Review of Florida's Investor-Owned Electric Utilities

2 0 1 5 Service Reliability Reports

September 2 0 1 6

State of Florida
Florida Public Service Commission
Division of Engineering

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Terms and Acronyms

AMI	Advanced Metering Infrastructure
ANSI	American National Standards Institute
CAIDI	Customer Average Interruption Duration Index
CEMI5	Customers Experiencing More Than Five Interruptions
CI	Customer Interruption
CME	Customer Momentary Events
CMI	Customer Minutes of Interruption
DSM	Demand Side Management
DEF	Duke Energy Florida (formerly Progress Energy Florida, Inc.)
EOC	Emergency Operation Center
F.A.C.	Florida Administrative Code
FEMA	Federal Emergency Management Agency
FPL	Florida Power & Light Company
FPUC	Florida Public Utilities Company
GIS	Geographic Information System
Gulf	Gulf Power Company
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IOU	The Five Investor-Owned Electric Utilities: FPL, DEF, 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 Outages
NWS	National Weather Service
OMS	Outage Management System
RDUP	Rural Development Utility Program
SCADA	Supervisory Control and Data Acquisition
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
TECO	Tampa Electric Company
VMP	Vegetation Management Program

Reliability Metrics

Average Duration of Outage Events (L-Bar) is the sum of each outage event duration for all outage events during a given time period, divided by the number of outage events over the same time within a specific area of service.

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).

Customers Experiencing More Than Five Interruptions (CEMI5) is the number of retail customers that have experienced more than five service interruptions. (CEMI5 in this review is a customer count shown as a percentage of total customers.)

Customer Interruptions (CI) is the number of customer service interruptions, which lasted one minute or longer.

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

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.

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)

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

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)

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 Florida Public Service Commission (FPSC or Commission) has 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.[1] This report is a compilation of the 2015 electric distribution reliability data filed by Florida's IOUs. The data is presented using tables and figures so that trends in each IOU's service reliability may be easily observed. In addition, the scope of the IOUs' Annual Distribution Service Reliability Report was expanded to include status reports on the various storm hardening and preparedness initiatives required by the Commission.[2] This data may be used during rate cases, show cause dockets, and is helpful in resolving customer complaints.

Monitoring service reliability is achieved through a review of service reliability metrics provided by the IOUs pursuant to Rule 25-6.0455, Florida Administrative Code (F.A.C.).[3] 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 provided. Comparison of the year-to-year levels of the reliability metrics may reveal changes in performance, which indicates the need for additional investigation, or work in one or more areas. Rule 25-6.0455, F.A.C., requires the IOUs to file distribution reliability reports to track adjusted performance that excludes events such as planned outages for maintenance, generation disturbances, transmission disturbances, wildfires, and extreme acts of nature such as tornados and hurricanes. This "adjusted" data provides an indication of the distribution system performance on a normal day-to-day basis.

With the active hurricane seasons of 2004 and 2005, the importance of collecting reliability data that would reflect the total reliability experience from the customer perspective became apparent. 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. This data provides insight concerning the overall reliability performance of each utility.

The March 2016 Distribution Reliability Reports of Duke Energy Florida (DEF), Florida Power & Light Company (FPL), Florida Public Utilities Company (FPUC), Gulf Power Company (Gulf), and Tampa Electric Company (TECO) and responses to staff's data requests were sufficient to perform the 2015 review.

The following company specific summaries provide highlights of the observed patterns.

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

[2] Wooden Pole Inspection Orders: FPSC Order No. PSC-06-0144-PAA-EI, issued February 27, 2006, in Docket No. 060078-EI; and FPSC 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 Preparedness Initiative Orders: FPSC Order Nos. PSC-06-0351-PAA-EI, issued 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.

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

Service Reliability of Duke Energy Florida

DEF's 2015 unadjusted data indicated that allowable exclusions for outage events accounted for approximately 19 percent of all Customer Minutes of Interruption (CMI). The largest contributor to the exclusion percentage was the category of Planned Service Interruptions at 10 percent. From August 3-6, 2015, a series of severe thunderstorms caused flooding of the Anclote River. During this event the Pasco County EOC was activated and DEF was required to keep specific customers de-energized.

On an adjusted basis, DEF's 2015 System Average Interruption Duration Index (SAIDI) was 80 minutes, decreasing its adjusted SAIDI by 5 minutes from the 2014 results. The trend for the SAIDI over the five-year period of 2011 to 2015 is trending downward. The System Average Interruption Frequency Index (SAIFI) decreased from the 2014 value of 1.09 interruptions to 0.98 interruptions in 2015. The Customer Average Interruption Duration Index (CAIDI) increased for 2015 compared to 2014. Over the five-year period, the SAIFI is still trending downward as the CAIDI is remaining relatively flat.

In **Figure 3-8**, DEF's Top Five Outage Categories, the category Defective Equipment is in the top spot representing 21 percent of the top 10-outage categories. The next two highest categories were Vegetation (21 percent) and All Other (20 percent). Other Weather (18 percent) and Animals (13 percent) are the next two causes of outages. Commission staff requested that, beginning with 2014 data, all IOU's use the same outage categories for comparison purposes. As such, the Vegetation, Defective Equipment, and Other Weather now include outage categories that in the past were separately identified. The Vegetation and Animals outage categories are trending downward for the five-year period of 2011 to 2015 even though the Animals category had an 8 percent increase in 2015 and the Vegetation category had an 14 percent decrease. The Defective Equipment, All Other and Other Weather categories all had increases between 2014 and 2015 and all are trending upward for the same five-year period.

The percentage of reliability complaints to the total number of complaints filed with the Commission for DEF increased to 4.8 percent in 2015 from 4.3 percent in 2014. Over the five-year period from 2011-2015, DEF's reliability related complaints appear to be trending downward.

In 2015, DEF completed 2,297 hardening projects for existing transmission structures. The projects included maintenance pole change-outs, insulator replacements, Department of Transportation/customer relocations, line rebuilds, and system planning additions. The transmission structures are designed to withstand the current NESC wind requirements and are built utilizing steel or concrete structures. In 2016, DEF plans to harden 1,782 transmission structures. This would leave DEF with 24,265 transmission structures left to harden.

Service Reliability of Florida Power & Light Company

In reviewing the unadjusted data for 2015, FPL's documented exclusions for outage events accounted for approximately 11 percent of all CMI. The biggest impact was the Planned Service Interruptions accounting for approximately 8 percent of the CMI. The weather events that affected FPL's service areas were 13 tornados and Tropical Storm Erika. FPL reports that even though Tropical Storm Erika did not make landfall, all of it's territory was impacted.

FPL's 2015 metrics on an adjusted basis include SAIDI which was reported as 59 minutes and represents a 5 minute decrease from last year's reported 64 minutes. The SAIFI increased as CAIDI improved in 2015. The SAIFI increased from 0.99 interruptions in 2014 to 1.00 interruptions in 2015 and the CAIDI decreased from 65 minutes in 2014 to 60 minutes in 2015.

Defective Equipment (33 percent) and Vegetation (23 percent) outages were the leading causes of the number of outage events per customer for 2015. Starting in 2014, Defective Equipment includes Equipment Failure, Equipment Connect and Dig-in, which were all separate categories, in prior years. Outages caused by vegetation are addressed through FPL's Vegetation Management Program. The next three outage causes are Unknown (11 percent), Animals (10 percent) and Other Weather (9 percent). Analysis of **Figure 3-16** shows an increasing trend in the number of outage events attributed to Vegetation, causing the number of outages to increase by 8 percent from 2014 to 2015. The analysis shows a decreasing trend in the number of outage events caused by Defective Equipment, causing the number of outages to decrease by 1 percent from 2014 to 2015 and a decreasing trend of outage events by Unknown, causing a decrease of 4 percent from 2014 to 2015. The analysis shows that the trend for the Animals category is trending downward even though there was an increase in outages of 6 percent and the Other Weather category is trending upward even though there was a decrease in outages of 5 percent.

FPL's reliability related complaints percentage received by the Commission in 2015 was 0.6 percent, which is higher than the 0.5 percent received in 2014. FPL's reliability related complaints are trending downward as shown in **Figure 4-10**, even with the increase in 2015.

In 2015, FPL replaced 1,888 wood transmission structures with spun concrete poles. FPL completed the replacement of ceramic post insulator with polymer insulators in 2014. Also, in 2014, FPL completed the installation of water-level monitoring systems and communication equipment in its 223 substations. In 2016, FPL plans on replacing approximately 1,400 wood transmission structures. FPL has 9,662 wood transmission structures remaining to be replaced.

Service Reliability of Florida Public Utilities Company

The unadjusted data for FPUC indicates that its 2015 allowable exclusions accounted for approximately 52 percent of the total CMI. The Generation/Transmission Events category accounted for approximately 48 percent of the CMI that were excluded. Several of the Transmission events were related to severe weather conditions. FPUC did report two transmission outage events due to temporary loss of power by JEA and five substation outages due to a loss of power by Gulf, both supply power to FPUC. FPUC's Northwest Division was affected by a tornado.

The 2015 adjusted data for FPUC's SAIDI was 127 minutes, which is a 27 percent decrease from the 175 minutes reported in the previous year. The SAIFI also decreased from 1.89 interruptions in 2014 to 1.62 interruptions in 2015. The CAIDI value in 2015 was 79 minutes, which is a decrease of 93 minutes reported in 2014.

FPUC's top five causes of outages included Vegetation, Animals, Other Weather, Lightning, and Defective Equipment events. Vegetation (27 percent) related outages were the number one cause of outages in 2015 as shown in **Figure 3-21** followed by Animals (19 percent), Other Weather (16 percent), Lightning (14 percent), and Defective Equipment (13 percent). Animal and Other

Weather (non-excludable weather events) attributed outages decreased in 2015, as Vegetation, Lightning, and Defective Equipment caused outages increased. Beginning in 2014, the Defective Equipment category now includes outage categories that in the past were separately identified.

Reliability related complaints against FPUC are minimal. In 2015, the utility had 12 complaints filed with the Commission none of which were reliability related. The volatility in FPUC's results can be attributed to its small customer base that averages 28,000 or fewer customers. For the last five years, the percentage of reliability related complaints against FPUC continue to trend downward.

FPUC did not conduct any storm hardening of existing structures in 2015. All of the Northeast Division's 138kV poles are constructed of concrete and steel. The Northeast Division's 69kV transmission system consists of 218 poles of which 75 are concrete. The Northwest Division does not have transmission structures. During 2012, the six-year transmission climbing inspection was completed. In 2015, FPUC began planning the replacement of 21 wooden transmission poles with spun concrete transmission poles. FPUC has 135 transmission structures left to be hardened.

Service Reliability of Gulf Power Company

Gulf's 2015 unadjusted data indicates that allowable exclusions accounted for approximately 14 percent of its CMI. Transmission events accounted for 6 percent of the total CMI. Gulf reported the causes for the transmission events included deterioration, external utility trouble, switching error, animals, distribution trouble and tree cut in the public right of way. Gulf's service areas were also affected by four tornados.

The 2015 SAIDI for Gulf was reported to be 88 minutes, which was the same that was reported in 2014. The SAIFI increased to 1.02 interruptions from 0.93 interruptions the previous year. The CAIDI decreased to 86 minutes from 94 minutes in 2014. Gulf explained that it continues to seek improvements in distribution reliability through a continued focus on root causes and added distribution automation, which is part of its Storm Hardening Plan. In addition, Gulf stated there was added emphasis on identifying and addressing recurring issues throughout the system.

Gulf's top five causes of outages were listed as Animals, Defective Equipment, Vegetation, Lightning, and Unknown. Animal (27 percent) caused outages was the number one cause of outages followed by Defective Equipment (23 percent), Vegetation (18 percent), Lightning (17 percent), and Unknown (6 percent). The number of outages decreased for three of the top five outage categories in 2015 when compared to 2014, which were outages due to Defective Equipment, Lightning, and Unknown as shown in **Figure 3-29**. The Defective Equipment and Vegetation categories now include outage categories which in the past were separately identified.

The percentage of complaints reported to the Commission against Gulf that were reliability related was 0.5 percent in 2015. This is lower than the 0.7 percent recorded last year. Gulf's percent of total complaints for the five-year period of 2011 to 2015 is trending upward despite the decrease in 2015. Overall, Gulf has the lowest percentage of total complaints that are reliability related as shown in **Figure 4-10**.

Gulf had two priority goals for hardening its transmission structures: installation of guys on H-frame structures and replacement of wooden cross arms with steel cross arms. The installation of guys on H-frame structures was completed in 2012. The replacement of wooden cross arms with steel cross arms is proceeding on schedule to meet the 2017 completion date with 355 wooden cross arms remaining to be replaced. In 2015, 175 transmission structures were hardened.

Service Reliability of Tampa Electric Company

TECO's 2015 unadjusted data indicate that the allowable exclusions for outage events accounted for approximately 19 percent of all the CMI. The largest documented exclusion was the Generation/Transmission Events, which accounted for approximately 15 percent of the total excludable CMI. TECO reported 13 transmission outages in 2015 caused by equipment failure, lightning, vehicles, broken water main, bird nest fouling, and storms. TECO's service area was not affected by extreme weather events during 2015.

The adjusted SAIDI for 2015 decreased to 79 minutes from 80 minutes in 2014 and represents a 1 percent improvement in performance. The SAIFI increased to 1.03 interruptions from 0.94 interruptions in the previous year. The CAIDI decreased 9 percent to 77 minutes from 85 minutes reported in 2014. TECO reported that the overall improvements in the reliability indices are attributed to its aggressive tree-trimming plan, installation of additional reclosers, and the implementation of crews who mainly focus on restoration work.

Defective Equipment (28 percent) and Vegetation (21 percent) were the largest contributors to TECO's causes of outage events followed by Lightning (18 percent), Animals (13 percent), and Unknown (8 percent). **Figure 3-37** illustrates the top five outage causes showing Defective Equipment and Lightning related causes are trending upward, even though there were decreases of 0.9 percent and 9 percent, respectively, from the previous year. Vegetation related outage events are trending upward and there was an increase of 3 percent form 2014 to 2015. Unknown related causes are is remaining relatively flat even though there was a decrease of 8 percent in 2015. Animal related causes are trending downward and decreased by 12 percent from the previous year. Beginning in 2014, the Defective Equipment category now includes outage categories that in the past were separately identified.

TECO's 2015 percentage of total complaints that are service reliability related decreased to 4.7 percent from 5.6 percent as reported in 2014. TECO's percentage of service reliability complaints is trending upward over the period of 2011 to 2015 despite the decrease in 2015. TECO continues to focus on vegetation management, circuit review activity, and other maintenance activities to minimize service-related complaints in 2016. Working through and responding to complaints at a regional level affords TECO an opportunity to be aware of any trends that may occur for a given feeder or lateral.

TECO's transmission system is hardened by utilizing its inspections and maintenance program to systematically replace wood structures with non-wood structures. In 2015, TECO hardened 726 structures including 640 pole replacements utilizing steel or concrete poles and replaced 77 sets of insulators with polymer insulators. TECO's goal for 2016 is to harden 500 transmission structures. TECO has approximately 8,156 wooden poles left to be replaced.

Review Outline

This review primarily relies on the March 2016 Reliability Reports filed by the IOUs for the 2015 reliability performance data and storm hardening and preparedness initiatives. A section addressing trends in reliability related complaints is also included. Staff's review consists of five sections.

- **Section I:** Storm hardening activities, which include each IOU's Eight-Year Wooden Pole Inspection Program and the Ten Storm Preparedness Initiatives.

- **Section II:** Each utility's actual 2015 distribution service reliability data and support for each of its adjustments to the actual service reliability data.

- **Section III:** Each utility's 2015 distribution service reliability based on adjusted service reliability data and staff's observations of overall service reliability performance.

- **Section IV:** Inter-utility comparisons and the volume of reliability related customer complaints for 2011 to 2015.

- **Section V:** Appendices containing detailed utility specific data of the IOUs and summaries of the municipal and rural cooperative utilities.

Section I: Storm Hardening Activities

Each IOU, pursuant to Rule 25-6.0342(2), F.A.C., must file a storm hardening plan which is required to be updated every three years. The IOU's third updated storm hardening plans were filed on May 2 and 3, 2016, except for FPL who filed its plan on March 15, 2016.[4] The following subsections provide a summary of each IOU's programs addressing an on-going Eight-Year Wooden Pole Inspection Program and the Ten Storm Preparedness Initiatives as directed by the Commission.

Eight-Year Wooden Pole Inspection Program

FPSC Order Nos. PSC-06-0144-PAA-EI, issued February 27, 2006, in Docket No. 060078-EI and PSC-07-0078-PAA-EU, issued January 29, 2007, in Docket No. 060531-EU, require each IOU to inspect 100 percent of their installed wooden poles within an eight-year inspection cycle. The National Electric Safety Code (NESC) serves as a basis for the design of replacement poles for wood poles failing inspection. Additionally, Rule 25-6.0342(3)(b), F.A.C., requires that each utility's storm hardening plan address the extent to which the plan adopts extreme wind loading standards as specified in Figure 250-2(d) of the 2007 edition of the NESC. Staff notes that DEF determined the extreme wind loading requirements, as specified in Figure 250-2(d) of the NESC did not apply to poles less than 60 feet in height that are typically found within the electrical distribution system. DEF stated in its 2009 Storm Hardening Report that extreme wind loading requirements have not been adopted for all new distribution construction since poles less than 60 feet in height are more likely to be damaged by falling trees, flying limbs, and other wind borne debris.[5]

[4] Docket Nos. 160061-EI (FPL), 160105-EI (TECO), 160106-EI (FPUC), 160107-EI (DEF), and 160108-EI (Gulf), *In re: Petition for approval of 2016-2018 storm hardening plan, pursuant to Rule 25-6.0342, F.A.C.*

[5] DEF Storm Hardening Plan 2007-2009, Appendix J, pp. 4-5.

Table 1-1 shows a summary of the quantities of wooden poles inspected by all IOUs in 2015.

Table 1-1.
2015 Wooden Pole Inspection Summary

Utility	Total Poles	Poles Planned 2015	Poles Inspected 2015	Poles Failed Inspection	% Failed Inspection	Years Complete in 8-Year Inspection Cycle
DEF	762,574	96,000	100,651	10,113	10.05%	1
FPL	1,075,419	133,363	133,243	12,243	9.19%	2
FPUC*	26,151	1,709	1,721	186	10.81%	8
GULF	203,554	26,000	25,563	693	2.71%	2
TECO	316,000	39,500	51,959	8,073	15.54%	2

*Note: FPUC completed its last year of its first eight-year cycle in 2015.
Source: The IOUs 2015 distribution service reliability reports.

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

Table 1-2.
Projected 2016 Wooden Pole Inspection Summary

Utility	Total Poles	Total Number of Wood Poles Inspected 2014-15	Number of Wood Pole Inspections Planned for 2016	Percent of Wood Poles Planned 2016	Percent of Wood Pole Inspections Completed in 8-Year Cycle	Years Remaining in 8-Year Cycle After 2015
DEF*	762,574	191,574	96,000	12.59%	25%	7
FPL	1,075,419	266,815	133,363	12.40%	25%	6
FPUC	26,151	26,309	3,286	12.57%	101%	0
GULF	203,554	52,767	26,000	12.77%	26%	6
TECO*	316,000	88,127	14,500	4.59%	28%	6

*Note: DEF has completed one year and eight months of its second eight-year cycle. TECO accelerated its inspections by completing all transmission inspections for 2015 and 2016 in 2015.
Source: The IOUs 2015 distribution service reliability reports.

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 continues to monitor each utility's performance.

Ten Initiatives for Storm Preparedness

On April 25, 2006, the Commission issued FPSC Order No. PSC-06-0351-PAA-EI, in Docket No. 060198-EI. This Order required the IOUs to file plans for Ten Storm Preparedness Initiatives (Ten Initiatives).[6] Storm hardening activities and associated programs are on-going parts of the annual reliability reports required from each IOU since rule changes in 2006. The status of these initiatives is discussed in each IOU's report for 2015. Separate from the Ten Initiatives, and not included in this review, the Commission established rules addressing storm hardening of transmission and distribution facilities for all of Florida's electric utilities.[7,8,9]

Initiative 1 - Three-Year Vegetation Management Cycle for Distribution Circuits

Each IOU continues to maintain the commitment to complete three-year trim cycles for overhead feeder circuits since feeder circuits are the main arteries from the substations to the local communities. The approved plans of all the IOUs also require a maximum of a six-year trim cycle for lateral circuits. In addition to the planned trimming cycles, each IOU performs hot-spot tree trimming[10] and mid-cycle trimming to address rapid growth problems.

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[6] Docket No. 060198-EI, Requirement for investor-owned electric utilities to file ongoing storm preparedness plans and implementation cost estimates.

[7] FPSC Order No. PSC-06-0556-NOR-EU, issued June 28, 2006, in Docket No. 060172-EU, 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, Proposed amendments to rules regarding overhead electric facilities to allow more stringent construction standards than required by National Electric Safety Code.

[8] FPSC Order Nos. PSC-07-0043-FOF-EU, issued January 16, 2007, and PSC-07-0043A-FOF-EU, issued January 17, 2007, both in Docket Nos. 060173-EU and 060172-EU.

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

[10] 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. TECO defines hot-spot trimming as any internal or external customer driven request for tree trimming. Therefore, all tree trim requests outside of full circuit trimming activities are categorized as hot-spot trims.

Table 1-3 is a summary of feeder vegetation management activities by each company's cycle.

Table 1-3.
Vegetation Clearing from Feeder Circuits

IOU	# of Years in Cycle	1st Year of Cycle	Total Feeder Miles	Miles Trimmed				Total Miles Trimmed	% of Miles Trimmed
				1st Year	2nd Year	3rd Year	4th Year		
DEF	3	2015	3,968	1,024				1,024	25.8%
FPL	3	2013	13,554	4,637	4,249	4,209		13,095	96.6%
FPUC	3	2014	159	52	51			103	64.5%
GULF	3	2013	723	240	241	241		722	99.9%
TECO	4	2013	1,720	373.9	464.8	453.6		1,292	75.1%

Note: In 2012, the Commission approved TECO's request to modify its trim cycle for feeders to four years.[11]
Source: The IOUs 2015 distribution service reliability reports.

Based on the data in Table 1-3, it appears Gulf and TECO are on schedule with their feeder vegetation cycles. DEF indicates that a portion of feeder miles recently maintained were re-inspected in 2015 which is why DEF did not meet target goal of trimming 33 percent of its feeder miles. FPL implemented several initiatives to align feeder trimming to coincide with its feeder hardening deployment plan, which shifted approximately 3 percent of its feeder miles to be trimmed during 2016. FPUC's annual trim schedule does not add up to one-third of the total feeder miles as FPUC adjusted its annual trimming schedule to efficiently use the resources available.

[11] FPSC Order No. PSC-12-0303-PAA-EI, issued June 12, 2012, in Docket No. 120038-EI, Petition to modify vegetation management plan by Tampa Electric Company.

Table 1-4 is a summary of the lateral vegetation management activities by company.

Table 1-4.
Vegetation Clearing from Lateral Circuits

IOU	# of Years in Cycle	1st Year of Cycle	Total Lateral Miles	Miles Trimmed						Total Lateral Miles Trimmed	% of Lateral Miles Trimmed
				1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year		
DEF	5	2011	14,200	1,132	3,228	3,810	2,782	3,579		14,531	102.3%
FPL	6	2013	22,722	4,124	3,685	3,817				11,626	51.2%
FPUC	6	2014	571	145	134					280	49.0%
GULF	4	2014	5,148	1,294	913					2,207	42.9%
TECO	4	2013	4,572	1,098	1,161	1,146				3,405	74.5%

Note: In 2006, the Commission approved DEF's request to modify its lateral trim cycle to five years.[12] In the same docket, the Commission approved FPL's modified trim cycle for laterals to six years.[13] FPUC's lateral trim cycle was modified to six years in 2010.[14] The Commission approved Gulf's modified lateral trim cycle to four years in 2010.[15] In 2012, the Commission approved TECO's request to modify its trim cycle for laterals to four years.[16]

Source: The IOUs 2015 distribution service reliability reports.

From the data in Table 1-4, it appears that all the IOUs except Gulf are on schedule with lateral vegetation cycles. Gulf uses outage data to identify specific locations for trimming to improve reliability to its customers; therefore, the actual line miles trimmed may vary from year to year.

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 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.

Initiative 2 - Audit of Joint-Use Agreements

[12] FPSC Order No. PSC-06-0947-PAA-EI, issued November 13, 2006, in Docket No. 060198-EI, Requirement for investor-owned electric utilities to file ongoing storm preparedness plans and implementation cost estimates.

[13] FPSC Order No. PSC-07-0468-FOF-EI, issued May 30, 2007, in Docket No. 060198-EI, Requirement for investor-owned electric utilities to file ongoing storm preparedness plans and implementation cost estimates.

[14] FPSC Order No. PSC-10-0687-PAA-EI, issued November 15, 2010, in Docket No. 100264-EI, Review of 2010 Electric Infrastructure Storm Hardening Plan filed pursuant to Rule 25-6.0342, F.A.C., submitted by Florida Public Utilities Company.

[15] FPSC Order No. PSC-10-0688-PAA-EI, issued November 15, 2010, in Docket No. 100265-EI, Review of 2010 Electric Infrastructure Storm Hardening Plan filed pursuant to Rule 25-6.0342, F.A.C., submitted by Gulf Power Company.

[16] FPSC Order No. PSC-12-0303-PAA-EI, issued June 12, 2012, in Docket No. 120038-EI, Petition to modify vegetation management plan by Tampa Electric Company.

For hardening purposes, the benefits of fewer attachments are reflected in the extreme wind loading rating of the overall design of pole loading considerations. Each IOU monitors the impact of attachments by other parties to ensure the attachments conform to the utility's strength and loading requirements without compromising storm performance. Each IOU's plan for performing pole strength assessments includes the stress impacts of all pole attachments as an integral part of its eight-year wood pole inspection program. In addition, these assessments are also conducted on concrete and steel poles. The following are some 2015 highlights:

- DEF preforms its joint-use audit on an eight-year cycle with 2015 being the first year in the current cycle. In 2015, DEF audited one-eighth of its joint-use attachments. Of the 56,637 distribution poles that were strength tested 48 failed the test. DEF added guy wires to 33 poles and replaced 15 of the failed poles. DEF found no unauthorized attachments on the poles. Of its 7,443 joint-use transmission poles, 362 poles were strength tested with 30 poles deemed overloaded and scheduled for replacement.

- FPL audited approximately 20 percent of its service territory through its joint-use survey in order to determine the number and ownership of jointly used poles and associated attachments in 2015. Pole strength and loading tests were also performed on the joint use poles. The 2015 survey and inspection results show that no unauthorized attachments were found. The results also show that 2,541 (3.5 percent) poles failed the strength test due to being overloaded.

- In 2014, FPUC added language to its Joint-Use agreements to clarify joint-use safety audit instructions. The additional language included a provision for an initial joint-use pole attachment audit to take place 12 months after the effective date of the agreement, and on a five-year recurring cycle after the first audit. Currently, two joint-use agreements have been executed. The other agreements are being negotiated. No inspections were performed in 2015; however, FPUC is planning to start another inspection in 2016.

- Gulf performs its joint use inventory audits every 5 years. The last audit was completed in December 2011. Gulf's 2016 Pole Attachment audit began on January 14, 2016, and is scheduled to be completed by August 15, 2016. As of 2015, Gulf has 200,511 distribution poles with 295,939 third-party attachers (136,927 Telecom and 159,012 CSTV & other). Gulf is attached to 57,312 foreign poles. During Gulf's last audit, 26,317 "unauthorized attachments" were identified and associated with the appropriate third-party attachers. Gulf's mapping system has been updated to reflect the third-party attachments. Gulf has updated its language in its third-party agreements to allow Gulf to account and bill for more than one attachment per pole.

- In 2015, TECO conducted comprehensive loading analysis and continued to streamline its processes to better manage attachment requests from attaching entities. A comprehensive loading analysis was performed on 1,548 poles. TECO identified 12 distribution poles that were overloaded due to joint-use attachments and 44 poles were overloaded due to TECO's attachments. TECO also found 160 poles that had NESC violations due to joint-use attachments and 52 poles with NESC violations due to

TECO's attachments. All poles were corrected by adjustments to attachments, pole replacements or joint-use entities' removal of attachments.

Initiative 3 - Six-Year Transmission Inspections

The IOUs are required by the Commission to inspect 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, FPUC, and Gulf require full inspection of all transmission facilities within a six-year cycle. DEF, 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 FPSC Order No. PSC-06-0781-PAA-EI, issued September 19, 2006, in Docket No. 060198-EI.

- DEF's transmission system are on a five-year cycle plan. DEF inspected 175 transmission circuits (30 percent), 485 transmission substations (100 percent), 1,062 transmission tower structures (32 percent), and 5,856 transmission poles (13 percent) DEF performs ground patrol of transmission line structure associated hardware, and conductors on a routine basis to identify potential problems. DEF is on target for its five-year transmission inspections.

- In 2012, FPL began a new six-year cycle, performing climbing inspections on more than 65,000 wood, concrete and steel transmission structures. In 2015, FPL inspected approximately 73.4 percent of transmission circuits, 100 percent of transmission substations, 100 percent of non-wood transmission tower structures, and 19.8 percent of wood transmission poles. In addition, FPL inspects 100 percent of its wood poles and structures by performing a visual inspection at ground level each year. It appears that FPL is on target for its six-year transmission inspections.

- In 2015, FPUC inspected 100 percent of transmission circuits, transmission substations, tower structures, and transmission poles. The transmission inspections included climbing patrols of 95 138kV and 218 69kV structures. Transmission inspections will be conducted at a minimum every six years on all transmission facilities. FPUC is on schedule for its transmission facilities inspections.

- Gulf inspected 56 transmission substations in 2015 and conducted 577 inspections of its metal poles and towers as well as 2,495 wood transmission poles. Gulf replaced 62 of its wood transmission poles. Gulf's transmission line inspections include a ground line treatment inspection, a comprehensive walking inspection, and aerial inspections. The transmission inspections are based on two alternating 12-year cycles, which results in the structures being inspected at least once every six years. It appears that Gulf is on schedule for its transmission inspections.

- TECO's transmission system inspection program includes ground patrol, aerial infrared patrol, substation inspections, which are on a one-year cycle, above ground inspection and ground line inspection, which is on an eight-year cycle. The above ground inspection

was shifted from a six-year cycle to an eight-year cycle in 2015 per FPSC Order No. PSC-14-0684-PAA-EI, issued December 10, 2014, in Docket No. 140122-EI. Additionally, pre-climb inspections are performed prior to commencing work on any structure. Approximately 3,220 structures or 12.7 percent of the system was inspected by ground line inspection. Infrared aerial patrol was performed on 100 percent of transmission circuits. Above ground inspections were performed in 2014 and were also completed in 2015 as an acceleration of 2016 inspections. Therefore, the above ground inspections will resume in 2017 and TECO plans to inspect approximately 12.5 percent of the system. All 230 kV, 138 kV, and 69 kV circuits were patrolled by ground at least once and all transmission substations were inspected. It appears that TECO is on target for its transmission inspection schedule.

Initiative 4 - Hardening of Existing Transmission Structures

Hardening transmission infrastructure for severe storms is important in order to continue providing transmission of electricity to high priority customers and key economic centers. IOUs are required by the Commission to show the extent of the utility's efforts in hardening of existing transmission structures. No specific activity was ordered other than developing a plan and reporting on storm hardening of existing transmission structures. In general, all of the IOU's plans continued pre-existing programs that focus on upgrading older wooden transmission poles. Highlights of 2015 and projected 2016 activities for each IOU are explained below.

- DEF planned 3,150 transmission structures for hardening and completed hardening of 2,297 transmission structures, which includes maintenance pole change-outs, insulator replacements, Department of Transportation/customer relocations, line rebuilds, and system planning additions. The transmission structures are designed to withstand the current NESC wind requirements and are built utilizing steel or concrete structures. In 2016, DEF plans to harden 1,782 transmission structures. DEF reported 53,476 transmission poles, with 24,265 wood poles (45 percent) left to be hardened.

- FPL accelerated its plan in 2013, to replace all wood transmission structures in its system, from a target date range of 2033-2038 to a new target date range of 2023-2028. FPL replaced 1,888 wood transmission structures with spun concrete poles in 2015. FPL completed all replacements of its ceramic post insulators with polymer insulators in 2014. Also, in 2014, FPL completed the installation of water-level monitoring systems and communication equipment in its 223 substations. FPL's future hardening plans were addressed in its 2015 Storm Hardening Plan. FPL has 9,662 (15 percent) wood transmission structures remaining to be replaced.

- FPUC did not conduct any storm hardening of existing structures during 2015. All of the Northeast Division's 138kV poles are constructed of concrete and steel and meet NESC standards. The Northeast Division's 69kV transmission system consists of 218 poles of which 75 are concrete poles. During 2012, the six-year transmission climbing inspection was completed. In 2015, FPUC began designing the replacement of 21 wooden transmission poles with spun concrete transmission poles. FPUC has 135 (62 percent) transmission structures left to be hardened. The Northwest Division does not have transmission structures.

- Gulf has two priority goals for hardening its transmission structures: installation of guys on H-frame structures and replacement of wooden cross arms with steel cross arms. The installation of guys on H-frame structures was completed in 2012 and the replacement of wooden cross arms with steel cross arms is proceeding on schedule to meet the 2017 completion date. In 2015, 175 transmission structures were hardened. Gulf has 355 (14 percent) remaining wooden cross arms left to be replaced. The replacement of wooden cross arms with steel cross arms will continue in 2016 and is on schedule to meet the 2017 completion date.

- TECO is hardening the existing transmission system by utilizing its inspections and maintenance program to systematically replace wood structures with non-wood structures. In 2015, TECO hardened 726 structures including 640 structure replacements utilizing steel or concrete poles and replaced 77 sets of insulators with polymer insulators. TECO's goal for 2016 is to harden 500 transmission structures. TECO has approximately 8,156 (38 percent) wood poles left to be replaced.

Initiative 5 - Transmission and Distribution Geographic Information System

Initiative 6 - Post-Storm Data Collection and Forensic Analysis

Initiative 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 upon effective implementation of the other two initiatives. The five IOUs have GIS and other 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. The electric utility companies have implemented an Outage Management System (OMS). The collection of information for the OMS is being utilized in the form of a database for emergency preparedness. This will help utilities identify and restore outages sooner and more efficiently. The OMS also fills a need for systems and methods to facilitate the dispatching of maintenance crews during outages, and for providing an estimated time to restore power to customers. Effective restoration will also yield improved customer service and increased electric utility reliability. The year 2015 highlights and projected 2016 activities for each IOU are listed below:

- DEF's forensics teams will participate in DEF's 2016 Storm Drill. During field observations, the forensics team collects various information regarding poles damaged during storm events and collects sufficient data at failure sites to determine the nature and cause of the failure. In collaboration with University of Florida's Public Utility Research Center (PURC), DEF and the other IOUs developed a common format to collect and track data related to damage discovered during forensics investigation. Weather stations were installed across Florida as part of the collaboration with PURC and the other IOUs. As a result, DEF is now able to correlate experienced outages with nearby wind speeds. This type of information is augmented with on-site forensics data following a major storm event. DEF collects information to determine the percentage of storm caused

outages on overhead and underground systems. DEF's GIS provides several sets of data and information points regarding DEF's assets. DEF uses OMS, Customer Service System, and GIS to help analyze the performance of the overhead and underground facilities. DEF collects available performance information as part of the storm restoration process. DEF's Facilities Management Data Repository and Compliance Tracking System facilitate the compliance tracking, maintenance, planning, and risk management of the major distribution assets. One hundred percent of the overhead and underground distribution and transmission systems are in the GIS.

- FPL completed its five approved Key Distribution GIS improvement initiatives in 2012. The initiatives include post-hurricane forensic analyses, the addition of poles, streetlights, joint-use survey, and hardening level data to the GIS. Data collection and updates to the GIS will continue through inspection cycles and other normal daily work activities. FPL has post-storm data collection and forensic analysis plans, systems and processes in place and ready for use. The plans, systems and processes capture overhead and underground storm performance based on an alternative metric of analyzing performance of laterals. There were no storm forensic activities in 2015. In 2016, FPL's forensic team will participate in the Annual Storm Dry Run.

- FPUC uses GIS mapping for all of its deployed equipment and uses it to identify distribution and transmission facilities. The system interfaces with the Customer Information System to function as a Customer OMS. The implementation of the OMS has resulted in significant improvement in data collection and retrieval capability for analyzing and reporting reliability indices. The migration of the data began in 2012 and was completed in 2013. In 2014, FPUC began using the new OMS. The enhancements, which include providing outage data via smart mobile phones, have proven beneficial for managing outages. The plan to enable customer outage calls to be automatically logged into the system has been postponed to 2015 and 2016 due to the need to upgrade internal phone systems. FPUC purchased an application in 2015 that will enhance the current OMS by enabling crews to electronically receive and close outages in the field. The implementation of this tool is also planned for 2016. Field data will be collected, analyzed, and entered into the OMS. The process is triggered 72 hours prior to a storm. FPUC collects outage data attributed to overhead and underground equipment failure in order to evaluate the associated reliability indices. During 2015, there were no projects in the NE Division to convert overhead facilities to underground. Four small storm hardening projects, converting overhead facilities to underground, were performed in the NW division. All of the projects were at Chipola College and were completed in 2015. FPUC converted a total 2,009 feet of overhead facilities to underground.

- Gulf completed its distribution facilities mapping transition to its new Distribution GIS in 2009. The transmission system has been completely captured in the transmission GIS database. The Distribution GIS and Transmission GIS are continually updated with any additions and changes as the associated work orders for maintenance, system improvements, and new business are completed. This ongoing process provides Gulf sufficient information to use with collected forensic data to assess performance of its overhead and underground systems in the event of a major storm. The 2015 storm season

was uneventful so there was no need to mobilize the forensic data collection process and contractor. GIS data was updated in the contractor's hand held computers and data collection was tested prior to the 2015 storm season. Using aerial patrol, Gulf will be able to capture an initial assessment of the level of damage to the transmission system and record the GPS coordinates and failures with the Transmission Line Inspection System. Gulf's existing Common Transmission Database will be utilized to capture all forensic information. Gulf did experience outages and damage from transmission outages, planned outages, and tornadoe outages in 2015, but these outage events did not produce major storm related data. Gulf will continue its record keeping and analysis of data associated with overhead and underground outages. Gulf collects, for the following situations, data on outages as they occur: if underground cables are direct buried, if they are direct buried but the cable is injected, or in a conduit, and whether the pole type is concrete or wood.

- TECO's GIS continues to serve as the foundational database for all transmission, substation and distribution facilities. Development and improvement of the GIS continues on an ongoing basis. In 2015, over 30 changes and enhancements to the system included: service pack upgrades, data updates, and functionality changes to better conform to business processes and improve the user experience. TECO uses an outside contractor to execute the process that includes the establishment of a field asset database, forensic measurement protocol, integration of forensics activity with overall system restoration, forensics data sampling and reporting format. In 2015, TECO did not incur costs associated with Post-Storm Data Collection and Forensic Analysis because there were no major storms that impacted its service area. TECO incurs costs based on the category of storm and level of activation of the outside contractor depending upon the number of storm events in 2016. The data collected following a significant storm will be used to determine the root cause of damage. However, in 2015, due to the lack of severity of weather events in TECO's service area, meaningful performance data of overhead versus underground systems was not available. An established process is in place for collecting post-storm data and forensic analysis.

Initiative 8 - Increased Utility Coordination with Local Governments

The Commission's goal with this program is to promote an 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 inform customers and communities that 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 undergrounding, 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's 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.

- DEF's storm planning and response program is operational year-round to respond to catastrophic events at anytime. There are approximately 40 employees assigned full-time, year-round to coordinate with local governments on issues such as emergency planning, vegetation management, undergrounding, and service related issues. In 2015, DEF visited several EOCs in different counties to review storm procedures and participated in several different storm drills including Florida's state wide annual storm drill. For 2016, DEF plans to continue to participate in county storm drills and Florida's State Wide Annual Storm Drill. Also in 2015, DEF held a forum specifically for commercial, industrial, and governmental customers. DEF held 26 individual Live Line demonstration sessions across its service territory. These events addressed emergency response, general safety awareness, a utility's perspective on hurricane preparedness, and safety issues. Representatives from the sheriff's departments, public schools, and fire/rescue departments attended these sessions. For 2016, DEF plans to expand the number of Live Line demonstration session.

- FPL, in 2015, continued efforts to improve local government coordination. The company conducted meetings with county emergency operations managers to discuss critical infrastructure locations in each jurisdiction. FPL also invited federal and state emergency management personnel to participate in FPL's annual Storm Preparedness Drill. In 2015, FPL conducted 640 community presentations providing information on storm readiness and other topics of community interest. During the 2015 storm season, FPL activated its dedicated Government Portal Website, which has information that government leaders rely on to help during storm recovery. The site contains media alerts and releases, customer outage information and maps, critical infrastructure facility information, estimated time of restoration information, FPL staging site locations and available personnel resources.

- FPUC has continued its involvement with local governments regarding reliability issues with emphasis on vegetation management. FPUC and the City of Marianna have worked together to complete an undergrounding project in the downtown area and are planning further projects. FPUC is also working with a citizens group on Amelia Island that is interested in undergrounding facilities on the Island. FPUC's current practice is to have its personnel located at the counties EOCs on a 24-hour basis during emergency situations to ensure good communication.

- Gulf meets with governmental entities for all major projects, as appropriate, to discuss the scope of the projects and coordinate activities involved with project implementation. Gulf maintains year-round contact with city and county officials to ensure cooperation in planning, good communications, and coordination of activities. In 2015, Gulf participated in hurricane drills, EOC training, and statewide exercises. Gulf assigns employees to county EOCs throughout Northwest Florida to assist during emergencies. Gulf also conducts a storm drill each year. Gulf's service areas were affected by two small weather

events that were handled by local district offices. Therefore, Gulf did not fully activate its Corporate Emergency Management Center.

- TECO's communication efforts, in 2015, focused on maintaining existing vital governmental contacts and continued participation on standing disaster recovery planning committees. TECO participated in joint storm workshops, training involving governmental officials and exercises with Hillsborough, Polk, and Pinellas Counties and municipal agencies. TECO continues to work with local, state, and federal governments to streamline the flow of information to help efforts to restore all service as quickly as possible.

Initiative 9 - Collaborative Research on Effects of Hurricane Winds and Storm Surge

PURC assisted Florida's electric utilities by coordinating a three-year research effort, from 2006 to 2009, in the area of hardening the electric infrastructure to better withstand and recover from hurricanes. Hurricane winds, undergrounding, and vegetation management research are key areas explored in these efforts by all of the research sponsors involved with PURC. Since that time, PURC compiles a research report every year to provide the utilities with results from its research. The latest report was issued February 2016.

Current projects in this effort include: (1) research on undergrounding existing electric distribution facilities by surveying the current literature including case analyses of Florida underground projects, and developing a model for projecting the benefits and costs of converting overhead facilities to underground; (2) data gathering and analysis of hurricane winds in Florida and the possible expansion of a hurricane simulator that can be used to test hardening approaches; and (3) an initiative to increase public outreach to address storm preparedness in the wake of Hurricane Sandy. This included reaching out to affected states for further data and a print debate surrounding overhead vs. underground installation of power lines.

The effort is the result of FPSC Order No. PSC-06-0351-PAA-EI, issued April 25, 2006, in Docket No. 060198-EI, directing each investor-owned electric utility to establish a plan that increases collaborative research to further the development of storm resilient electric utility infrastructure and technologies that reduce storm restoration costs and outages to customers. The order directed them to solicit participation from municipal electric utilities and rural electric cooperatives in addition to available educational and research organizations.

The IOUs joined with the municipal electric utilities and rural electric cooperatives in the state (collectively referred to as the Project Sponsors) to form a steering committee of representatives from each utility and entered into a Memorandum of Understanding (MOU) with PURC. In serving as the research coordinator for the project outlined by the MOU, PURC manages the workflow and communications, develops work plans, serves as a subject matter expert and conducts research, facilitates the hiring of experts, coordinates with research vendors, advise the project sponsors, and provides reports for project activities.

Undergrounding Of Electric Utility Infrastructure: All five IOUs participate with PURC, along with the other cooperative and municipal electric utilities, in order to perform beneficial research regarding hurricane winds and storm surge within the state. The group's research shows

that while underground systems on average have fewer outages than overhead systems, they can sometimes take longer to repair. Analyses of hurricane damage in Florida found that underground systems might be particularly susceptible to storm surge. The research on undergrounding has been the focus for understanding the economics and effects of hardening strategies, including undergrounding. As a result, Quanta Technologies was contracted to conduct a three-phase project to understand the economics and effect of hardening policies in order to make informed decisions regarding hardening of underground facilities.

Phase I of the project was a meta-analysis of existing research, reports, methodologies, and case studies. Phase II examined specific undergrounding project case studies in Florida and included an evaluation of relevant case studies from other hurricane prone states and other parts of the world. Phase III developed a methodology to identify and evaluate the costs and benefits of undergrounding specific facilities in Florida. The primary focus is the impact of undergrounding on hurricane performance. This study also considered benefits and drawbacks of undergrounding during non-hurricane conditions. The collaborative refined the computer model developed by Quanta Technologies. The reports for Phase I, Phase II, and Phase III are available at http://warrington.ufl.edu/purc/research/energy.asp.

PURC and the utilities have worked to fill information gaps for model inputs. There have also been significant investments and efforts in the area of forensic data collection. Currently there is no data because Florida has not been directly affected by a hurricane since the database software was completed. Future efforts to refine the model will occur when such data becomes available.

PURC has worked with doctoral and master's candidates at the University of Florida to assess the inter-relationships between wind speed and other environmental factors on utility damage. PURC was contacted by the University of Wisconsin and North Carolina State University, who showed interest in the model, but no additional relationships have been established. Researchers at the Argonne National Laboratory also contacted PURC. The researchers were interested in modeling the effects of storm damage and developed a deterministic model, rather than a probabilistic model, themselves. The researchers did use many of the factors that the collaborative attempted to quantify. The researchers that contacted PURC cite the model as the only non-proprietary model of its kind.

Hurricane Wind Effects: The collaborative group is trying to determine the appropriate level of hardening required for the electric utility infrastructure against wind damage from hurricanes. The project's focus was divided into two categories: (1) accurate characterization of severe dynamic wind loading; and (2) understanding the likely failure modes for different wind conditions. An agreement with WeatherFlow, Inc., to study the effects of dynamic wind conditions upon hurricane landfall includes 50 permanent wind-monitoring stations around the coast of Florida. This agreement expired in 2012; however, the data being collected at the stations is available to PURC on a complimentary basis. In addition, PURC has developed a uniform forensics data gathering system for use by the utilities and a database that will allow for data sharing that will match the forensics data with the wind monitoring and other weather data.

Public Outreach: To increase public outreach, PURC was asked to contribute an article to the second quarter issue of *Utility Horizons*. This essay described the modeling methodology for assessing the undergrounding of power lines and provided a link to an article in the *Electricity*

Journal provided by PURC. This article discusses Florida's cooperative approach. In addition, the director of PURC has conducted interviews for the general press on the costs and benefits of underground power lines.

In response to Hurricane Sandy, PURC researchers discussed the collaborative effort in Florida with the engineering departments of the state regulators in Connecticut, New York, and New Jersey, and regulators in Jamaica, Grenada, and Curacao. The regulators and policymakers showed interest in the collaborative effort and its results, but have shown no further interest in participating in the research effort.

Initiative 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. In addition, participation in the Commission's annual pre-storm preparedness briefing is required which focuses on the extent to which all Florida electric utilities are prepared for potential hurricane events. The following are some 2015 highlights for each IOU.

- DEF's Storm Recovery Plan is reviewed and updated annually based on lessons learned from the previous storm season and organizational needs. The Distribution System Storm Operational Plan and the Transmission Storm Plan incorporates organizational redesign at DEF, internal feedback, suggestions, and customer survey responses. DEF uses the Extreme Wind Loading standards in accordance with the National Electrical Safety Code, Rule 250C in all planning for transmission upgrades, rebuilds and expansions of existing facilities.

- FPL's Storm Emergency Plan identifies emergency conditions associated with natural disasters and responsibilities and duties of FPL's Emergency Response Organization. The plan provides a summary of overall emergency process, systems, accounting, safe work practices, etc. The plan also provides information on the Emergency Response Organization conducting damage assessment, restoration response, supporting organizations for external agency support, such as regulatory bodies, EOC's, local governments, etc., and support to major commercial and industrial customers. The plan is reviewed annually and revised as necessary.

- FPUC utilizes its Disaster Preparedness and Recovery Plan to prepare for storms annually and will ensure all employees are aware of their responsibilities. The objectives included in the plan to ensure orderly and efficient service restoration are: the safety of employees, contractors, and the general public; early damage assessment in order to develop manpower requirements; request additional manpower as soon as conditions and information indicate the need; provide for orderly restoration activities; provide all logistical needs for employees and contractors; provide ongoing preparation of FPUC's employee buildings, equipment and support functions; and provide support and additional resources for employees and their families. The plan was updated in 2015 and included: updated logos, updated sections to clarify several roles and responsibilities for the NE division, and the organizational chart to reflect employee changes and new assignments.

- Gulf's 2015 Storm Restoration Procedures Manual is currently being revised and reviewed and all changes will be incorporated by April 1, 2016. Gulf continues to provide annual refresher training in the area of storm preparedness for various storm roles at minimal cost. A mock hurricane drill was completed on May 11, 2015. The drill involved testing Gulf' Emergency News Now system and the readiness to deal with an unexpected event during a restoration effort. Gulf uses the strategy described in its Storm Restoration Procedures Manual to respond to any natural disaster that may occur. Annually, Gulf develops and refines its planning and preparations for the possibility of a natural disaster. Gulf's restoration procedures establish a plan of action to be utilized for the operation and restoration of generation, transmission, and distribution facilities during major disasters. Gulf's 2016 annual hurricane drill was held on May 3, 2016.

- TECO's Emergency Management Plans address all hazards, including extreme weather events. TECO continues to use the policy labeled Emergency Management and Business Continuity. This policy delineates the responsibility at employee, company, and community levels. TECO continues to participate in internal and external preparedness exercises, collaborating with government emergency management agencies, at local, State and Federal levels. Prior to June 1, 2015, all emergency support functions were reviewed, personnel trained, and Incident Command System Logistics and Planning Section Plans were tested. TECO launched its Emergency Management Twitter Account and Facebook group in 2015, with the purpose of communicating with governmental officials, customers, and TECO's employees families during emergency situations.

Section II: Actual Distribution Service Reliability

Electric utility customers are affected by all outage and momentary events, regardless of where problems originate. For example, generation events and transmission events, while remote from the distribution system serving a customer, affect the distribution service experience. Actual reliability data is the accumulation of these events.

The actual reliability data includes two subsets of outage data: (1) data on excludable events; and (2) data pertaining to normal day-to-day activities. Rule 25-6.0455(4), F.A.C., explicitly lists outage events that may be excluded:

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

This section provides an overview of each IOU's actual 2015 performance data and focuses on the exclusions allowed by the rule.

Duke Energy Florida: Actual Data

Table 2-1 provides an overview of key DEF metrics: Customer Minutes of Interruption (CMI) and Customer Interruptions (CI) for 2015. Excludable outage events accounted for approximately 19 percent of the minutes of interruption experienced by DEF's customers. In 2015, DEF experienced the Pasco County EOC activation that occurred on August 3-6, 2015, due to severe thunderstorms causing flooding of the Anclote River. The Extreme Weather event accounted for approximately 1 percent of the total minutes of interruption on its distribution system.

The biggest impact on CMI were the Planned Service Interruptions events, which accounted for approximately 10 percent of the excludable minutes of interruptions. DEF explained that investments in proactive asset replacements and projects increased approximately 50 percent between 2014 and 2015. This increase in proactive asset replacements and projects drove the increase in Planned Service Interruptions. Between 2014 and 2015, DEF experienced approximately a 10 percent increase in the Planned Service Interruptions.

Table 2-1.
DEF's 2015 Customer Minutes of Interruptions and Customer Interruptions

2015	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	% of Actual	Value	% of Actual
Reported Actual Data	**170,005,135**		**2,381,047**	
Documented Exclusions				
Planned Service Interruptions	16,660,902	9.80%	396,074	16.63%
Named Storms		0.00%		0.00%
Tornadoes		0.00%		0.00%
Ice on Lines		0.00%		0.00%
Planned Load Management Events		0.00%		0.00%
Generation/Transmission Events	14,069,157	8.28%	278,824	11.71%
Extreme Weather (EOC Activation/Fire)	1,853,804	1.09%	9,587	0.40%
Reported Adjusted Data	**137,421,272**	**80.83%**	**1,696,562**	**71.25%**

Source: DEF's 2015 distribution service reliability report.

Florida Power & Light Company: Actual Data

Table 2-2 provides an overview of FPL's CMI and CI figures for 2015. Excludable outage events accounted for approximately 11 percent of the minutes of interruption experienced by FPL's customers. FPL reported 13 tornados and Tropical Storm Erika in 2015. The 13 tornados accounted for approximately 1 percent and Tropical Storm Erika accounted for approximately 3 percent of the excludable outage events total. FPL reports that even though Tropical Storm Erika did not make landfall, all of FPL's territories were impacted on August 28 through August 31, 2015. The tornados affected the following regions:

- Toledo Blade region on January 25, 2015
- Boca Raton region on February 5, April 23, August 13 and August 14, 2015
- Wingate region on May 25, 2015
- West Palm region on June10 and August 3, 2015
- North Florida region on June 10 and September 12, 2015
- Gulfstream on September 16, 2015
- Naples on September 29, 2015
- Manasota on October 11, 2015

The biggest impact on CMI was Planned Service Interruptions events, which accounted for approximately 8 percent of the excludable minutes of interruption. FPL explained that Planned Service Interruptions events are classified in two categories – Crew-Requested and Customer-Requested. The Crew-Requested Planned Outages include facilities, equipment repairs, and distribution facilities upgrades. The Customer-Requested Planned Outages include repairs and/or upgrades to customer-owned equipment. Included in this category is the conversion of overhead to underground facilities. All FPL regions were affected by Planned Service Interruptions events.

FPL continually evaluates the need for Planned Service Interruptions by determining if there are alternative work methods, temporary reconfiguration of a feeder or lateral and/or utilization of switching. These processes could minimize or prevent such outages by limiting the number of customer affected and possibly reducing the duration of the planned interruptions. If an outage is not preventable, FPL works with its customers to schedule the necessary outages during a time that is convenient for the customer.

Table 2-2.
FPL's 2015 Customer Minutes of Interruptions and Customer Interruptions

2015	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	**% of Actual**	**Value**	**% of Actual**
Reported Actual Data (1)	**320,862,954**		**5,256,961**	
Documented Exclusions				
Planned Service Interruptions	24,259,161	7.56%	315,503	6.00%
Named Storms	8,461,237	2.64%	113536	2.16%
Tornadoes	3,422,509	1.07%	54423	1.04%
Ice on Lines	0	0.00%	0	0.00%
Planned Load Management Events	0	0.00%	0	0.00%
Generation/Transmission Events (2)	9,685,249	3.02%	647,936	12.33%
Extreme Weather (EOC Activation/Fire)	0	0.00%	0	0.00%
Reported Adjusted Data	**284,720,047**	**88.74%**	**4,773,499**	**90.80%**

Notes: (1) Excludes Generation/Transmission Events per Rule 25-6.0455(2), .F.A.C.; and (2) Information Only, as reported actual data already excludes Generation/Transmission Events.
Source: FPL's 2015 distribution service reliability report.

Florida Public Utilities Company: Actual Data

Table 2-3 provides an overview of FPUC's CMI and CI figures for 2015. Excludable outage events accounted for approximately 52 percent of the minutes of interruption experienced by FPUC's customers. FPUC reported that one tornado, which occurred on July 7, 2015, affected the Northwest Division. The tornado accounted for less than 1 percent of the excludable minutes of interruption.

The biggest impact on CMI was Generation/Transmission events, which accounted for approximately 48 percent of the excludable minutes of interruption. FPUC explained that the Northeast Division was affected by two outages on April 8 and June 19, 2015. On April 8, 2015, FPUC's customers lost power for 151 minutes and 5 minutes on June 19, 2015, when JEA experienced severe weather conditions that tripped the 138 KV line to Amelia Island. There were several other transmission and substation outages during 2015 mainly related to severe weather conditions. FPUC will continue to implement its long-term plan of enhancing lightning protection on its system.

The Northwest Division experienced five substation outages due to the loss of power by Gulf. Three outages occurred on June 30, 2015, and effected substations in Altha, which lost power for 59 minutes, Blountstown, which lost power for 5 hours and 36 minutes, and Bristol, which lost power for 5 hours and 36 minutes. Two more outages occurred on August 14, 2015, and effected substations in Altha and Bristol, which both lost power, for 1 hour and 46 minutes for both substations. FPUC noted that all five substation outages were caused by trees falling across Gulf's transmission system which provides power to the Northwest Division.

Table 2-3.
FPUC's 2015 Customer Minutes of Interruptions and Customer Interruptions

2015	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	**% of Actual**	**Value**	**% of Actual**
Reported Actual Data	**7,566,016**		**94,917**	
Documented Exclusions				
Planned Service Interruptions	309,053	4.08%	5,932	6.25%
Named Storms	0	0.00%	0	0.00%
Tornadoes	4,176	0.06%	36	0.04%
Ice on Lines	0	0.00%	0	0.00%
Planned Load Management Events	0	0.00%	0	0.00%
Generation/Transmission Events	3,630,969	47.99%	42,992	45.29%
Extreme Weather (EOC Activation/Fire)	0	0.00%	0	0.00%
Reported Adjusted Data	**3,621,818**	**47.87%**	**45,957**	**48.42%**

Source: FPUC's 2015 distribution service reliability report.

Gulf Power Company: Actual Data

Table 2-4 provides an overview of Gulf's CMI and CI figures for 2015. Excludable outage events accounted for approximately 14 percent of the minutes of interruption experienced by Gulf's customers. Gulf reported four tornados which accounted for approximately 2 percent of the excludable minutes of interruption. The tornados affected the following regions:

- ♦ Eastern region on April 19 and November 2, 2015
- ♦ Central region on November 18, 2015
- ♦ Western region on December 28, 2015

The biggest impact on CMI was Transmission events, which accounted for approximately 6 percent of the excludable minutes of interruption. Gulf reported the causes for the transmission events included deterioration, external utility trouble, switching error, an animal, distribution trouble and tree cut/public right of way. The external utility trouble happened when the external utility lost power on the lines serving Gulf's substations.

Table 2-4.
Gulf's 2015 Customer Minutes of Interruption and Customer Interruptions

2015	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	% of Actual	Value	% of Actual
Reported Actual Data	**46,306,096**		**558,462**	
Documented Exclusions				
Planned Service Interruptions	2,896,293	6.25%	49,714	8.90%
Named Storms		0.00%		0.00%
Tornadoes	716,595	1.55%	4,648	0.83%
Ice on Lines		0.00%		0.00%
Planned Load Management Events		0.00%		0.00%
Generation/Transmission Events	3,001,115	6.48%	45,441	8.14%
Extreme Weather (EOC Activation/Fire)		0.00%		0.00%
Reported Adjusted Data	**39,692,093**	**85.72%**	**458,659**	**82.13%**

Source: Gulf's 2015 distribution service reliability report.

Tampa Electric Company: Actual Data

Table 2-5 provides an overview of TECO's CMI and CI figures for 2015. Excludable outage events accounted for approximately 19 percent of the minutes of interruption experienced by TECO's customers. TECO reported no extreme weather events during 2015.

The biggest impact on CMI was the Generation/Transmission events, which accounted for approximately 15 percent of the excludable minutes of interruption. TECO reported 13 transmission outages in 2015. The causes listed included equipment failure, lightning, vehicles, broken water main, bird nest fouling, and storms. It appears that all equipment failures were repaired, the bird nest was removed, and poles were repaired.

Table 2-5.
TECO's 2015 Customer Minutes of Interruptions and Customer Interruptions

2015	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	% of Actual	Value	% of Actual
Reported Actual Data	**70,745,234**		**1,105,627**	
Documented Exclusions				
Planned Service Interruptions	2,630,633	3.72%	148,639	13.44%
Named Storms		0.00%		0.00%
Tornadoes		0.00%		0.00%
Ice on Lines		0.00%		0.00%
Planned Load Management Events		0.00%		0.00%
Generation/Transmission Events	10,756,176	15.20%	211,292	19.11%
Extreme Weather (EOC Activation/Fire)		0.00%		0.00%
Reported Adjusted Data	**57,358,425**	**81.08%**	**745,696**	**67.45%**

Source: TECO's 2015 distribution service reliability report.

Section III: Adjusted Distribution Service Reliability Review of Individual Utilities

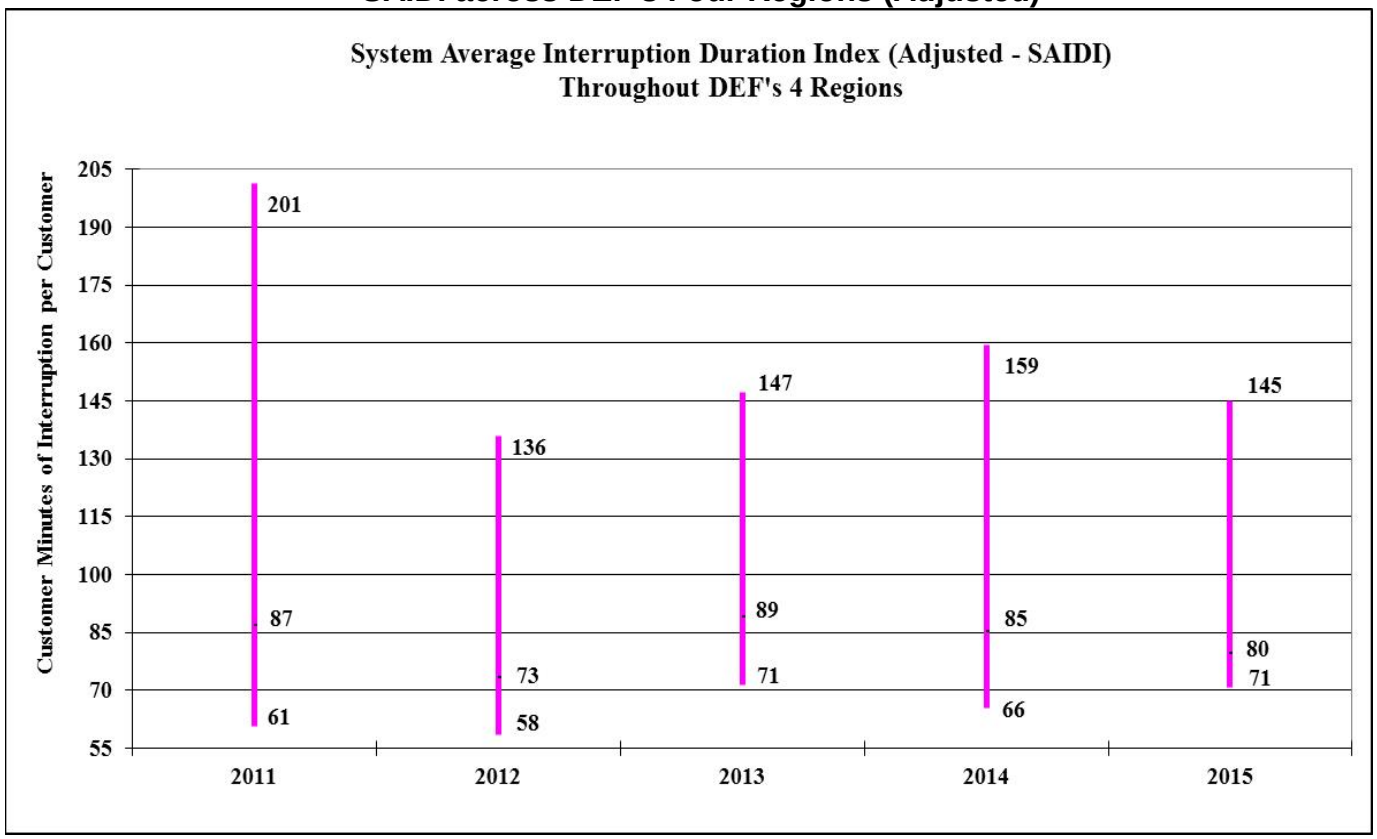
The adjusted distribution reliability metrics or indices provide insight into potential trends in a utility's daily practices and maintenance of its distribution facilities. This section of the review is based on each utility's reported adjusted data.

Duke Energy Florida: Adjusted Data

Figure 3-1 charts the adjusted SAIDI recorded across DEF's system and depicts an increase in the lowest value and decreases in the average and highest values for 2015. DEF reported that in 2015, the flooding of the Anclote River, which caused the activation of the Pasco County Emergency Operations Center, account for 1.1 customer minutes of interruptions per customers. This event was the only weather excluded event in 2015. DEF notes that 2015 was an extremely active storm season with multiple thunderstorms causing higher outage volumes in the North and South Coastal regions and two abnormally long feeder cable outages in the South Coastal region.

DEF's service territory is comprised of four regions: North Coastal, South Coastal, North Central, and South Central. **Figure 3-1** illustrates that the North Coastal region continues to report the poorest SAIDI over the last five years, fluctuating between 136 minutes and 201 minutes. While the South Coastal and South Central regions have the best or lowest SAIDI for the same period. The North Coastal region is rural and has more square miles when compared to the other regions. This region is also served by predominantly long circuits with approximately 7,700 miles of overhead and underground main circuits. DEF explained that these factors result in higher exposure to outage causes and higher reliability indices.

Figure 3-1.
SAIDI across DEF's Four Regions (Adjusted)



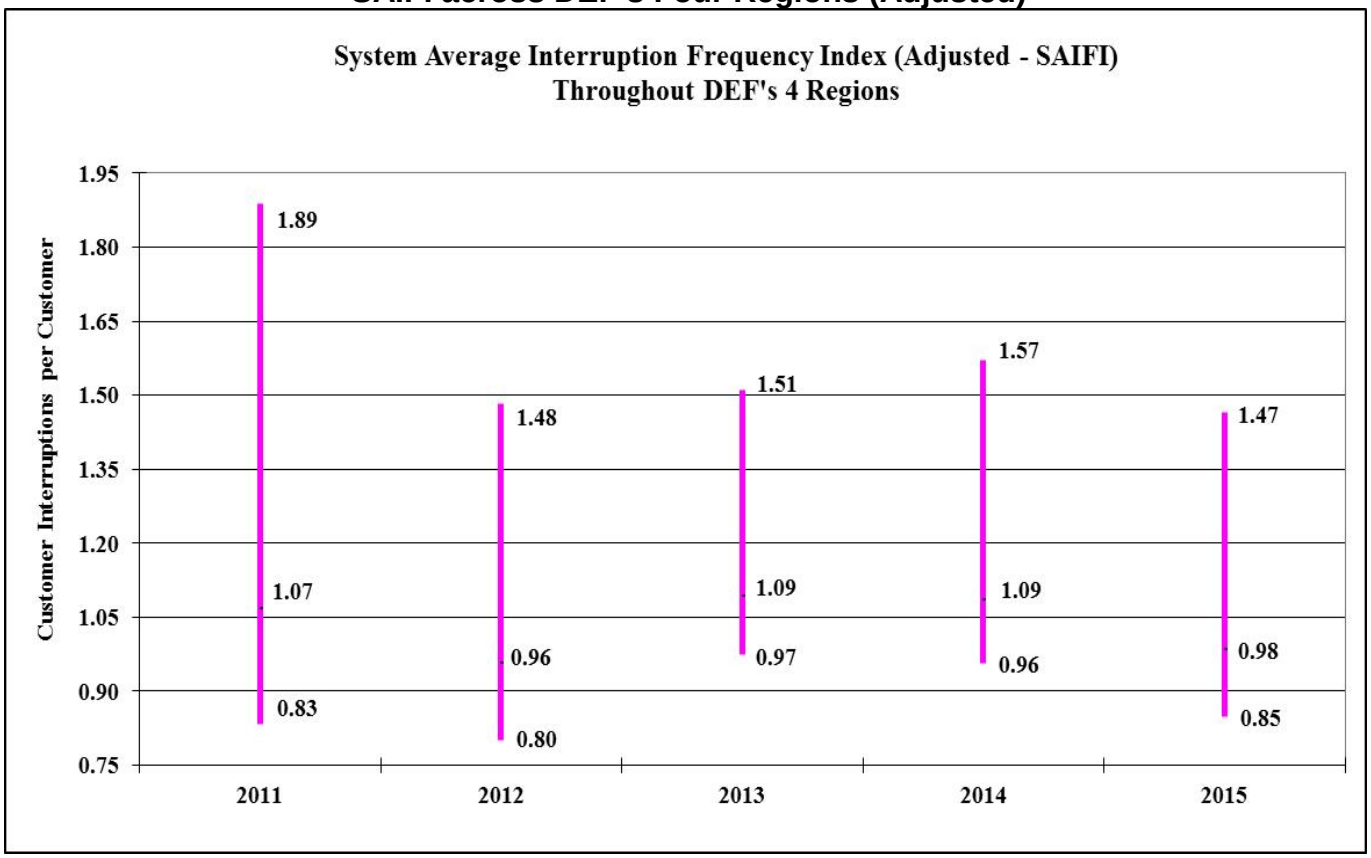
DEF's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest SAIDI	North Coastal	North Coastal	North Coastal	North Coastal	North Coastal
Lowest SAIDI	South Central	South Coastal	South Coastal	South Coastal	South Central

Source: DEF's 2011-2015 distribution service reliability reports.

Figure 3-2 shows the adjusted SAIFI across DEF's system. The maximum and average SAIFI indexes are trending downward as the minimum SAIFI is trending slightly upward. There were decreases of 6 percent for the maximum value, 10 percent for the average value, and 11 percent for the minimum value, in 2015. The North Central region had the lowest number of interruptions, while the North Coastal region continues to have the highest number of interruptions.

Figure 3-2.
SAIFI across DEF's Four Regions (Adjusted)



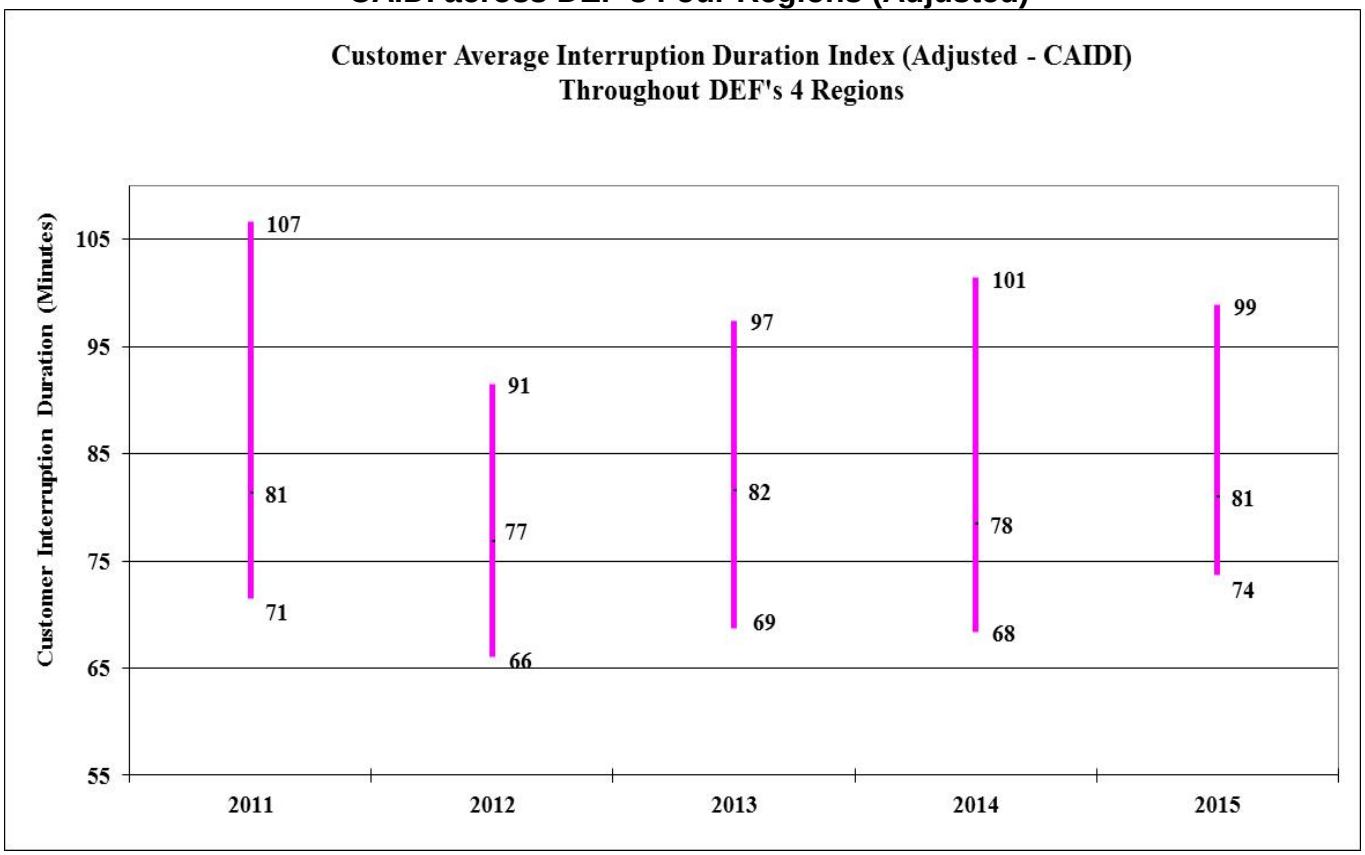
DEF's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest SAIFI	North Coastal	North Coastal	North Coastal	North Coastal	North Coastal
Lowest SAIFI	South Central	South Central	South Central	South Coastal	North Central

Source: DEF's 2011-2015 distribution service reliability reports.

Figure 3-3 illustrates the CAIDI, or the average number of minutes a customer is without power when a service interruption occurs, for DEF's four regions. DEF's adjusted CAIDI is remaining relatively flat for a five-year period from 81 minutes in 2011 to 81 minutes in 2015 even though there was a 4 percent increase from 78 minutes in 2014 to 81 minutes in 2015. The North Coastal region has continued to have the highest CAIDI level for the past five years with the maximum CAIDI trending downward. The South Coastal region has maintained the lowest CAIDI level during the same period with the minimum CAIDI trending upward.

Figure 3-3.
CAIDI across DEF's Four Regions (Adjusted)



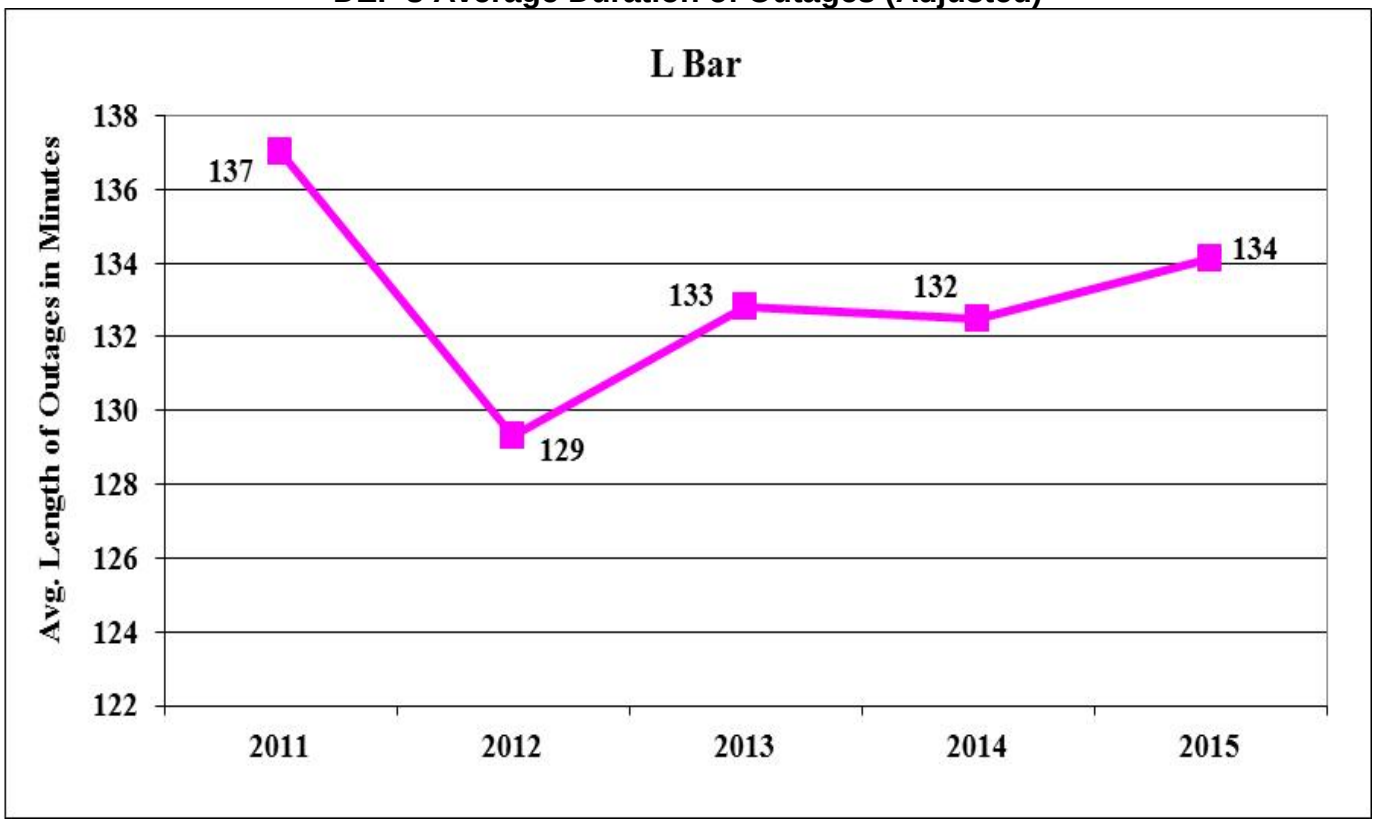
DEF's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest CAIDI	North Coastal	North Coastal	North Coastal	North Coastal	North Coastal
Lowest CAIDI	South Coastal	South Coastal	South Coastal	South Coastal	South Coastal

Source: DEF's 2011-2015 distribution service reliability reports.

Figure 3-4 is the average length of time DEF spends restoring customers affected by outage events, excluding hurricanes and certain other outage events. This is displayed by the index L-Bar in the graph below. The data demonstrates an overall 2.2 percent decrease of outage durations since 2011, and a 1.5 percent increase from 2014 to 2015. DEF's overall L-Bar index is trending slightly downward, indicating that DEF is spending a shorter time restoring service from outage events.

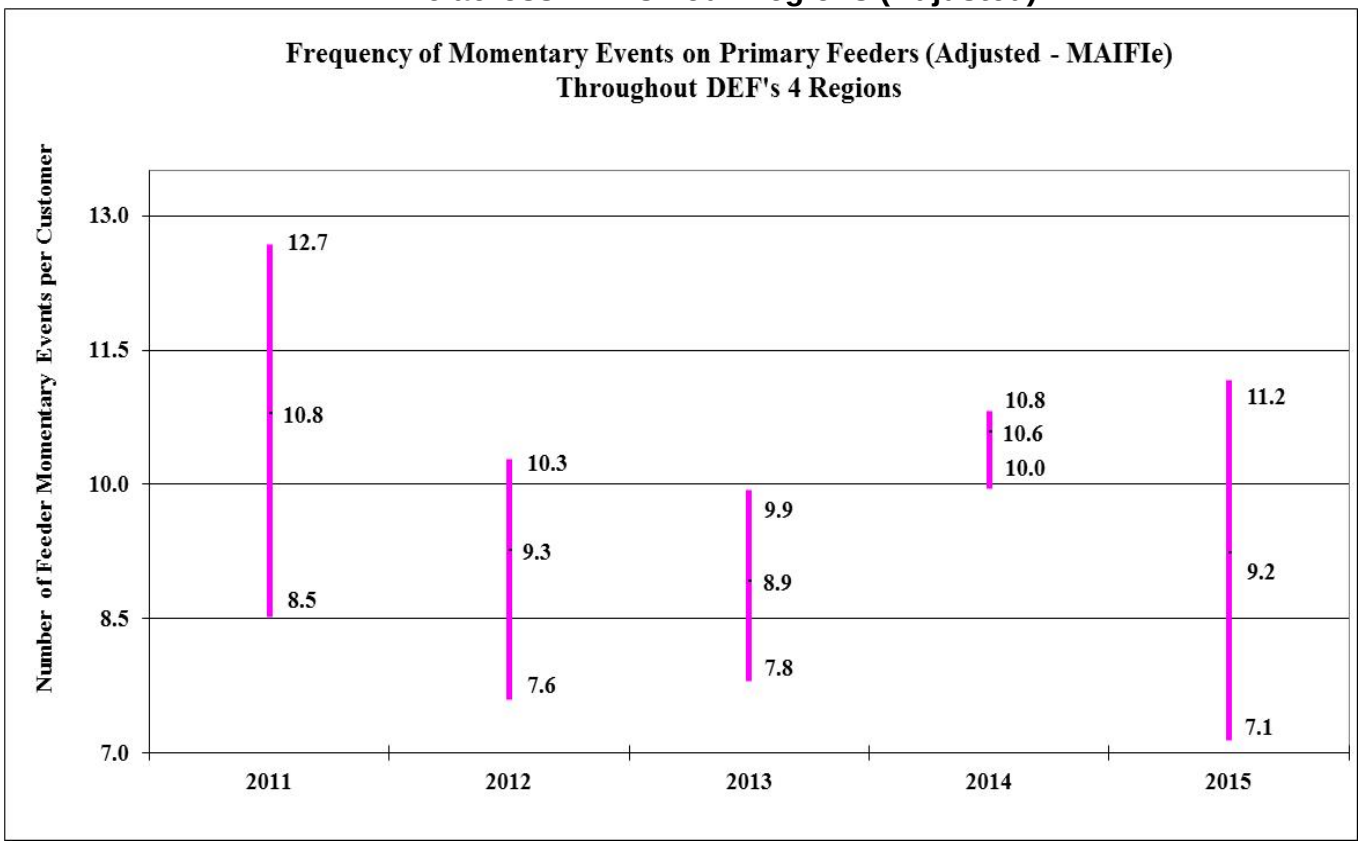
Figure 3-4.
DEF's Average Duration of Outages (Adjusted)



Source: DEF's 2011-2015 distribution service reliability reports.

Figure 3-5 illustrates the frequency of momentary events on primary circuits for DEF's customers recorded across its system. These momentary events often affect a small group of customers. A review of the supporting data suggests that the MAIFIe results between 2011 and 2015 appear to be trending downward showing improvement and there was a decrease in the average MAIFIe of 13 percent from 2014 to 2015. The North Coastal and South Central regions appear to have the best (lowest) results for the last five years. There was a 29 percent decrease for the lowest MAIFIe from 2014 to 2015. The South Coastal and North Central regions appear to have the worst (highest) results for the last five years. There was a 4 percent increase from 2014 to 2015.

Figure 3-5.
MAIFIe across DEF's Four Regions (Adjusted)



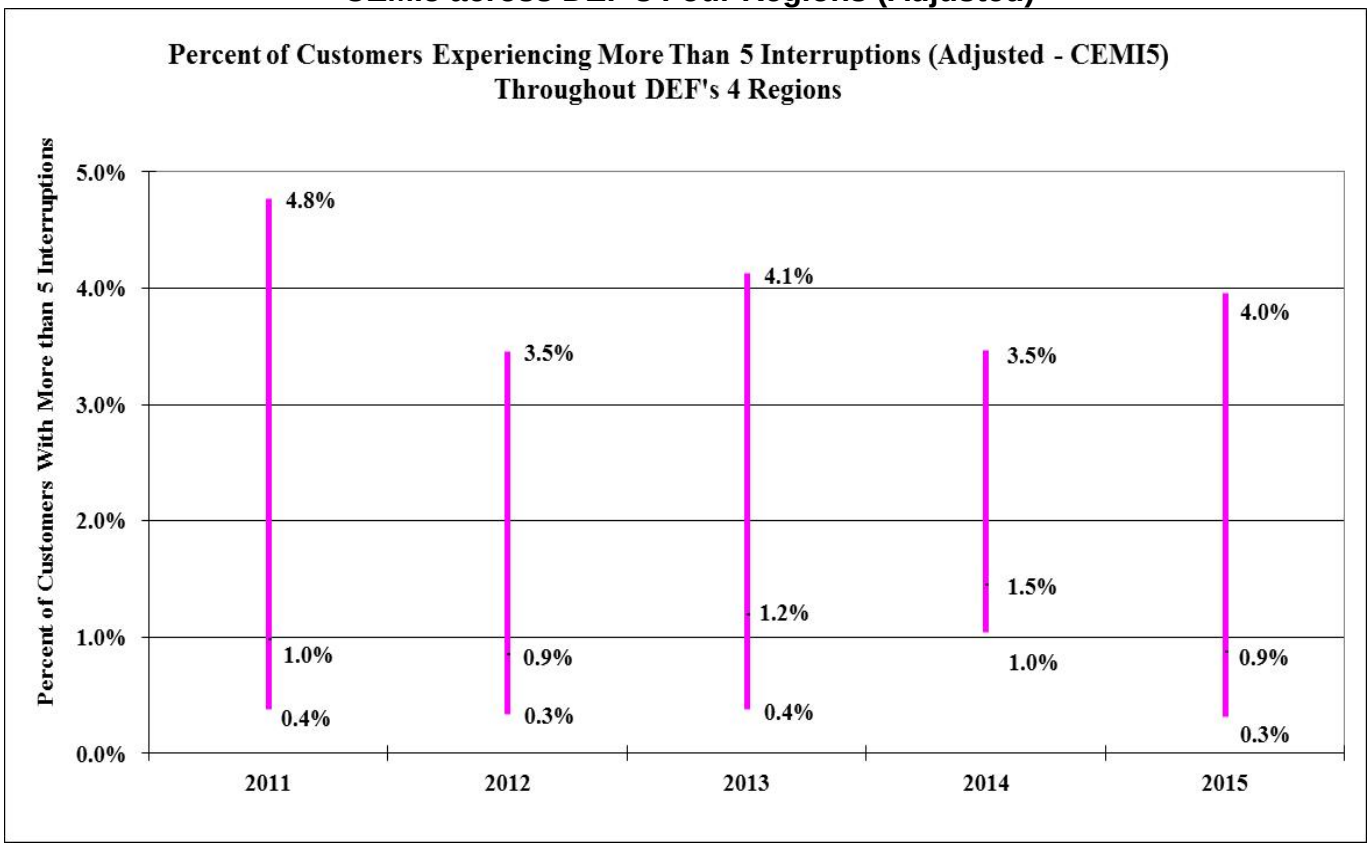
DEF's Regions with the Highest and Lowest Adjusted MAIFIe Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest MAIFIe	South Coastal	South Coastal	South Coastal	North Central	South Coastal
Lowest MAIFIe	South Central	South Central	South Central	North Coastal	North Coastal

Source: DEF's 2011-2015 distribution service reliability reports.

Figure 3-6 charts the percentage of DEF's customers experiencing more than five interruptions over the last five years. DEF reported a decrease in the average CEMI5 performance from 1.5 percent in 2014 to 0.9 percent in 2015; however the average CEMI5 is trending upward over the past five years. The North Central region has the lowest reported percentage for all of DEF's regions and the North Coastal region continues to have the highest reported percentage.

Figure 3-6.
CEMI5 across DEF's Four Regions (Adjusted)



DEF's Regions with the Highest and Lowest Adjusted CEMI5 Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest CEMI5	North Coastal	North Coastal	North Coastal	North Coastal	North Coastal
Lowest CEMI5	South Coastal	South Coastal	South Coastal	South Central	North Central

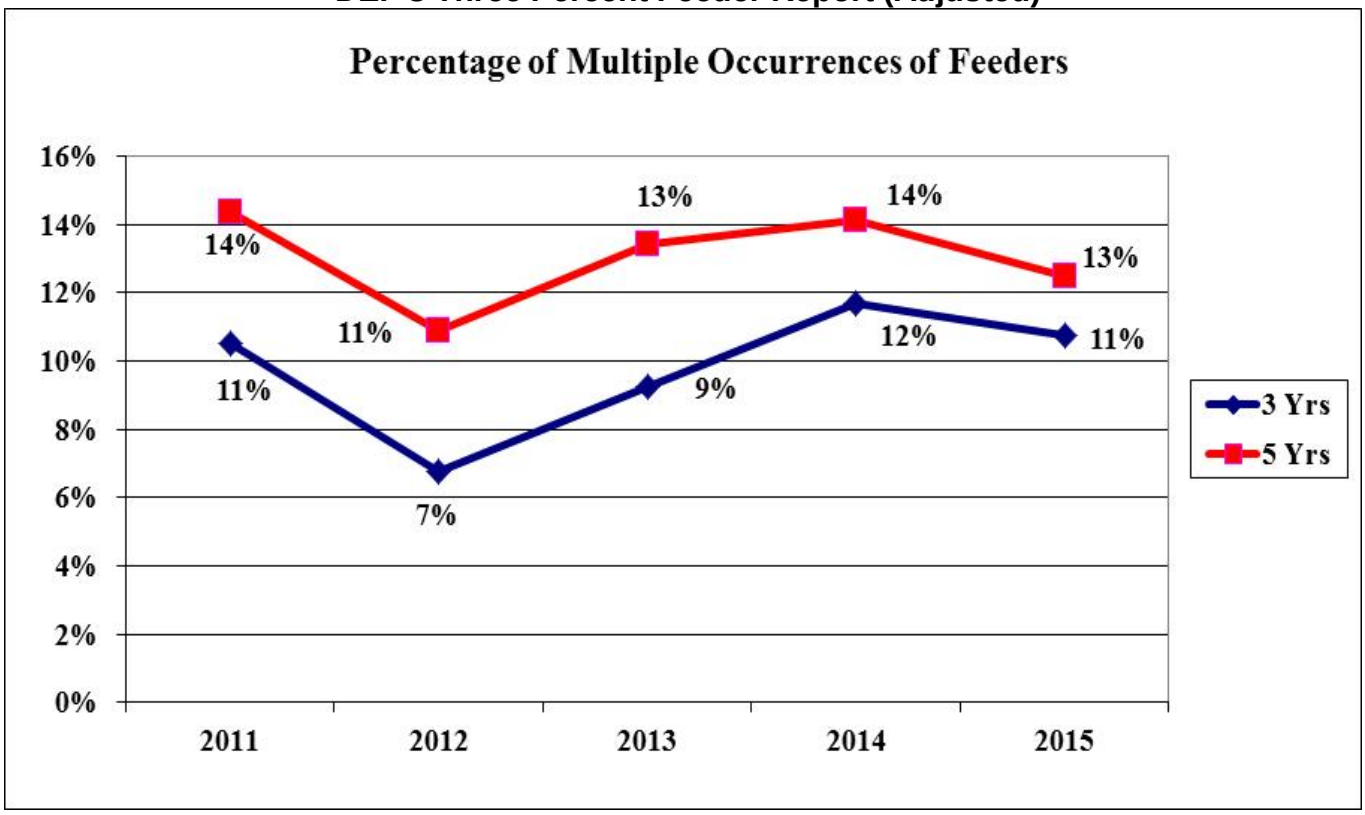
Source: DEF's 2011-2015 distribution service reliability reports.

Figure 3-7 shows the fraction of multiple occurrences of feeders using a three-year and five-year basis. During the period of 2011 to 2015, the five-year fraction of multiple occurrences is relatively flat as the three-year fraction of multiple occurrences is trending upward. The Three Percent Feeder Report lists the top three percent of feeders with the most feeder outage events. The fraction of multiple occurrences is calculated from the number of recurrences divided by the number of feeders reported.

Staff notes that one of DEF's feeders has been on the Three Percent Feeder Report for the last four years back-to-back. According to DEF, tree outages and the configuration of the circuit contributed to the vast majority of the outage causes for this feeder. DEF has not trimmed any trees around this feeder since routine trimming was completed in 2014. DEF reported that its plans to rebuild approximately three miles of this feeder, which will act as a double circuit line with another feeder, will be completed by June 2016. All of the outages that occurred in 2015 on this feeder were located along this three mile section. This feeder also had an infrared scan in June 2015 and no issues were found. DEF will perform another infrared scan in 2016.

Another feeder has been on the Three Percent Feeder Report for three years. DEF performed an infrared scan in June 2015 and no issues were found. DEF will perform another infrared scan in 2016. In addition, DEF trimmed 55.4 miles of the feeder laterals, which was completed in January 2016. There were five outages in 2015 related to this feeder. Storms caused two of the outages, wind cause one outage, a connector failure cause one outage, and the cause of the last outage was unknown.

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

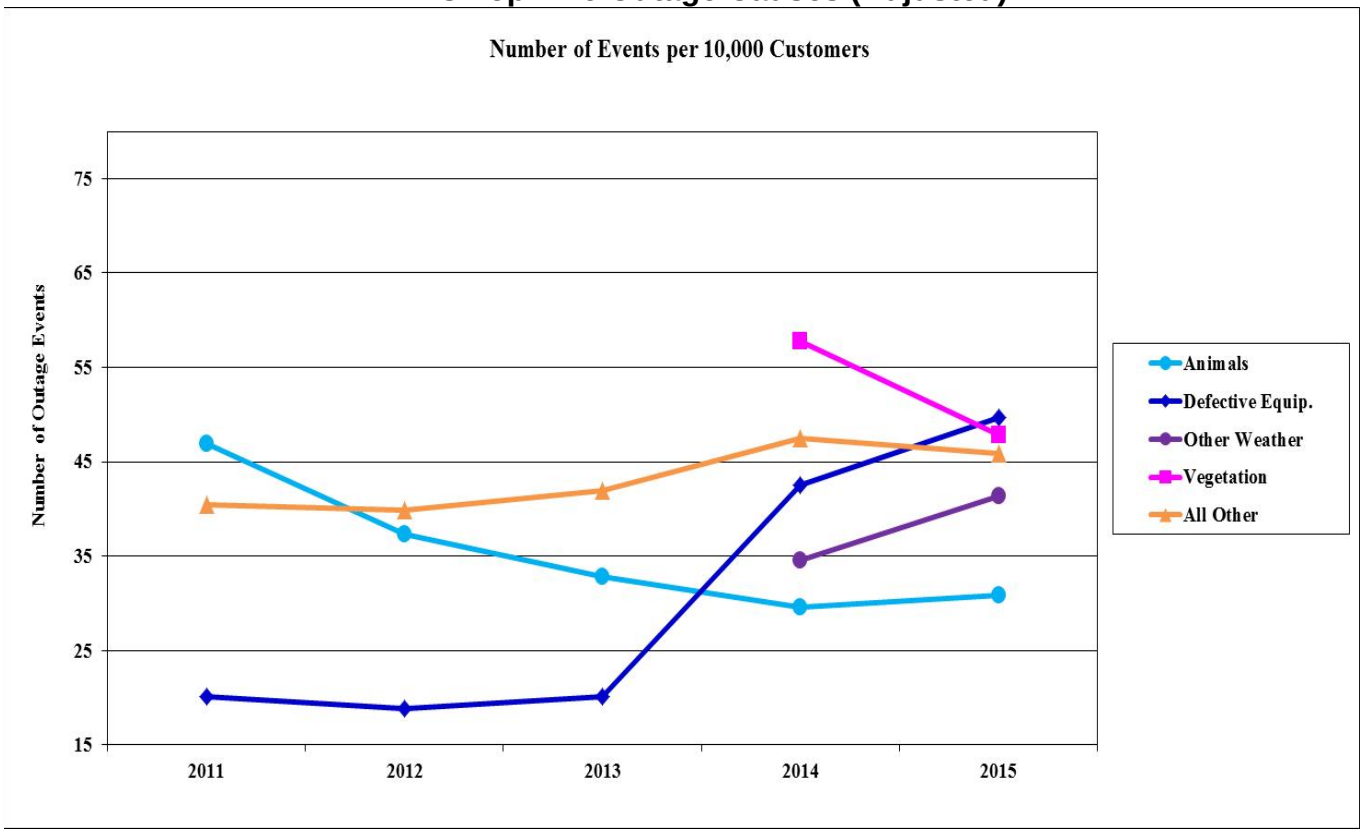


Source: DEF's 2011-2015 distribution service reliability reports.

Figure 3-8 shows the top five causes of outage events on DEF's distribution system normalized to a 10,000-customer base. The figure is based on DEF's adjusted data and represents approximately 93 percent of the top 10 causes of outage events that occurred during 2015. For the five-year period, the top five causes of outage events were Defective Equipment (21 percent), Vegetation (21 percent), All Other (20 percent), Other Weather (18 percent), and Animals (13 percent) on a cumulative basis. Commission staff requested that, beginning with 2014 data, all IOU's use the same outage categories for comparison purposes. As such, the Vegetation, Defective Equipment, and Other Weather now include outage categories that in the past were separately identified. The outage events caused by Vegetation and Animals are trending downward even though the Animals category had an 8 percent increase in 2015. DEF reported that it prioritizes the reliability improvements action plan by balancing historical and current year performance. In addition, current year performance is monitored monthly to identify emergent and seasonal issues including load balancing for cold weather and the need for foot patrols of devices experiencing multiple interruptions.

To address outages related to Defective Equipment, DEF's Outage Follow Up process, operational threshold reviews, and annual asset programs are all targeted at reducing CMI in this area. DEF explained that the Defective Equipment category was merged with the Connector Failure, Corrosion, and Equipment Misapplication causes codes, which caused the increase of outages for 2014 and 2015 when compared to 2013.

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



Source: DEF's 2011-2015 distribution service reliability reports.

Observations: DEF's Adjusted Data

DEF's SAIDI, SAIFI, MAIFIe, and L-Bar are trending downward over the past five years. The CEMI5 and the Three-Year Percent of Multiple Feeder Outage events are all trending upward over the five-year period. The CAIDI and the Five-Year Percent of Multiple Feeder Outage events are relatively flat for the five-year period. All of the reliability indices, except for CAIDI and L-Bar, had decreases from 2014 to 2015. The results of the North Coastal Region have continually demonstrated the highest (poorest) service reliability indices of the four regions within DEF for the past five years. The North Coastal region is rural and has more square miles compared to DEF's other service territories.

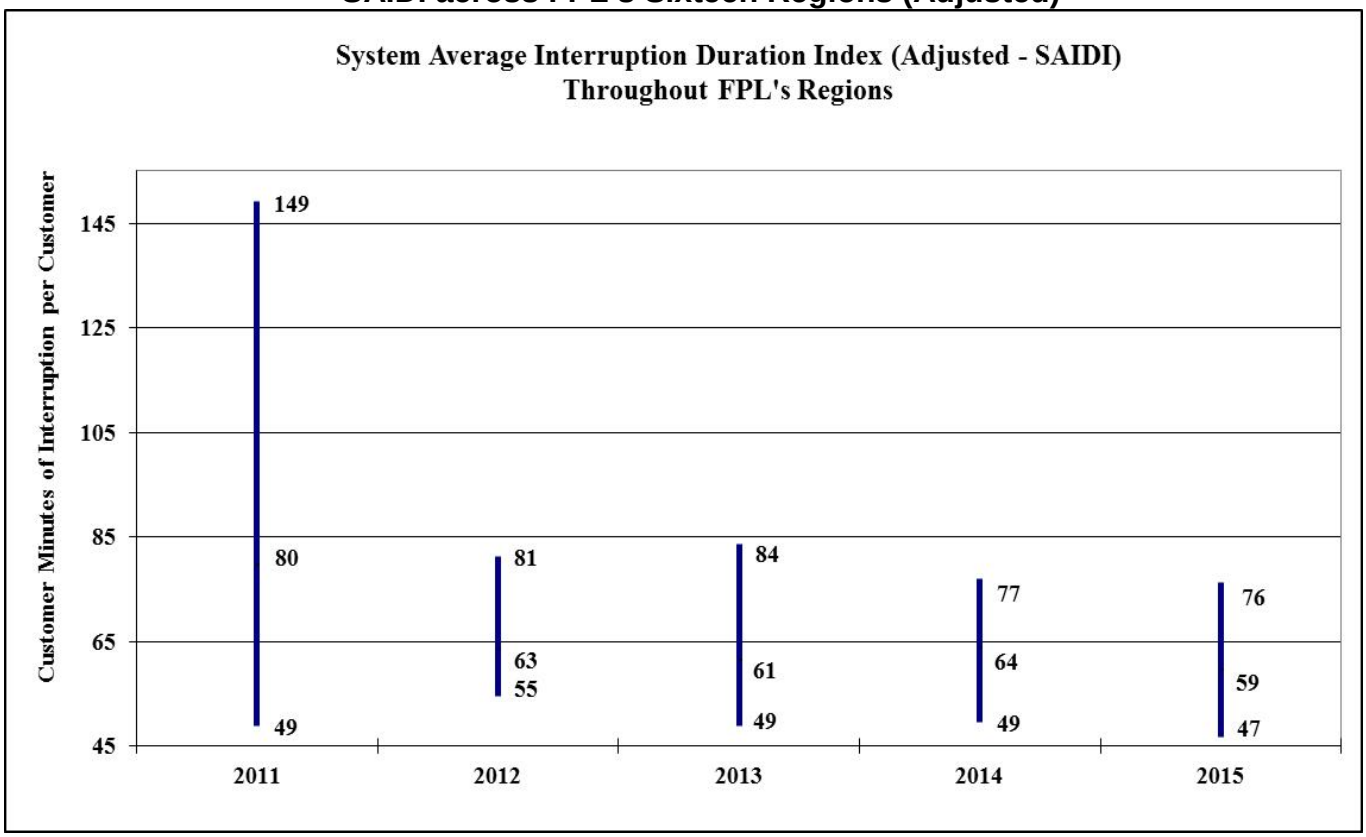
DEF reported an extremely active storm season, with only one weather exclusion, and two abnormally long feeder cable outages in the South Coastal region. In 2015, DEF implemented a multi-year program to install new electronic reclosers. DEF planned for over 100 recloser installations in 2015 and actually installed 154 reclosers. This project will continue through 2017. The electronic reclosers are designed to reduce the overall number and duration of outages by increased sectionalization on distribution feeders. This project will also improve the communication between the devices.

In 2015, DEF also added additional staff to conduct analysis and reviews of the reliability data in order to reduce the number of outages and momentary interruptions. This prioritization model does not take customer counts into consideration so rural areas, such as the North Coastal region, has the same level of analysis and impact to devices as a urban area, such as the South Coastal region. DEF will refine this process and add additional resources in 2016.

Florida Power & Light Company: Adjusted Data

Figure 3-9 shows the highest, average, and lowest adjusted SAIDI recorded across FPL's system that encompasses four management regions with 16 service areas. The highest and lowest SAIDI values are the values reported for a particular service area. FPL had an overall decrease of five minutes (8 percent) to its average SAIDI results for 2015 compared to 2014. The average SAIDI appears to be trending downward over the five-year period of 2011 to 2015. The Central Dade region has the best SAIDI results for two out of the five years.

Figure 3-9.
SAIDI across FPL's Sixteen Regions (Adjusted)



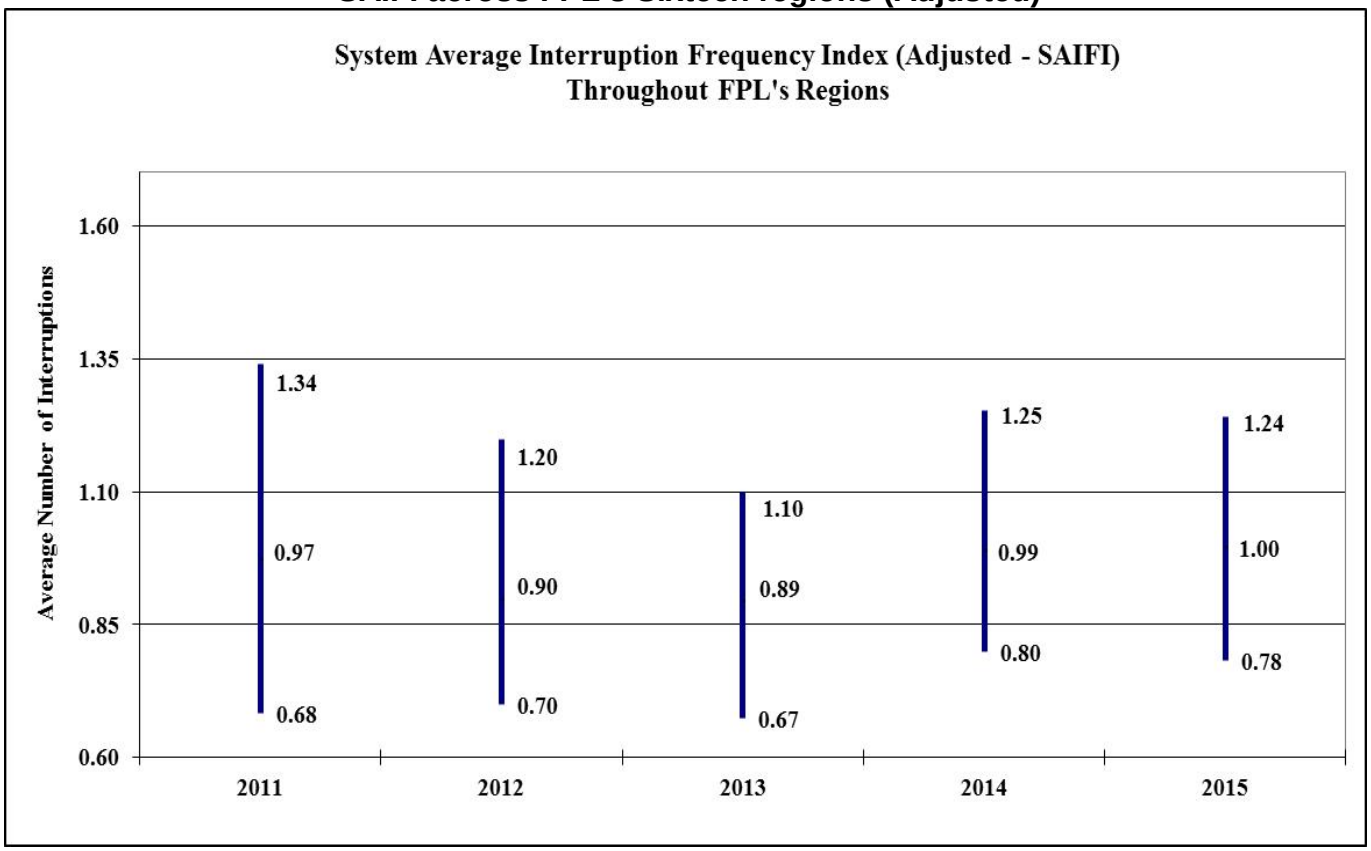
FPL's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest SAIDI	Central Florida	South Dade	North Florida	North Dade	South Dade
Lowest SAIDI	Central Dade	West Palm	Pompano	West Palm	Central Dade

Source: FPL's 2011-2015 distribution service reliability reports.

Figure 3-10 is a chart of the highest, average, and lowest adjusted SAIFI across FPL's system. FPL had an increase in the system average results to 1.00 outages in 2015, compared to 0.99 outages in 2014, which is a 1 percent increase. FPL reported a decrease in the highest SAIFI of 1.24 interruptions in 2015 compared to 1.25 interruptions in 2014. The region reporting the lowest adjusted SAIFI for 2015 was Central Dade, again, at 0.78 interruptions compared to 0.80 interruptions in 2014. The average and lowest SAIFI appear to be trending upward as the highest SAIFI appear to be trending downward. The 2015 average SAIFI results are the highest (worst) for the five-year period of 2011 to 2015.

Figure 3-10.
SAIFI across FPL's Sixteen regions (Adjusted)



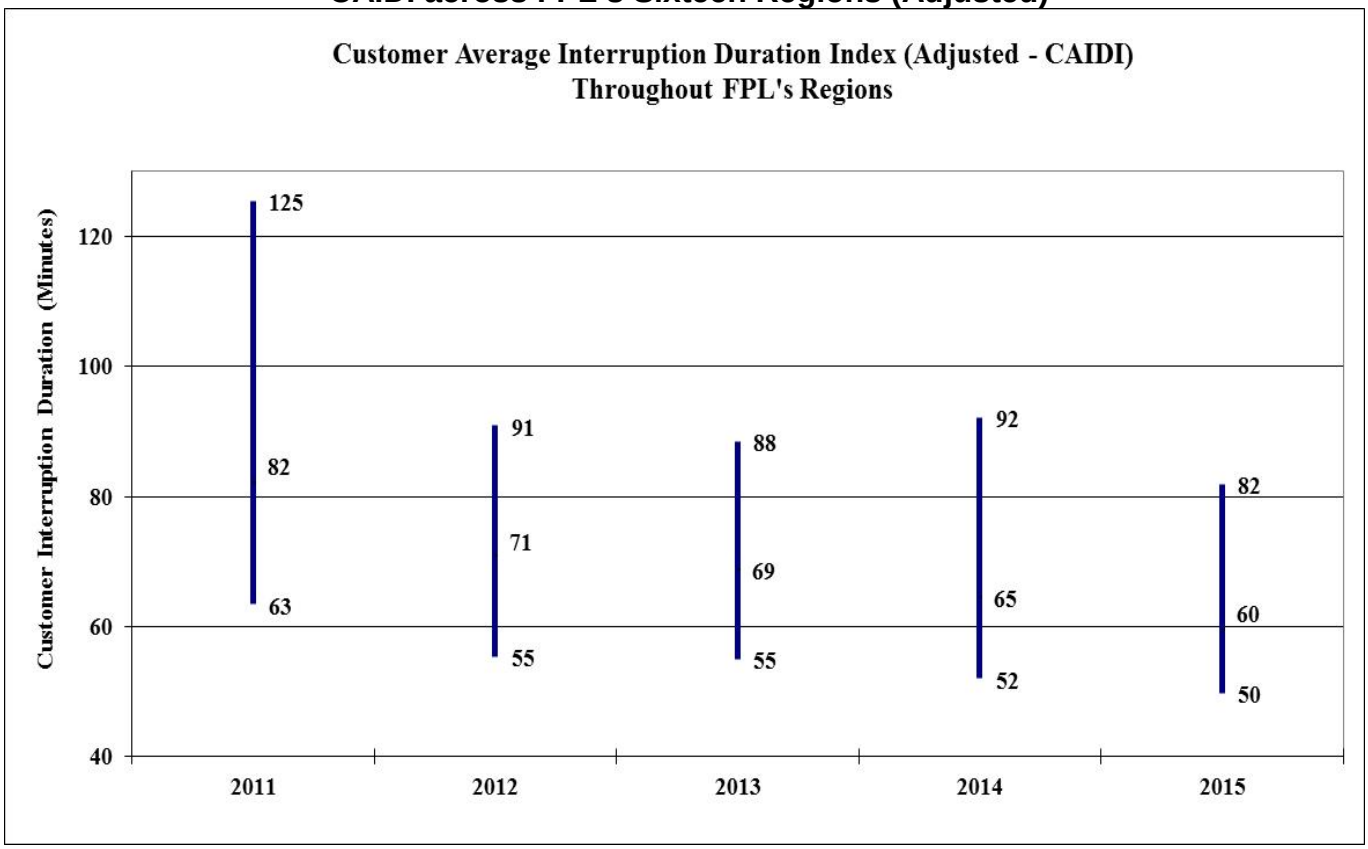
FPL's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest SAIFI	North Florida	West Dade	Boca Raton	Wingate	West Dade
Lowest SAIFI	Central Dade	North Dade	Central Dade	Central Dade	Central Dade

Source: FPL's 2011-2015 distribution service reliability reports.

Figure 3-11 is a chart of FPL's highest, average, and lowest CAIDI expressed in minutes. FPL's adjusted average CAIDI has dropped approximately 8 percent from 65 minutes in 2014, to 60 minutes in 2015. The average duration of CAIDI is trending downward. For 2015, the Boca Raton service area once again reported the lowest duration of CAIDI at 50 minutes, which is a decrease from 52 minutes in 2014. The highest duration of CAIDI was 82 minutes for the North Dade service area for 2015, which is 11 percent lower than the highest CAIDI minutes in 2014.

Figure 3-11.
CAIDI across FPL's Sixteen Regions (Adjusted)



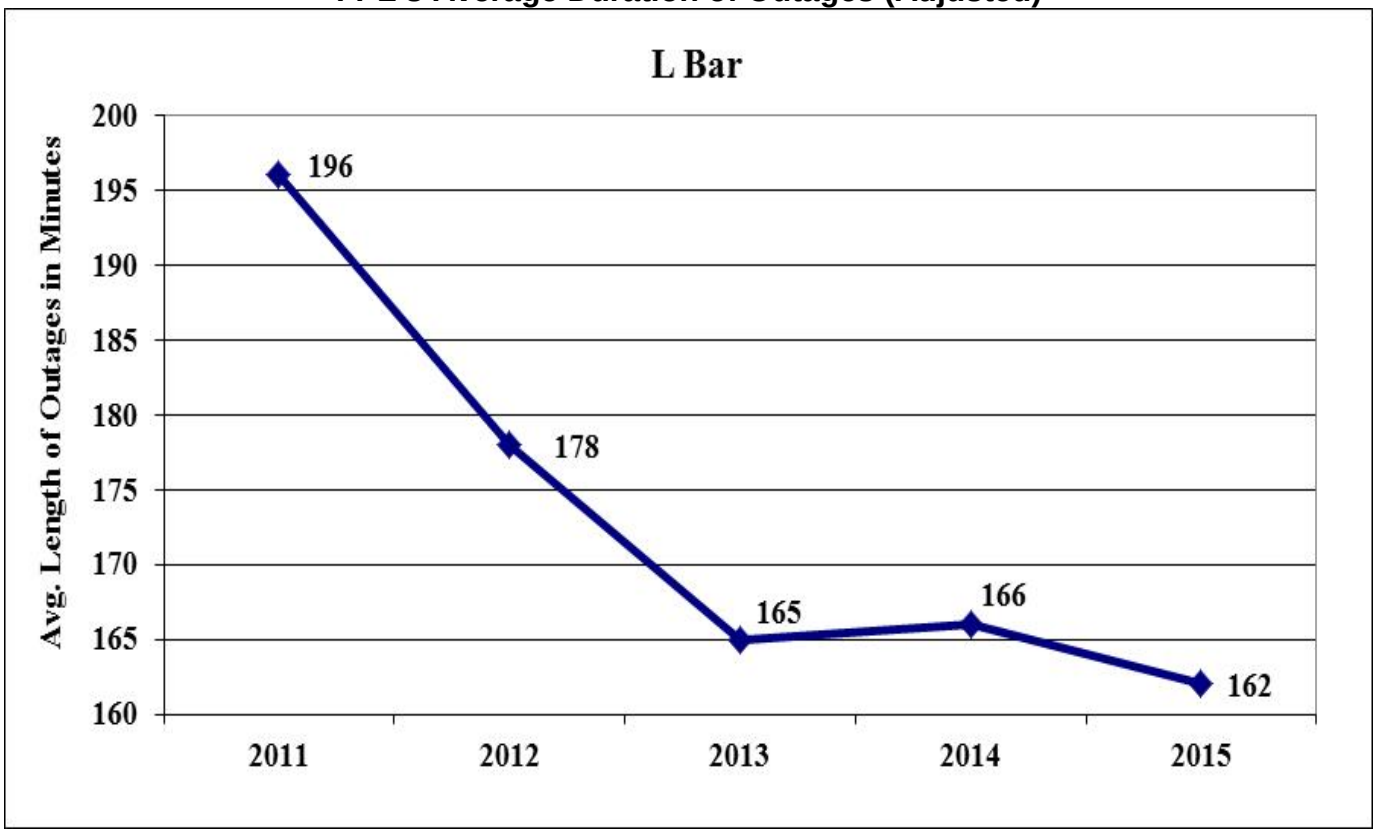
FPL's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest CAIDI	Central Florida	North Dade	North Dade	North Dade	North Dade
Lowest CAIDI	Boca Raton	Boca Raton	Boca Raton	Boca Raton	Boca Raton

Source: FPL's 2011-2015 distribution service reliability reports.

Figure 3-12 depicts the average length of time that FPL spends recovering from outage events, excluding hurricanes and other extreme outage events and is the index known as L-Bar (Average Service Restoration Time). FPL had a 2.4 percent decrease in L-Bar from 166 minutes in 2014, to 162 minutes in 2015. There is a 17 percent overall decrease since 2011, indicating FPL is spending less time restoring service.

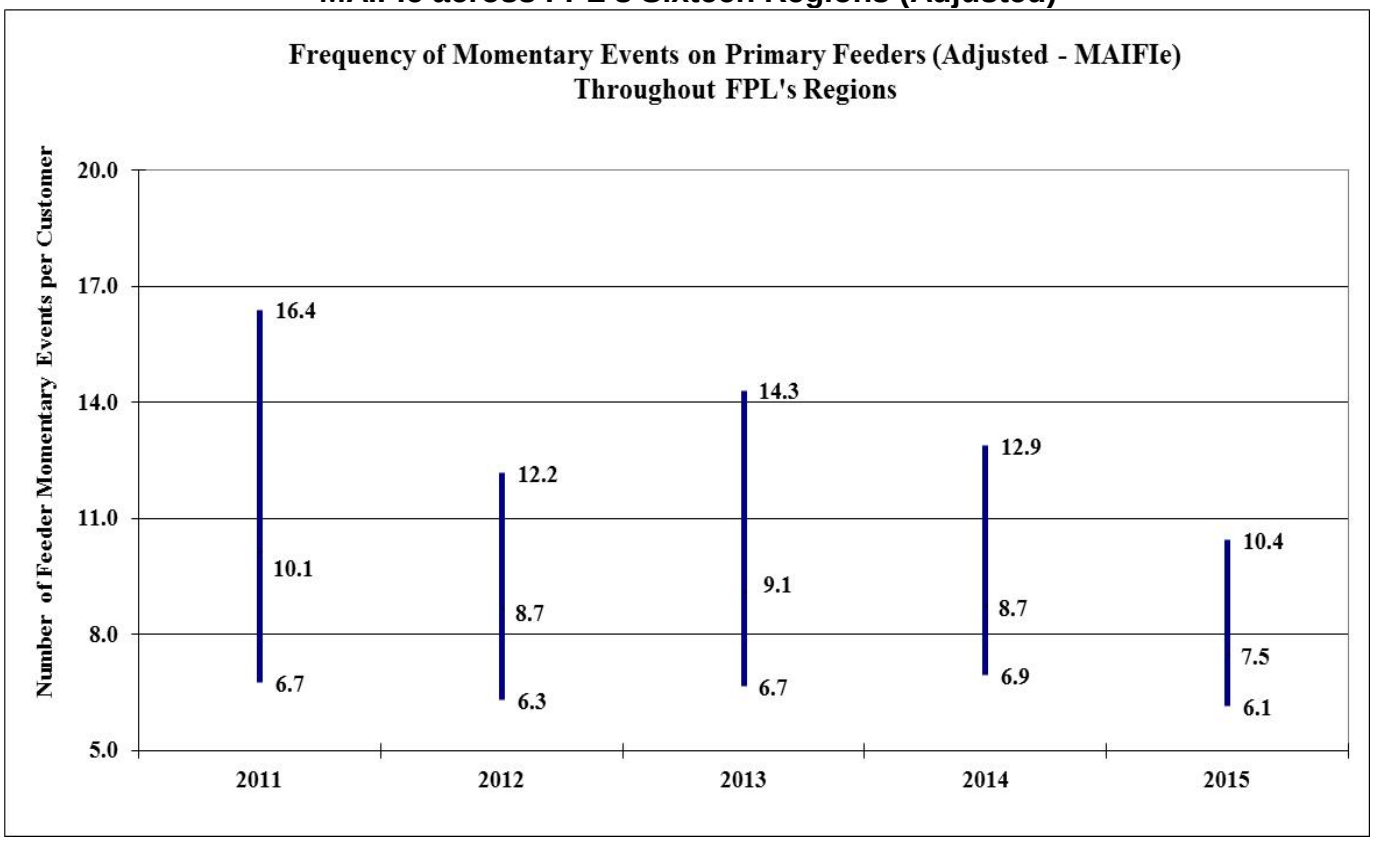
Figure 3-12.
FPL's Average Duration of Outages (Adjusted)



Source: FPL's 2011-2015 distribution service reliability reports.

Figure 3-13 is the highest, average, and lowest adjusted MAIFIe recorded across FPL's system. FPL's Treasure Coast, North Florida, and Wingate service areas have experienced the least reliable MAIFIe results of the 16 service areas of FPL since 2011. The Pompano, Central Dade, Naples, and Manasota service areas had the fewest momentary events since 2011. The results have been trending downward (improving) over the last five years. There is a 14 percent decrease in the average MAIFIe results from 2014 to 2015.

Figure 3-13.
MAIFIe across FPL's Sixteen Regions (Adjusted)



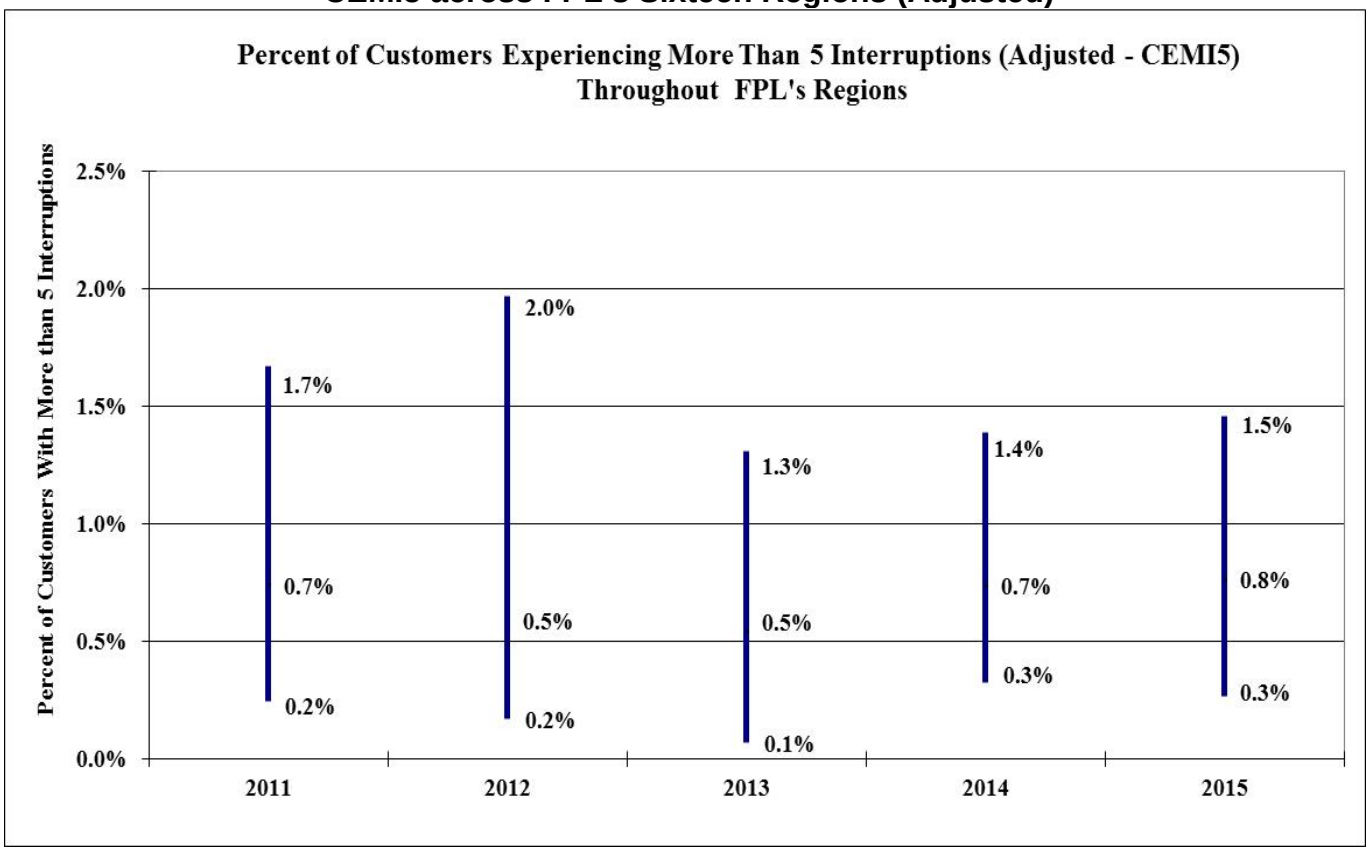
FPL's Regions with the Highest and Lowest Adjusted MAIFIe Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest MAIFIe	North Florida	Treasure Coast	Treasure Coast	Wingate	Wingate
Lowest MAIFIe	Central Dade	Naples	Central Dade	Pompano	Manasota

Source: FPL's 2011-2015 distribution service reliability reports.

Figure 3-14 shows the highest, average, and lowest adjusted CEMI5. FPL's customers with more than five interruptions per year appear to be slightly increasing and trending upward. The service areas experiencing the highest CEMI5 over the five-year period appear to fluctuate among North Florida, West Dade, Boca Raton, and West Palm. Pompano, Central Dade, and Brevard are reported as having the lowest percentages in the last five years. The average CEMI5 result for 2015 was 0.8 percent compared to 0.7 percent in 2014.

Figure 3-14.
CEMI5 across FPL's Sixteen Regions (Adjusted)



FPL's Regions with the Highest and Lowest Adjusted CEMI5 Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest CEMI5	North Florida	West Dade	Boca Raton	West Palm	West Dade
Lowest CEMI5	Central Dade	Pompano	Pompano	Brevard	Brevard

Source: FPL's 2011-2015 distribution service reliability reports.

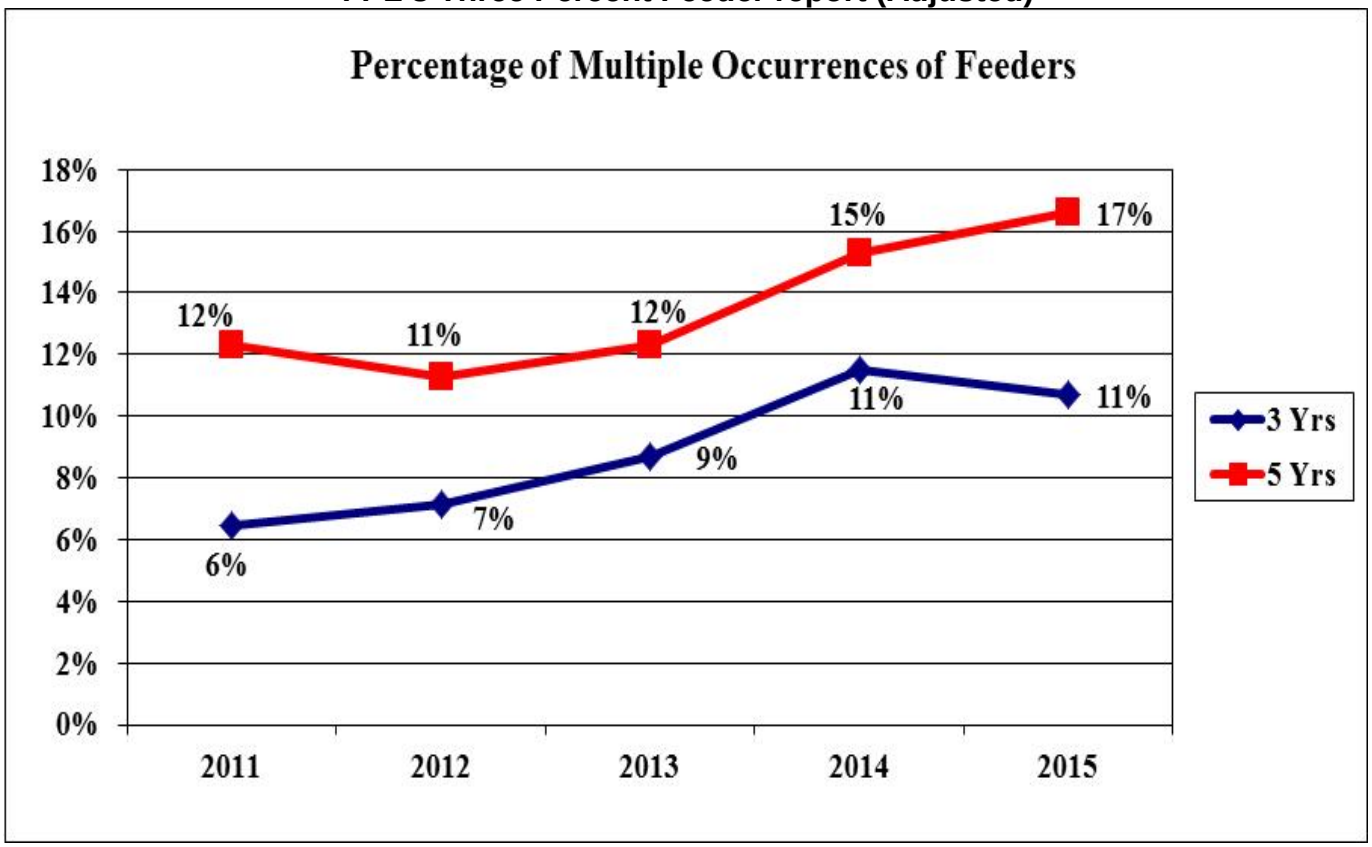
Figure 3-15 is a graphical representation of the percentage of multiple occurrences of FPL's feeders and is derived from The Three Percent Feeder Report, which is a listing of the top three percent of problem feeders reported by the utility. The fraction of multiple occurrences is calculated from the number of recurrences divided by the number of feeders reported. The three-year percentage had no change with 11 percent in 2014 and 11 percent in 2015. The five-year percentage increased from 15 percent in 2014 to 17 percent in 2015. Both the five-year percentage and the three-year percentage appear to be trending upward.

Staff notes four feeders were on the Three Percent Feeder Report the last two years. FPL reported that recently completed and future efforts to improve performance on the four feeders include:

- Replacing fuse switches, arresters, disconnect switches and bolt connections.
- Completing hot spot feeder and lateral trimming.
- Replacing spacers on several spans of Hendrix cables.
- Installing automated feeder and lateral switches.
- Conducting thermovision inspections and completing associated follow-up work.
- Completing pole inspections and associated follow-up work.

FPL also reported that two of these feeders were storm hardened in late 2015.

Figure 3-15.
FPL's Three Percent Feeder report (Adjusted)

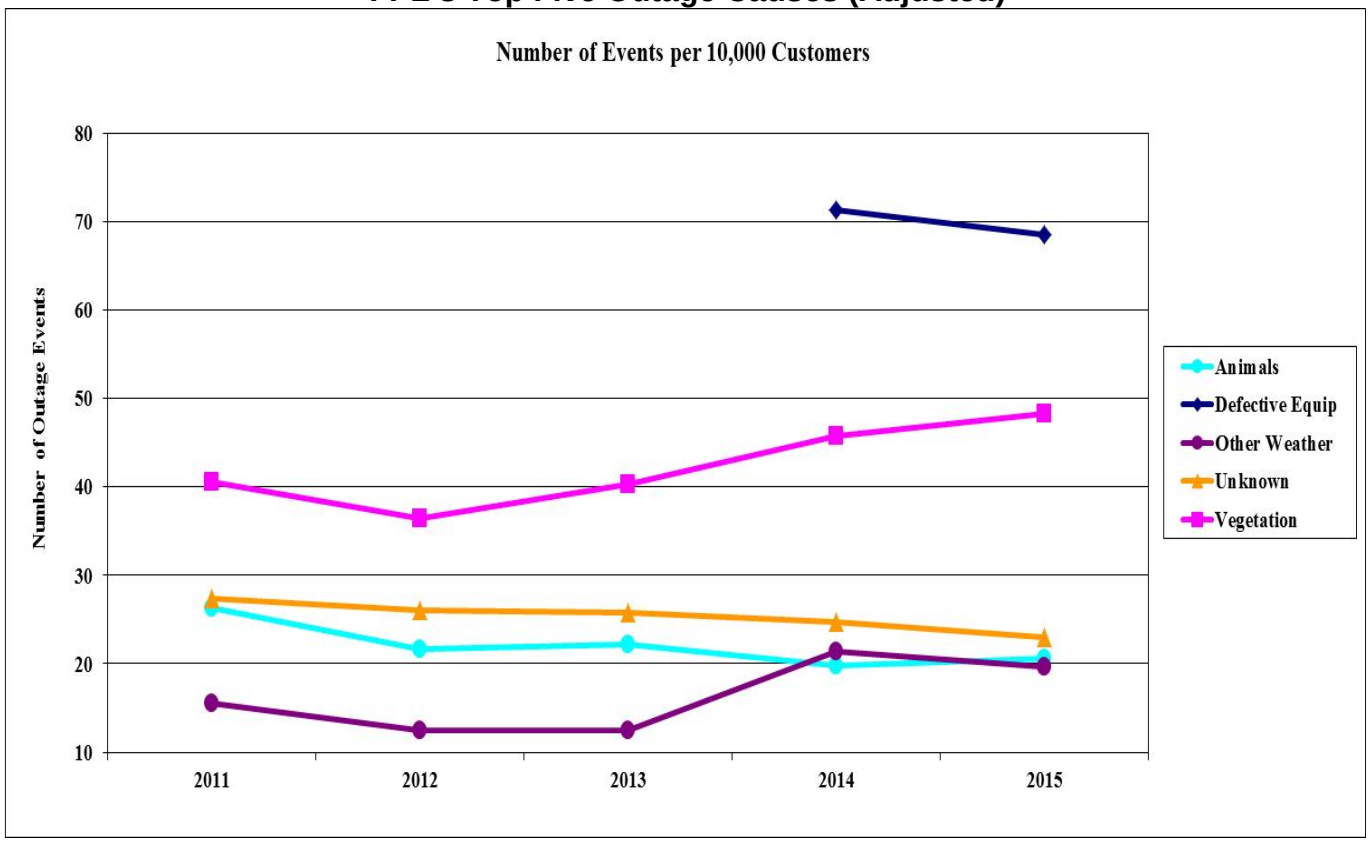


Source: FPL's 2011-2015 distribution service reliability reports.

Figure 3-16 depicts 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 10 causes of outage events. For the five-year period, the five top causes of outage events included Defective Equipment (33 percent), Vegetation (23 percent), Unknown (11 percent), Animals (10 percent), and Other Weather (9 percent) on a cumulative basis. The data shows an increasing trend in outage events caused by Vegetation and Other Weather. The number of outages increased for the Vegetation category and decreased for the Other Weather category from 2014 to 2015. The outage events due to Animals and Unknown are trending downward. The Defective Equipment category dominates the highest percentage of outage causes throughout the FPL regions. Starting in 2014, Defective Equipment includes Equipment Failure, Equipment Connect and Dig-in, which were all separate categories, in prior years.

Annually, FPL evaluates its current reliability remediation programs and verifies the program's need and/or existence. In addition, FPL proposes new reliability remediation programs to improve its reliability performance concentrating on the highest cause codes and those cause codes that have shown trends needing attention. FPL has 17 reliability programs listed for its 2016 budget. The programs include: priority feeder inspection, distribution automation (installing and maintaining automated feeder switches, automated lateral switches and fault current indicators), and replacing oil circuit reclosers with electronic reclosers. Six programs are designed to help improve the Vegetation cause code, which had an increase in 2015. Along with those six programs, FPL has several other initiatives to address vegetation issues, including FPL's "Right Tree, Right Place" and Palm Management programs. Four programs are intended to help improve the Animal cause code, which also had an increase in 2015.

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



Source: FPL's 2011-2015 distribution service reliability reports.

Observations: FPL's Adjusted Data

The least reliable overall results seem to fluctuate between FPL's different service areas, as do the best service reliability results. The 2015 report shows the system indices for SAIDI, CAIDI, MAIFe, and L-Bar are lower or better than the 2014 results. The system index for SAIFI, CEMI5, and the Five-Year Percentages of Multiple Feeder Outage events are higher than the 2014 results. There was no change in the Three-Year Percentages of Multiple Feeder Outage events results. FPL explains that it evaluates its current reliability programs annually to verify the program's need and/or existence. In addition, FPL proposes new reliability programs to improve its reliability performance concentrating on the highest cause codes and those cause codes that have shown trends needing attention. The cause codes that FPL will be concentrating on to improve are equipment failures and vegetation causes of outages. FPL is also continuing to increase the utilization of automation to address feeder interruptions.

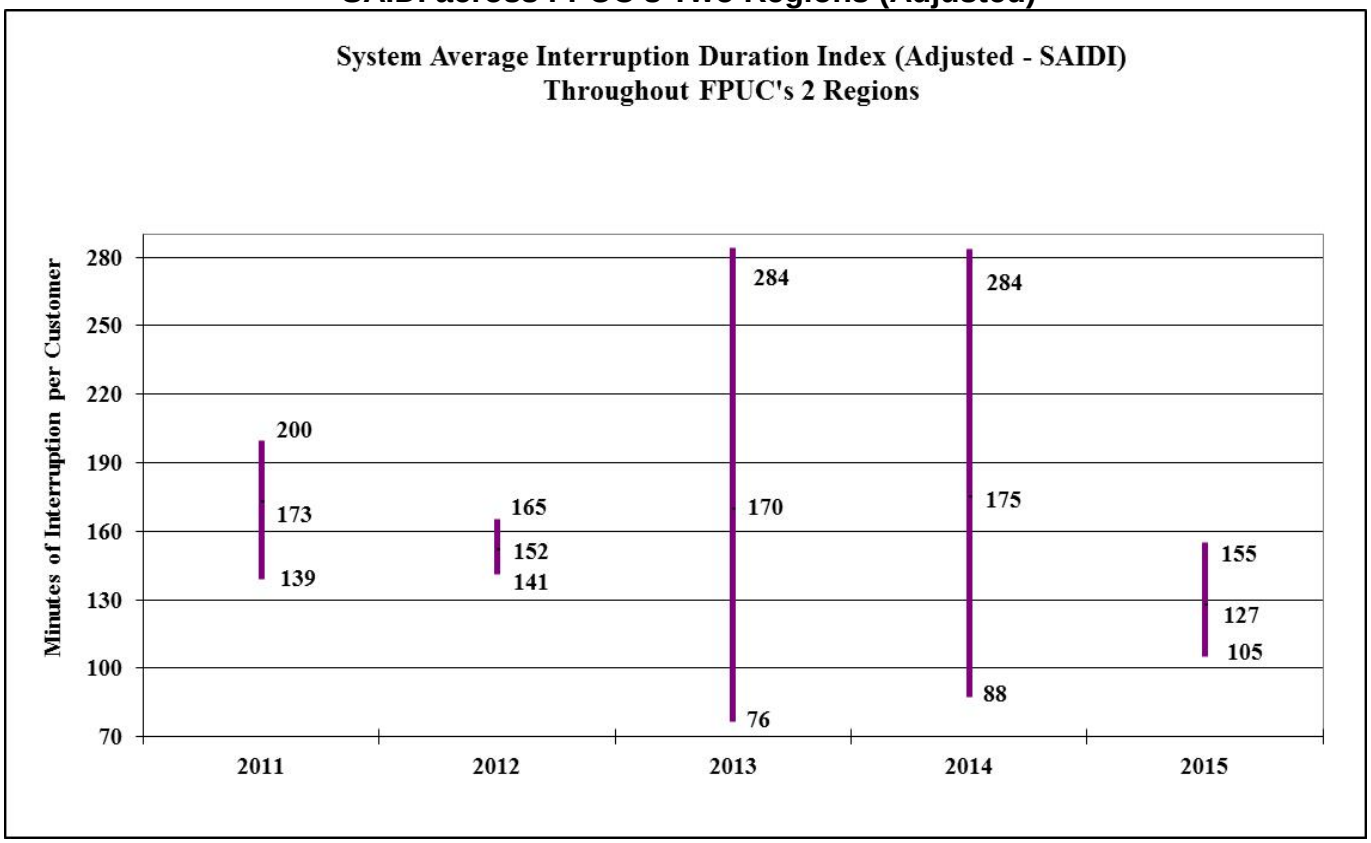
While the least reliable region has varied, the North Dade region continues to have the highest CAIDI for four years in a row. To improve reliability in the North Dade region, FPL is performing targeted vegetation management trimming, installing automated lateral switches, and upgrading poorer performing laterals. However, the CAIDI value for the North Dade region did improve by 11 percent in 2015.

Florida Public Utilities Company: Adjusted Data

FPUC has two electric divisions, the Northwest Division, also referred to as Marianna and the Northeast Division, also referred to as Fernandina Beach. Each division's result is reported separately because the two divisions are 250 miles apart and not directly interconnected. Although the divisions may supply resources to support one another during emergencies, each division has diverse situations to contend with, making it difficult to compare the division's results and form a conclusion as to response and restoration time.

Figure 3-17 shows the highest, average, and lowest adjusted SAIDI values recorded by FPUC's system. The data shows the average SAIDI index is trending downward for the five-year period of 2011 to 2015 and there was a 27 percent decrease from 2014 to 2015. FPUC's 2015 Reliability Report notes that the reliability indicators continue to be heavily influenced by the weather and the small size of the territories.

Figure 3-17.
SAIDI across FPUC's Two Regions (Adjusted)



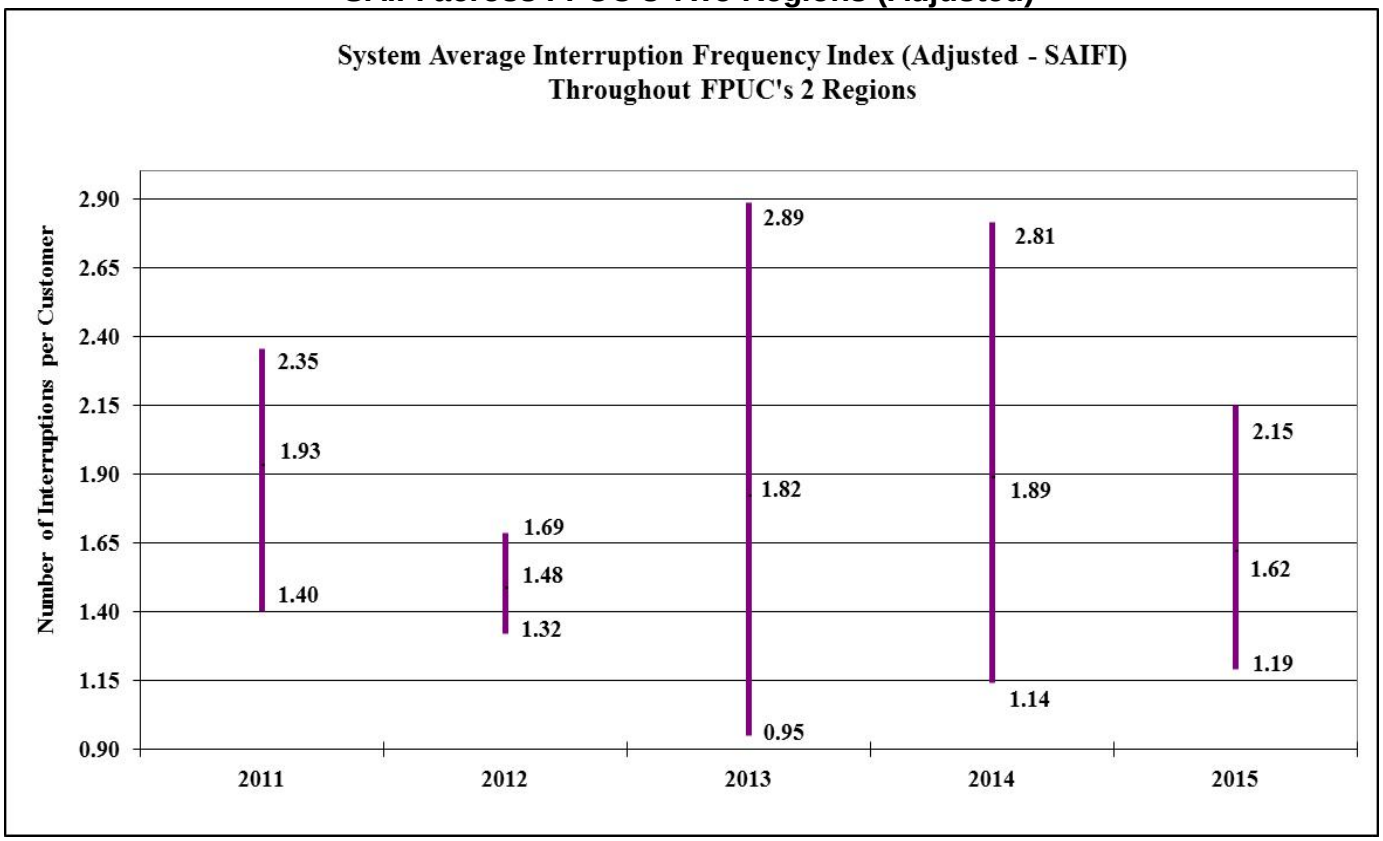
FPUC's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest SAIDI	Fernandina(NE)	Marianna (NW)	Marianna (NW)	Marianna (NW)	Marianna (NW)
Lowest SAIDI	Marianna (NW)	Fernandina(NE)	Fernandina(NE)	Fernandina(NE)	Fernandina(NE)

Source: FPUC's 2011-2015 distribution service reliability reports.

Figure 3-18 shows the adjusted SAIFI across FPUC's two divisions. The data depicts a 14 percent decrease in the 2015 average SAIFI reliability index from 2014. The data for the minimum and average SAIFI values are trending downward over the five-year period of 2011 to 2015 as the trend line for the maximum SAIFI value is trending upward for the same period.

Figure 3-18.
SAIFI across FPUC's Two Regions (Adjusted)



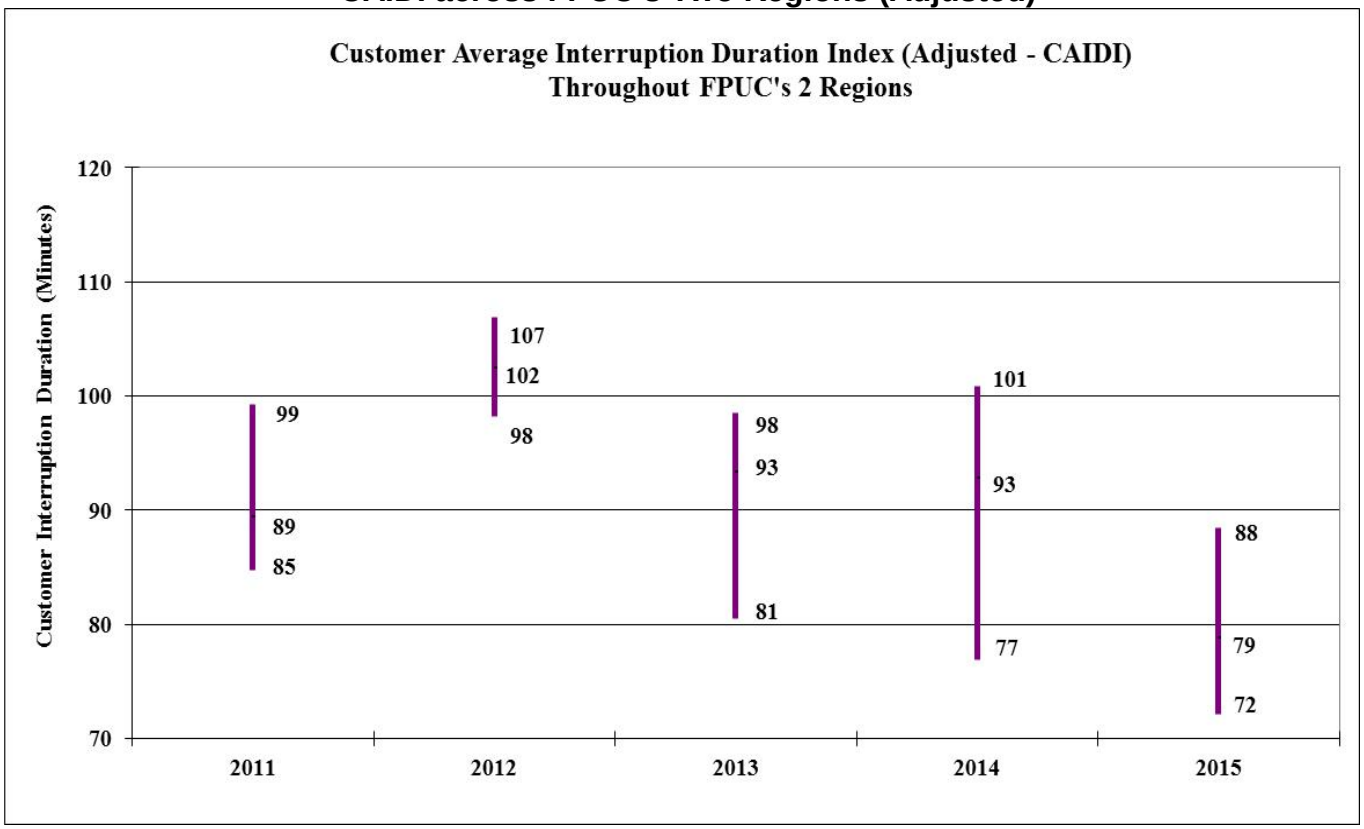
FPUC's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest SAIFI	Fernandina(NE)	Marianna (NW)	Marianna (NW)	Marianna (NW)	Marianna (NW)
Lowest SAIFI	Marianna (NW)	Fernandina(NE)	Fernandina(NE)	Fernandina(NE)	Fernandina(NE)

Source: FPUC's 2011-2015 distribution service reliability reports.

Figure 3-19 shows the highest, average, and lowest adjusted CAIDI values across FPUC's system. FPUC's data shows the average CAIDI value decreased by 15 percent for 2015 (79 minutes) when compared to 2014 (93 minutes). For the past five years, the maximum, the minimum, and the average CAIDI values are trending downward.

Figure 3-19.
CAIDI across FPUC's Two Regions (Adjusted)



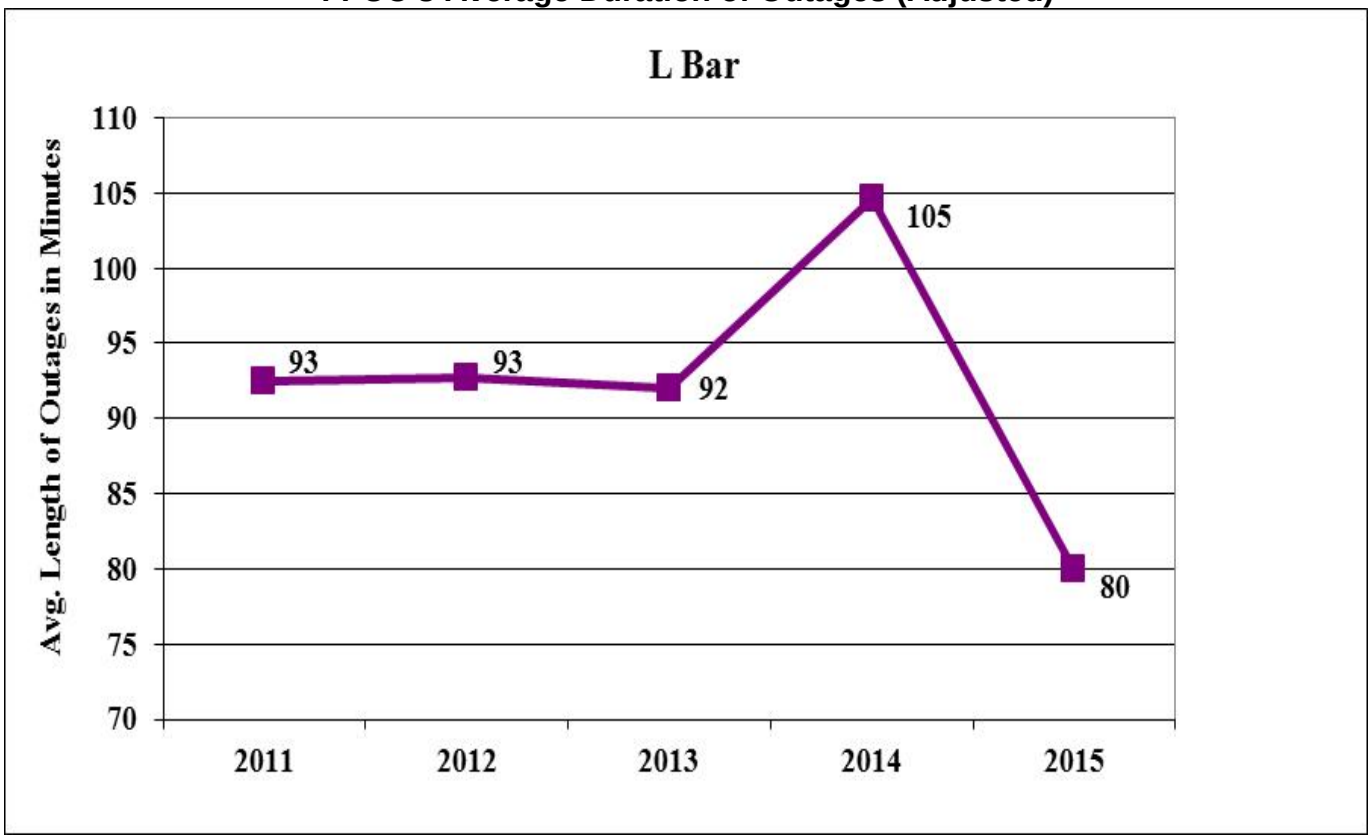
FPUC's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest CAIDI	Marianna (NW)	Fernandina(NE)	Marianna (NW)	Marianna (NW)	Fernandina(NE)
Lowest CAIDI	Fernandina(NE)	Marianna (NW)	Fernandina(NE)	Fernandina(NE)	Marianna (NW)

Source: FPUC's 2011-2015 distribution service reliability reports.

Figure 3-20 is the average length of time FPUC spends recovering from outage events (adjusted L-Bar). There was a 24 percent decrease in the L-Bar value from 2014 to 2015. The data for the five-year period of 2011 to 2015 suggests that the L-Bar index is trending downward indicating FPUC is taking less time to restore service after an outage event.

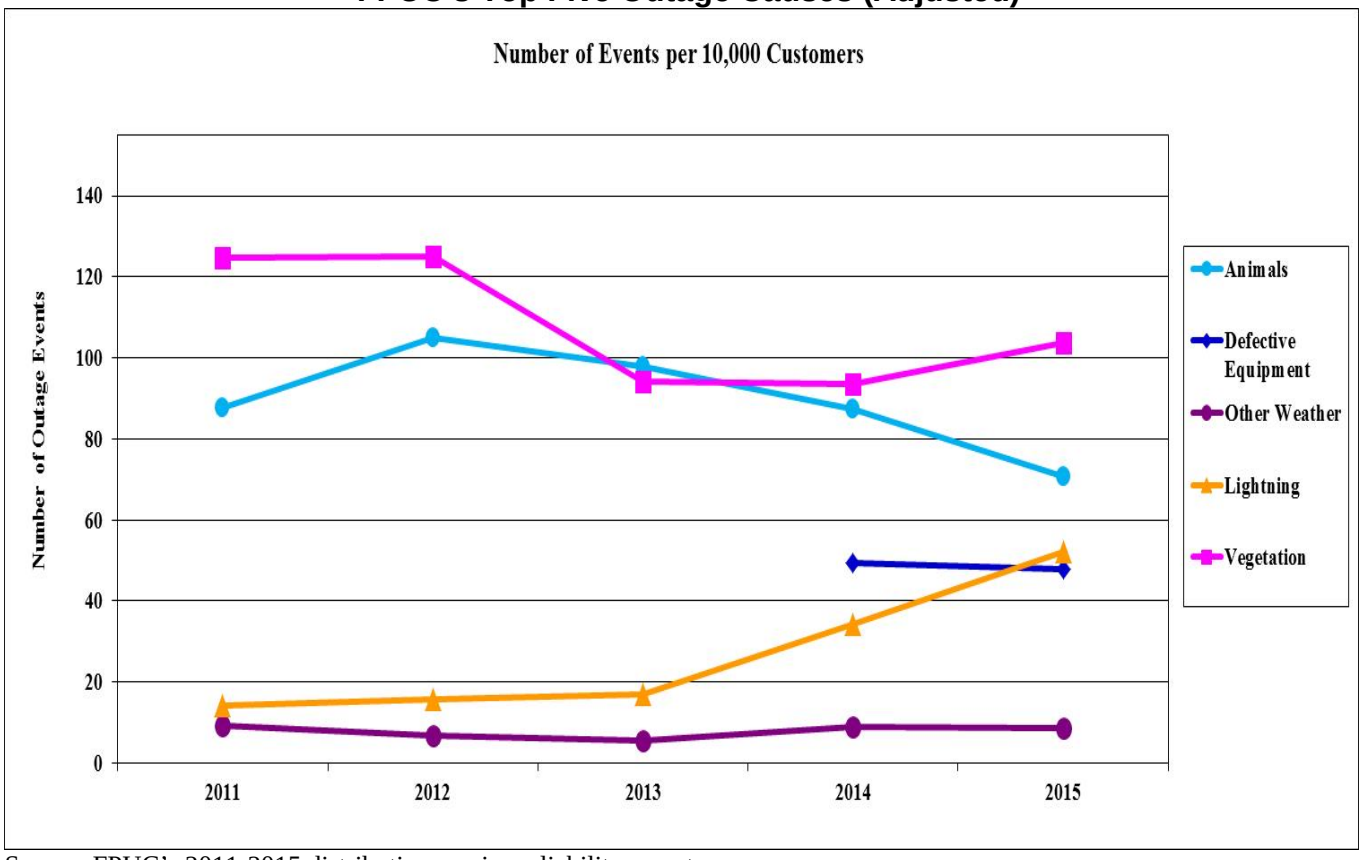
Figure 3-20.
FPUC's Average Duration of Outages (Adjusted)



Source: FPUC's 2011-2015 distribution service reliability reports.

Figure 3-21 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 10 causes of outages. For 2015, the top five causes of outage events were Vegetation (27 percent), Animals (19 percent), Other Weather (16 percent), Lightning (14 percent), and Defective Equipment (13 percent). These five factors represent 89 percent of the total adjusted outage causes in 2015. The cause by Lightning is trending upward and increased 44 percent from 2014 to 2015. The causes by Defective Equipment, Animals, and Vegetation are trending downward. Defective Equipment and Vegetation increased 12 percent and 24 percent from 2014 to 2015, respectively. The Animals category decreased 5 percent during the same time period. The Other Weather category caused outages has remained relatively flat over the five-year period of 2011 to 2015, even though there was a 46 percent decrease from 2014 to 2015. Beginning with 2014, the Defective Equipment category now includes outage categories that in the past were separately identified.

Figure 3-21.
FPUC's Top Five Outage Causes (Adjusted)



Source: FPUC's 2011-2015 distribution service reliability reports.

FPUC filed a Three Percent Feeder Report listing the top three percent of feeders with the outage events for 2015. FPUC has so few feeders that the data in the report has not been statistically significant. There were two feeders on the Three Percent Feeder Report, one in each division. The 2015 report is the first year the two feeders have been on the report.

Observations: FPUC's Adjusted Data

The SAIDI, SAIFI, CAIDI, and L-Bar average indices have all decreased compared to 2014. For the five-year period of 2011 to 2015, the average indices for SAIDI, SAIFI, CAIDI, and L-Bar are all trending downward. FPUC reports that its reliability indexes continue to be heavily influenced by the weather and the relative small size of its territories. FPUC states that it will continue to invest in infrastructure upgrades and it believes the upgrades have begun to show reliability improvement. FPUC had decreases or improvements in SAIDI, SAIFI, and CAIDI. FPUC will continue to monitor all the reliability indices and outage causes to adjust and improve current reliability programs.

FPUC has been utilizing a Jarraff (an all-terrain tree trimmer vehicle) in the Northwest division for more than a year to more efficiently clear vegetation from its overhead lines and has been increasing its spraying program to retard vegetation growth under the lines between trimmings. FPUC continues installing additional reclosers in this division. FPUC reported that these programs should continue to reduce outages and improve reliability.

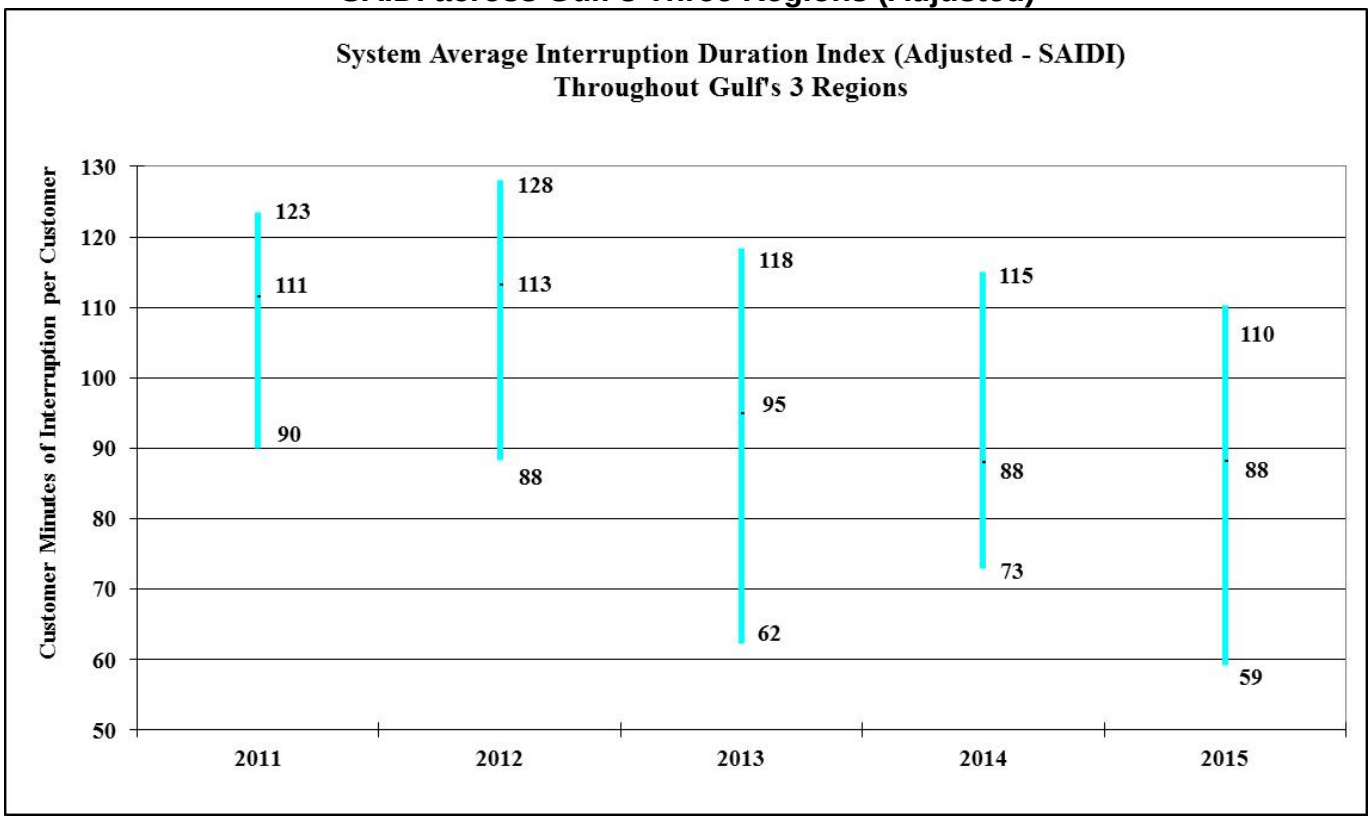
FPUC does not have to report MAIFIe or CEMI5 because Rule 25-6.0455, F.A.C., waives the requirement. The cost for the information systems necessary to measure MAIFIe and CEMI5 has a higher impact on small utilities compared to large utilities on a per customer basis.

Gulf Power Company: Adjusted Data

Gulf's service area includes much of the Florida panhandle and covers approximately 7,550 square miles in eight Florida counties – Bay, Escambia, Holmes, Jackson, Okaloosa, Santa Rosa, Walton, and Washington. This geographic area is divided into three districts known as the Western, Central, and Eastern. The district distribution metrics and overall distribution system metrics are presented in the following figures.

Figure 3-22 illustrates Gulf's SAIDI minutes, or the interruption duration minutes on a system basis. The chart depicts no change in the average SAIDI in Gulf's combined regions when compared to the 2014 results. Gulf's 2015 average performance was 88 minutes as were the 2014 SAIDI results. The highest SAIDI value for the past five years has fluctuated between the three regions as the Central and Eastern districts have the best or lowest SAIDI values. The maximum, minimum, and average SAIDI indices are continuing to trend downward, showing improvements.

Figure 3-22.
SAIDI across Gulf's Three Regions (Adjusted)



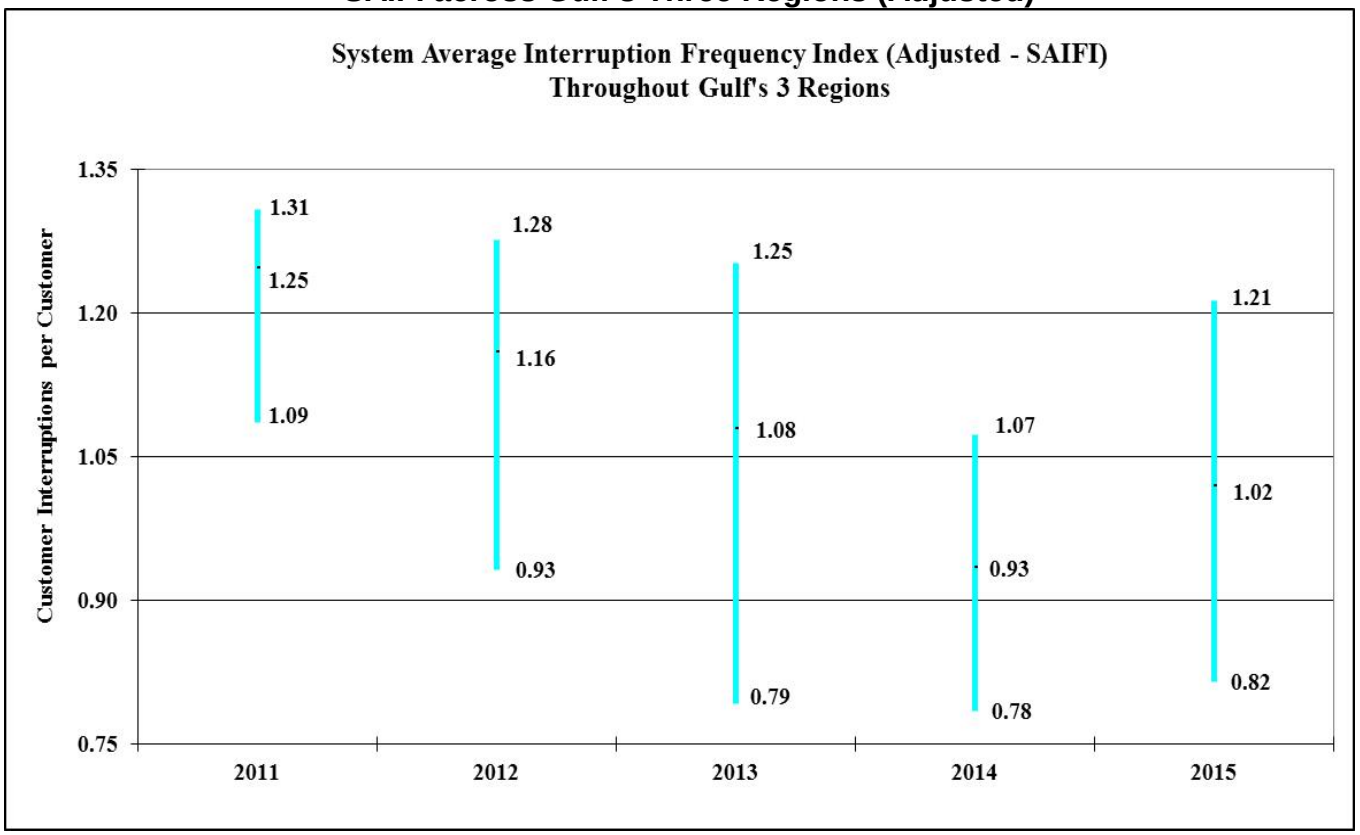
Gulf's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest SAIDI	Western	Western	Eastern	Central	Western
Lowest SAIDI	Central	Eastern	Central	Eastern	Eastern

Source: Gulf's 2011-2015 distribution service reliability reports.

Figure 3-23 illustrates that Gulf's SAIFI had a 9 percent increase in 2015 when compared to 2014. The highest SAIFI value for the past five years has fluctuated between the three regions. The lowest values appear to fluctuate between the Central region and the Eastern region. The maximum, minimum, and average SAIFI values still appear to be trending downward.

Figure 3-23.
SAIFI across Gulf's Three Regions (Adjusted)



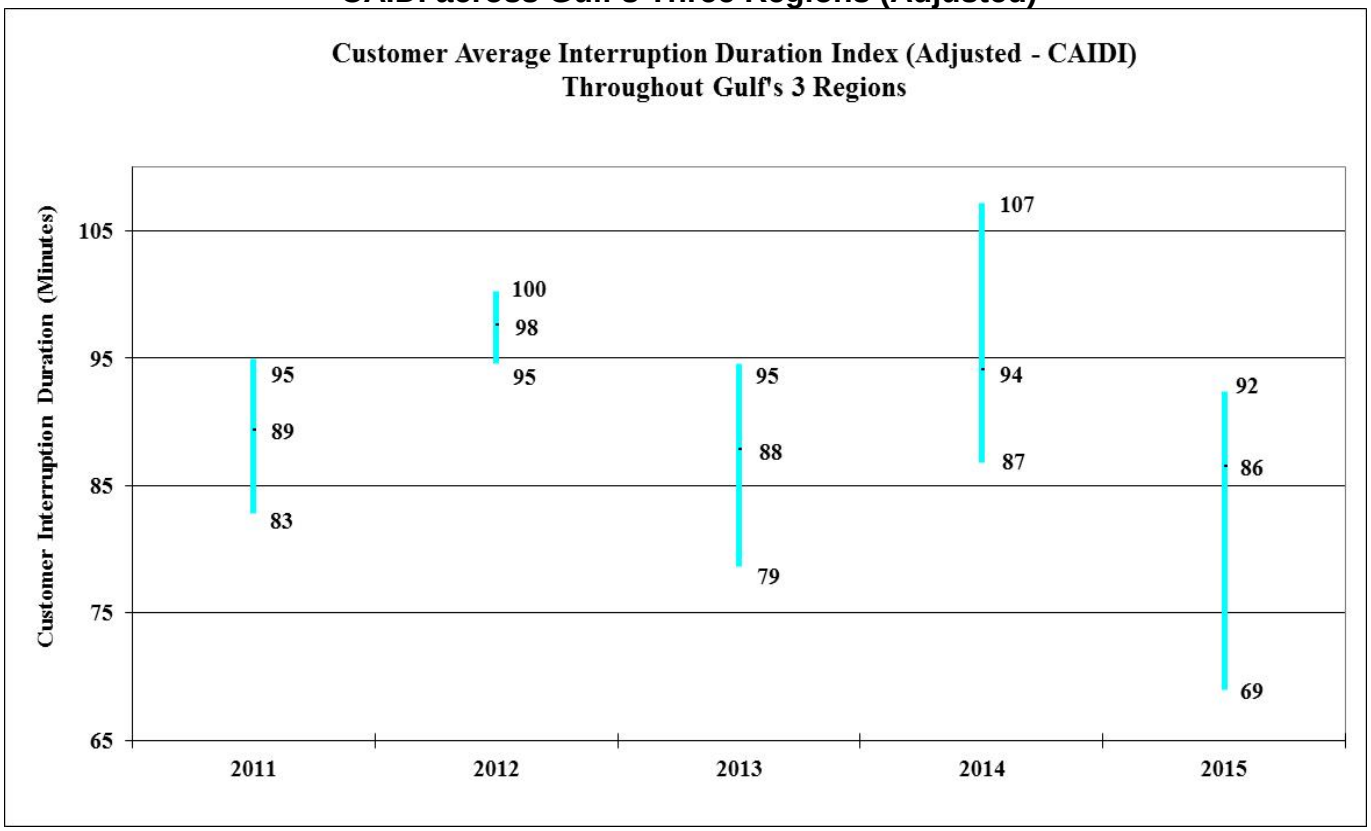
Gulf's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest SAIFI	Eastern	Western	Eastern	Central	Western
Lowest SAIFI	Central	Eastern	Central	Eastern	Central

Source: Gulf's 2011-2015 distribution service reliability reports.

Figure 3-24 is Gulf's adjusted CAIDI. For 2015, the average CAIDI is 86 minutes and represents a 9 percent decrease from the 2014 value of 94 minutes. In 2015, the Central region had the highest CAIDI value, as the Eastern region had the lowest CAIDI. Staff notes that the average and the minimum CAIDI values are trending upward as the maximum CAIDI value is remaining relatively flat.

Figure 3-24.
CAIDI across Gulf's Three Regions (Adjusted)



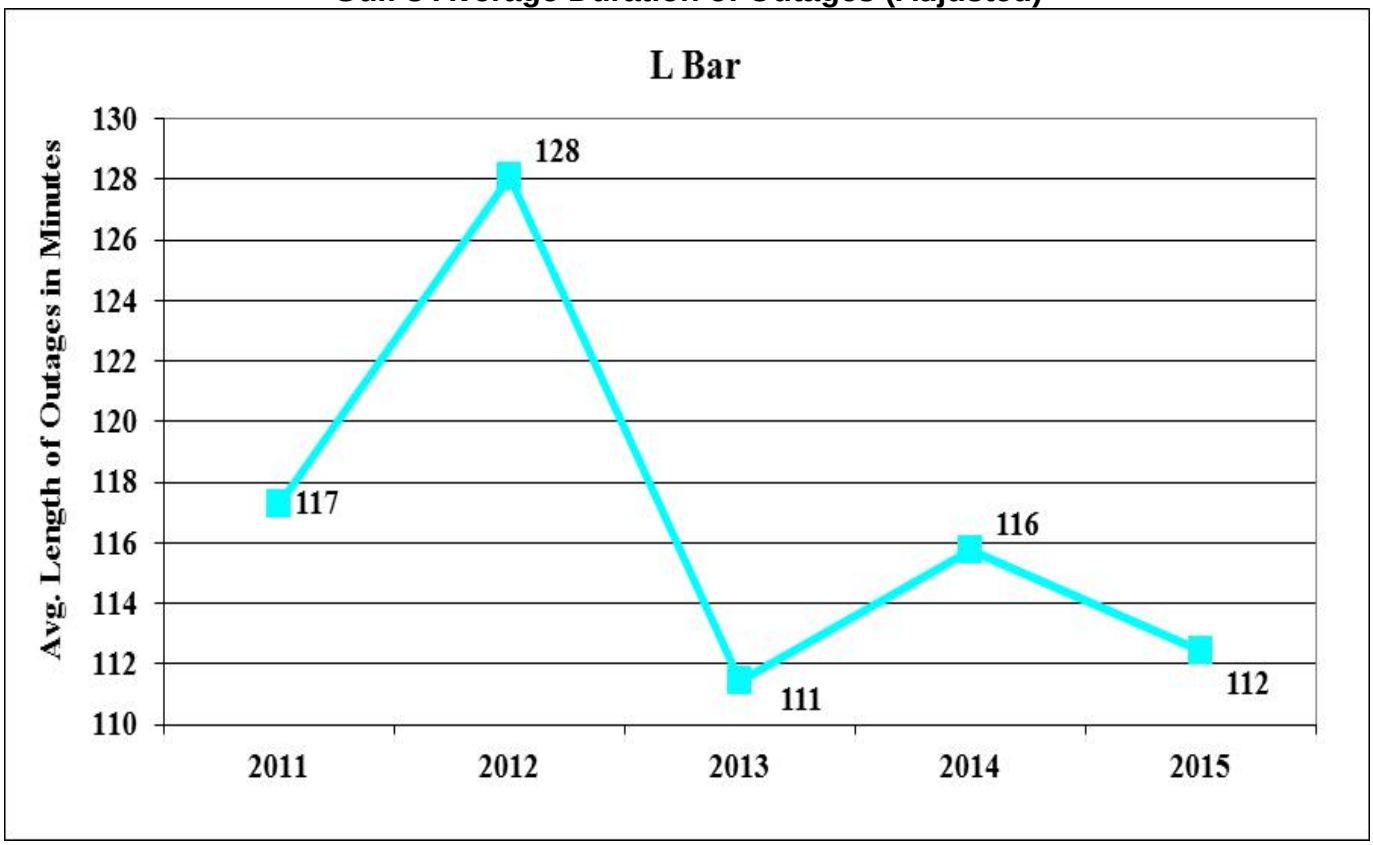
Gulf's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest CAIDI	Western	Western	Eastern	Central	Central
Lowest CAIDI	Central	Central	Central	Western	Eastern

Source: Gulf's 2011-2015 distribution service reliability reports.

Figure 3-25 illustrates Gulf's L-Bar or the average length of time Gulf spends recovering from outage events, excluding hurricanes and other allowable excluded outage events. Gulf's L-Bar showed a 3 percent decrease from 2014 to 2015. The data for the five-year period of 2011 to 2015 still shows a downward trend.

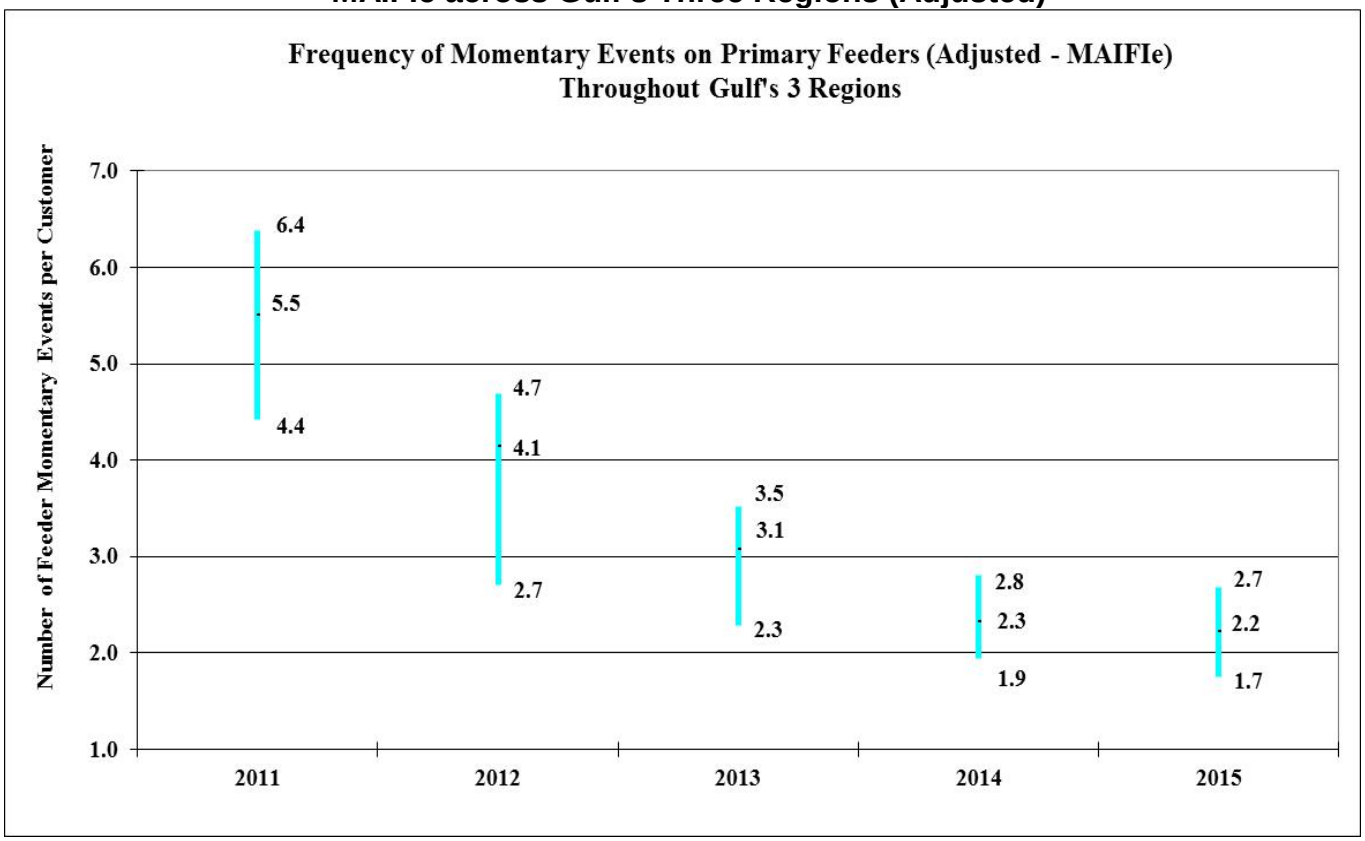
Figure 3-25.
Gulf's Average Duration of Outages (Adjusted)



Source: Gulf's 2011-2015 distribution service reliability reports**.**

Figure 3-26 is the adjusted MAIFIe recorded across Gulf's system. The adjusted MAIFIe results by region show that the Eastern region once again had the lowest frequency of momentary events on primary feeders. The Western region has the highest MAIFIe index in 2015, with a 4 percent improvement when compared to 2014. The data suggest that the highest, average, and lowest MAIFIe are all continuing to trend downward, suggesting improvement.

Figure 3-26.
MAIFIe across Gulf's Three Regions (Adjusted)



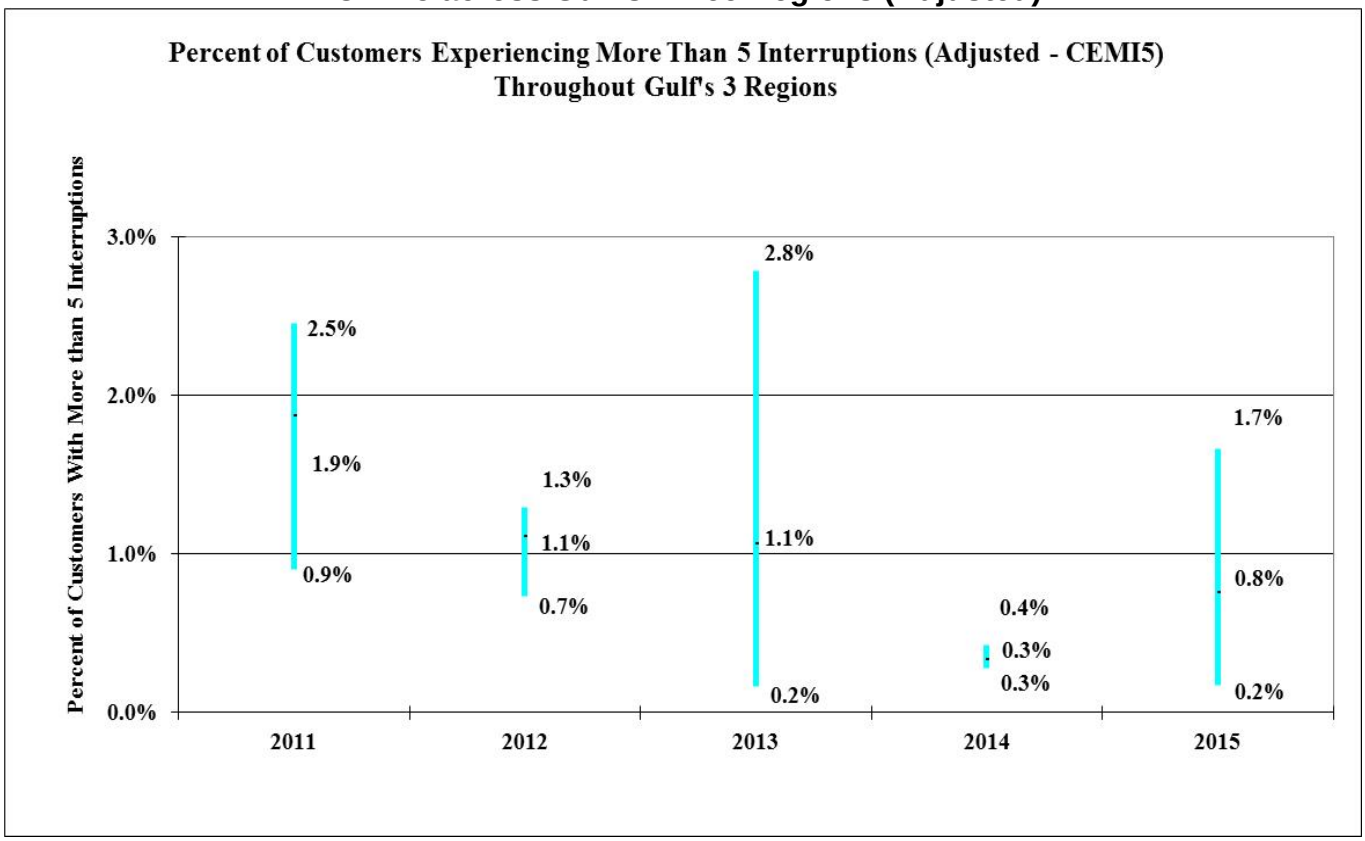
Gulf's Regions with the Highest and Lowest Adjusted MAIFIe Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest MAIFIe	Central	Western	Western	Central	Western
Lowest MAIFIe	Eastern	Eastern	Eastern	Eastern	Eastern

Source: Gulf's 2011-2015 distribution service reliability reports.

Figure 3-27 shows the highest, average, and lowest adjusted CEMI5 across Gulf's Western, Central, and Eastern regions. Gulf's 2015 results illustrate a 63 percent increase in the average CEMI5 percentage when compared to 2014. The average, lowest, and highest CEMI5 appears to still be trending downward over the five-year period of 2011 to 2015, suggesting that the percentage of Gulf's customers experiencing more than five interruptions is decreasing and improving.

Figure 3-27.
CEMI5 across Gulf's Three Regions (Adjusted)



Gulf's Regions with the Highest and Lowest Adjusted CEMI5 Distribution Reliability Performance by Year

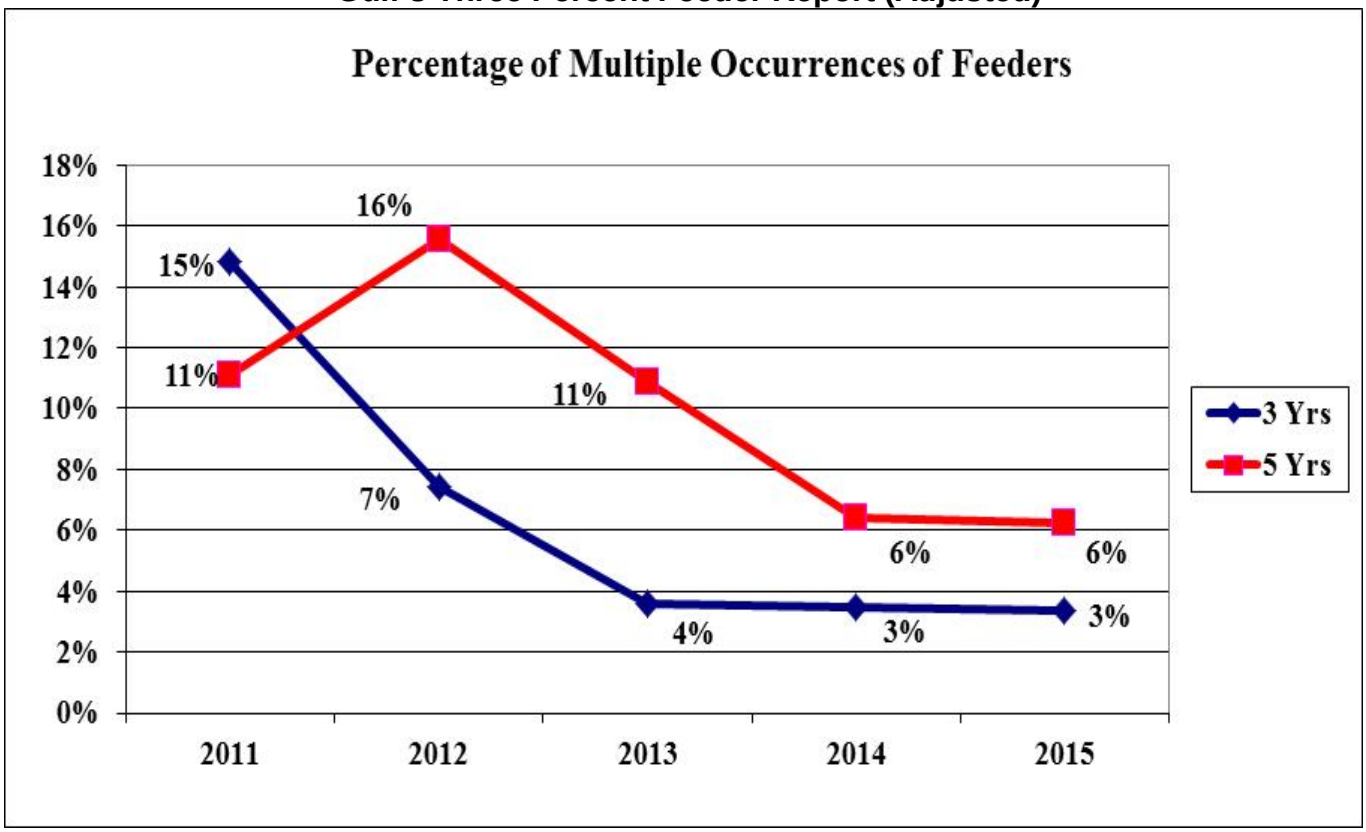
	2011	2012	2013	2014	2015
Highest CEMI5	Eastern	Western	Eastern	Eastern	Eastern
Lowest CEMI5	Central	Eastern	Central	Western	Central

Source: Gulf's 2011-2015 distribution service reliability reports.

Figure 3-28 shows the multiple occurrences of feeders using the utility's Three Percent Feeder Report and is analyzed on a three- and five-year basis. The Three Percent Feeder Report is a listing of the top three percent of feeders that have the most feeder outage events. The supporting data illustrates that the five-year multiple occurrences did not change from 2014 to 2015 along with the three-year multiple occurrences. The five-year period of 2011 to 2015 indicates overall that the five-year index is trending downward, as is the three-year multiple occurrences index.

Staff notes there was one feeder on the Three Percent Feeder Report with the last two years consecutively. Gulf reported that feeder 5542 experienced four outages in 2015. Three outages were created by Gulf's control center to create a safe work environment and all three outages lasted less than six minutes. The fourth outage was due to the severe weather event on April 25, 2015, when a switch was damaged by lightning. The customers lost power for approximately 124 minutes. Additional review of the feeder will be conducted to determine if there are any specific improvements that can be performed to improve performance of the feeders including installing smart devices that will enable operators to de-energize smaller sections of the feeder.

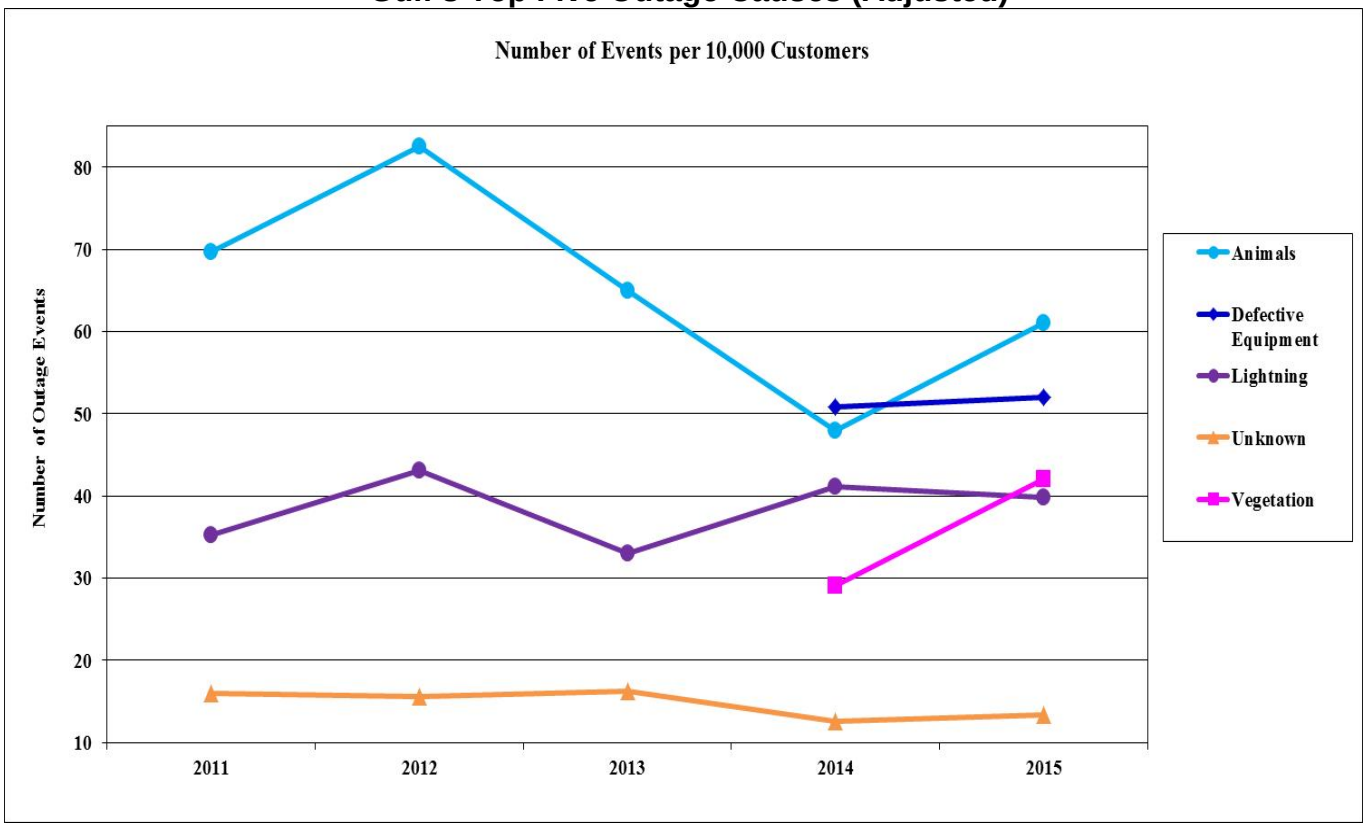
Figure 3-28.
Gulf's Three Percent Feeder Report (Adjusted)



Source: Gulf's 2011-2015 distribution service reliability reports.

Figure 3-29 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 10 causes of outage events and represents 91 percent of the total adjusted outage events that occurred during 2015. The top five causes of outage events were Animals (27 percent), Defective Equipment (23 percent), Vegetation (18 percent), Lightning (17 percent), and Unknown Causes (6 percent). The percentage of outages due to Animals was the highest cause of outages. As the number of outage events due to Animals is trending downward, even though there was an increase in 2015, the number of outage events due to Lightning and Unknown causes has remained relatively flat. The number of outages due to Defective Equipment and Vegetation are both trending upward. The Defective Equipment and Vegetation categories now include outage categories that in the past were separately identified. To improve reliability, Gulf continues to install animal protection on all major equipment and transformers. Gulf added Animal related outages as a stand-alone initiative in 2016 to its Root Cause Mitigation program. Through the Root Cause Mitigation program, Gulf will review feeders with a high number of Animal related outages and install additional animal protection when needed. In addition, Gulf continues to encourage its employees to report vegetation conditions so those issues can be remedied as soon as possible.

Figure 3-29.
Gulf's Top Five Outage Causes (Adjusted)



Source: Gulf's 2011-2015 distribution service reliability reports.

Observations: Gulf's Adjusted Data

There were improvements seen in the majority of Gulf's reliability indices in 2015, except SAIFI and CEMI5, where there were increases, and the Five-Year Percentages of Multiple Feeder Outage events and the Three-Year Percentages of Multiple Feeder Outage events, where there were no changes. Overall it appears that the trend lines for the reliability indices for the five-year period of 2011 to 2015 are all trending downward.

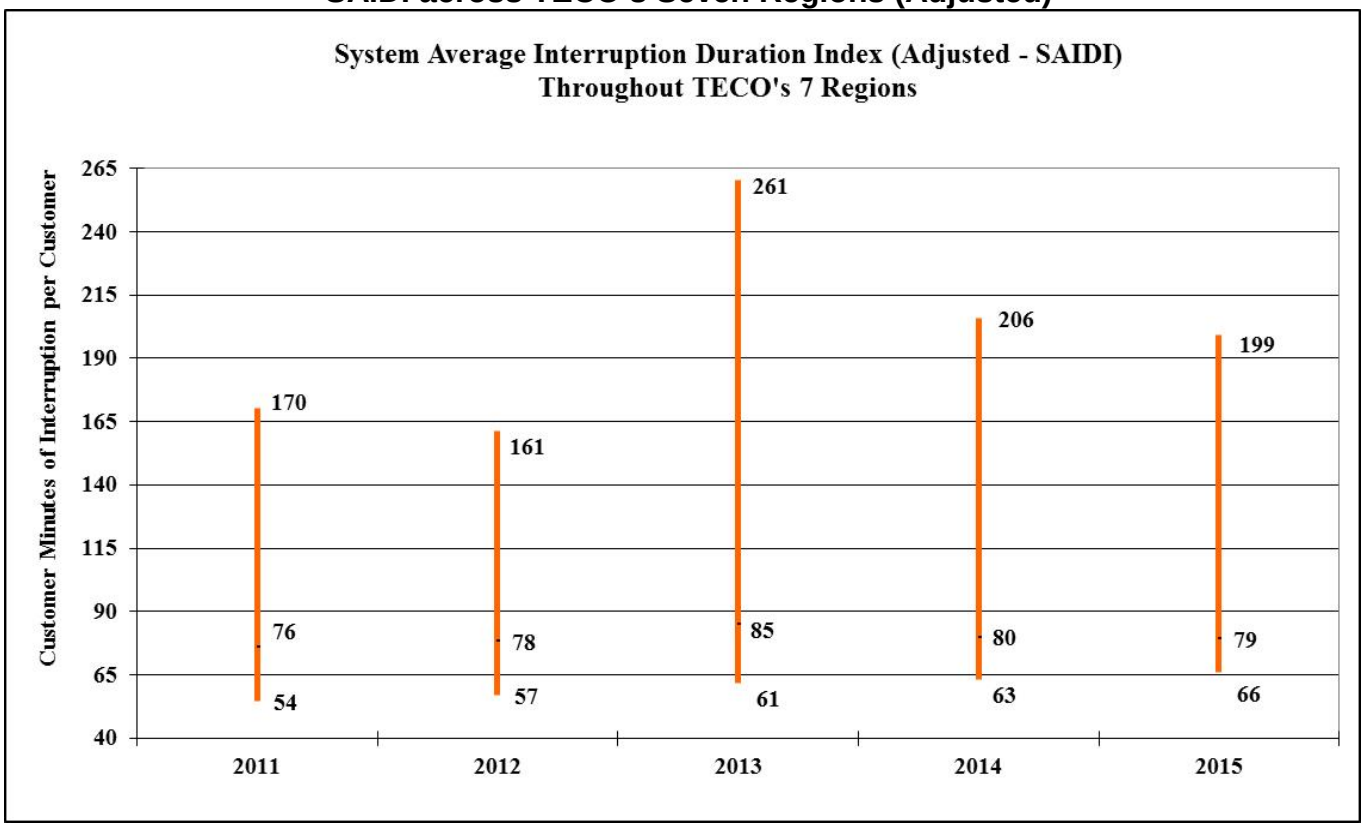
Gulf improves its distribution reliability through a continued focus on root causes and added distribution automation. Gulf explained that distribution automation is part of its Storm Hardening Plan, which includes installation of reclosers, transfer schemes, and fault indicators on the distribution system to further segment the feeders for outage restoration. In addition, there was increased emphasis on identifying and addressing recurring trouble throughout the system. Gulf is currently analyzing 2015 data to determine the need for any specific improvement opportunities beyond the current programs and storm hardening initiatives.

The Western District had the highest indexes for three out of five indices for 2015. Gulf reported that the Western District was severely impacted by a non-excludable severe weather event on April 25, 2015. During this event, over 23,000 customer lost power due to severe thunderstorms and high winds. Power to those customers was restored the next morning. Vegetation and Other weather outage causes were the two most common outage causes during the severe storm event on April 25, 2015.

Tampa Electric Company: Adjusted Data

Figure 3-30 shows the adjusted SAIDI values recorded by TECO's system. Two of the seven TECO regions had an increase in SAIDI performance during 2015, with Dade City having the highest SAIDI performance results for the five-year period of 2011 to 2015. The lowest SAIDI index for the seven regions appears to be trending upward. The average SAIDI index decreased 1 percent from 2014 to 2015 and appears to also be trending upward. The Central, Eastern, and Winter Haven regions recorded the lowest SAIDI indices for the five-year period. Dade City, Plant City, and South Hillsborough regions have the fewest customers and represent the most rural, lowest customer density per line mile in comparison to the other four TECO divisions.

Figure 3-30.
SAIDI across TECO's Seven Regions (Adjusted)



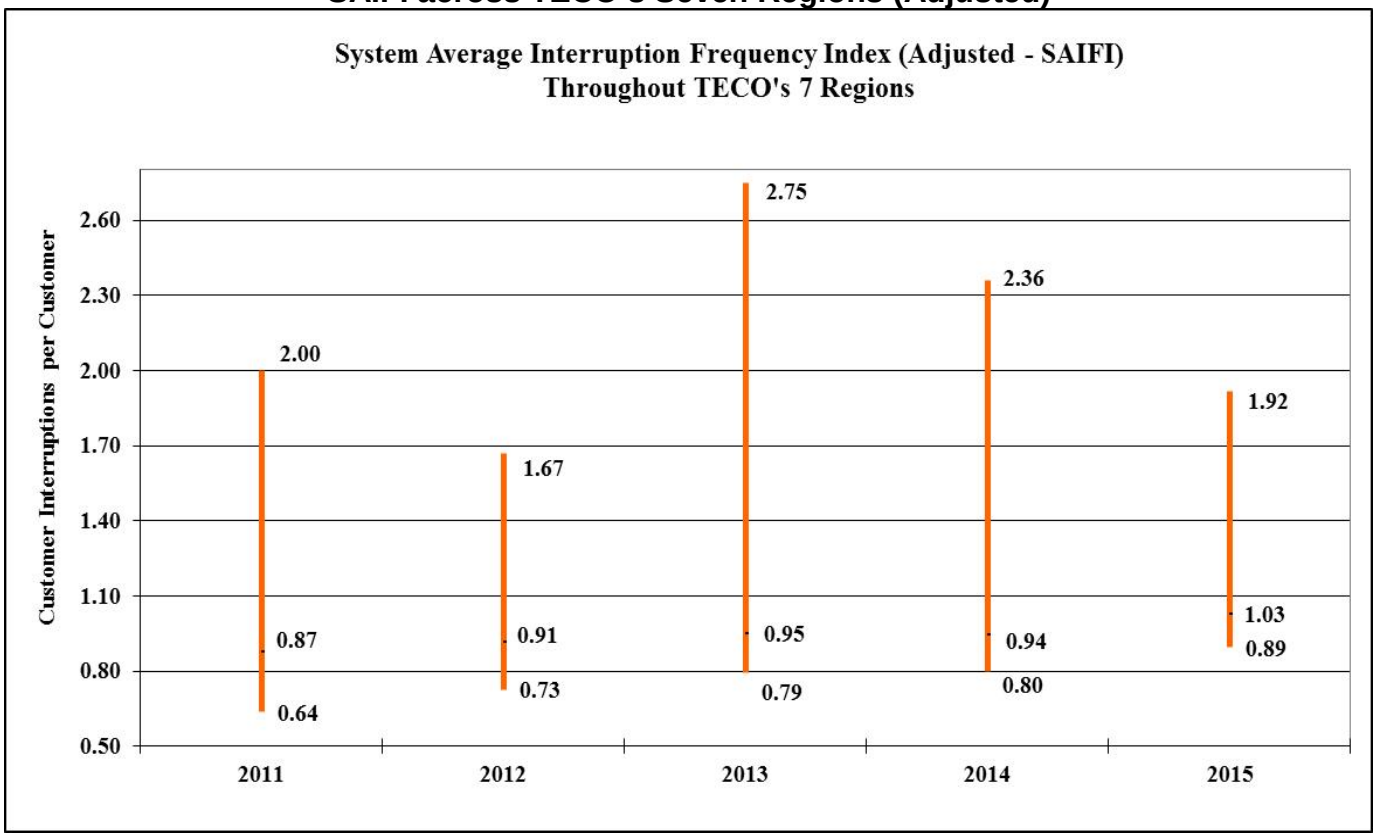
TECO's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest SAIDI	Dade City	Dade City	Dade City	Dade City	Dade City
Lowest SAIDI	Central	Eastern	Winter Haven	Central	Winter Haven

Source: TECO's 2011-2015 distribution service reliability reports.

Figures 3-31 illustrates TECO's adjusted frequency of interruptions per customer reported by the system. TECO's data represent a 9 percent increase in the SAIFI average from 0.94 interruptions in 2014 to 1.03 interruptions in 2015. TECO's Dade City region continues to have the highest frequency of service interruptions when compared to TECO's other regions. The maximum, minimum, and average SAIFI are all trending upward.

Figure 3-31.
SAIFI across TECO's Seven Regions (Adjusted)



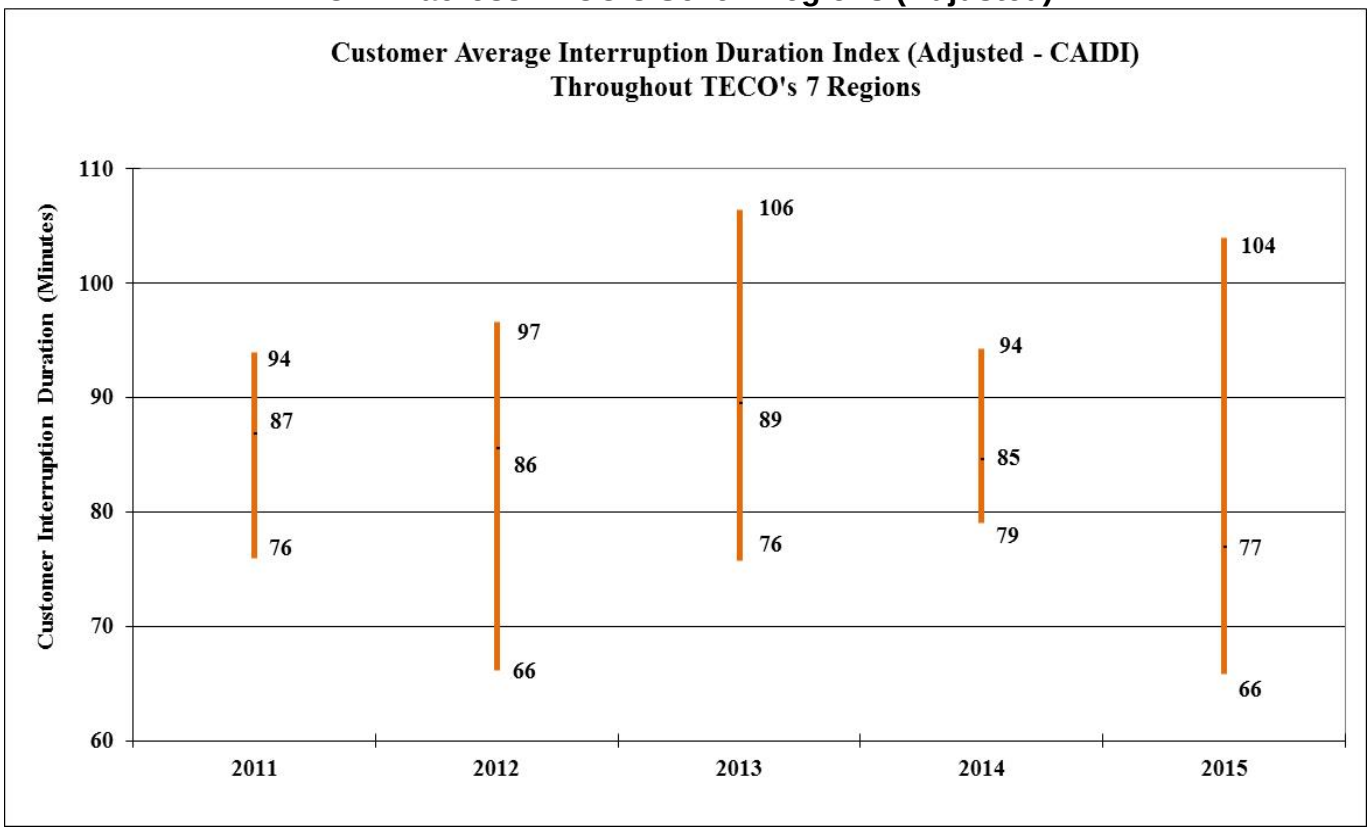
TECO's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest SAIFI	Dade City	Dade City	Dade City	Dade City	Dade City
Lowest SAIFI	Central	Eastern	Central	Central	Western

Source: TECO's 2011-2015 distribution service reliability reports.

Figure 3-32 charts the length of time that a typical TECO customer experiences an outage, which is known as CAIDI. The highest CAIDI minutes appear to be confined to the Dade City, Eastern, and Western regions. Winter Haven, Eastern, and Central regions have had the lowest (best) results for the last five years. The average CAIDI is trending upward at this time suggesting TECO's customers are experiencing longer lasting outages, even though there was a 9 percent decrease in the average CAIDI when comparing 2014 to 2015.

Figure 3-32.
CAIDI across TECO's Seven Regions (Adjusted)



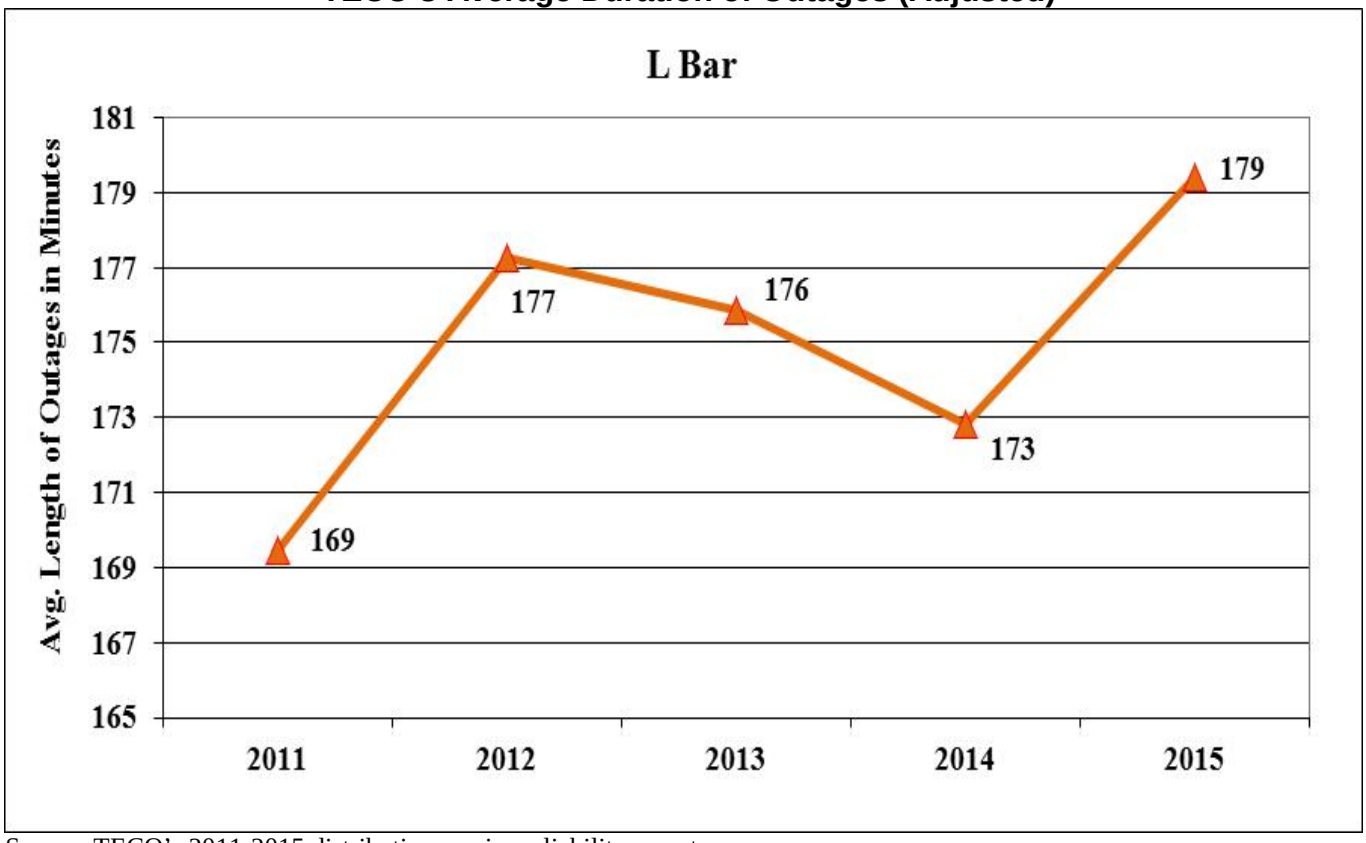
TECO's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest CAIDI	Western	Dade City	Eastern	Western	Dade City
Lowest CAIDI	Eastern	Winter Haven	Winter Haven	Central	Central

Source: TECO's 2011-2015 distribution service reliability reports.

Figure 3-33 denotes a 3 percent increase in outage durations for the period from 2014 to 2015 for TECO. The average length of time TECO spends restoring service to its customers affected by outage events, excluding hurricanes and other allowable excluded outage events is shown in the L-Bar index. The L-Bar index continues to be trending upward for the five-year period of 2011 to 2015, suggesting longer restoral times. TECO reported that the increasing value of L-Bar is due to lightning, other weather and defective equipment type of outages. TECO has initiated plans to reduce the total minutes of interruptions related to theses type of outages by: (1) identifying and replacing lightning arrestors on overhead transformers and (2) changing its standard for previously installing live-front switchgears to dead-front switchgears.

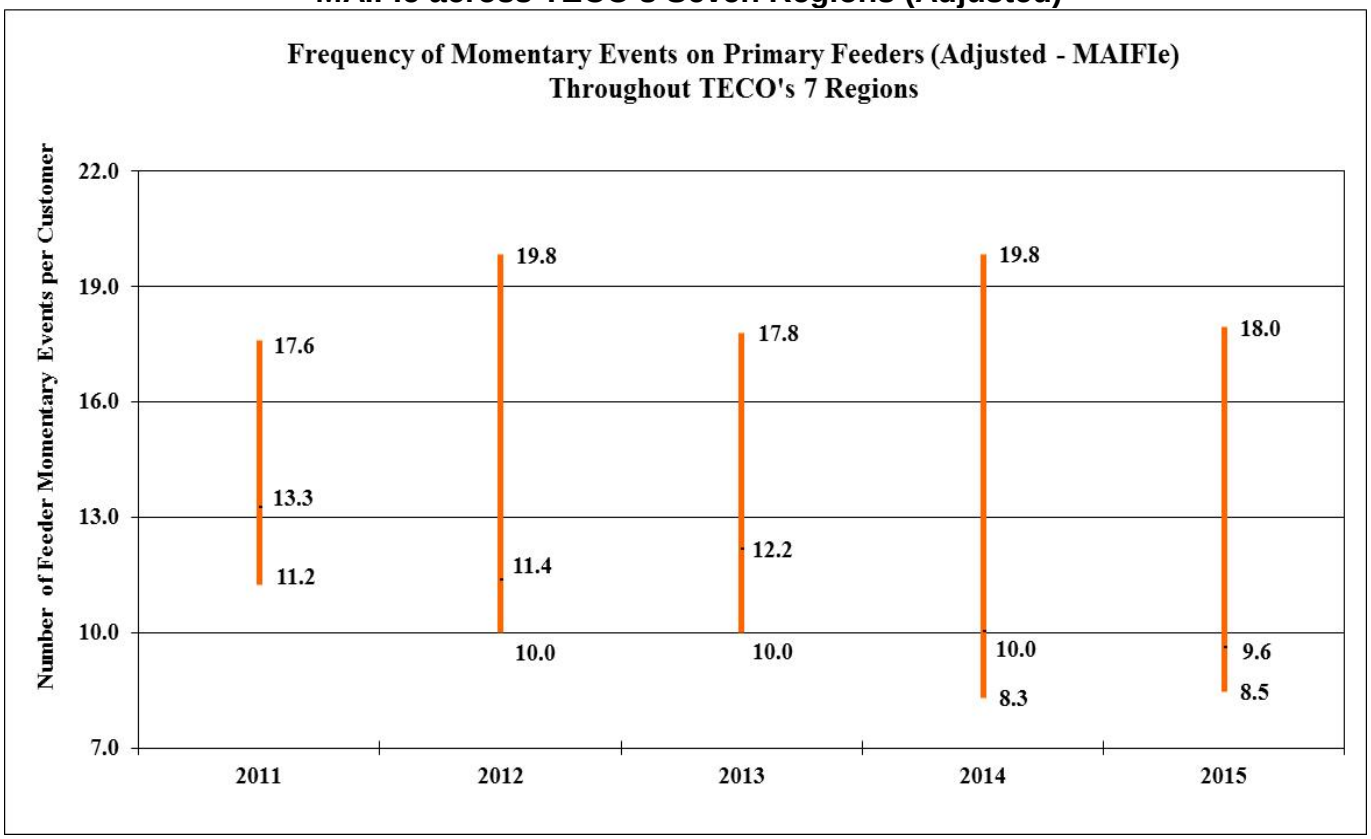
Figure 3-33.
TECO's Average Duration of Outages (Adjusted)



Source: TECO's 2011-2015 distribution service reliability reports.

Figure 3-34 illustrates TECO's number of momentary events on primary circuits per customer recorded across its system. In 2015, the MAIFIe performance improved over the 2014 results in all regions except Central and South Hillsborough. The average MAIFIe decreased 4 percent from 2014 to 2015. **Figure 3-34** shows that the average MAIFIe is trending downward, which suggest an improvement in performance over the five-year period of 2011 to 2015.

Figure 3-34.
MAIFIe across TECO's Seven Regions (Adjusted)



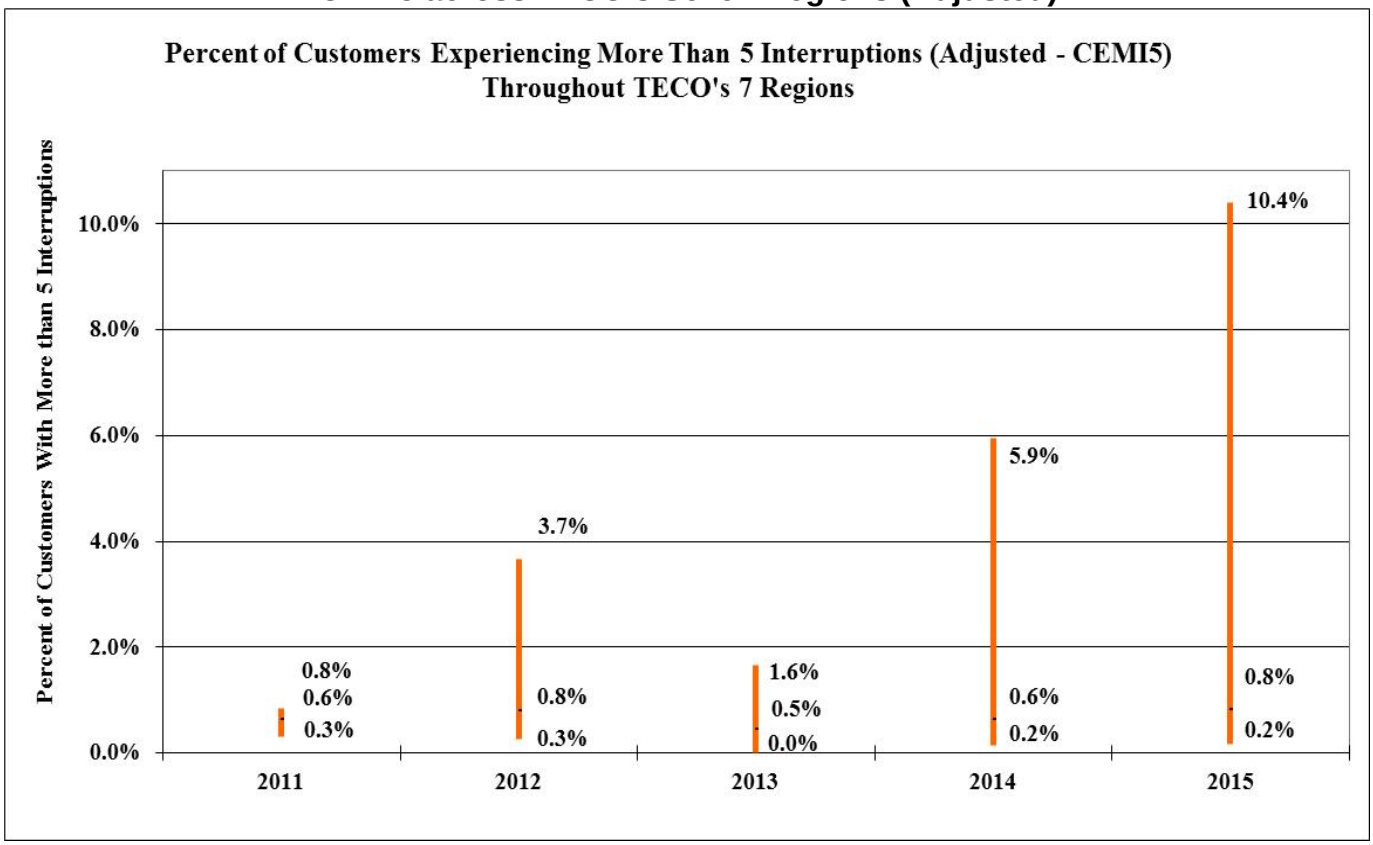
TECO's Regions with the Highest and Lowest Adjusted MAIFIe Distribution Reliability Performance by Year

	2011	2012	2013	2014	2015
Highest MAIFIe	Plant City	Plant City	Plant City	Dade City	Dade City
Lowest MAIFIe	Central	Winter Haven	Central	Central	Central

Source: TECO's 2011-2015 distribution service reliability reports.

Figure 3-35 shows the percent of TECO's customers experiencing more than five interruptions. Three regions in TECO's territory experienced a decrease in the CEMI5 results for 2015. The Dade City, Plant City, South Hillsborough, and Western regions experienced an increase in the CEMI5 index. Dade City reported the highest CEMI5 percentage for 2015. With TECO's results for this index varying for the past five years, the average CEMI5 index appears to be trending slightly upward indicating a decline in performance. There was a 25 percent increase in the average CEMI5 index from 2014 to 2015.

Figure 3-35.
CEMI5 across TECO's Seven Regions (Adjusted)



TECO's Regions with the Highest and Lowest Adjusted CEMI5 Distribution Reliability Performance by Year

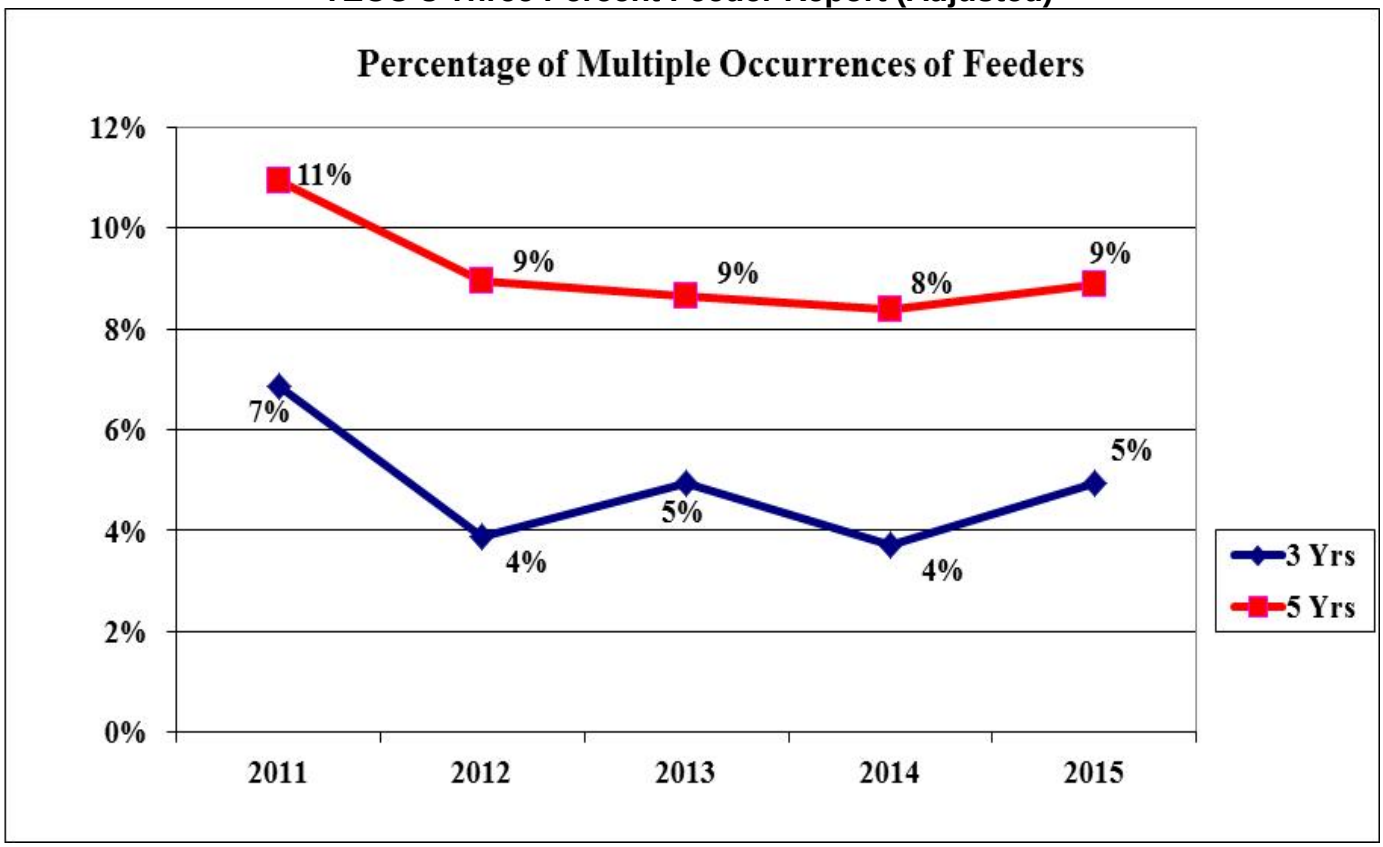
	2011	2012	2013	2014	2015
Highest CEMI5	Plant City	Dade City	Plant City	Dade City	Dade City
Lowest CEMI5	South Hillsborough	Western	Winter Haven	Western	Winter Haven

Source: TECO's 2011-2015 distribution service reliability reports.

Figure 3-36 represents an analysis of TECO's top three percent of problem feeders that have reoccurred (appeared on the Three Percent Feeder Report) on a five-year and three-year basis. The graph is developed using the number of recurrences divided by the number of feeders reported. The five-year average of outages per feeder increased by 11 percent from 2014 to 2015 and the three-year average of outages also increased from 4 percent in 2014 to 5 percent in 2015. Both the five-year average of outages per feeder and the three-year average of outages appear to be trending downward for the five-year period of 2011 to 2015.

Staff notes that two feeders were on the Three Percent Feeder Report for three years, the last two years consecutively. Four circuit outages were reported for each feeder. The causes for the outages were animals, electrical, down wire, and vegetation. In 2015, the corrective action undertaken by TECO included: hotspot tree trimming, full circuit tree trimming, installation of a recloser, pole replacement, and replacement of defective transformers and lightning arresters. TECO stated that it will continue to monitor circuit outage performance as part of its daily and ongoing review of system reliability and will respond accordingly at a regional level.

Figure 3-36.
TECO's Three Percent Feeder Report (Adjusted)

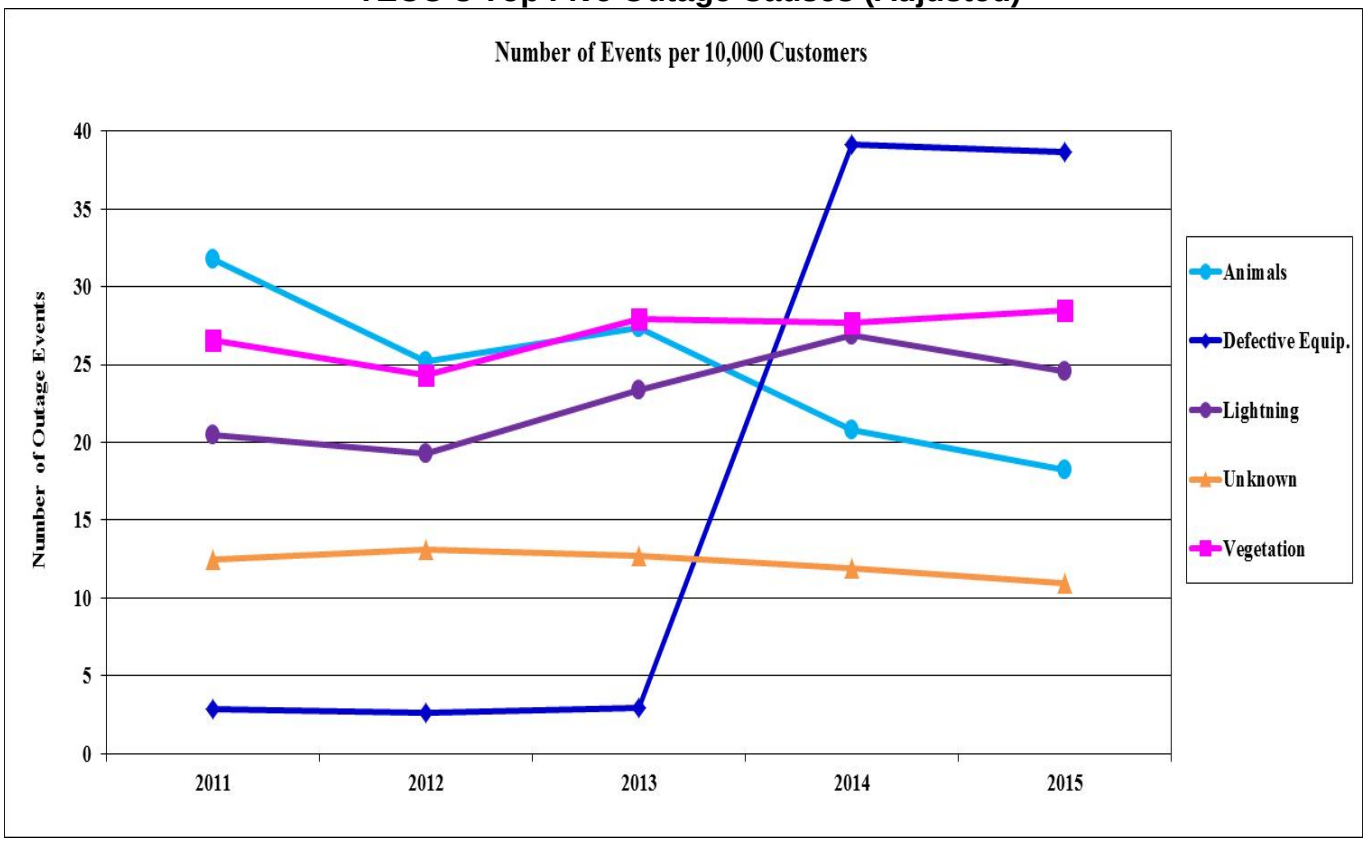


Source: TECO's 2011-2015 distribution service reliability reports.

Figure 3-37 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 10 causes of outage events and represents 89 percent of the total outage events that occurred during 2015. For the five-year period, the five top causes of outage events included Defective Equipment (28 percent), Vegetation (21 percent), Lightning (18 percent), Animals (13 percent), and Unknown Causes (8 percent) on a cumulative basis. Defective equipment is the highest cause of outages for 2015. Beginning in 2014, the Defective Equipment category now includes outage categories that in the past were separately identified. Vegetation and Lightning causes are the next two top problem areas for TECO. The outages due to Vegetation increased 3 percent from 2014 to 2015. The outages from Lightning decreased 9 percent for the same time period. The numbers of outages due to Defective Equipment, Lightning and Vegetation causes are trending upward while the number of outages due to Unknown is remaining relatively flat. The number of outages due to Animals is trending downward.

TECO continues to review processes and updates equipment to mitigate outages caused by Defective Equipment. TECO has reviewed the common outage occurrences, which led to changes in: (1) materials; (2) workmanship issues; and (3) construction practices. This will help reduce, minimize or even eliminate these types of outages. TECO installed reclosers, sectionalizers, and animal guards. Lightning arresters that failed were replaced. TECO inspects the primary meter cabinets annually. In 2016, TECO plans to install smart switches in its service area to sectionalize the circuits when a fault occurs to restore power to the unaffected portions of the circuits.

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



Source: TECO's 2011-2015 distribution service reliability reports.

Observations: TECO's Adjusted Data

Only three of TECO's 2015 reliability indices, SAIDI, CAIDI, and MAIFIe, showed an improvement in performance compared to 2014. For the five-year period of 2011 to 2015, the indices for SAIDI, SAIFI, CAIDI, CEMI5, and L-Bar are all trending upward. The indices for MAIFIe, the Three-Year Percent of Multiple Feeder outage events, and the Five-Year Percent of Multiple Feeder outage events are trending downward. TECO reported that the overall improvements of the reliability indices are attributed to its aggressive tree-trimming plan, installation of additional reclosers, and the implementation of crews who mainly focus on restoration work. The decrease in MAIFIe index is attributed to TECO's use of its Schweitzer relays and controls in substations. During non-storm months these relays were temporarily disabled to reduce the number of momentary events customers would experience. TECO analyzes outages through its outage database. TECO's management continues reviewing system performance and related metrics on a daily basis and reviews the status of de-energized underground cables, oil circuit reclosers, online capacitor banks and streetlights previously identified as needing maintenance.

In 2015, the Dade City region had the highest reliability indices in all five indices although Dade City did improve in three of the five indices. TECO has implemented the following measures to improve reliability in this region: installed reclosers on the poor performing circuits, reconfigured circuits, and installed one TripSavers (a type of recloser that protects laterals). This recloser eliminates sustained interruptions, which results when the lateral fuse operates. This recloser also eliminates momentary interruptions on the feeder when the breaker is tripped to save the lateral fuse during a transient fault. In 2016, TECO will install one more recloser and five TripSavers.

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Section IV: Inter-Utility Reliability Comparisons

Section IV contains comparisons of the utilities' adjusted data for the various reliability indices that were reported. It also contains a comparison of the service reliability related complaints received by the Commission.

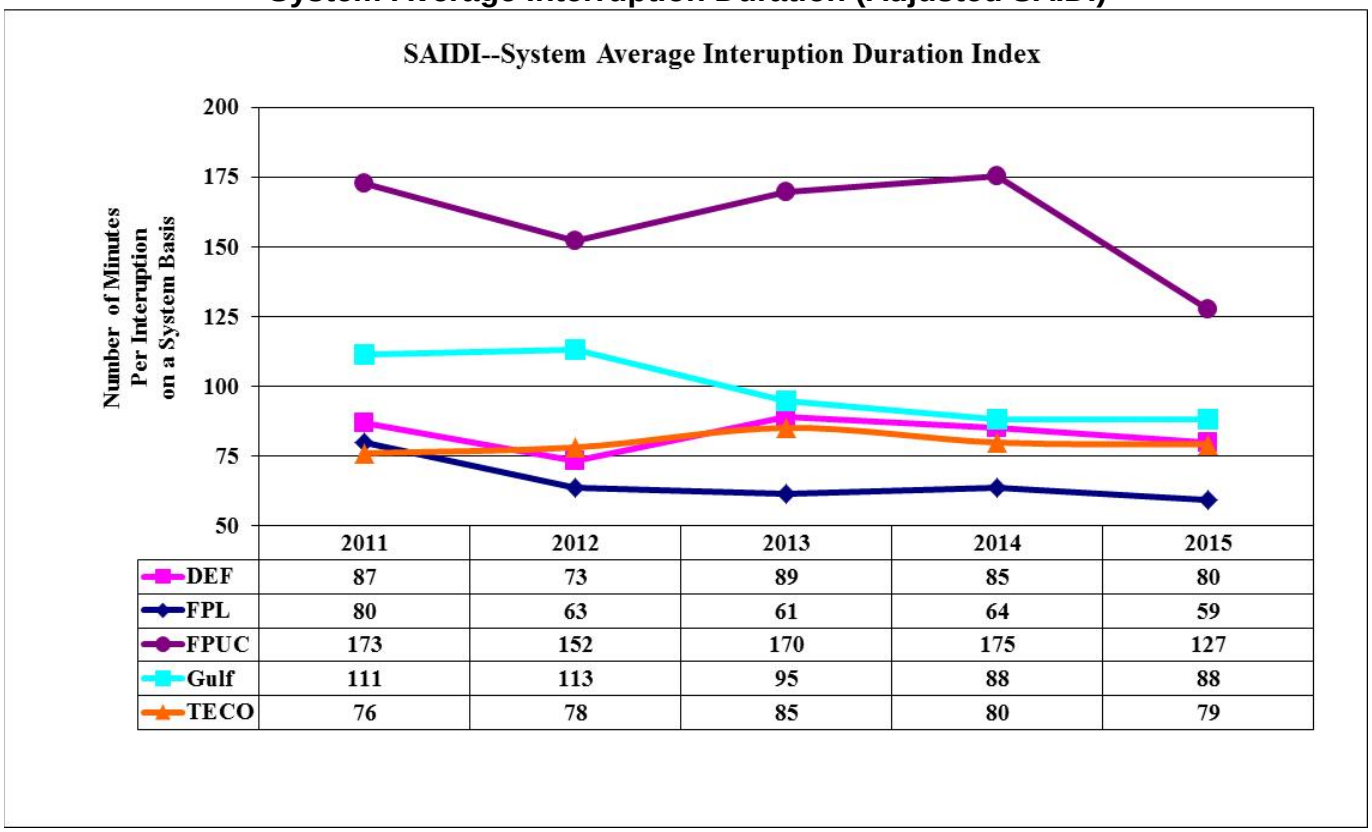
Inter-Utility Reliability Trend Comparisons: Adjusted Data

The inter-utility trend comparison focuses on a graphical presentation that combines all of the IOUs' distribution reliability indices for the years 2011 to 2015. **Figures 4-1** through **4-3** apply to all five utilities while **Figures 4-4** and **4-5** do not apply to FPUC because it is not required to report MAIFIe and CEMI5 due to the size of its customer base. The adjusted data is used in generating the indices in this report and is based on the exclusion of certain events allowed by Rule 25-6.0455(4), F.A.C. Generalizations can be drawn from the side-by-side comparisons; however, any generalizations should be used with caution due to the differing sizes of the distribution systems, the degree of automation, and the number of customers. The indices are unique to each IOU.

Figure 4-1 indicates that TECO's SAIDI trend has gradually risen since 2011, while DEF, FPL, FPUC, and Gulf appear to be trending downward. Comparing 2014 SAIDI values to 2015 SAIDI indices, all utilities, except Gulf, have decreased. Gulf's SAIDI value did not change from 2014 to 2015. DEF's SAIDI value has fallen 6 percent, FPL fell 8 percent, FPUC fell 27 percent, and TECO fell 1 percent from 2014 to 2015.

SAIDI is the duration of an interruption per retail customer served within a specified area of service over a given period. It is determined by dividing the total Customer Minutes of Interruption by total Number of Customers Served for the respective area of service.

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



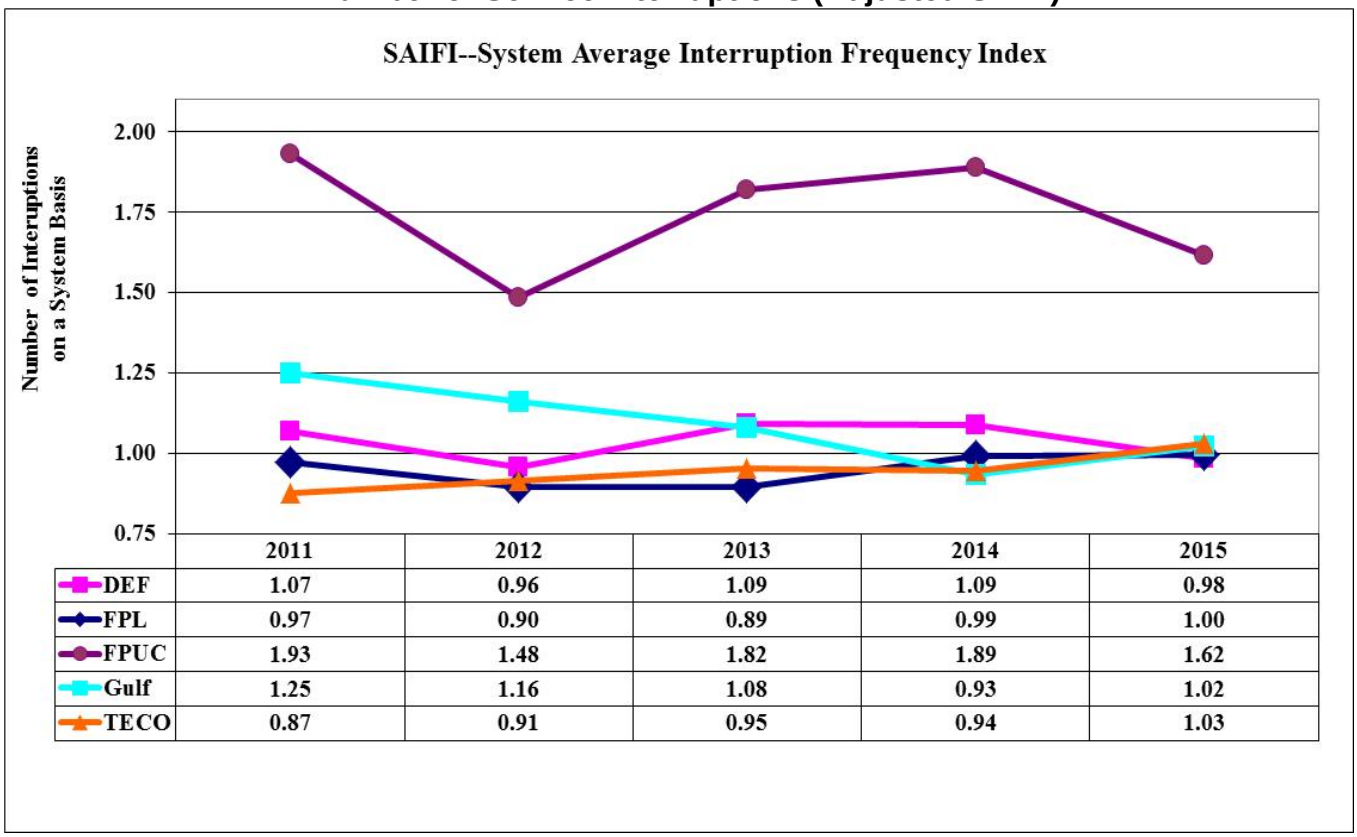
	2011	2012	2013	2014	2015
DEF	87	73	89	85	80
FPL	80	63	61	64	59
FPUC	173	152	170	175	127
Gulf	111	113	95	88	88
TECO	76	78	85	80	79

Source: The IOUs' 2011-2015 distribution service reliability reports.

Figure 4-2 is a five-year graph of the adjusted SAIFI for each IOU. The 2015 data shows DEF and FPUC's SAIFI values decreased (improved) from the 2014 results as FPL, Gulf and TECO's SAIFI values increased. Over the five-year period of 2011 to 2015, FPL and TECO's SAIFI values are all trending upward. DEF, FPUC, and Gulf's SAIFI value is trending downward for the period of 2011 to 2015.

SAIFI is the average number of service interruptions per retail customer within a specified area of service over a given period. It is determined by dividing the Sum of Service (aka Customer) Interruptions (CI) by the total Number of Customers Served for the respective area of service.

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



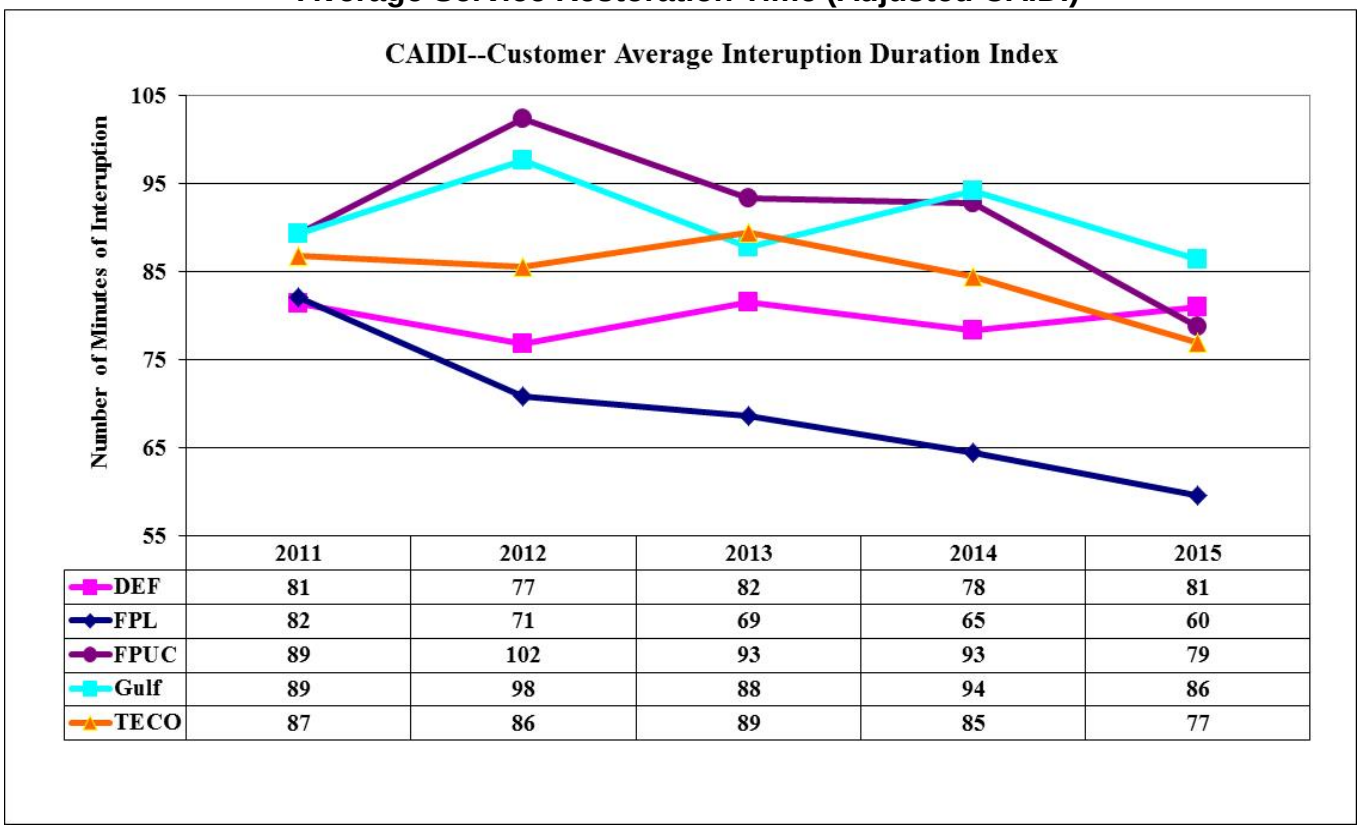
	2011	2012	2013	2014	2015
DEF	1.07	0.96	1.09	1.09	0.98
FPL	0.97	0.90	0.89	0.99	1.00
FPUC	1.93	1.48	1.82	1.89	1.62
Gulf	1.25	1.16	1.08	0.93	1.02
TECO	0.87	0.91	0.95	0.94	1.03

Source: The IOUs' 2011-2015 distribution service reliability reports.

Figure 4-3 is a five-year graph of the adjusted CAIDI for each IOU. FPL, FPUC, Gulf, and TECO had a decrease in the CAIDI from 2014 to 2015 while DEF had an increase in the CAIDI. All utilities, except DEF, CAIDI values are trending downward for the five-year period of 2011 to 2015. DEF's CAIDI value is staying relatively flat for the same period.

CAIDI is the average interruption duration or the time to restore service to interrupted customers. CAIDI is calculated by dividing the total system CMI by the number of customer interruptions, which is also SAIDI, divided by SAIFI.

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



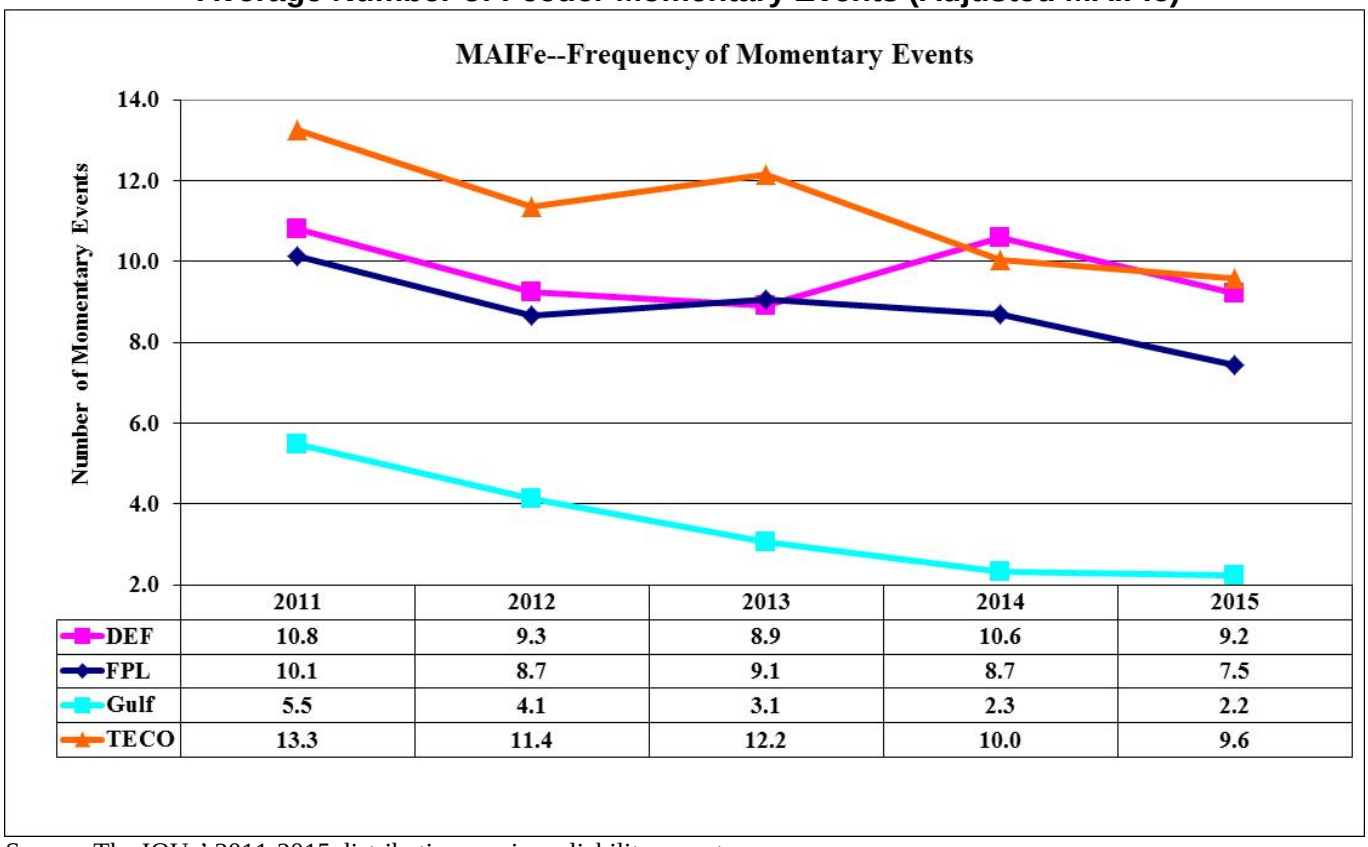
	2011	2012	2013	2014	2015
DEF	81	77	82	78	81
FPL	82	71	69	65	60
FPUC	89	102	93	93	79
Gulf	89	98	88	94	86
TECO	87	86	89	85	77

Source: The IOUs' 2011-2015 distribution service reliability reports.

Figure 4-4 shows a five-year graph of the adjusted MAIFIe for DEF, FPL, Gulf, and TECO. DEF, FPL, Gulf and TECO's MAIFIe indices are all trending downward for the five-year period of 2011 to 2015. Comparing the MAIFIe for 2014 to 2015, DEF decreased by 13 percent, FPL decreased by 14 percent, Gulf decreased by 4 percent and TECO decreased by 4 percent. FPUC is exempt from reporting MAIFIe and CEMI5 because it has fewer than 50,000 customers.

MAIFIe is the 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 interruptions events recorded on primary circuits (CME) by the number of customers served.

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

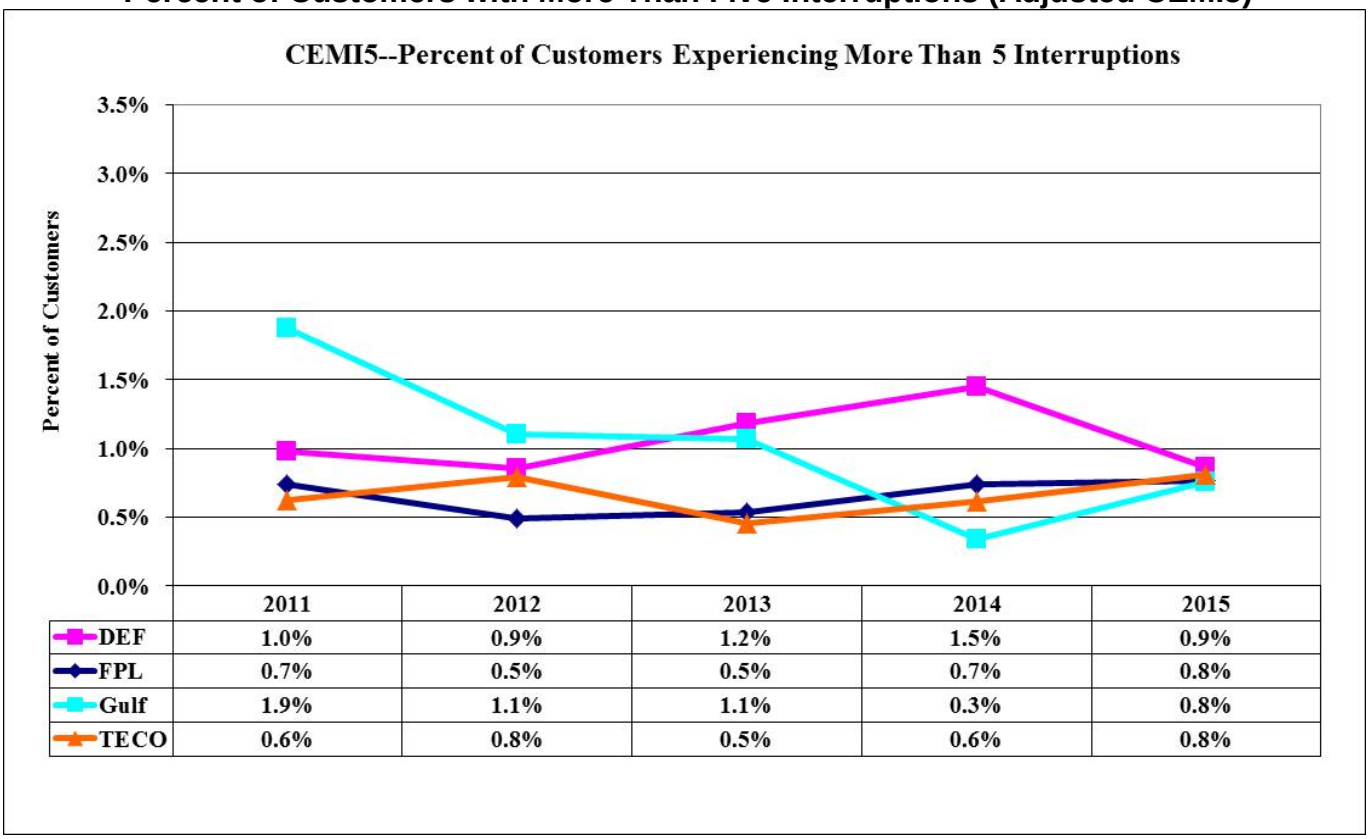


	2011	2012	2013	2014	2015
DEF	10.8	9.3	8.9	10.6	9.2
FPL	10.1	8.7	9.1	8.7	7.5
Gulf	5.5	4.1	3.1	2.3	2.2
TECO	13.3	11.4	12.2	10.0	9.6

Source: The IOUs' 2011-2015 distribution service reliability reports.

Figure 4-5 is a five-year graph of the adjusted CEMI5 for FPL, Gulf, DEF, and TECO. CEMI5 is a percentage. It represents the number of customers that experienced more than five service interruptions in the year divided by the total number of customers. In 2015, FPL, Gulf, and TECO's CEMI5 percent all increased to 0.8 percent from 0.7 percent, 0.3 percent, and 0.6 percent, in 2014. FPL and TECO are trending slightly upward as Gulf is trending downward for the period of 2011 to 2015. DEF's CEMI5 had a 13 percent decrease in the percent of customers experiencing more than five interruptions in 2015 compared to its 2014 results. DEF's CEMI5 index is trending slightly upward for the five-year period.

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

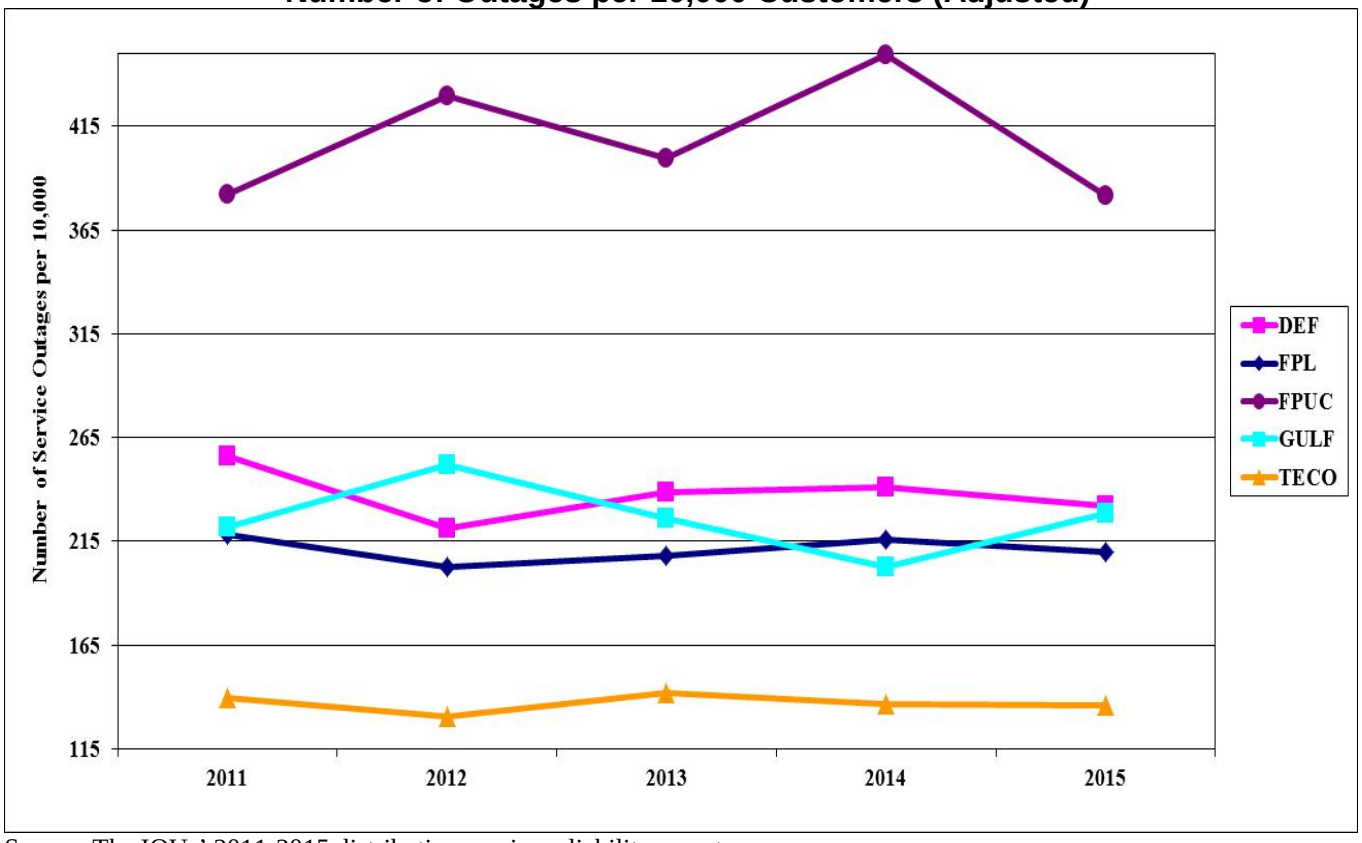


	2011	2012	2013	2014	2015
DEF	1.0%	0.9%	1.2%	1.5%	0.9%
FPL	0.7%	0.5%	0.5%	0.7%	0.8%
Gulf	1.9%	1.1%	1.1%	0.3%	0.8%
TECO	0.6%	0.8%	0.5%	0.6%	0.8%

Source: The IOUs' 2011-2015 distribution service reliability reports.

Figure 4-6 shows the number of outages per 10,000 customers on an adjusted basis for the five IOUs over the last five years. The graph displays each utility's adjusted data concerning the number of outage events and the total number of customers on an annual basis. The number of FPL outages decreased from 101,981 in 2014 to 100,563 in 2015, and the number of outages per 10,000 customers is trending downward for the five-year period. TECO's results are trending upward for the five-year period. DEF's number of outages decreased for 2015 and the results are trending downward for the five-year period. Gulf's number of outages increased for 2015, and is trending upward for the five-year period. FPUC's results increased for 2011 to 2012, decreased for 2012 and 2013, increased for 2013 to 2014 and decreased for 2014 to 2015. Due to the small customer base, the line graph for FPUC could be subject to greater volatility.

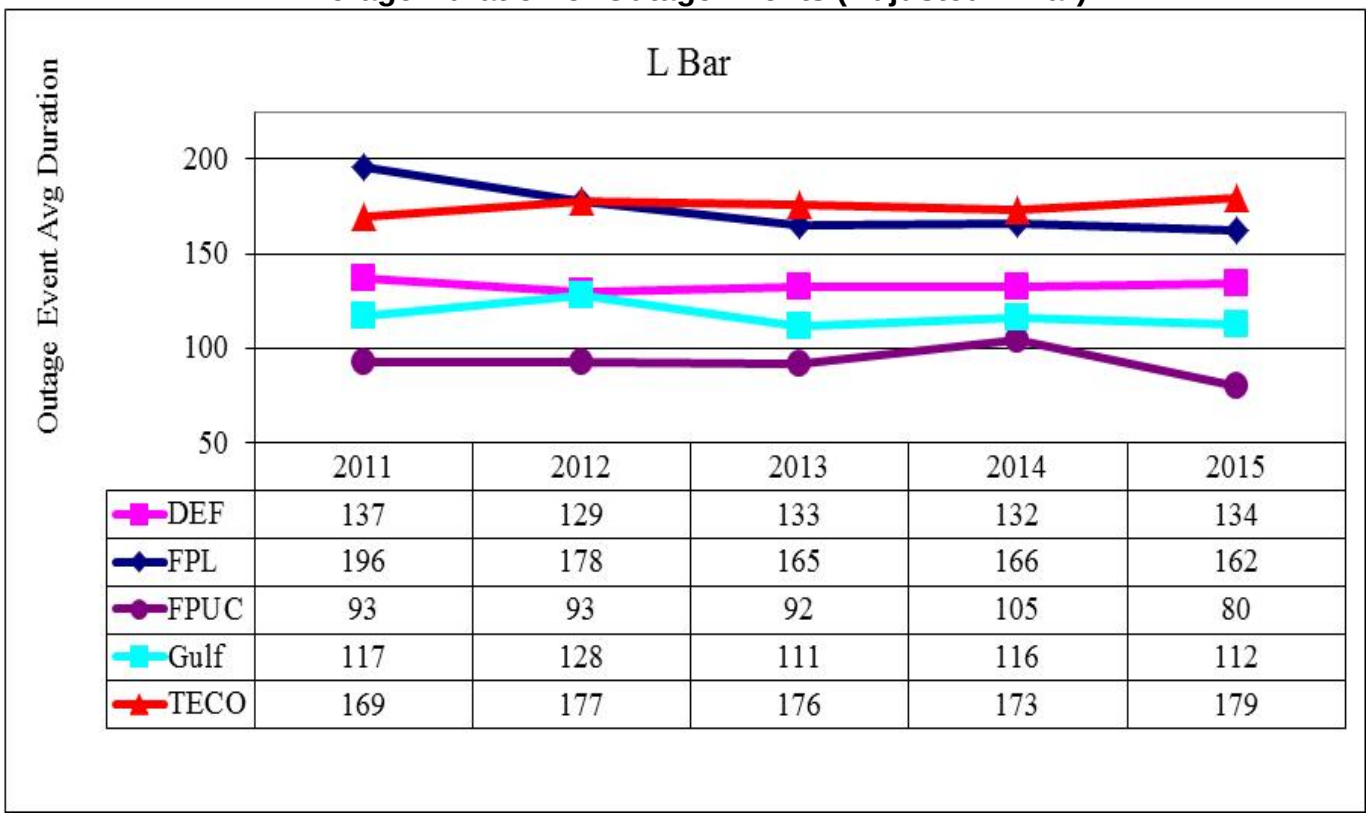
Figure 4-6.
Number of Outages per 10,000 Customers (Adjusted)



Source: The IOUs' 2011-2015 distribution service reliability reports.

Figure 4-7 represents the average duration of outage events (Adjusted L-Bar) for each IOU. From the data shown, it appears that the utilities are more consistent with their restoral times for the five-year period of 2011 to 2015.

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



	2011	2012	2013	2014	2015
DEF	137	129	133	132	134
FPL	196	178	165	166	162
FPUC	93	93	92	105	80
Gulf	117	128	111	116	112
TECO	169	177	176	173	179

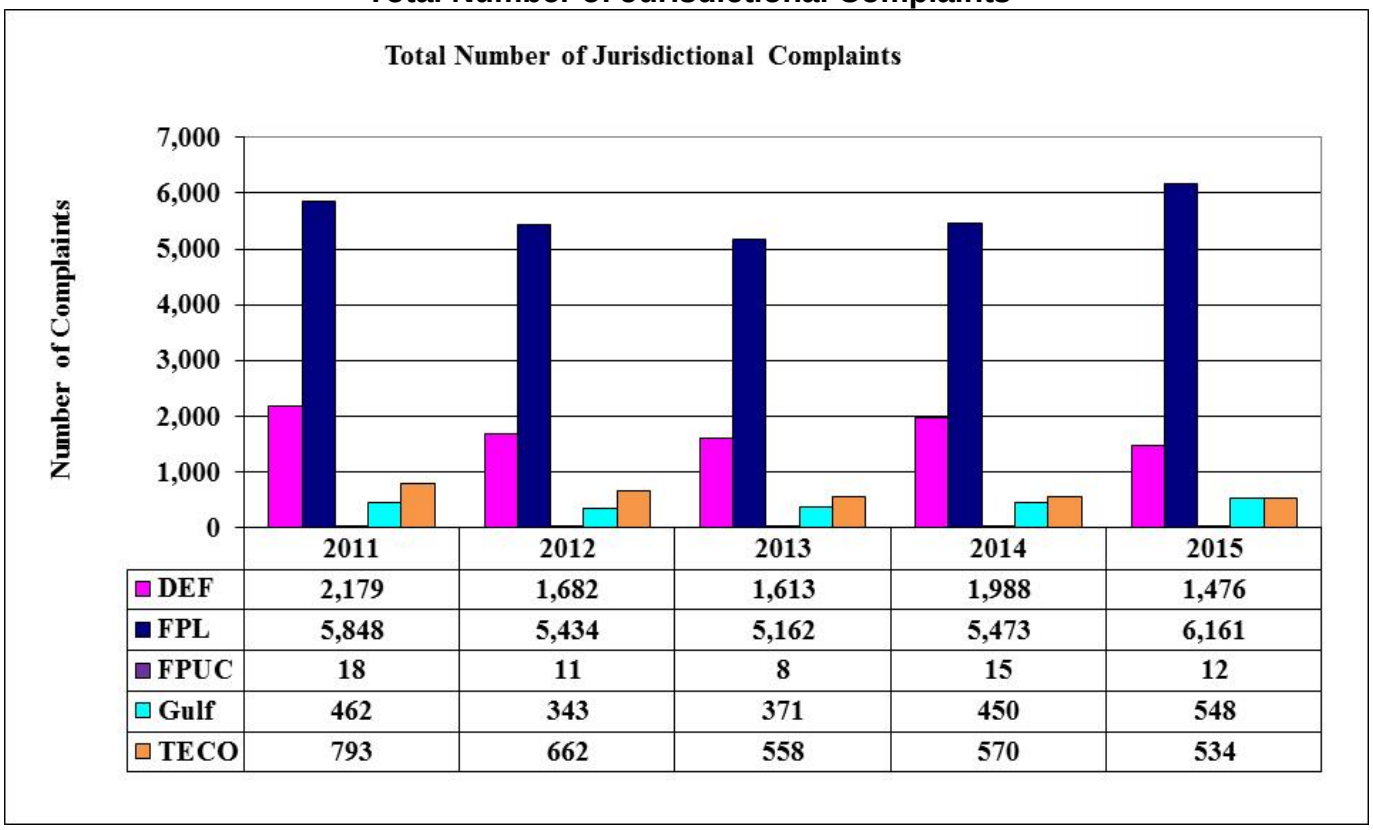
Source: The IOUs' 2011-2015 distribution service reliability reports.

Inter-Utility Comparisons of Reliability Related Complaints

Figures 4-8, **4-9**, **4-10**, and **4-11** represent consumer complaint data that was extracted from the Commission's Consumer Activity Tracking System (CATS). Each consumer complaint received by the Commission is assigned a code after the complaint is resolved. Reliability related complaints have 10 specific category types and typically pertain to Trees, Safety, Repairs, Frequent Outages, and Momentary Service Interruptions.

Figure 4-8 shows the total number of jurisdictional complaints[17] for each IOU. In comparing the number of complaints by the different companies, the total number of customers should be considered. FPL has the higher number of complaints, but FPL also has more customers than the other companies.

Figure 4-8.
Total Number of Jurisdictional Complaints



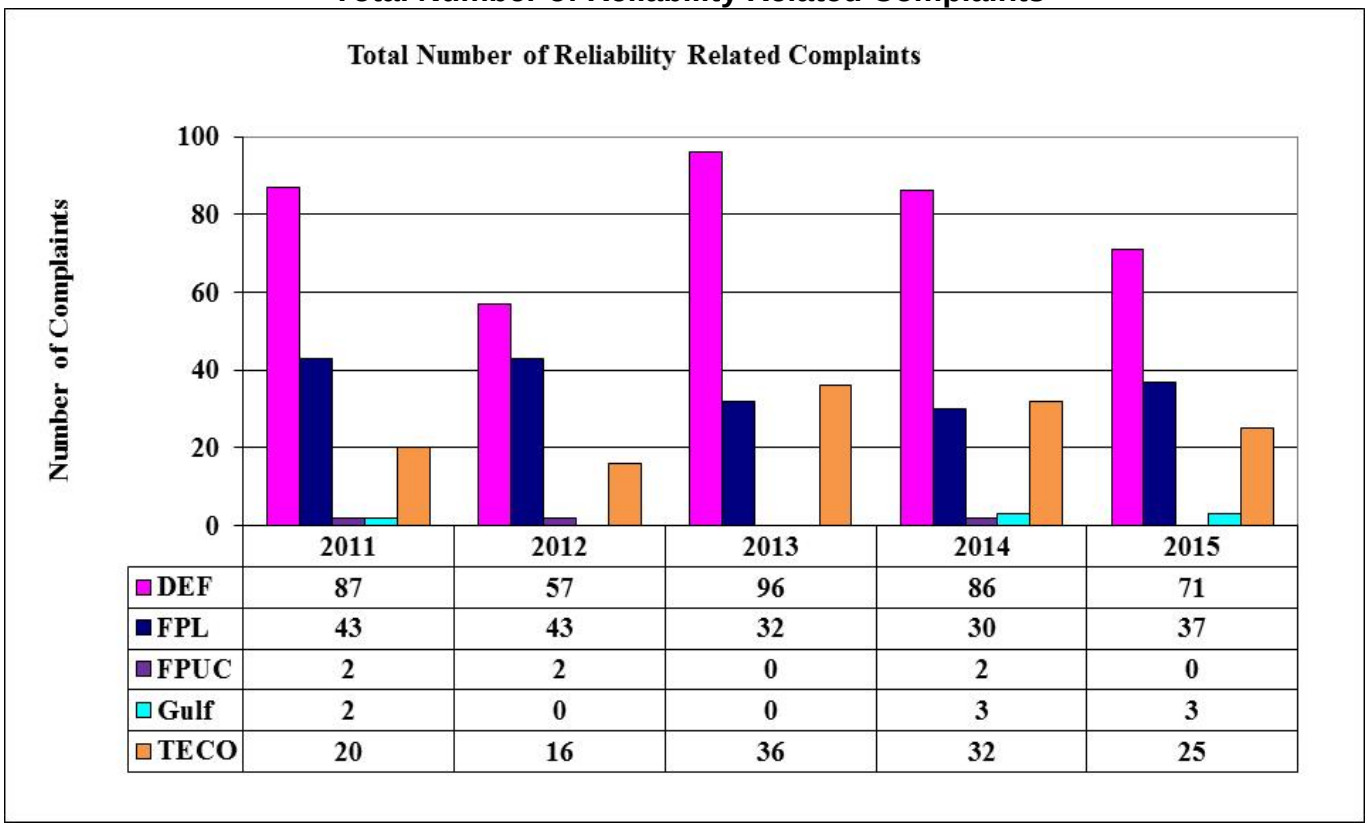
	2011	2012	2013	2014	2015
DEF	2,179	1,682	1,613	1,988	1,476
FPL	5,848	5,434	5,162	5,473	6,161
FPUC	18	11	8	15	12
Gulf	462	343	371	450	548
TECO	793	662	558	570	534

Source: FPSC CATS.

[17] Non-jurisdictional complaint codes include load management, hurricanes, and damage claims.

Figure 4-9 charts the total number of reliability related complaints for the IOUs. DEF is showing the largest amount of reliability complaints for the five-year period of 2011 to 2015 with FPUC and Gulf showing the least amount. DEF, FPL, and FPUC are trending downward in the number of reliability complaints, while Gulf and TECO are trending upward.

Figure 4-9.
Total Number of Reliability Related Complaints

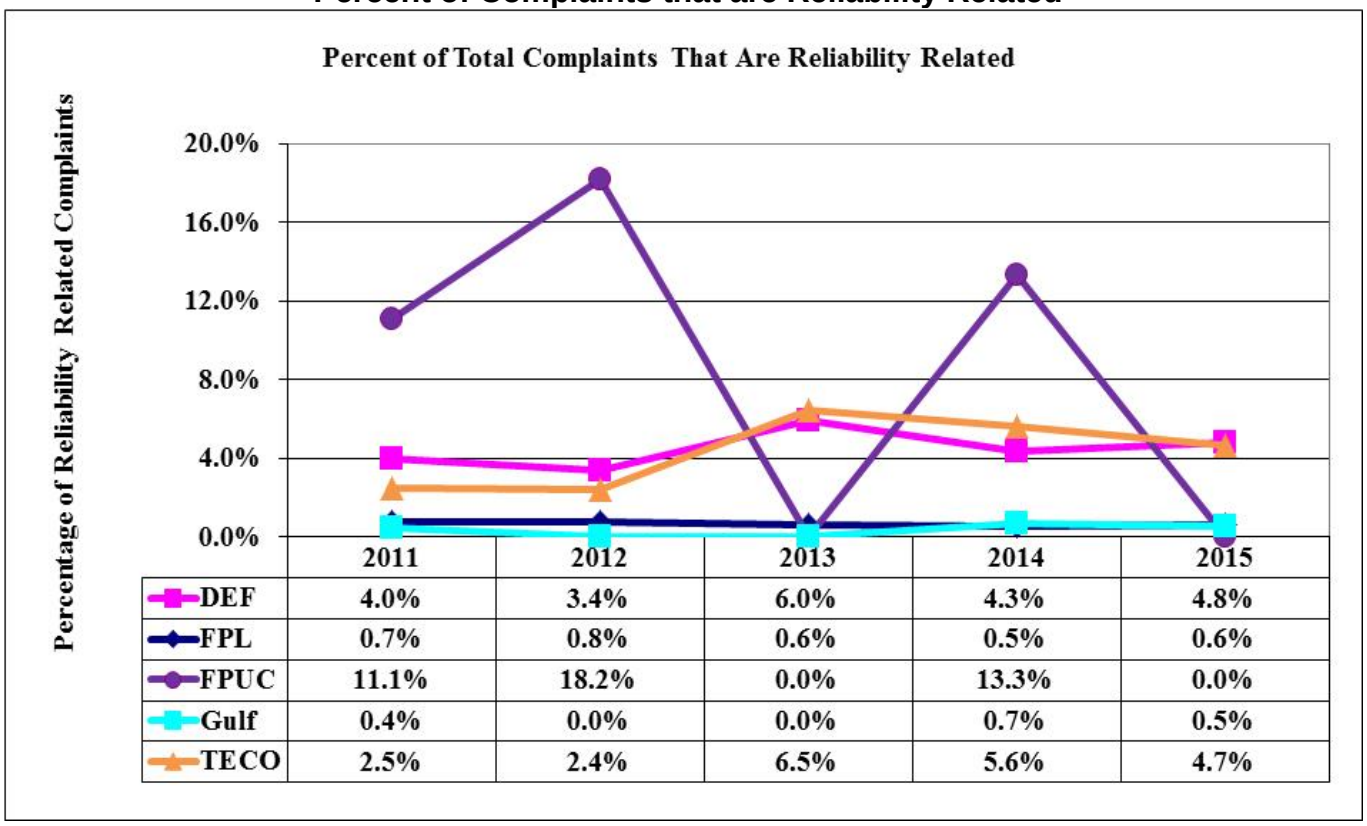


	2011	2012	2013	2014	2015
DEF	87	57	96	86	71
FPL	43	43	32	30	37
FPUC	2	2	0	2	0
Gulf	2	0	0	3	3
TECO	20	16	36	32	25

Source: FPSC CATS.

Figure 4-10 shows the percentage of reliability related customer complaints in relation to the total number of complaints for each IOU. FPL and FPUC's are trending downward as DEF, Gulf, and TECO are trending upward. The percentages of FPUC complaints compared to the other companies appears high, however FPUC has fewer customers and fewer complaints in total.

Figure 4-10.
Percent of Complaints that are Reliability Related



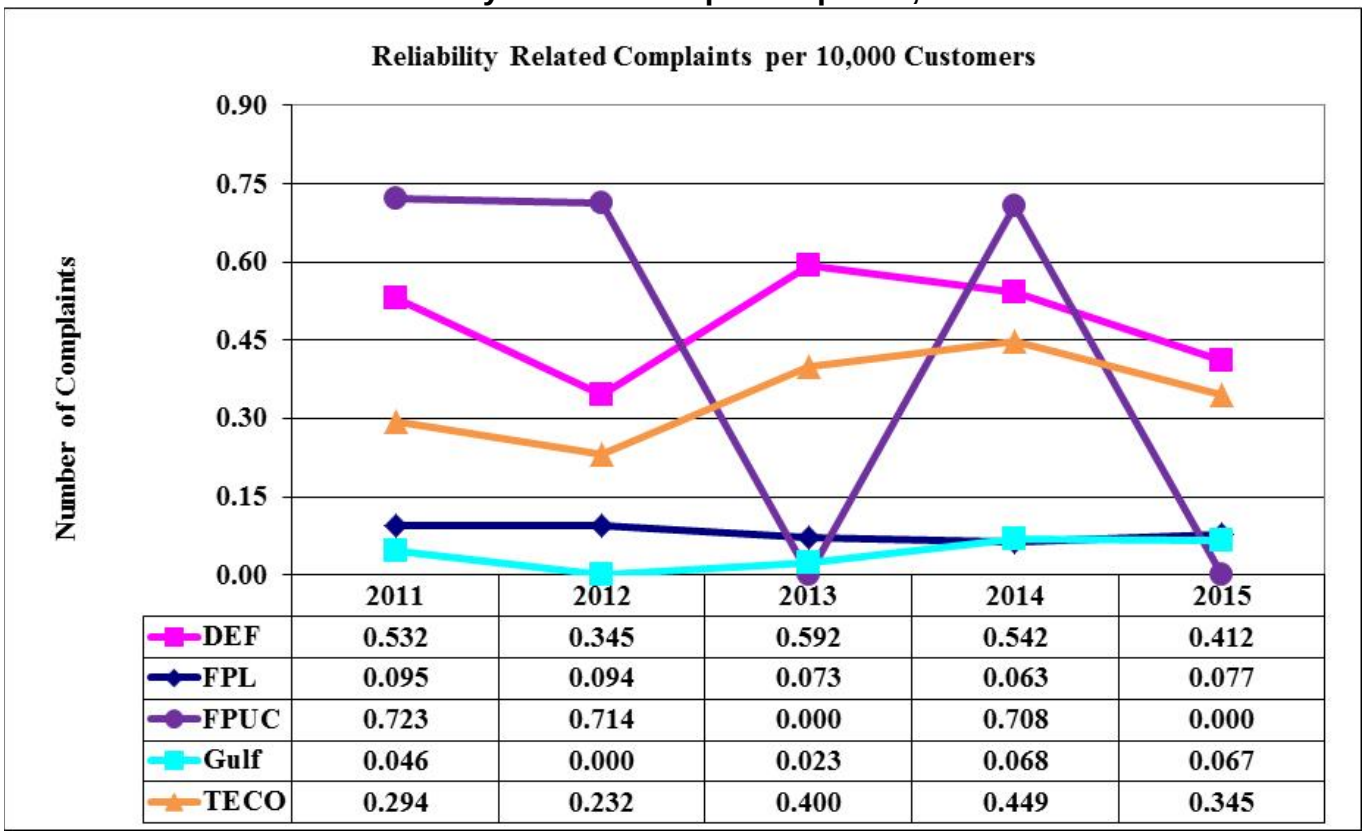
	2011	2012	2013	2014	2015
DEF	4.0%	3.4%	6.0%	4.3%	4.8%
FPL	0.7%	0.8%	0.6%	0.5%	0.6%
FPUC	11.1%	18.2%	0.0%	13.3%	0.0%
Gulf	0.4%	0.0%	0.0%	0.7%	0.5%
TECO	2.5%	2.4%	6.5%	5.6%	4.7%

Source: FPSC CATS.

Figure 4-11 charts the volume of reliability related complaints per 10,000 customers for the IOUs. The volume of service reliability complaints is normalized to a 10,000-customer base for comparative purposes. This is calculated for each IOU by dividing the total number of reliability complaints reported to the Commission by the total number of utility's customers. This fraction is then multiplied by 10,000 for graphing purposes.

All the IOUs have less than one reliability complaint per 10,000 customers since 2011. For the five-year period, FPL and FPUC continue to trend downward as DEF is staying relatively flat. Gulf and TECO are trending upward for the five-year period. The volatility of FPUC's results can be attributed to its small customer base, which typically averages 28,500 customers.

Figure 4-11.
Service Reliability Related Complaints per 10,000 Customers



	2011	2012	2013	2014	2015
DEF	0.532	0.345	0.592	0.542	0.412
FPL	0.095	0.094	0.073	0.063	0.077
FPUC	0.723	0.714	0.000	0.708	0.000
Gulf	0.046	0.000	0.023	0.068	0.067
TECO	0.294	0.232	0.400	0.449	0.345

Source: The IOUs' 2011-2015 distribution service reliability reports and FPSC CATS.

Section V: Appendices

Appendix A – Adjusted Service Reliability Data

Duke Energy Florida

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

	2011	2012	2013	2014	2015
North Central	374,978	378,198	383,011	388,187	396,395
North Coastal	192,477	193,049	194,394	196,321	198,525
South Central	422,041	428,891	438,088	449,363	458,457
South Coastal	647,103	650,951	656,073	663,973	670,743
DEF System	**1,636,599**	**1,651,089**	**1,671,566**	**1,697,844**	**1,724,120**

Source: DEF's 2011-2015 distribution service reliability reports.

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

	Average Interruption Duration Index (SAIDI)					Average Interruption Frequency Index (SAIFI)					Average Customer Restoration Time Index (CAIDI)				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
North Central	86	79	91	84	71	1.06	0.98	1.11	1.11	0.85	82	81	82	76	84
North Coastal	201	136	147	159	145	1.89	1.48	1.51	1.57	1.47	107	92	97	101	99
South Central	61	63	88	83	71	0.83	0.80	0.97	1.04	0.91	73	79	91	80	77
South Coastal	70	58	71	66	71	0.98	0.89	1.04	0.96	0.97	72	66	69	68	74
DEF System	**87**	**73**	**89**	**85**	**80**	**1.07**	**0.96**	**1.09**	**1.09**	**0.98**	**81**	**77**	**82**	**78**	**81**

Source: DEF's 2011-2015 distribution service reliability reports.

Table A-3.
DEF'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%)				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
North Central	11.0	9.6	8.9	10.8	8.3	0.69%	0.82%	1.53%	1.07%	0.32%
North Coastal	9.1	8.8	8.1	10.0	7.1	4.77%	3.46%	4.13%	3.47%	3.96%
South Central	8.5	7.6	7.8	10.4	8.1	0.43%	0.49%	0.80%	1.04%	0.64%
South Coastal	12.7	10.3	9.9	10.8	11.2	0.38%	0.34%	0.38%	1.36%	0.43%
DEF System	**10.8**	**9.3**	**8.9**	**10.6**	**9.2**	**0.98%**	**0.85%**	**1.19%**	**1.45%**	**0.87%**

Source: DEF's 2011-2015 distribution service reliability reports.

Table A-4.
DEF's Primary Causes of Outages Events

	Adjusted Number of Outages Events						Adjusted L-Bar Length of Outages				
	2011	2012	2013	2014	2015	Percentages	2011	2012	2013	2014	2015
Animals	7,686	6,168	5,488	5,020	5,321	13.3%	70	70	71	75	75
Storm	4,470	3,826	4,755	-	-	-	131	103	115	-	-
Tree-Preventable	4,896	3,229	3,938	-	-	-	148	120	123	-	-
Unknown	3,429	2,909	3,333	2,867	1,224	3.1%	81	80	84	82	77
All Other	6,614	6,577	7,015	8,073	7,900	19.7%	144	143	147	170	167
Defective Equipment	3,296	3,122	3,358	7,221	8,572	21.4%	174	177	171	150	142
Vehicle-Const. Equipment	316	303	392	-	-	-	227	239	222	-	-
Connector Failure	2,905	2,892	3,000	-	-	-	120	114	117	-	-
Tree Non-preventable	4,930	4,438	5,205	-	-	-	176	150	154	-	-
UG Primary	2,288	2,076	2,039	-	-	-	249	252	252	-	-
Lightning	1,093	980	1,344	1,647	1,201	3.0%	216	192	178	166	145
Vegetation	-	-	-	9,816	8,240	20.6%	-	-	-	137	136
Other Weather	-	-	-	5,875	7,141	17.8%	-	-	-	108	134
Vehicle	-	-	-	420	412	1.0%	-	-	-	241	227
DEF System	**41,923**	**36,520**	**39,867**	**40,939**	**40,011**	**100%**	**137**	**129**	**133**	**132**	**134**

Note: (1) All Other category is the sum of diverse causes of outage events which individually are not among the top 10 causes of outage events.

(2) Commission staff requested that, beginning with 2014 data, all IOU's use the same outage categories for comparison purposes. As such, the Vegetation, Defective Equipment, and Other Weather now include outage categories that in the past were separately identified.

Source: DEF's 2011-2015 distribution service reliability reports.

Florida Power & Light Company

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

	2011	2012	2013	2014	2015
Boca Raton	352,382	355,293	361,932	366,503	370,266
Brevard	286,035	287,898	293,491	297,877	301,843
Central Dade	267,582	270,676	277,807	282,155	287,147
Central Florida	267,930	269,890	275,033	279,726	283,868
Gulf Stream	319,478	322,805	327,898	331,643	335,006
Manasota	363,324	366,379	372,514	378,304	384,138
North Dade	225,457	226,633	232,018	235,112	237,328
North Florida	141,303	143,038	146,184	150,052	153,683
Naples	360,786	364,414	371,866	379,012	386,710
Pompano	300,115	301,639	306,692	310,483	314,209
South Dade	286,068	289,808	295,283	299,919	304,336
Toledo Blade	241,111	243,832	249,533	254,982	260,053
Treasure Coast	272,383	274,197	279,202	283,693	287,508
West Dade	242,334	244,838	249,935	254,130	257,539
West Palm	340,898	344,432	351,875	357,064	361,717
Wingate	256,934	258,480	265,120	268,737	271,478
FPL System	**4,524,120**	**4,564,252**	**4,656,383**	**4,729,392**	**4,796,829**

Source: FPL's 2011-2015 distribution service reliability reports.

Table A-6.
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)				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Boca Raton	58	63	61	63	54	0.92	1.14	1.10	1.21	1.08	63	55	55	52	50
Brevard	115	61	56	69	53	1.15	0.87	0.89	1.14	0.96	100	70	63	61	55
Central Dade	49	62	51	54	47	0.68	0.72	0.67	0.80	0.78	72	86	75	68	60
Central Florida	149	61	67	61	50	1.19	0.82	0.93	0.95	0.90	126	75	71	64	55
Gulf Stream	55	60	59	58	52	0.81	0.86	0.93	0.96	0.88	68	70	63	60	59
Manasota	67	55	58	57	55	0.84	0.77	0.83	0.83	1.00	80	72	70	68	55
North Dade	67	64	60	77	71	0.78	0.70	0.68	0.83	0.87	86	91	88	92	82
North Florida	131	81	84	77	68	1.34	1.03	1.10	1.06	1.08	98	79	76	73	63
Naples	86	57	55	58	57	0.90	0.86	0.68	0.88	0.91	96	66	79	66	62
Pompano	61	62	49	52	57	0.92	0.84	0.69	0.86	1.03	66	73	71	61	55
South Dade	92	81	77	73	76	1.14	0.96	0.99	0.90	1.08	81	85	77	81	71
Toledo Blade	98	62	72	73	65	1.28	0.91	1.04	1.16	0.98	76	68	70	63	66
Treasure Coast	78	61	72	74	72	0.98	0.95	1.08	1.07	1.05	80	64	67	69	69
West Dade	70	79	59	72	68	0.96	1.20	0.85	1.20	1.24	73	66	69	60	55
West Palm	63	55	54	49	55	0.87	0.82	0.95	0.85	1.01	73	66	57	58	55
Wingate	78	70	70	74	64	1.10	0.99	0.99	1.25	1.14	71	71	71	59	57
FPL System	**80**	**63**	**61**	**64**	**59**	**0.97**	**0.90**	**0.89**	**0.99**	**1.00**	**82**	**71**	**69**	**65**	**60**

Source: FPL's 2011-2015 distribution service reliability reports.

Table A-7.
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%)				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Boca Raton	8.3	8.4	8.4	8.6	7.4	0.44%	0.99%	1.31%	0.89%	0.76%
Brevard	15.1	10.6	10.1	9.6	7.8	0.69%	0.23%	0.58%	0.33%	0.27%
Central Dade	6.7	6.4	6.7	7.8	7.5	0.25%	0.28%	0.08%	0.66%	0.29%
Central Florida	14.0	9.8	10.0	8.9	6.5	0.91%	0.99%	0.52%	0.51%	0.30%
Gulf Stream	7.8	7.8	8.7	8.8	6.6	0.37%	0.40%	0.45%	0.68%	0.79%
Manasota	8.8	7.7	7.7	7.0	6.1	0.53%	0.22%	0.23%	0.33%	0.91%
North Dade	7.0	6.8	6.8	8.4	7.7	0.94%	0.35%	0.45%	0.89%	1.01%
North Florida	16.4	11.6	10.8	10.3	8.7	1.67%	0.49%	0.47%	0.60%	0.71%
Naples	7.3	6.3	7.0	7.0	7.1	0.49%	0.22%	0.36%	0.74%	0.56%
Pompano	6.9	6.9	7.5	6.9	6.1	0.49%	0.17%	0.07%	0.46%	1.01%
South Dade	8.9	7.8	8.0	7.9	7.1	1.64%	0.27%	0.70%	0.61%	0.89%
Toledo Blade	15.4	10.9	12.9	9.7	8.2	1.33%	0.52%	1.21%	1.33%	0.65%
Treasure Coast	15.1	12.2	14.3	11.0	8.1	1.25%	0.64%	0.87%	0.96%	1.03%
West Dade	8.7	7.8	7.3	8.2	7.8	0.49%	1.97%	0.29%	0.60%	1.46%
West Palm	10.2	9.0	9.8	8.5	7.5	0.51%	0.19%	0.73%	1.39%	1.01%
Wingate	10.9	11.4	11.6	12.9	10.4	0.67%	0.23%	0.22%	0.81%	0.59%
FPL System	**10.1**	**8.7**	**9.1**	**8.7**	**7.5**	**0.74%**	**0.49%**	**0.54%**	**0.74%**	**0.76%**

Source: FPL's 2011-2015 distribution service reliability reports.

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

	Adjusted Number of Outage Events						Adjusted L-Bar Length of Outages				
	2011	2012	2013	2014	2015	Percentages	2011	2012	2013	2014	2015
Equipment Failure	28,825	30,801	31,110	-	-	-	231	218	199	-	-
Unknown	12,404	11,883	12,000	11,703	11,022	11.0%	137	130	122	124	124
Vegetation	18,379	16,636	18,774	21,633	23,155	23.0%	229	196	183	187	182
Animals	11,916	9,870	10,320	9,359	9,878	9.8%	105	98	94	94	93
Remaining Causes	6,072	5,011	5,075	3,410	3,147	3.1%	259	211	201	142	140
Other Weather	7,033	5,708	5,795	10,141	9,426	9.4%	177	137	125	160	167
Other	7,104	6,598	7,826	9,187	8,358	8.3%	178	140	143	148	149
Lightning	1,855	1,528	1,567	1,938	1,770	1.8%	270	265	246	245	241
Equipment Connect	4,176	3,511	3,306	-	-	-	174	157	148	-	-
Vehicle	1,016	1,008	1,042	877	969	1.0%	236	249	230	251	230
Request	-	-	27	-	-	-	-	-	80	-	-
Defective Equipment	-	-	-	33,733	32,838	32.7%	-	-	-	190	179
FPL System	**98,780**	**92,554**	**96,842**	**101,981**	**100,563**	**100%**	**196**	**178**	**165**	**166**	**162**

Notes: (1) Other category is a sum of outages events that require a detailed explanation.
(2) Remaining Causes category is the sum of many diverse causes of outage events, which individually are not among the top 10 causes of outage events, and excludes those identified as Other.
(3) Starting in 2014, Defective Equipment includes Equipment Failure, Equipment Connect and Dig-in, which were all separate categories, in prior years.

Source: FPL's 2011-2015 distribution service reliability reports.

Florida Public Utilities Company

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

	2011	2012	2013	2014	2015
Fernandina(NE)	15,416	15,461	15,509	15,628	15,787
Marianna (NW)	12,260	12,560	12,602	12,621	12,649
FPUC System	**27,676**	**28,021**	**28,111**	**28,249**	**28,436**

Source: FPUC's 2011-2015 distribution service reliability reports.

Table A-10
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)				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
NE	200	141	76	88	105	2.35	1.32	0.95	1.14	1.19	85	107	81	77	88
NW	139	165	284	284	155	1.40	1.69	2.89	2.81	2.15	99	98	98	101	72
FPUC System	**173**	**152**	**170**	**175**	**127**	**1.93**	**1.48**	**1.82**	**1.89**	**1.62**	**89**	**102**	**93**	**93**	**79**

Source: FPUC's 2011-2015 distribution service reliability reports.

Table A-11.
FPUC's Primary Causes of Outage Events

	Adjusted Number of Outage Events						Adjusted L-Bar Length of Outages				
	2011	2012	2013	2014	2015	Percentages	2011	2012	2013	2014	2015
Vegetation	345	350	265	262	295	27.2%	83	83	83	87	76
Animals	243	294	275	245	201	18.5%	55	67	56	60	53
Lightning	39	44	48	96	148	13.6%	80	82	85	110	90
Unknown	79	83	95	66	75	6.9%	64	67	64	67	64
Corrosion	85	79	65	-	-	-	103	96	92	-	-
All Other	55	63	32	45	27	2.5%	93	107	96	62	94
Other Weather	167	246	299	381	178	16.4%	177	134	136	155	94
Trans. Failure	18	25	29	-	-	-	100	139	148	-	-
Vehicle	26	19	16	25	25	2.3%	97	150	117	108	130
Defective Equipment	-	-	-	138	136	12.5%	-	-	-	232	97
FPUC System	**1,057**	**1,203**	**1,124**	**1,258**	**1,085**	**100%**	**93**	**93**	**92**	**105**	**80**

Notes: (1) All Other category is the sum of many diverse causes of outage events which individually are not one of the top 10 causes of outage events.
(2) Blanks are shown for years where the quantity of outages was less than one of the top 10 causes of outage event.
(3) Beginning with 2014, the Defective Equipment category now includes outage categories that in the past were separately identified.
Source: FPUC's 2011-2015 distribution service reliability reports.

Gulf Power Company

Table A-12.
Gulf's Number of Customers (Year End)

	2011	2012	2013	2014	2015
Central	111,168	111,854	113,179	114,363	115,524
Eastern	111,180	111,481	112,462	113,897	115,099
Western	210,188	211,236	213,748	215,787	218,848
Gulf System	**432,536**	**434,571**	**439,389**	**444,047**	**449,471**

Source: Gulf's 2011-2015 distribution service reliability reports.

Table A-13.
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)				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Central	90	110	62	115	75	1.09	1.16	0.79	1.07	0.82	83	95	79	107	92
Eastern	110	88	118	73	59	1.31	0.93	1.25	0.78	0.86	84	95	95	93	69
Western	123	128	100	81	110	1.30	1.28	1.14	0.94	1.21	95	100	87	87	91
Gulf System	**111**	**113**	**95**	**88**	**88**	**1.25**	**1.16**	**1.08**	**0.93**	**1.02**	**89**	**98**	**88**	**94**	**86**

Source: Gulf's 2011-2015 distribution service reliability reports.

Table A-14.
Gulf'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%)				
	2011	**2012**	**2013**	**2014**	**2015**	**2011**	**2012**	**2013**	**2014**	**2015**
Central	6.4	4.5	3.0	2.8	1.8	0.91%	1.11%	0.17%	0.36%	0.17%
Eastern	4.4	2.7	2.3	1.9	1.7	2.45%	0.74%	2.78%	0.43%	1.66%
Western	5.6	4.7	3.5	2.3	2.7	2.08%	1.30%	0.64%	0.28%	0.59%
Gulf System	**5.5**	**4.1**	**3.1**	**2.3**	**2.2**	**1.87%**	**1.11%**	**1.07%**	**0.34%**	**0.76%**

Source: Gulf's 2011-2015 distribution service reliability reports.

Table A-15.
Gulf's Primary Causes of Outage Events

	Adjusted Number of Outage Events						Adjusted L-Bar Length of Outages				
	2011	2012	2013	2014	2015	Percentages	2011	2012	2013	2014	2015
Animals	3,013	3,585	2,857	2,132	2,743	26.7%	72	72	64	64	60
Lightning	1,527	1,875	1,452	1,827	1,788	17.4%	148	187	139	136	134
Deterioration	1,928	2,219	2,067	-	-	-	154	162	146	-	-
Unknown	691	676	715	557	598	5.8%	96	94	85	86	79
Trees	1,174	1,195	1,354	-	-	-	138	149	129	-	-
Vehicle	249	275	272	289	293	2.9%	180	187	178	185	170
All Other	285	290	314	445	379	3.7%	119	115	112	113	101
Wind/Rain	-	182	203	-	-	-	-	212	151	-	-
Overload	162	-	-	-	-	-	97	-	-	-	-
Vines	187	159	237	-	-	-	110	95	91	-	-
Other	222	254	249	-	-	-	103	113	102	-	-
Contamination Corrosion	151	240	211	-	-	-	118	110	118	-	-
Vegetation	-	-	-	1,294	1,888	18.4%	-	-	-	123	138
Other Weather	-	-	-	196	251	2.4%	-	-	-	181	137
Defective Equipment	-	-	-	2,257	2,340	22.8%	-	-	-	138	137
Gulf System	**9,589**	**10,950**	**9,931**	**8,997**	**10,280**	**100%**	**117**	**128**	**111**	**116**	**112**

Notes: (1) All Other category is the sum of many diverse causes of outage events which individually are not among the top 10 causes of outages events.
(2) Blanks are shown for years where the number of outages was too small to be among the top 10 causes of outage events.
(3) The Defective Equipment, Other Weather, and Vegetation categories now include outage categories that in the past were separately identified.
Source: Gulf's 2011-2015 distribution service reliability reports.

Tampa Electric Company

Table A-16.
TECO's Number of Customers (Year End)

	2011	2012	2013	2014	2015
Central	181,797	185,005	188,161	190,459	193,436
Dade City	13,700	13,822	13,965	14,165	14,372
Eastern	109,876	111,069	113,053	115,122	117,268
Plant City	54,725	55,472	56,438	57,220	58,472
South Hillsborough	62,761	64,530	67,071	69,431	72,340
Western	189,200	191,083	193,320	196,085	198,224
Winter Haven	67,222	67,735	68,529	69,687	70,799
TECO System	**679,281**	**688,716**	**700,537**	**712,169**	**724,911**

Source: TECO's 2011-2015 distribution service reliability reports.

Table A-17.
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)				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
Central	54	76	70	63	70	0.64	0.86	0.79	0.80	1.06	85	88	88	79	66
Dade City	170	161	261	206	199	2.00	1.67	2.75	2.36	1.92	85	97	95	87	104
Eastern	61	57	93	76	67	0.80	0.73	0.87	0.96	0.90	76	78	106	80	75
Plant City	99	110	131	117	117	1.13	1.34	1.49	1.47	1.46	88	82	87	79	80
South Hillsborough	67	90	94	74	86	0.75	1.06	1.11	0.85	1.10	89	85	84	88	78
Western	91	77	75	81	78	0.97	0.81	0.86	0.86	0.89	94	96	88	94	87
Winter Haven	86	67	61	77	66	1.04	1.01	0.81	0.93	0.93	83	66	76	83	71
TECO System	**76**	**78**	**85**	**80**	**79**	**0.87**	**0.91**	**0.95**	**0.94**	**1.03**	**87**	**86**	**89**	**85**	**77**

Source: TECO's 2011-2015 distribution service reliability reports.

Table A-18.
TECO'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%)				
	2011	**2012**	**2013**	**2014**	**2015**	**2011**	**2012**	**2013**	**2014**	**2015**
Central	11.2	10.2	10.0	8.3	8.5	0.60%	0.44%	0.20%	0.83%	0.51%
Dade City	15.6	15.8	17.4	19.8	18.0	0.67%	3.66%	1.48%	5.94%	10.41%
Eastern	14.4	10.8	13.8	9.9	9.1	0.69%	0.37%	0.41%	0.33%	0.27%
Plant City	17.6	19.8	17.8	15.1	11.8	0.85%	0.90%	1.65%	1.37%	2.61%
South Hillsborough	13.6	11.2	12.9	8.7	11.0	0.30%	3.49%	0.84%	0.23%	0.82%
Western	12.6	10.6	10.9	9.6	8.7	0.58%	0.26%	0.33%	0.15%	0.42%
Winter Haven	14.5	10.0	12.6	11.4	11.1	0.80%	0.71%	0.01%	0.54%	0.15%
TECO System	**13.3**	**11.4**	**12.2**	**10.0**	**9.6**	**0.62%**	**0.79%**	**0.45%**	**0.62%**	**0.81%**

Source: TECO's 2011-2015 distribution service reliability reports.

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

	Adjusted Number of Outage Events						Adjusted L-Bar Length of Outages				
	2011	2012	2013	2014	2015	Percentages	2011	2012	2013	2014	2015
Lightning	1,392	1,327	1,639	1,917	1,779	18.0%	206	225	214	199	218
Animals	2,157	1,736	1,918	1,483	1,321	13.4%	90	87	95	98	100
Vegetation	1,806	1,677	1,959	1,974	2,064	20.9%	207	218	202	192	190
Unknown	849	905	892	850	792	8.0%	128	225	143	134	125
Other Weather	222	260	261	209	166	1.7%	183	191	190	82	192
Electrical	1,172	1,068	1,154	-	-	-	197	184	186	-	-
Bad Connection	848	779	837	-	-	-	226	135	229	-	-
Vehicle	285	315	306	343	397	4.0%	218	221	215	76	199
Defective Equipment	196	181	206	2,788	2,803	28.4%	161	182	164	419	198
All Other	223	215	187	182	559	5.7%	138	155	141	165	166
Down Wire	325	525	599	-	-	-	174	165	187	-	-
TECO System	**9,475**	**8,988**	**9,958**	**9,746**	**9,870**	**100%**	**169**	**177**	**176**	**173**	**179**

Notes: (1) All Other category is the sum of many diverse causes of outage events which individually are not among the top 10 causes of outages events.
(2) Blanks are shown for years where the number of outages was too small to be among the top 10 causes of outage events.
(3) Beginning in 2014, the Defective Equipment category now includes outage categories that in the past were separately identified.
Source: TECO's 2011-2015 distribution service reliability reports.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

Utility	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	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	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	The City's inspection cycle is on an eight-year cycle (15% per year) The City of Alachua owns only distribution poles, no transmission poles. In October 2015, the City completed its first eight-year cycle and the new cycle will begin in 2016.	The City planned 15% of distribution system to be inspected and completed 474 poles (20.1%). The City of Alachua has 2,268 distribution poles.	72 (15.2%) poles were rejected. Six poles were deemed priority rejects requiring immediate change-out due to shell rot. 66 poles were deemed non-priority rejects due to shell rot, decay top, split top and woodpecker holes.	All failed poles were 45 foot, Class 2. The 66 non-priority reject poles will be individually evaluated and replaced according to final field evaluation.	The City continues to use the information from the PURC conference held in 2007 and 2009, to improve vegetation management .	The City trims approximately 62 miles of overhead distribution on a three-year cycle. Approximately 20% of the facilities are trimmed each year.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Bartow, City of	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	The facilities are inspected on an eight-year cycle. Inspections are visual, and tests are made to identify shell rot, insect infestation, and excavated to determine strength.	The City completed 848 pole inspections in 2015. This completes the first eight-year cycle in which a total of 10,716 poles were inspected (finished January 2015).	148 (17%) distribution poles failed inspection due to pole top rot or rotten ground decay.	119 poles were replaced ranging in size from 30 to 50 feet Classes 3 to 7. One 40 foot, Class 5 pole was removed in 2015.	The City is on a four-year trim cycle with trim out at 6-10 feet clearance depending on the situation and type of vegetation, along with foliage and herbicidal treatments.	The City feels that its four-year cycle and other vegetation management practices are effective in offering great reliability to its customers.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
City of Jacksonville Beach d/b/a Beaches Energy Services	Yes	Yes, BES uses stronger concrete poles rather than wood poles and eliminates of static lines with shorter distribution structures to reduce moment loads on the structures. BES has a distribution wooden pole replacement program where BES will replace the wooden poles with concrete. To date, 587 concrete poles have been placed in service.	BES eliminated all exposed "live-front" connected transformers. The high voltage cables are connected to the transformers with sealed "dead front" elbows. Fiberglass foundations for pad mounted equipment have been replaced with thick heavy concrete foundations.	Yes, "Back lot line" construction has been eliminated, all electric kWh meters are located outside & near the front corner of buildings, all replacement or new URD underground cables are being installed in conduits & have a plastic, jacketed sheath, & all pad mounted equipment located near buildings have minimum access clearance.	Yes	The transmission structure is inspected annual, which includes insulators, downguys, grounding, and pole integrity. The distribution poles are inspected on an eight-year cycle using sound and bore method for every wood pole. Poles 10 years old and older were treated at ground level for rot and decay.	355 (100%) transmission structure inspections were planned and completed. In 2015, 800 (15.5%) distribution poles were inspected.	No transmission structures failed the inspection. In 2015, three distribution structures failed inspection due to decay.	No transmission structures failed the inspection. In 2015, three poles were replaced.	The transmission line rights-of-way are mowed and maintained annually. Tree trimming crews work year round to maintain a two to three year VMP cycle for transmission and distribution lines.	All vegetation management activities for 2015 have been fully completed and the vegetation management activities for 2016 are on schedule.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	**Major Planned Work Expansion, Rebuild or Relocation**	**Targeted Critical Infrastructures and major thoroughfares**	**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**
Blountstown, City of	Yes	Yes; the City of Blountstown adopted a larger minimum pole standard of a Class 3 pole in 2007 in an effort to harden facilities.	The City does not have any underground facilities. The City is looking at measures to flood proof substation.	Yes	No. Guidelines do not include written safety, pole reliability, pole loading, capacity and engineering standards and procedures for attachments by others to the transmission and distribution poles.	The City owns 1,946 utility poles and does visual inspections of all poles once a year.	100% of all poles are visually inspected annually.	29 (1.5%) poles required replacement because of ground rot, extreme cracking and warping and splices in the line.	29 Class 5 poles were replaced with Class 3 poles.	The City has a four-year tree trimming cycle with 10-foot clearance of lines and facilities. The City has policies to remove dead, dying, or problematic trees before damage occurs.	The City will trim 25% of the system with a 10-foot clearance in 2016.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Bushnell, City of	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	No written policy. All existing attachments inspected as part of the City's pole program initiated in 2007. An attachment audit was completed in 2014 to verify the current number and location of existing attachments.	The City has no transmission facilities. All distribution poles are on a seven-year cycle. The inspection includes visual, sound/bore, pole condition, and wind loading.	In 2015, 301 poles were inspected. The City is in its second cycle of pole inspection.	24 (8%) poles failed inspection due to shell rot, decayed tops, woodpecker damage, split top, excessive cracking, and pole top rejects.	As of March 1, 2015, 100% of the rejects from the 2014 inspection have been replaced and the City is currently working on replacing 21 failures from the 2015 inspection.	Tree removal, power line trim, and right of way clearing are on a three-year cycle. Annual trimming is performed before hurricane season. Distribution lines not located on right of ways are trimmed on an “as needed” basis.	PURC held a vegetation management conference March 2007. Through Florida Municipal Electric Association, the City has a copy of the report and will use the information to continually improve vegetation management practices.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

Utility	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	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									
Chattahoochee, City of	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	The distribution facilities are on a three-year cycle inspection using visual, excavation around base, sounding, and probing with steel rod. The City does not have any transmission facilities.	1,957 distribution poles were inspected in January 2015.	In 2015, 60 (3%) poles failed the inspection due to ground line and pole top decay.	In 2015, the City replaced 40 poles ranging from 30 feet to 45 feet, Class 4 to 6. The remaining 20 poles will be replaced in 2016.	The City trims the distribution system on an annual basis. This cuts down on animal outages by limiting their pathways to poles and conductors.	The 2007 and 2009 PURC workshops reports are used to improve vegetation management.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
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Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Clewiston, City of	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	The City does not have standard guidelines for pole attachments as all attachments are reviewed by engineers, and place all new construction underground.	The facilities are on a five-year inspection cycle, which began in 2014, using sound, prod and visual inspections. The City performs infrared inspections on the facilities on a three- to four-year cycle.	323 (20%) poles were inspected in 2015.	13 (4%) poles failed due to pole rot.	The City has replaced 12 - 40 foot wooden poles in 2015. The City shortened the span on distribution feeder #1 by installing four additional poles.	The City has a City ordinance that prohibits planting in easements. 100% of the distribution system is inspected annually for excessive tree growth. The City trims the entire system continuously as needed. The City will also accept requests from customers for tree trimming.	All transmission and feeders checked and trimmed in 2015 as every year, and The City completed 85 customer requests for tree trimming.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Fort Meade, City of	Yes	Yes	The current procedures address flooding & storm surges. Participant in PURC study on conversion of OH to UG.	Yes	Yes	The City's facilities are on an eight-year cycle using visual and sound and probe technique.	The City has distribution lines only. The City replaced 142 poles in 2015.	The City has approximately 2,730 dist. poles. Of those poles 10 (0.04%) poles failed inspection. The poles failed inspection due to age deterioration & animal infestation.	The City replaced 35 (1.3%) poles with poles ranging from 35 feet to 30 feet, Class 5.	The facilities are on a three-year inspection cycle, and have a low outage rate due to problem vegetation.	The City has completed approximately 33% of trimming. The city reported 77 outages in 2015, with 20% (15) due to vegetation.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Fort Pierce Utilities Authority	Yes	Yes	Yes, FPUA references FEMA 100 Year Flood Zone for pad mounted equipment installation and alternatively, may elect to install fully submersible equipment as deemed necessary.	Yes	Yes	FPUA utilizes a contractor to perform inspection of all wood distribution and transmission poles on an eight-year cycle. The inspection includes visual inspection from ground line to the top and some excavation is performed on older poles.	3,000 distribution and 100 transmission poles were planned for inspection in 2015. 3,872 distribution and 125 transmission poles were inspected in 2015 indicating 19.7% were inspected.	One transmission pole failed inspection in 2015. 557 (14%) distribution pole failed inspection in 2015. 108 failures are non-priority because the calculated strength fell below 67% due to decay at ground line. 450 poles will be replaced during 2016 and 2017 fiscal years.	FPUA replaced 61 wood distribution poles in 2015. The one transmission pole that failed inspection will be replaced during the second quarter of 2016.	FPUA maintains a three-year VM cycle for transmission and distribution system with a goal of maintaining foliage cut back at a minimum to a three-year level. FPUA also aggressively seeks to remove problem trees when trimming is not an effective option.	FPUA spent $330,000 for the trimming, removal and disposal of vegetation waste in fiscal year 2015, which was sufficient to meet the yearly target of addressing one-third of the system.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Gainesville Regional Utilities	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes; GRU has instituted a Continuous Improvement Program, which identifies the worst performing devices, circuits and most compromised primary voltage underground cable.	Yes	The facility are on an eight-year cycle for all lines and includes visual, sound, and bore, and below ground line inspection to 18 inches around the base of each pole.	No transmission poles were scheduled for inspection in 2015. GRU planned 4,187 distribution pole inspections and completed 4,133 (99%) inspections.	No transmission poles were planned or identified for replacement. 57 (1.9%) distribution poles failed due to shell rot, exposed pockets, carpenter ants and external decay.	There were no transmission poles inspected. 57 (1.9%) distribution poles were replaced in 2015, ranging in size from 25 feet to 55 feet Class 3 to Class 7.	The VMP includes 560 miles of overhead distribution lines on a three-year cycle. The VMP includes an herbicide program and standards from NESC, ANSI A300, and Shigo-Tree Pruning.	The VMP is an on going and year round program. 100% of the transmission facilities were inspected. 194 distribution circuit miles were trimmed in 2015 with an additional 50 circuit miles associated with renewal and replacement work.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

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Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Green Cove Springs, City of	Yes	Yes	Yes, all facilities are installed a minimum 8 inches above the roadway.	Yes	Yes	The City does not have transmission lines as defined by 69kV and above. The City is continuing to evaluate the benefits of an inspection program versus accomplishing the same activity during capital improvement programs. The City started converting 4.1 kV lines to 13.2 kV in 2015 and this project will be completed in 2016.	The City visually inspects any distribution pole it interfaces with under normal maintenance workflow patterns. In 2015, the City inspected 190 (6.3%) poles. The City has inspected 1,786 (60%) of its 2,996 poles since 2012.	In 2015, 19 (10%) wood distribution poles were replaced on visual inspection. The poles failed inspection due to rot.	The City replaced the following: Two – 30 foot Class 3 poles, One – 35 foot, Class 3 pole, Thirteen – 40 foot Class 3 poles, and Two – 45 foot Class 3 pole.	The City contracts annually to trim 100% of the system three-phase primary circuits including all sub-transmission and distribution feeder facilities. Problem trees are trimmed and removed as identified.	100% of system was trimmed in 2015, with the new trim cycle to start January 2016. PURC held two vegetation management workshops in 2007 and 2009 and the City has a copy of the report and will use the information.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
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Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Havana, Town of	Yes	No. Participating in PURC granular wind research study through the Florida Municipal Electric Assoc.	Non-coastal utility; therefore storm surge is not an issue	Yes	Yes	Total system is 1,173 poles; inspected several times annually using sound and probe method.	100% planned and completed in 2015.	9 (0.77%) poles failed inspection.	One - 45 foot Class 4 pole, Two - 40 foot Class 4 poles, and Six - 30 foot Class 4 poles for a total of 9 were replaced. 3,000 feet of secondary conductor from overhead transmission was replaced due to old age.	Written policy requires one-third of entire system trimmed annually.	33% of the system was trimmed in 2015.

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Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Homestead Public Services	Yes	Yes	Yes; participating in PURC's study on the conversion of overhead to underground facilities through Florida Municipal Electric Association.	Yes	Yes	All transmission poles concrete. The distribution facilities are on an 8-year cycle using sound and bore and loading evaluations and the annual thermographic inspection was completed February 2015.	Since 2008, all poles have been inspected. Therefore, during 2014/2015 no poles were inspected. The pole inspection will continue during the 2015-2016 cycle. The entire transmission system was inspected in 2005. The transmission system was not inspected in 2015.	No inspections were completed during this cycle.	During the past year, HES removed 13 defective poles, removed and converted to underground 5 45 foot Class 4 poles, replaced 12 poles ranging from 35 feet to 45 feet, Class 3 to 4, reworked 1 pole, transferred facilities to 3 storm hardened poles owned by others, and installed 5 concrete poles ranging from 40 feet to 55 feet, Class 3.	Trimming services are contracted out and entire system is trimmed on a two-year cycle. There are no issues for transmission facilities.	HES enacted code changes which require property owners to keep vegetation trimmed to maintain 6-feet of clearance from city utilities.

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Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
JEA	Yes	Yes	Yes, currently has written Storm Policy and associated procedures addressed for Category 3 storms or greater.	Yes	Yes	Transmission circuits are on a 5-year cycle, except for the critical N-1 240kV, which is on a 2-year cycle. Distribution poles are on an eight-year inspection cycle, using sound and bore with excavation.	36 transmission circuits and 20 distribution circuits were inspected in 2015.	Based on 2015 inspection: 0 (0%) transmission wooden poles failed inspection. Based on 2015 inspection: 4.3% distribution poles failed inspection due to ground decay and pole top decay.	10 (0.01%) transmission wood poles were replaced in 2015. In 2015, 189 distribution poles were replaced. The poles listed as emergency poles (under 1%) are replaced immediately. Since 2006, 15,156 poles have been replaced.	The transmission facilities are in accordance with NERC FAC-003-1. The distribution facilities are on a 2.5-year trim cycle as requested by their customers to improve reliability.	JEA fully completed all 2015 VM activities and is fully compliant with NERC standard for vegetation management in 2015. VMP activities are on schedule for 2016.

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Keys Energy Services, City of Key West	Yes	Yes	Yes	Yes. The KEYS will ensure all future construction occurs adjacent to public roads, will relocate all primary high voltage facilities that are currently inaccessible over a three-year period, and will develop a multi-year program to relocate all secondary facilities that are currently inaccessible.	Yes	The Keys does not have any wooden transmission poles. The concrete and metal transmission poles are inspected every two years by helicopter and infrared survey. 100% of the distribution poles were inspected in 2015 by Osmose, Inc.	An inspection of all transmission facilities was done in 2014. From the 2015 inspection, 5,823 concrete poles, 6,616 wooden, and 6 other type of distribution poles were inspected.	No transmission poles failed inspection. 70 (1.2%) concrete poles and 484 (7.3%) wooden poles failed inspection in 2015. The reasons for the failures are decayed top, excessive cracking, excessive spur cuts, hollow, mechanical damage, rotten butt, ground shell rot, wind shake, wood borers, woodpecker holes.	No transmission facilities failed inspection. The KEYS bid out the project of replacing 485 poles with storm harden facilities but this process is not complete. The KEYS also approved a multi-year contract to manufacture 485 new ductile iron poles.	The Keys' 230 miles 3 phase distribution lines are on a two-year trim cycle and 66 miles of transmission lines are a quarterly cycle. The Keys tree crews remove all invasive trees in the right-of-way and easements. The trees are cut to ground level and sprayed with an herbicide to prevent re-growth.	In 2015, the Keys had 1 recloser outages, 1 feeder outages, & 26 lateral outages due to trees. Keys will strive to continue to improve its VMP to further reduce outages.

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	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Kissimmee Utility Authority	Yes	Yes; in 2015 replaced 27 wooden distribution poles with spun concrete to meet or exceed extreme wind loading requirements.	Non-coastal utility; therefore storm surge is not an issue. Low areas susceptible to flooding have been identified and are monitored.	Yes	Yes	All transmission and distribution inspections are outsourced to experienced pole inspector who utilizes sound and bore and ground-line excavation method for all wood poles. Transmission poles are inspected on a biennial cycle and distribution poles are inspected on an eight-year cycle.	There were no targeted inspections of wooden transmission poles in 2015. 2,131 distribution poles were inspected in 2015, which is 14.85% of the system.	8 (6.2%) transmission poles were scheduled for replacement in 2015 due to decay pocket, enclosed pocket, heart rot, and woodpecker holes. 26 (1.7%) distribution poles failed inspection due to split top, decayed top, woodpecker holes, shell rot, enclosed pocket and fire damage.	8 transmission poles were replaced and 21 distribution poles were replaced in 2015. The transmission poles range from 80 feet to 70 feet and Classes H1 and H2. The distribution poles ranged from 30 to 45 feet and Classes 3 to 4.	KUA has a written Transmission Vegetation Management Plan (TVMT) where it conducts visual inspection of all transmission lines semi-annually. The guidelines for KUA's distribution facilities are on a three-year trim cycle.	100% required remediation during the transmission facilities inspection was completed in 2015. Approximately 96 miles (28.5%) of distribution facilities were inspected and remediated in 2015.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Lake Worth Utilities, City of	Yes	The facilities are not designed to be guided by the extreme loading standards on a system wide basis. However, CLW is guided by the extreme wind-loading standard for new construction, major planned work, etc. after December 10, 2006.	Underground distribution construction practices require installation of dead front pad mounted equipment in areas susceptible to flooding.	Yes	Yes	Visual inspections are performed on all CLW transmission facilities on an annual basis. The transmission poles are concrete and steel. CLW performs an inspection of the distribution facilities on an eight-year cycle. Pole tests include hammer sounding and pole prod penetration 6 inches below ground.	In 2015, CLW inspected 710 poles.	65 poles were deemed unsatisfactory in 2015. Poles are replaced when pole prod penetration exceeds two inches or there is evidence of pole top shell rot.	CLW replaced 37 poles in 2015, with 28 poles pending replacement.	CLW has an on-going VMP on a system wide, two-year cycle. Minimum clearance of 10 feet in any direction from CLW conductors is obtained.	Contractor attempts to get property owners permission to remove trees which are dead or defective and are a hazard; fast growing soft-wooded or weed trees, small trees which do not have value but will require trimming in the future, tress that are unsightly as a result of trimming and have no chance for future development, and trees that are non native and invasive.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Lakeland Electric	Yes	Yes, for all pole heights 60 feet and above; and meet or exceed Grade B construction below this height.	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	The facilities are on an eight-year inspection cycle using visual, sound and bore, with ground line excavation and in addition; visual inspection during normal course of daily activities. Lakeland Electric initiated its second eight-year cycle in 2015.	There were 147 (12.5%) transmission poles planned for inspection and 81 (6.9%) were completed. There were 7,500 (12.5%) distribution poles planned for inspection and 7,340 (12.2%) completed.	23 (28.4%) transmission poles failed inspection due to decay. 1,067 (14.5%) distribution poles failed inspection due to decay.	All poles recommended in 2015 assessed for appropriate action. 629 poles were replaced, repaired, or removed in 2015. 1,684 distribution poles were deferred to 2016. Four transmission poles were replaced in 2015 and 29 were deferred to 2016.	The facilities are on a three-year inspection cycle for transmission and distribution circuits. VMP also provides in between cycle trim to enhance reliability.	27 miles of 230kV transmission lines were inspected in 2015. 19 miles of transmission were planned and completed in 2015. LE completed 415 of the planned 400 miles of distribution lines for 2015.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	**Major Planned Work Expansion, Rebuild or Relocation**	**Targeted Critical Infrastructures and major thoroughfares**	**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**
Leesburg, City of	Yes	Yes, and Participation in PURC granular wind research study through the Florida Municipal Electric Assoc.	Leesburg is approximately 60 miles inland from the Atlantic and Gulf coasts and is not subject to major flooding or storm surge.	Yes	Yes; Foreign utility attachments are inspected on an eight-year cycle.	No transmission facilities. The Distribution facilities are on an eight-year cycle using visual, sound/bore, excavation method, and ground level strength test.	No poles were inspected in 2015. The current eight-year cycle was completed in 2010. The next cycle will begin in 2016.	Of the 16,483 poles inspected between 2007 and 2010, 9 poles failed requiring immediate attention, 452 poles failed the minimum strength and were replaced, and 2,603 poles failed due to split-top, woodpecker holes, etc.	Sixty-six poles were replaced in 2015. In addition, 40 wood poles were replaced with concrete poles in 2015. Seventy poles are scheduled for replacement in 2016.	Four-year trim cycle for feeder and lateral circuits. Problem trees are trimmed or removed as identified.	VMP activities were completed as scheduled during 2015. An additional Tree Crew was added as planned during April 2008 and has been continuously maintained.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Moore Haven, City of	Yes	At this time, the facilities are not designed to be guided by the extreme loading standards on a system wide basis. The City is participating in PURC granular wind research study through Florida Municipal Electric Assoc.	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	The City inspects all the distribution facilities annually by visual and sound inspections.	The City continuously inspects the distribution facilities in 2015. The City is one square mile and easily inspected during routine activities. The City does not own any transmission facilities. The City is upgrading its 3 Phase poles.	The City is working on the rear-of secondary, making them more accessible. The City has approximately 410 poles in the distribution system and streetlights.	The City replaced 14 40-foot poles and 16 35-foot poles.	The City is continuous tree trimming in easements and right of way. 100% of distribution system is trimmed each year.	The City expended approximately 20% of Electric Dept. Resources to vegetation management. All vegetation management is performed in house.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	**Major Planned Work Expansion, Rebuild or Relocation**	**Targeted Critical Infrastructures and major thoroughfares**	**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**
Mount Dora, City of	The City retained an engineering firm and developed construction standards for 12 kV distribution poles.	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	A new construction standard was developed to use guy wires for all levels on poles. The standards for poles that the City developed in 2012 reflect the impact of pole attachments on pole loading capacity.	The City does not own any transmission lines. Distribution lines and structures are visually inspected for cracks and a sounding technique used to determine rot annually.	The City completed 100% of planned distribution inspections in 2015.	The City had 24 distribution poles in 2015 that failed inspection. All 24 wood poles were replaced with concrete poles.	The city had 1,847 wooden poles as of January 1, 2015. The City's table shows 40 wooden poles were replaced and one pole was removed and one pole added. The wooden replaced range from 30 foot to 55 foot.	An outside contractor working two crews 40 hours per week completes tree trimming on a 12-month cycle.	The City trimmed trees on a 12-month cycle, and removed limbs from trees in right of way and easements that could create clearance problems.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
New Smyrna Beach Utilities Commission, City of	Yes	Yes	Yes. The City only installs stainless steel dead front pad mounted transformers in its system and existing pad mounted transformers are being upgraded to dead front stainless steel transformers.	Yes	Yes	The transmission and distribution facilities are on an eight-year inspection cycle. Additionally, distribution facilities are inspected as part of the City's normal maintenance when patrolling distribution facilities.	No transmission poles were inspected during 2015. 100% of the transmission poles inspections were completed in 2012. 1,500 (12.5%) distribution poles were inspected in 2015.	No transmission poles were inspected in 2015. 266 (17.7%) failed inspection due to decay, split top, and woodpecker damage.	The City replaced/ repaired 122 distribution poles. The poles are sizes 30-65 feet and Class 1-5.	The City maintains two crews on continuous basis to do main feeder and hot spot trimming. The City mows its transmission lines on a yearly basis.	The City trimmed approximately 20% of distribution system in 2015, and performed clear cutting on 20% of the transmission lines.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Newberry, City of	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	Distribution poles are inspected on a three-year inspection cycle at ground line for deterioration, entire upper part of the pole for cracks, and soundness of upper part of pole.	The City inspected 224 (6.35%) of 1,550 the poles in 2015.	141 (63%) of the poles were rejected due to top rot and 6 (2.7%) were rejected due to bottom rot (from the inspection in 2015).	Eight distribution poles were replaced in 2015: seven wooden poles Class 3 varied from 30 to 45 foot and one 55-foot concrete pole.	The City trims all distribution lines on a three-year trim cycle, with attention given to problem trees during the same cycle. Problem trees not in the right of way are addressed with the property owner.	One third of distribution facilities are trimmed each year to obtain a three-year cycle.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
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Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Ocala Utility Services, City of	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	The City inspects its system on an eight-year inspection cycle, which include above ground inspection, sounding, boring, excavation, chipping, internal treatment, and evaluation of each pole to determine strength. 2015 is the first year in the second eight-year cycle.	498 (100%) of the 498 wood transmission poles were inspected in 2015. 4,977 (15.7%) of the 31,575 wood distribution poles were inspected in 2015.	52 (10.4%) transmission poles were rejected due to shell rot, decayed top, split top, woodpecker holes, exposed pocket, and ground line decay. 351 (7.0%) distribution poles failed inspection due to shell rot, decayed top, split top, woodpecker holes and exposed pocket.	3 (0.6%) of the failed transmission poles were braced and 52 (10.4%) were replaced. 40 (0.8%) of the failed distribution poles were braced and 351 (7.1%) poles were replaced.	The City is on a three-year trim cycle, with additional pruning over areas allowed minimal trimming. Contractor performs annual VMP over one-third of the system. In 2013, an IVM style-pruning program was implemented , which uses manual, mechanical, and chemical control methods for managing brush.	In 2015,the City trimmed one-third of the system, both transmission and distribution.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Orlando Utilities Commission, City Orlando	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	OUC facilities are on an eight-year inspection cycle, which includes visual inspection, sounding & boring, excavation, removal of exterior decay, ground line and internal treatments.	OUC planned 6,400 (12%) inspection for distribution and transmission facilities and completed 6,758 (13%) inspections in 2015.	97 poles (1.3%) failed inspection. Failure causes include: decay and others. (Detailed Osmosis Report included).	15 poles were deemed priority replacement, 8 were completed. There are 9 poles pending restoration using reinforcing truss, to be completed the first quarter of 2016. The remaining 73 will be replaced in 2016 and 2017. (See the detailed Osmosis report for size and classes.)	200 miles of transmission facilities are on a three-year trim cycle. 1,261 miles of distribution facilities are on a four-year trim cycle. OUC follows safety methods in ANSI A300 & Z133.1.	For 2015, 335 distribution miles were planned and 100% were completed. For 2015, 88 transmission miles were planned and 100% were completed.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

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	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Quincy, City of	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue	Yes	Yes	The City's pole inspection procedures include visual and sound and bore methods for an inspection cycle of eight years.	Visual inspections were carried out on all 2,854 distribution poles in 2015. Detailed inspections were carried out on all 31 transmission poles and 283 distribution poles for 2015. All transmission poles are made of concrete and found to be in good condition.	19 distribution poles (0.67%) failed inspection. The poles showed signs of rotting around the base of the pole. The poles were replaced with wood poles. No transmission poles failed inspection.	19 distribution poles were replaced as follows: One 25 foot Class7, Three 30 foot Class 6, Two 35 foot Class 3, Thirteen 40 foot Class 3.	The City trims its electric system right of way on a regular basis using in-house crews. The City strives to trim 25% of the system per year.	Approximately 20.5 miles (27.3%) of vegetation trimming was planned and completed on the distribution system in 2015. 100% of the City's transmission lines were inspected in 2015.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

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Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Reedy Creek Improvement District	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	The District does not have any foreign attachments on the facilities.	The District performs visual inspection monthly, and inspects the distribution facilities every eight years. Reedy Creek in not a transmission owner or operator.	All distribution poles were inspected and treated by an outside contractor in 2013. The District has 18 wooden distribution poles. No inspections were completed in 2015.	All distribution poles passed inspection.	The District's transmission system has no wooden poles in service. The transmission system includes approximately 15 miles of overhead transmission ROW. The distribution system is essentially an underground system with very limited amount of overhead.	15 miles of transmission right-of-way is ridden monthly for visual inspection. The District contracts tree trimming each spring to clear any issues on right-of-ways.	Periodic inspections in 2015 yielded minimal instances of vegetation encroachment. In each scenario, tree-trimming services were engaged to remove any concerns. The District continues its long-term vegetation management plan to ensure all clearances remain within acceptable tolerances.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	**Major Planned Work Expansion, Rebuild or Relocation**	**Targeted Critical Infrastructures and major thoroughfares**	**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**
Starke, City of	Yes	Yes, and the City participates in the PURC granular wind research study through the Florida Municipal Electric Association.	Non-coastal utility; therefore storm surge is not an issue.	Yes	The City is in the process of studying this issue.	The City is in process of having all their poles GIS mapped. To date, they have approximately one-third of their poles mapped and inspected. The poles are replaced as needed on a visual basis.	One third of the City's poles (1191) poles were inspected.	In 2015, three poles (0.107%) were found to be rotten.	The City has no transmission poles. The following distribution poles were replaced in 2015: One (0.027%), Class 2, 35 foot, Two (0.055%) Class 2, 40 foot.	The City trims their trees upon visual inspection. The City trims 33% of their electrical distribution system annually.	The City trims distribution lines throughout the year as needed and when applicable removes dead or decayed trees. The City trimmed 33% of distribution system in 2015. The City will use the information from PURC's VM workshops to improve their VM.

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Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Tallahassee, City of	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	Every eight years a new pole inspection cycle is initiated to inspect all poles over a three-year period. The inspection includes visual inspection, sound & bore, internal & fumigant treatment, assessment & evaluation for strength standards.	590 (19.1%) transmission poles were inspected in 2015. All distribution poles were inspected from FY 2013-FY 2014. No distribution pole inspections were performed in 2015. The next cycle will begin in 2020.	The annual climbing inspection identified 11 (0.357%) transmission poles/structures to be rejected due to wood decay or other deteriorating conditions.	11 (0.357%) transmission poles were replaced with poles ranging from 60 feet to 75 feet, Class 1.	The transmission facilities are on a 3-year trim cycle with target of 20 feet horizontal clearance on lines. The distribution facilities are on an 18 month trim cycle on overhead lines to 4-6 feet clearances.	The transmission rights of way & easements were mowed in 2015. Approximately 1,037 miles of overhead distribution lines were managed in 2014 and 2015.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

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Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Vero Beach, City of	Yes	Yes	Facilities installed a minimum of 8 inches above roadway and grading required preventing erosion.	Yes	Yes	The transmission lines are driven and inspected visually every two-three months. There is a total of 41.5 total miles of transmission lines. The distribution poles and lines are inspected on five-year cycle by sound and bore method with some excavation.	The transmission system was inspected one time in 2015 with no poles failing. The city has 700 concrete, 65 steel, 125-spun concrete, 65 wooden and 5 hybrid concrete/steel poles. In 2015, approximately 12.5% (1,320 poles) of the distribution system was inspected.	There were no transmission poles failures in 2015. 1,320 distribution poles were inspected with 15 (0.5%) failures due to ground rot.	There were no transmission poles failures in 2015. 54 distribution poles were replaced by the City in 2015. Most of the poles were Class 4.	The City's VMP is on a three-year cycle that includes trimming tree limbs within 3 foot of neutral or 5 foot of the primary and topping trees in the right of way. In 2015, the City received approximately 8 calls per week from customers requesting tree trimming.	The City has approximately 40 square miles of service territory. The territory is broken down into 60 blocks of equal size and the City's goal is to complete all 60 blocks every three years. The transmission facilities are mowed twice a year.

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Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Wauchula, City of	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	The City of Wauchula has a third-party contractor inspect its substation yearly and 50% of distribution poles in 2016-17.	The City of Wauchula has a third-party contractor inspect its substation yearly and 50% of distribution poles in 2016-17.	Less than 1% (out of 1800 poles) has failed due to poles rotting.	33 distribution poles were replaced in 2015 ranging from 30 feet to 45 feet, all Class 4.	The policy on vegetation management is on a three-year cycle that includes trimming trees and herbicides for vines.	The City completes one-third of the system every year. The City also uses PURC's 2007 and 2009 vegetation management reports to help improve its practices.

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	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Williston, City of	Yes	Yes	Not applicable, the City of Williston is an inland community located 45 miles from a coastal area.	Yes	As a result of employee turnover within the management ranks the City has not established any data on pole reliability, pole loading capacity, or engineering standards and procedures for attachments by others to our distribution poles. The City anticipates outsourcing this function in the 2015–2016 budget years.	All distribution poles are visual and sound inspection on a three-year cycle. The city uses both the bore method and the visual and sound method to inspect poles.	33% of 1,100 poles were inspected in 2015. This is the first year of the three-year cycle.	Five (0.06%) poles found defective due to wood decay at or below ground level.	Five poles failing inspection were 40 feet to 45 feet, Class 2 to 5, which all have been replaced with the same type of pole.	The distribution lines are on a three-year trim cycle with attention to problem trees during the same cycle. Any problem tree not in right of way is addressed to the property owner to correct.	One-third of distribution facilities are trimmed every year to obtain a three-year cycle.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Winter Park, City of	The City has an initiative to put its entire distribution system underground The City requires new residential service to be installed underground and to date, 60% of the system is underground .	The facilities are not designed to meet extreme loading standards on a system wide basis. The City participates in PURC's granular wind research study through Florida Municipal Electric Association.	Non-coastal utility; therefore storm surge is not an issue	Yes	Yes	The City does not own transmission poles or lines. The distribution facilities are on an eight-year cycle, which the City is evaluating the cycle for length. The inspection includes visual, assessment prior to climbing and sounding with a hammer.	The City does not own transmission poles. The City did not conduct pole inspections in 2015; however, WPE routinely inspect poles that are involved with daily jobs and work orders.	Causes of the 10 pole replacements in 2015 were broken or damaged during seasonal storms, car accidents and base rot.	Based on the 2007 full system inspections, all repairs and replacements have been made. The City routinely inspects the poles involved with daily jobs and work orders. Poles requiring remediation or replacement were Class 1 to 3 wood poles with damage from decay or insects.	Vegetation Management is performed by an outside contractor on a three-year trim cycle, which is augmented as needed between cycles.	The trimming crews trimmed approximately 61 miles of distribution lines in 2015. The City is using the PURC 2007 and 2009 reports to improve VMP practices.

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Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	**Major Planned Work Expansion, Rebuild or Relocation**	**Targeted Critical Infrastructures and major thoroughfares**	**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**
Central Florida Electric Cooperative, Inc.	Yes	Central Florida's facilities are not designed to be guided by the extreme loading standards on a system wide basis. However, the wind standard for central Florida's facilities is between 100 mph inland and 130 mph at the coast.	Central Florida continues to participation in evaluation of PURC study to determine effectiveness of relocating to underground.	Yes	Yes	100% of the transmission facilities are inspected annually using above and ground level inspections. The distribution facilities are on a nine-year cycle for inspections using above and ground level inspections.	Central Florida planned and inspected 30 miles of the transmission facilities in 2015. 10,447 (12.22%) distribution poles were inspected in 2015.	Of the 10,447 distribution poles inspected in 2015, 234 (2.23%) were rejected due to deterioration.	234 rejected distribution poles are scheduled for replacement.	Trees are trimmed or removed within 15 feet of main lines, taps, and guys on a five-year plan.	In 2015, 675 miles of 3,192 miles of primary overhead line on the system were cleared.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Choctawhatchee Electric Cooperative, Inc.	Yes	Yes	Yes	Yes	Yes; also inspect and physically count every attachment on a three-year cycle.	The Coop inspects new construction of power lines on a monthly basis and has an eight-year cycle to cover all poles.	During 2015, 6,222 poles or 10.5% of 59,125 total poles were inspected.	214 poles or 3.4% of the poles failed inspection ranging from spit top to wood rot.	100% of 214 failed poles were replaced.	Current right of way program is to cut, mow, or otherwise manage 20% of its right of way on an annual basis. Standard cutting is 10 feet on either side of primary from ground to sky. In 2015, the Coop increased the standard overhead primary line easement area from 20 feet to 30 feet.	513 miles were cut on primary lines and the Coop worked to remove problem tress under the primary lines, which reduces hot-spotting requirements between cycles. The Company also established herbicidal spraying program.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

Utility	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	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									
Clay Electric Cooperative, Inc.	Yes	Clay's distribution facilities are not designed to be guided by the extreme wind loading standards specified by Figure 250-2(d) except as required by rule 250-C, but Clay's transmission facilities are guided by the extreme wind loading. Clay is participating in the PURC's granular wind research study through the Florida Municipal Electric Association.	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	Clay's transmission facilities are on a ten-year cycle, which includes sound/bore techniques, excavation, climbing inspection (four-year cycle), and ground (two-year) and helicopter (one-year) visual (two-year) patrol. Clay's distribution system is on an eight-year cycle using excavation, sound and bore at the ground line and visual inspection.	Clay completed the transmission ground patrol inspection in 2015 & the next inspection will be done in 2018. One helicopter inspection was performed in 2015. A total of 1,860 transmission structures were inspected consisting of 2,627 poles. In 2015, 34,722 distribution poles were inspected.	The inspection found 20 (0.761%) transmission poles inspected required some form of maintenance. 778 (2.24%) distribution poles were rejected due to ground rot, top decay, holes high, split, and rot.	20 (0.761%) transmission poles required maintenance. 2 (0.0761%) transmission poles were replaced with 65 feet Class 1 poles. 742 distribution poles were replaced with poles ranging from 25 feet to 55 feet, Class 1 to 7.	Clay's VMP for the transmission facilities is on a three-year cycle and includes mowing, herbicide spraying and systematic re-cutting. Clay's VMP for the distribution facilities is on a three-year cycle for city, a four-year cycle for urban and five-year cycle for rural and includes mowing spraying and re-cutting.	In 2015, Clay mowed 53.82 miles, sprayed 52.26 miles, and recut 49.32 miles of its transmission right-of-way. In 2015, Clay mowed 2,268.85 miles, sprayed 2,391.21 miles, and recut 2,010.7 miles of its distribution circuits.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Escambia River Electric Cooperative	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	Escambia River inspects its distribution facilities on an eight-year cycle using visual, sound, and bore techniques in accordance with RUS standards.	4,107 (12.5%) distribution poles were planned and 4,365 (13.3%) inspections were completed 2015. Escambia River does not own any transmission poles.	39 poles failed inspection in 2015. The common cause was pole rot.	Poles replaced were of various size and Class and were replaced with the appropriate size and Class.	Escambia River's distribution facilities are on a five-year trim cycle. Distribution lines and right-of-way is cleared 20 feet; 10 feet on each side.	In 2015, approximately 327 miles (21%) of the power lines were trimmed with 310 miles (20%) planned.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

Utility	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	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									
Florida Keys Electric Cooperative Association, Inc.	Yes	The facilities were not designed to the extreme loading standards on a system wide basis. However, the Company has adopted the extreme wind loading standard in April 2007.	Yes	Yes	Yes	The company inspects 100% of the transmission structures annually by helicopter. The distribution poles are on a four-year cycle. The four-year cycle was completed in 2010. All 10,698 distribution poles have been inspected and all 1,003 rejects have been replaced. Inspections and treatment resumed in 2015.	100% of the transmission poles were inspected in 2015 by helicopter. 3,626 (25%) distribution poles were inspected in 2015.	No transmission structures failed inspection in 2015. 120 (3.3%) distribution poles failed inspection in 2015.	No transmission poles were replaced in 2015. 86 distribution poles were replaced and 34 poles were fitted with a C-truss.	100% of the transmission system is inspected and trimmed annually. The distribution system is on a three-year trimming cycle. The trade-a-tree program was implemented in 2007 for problem trees within the right of way.	Annual transmission line right-of-way clearing from mile marker 106 to County Road 905 to the Dade/Monroe County line was completed in 2015. The remainder of the transmission system was spot trimmed. Approximately 120 circuit miles of distribution lines were trimmed in 2015.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Glades Electric Cooperative, Inc.	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue; GEC participated in a workshop hosted by Florida Catastrophic Planning that addressed flooding and storm surges.	Yes	Yes	The facilities are on a 10-year sound and bore inspection cycle with excavation inspection cycle for all wood poles in addition to System Improvement Plan inspections.	100% of total 83 miles of transmission lines were planned and completed by visual inspections 2,490 miles of distribution lines and 122 miles of underground distribution lines were planned and inspected in 2015. 4,620 poles were also inspected in 2015.	446 (10%) distribution poles failed due to decay, rot and top splits.	91% distribution poles rejected in 2015 were replaced. The distribution poles ranged from 35 to 40 foot, Class 5 to 6 GEC also replaced 448 lightning arrestors, which completes its lightning arrestor maintenance on the entire distribution system.	All trimming is on a three-year cycle. The right-of-way is trimmed for 10-foot clearance on both sides, and herbicide treatment is used where needed.	GEC trimmed 344 miles of distribution circuits in 2015. The transmission right-of-ways are inspected annually and trimmed if necessary. Vegetation growth is not an issue for the transmission lines.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	**Major Planned Work Expansion, Rebuild or Relocation**	**Targeted Critical Infrastructures and major thoroughfares**	**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**
Gulf Coast Electric Cooperative, Inc.	Not bound by the extreme loading standards due to system is 99.9% under the 60 foot extreme wind load requirements.	The method of construction used by GCEC does, however, meet the "design to withstand, without conductors, extreme wind loading in Rule 250C applied in any direction on the structure."	Yes, and GCEC continues to evaluate the PURC study to determine effectiveness of relocating to underground	Yes	Yes	No transmission lines. Performs general distribution pole inspections on an eight-year cycle. Also, GECE inspects underground transformers and other padmount equipment on a four-year cycle.	Inspected 6,477 (13.3%) distribution poles, in 2015 with 32 rejects. Also, in 2015, GECE inspected 205 padmount transformers, 72 pull box cabinets, 3 padmount switchgears and 73 secondary pedestals, which accounts for approximately 20.3% of padmounted equipment.	Of the 6,477 poles inspected in 2015, 32 (0.5%) poles were rejected. The poles were rejected due to decay pockets (2, 6.3%), decay tops (2, 6.3%), butt rot (21, 65.5%), mechanical damage (5, 15.6%), and punk wood (2, 6.3%).	In 2015, GCEC replaced 23.5% wooden poles.	GCEC owns approximately 2,158 miles of overhead and 435 miles of underground distribution lines. GCEC strives to clear the entire ROW on a five-year cycle. GCEC clears between 20 and 30 foot width, from ground to sky.	GCEC cut 375 miles of ROW in 2014 and 2015. GCEC also works closely with property owners for danger tree removal.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

Utility	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	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									
Lee County Electric Cooperative, Inc.	Yes	Yes	Yes, the majority of LCEC's underground facilities, excluding conduits and cables, are at or above existing/surrounding grade.	Yes	Yes	Transmission facilities are inspected annually for 230 kV systems and ever two years for 138 kV systems. The inspections are done by climbing or the use of a bucket truck. The distribution facilities are on a two-year visual inspection cycle and on a 10-year climbing inspection cycle for splitting, cracking, decay, twisting, and bird damage.	In 2015, 1,198 (100% 230kV, 54% 138 kV) transmission poles were inspected, which was 100% of the poles that were scheduled. 78,536 (49%) distribution poles were inspected, which was 99.4% of the inspections scheduled.	203 (17%) transmission poles failed inspection due to rot, woodpecker damage, bad arm, and grounds. 3,701 (4.7%) distribution poles failed inspection due to rot/split top, out of plumb, and woodpecker damage.	122 transmission poles were replaced with concrete and steel poles. 94 (2.5%) distribution poles were repaired through re-plumbing, and through patching. 756 (20.4%) poles were replaced in 2015. The sizes varied by Class 2 to Class 6.	VMP strategies include cultural, mechanical, manual, & chemical treatments and the plan is on a six-year cycle for 1-phase distribution facilities and three years for 2 & 3 phase distribution facilities. The 230 kV transmission systems are on a bi-annual cycle and 138 kV is on an annual cycle.	LCEC completed 5.02 miles (100%) of Transmission trimming, 575 miles (100%) three-phase trimming, and 574 (127%) miles of single-phase trimming, 28.46 (100%) miles transmission mowing.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Okefenoke Rural Electric Membership Cooperative	Yes	The facilities are not designed to be guided by the extreme loading standards on a system wide basis. OREMC is participating in PURC's granular wind research study.	OREMC is continuing the evaluation of the PURC study to determine effectiveness of relocating to underground.	Yes	Yes	OREMC owns no transmission facilities. The inspections for the distribution systems include visual, sound/bore with excavations, and chemical treatment.	In 2015, OREMC performed visual inspections of a fair number of poles. OREMC also replaced poles and conductors, relocated poles and lines, and completed other miscellaneous projects.	462 poles were added in 2015 and 329 poles were retired. The work plan listed system improvement, pole replacement, miscellaneous replacements, conductor replacements, miscellaneous plant additions, road moves and line relocations.	For system improvement – 125 new poles were added & 120 poles were retired, pole replacement – 140 added & 132 retired, misc. replacements – 17 added & 22 retired, conductor replacements – 122 added & 107 retired, misc. plant additions – 115 added & 2 retired, road moves – 27 added & 21 retired, line relocations – 41 added and 45 retired.	Vegetation control practices consist of complete clearing to the ground line, trimming, and herbicides. The VMP is on a five-year trim cycle. OREMC utilizes contractors for its VM programs.	OREMC planned 500 miles of right-of-ways for trimming and completed 510 miles in 2015. This equates to less than 20% of the overhead distribution line. Also in 2015, contractors sprayed 600 to 650 miles of right-of-way, which is on a four-year plan.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Peace River Electric Cooperative, Inc.	Yes	The facilities are not designed to be guided by the extreme loading standards on a system wide basis. Peace River is currently participating in PURC granular wind research study.	Peace River is continuing the evaluation of PURC study to determine effectiveness of relocating to underground to prevent storm damage and outages.	Yes	Yes	Peace River currently uses RDUP bulletin 1730B-121 for planned inspection and maintenance. The facilities are located in Decay Zone 5 and are inspected on an eight-year cycle. The transmission poles are visually inspected every two years.	391 transmission (170 concrete, 3 steel, 218 wooden) poles are inspected every two years. 4,873 (8.6%) of 56,605 distribution poles were inspected.	Peace River did not replace any transmission poles in 2015. 161 (3.3%) distribution poles were rejected in 2015.	Peace River replaced 84 poles in 2015. The distribution poles receiving remediation in 2015 varied from 35 foot to 50 foot, Class 1 to 5.	Peace River renewed its vegetation maintenance plan in December 2012, to cut the system in a three-year period from the substation to the consumer's meter. In January 2013, Peace River started their first year of the three-year renewed VM contract.	In 2015, the Company completed right-of-way maintenance on 745 (28.8%) of its 2,584 miles of overhead distribution. 2015 is year three of their VM plan.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

Utility	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	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									
Sumter Electric Cooperative, Inc.	Yes	Transmission and distribution facilities are designed to withstand winds of 110 MPH in accordance with 2012 NESC extreme wind load	Non-coastal utility; therefore storm surge is not an issue	Yes	Yes	The transmission facilities are on a five-year cycle using ground line visual inspections, which includes sounding and boring and excavation. The distribution facilities are on an eight-year cycle using sound, bore, & excavation tests.	197 (16.5%) transmission poles were planned and 197 (100%) were inspected in 2015. 18,661 (13.6%) distribution poles were planned and 18,661 (100%) were inspected in 2015. 10,956 (19.3%) distribution underground structures were planned and 10,956 (100%) were inspected in 2015.	25 (12.7%) transmission poles failed inspection. 3,830 (35%) distribution poles failed inspection. The causes are due to ground rot and top deterioration.	18 (72%) wooden transmission poles were replaced or remediated. 3,801 distribution poles were replaced (99.2%). The transmission and distribution poles ranged from 20 to 85 foot and Class 1 to Class 6.	Distribution and transmission systems are on a three-year trim cycle for feeder and laterals. In 2015, Sumter trimmed 1,651 circuit miles, applied herbicide to 1,521 circuit miles, and removed 19,024 trees.	Sumter plans to meet current tree trim cycles, tree removals, and herbicide treatment. An estimated 1,500 miles of underbrush treatment is being scheduled for 2016.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	**Major Planned Work Expansion, Rebuild or Relocation**	**Targeted Critical Infrastructures and major thoroughfares**	**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**
Suwannee Valley Electric Cooperative, Inc.	Yes	SVEC facilities are not designed to be guided by the extreme loading standards on a system wide basis. SVEC participates in PURC wind study.	Non-coastal utility; therefore storm surge is not an issue	Yes	Yes	SVEC inspects all structures on an eight-year cycle using sound/bore and visual inspection procedures.	SVEC inspected five (100%) transmission structures in 2015. 10,535 (12%) distribution structures were inspected in 2015.	1,265 (13%) inspections of distribution poles failed due to ground line decay, excessive splitting, & woodpecker damage. Zero inspections of transmission poles failed.	1,378 (13.2%) distribution poles of total inspected were remediated by ground line treatment and 234 (2.3%) distribution poles were replaced. Zero transmission structures were remediated.	SVEC's facilities are on a four- to three-year inspection cycle includes cutting, spraying and visual on as-needed basis.	In 2015, 962 (29%) miles were cut and 600 miles right-of-way sprayed. 950 (24%) miles are planned for cutting and 962 miles are planned for spraying in 2016.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
Talquin Electric Cooperative, Inc.	Yes	Yes	Talquin has a very small percentage subject to storm surge. Stronger anchoring systems are in place to better secure pad-mount transformers and installation of grounding sleeves to secure underground cabinets.	Yes	Yes, inspecting on a five-year cycle.	Annual inspections in house of transmission lines are performed by checking the pole, hardware, and conductors. An outside pole-treating contractor inspects distribution and transmission poles each year. The poles are inspected on eight year rotation since 2007.	10,094 poles were inspected in 2015, which included no transmission poles.	432 (4.3%) of the distribution poles inspected were rejected.	The priority poles were replaced and the rejected poles are being inspected and repaired or replaced if necessary. Talquin replaces 30-foot Class 7 poles with stronger 35-foot Class 6 poles with guys and 35-foot Class 6 poles with 40 foot Class 4 poles as a minimum standard.	Talquin maintains its right-of-ways by mechanical cutting, mowing, and herbicidal applications.	428 (15%) miles of distribution right of ways were treated in 2015. In addition, Talquin received 1,996 non-routine requests for tree maintenance.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	**Major Planned Work Expansion, Rebuild or Relocation**	**Targeted Critical Infrastructures and major thoroughfares**	**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**
Tri-County Electric Cooperative, Inc.	Yes	Yes	The current standard practice is to restrict electrification of flood prone areas. Due to natural landscape within area, storm surge issues are low.	Yes	Yes	The transmission facilities are inspected on a five-year cycle by both ground line and visual inspections. The distribution facilities are on an eight-year cycle using both ground line and visual inspections.	During 2015, the transmission poles were visually inspected. Tri-County inspected 7,288 distribution poles in 2015.	236 (3.2%) distribution poles were rejected. The Coop replaced 2 guy guards and repaired 82 broken ground wires.	The 236 rejected distribution poles found during the 2015 inspection which required replacement are in the process of being changed out.	The Coop attempts to acquire 30-foot right-of-way easement for new construction. The entire width of the obtained ROW easement is cleared from ground level to a maximum height of 60 feet in order to minimize vegetation and ROW interference with the facilities.	In 2015, approximately 600 distribution miles were trimmed.

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	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	Guided by Extreme Wind Loading per Figure 250-2(d)										
Utility	Major Planned Work Expansion, Rebuild or Relocation	Targeted Critical Infrastructures and major thoroughfares	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
West Florida Electric Cooperative Association, Inc.	Yes	Yes	Non-coastal utility; therefore, storm surge is not an issue. Some areas in territory are subject to flooding. In these areas, line design is modified to compensate for known flooding conditions.	Yes	Yes. General inspections are completed on an eight-year cycle.	West Florida continues to use RUS Bulletin 1730B-121 as its guideline for pole maintenance and inspection.	During 2015, West Florida inspected 9.1% of entire system.	Out of the 9.1% inspected, 12% required maintenance or replacement.	During 2015, 1,502 poles were replaced. Five miles of single phase line was converted to 3 Phase to correct loading issues. The Company re-insulated and upgraded approximately 85 miles of distribution lines from 12.5 KV to 25 KV. The Company relocated 7 miles of line to accommodate the upgrade and widening of local roads.	West Florida's VM includes ground to sky side trimming along with mechanical mowing and tree removal.	During 2015, the Company mowed and side trimmed 924 miles of its distribution system. Also, the Company chemically sprayed approximately 1,187 miles of right-of-way. Approximately 924 miles will be sprayed and approximately 751 miles will be trimmed and mowed during 2016.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2015

Utility	The extent to which Standards of construction address:					Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	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									
Withlacoochee River Electric Cooperative, Inc.	Yes	The facilities are not designed to be guided by the extreme wind loading standards on a system wide basis. However, most new construction, major planned work and targeted critical infrastructure meets the design criterions that comply with the standards.	Yes	Yes; in 2015, WREC relocated 15 miles of overhead primary lines from rear lots to street, changing out hundreds of older poles and facilities; this will continue until older areas are all upgraded.	Yes	WREC inspects the transmission and distribution facilities annually (approximately (6,175 miles for 2015) by line patrol, physical and visual inspections.	68 miles or 100% of transmission facilities were inspected by walking, riding or aerial patrol. 6,175 miles of distribution facilities were inspected annually by line patrol, voltage conversion, right-of-way, and Strategic Targeted Action and Repair (S.T.A.R.).	OSMOSE (a contractor for pole inspection and treatment) found 6.2% poles with pole rot and 1.0% poles were rejected in 2003 to 2004. WREC discontinued this type of inspection/ treatment plan and now data is unavailable on the exact failure rates.	4,216 wooden, composite, cement, concrete, steel, ductile iron, aluminum, and fiberglass poles ranging in size from 12 to 95 feet were added; 3,207 poles were retired.	WREC has an aggressive VMP that includes problem tree removal, horizontal/vertical clearances and under-brush to ground. WREC maintains over 150 overhead feeder circuits (over 7,100 miles of line) on a trim cycle between three to four years.	All transmission lines are inspected annually. 1,946 miles of right-of-way issues were addressed in 2015.