Effects of flooding & storm surges on UG and OH distributio n facilities** | **Placement of distribution facilities to facilitate safe and efficient access** | **Written safety, pole reliability, pole loading capacity and engineering standards for attachments** | **Descripti on of policies, guideline s, practices , procedur es, cycles, and pole selection** | **Number and percent of poles and structures planned and completed** | **Number and percent of poles and structure s failing inspectio ns with reasons** | **Number and percent of poles and structures by class replaced or remediated with description** | **Description of policies, guidelines, practices, procedures, tree removals, with sufficient explanation** | **Quantity, level, and scope of planned and completed for transmission and distribution** |
| | | **Major Planned Work Expansion, Rebuild or Relocation** | **Targeted Critical Infrastructure s and major thoroughfares** | | | | | | | | | |
| Central Florida Electric Cooperative, Inc. | Yes | None. Self audit and evaluation | Insufficient data, pending research | Participating in PURC study | Insufficient data, pending research | Yes | Yes, inspect on a yearly basis | 8,744 poles(10.6 %) inspected and treated | 115 poles deteriorat ed and scheduled for replacem ent | 6,700 poles to be inspected in 2009 | 4 years into a 5-year right-of-way vegetation clearance plan. | 543 miles complete in 2008 of 2,918 miles |
| Choctawhatche e Electric Cooperative, Inc. | Yes | Yes | Facilities constructed on or after 02/01/07 | Yes, on a case by case basis | Yes | Yes | Yes, monthly inspection and eight-year cycle | 7,463 poles (12.5%) inspected out of 59,370 poles | 110 poles (1.4%) failed | 110 (1.4%) replaced in 2008 | No board policy. Program is designed to cut, mow, or otherwise manage 20% annually. | 517 miles cut on in 2008. Establis herbicidal spray p |
| Clay Electric Cooperative, Inc. | Yes | Yes | Not designed by Figure 250-2(d) except as required by rule 250-C | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes | Yes, on a ten year ground line pole inspection cycle | 3,291 poles (100% of transmissio n line) | 33 poles (23.74%) failed and were replaced, 139 (4.22%) required some type of maintena nce | 26,621 poles (14%) distribution planned with 37,397 poles (19.7%) completed in 2008 | Policy consists of mowing, herbicide spraying, and systematic recutting on a three year cycle. | Mowed 78.16 miles of transmission right-of-way, sprayed 80.94 miles, and recut 46.22 miles in 2008. |

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| Escambia River Electric Cooperative | Yes | Yes | Major planned work, including expansion, rebuild, or relocation of existing facilities, assigned on or after 12/10/06 | Non-coastal utility; therefore, storm surge is not an issue | Yes | Yes, on a case by case basis | Yes, on an 8 year cycle using visual, sound, and boring techniques | 3,790 poles (12.5%) planned with 3,189 poles (10.5%) inspected | 4 poles (0.12%) failed due to ground level decay | 4 poles (0.12%) replaced after inspection | Cut 379 miles of vegetation during 2008 (21.3%) | Escambia River Electric Cooperative does not own any transmission poles |
| Florida Keys Electric Cooperative Association, Inc. | Yes | Yes | Adopted on April 24, 2007 for; new construction, including expansion, reconstruction or relocation of existing facilities | Yes | Yes | Yes | Annual inspections by helicopter. Distribution poles inspected on a four-year cycle. | 100% transmission poles inspected visually by helicopter in 2008. 3,146 poles (25%) distribution poles in 2008. | 213 wood primary poles and 38 secondary, streetlight, and service poles failed inspection | Replaced 213 wood poles, 38 secondary poles in process of being replaced and 58 poles identified in 2007 and 2008 to be reinforced with C-Trusses during 2009 | Inspects and trims, where necessary, the entire transmission system on an annual basis. Substations inspected annually and trimmed when vegetation encroaches. | Annual transmission line right-of-way clearing from mile marker 106 on US1 to Dade/Monroe County line completed 1st quarter 2008. 200 circuit miles of distribution lines trimmed in 2008. |
| Glades Electric Cooperative, Inc. | Yes | Yes | New construction, including expansion, rebuilds, or relocation of existing facilities after 2007 NESC edition | Non-coastal utility; but recognizes the potential for flooding and is participating in a workshop series hosted by Florida Catastrophic Planning | Yes | No, case-by-case basis | Annual strategic work plan. 100% completed for 2008 planned maintenance and inspections. | 3,842 poles (9.6%) distribution poles | 219 poles rejected (5.7%) | 100% of rejected poles were replaced in 2008 | 1/8th of circuit per year. System wide inspections on a two year cycle. Transmission inspected annually. | Every mainline section undergoes system restoration within approximately an 8-yr. period |
| Gulf Coast Electric Cooperative, Inc. | Yes | Insufficient data | Not bound by the extreme loading standards. System is 99.9% under the 60 ft extreme wind loading requirements | | Participating in PURC study | Yes | Gulf Coast Electric Coop. has no transmission lines. Conforms on an 8 year cycle | 10.158 poles (7.5%) inspected in 2008 | 226 poles (2.2%) rejected. | Not reported | 1,632 miles of overhead and underground Primary power lines and all right-of-way is scheduled to be cut on a 5 year cycle. 400 miles were cut in 2008. | Currently working on systematic herbicide spraying program 12 to 18 months behind clearing and mowing program |

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| Lee County Electric Cooperative, Inc. | Yes | Yes | Construction standards, for required facilities meet the extreme wind loading standards | | | Yes | 2 year cycle, inspecting by either climbing or with the use of a bucket truck. | Transmission section is on a 2 year cycle and distribution inspection is on 10 year cycle | 1.676 transmission poles, 100% of scheduled. 22,637 distribution poles (89.8%) of inspections scheduled | 142 transmission facilities failed, (8.4%) | Program covers maintenance of 3,934 miles of distribution lines. | Completed 892 miles of transmission trimming and mowing in 2008 |
| Okefenoke Rural Electric Membership Corporation | Yes | Not on a system wide basis | Participates in PURC granular wind research study | | Self-audit and self-evaluate | Yes | Currently on an 8 year inspection cycle | | 2,424 distribution poles (4.3%) inspected in 2008. | 19 poles rejected (0.78%) of distribution poles. One (10 was a priority pole and was replaced; 15 will be replaced and remediation of 3 is scheduled for Spring, 2009 | Vegetation control practices consist of complete clearing to the ground-line, trimming, and herbicide application. | Cut and trimmed 460 miles of right-of-way in 2008. Herbicide apply to 1,022 miles of distribution lines in 2008. |
| Seminole Electric Cooperative, Inc. | Yes | Yes | Yes | Not applicable | Not applicable | Not allowed on 230kV transmission structures. Attachment loading models must be evaluated prior to permit attachment on 69kV transmission structures | T: 1-yr D: Does not own distribution lines | 3,240 transmission structures, which consist of steel, concrete, and wood. 100% planned for calendar year 2009 | Zero (0%) All planned for 2009 | Zero (0%) All planned for 2009 | NERC Reliability Stds.-annual visual inspection, problem tree removal program, and 3-yr cycle for herbicide application | 100% of Plan Does not own or operate any distribution facilities |

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| Sumter Electric Cooperative, Inc. | Yes | Insufficient data | Insufficient data, pending research | Non-coastal utility, storm surge is not a consideration. | Yes | Yes, six year inspection cycle | Inspects transmission, substation, and distribution facilities on regular cycle. | 294 poles (20%) inspected. Ground inspections are completed every 8 years. | 130 poles failed inspection. | 130 poles (100%) remediation complete in June, 2008 | Sustain 2 year trimming cycle on transmission circuits, 3 year trimming cycle on feeder circuits, and 6 year cycle on lateral circuits | 100% complete of planned distribution and transmission pole inspections |
| Suwannee Valley Electric Cooperative, Inc. | Yes | Not on a system wide basis | Self-audit and evaluate to determine immediate needs for system upgrades. | Non-coastal utility, storm surge is not an issue | Yes | Yes | Inspects all structures every eight years. Followed up with treatment, repair, and replacement as needed. | 9.140 inspections (11%) of distribution structures, 5 inspections representing 100% of transmission structures | 124 inspections of distribution structures failed and none of the transmission structures failed. | 2,278 poles were remediated by ground line treatment (25%) of total inspected distribution structures. There were 124 poles (1.4%) replaced | Suwannee Valley Electric Cooperative inspects, cuts, and sprays all right-of-way every 4 years. | 937 miles of right-of-way were cut and 701 miles of right-of-way sprayed in 2008 |
| Talquin Electric Cooperative, Inc. | Yes | Yes | Rebuild or relocate existing facilities, assigned on or after December 10, 2006 | Study to determine if an increase in Class B construction is needed | Yes | Yes, 5 year cycle | Poles inspected on an eight year rotation | 8,279 poles inspected which included 187 transmission poles. Scheduled inspections were 100% complete | There were 53 distribution poles rejected (0.60%) of distribution poles inspected. | Priority poles were replaced and rejected poles were inspected and repaired if possible or replaced if not | Talquin maintains its right-of way by mechanical cutting, herbicide and mowing. Talquin continues to increase the miles of right-of-way trimmed as they strive to achieve a 3 year inspection and trim cycle. | Talquin performed maintenance on 669.5 miles of line in right-of-way in 2008. |
| West Florida Electric Cooperative Association, Inc. | Yes | Y as | Not reported | Non-coastal utility; therefore, storm surge is not an issue | Yes. | Yes | Not reported | Inspected 14% of its system in 2008. | Of the 14% inspected, 6% required maintenance or replacement | Not reported | Ground to sky side trimming along with mechanical mowing and tree removal. | Not reported |

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| Withlacoochee River Electric Cooperative, Inc. | Yes | Yes | The NESC extreme wind loading standards are being considered for major distribution feeders | Yes | Yes, in 2008, relocated 78,000 feet of overhead primary lines from rear lot lines to the street | Yes | Scheduled inspections and routine line patrol on an on-going basis. | Maintains 60 miles of transmission lines. All of the transmission feeders are patrolled annually by walking, riding, or aerial patrol | Data unavailable for 2008 | Detailed data on failure not available | 7,000 miles of overhead feeder circuits, with current trim cycle between four and five years. When circuit trimming is performed all lateral taps and services are trimmed. | All transmission lines are inspected annually and associated right-of-way issues considered top priority. During 2008, WREC addressed 17miles of transmission related right-of-way |