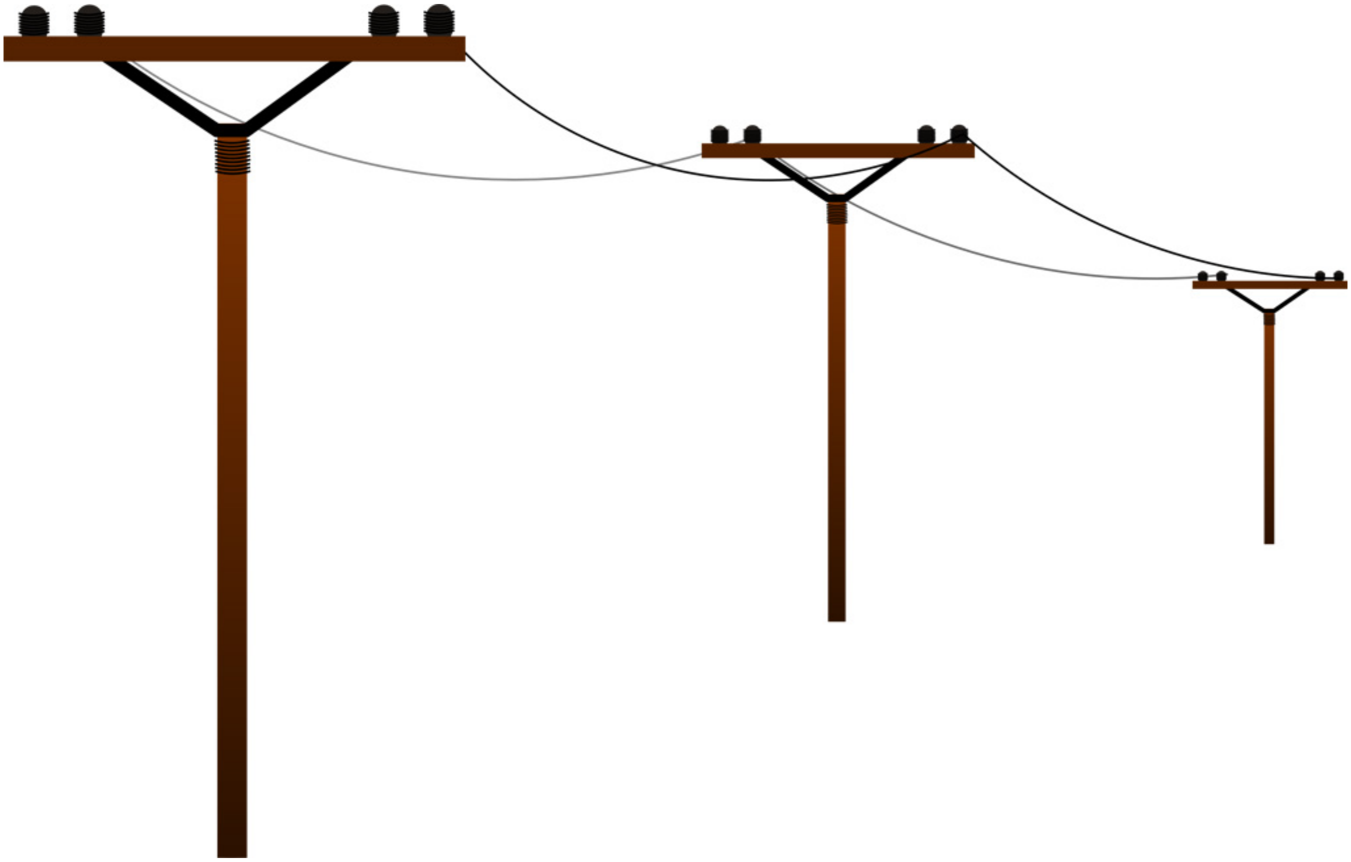

Review of Florida's Investor-Owned Electric Utilities

2 0 1 6

Service Reliability Reports

November 2 0 1 7

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, LLC
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 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 2016 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, LLC (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 2016 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. 20060078-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. 20060531-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. 20060198-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, LLC

DEF's 2016 unadjusted data indicated that allowable exclusions for outage events accounted for approximately 77 percent of all Customer Minutes of Interruption (CMI). The largest contributor to the exclusion percentage was the category of Named Storms at 72 percent. DEF experienced one tornado, Tropical Storm Colin, Hurricane Hermine, Tropical Storm Julia, and Hurricane Matthew.

On an adjusted basis, DEF's 2016 System Average Interruption Duration Index (SAIDI) was 85 minutes, increasing its adjusted SAIDI by 5 minutes from the 2015 results. The trend for the SAIDI over the five-year period of 2012 to 2016 is trending slightly upward. The System Average Interruption Frequency Index (SAIFI) in 2016 was the same as the 2015 value of 0.98 interruptions. The Customer Average Interruption Duration Index (CAIDI) increased for 2016 compared to 2015. Over the five-year period, the SAIFI is trending downward as the CAIDI is trending upward.

In **Figure 3-8**, DEF's Top Five Outage Categories, the category Defective Equipment is in the top spot representing 25 percent of the top 10-outage categories. The next two highest categories were Vegetation (21 percent) and All Other (20 percent). Other Weather (13 percent) and Animals (14 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, Other Weather, and Animals outage categories are trending downward for the five-year period of 2012 to 2016 even though the Animals category had a 7 percent increase in 2016, Other Weather had a 26 percent decrease, and the Vegetation category had a 2 percent increase. The Defective Equipment had an increase between 2015 and 2016 and is trending upward for the same five-year period. The All Other category was the same value for 2016 as 2015; however, over the five-year period this category is trending upward.

The percentage of reliability complaints to the total number of complaints filed with the Commission for DEF decreased to 4.0 percent in 2016 from 4.8 percent in 2015. Over the five-year period from 2012-2016, DEF's reliability related complaints have been relatively flat.

In 2016, DEF completed 1,167 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 2017, DEF plans to harden 1,199 transmission structures. At the end of 2016, DEF reported 23,567 transmission structures left to harden.

Since DEF's service territory was impacted by Hurricanes Hermine and Matthew, the Utility performed data collection and analysis on the impact of the two hurricanes. Hurricane Hermine impacted 33.5 percent of the customers in the North Coastal region and 24.5 percent of the customers in the South Coastal region. DEF reported 75 poles were replaced after Hurricane Hermine. Hurricane Matthew impacted 53.3 percent of the customers in the North Central region and 7.6 percent of the customers in all other regions combined. DEF replaced 213 poles after Hurricane Matthew.

Service Reliability of Florida Power & Light Company

In reviewing the unadjusted data for 2016, FPL's documented exclusions for outage events accounted for approximately 87 percent of all CMI. The biggest impact was the Named Storms accounting for approximately 82 percent of the CMI. The weather events that affected FPL's service area were nine tornados, Tropical Storm Colin, Hurricane Hermine, Tropical Storm Julia, and Hurricane Matthew.

FPL's 2016 metrics on an adjusted basis include SAIDI which was reported as 56 minutes and represents a 3 minute decrease from last year's reported 59 minutes. The SAIFI improved as CAIDI increased in 2016. The SAIFI decreased from 1.00 interruptions in 2015 to 0.92 interruptions in 2016 and the CAIDI increased from 60 minutes in 2015 to 61 minutes in 2016.

Defective Equipment (35 percent) and Vegetation (22 percent) outages were the leading causes of the number of outage events per customer for 2016. Starting in 2014, Defective Equipment includes Equipment Failure, Equipment Connect and Dig-in, which were all separate categories, in prior years. The next three outage causes are Unknown (11 percent), Animals (10 percent) and Other Weather (9 percent). **Figure 3-16** shows an increasing trend in the number of outage events attributed to Vegetation, even though the number of outages decreased by 12 percent from 2015 to 2016. The analysis shows a decreasing trend in the number of outage events caused by Defective Equipment. The number of outages decreased by 3 percent from 2015 to 2016 and a decreasing trend of outage events by Unknown, which decreased by 8 percent from 2015 to 2016. The analysis shows that the trend for the Animals category is trending downward and there was a decrease in outages of 4 percent and the Other Weather category is trending upward even though there was a decrease in outages of 15 percent.

FPL's reliability related complaints percentage received by the Commission in 2016 was 0.8 percent, which is higher than the 0.6 percent received in 2015. FPL's reliability related complaints are relatively flat as shown in **Figure 4-10**, even with the increase in 2016.

In 2016, FPL replaced 1,737 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 223 substations. In 2017, FPL plans on replacing approximately 1,400 to 1,800 wood transmission structures. FPL has 7,925 wood transmission structures remaining to be replaced.

In 2016, FPL collected data and performed analysis on Hurricane Hermine and Hurricane Matthew. Hurricane Hermine impacted 18 percent of the customers in the North Florida region, 8 percent of the customers in the Manasota region, 3 percent of the customers in the Brevard, Central Florida, and Naples regions and 2 percent of the customers in the Toledo Blade and Treasure Coast regions. The other regions had 1 percent or less of the customers affected. FPL reported that no hardened poles required replacement as a direct result of Hurricane Hermine. However, as a result of a vehicle accident in the Central Florida region, one critical infrastructure (CIF) pole was replaced. Hurricane Matthew impacted 96 percent of the customers in the Central Florida region, 92 percent of the customers in the North Florida region, 74 percent of the customers in the Brevard region, 59 percent of the customers in the Treasure Coast region and 20 percent of the customers in the West Palm Beach region. The other regions had 8 percent or less of the customers affected. FPL reported that no hardened poles required replacement as a direct result of Hurricane Matthew.

Service Reliability of Florida Public Utilities Company

The unadjusted data for FPUC indicates that its 2016 allowable exclusions accounted for approximately 86 percent of the total CMI. The Named Storms category accounted for approximately 80 percent of the CMI that were excluded. FPUC reported that neither the Northeast nor the Northwest divisions were impacted by tornados during 2016. The Northeast division was affected by Hurricane Matthew, Hurricane Hermine, and Tropical Storm Julia. The Northwest division was impacted by Hurricane Hermine.

The 2016 adjusted data for FPUC's SAIDI was 185 minutes, which is a 31 percent increase from the 127 minutes reported in the previous year. The SAIFI also increased from 1.62 interruptions in 2015 to 1.95 interruptions in 2016. The CAIDI value in 2016 was 95 minutes, which is an increase from the 79 minutes in 2015.

FPUC's top five causes of outages included Vegetation, Animals, Other Weather, Lightning, and Defective Equipment events. As shown in **Figure 3-21**, Vegetation (31 percent) was the number one cause of outages in 2016 followed by Animals (25 percent), Defective Equipment (12 percent), Other Weather (11 percent), and Lightning (9 percent). Other Weather (non-excludable weather events), Lightning, and Defective Equipment attributed outages decreased in 2016, as Vegetation and Animals 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 2016, the Utility had five reliability related complaints filed with the Commission. 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 are trending upward.

All of the Northeast division's 138kV poles are constructed of concrete and steel. The Northeast division's 69kV transmission system consists of 217 poles of which 105 are concrete. The Northwest division does not have transmission structures. In 2016, FPUC replaced 31 wooden transmission poles with spun concrete transmission poles. FPUC has 112 transmission structures left to be hardened.

FPUC reported that its post storm damage assessment for Hurricanes Hermine and Matthew showed that its distribution system was damaged as a result of falling trees and limbs. Hurricane Hermine impacted 35 customers in the Northwest division. FPUC reported that Hurricane Hermine affected no CIFs. For Hurricane Matthew, FPUC reported that 100 percent of its customers in the Northeast division were without power. FPUC reported one transmission pole and twelve wooden distribution poles were broken due to falling trees and limbs. Four of the twelve wooden distribution poles were CIF poles.

Service Reliability of Gulf Power Company

Gulf's 2016 unadjusted data indicates that allowable exclusions accounted for approximately 36 percent of its CMI. Extreme Weather (EOC Activation/Fire) events accounted for 28 percent of the total CMI. Gulf explained the EOC Activation events were severe storm fronts that moved across all three regions producing numerous tornados. Two EF-3 tornadoes touched down in Escambia County within days of each other and the Escambia County EOC was opened to help victims and organize first responders. Gulf mobilized crews from all three regions, as well as crews from out of state to assist with the recovery efforts.

The 2016 SAIDI for Gulf was reported to be 95 minutes, which is higher than the 88 minutes reported in 2015. The SAIFI increased to 1.14 interruptions from 1.02 interruptions the previous year. The CAIDI decreased to 83 minutes from 86 minutes in 2015. 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. Animals (30 percent) caused outages was the number one cause of outages followed by Defective Equipment (23 percent), Vegetation (16 percent), Lightning (16 percent), and Unknown (6 percent). The number of outages decreased for three of the top five outage categories in 2016 when compared to 2015, which were outages due to Defective Equipment, Lightning, and Vegetation as shown in **Figure 3-29**. The Defective Equipment and Vegetation categories now include outage categories that in the past were separately identified.

The percentage of complaints reported to the Commission against Gulf that were reliability related was 0.2 percent in 2016. This is lower than the 0.5 percent recorded last year. Gulf's percent of total complaints for the five-year period of 2012 to 2016 is trending upward despite the decrease in 2016. 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 57 wooden cross arms remaining to be replaced. In 2016, 298 transmission structures were hardened.

Service Reliability of Tampa Electric Company

TECO's 2016 unadjusted data indicate that the allowable exclusions for outage events accounted for approximately 25 percent of all the CMI. The largest documented exclusion was the Generation/Transmission Events, which accounted for approximately 16 percent of the total excludable CMI. TECO reported 13 transmission outages in 2016 caused by equipment failure, lightning, human error, bird nest fouling, and storms. TECO's service area was affected by Tropical Storm Colin, Hurricane Hermine and Hurricane Matthew during 2016.

The adjusted SAIDI for 2016 increased to 83 minutes from 79 minutes in 2015 and represents a 5 percent decline in performance. The SAIFI decreased to 1.01 interruptions from 1.03 interruptions in the previous year. The CAIDI increased 7 percent to 83 minutes from 77 minutes reported in 2015. TECO reported the improvement in SAIFI was attributed to customer's experiencing fewer momentary breaker operations. The increases in SAIDI and CAIDI were contributed to a series of severe summer thunderstorms in July 2016. In addition, TECO experienced application issues with its OMS and Computer Aided Dispatch (CAD) systems. These issues hindered dispatchers and field worker's responsiveness.

Defective Equipment (28 percent) and Vegetation (21 percent) were the largest contributors to TECO's causes of outage events followed by Lightning (19 percent), Animals (13 percent), and Unknown (10 percent). **Figure 3-37** illustrates the top five outage causes showing Defective Equipment, Vegetation, and Lightning related causes are trending upward. Vegetation and Lightning had a 5.1 percent and 1.6 percent decrease as Defective Equipment had a 7.9 percent decrease in outages when compared to the previous year. Unknown related causes are remaining relatively flat even though there was an increase of 17.6 percent in 2016. Animal related causes are trending downward. Beginning in 2014, the Defective Equipment category now includes outage categories that in the past were separately identified.

TECO's 2016 percentage of total complaints that are service reliability related increased to 11.3 percent from 4.7 percent as reported in 2015. TECO's percentage of service reliability complaints is trending upward over the period of 2012 to 2016. TECO continues to focus on vegetation management, circuit review activity, and other maintenance activities to minimize service-related complaints in 2017. 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 2016, TECO hardened 1,054 structures including 940 pole replacements utilizing steel or concrete poles and replaced 114 sets of insulators with polymer insulators. TECO's goal for 2017 is to harden 310 transmission structures. TECO has approximately 7,038 wooden poles left to be replaced.

In 2016, TECO was impacted by three weather events: Tropical Storm Colin, Hurricane Hermine and Hurricane Matthew. However, TECO did not collect post-storm data or perform any analysis related to these storm events because TECO only gathers data following a Category One or greater storm (wind speeds greater than 74 miles per hour) that significantly impacts its service area. TECO reported that its service area was impacted by these storm events but the threshold was not met as Hurricane Hermine and Matthew's wind speed did not exceed 74 mph when impacting TECO's service area.

Review Outline

This review primarily relies on the March 2017 Reliability Reports filed by the IOUs for the 2016 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 2016 distribution service reliability data and support for each of its adjustments to the actual service reliability data.
- ♦ **Section III:** Each utility's 2016 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 2012 to 2016.
- ♦ **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. 20060078-EI and PSC-07-0078-PAA-EU, issued January 29, 2007, in Docket No. 20060531-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]

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[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 2016.

Table 1-1.
2016 Wooden Pole Inspection Summary

Utility	Total Poles	Poles Planned 2016	Poles Inspected 2016	Poles Failed Inspection	% Failed Inspection	Years Complete in 8-Year Inspection Cycle
DEF	802,113	100,000	103,684	2,781	2.68%	2
FPL	1,075,419	133,363	121,293	5,360	4.42%	3
FPUC	26,548	3,286	2,478	78	3.15%	1
GULF	207,889	26,000	25,580	746	2.92%	3
TECO	311,000	0	63,454	3,355	5.29%	3

Source: The IOUs 2016 distribution service reliability reports.

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

Table 1-2.
Projected 2017 Wooden Pole Inspection Summary

Utility	Total Poles	Total Number of Wood Poles Inspected in current cycle	Number of Wood Pole Inspections Planned for 2017	Percent of Wood Poles Planned 2017	Percent of Wood Pole Inspections Completed in 8-Year Cycle	Years Remaining in 8-Year Cycle After 2016
DEF	802,113	295,258	100,000	12.47%	37%	6
FPL	1,075,419	388,108	133,630	12.43%	36%	5
FPUC	26,548	2,478	3,439	12.95%	9%	7
GULF	207,889	78,347	26,000	12.51%	38%	5
TECO	311,000	176,102	0	0.00%	57%	5

*Note: DEF has completed two years and eight months of its second eight-year cycle. TECO reports it is more than one year ahead of schedule; therefore TECO did not schedule any inspections in 2017.
Source: The IOUs 2016 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. 20060198-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 2016. 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, except for TECO which is on a four-year cycle, 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. 20060198-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. 20060172-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. 20060173-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. 20060173-EU and 20060172-EU.

[9] FPSC Order No. PSC-06-0969-FOF-EU, issued November 21, 2006, in Docket No. 20060512-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	1,016			2,040	51.4%
FPL	3	2016	13,417	4,418				4,418	32.9%
FPUC	3	2014	159	52	51	62		164	103.2%
GULF	3	2016	723	241				241	33.3%
TECO	4	2013	1,720	373.9	464.8	453.6	385.5	1,678	97.5%

Note: In 2012, the Commission approved TECO's request to modify its trim cycle for feeders to four years.[11]
Source: The IOUs 2016 distribution service reliability reports.

Based on the data in Table 1-3, it appears that both FPL and Gulf are on schedule with their feeder vegetation cycles. FPUC trimmed additional miles during its three-year feeder vegetation cycle. DEF indicates approximately 80 percent of its feeder miles were maintained in 2014 and since then DEF has taken a level approach considering resource availability, growth patterns, and other reliability driven factors. DEF believes it is on track to meet its 2017 three-year commitment of 100 percent. TECO explained that in 2016 it reallocated tree-trimming resources due to reliability demands. This adjustment caused proactive production miles to drop slightly below the goal.

[11] FPSC Order No. PSC-12-0303-PAA-EI, issued June 12, 2012, in Docket No. 20120038-EI, *In re: 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	2016	14,200	2,173						2,173	15.3%
FPL	6	2013	22,722	4,124	3,685	3,817	3,745			15,371	67.6%
FPUC	6	2014	571	145	134	188				468	82.0%
GULF	4	2014	5,148	1,294	913	331				2,538	49.3%
TECO	4	2013	4,572	1,098	1,161	1,146	926			4,331	94.7%

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 2016 distribution service reliability reports.

From the data in Table 1-4, it appears that FPL and FPUC are on schedule with lateral vegetation cycles. DEF indicated that 2016 is the first year of its five-year lateral cycle. DEF explained that given overall business needs and resource challenges, it is confident that it will meet its 2020 lateral expectation. Gulf reported that its goal is to trim one-fourth of its lateral lines each year. 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. As explained above, in 2016, TECO reallocated tree-trimming resources due to reliability demands. This adjustment caused proactive production miles to drop slightly below the goal.

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

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[12] FPSC Order No. PSC-06-0947-PAA-EI, issued November 13, 2006, in Docket No. 20060198-EI, *In re: 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. 20060198-EI, *In re: 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. 20100264-EI, *In re: 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. 20100265-EI, *In re: 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. 20120038-EI, *In re: Petition to modify vegetation management plan by Tampa Electric Company*.

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

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 2016 highlights:

- ♦ DEF preforms its joint-use audit on an eight-year cycle with 2016 being the second year in the current cycle. In 2016, DEF audited one-eighth of its joint-use attachments. Of the 57,698 distribution poles that were strength tested 48 failed the test. DEF added guy wires to 29 poles and replaced 19 of the failed poles. DEF found no unauthorized attachments on the poles. Of its 7,554 joint-use transmission poles, 262 poles were strength tested with none of the poles failing the strength test.

- ♦ 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 2016. Pole strength and loading tests were also performed on the joint use poles. The results also show that 836 (1.8 percent) poles failed the strength test due to being overloaded. The 2016 survey and inspection results show that no unauthorized attachments were found.

- ♦ 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, four joint-use agreements have been executed. The other agreements are being negotiated. FPUC completed the joint use pole attachment audit in 2016. The audit results indicated there were 4,404 third-party attachers. The audit did not specifically identify unauthorized attachments since FPUC did not have records on past attachments.

- ♦ Gulf performs its joint use inventory audits every five years. The last audit was completed in December 2011. Gulf's 2016 Pole Attachment audit began on January 14, 2016, and was scheduled to be completed by August 15, 2016. As of 2016, Gulf has 203,800 distribution poles with 314,951 third-party attachers (149,763 Telecom and 165,188 cable TV & other). Gulf is attached to 62,366 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 2016, 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 4,120 poles. TECO identified 3 distribution poles that were overloaded due to joint-use attachments and 114 poles were overloaded due to TECO's attachments. TECO also found 393 poles that had NESC violations due to joint-use attachments and 161 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. 20060198-EI.

- DEF inspected 175 transmission circuits (30 percent), 485 transmission substations (100 percent), 294 transmission tower structures (9 percent), and 15,761 transmission poles (31 percent) in 2016. DEF plans to inspect 33 percent of the transmission system in 2017. 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 2014, FPL began a new six-year cycle, performing climbing inspections on all 500 kV structures. Climbing inspections for all other steel and concrete structures are on a ten-year cycle. In 2016, FPL inspected approximately 78.1 percent of transmission circuits, 100 percent of transmission substations, 100 percent of non-wood transmission tower structures, and 22 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 2016, FPUC inspected 100 percent of transmission circuits, transmission substations, tower structures, and transmission poles. The transmission inspections included climbing patrols of 95 138kV and 217 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 2016 and conducted 530 inspections of its metal poles and towers as well as 1,743 wood and concrete transmission poles. Gulf replaced 126 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. Normally, as part of the Transmission Line Inspection Standards, Gulf performs at least four routine aerial patrols annually. In 2016, policy changes and contractor insurance issues resulted in one aerial patrol; however, Gulf intends to resume performing four routine aerial patrols in 2017.

- 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. 20140122-EI. Additionally, pre-climb inspections are performed prior to commencing work on any structure. Approximately 2,820 structures or 11 percent of the system was inspected by ground line inspection. The 2016 infrared aerial patrol was performed on 100 percent of transmission circuits in 2015. Above ground inspections were performed on approximately 2,820 structures or 11 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 2016 and projected 2017 activities for each IOU are explained below.

- DEF planned 1,782 transmission structures for hardening and completed hardening of 1,167 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 2017, DEF plans to harden 1,199 transmission structures. DEF reported 53,476 transmission poles, with 23,567 wood poles (40 percent) left to be hardened.

- FPL's 2013-2015 storm hardening plan accelerated the replacement of wood transmission structures to within the next 10 to 15 years. FPL replaced 1,737 wood transmission structures with spun concrete poles in 2016. 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 has 7,925 (12 percent) wood transmission structures remaining to be replaced.

- In 2016, FPUC installed 31 new 69KV spun concrete structures. Twenty-eight of those concrete structures were to replace existing wood poles and the other three are new additions. 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 217 poles of which 105 are concrete poles. FPUC has 112 (51 percent) transmission structures left to be hardened. This includes seven wood span guy poles. FPUC indicated that during the hardening replacements, it designed and installed self-supporting structures, which in most cases eliminates the need to use span guys. 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 2016, 298 transmission structures were hardened. Gulf has 57 (2 percent) wooden cross arms left to be replaced.

- TECO is hardening the existing transmission system by utilizing its inspections and maintenance program to systematically replace wood structures with non-wood structures. In 2016, TECO hardened 1,054 structures including 940 structure replacements utilizing steel or concrete poles and replaced 114 sets of insulators with polymer insulators. TECO's goal for 2017 is to harden 310 transmission structures. TECO has approximately 7,038 (33 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 2016 highlights and projected 2017 activities for each IOU are listed below:

- DEF's forensics teams will participate in DEF's 2017 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.

In 2016, DEF's service territory was impacted by Hurricanes Hermine and Matthew. The Utility performed data collection and analysis on the impact of the two hurricanes. Hurricane Hermine impacted 23 counties and 33.5 percent of the customers in the North Coastal region and 24.5 percent of customers in the South Coastal region. DEF reported 75 poles were replaced after Hurricane Hermine.

Regarding Hurricane Matthew, the majority of the impact occurred in the North Central region. Ten counties were impacted and 53.3 percent of the customers in the North Central region and 7.6 percent of the customers in all other regions combined were affected. DEF replaced 213 poles after Hurricane Matthew.

- ♦ 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.

In 2016, FPL collected data and performed analysis on Hurricane Hermine and Hurricane Matthew. However no forensic field data was collected regarding the general performance of FPL's overhead versus underground facilities. FPL explained that since restoration for these storms was essentially completed within two days or less, the time to gather overhead versus underground forensic data was insufficient as gathering forensic data is highly dependent upon on the storm having sufficient intensity to result in a restoration lasting a numbers days. For Hurricane Hermine, FPL reported that all 16 regions were impacted including 30 counties. Hurricane Hermine affected 18 percent of the customers in the North Florida region, 8 percent of the customers in the Manasota region, 3 percent of the customers in the Brevard, Central Florida, and Naples regions and 2 percent of the customers in the Toledo Blade and Treasure Coast regions. The other regions had 1 percent or less of the customers affected. In the North Florida region, Hurricane Hermine impacted several CIFs including two hospitals, a fire station, and a Special Needs Shelter. Other CIFs that were affected included a sewage treatment facility in the Central Florida region, a fire station in the West Dade region and a 911 center in the Manasota region. FPL reported that no hardened poles required replacement as a direct result of Hurricane Hermine. However, as a result of a vehicle accident in the Central Florida region, one CIF pole was replaced.

Regarding Hurricane Matthew, FPL reported that all 16 regions were impacted including 31 counties. Hurricane Matthew affected 96 percent of the customers in the Central Florida, 92 percent of the customers in the North Florida region, 74 percent of the customers in the Brevard region, 59 percent of the customers in the Treasure Coast region and 20 percent of the customers in the West Palm Beach region. The other regions had 8 percent or less of the customers affected. In the Boca Raton region, Hurricane Matthew impacted two 911 centers and a hospital. Other CIFs that were affected included an EOC in the West Palm Beach region, two hospitals, a 911 center, a gas supply facility, two sewer treatment facilities, and a fire station in the Brevard region. In the Central Florida region, six sewage treatment facilities, two 911 centers, one media center, one police station, two water treatment facilities, and one hospital were impacted. In the North Florida region, four water treatment facilities, one hospital, one Special Needs Shelter, and one 911 center were impacted. In the Treasure Coast region, two water treatment facilities, one Government facility, one sewage treatment facility, and one nursing home was impacted. In South Dade two 911 CIFs were impacted and in West Dade one Government facility CIF was affected. FPL reported that no hardened poles required replacement as a direct result of Hurricane Matthew.

- ♦ 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 2017 and 2018 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 application was completed in 2016. FPUC is exploring the implementation of a contractor-hosted solution to avoid issues with incompatible phone systems to this application. 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 2016, there were no projects to convert overhead facilities to underground on FPUC's system.

  FPUC reported that its post storm damage assessment for Hurricanes Hermine and Matthew showed that its distribution system was damaged as a result of falling trees and limbs. Hurricane Hermine impacted three counties in FPUC's Northwest division and 35 customers, which equates to 0.12 percent of FPUC's customers. FPUC reported that Hurricane Hermine affected no CIFs.

Hurricane Matthew impacted FPUC's Northeast division, which included one county. FPUC reported that initially 100 percent of the customers in the Northeast division were without power and this equates to 55.87 percent of FPUC total customers. All CIFs were restored within 24 hours. FPUC reported high winds caused all system damage. FPUC reported one transmission pole and twelve wooden distribution poles were broken due to falling trees and limbs. Four of the twelve wooden distribution poles were CIF poles. The affected CIFs were the City of Fernandina Beach's lift station and the School Board's Administration Building, which was being used as a storm shelter.

- 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 2016 storm season was uneventful; however the forensic data collection team was mobilized after Gulf's Eastern district was placed under a warning for Hurricane Hermine. GIS data was updated in the contractor's hand held computers and data collection was tested prior to the 2016 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 tornadoes in 2016, 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.

  During its May 2016 Storm Drill, Gulf conducted a field simulation of transferring maps to its preferred contractor and then had the contractor go through the data collection process as training for its employees. Gulf reported this was done to test the data collection and data transfer process.

- 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 2016, over 61 changes and enhancements to the system were made including: 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. 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 2017. The data collected following a significant storm will be used to determine the root cause of damage. An established process is in place for collecting post-storm data, forensic analysis and outage performance data for both overhead and underground systems.

In 2016, TECO was impacted by three weather events: Tropical Storm Colin, Hurricane Hermine, and Hurricane Matthew. However, TECO did not collect post-storm data or perform any analysis related to theses storm events because TECO only gathers data following a Category One or greater storm (wind speeds greater than 74 miles per hour) that significantly impacts its service area. TECO reported that its service area was impacted by these storm's events but the threshold was not met as Hurricanes Hermine and Matthew's wind speed did not exceed 74 mph when impacting TECO's service area.

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 2016, 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 2017, DEF plans to continue to participate in county storm drills and Florida's state wide annual storm drill. Also in 2016, DEF held a forum specifically for commercial, industrial, and governmental customers. DEF held 25 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.

When Hurricane Hermine made landfall in Florida, DEF provided around the clock support for the State EOC and 21 county EOCs within its service territory. DEF provided support in the State EOC and 28 county EOCs when Hurricane Matthew impact Florida. DEF also created media releases throughout the event and launched a storm web page that aggregated all of its news releases and other communications into one location. DEF also executed its "Make It Safe" road-clearing program and modified it to provide support to counties well beyond 24-48 hours.

- ♦ FPL, in 2016, 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 2016, FPL conducted over 900 community presentations providing information on storm readiness and other topics of community interest. FPL's dedicated government portal website 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's current practice is to have its personnel located at the county EOCs on a 24-hour basis during emergency situations to ensure good communication. FPUC also has a dedicated Manager of Government Relations in each division. The manager's role is to maintain relationships with local and state government officials and staff, and business and community leaders. The manager is also responsible for responding to customer issues referred by governmental officials.

- ♦ 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 2016, 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 three tornados. Gulf activated Southern Company's mutual assistance plan and additional offsite crews responded, allowing for faster restoration. In preparation of Hurricane Hermine, Gulf activated the Corporate Emergency Management Center and assisted other utilities that experienced damage from the storm. During that time, personnel were assigned to work with the EOCs to facilitate communications.

- ♦ TECO's communication efforts, in 2016, 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. Tropical Storm Colin, Hurricane Hermine, and Hurricane Matthew triggered various county and municipal agencies to activate their EOCs. TECO participated in either partial or full activation of the EOCs in City of Tampa, Hillsborough County, Pasco County, Pinellas County, and Polk County.

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 2017.

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. 20060198-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.

In 2016, PURC and the Steering Committee organized a workshop for 26 participants from the Project Sponsors. Topics discussed at the workshop included the wind monitoring network, updates on the undergrounding model, and vegetation management. The participants discussed current procedures and practices. One challenge discussed was access to facilities within municipal boundaries. Some participants noted that municipalities may not be aware of the impact that their municipality codes may have on system reliability and that education is critical in this area.

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. Initial discussions between the project sponsors and the PURC, regarding model updates, are in the process of being scheduled. These discussions are expected to include impacts associated with Hurricanes Hermine, Matthew, and Irma.

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: PURC researchers continue to discuss 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 2016 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 2016 and included: updated sections to clarify several roles and responsibilities for the Northeast division, and the organizational chart to reflect employee changes and new assignments for both divisions.

- Gulf's 2017 Storm Restoration Procedures Manual is currently being revised and reviewed and all changes will be incorporated by April 1, 2017. 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 3, 2016. The drill involved testing 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 2017 annual hurricane drill was held on May 16, 2017.

- 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, 2016, all emergency support functions were reviewed, personnel trained, and Incident Command System Logistics and Planning Section Plans were tested. TECO continues to participate in internal and external preparedness exercises, and collaborates with local, state, and federal government emergency management agencies. During the state's mock hurricane exercise, TECO tested its response and communications plans.

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 2016 performance data and focuses on the exclusions allowed by the rule.

Duke Energy Florida, LLC: Actual Data

Table 2-1 provides an overview of key DEF metrics: Customer Minutes of Interruption (CMI) and Customer Interruptions (CI) for 2016. Excludable outage events accounted for approximately 77 percent of the minutes of interruption experienced by DEF's customers. In 2016, DEF experienced a tornado that occurred on April 7, 2016, Tropical Storm Colin on June 6-7, 2016, Hurricane Hermine on September 1-6, 2016, Tropical Storm Julia on September 14, 2016, and Hurricane Matthew on October 6-10, 2016.

The biggest impact on CMI were the Named Storm events, which accounted for approximately 72 percent of the excludable minutes of interruptions. DEF reported that 316,600 customers lost power during Hurricane Matthew, 239,409 customers lost power during Hurricane Hermine, 102,780 customers lost power during Tropical Storm Colin, and 9,328 customers lost power during Tropical Storm Julia. The average restoration time or CAIDI for Tropical Strom Julia was 98.97 minutes, Tropical Storm Colin was 152.8 minutes, Hurricane Hermine was 542.6 minutes and Hurricane Matthew was 1,124.4 minutes. During these events, DEF reported that it did not implement any new processes. Instead, it relied upon the execution of previously developed processes such as EOC partnerships, road clearing crews, crew schedule discipline, outage workflow process and others.

Table 2-1.
DEF's 2016 Customer Minutes of Interruptions and Customer Interruptions

2016	**Customer Minutes of Interruption (CMI)**		**Customer Interruptions (CI)**	
	Value	**% of Actual**	**Value**	**% of Actual**
Reported Actual Data	**648,346,110**		**3,090,598**	
Documented Exclusions				
Planned Service Interruptions	17,999,720	2.78%	402,024	13.01%
Named Storms	466,647,597	71.98%	650,474	21.05%
Tornadoes	113,260	0.02%	1,445	0.05%
Ice on Lines		0.00%		0.00%
Planned Load Management Events		0.00%		0.00%
Generation/Transmission Events	14,908,632	2.30%	316,232	10.23%
Extreme Weather (EOC Activation/Fire)		0.00%		0.00%
Reported Adjusted Data	**148,676,901**	**22.93%**	**1,720,423**	**55.67%**

Source: DEF's 2016 distribution service reliability report.

Florida Power & Light Company: Actual Data

Table 2-2 provides an overview of FPL's CMI and CI figures for 2016. Excludable outage events accounted for approximately 87 percent of the minutes of interruption experienced by FPL's customers. FPL reported nine tornados, Hurricane Hermine, Hurricane Matthew, Tropical Strom Colin, and Tropical Storm Julia in 2016. FPL reports that even though Hurricane Hermine and Hurricane Matthew did not make landfall in its service territory, all of FPL's territories were impacted. Tropical Strom Colin impacted FPL's service territories on June 6-7, 2016, Hurricane Hermine on August 31 through September 3, 2016, Tropical Storm Julia on September 13-14, 2016, and Hurricane Matthew on October 6 through 16, 2016. The tornados affected the following regions:

- Naples region on January 15, 2016
- Treasure Coast and Manasota regions on January 17-18, 2016
- Pompano region on January 27, 2016
- Boca Raton region on January 28, 2016
- Pompano, Gulfstream and North Dade regions on February 16, 2016
- Toledo Blade region on February 24, 2016
- Wingate region on March 19, 2016
- Treasure Coast region on May 17-18, 2016
- North Florida region on August 4, 2016

The biggest impact on CMI was the Named Storm events, which accounted for approximately 82 percent of the excludable minutes of interruption. FPL explained that after each extreme weather event, it gathers relevant information to critique its processes and performance. FPL continues to further develop new technology to strengthen its emergency response. Two examples of FPL's new technology are: (1) a mobile application which combines outage tickets, weather information, electrical network information, customer energy consumption and voltage, restoration crew locations and meter status; and (2) another new technology uses smart meter information to confirm power status of all smart meters in an area before the restoration crews leave that area. These new technologies will assist with diagnosing problems accurately.

Table 2-2.
FPL's 2016 Customer Minutes of Interruptions and Customer Interruptions

2016	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	% of Actual	Value	% of Actual
Reported Actual Data (1)	**2,014,787,150**		**6,685,987**	
Documented Exclusions				
Planned Service Interruptions	23,027,744	1.14%	264,042	3.95%
Named Storms	1,653,676,344	82.08%	1,523,904	22.79%
Tornadoes	67,004,092	3.33%	428,959	6.42%
Ice on Lines		0.00%		0.00%
Planned Load Management Events		0.00%		0.00%
Generation/Transmission Events (2)	10,664,798	0.53%	966,457	14.45%
Extreme Weather (EOC Activation/Fire)		0.00%		0.00%
Reported Adjusted Data	**271,078,970**	**13.45%**	**4,469,082**	**66.84%**

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 2016 distribution service reliability report.

Florida Public Utilities Company: Actual Data

Table 2-3 provides an overview of FPUC’s CMI and CI figures for 2016. Excludable outage events accounted for approximately 86 percent of the minutes of interruption experienced by FPUC’s customers. FPUC reported that Hurricane Hermine, which occurred on September 2, 2016, affected both divisions, Tropical Storm Julia, which occurred on September 13-14, 2016, affected the Northeast division and Hurricane Matthew, which occurred on October 5-12, 2016, affected the Northeast division.

The biggest impact on CMI was the Named Storms events, which accounted for approximately 80 percent of the excludable minutes of interruption. FPUC reported that neither the Northeast nor the Northwest divisions were impacted by tornados during 2016. The Northeast division was significantly affected by Hurricane Matthew and slightly affected by Hurricane Hermine and Tropical Storm Julia. The Northwest division was somewhat impacted by Hurricane Hermine.

FPUC reported the Northeast division experienced a major transmission event on January 24, 2016 and two substation events on November 1 and 6, 2016. The Northwest division experienced one transmission event on April 2, 2016, and one substation event on August 27, 2016. Both divisions had several planned outages that allowed FPUC to perform maintenance to different sections of the distribution system.

Table 2-3.
FPUC's 2016 Customer Minutes of Interruptions and Customer Interruptions

2016	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	% of Actual	Value	% of Actual
Reported Actual Data	**39,358,207**		**127,006**	
Documented Exclusions				
Planned Service Interruptions	282,158	0.72%	11,955	9.41%
Named Storms	31,391,870	79.76%	40,948	32.24%
Tornadoes	0	0.00%	0	0.00%
Ice on Lines	0	0.00%	0	0.00%
Planned Load Management Events	0	0.00%	0	0.00%
Generation/Transmission Events	2,368,987	6.02%	18,043	14.21%
Extreme Weather (EOC Activation/Fire)	0	0.00%	0	0.00%
Reported Adjusted Data	**5,315,192**	**13.50%**	**56,060**	**44.14%**

Source: FPUC's 2016 distribution service reliability report.

Gulf Power Company: Actual Data

Table 2-4 provides an overview of Gulf's CMI and CI figures for 2016. Excludable outage events accounted for approximately 36 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 January 22 and November 30, 2016
- ♦ Central region on January 22 and November 30, 2016
- ♦ Western region on February 15, 2016 and February 23, 2016

The biggest impact on CMI was Extreme Weather (EOC Activation/Fire), which accounted for approximately 28 percent of the excludable minutes of interruption. Gulf explained that the EOC Activations were due to severe storm fronts that moved across all three regions producing numerous tornados. On February 15, 2016, an EF-3 tornado touched down in Century, Florida in Escambia County. The Escambia County EOC was opened to help victims and organize first responders. Gulf responded with personnel from all three regions, as well as personnel from Alabama, Georgia and Mississippi, to assist with outages across multiple counties. On February 23, 2016, another EF-3 tornado traveled through Pensacola. The Escambia County EOC was once again activated. Gulf mobilized crews from all three regions, as well as crews from Alabama and Mississippi to assist with recovery efforts.

Gulf reported that all of its regions were affected by transmission events, which accounted for 2 percent of the excluded minutes of interruptions. The causes for the transmission events include erroneous operations, external utility trouble, severe weather, deterioration, failed equipment, animal, lightning, vegetation, and planned outages. Gulf explained that external utility trouble is defined as an outage occurring on another utility's system that affects Gulf's facilities or its customers. When this outage occurs, Gulf will sectionalize from the other utility if possible and restore the system after the utility has made its repairs. Gulf reported the cause of the external utility trouble was due to lightning and affected the Central region.

Table 2-4.
Gulf's 2016 Customer Minutes of Interruption and Customer Interruptions

2016	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	% of Actual	Value	% of Actual
Reported Actual Data	**67,049,584**		**675,017**	
Documented Exclusions				
Planned Service Interruptions	2,775,245	4.14%	45,436	6.73%
Named Storms		0.00%		0.00%
Tornadoes	1,610,605	2.40%	9,410	1.39%
Ice on Lines		0.00%		0.00%
Planned Load Management Events		0.00%		0.00%
Generation/Transmission Events	1,006,781	1.50%	38,629	5.72%
Extreme Weather (EOC Activation/Fire)	18,484,197	27.57%	63,499	9.41%
Reported Adjusted Data	**43,172,756**	**64.39%**	**518,043**	**76.75%**

Source: Gulf's 2016 distribution service reliability report.

Tampa Electric Company: Actual Data

Table 2-5 provides an overview of TECO's CMI and CI figures for 2016. Excludable outage events accounted for approximately 25 percent of the minutes of interruption experienced by TECO's customers. TECO reported that all regions were impacted by Tropical Storm Colin on June 5-6, 2016, Hurricane Hermine on August 31 through September 2, 2016, and Hurricane Matthew October 6-7, 2016. The Named Storms account for approximately 2 percent of the excludable minutes of interruption.

The biggest impact on CMI was the Generation/Transmission events, which accounted for approximately 16 percent of the excludable minutes of interruption. TECO reported 13 transmission outages in 2016. The causes listed included equipment failure, lightning, human error, bird nest fouling, and storms. TECO reported that all equipment failures were repaired, structures replaced, the bird nests were removed, and poles were repaired.

Table 2-5.
TECO's 2016 Customer Minutes of Interruptions and Customer Interruptions

2016	**Customer Minutes of Interruption (CMI)**		**Customer Interruptions (CI)**	
	Value	**% of Actual**	**Value**	**% of Actual**
Reported Actual Data	**82,096,523**		**1,188,156**	
Documented Exclusions				
Planned Service Interruptions	5,233,210	6.37%	124,197	10.45%
Named Storms	2,043,080	2.49%	5,059	0.43%
Tornadoes	0	0.00%	0	0.00%
Ice on Lines	0	0.00%	0	0.00%
Planned Load Management Events	0	0.00%	0	0.00%
Generation/Transmission Events	13,344,914	16.26%	316,201	26.61%
Extreme Weather (EOC Activation/Fire)	0	0.00%	0	0.00%
Reported Adjusted Data	**61,475,319**	**74.88%**	**742,699**	**62.51%**

Source: TECO's 2016 distribution service reliability report.

Section III: Adjusted Distribution Service Reliability Review of Individual Utilities

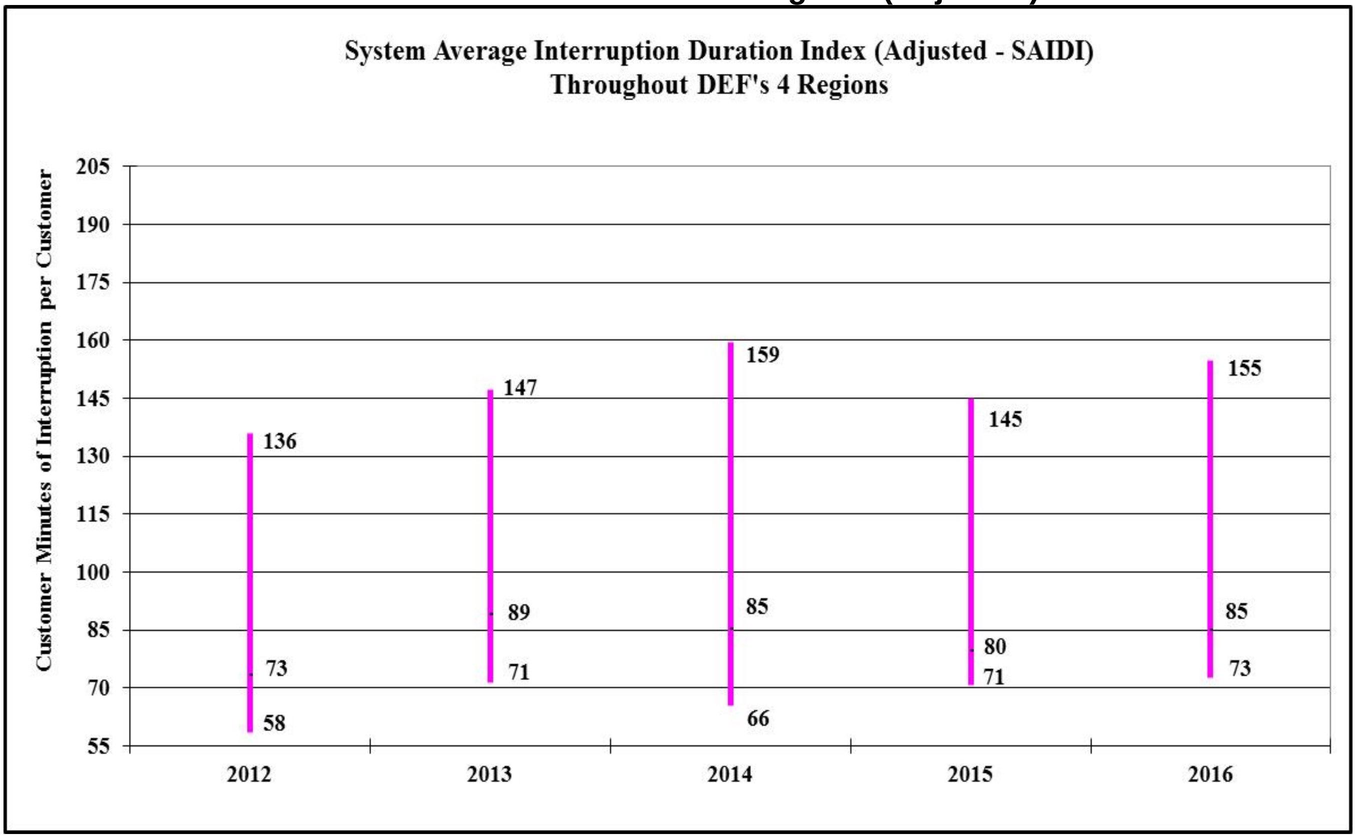
The adjusted distribution reliability metrics or indices provide insight into potential trends in a utility's daily practices and maintenance of its distribution facilities. This section of the review is based on each utility's reported adjusted data.

Duke Energy Florida, LLC: Adjusted Data

Figure 3-1 charts the adjusted SAIDI recorded across DEF's system and depicts increases in the lowest, the average and highest values for 2016. DEF reported that in 2016 its service territory was affected by an active weather pattern caused by El Niño events in the first half of the year. DEF also reports that its service territory was impacted by three named storms, record level heat in July, and many severe afternoon thunderstorms. Not all the extreme weather events qualified for exclusion.

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 159 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)



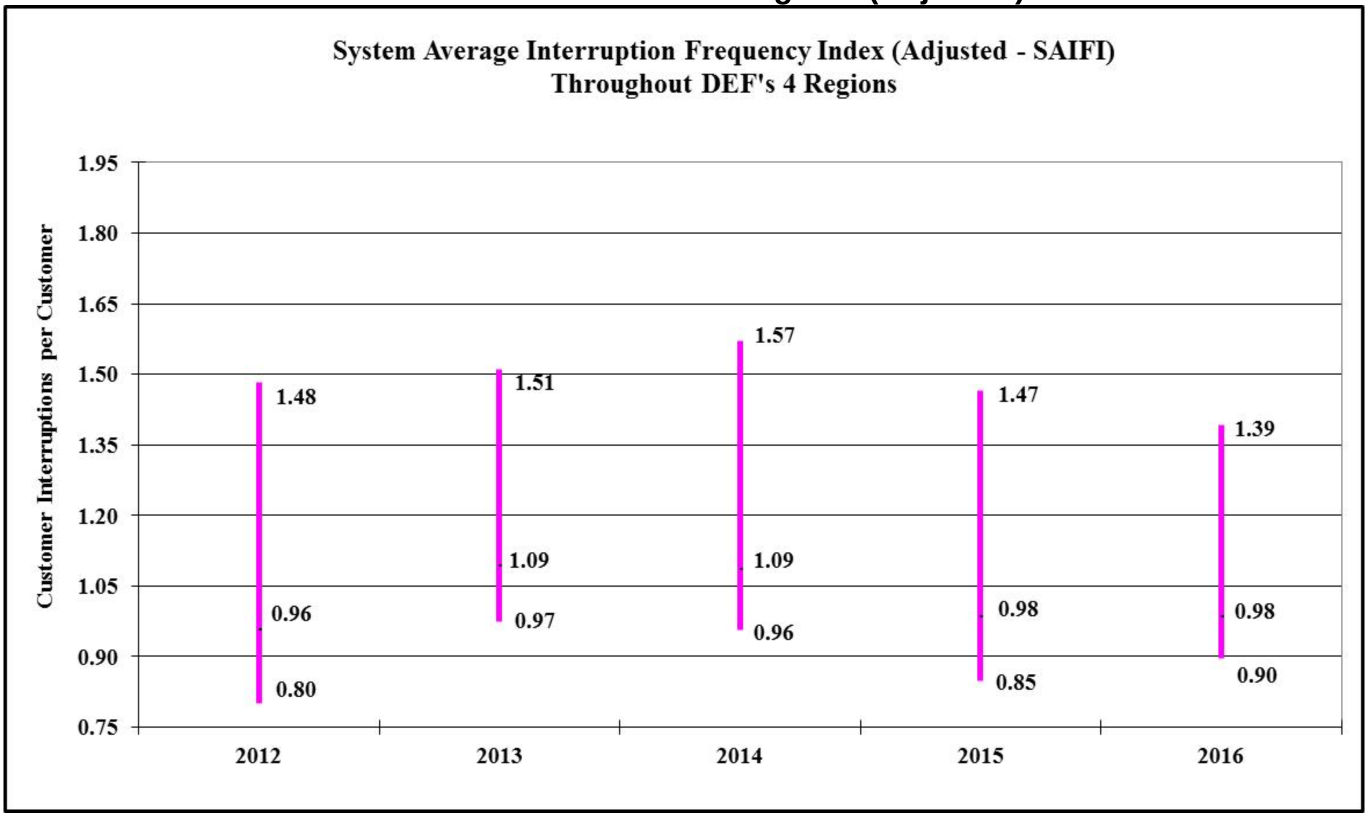
DEF's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest SAIDI	North Coastal	North Coastal	North Coastal	North Coastal	North Coastal
Lowest SAIDI	South Coastal	South Coastal	South Coastal	South Central	South Coastal

Source: DEF's 2012-2016 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 5 percent for the maximum value, no change in the average value, and an increase of 6 percent for the minimum value, in 2016. The South Coastal 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)



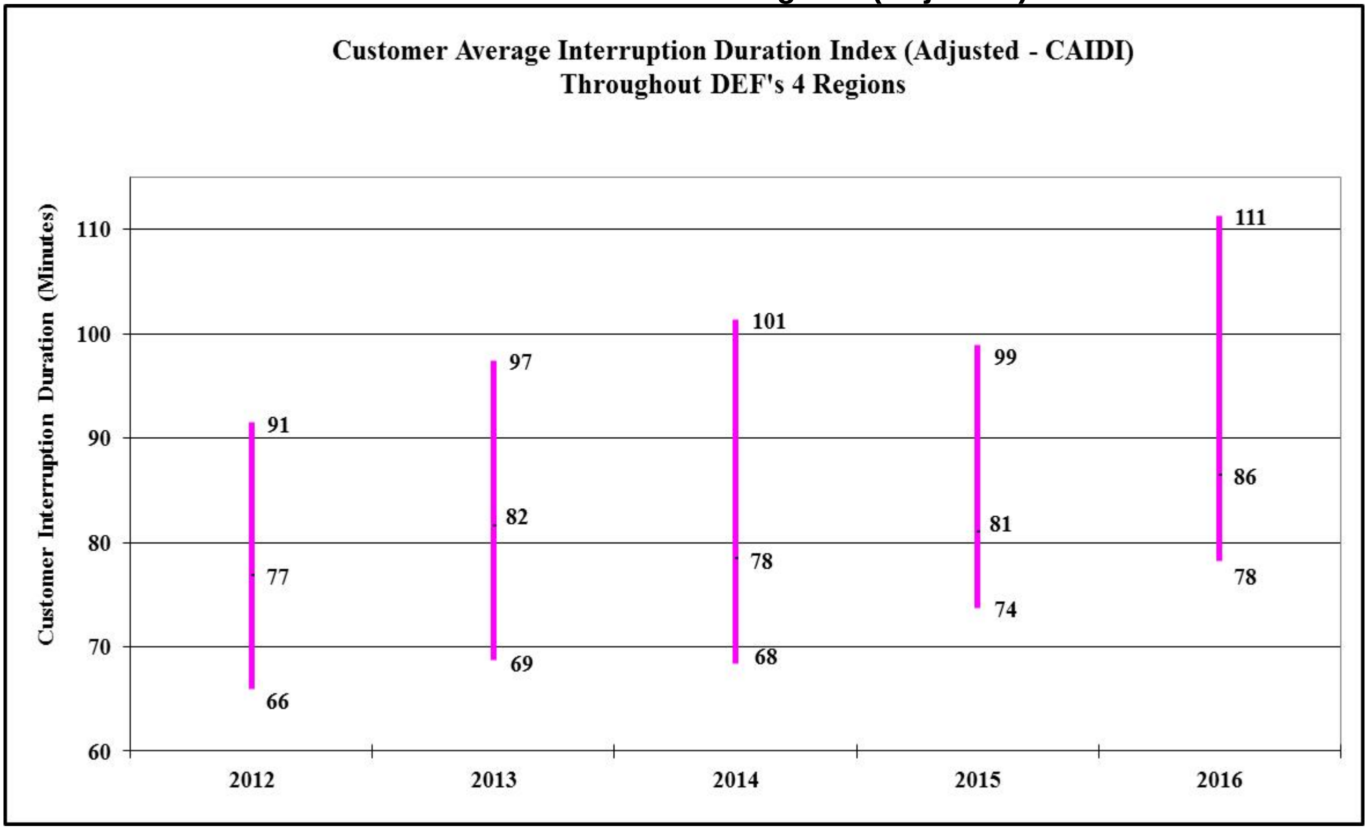
DEF's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest SAIFI	North Coastal	North Coastal	North Coastal	North Coastal	North Coastal
Lowest SAIFI	South Central	South Central	South Coastal	North Central	South Coastal

Source: DEF's 2012-2016 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 increasing for a five-year period from 77 minutes in 2012 to 86 minutes in 2016. The North Coastal region has continued to have the highest CAIDI level for the past five years with the maximum CAIDI trending upward. The South Central region had the lowest CAIDI level during the same period with the minimum CAIDI trending upward.

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



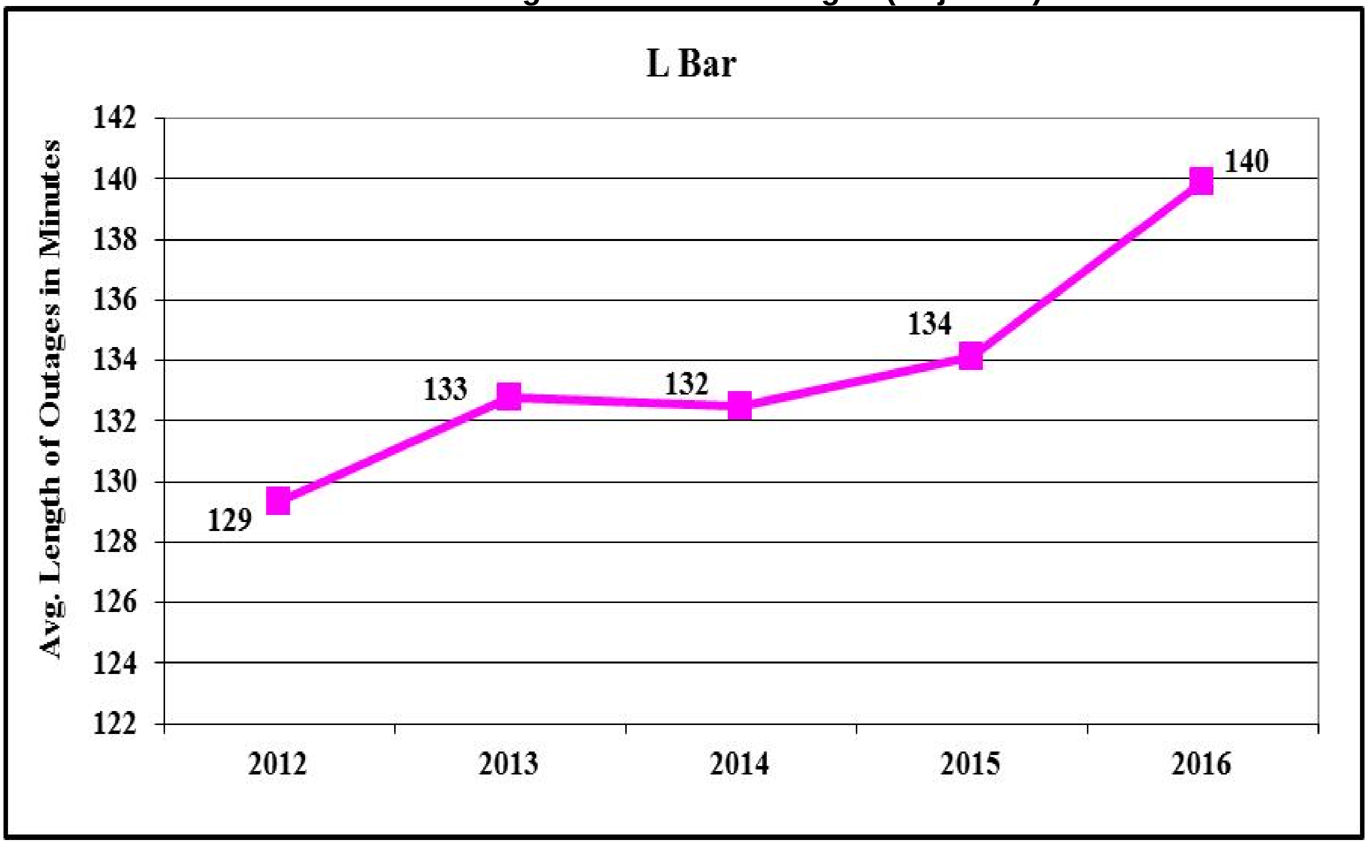
DEF's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest CAIDI	North Coastal	North Coastal	North Coastal	North Coastal	North Coastal
Lowest CAIDI	South Coastal	South Coastal	South Coastal	South Coastal	South Central

Source: DEF's 2012-2016 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 8 percent increase of outage durations since 2012, and a 4 percent increase from 2015 to 2016. DEF's overall L-Bar index is trending upward, indicating that DEF is spending more time restoring service from outage events.

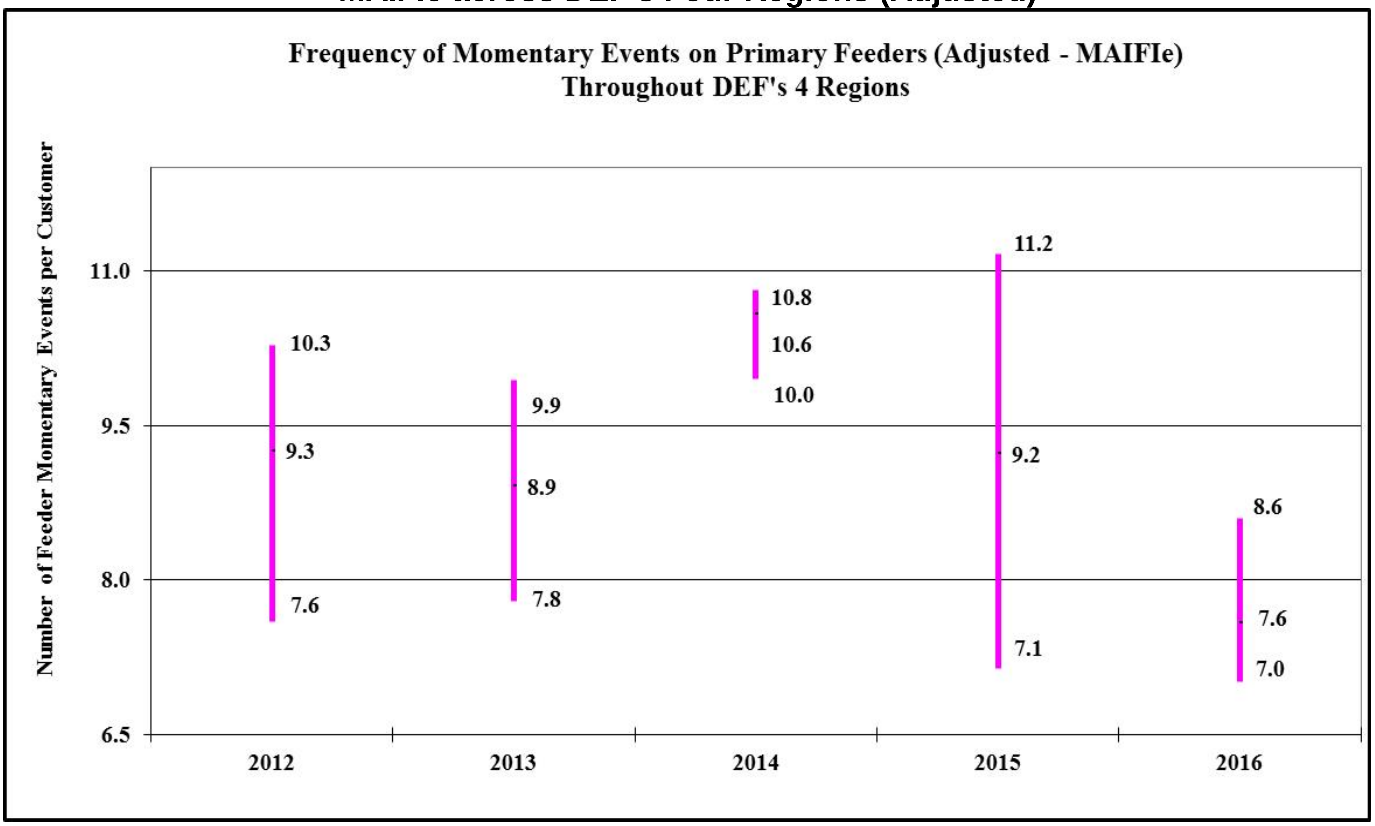
Figure 3-4.
DEF's Average Duration of Outages (Adjusted)



Source: DEF's 2012-2016 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 2012 and 2016 appear to be trending downward showing improvement and there was a decrease in the average MAIFIe of 17 percent from 2015 to 2016. The North Coastal and South Central regions appear to have the best (lowest) results for the last five years. There was a 1 percent decrease for the lowest MAIFIe from 2015 to 2016. The South Coastal and North Central regions appear to have the worst (highest) results for the last five years. There was a 23 percent decrease from 2015 to 2016.

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



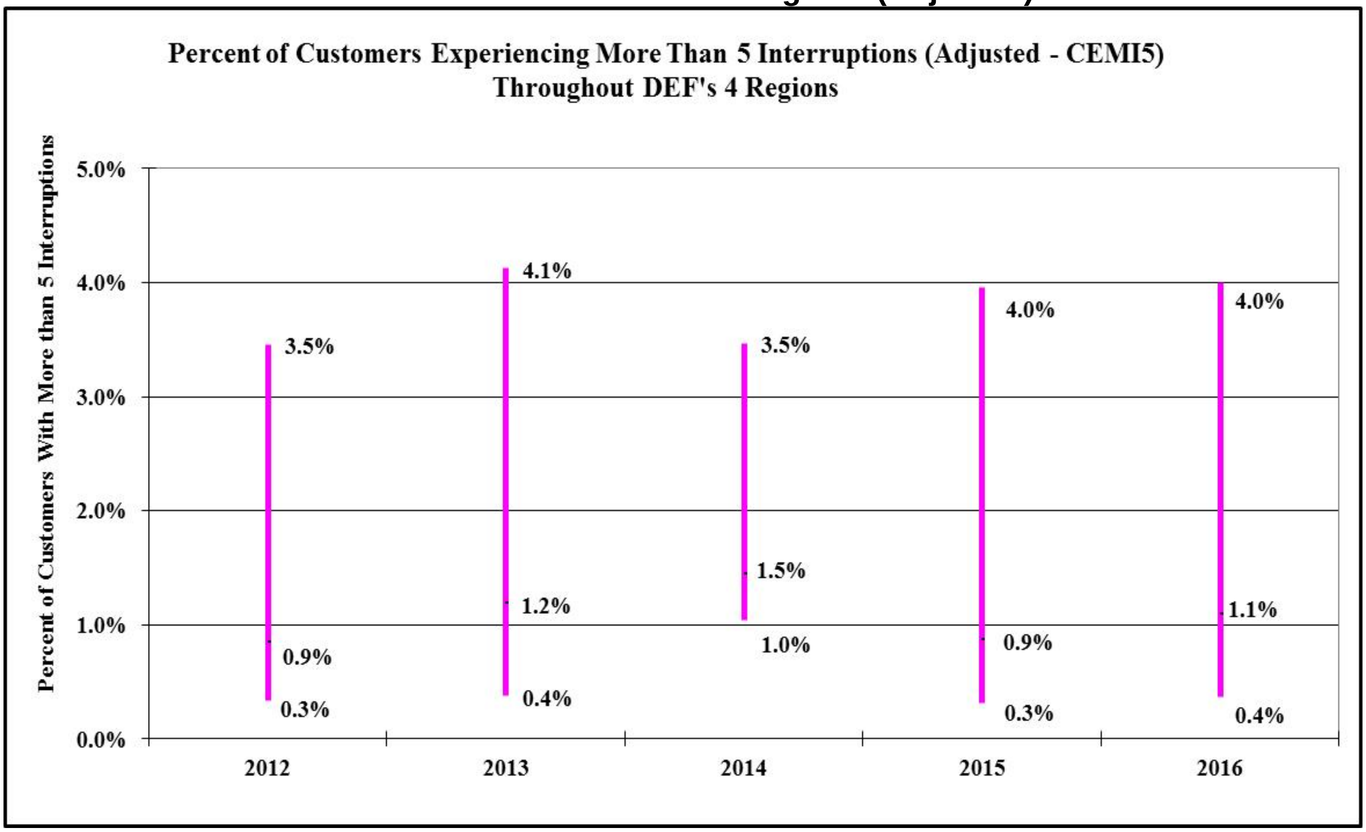
DEF's Regions with the Highest and Lowest Adjusted MAIFIe Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest MAIFIe	South Coastal	South Coastal	North Central	South Coastal	North Central
Lowest MAIFIe	South Central	South Central	North Coastal	North Coastal	South Central

Source: DEF's 2012-2016 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 an increase in the average CEMI5 performance from 0.9 percent in 2015 to 1.1 percent in 2016. The average CEMI5 is trending slightly 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

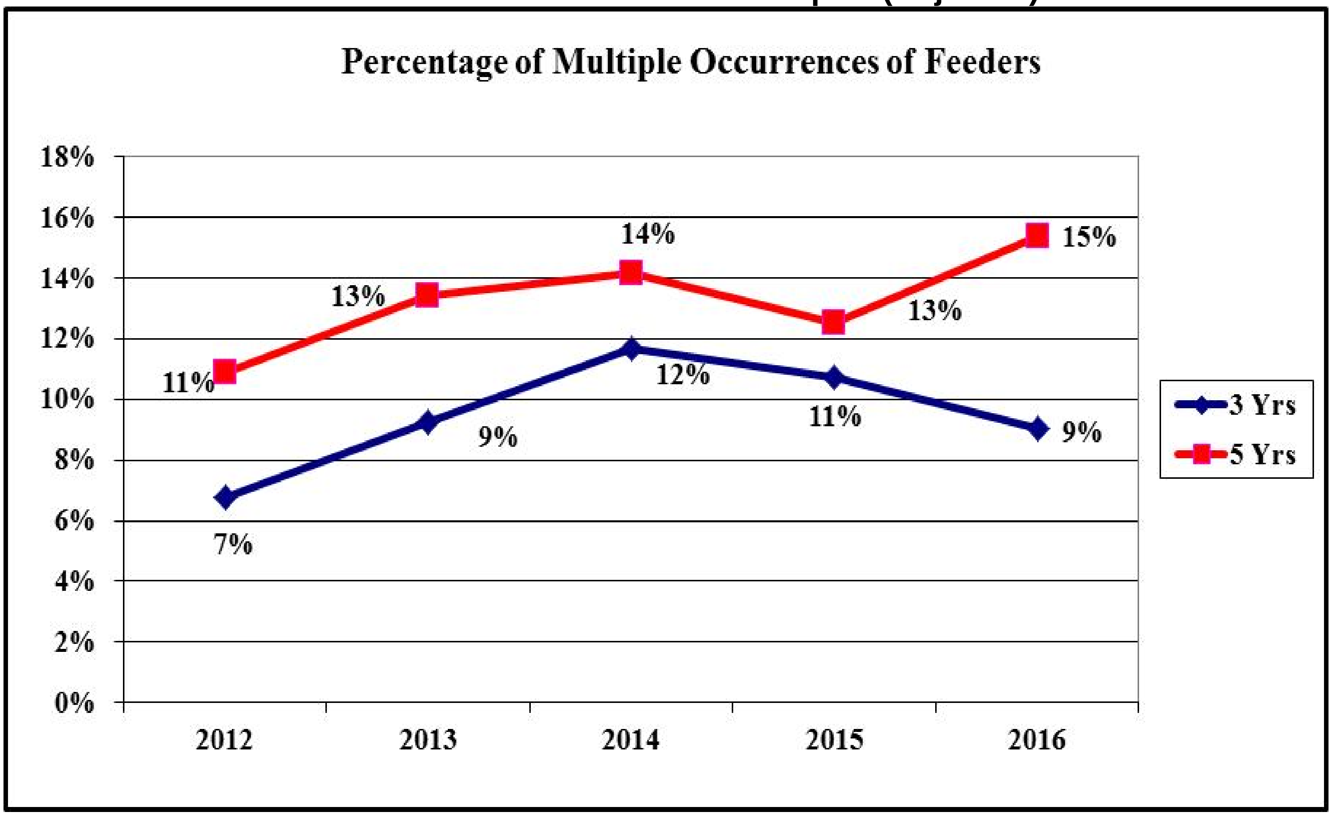
	2012	2013	2014	2015	2016
Highest CEMI5	North Coastal	North Coastal	North Coastal	North Coastal	North Coastal
Lowest CEMI5	South Coastal	South Coastal	South Central	North Central	North Central

Source: DEF's 2012-2016 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 2012 to 2016, the five-year fraction of multiple occurrences is trending upward and the three-year fraction of multiple occurrences is also trending upward. The Three Percent Feeder Report lists the top 3 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 four of DEF's feeders have been on the Three Percent Feeder Report for three years. For three of the feeders, DEF performed infrared scans in June and July 2016 and found a hot spot on the C phase switch from an underground to overhead transition. DEF explained the hot spot was on the bottom part of the switch, which connects to the underground cable. All three switches on this pole were replaced. DEF will perform another infrared scan in 2017 on all four feeders. In addition, DEF trimmed a combined 90.6 miles of the feeder laterals, which was completed in 2016 and an additional 11.1 miles in 2017. Three of the feeders had three outages each in 2016. The causes were underground primary cable failure, defective equipment, corrosion, tree-nonpreventable, and vehicle/construction equipment. The other feeder had four outages in 2016 and the causes were animals, connector failure, and defective equipment. DEF replaced burned jumpers, associated connectors, and a broken cross arm to correct some of these outages. DEF is either planning to or has already implemented a "self-healing team" on these feeders. DEF explained the "self-healing team" is designed to reduce the overall number and duration of outages by increased sectionalization on the distribution feeders. DEF utilizes Supervisory Control and Data Acquisition (SCADA) controlled reclosers that communicate back to software systems at its distribution control center. The software system analyzes fault information and automatically sends close and open commands to field devices to isolate the section of the grid for which repairs are required in order to restore power. DEF reported that the system benefited from the "self-healing team" as it automatically reconfigured a feeder to minimize the number of customers impacted from an associated outage.

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

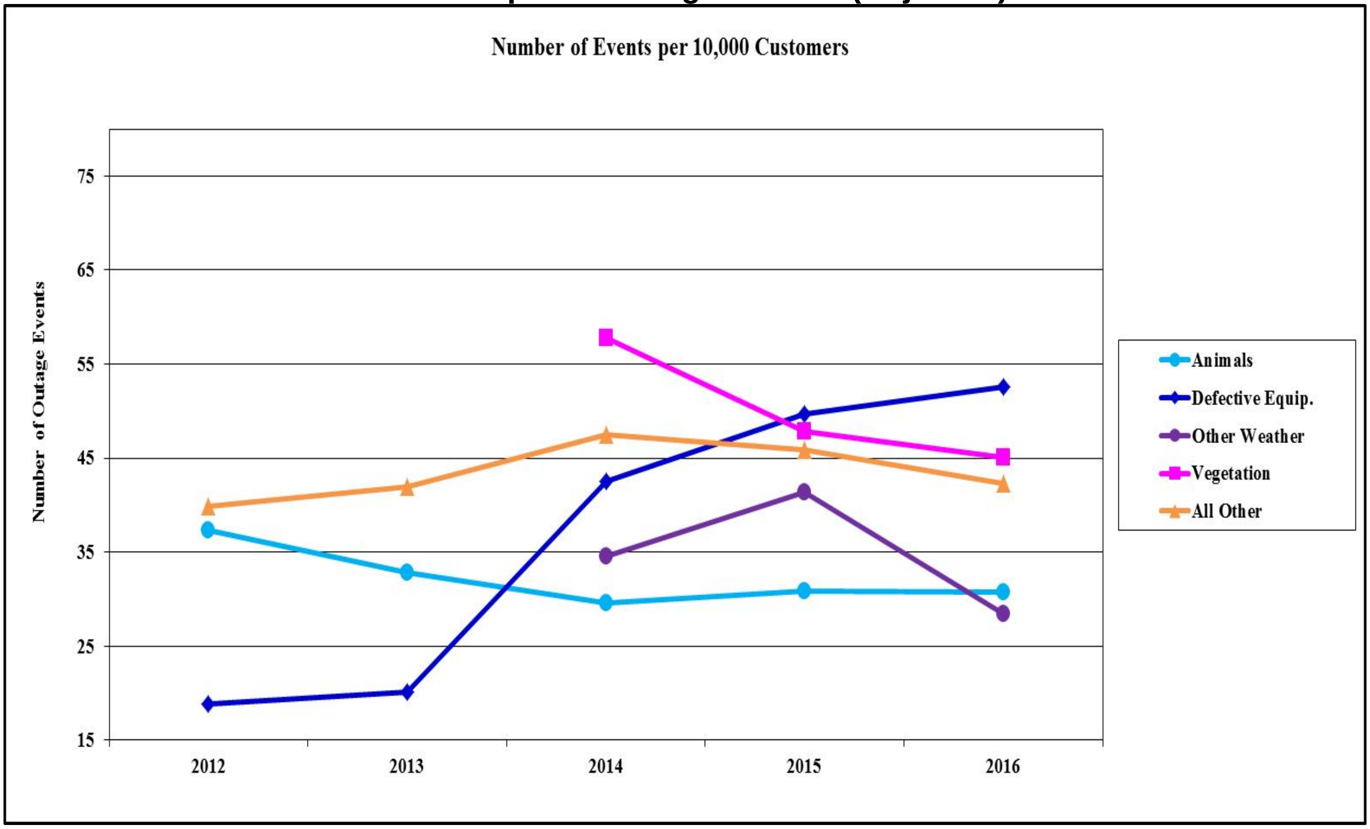


Source: DEF's 2012-2016 distribution service reliability reports.

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 2016. For the five-year period, the top five causes of outage events were Defective Equipment (25 percent), Vegetation (21 percent), All Other (20 percent), Animals (14 percent), and Other Weather (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, Other Weather, and Animals are trending downward even though the Vegetation and Animals categories had an increase of 2 percent and 7 percent in 2016. 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 is continuing to invest in proactive system maintenance activities, such as pole replacements, pad-mounted transformer replacements, and underground cable replacements. In 2018, DEF plans to invest in proactive switchgear replacements, overhead transformer retrofits, and other reliability programs.

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



Source: DEF's 2012-2016 distribution service reliability reports.

Observations: DEF's Adjusted Data

DEF's SAIFI and MAIFIe are trending downward over the past five years. The SAIDI, CAIDI, CEMI5, L-Bar, the Five-Year Percent of Multiple Feeder Outage Events, and the Three-Year Percent of Multiple Feeder Outage Events are all trending upward over the five-year period. All of the reliability indices, except for SAIFI, MAIFIe, and the Three-Year Percent of Multiple Feeder Outage Events, had increases from 2015 to 2016. The results for 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 that 2016 presented the Utility with a number of weather related challenges caused by El Niño events in the first half of the year. The Utility also reports that its service territory was impacted by three named storms, record level heat in July, and many severe afternoon thunderstorms. Not all the extreme weather events qualified for exclusion.

In 2016, DEF continued its multi-year program to install new electronic reclosers by installing 182 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. DEF, also, in 2016, added additional staff to conduct analysis and reviews of the reliability data in order to reduce the number of outages and momentary interruptions.

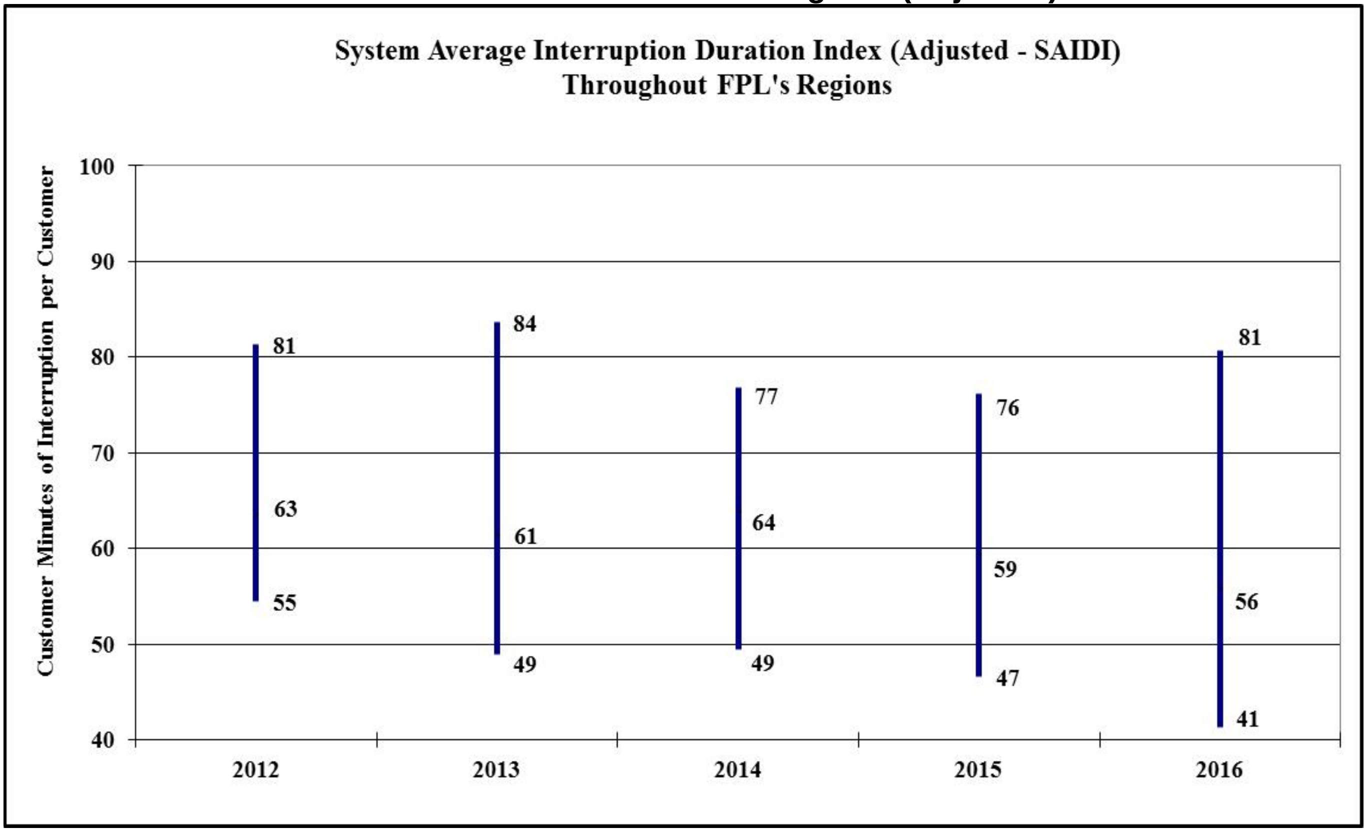
DEF has also installed "self-healing teams" throughout its service territory. This is designed to mitigate the number of customers impacted by outages. DEF will continue to invest in small wire reconductor projects in areas of concerns and will be deploying self-optimizing grid projects beginning in 2018. The self-optimizing grid projects working with the "self-healing teams" will further limit the loss of power to customers and provide automatic fault isolation for multiple concurrent faults.

In order to help reduce outage times, DEF implemented nighttime on-duty coverage with its Line Techs in the South Coastal and Central regions. This will drive faster response during the overnight hours by having resources on site and ready to respond. In addition, during periods of increased outage events, DEF engages its contract resources and has vegetation management resources on call to aid in outage response.

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 three minutes (5 percent) to its average SAIDI results for 2016 compared to 2015. The average SAIDI appears to be trending downward over the five-year period of 2012 to 2016. 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)



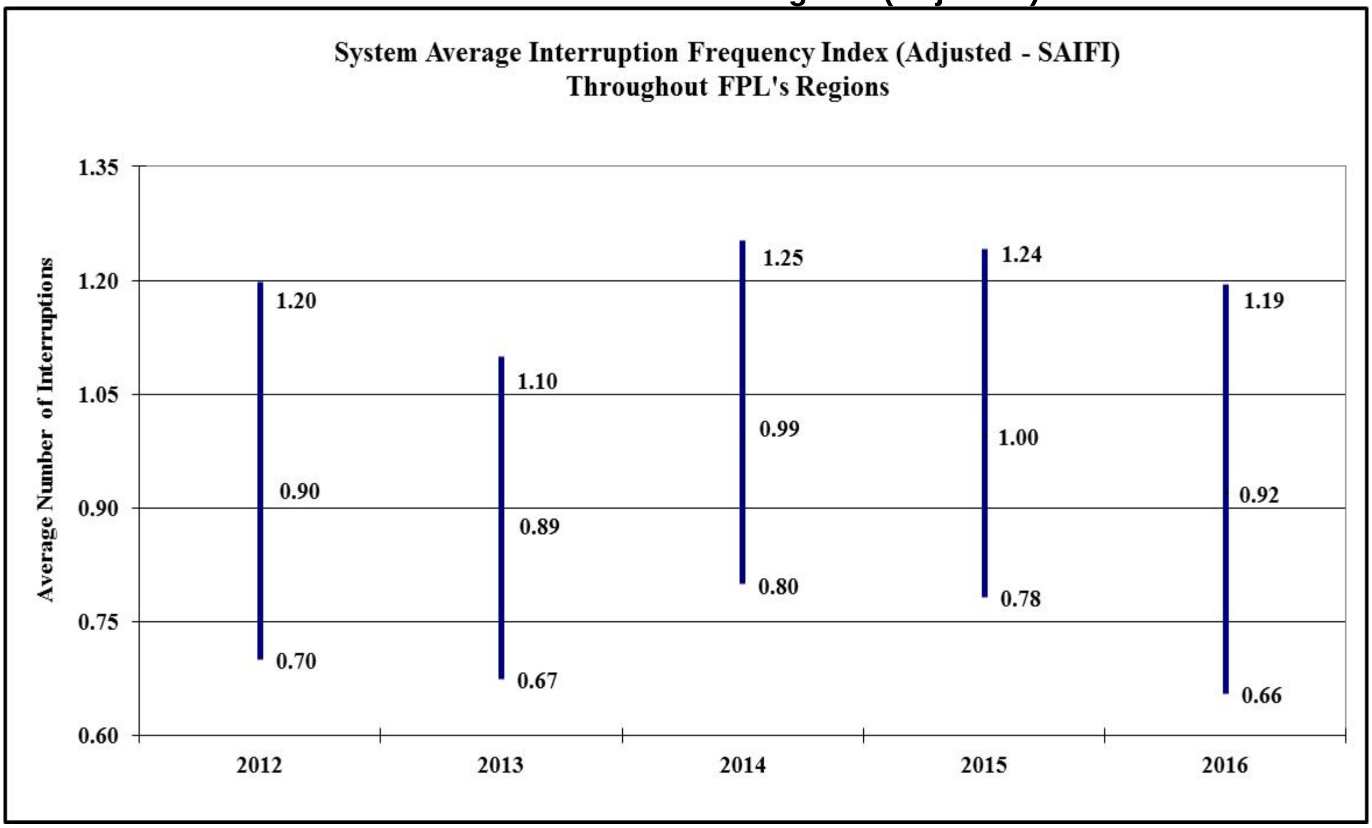
FPL's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest SAIDI	South Dade	North Florida	North Dade	South Dade	Treasure Coast
Lowest SAIDI	West Palm	Pompano	West Palm	Central Dade	Central Dade

Source: FPL's 2012-2016 distribution service reliability reports.

Figure 3-10 is a chart of the highest, average, and lowest adjusted SAIFI across FPL's system. FPL had a decrease in the system average results to 0.92 outages in 2016, compared to 1.00 outages in 2015, which is a 5 percent decrease. FPL reported a decrease in the highest SAIFI of 1.19 interruptions in 2016 compared to 1.24 interruptions in 2015. The region reporting the lowest adjusted SAIFI for 2016 was Central Dade, again, at 0.66 interruptions compared to 0.78 interruptions in 2015. The highest, average and lowest SAIFI appear to be trending upward even though each one had decreases for 2016.

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



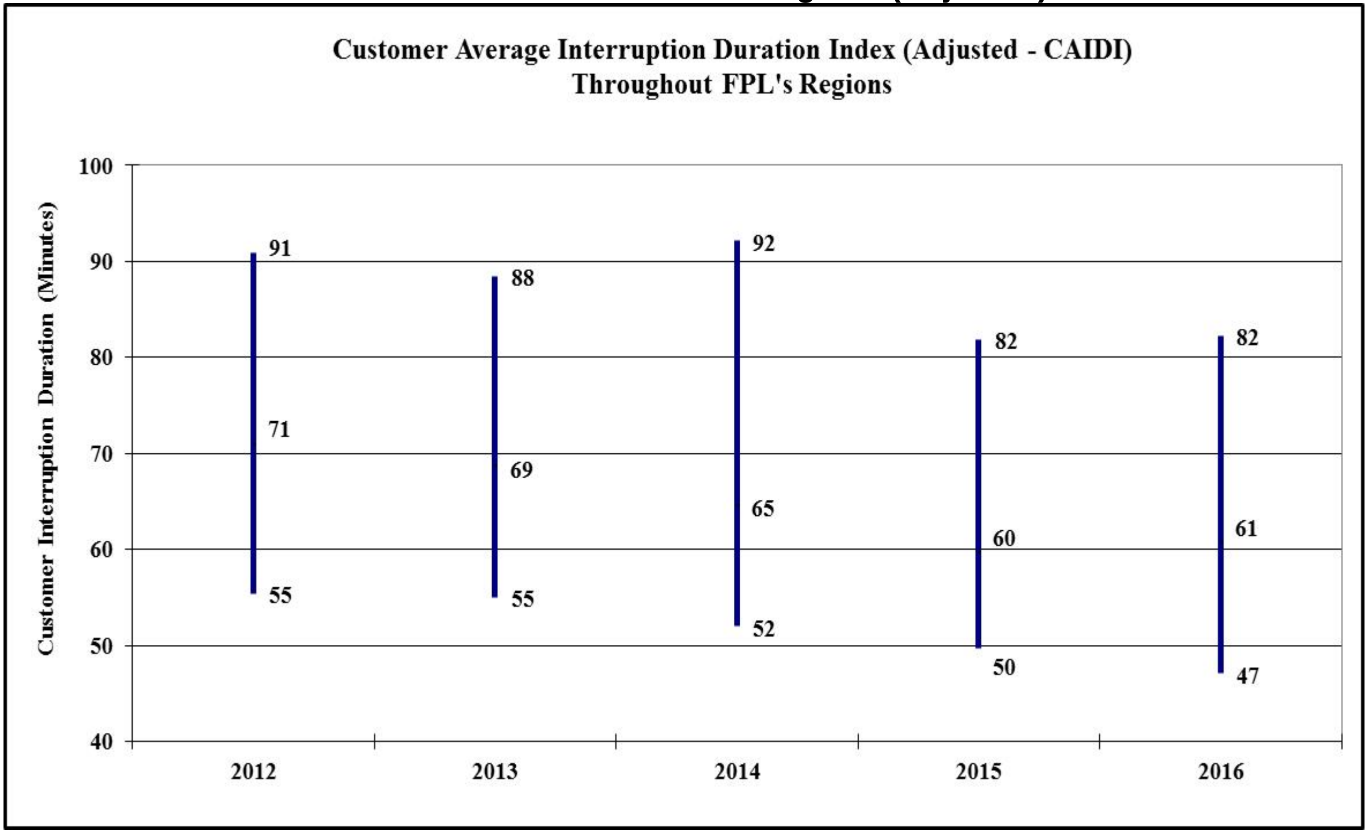
FPL's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest SAIFI	West Dade	Boca Raton	Wingate	West Dade	Treasure Coast
Lowest SAIFI	North Dade	Central Dade	Central Dade	Central Dade	Central Dade

Source: FPL's 2012-2016 distribution service reliability reports.

Figure 3-11 depicts FPL's highest, average, and lowest CAIDI expressed in minutes. FPL's adjusted average CAIDI has increased approximately 2 percent from 60 minutes in 2015 to 61 minutes in 2016. The average duration of CAIDI is trending downward. For 2016, the Boca Raton service area once again reported the lowest duration of CAIDI at 47 minutes, which is a decrease from 50 minutes in 2015. The highest duration of CAIDI was 82 minutes for the North Dade service area for 2016, which is the same as in 2015.

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



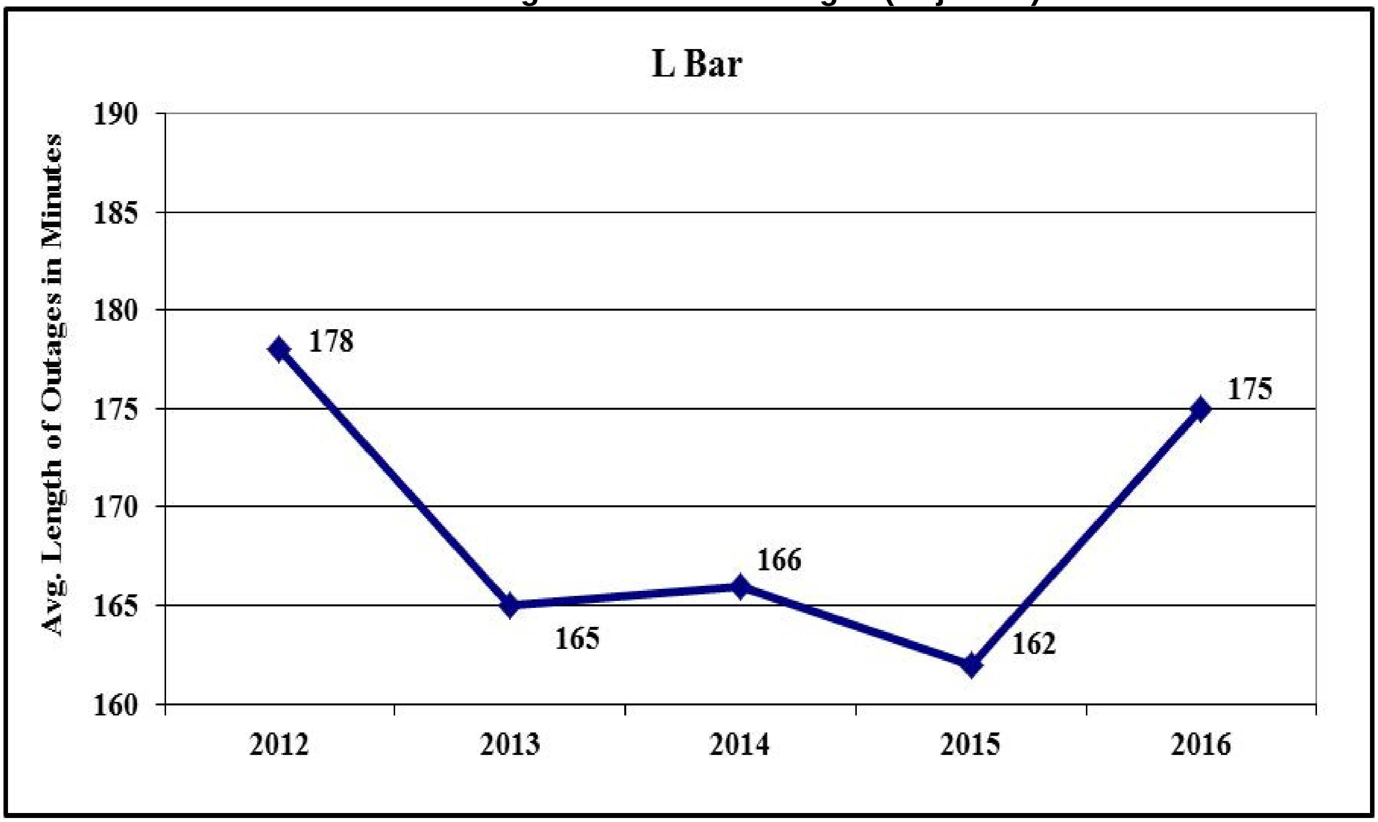
FPL's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest CAIDI	North Dade	North Dade	North Dade	North Dade	North Dade
Lowest CAIDI	Boca Raton	Boca Raton	Boca Raton	Boca Raton	Boca Raton

Source: FPL's 2012-2016 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 7 percent increase in L-Bar from 162 minutes in 2015 to 175 minutes in 2016. There is a 1.8 percent overall decrease since 2012 and the L-Bar is trending downward, indicating FPL is spending less time restoring service.

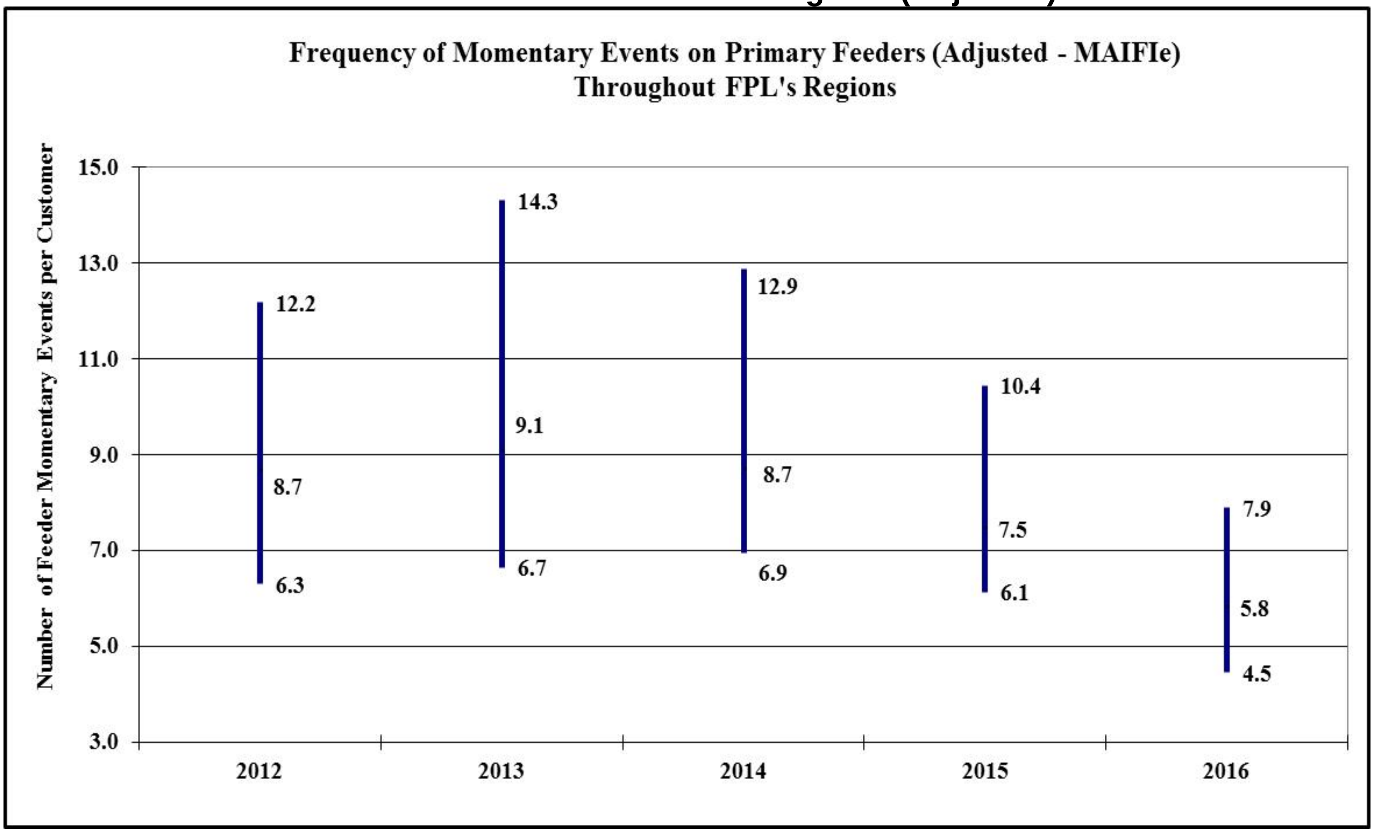
Figure 3-12.
FPL's Average Duration of Outages (Adjusted)



Source: FPL's 2012-2016 distribution service reliability reports.

Figure 3-13 is the highest, average, and lowest adjusted MAIFIe recorded across FPL's system. FPL's Treasure Coast and Wingate service areas have experienced the least reliable MAIFIe results of the 16 service areas of FPL since 2012. The Pompano, Central Dade, Naples, and Manasota service areas had the fewest momentary events since 2012. The results have been trending downward (improving) over the last five years. There is a 23 percent decrease in the average MAIFIe results from 2015 to 2016.

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



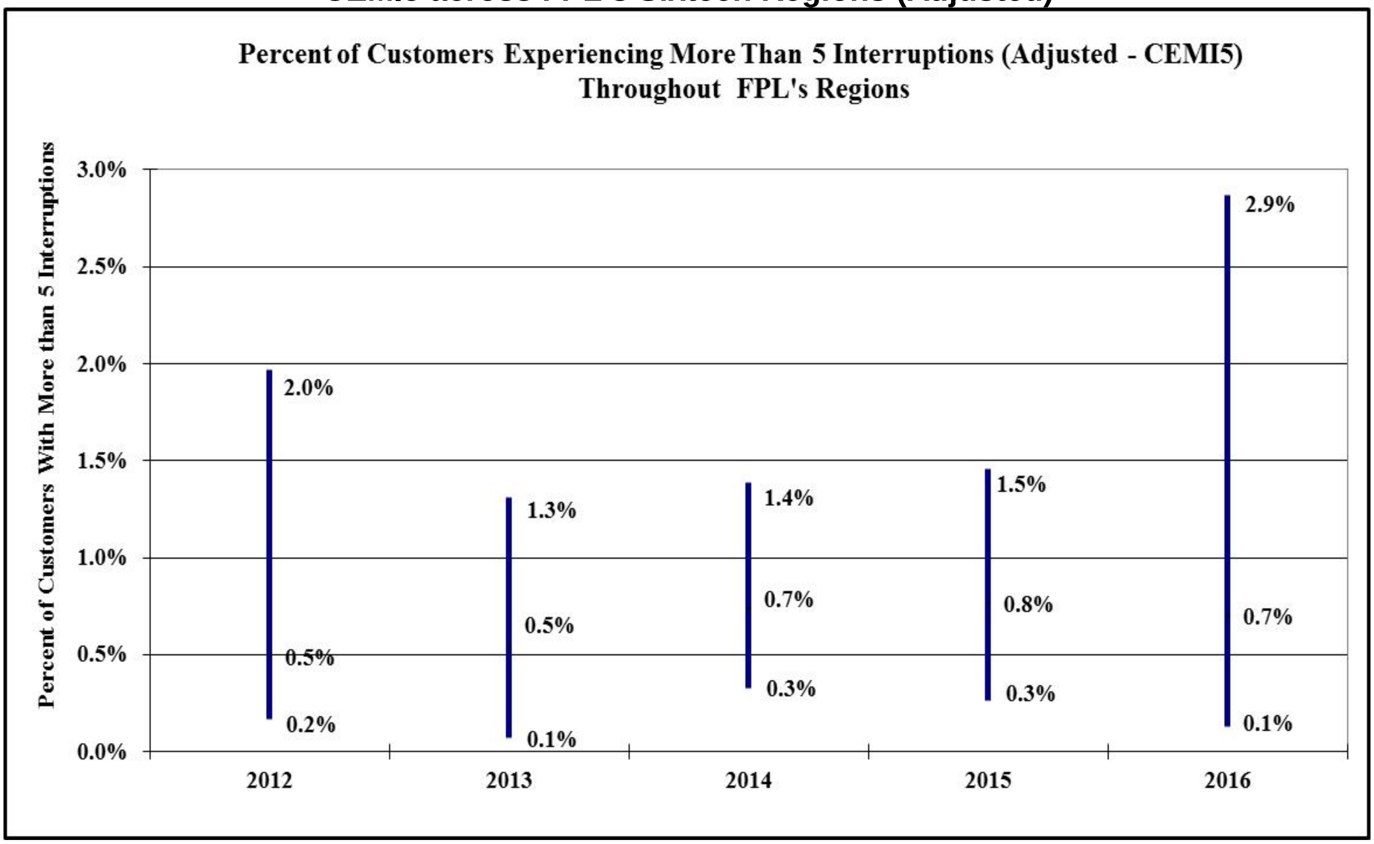
FPL's Regions with the Highest and Lowest Adjusted MAIFIe Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest MAIFIe	Treasure Coast	Treasure Coast	Wingate	Wingate	Wingate
Lowest MAIFIe	Naples	Central Dade	Pompano	Manasota	Pompano

Source: FPL's 2012-2016 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 increasing and trending upward. The service areas experiencing the highest CEMI5 over the five-year period appear to fluctuate among West Dade, Boca Raton, Treasure Coast, and West Palm. Pompano, Gulf Stream, and Brevard are reported as having the lowest percentages in the last five years. The average CEMI5 result for 2016 was 0.7 percent compared to 0.8 percent in 2015.

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

	2012	2013	2014	2015	2016
Highest CEMI5	West Dade	Boca Raton	West Palm	West Dade	Treasure Coast
Lowest CEMI5	Pompano	Pompano	Brevard	Brevard	Gulf Stream

Source: FPL's 2012-2016 distribution service reliability reports.

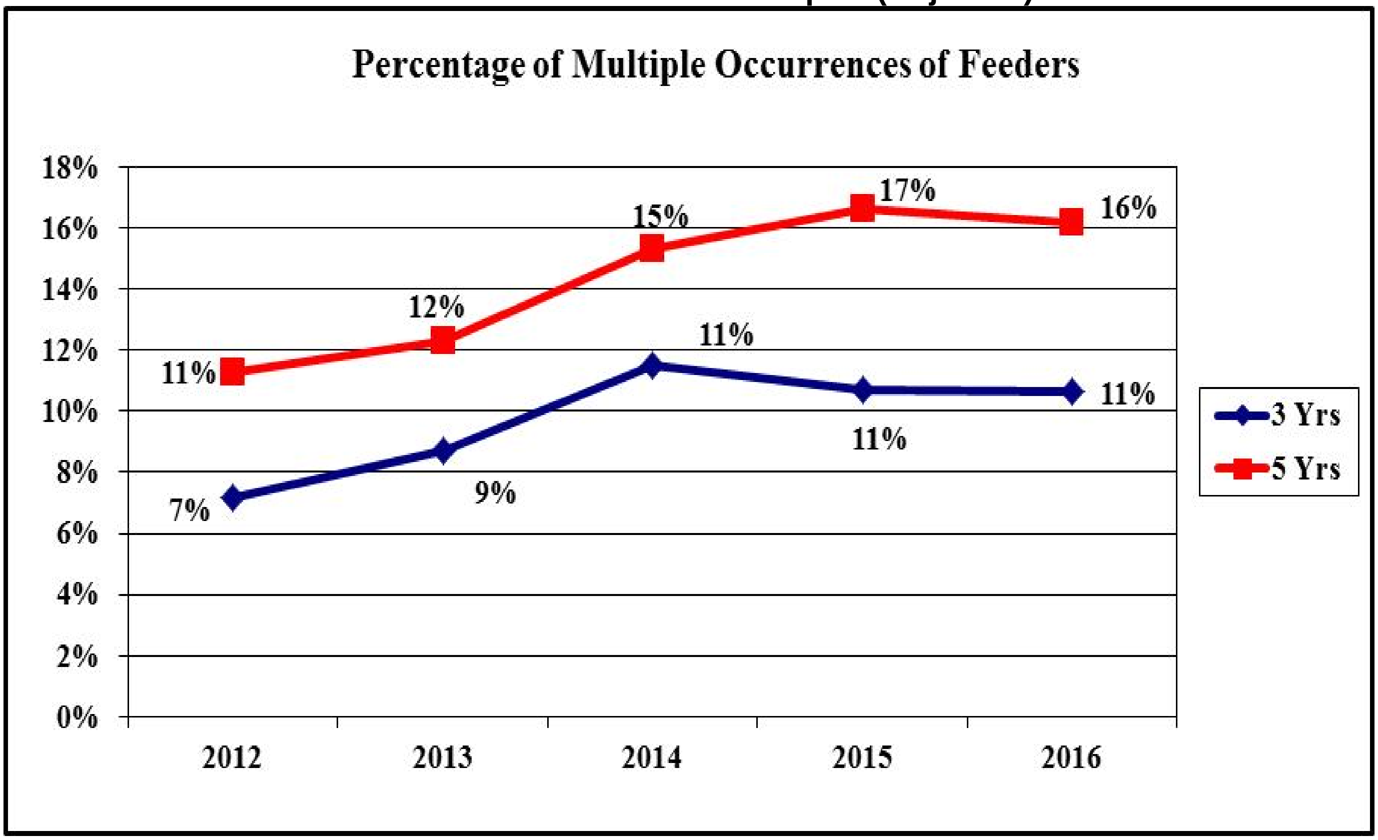
Figure 3-15 is a graphical representation of the percentage of multiple occurrences of FPL's feeders and is derived from The Three Percent Feeder Report, which is a listing of the top three percent of problem feeders reported by the utility. The fraction of multiple occurrences is calculated from the number of recurrences divided by the number of feeders reported. The three-year percentage had no change with 11 percent in 2015 and 11 percent in 2016. The five-year percentage decreased from 17 percent in 2015 to 16 percent in 2016. Both the five-year percentage and the three-year percentage appear to be trending upward.

Staff notes six 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 six feeders include:

- Converting line sections from overhead to underground.
- Re-conductoring line sections with "tree wire."
- Installing automated feeder switches.
- Conducting visual and infrared inspections and completing associated follow-up work.
- Conducting ground assessment inspections and completing associated follow-up work.

FPL also reported that two of these feeders were storm hardened in late 2016 and the other four are planned to be hardened within 2017.

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

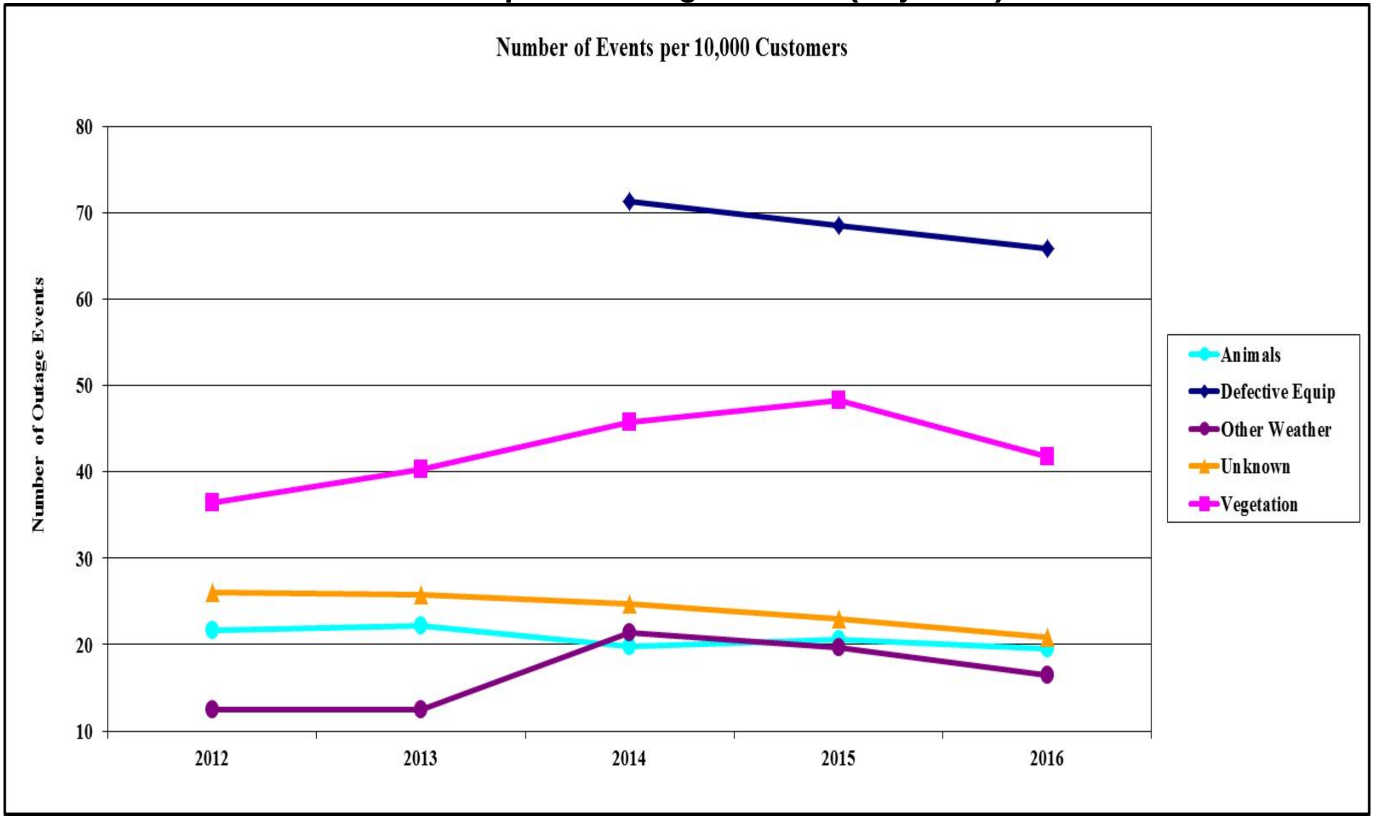


Source: FPL's 2012-2016 distribution service reliability reports.

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 (35 percent), Vegetation (22 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 decreased for both the Vegetation and the Other Weather categories from 2015 to 2016. 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 18 reliability programs listed for its 2017 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. Fifteen programs are designed to help improve the Defective Equipment cause code, which had an increase in 2016. Five programs will help to improve the Animals cause code, which also had an increase in 2016. In addition to the reliability programs identified by FPL in its report, the Utility is planning to inspect and repair or replace auto transformers, as necessary. This program will also help address the Defective Equipment and Animals cause codes.

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



Source: FPL's 2012-2016 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 2016 report shows the system indices for SAIDI, SAIFI, MAIFe, CEMI5, and the Five-Year Percentages of Multiple Feeder Outage events are lower or better than the 2015 results. The system index for CAIDI and L-Bar are higher than the 2015 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 Animals causes of outages. FPL is also continuing to increase the utilization of automation to address feeder interruptions.

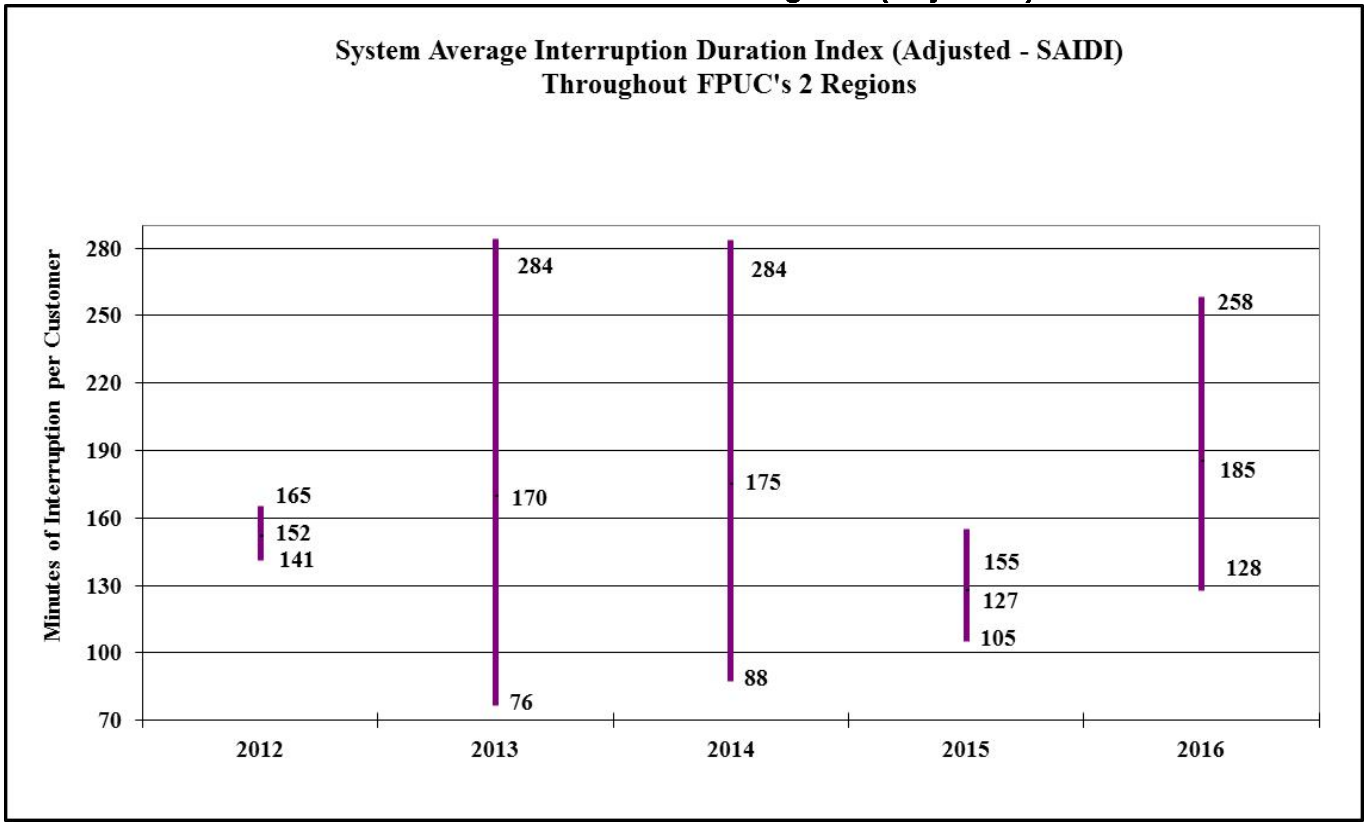
While the least reliable region has varied, the North Dade region continues to have the highest CAIDI for five years consecutively. To improve reliability in the North Dade region, FPL is performing targeted vegetation management trimming, installing automated lateral switches, replacing open wire secondary at all new service locations and on trouble calls, and managing resources by splitting crews to reduce outage investigation times. The Wingate region has had the highest MAIFIe for three years consecutively. However, the MAIFIe value for the Wingate region did improve by 23 percent in 2016. FPL is performing targeted vegetation trimming, increasing the number of investigative feeder patrols, and installing automated lateral switches to improve reliability in the Wingate region.

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 slightly upward for the five-year period of 2012 to 2016 and there was a 31 percent increase from 2015 to 2016.

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



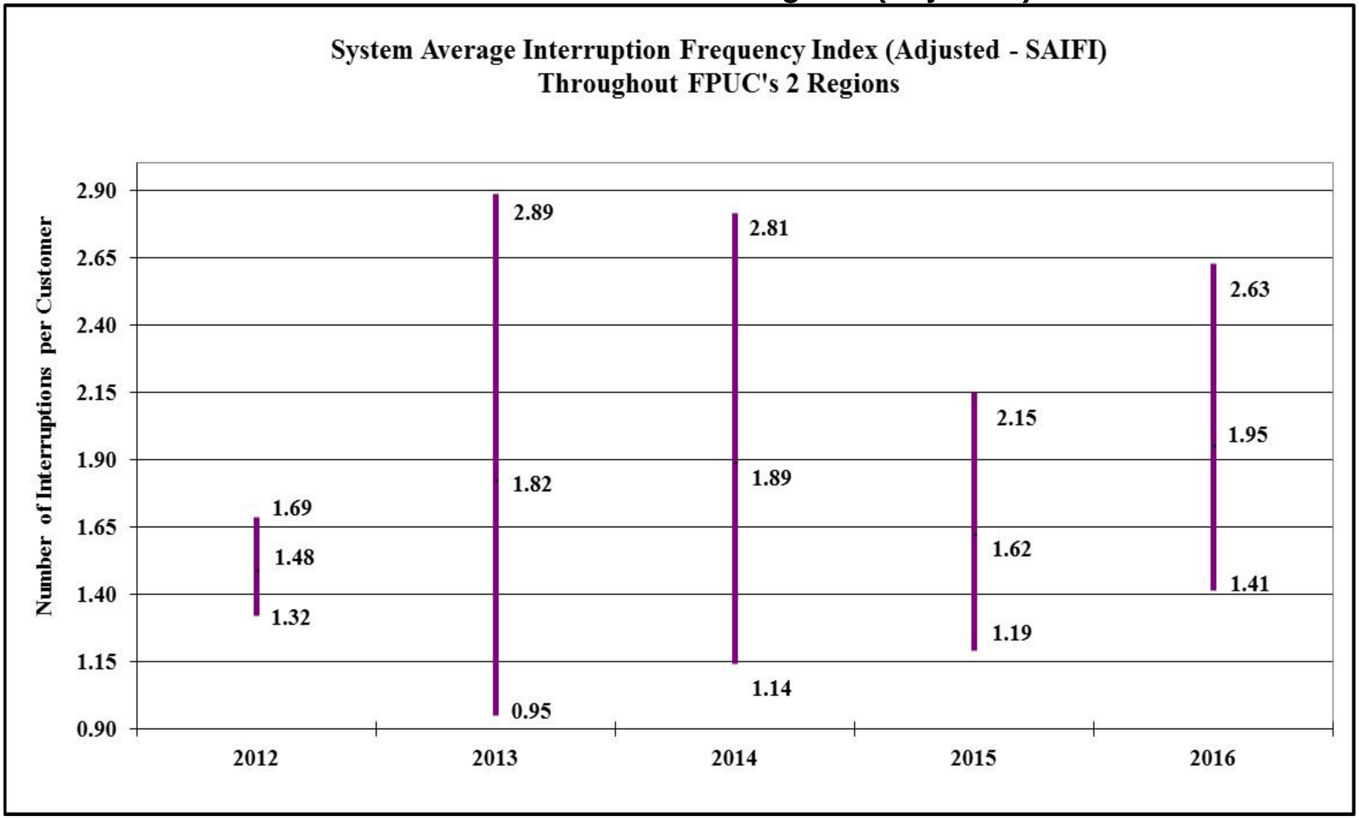
FPUC's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest SAIDI	Marianna (NW)	Marianna (NW)	Marianna (NW)	Marianna (NW)	Marianna (NW)
Lowest SAIDI	Fernandina(NE)	Fernandina(NE)	Fernandina(NE)	Fernandina(NE)	Fernandina(NE)

Source: FPUC's 2012-2016 distribution service reliability reports.

Figure 3-18 shows the adjusted SAIFI across FPUC's two divisions. The data depicts a 17 percent increase in the 2016 average SAIFI reliability index from 2015. The data for the minimum, average, and maximum SAIFI values are trending upward over the five-year period of 2012 to 2016.

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



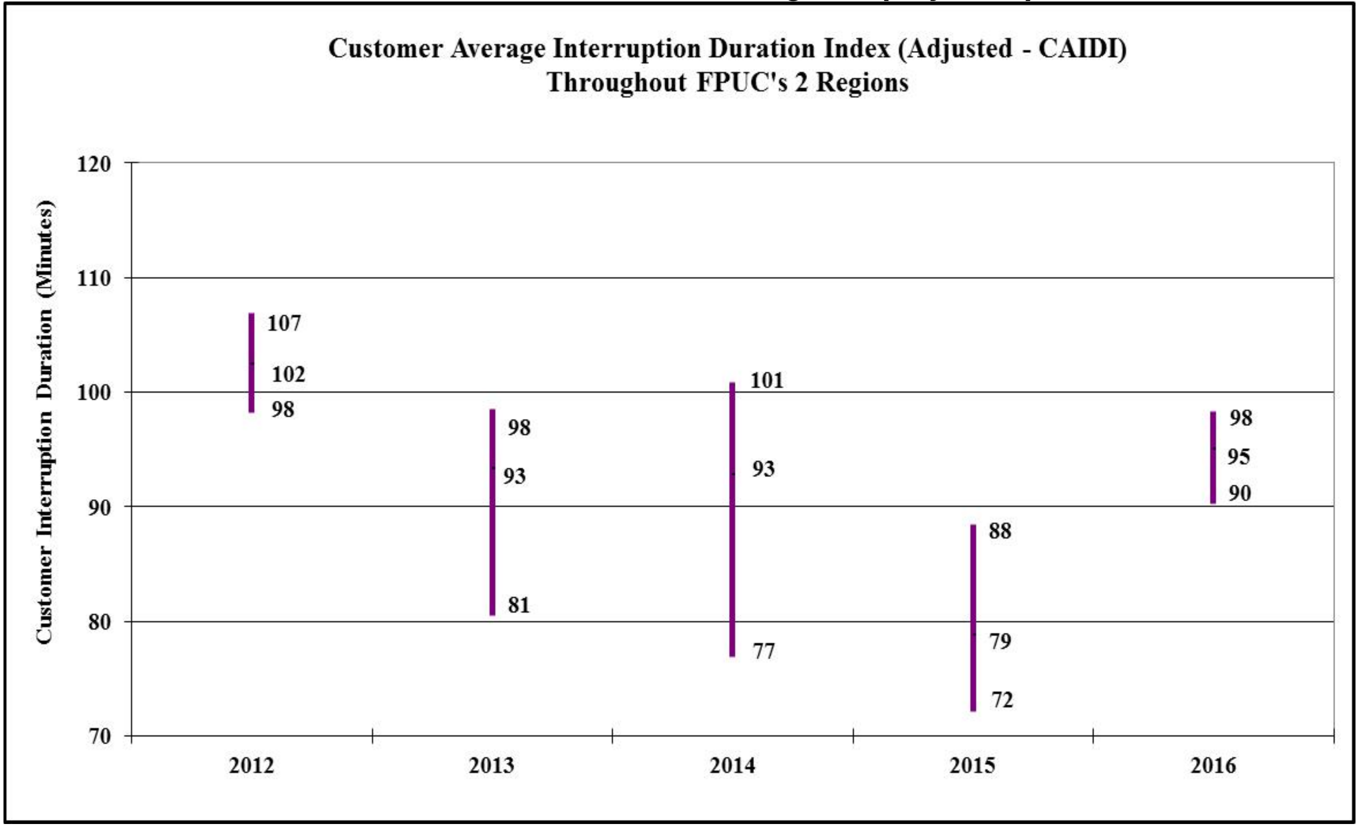
FPUC's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest SAIFI	Marianna (NW)	Marianna (NW)	Marianna (NW)	Marianna (NW)	Marianna (NW)
Lowest SAIFI	Fernandina(NE)	Fernandina(NE)	Fernandina(NE)	Fernandina(NE)	Fernandina(NE)

Source: FPUC's 2012-2016 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 increased by 17 percent for 2016 (95 minutes) when compared to 2015 (79 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)



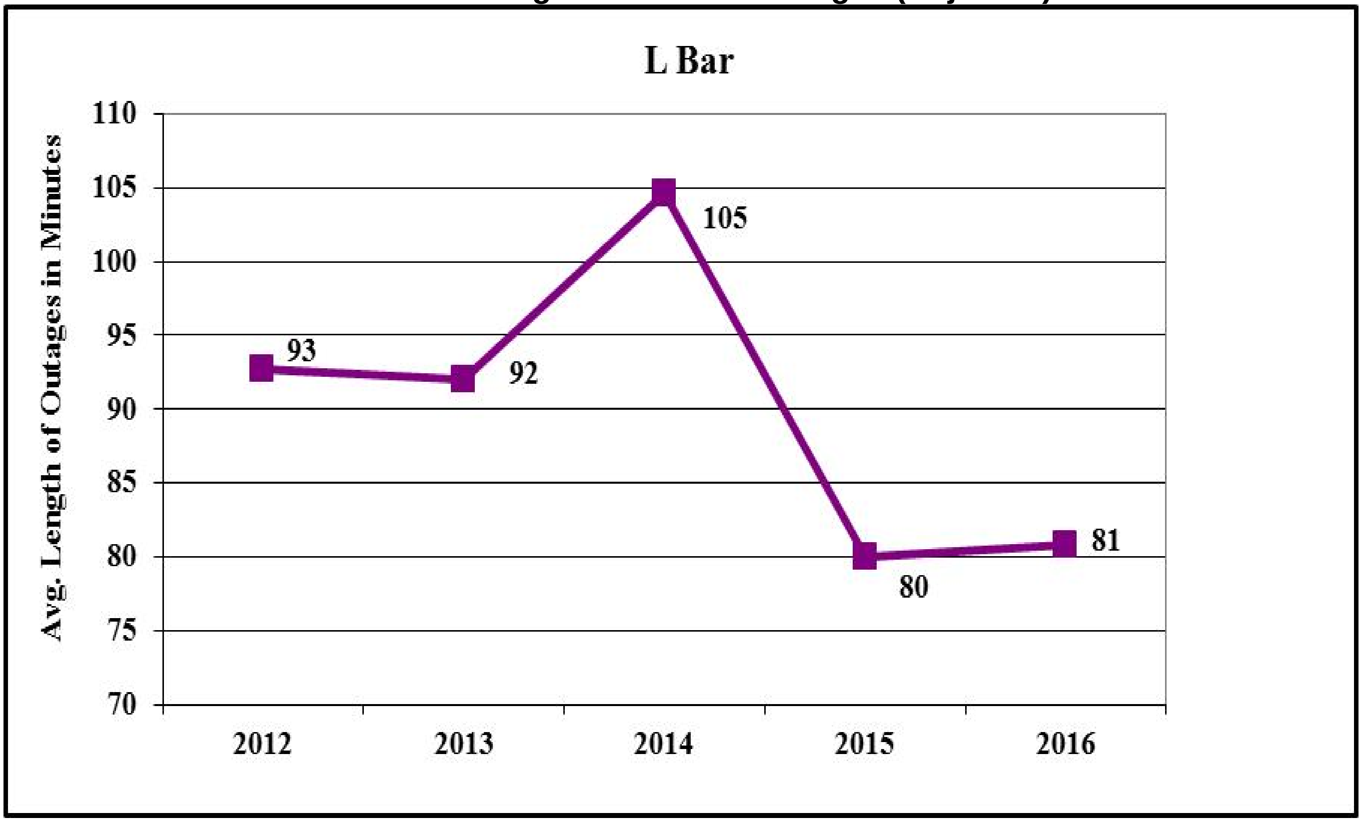
FPUC's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest CAIDI	Fernandina(NE)	Marianna (NW)	Marianna (NW)	Fernandina(NE)	Marianna (NW)
Lowest CAIDI	Marianna (NW)	Fernandina(NE)	Fernandina(NE)	Marianna (NW)	Fernandina(NE)

Source: FPUC's 2012-2016 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 1 percent increase in the L-Bar value from 2015 to 2016. The data for the five-year period of 2012 to 2016 suggests that the L-Bar index is trending downward indicating FPUC is taking less time to restore service after an outage event.

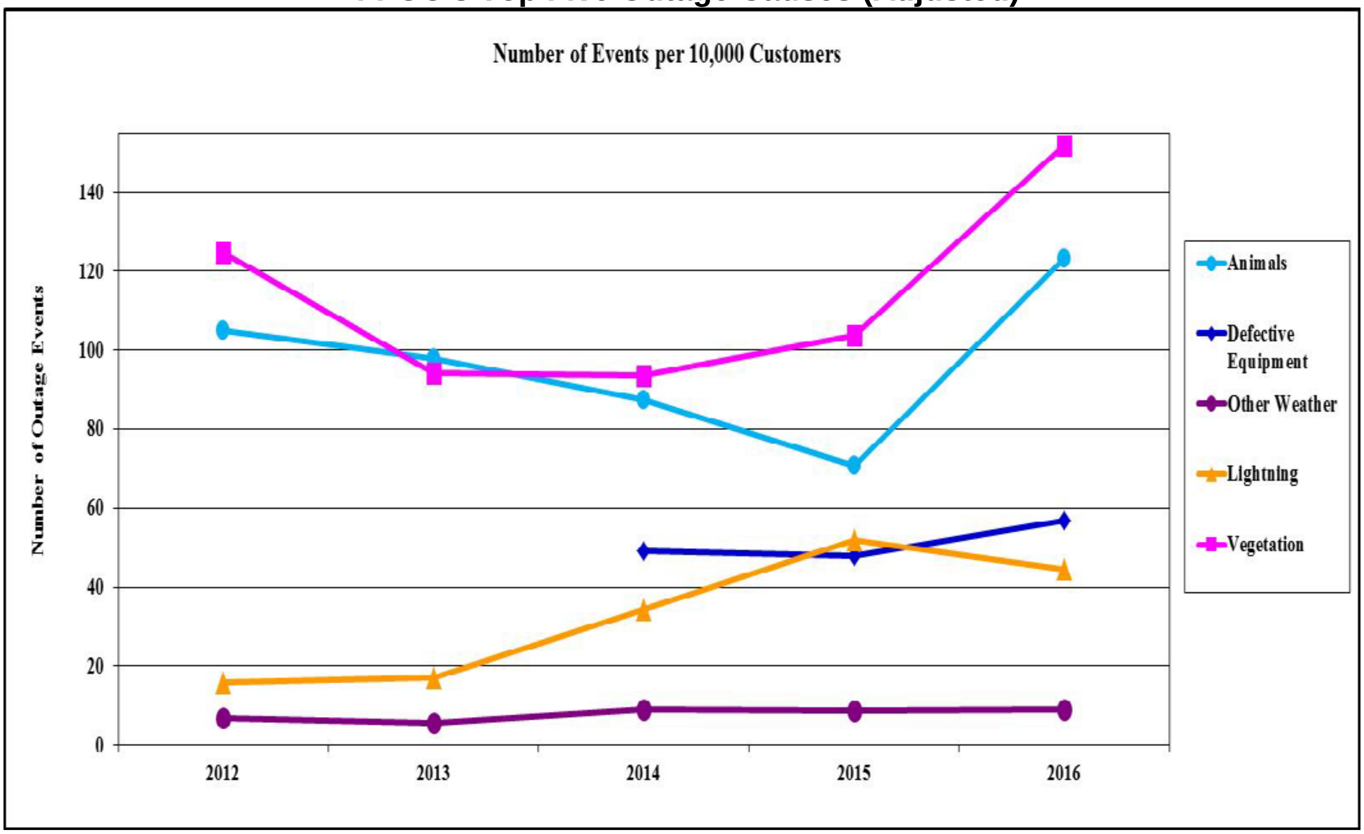
Figure 3-20.
FPUC's Average Duration of Outages (Adjusted)



Source: FPUC's 2012-2016 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 2016, the top five causes of outage events were Vegetation (31 percent), Animals (25 percent), Defective Equipment (12 percent), Other Weather (11 percent), and Lightning (9 percent). These five factors represent 88 percent of the total adjusted outage causes in 2016. The cause by Lightning is trending upward even though there was a 33 percent decrease from 2015 to 2016. The causes by Defective Equipment, Animals, and Vegetation are also trending upward. Animals and Vegetation increased 26 percent and 12 percent from 2015 to 2016, respectively. The Defective Equipment category increased 8 percent during the same time period. The Other Weather category caused outages has remained relatively flat over the five-year period of 2012 to 2016, even though there was a 36 percent decrease from 2015 to 2016. 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 2012-2016 distribution service reliability reports.

FPUC filed a Three Percent Feeder Report listing the top 3 percent of feeders with the outage events for 2016. 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. One feeder, located in the Northeast division, was listed on the report last year. FPUC reported that it is reconfiguring this feeder to move customers and balance the load between this feeder and another feeder. In addition, FPUC placed a set of fuses on the other feeder, where the customers are being moved, to isolate and minimize outage duration to customers on that feeder.

Observations: FPUC's Adjusted Data

The SAIDI, SAIFI, CAIDI, and L-Bar average indices have all increased compared to 2015. For the five-year period of 2012 to 2016, the average indices for CAIDI and L-Bar are trending downward as the average indices for SAIDI and SAIFI are trending upward. FPUC reports that even though it has made significant strides in improving its system performance and reliability, reducing outages, and enhancing its ability to respond to service issues, more needs to be done. FPUC contributes its increasing reliability indices to a combination of aging equipment, increased outages caused by animals, and severe storms affecting large areas. FPUC also reports that rural, wet and wooded locations make restoration efforts last longer and in combination with vegetation intrusion, more frequent.

FPUC continues to work at mitigating these impacts through ongoing activities. FPUC has also begun identifying and planning an aggressive approach to complete current projects. The projects and activities include increased tree trimming, moving feeders currently routed through heavily wooded areas to highway right-of-ways to reduce the outages caused by vegetation, installing insulated covers to equipment bushings and in substations to prevent animal contacts, and replacing older equipment such as transformers, breakers, switches, surge arresters and voltage regulators. FPUC has started improving its system grounding methods and will continue to convert overhead lines to underground when reliability improvements can be achieved.

In addition, to help mitigate the situation with vegetation caused outages, FPUC is planning to implement a pilot project. The anticipated pilot project includes replacing approximately 30 to 50 fused cutouts with a cutout mounted recloser such as the S&C Tripsaver. The S&C Tripsaver eliminates the sustained interruption that results when a lateral fuse operates in response to a transient fault. FPUC will also identify overhead facilities in heavy tree areas that can be relocated to reduced tree exposure.

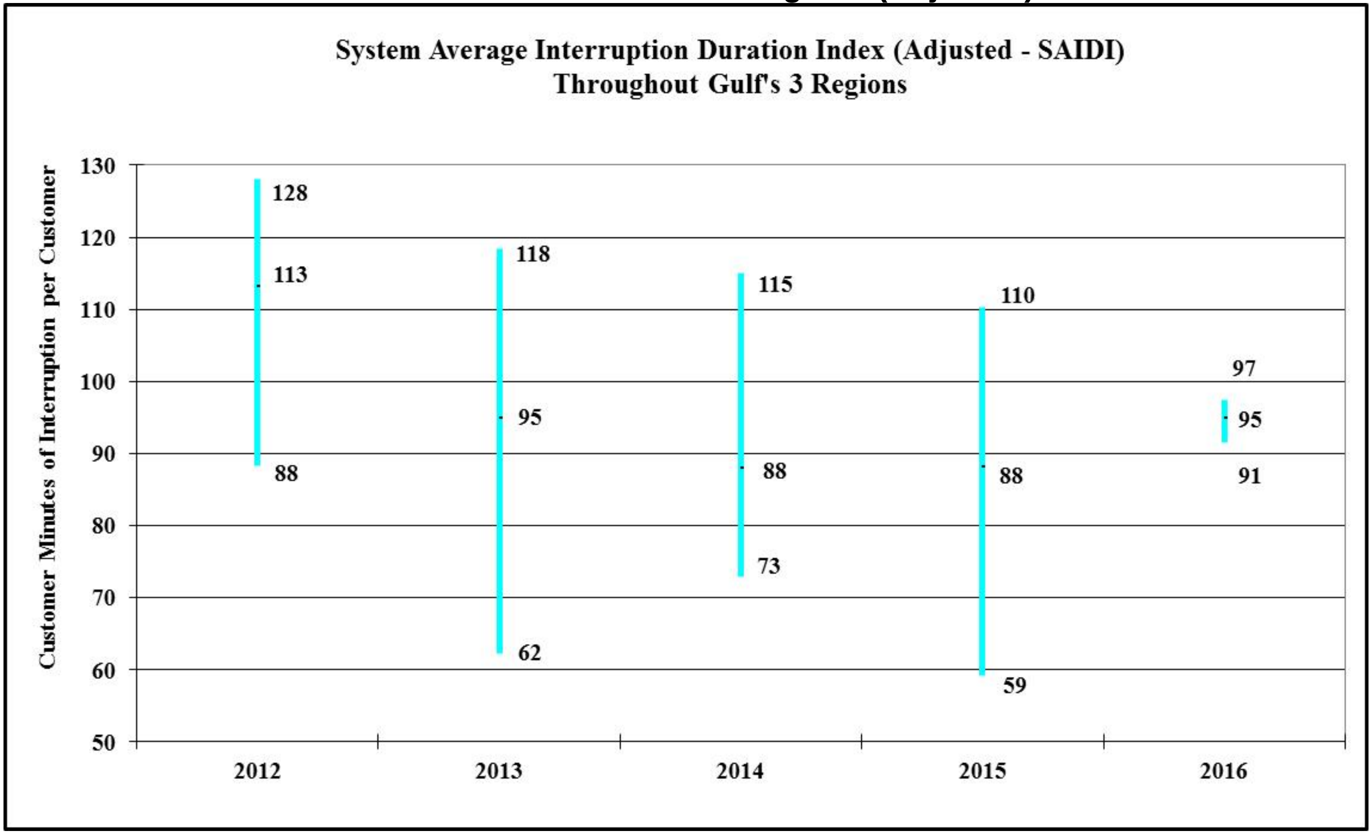
FPUC does not have to report MAIFIe or CEMI5 because Rule 25-6.0455, F.A.C., waives the requirement. The cost for the information systems necessary to measure MAIFIe and CEMI5 has a higher impact on small utilities compared to large utilities on a per customer basis.

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 a 7 percent increase in the average SAIDI in Gulf's combined regions when compared to the 2015 results. Gulf's 2016 average performance was 95 minutes compared to 88 minutes in 2015. 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 and average SAIDI indices are continuing to trend downward, showing improvements as the minimum SAIDI index is trending upward.

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



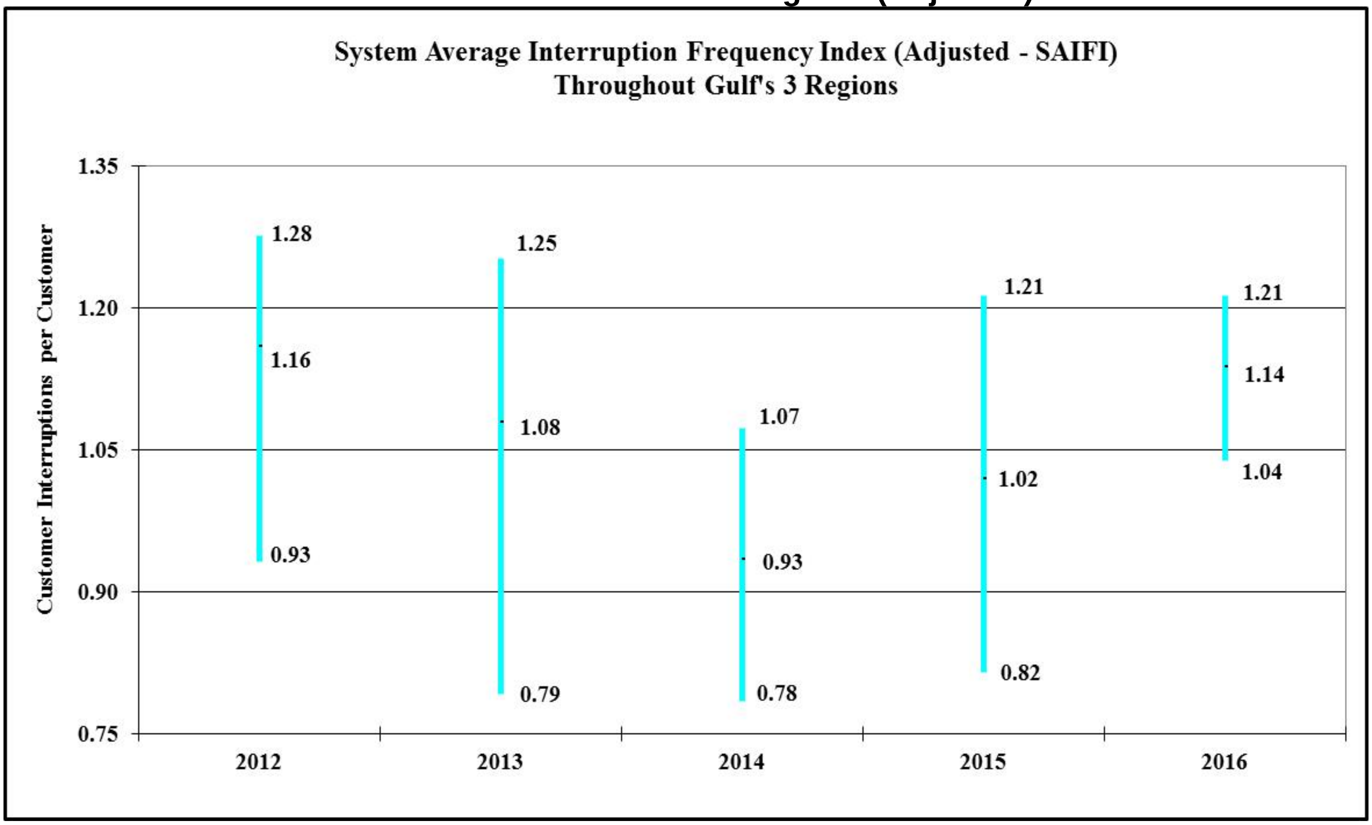
Gulf's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest SAIDI	Western	Eastern	Central	Western	Western
Lowest SAIDI	Eastern	Central	Eastern	Eastern	Central

Source: Gulf's 2012-2016 distribution service reliability reports.

Figure 3-23 illustrates that Gulf's SAIFI had an 11 percent increase in 2016 when compared to 2015. 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 and average SAIFI values still appear to be trending downward as the minimum SAIFI value appears to be trending upward.

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



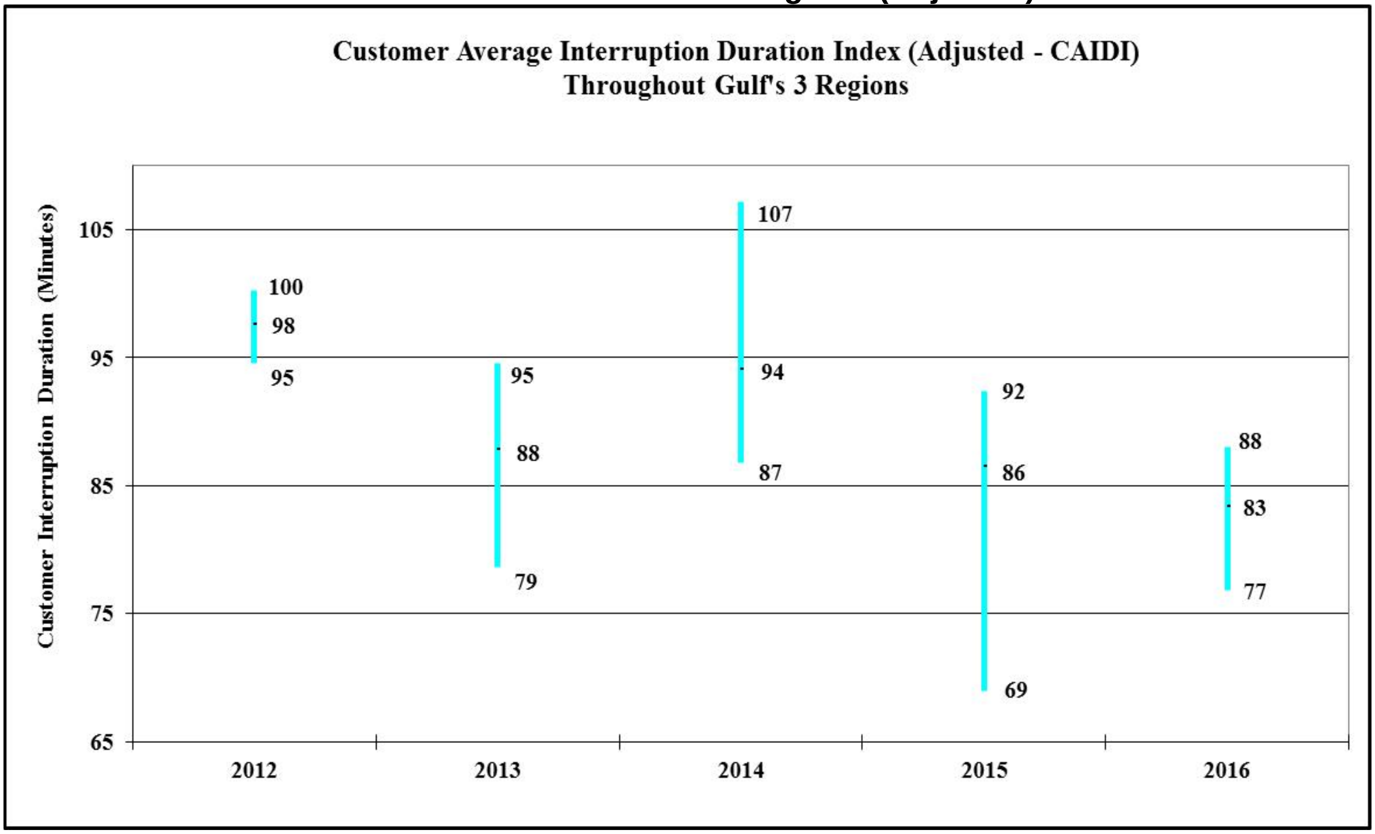
Gulf's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest SAIFI	Western	Eastern	Central	Western	Eastern
Lowest SAIFI	Eastern	Central	Eastern	Central	Central

Source: Gulf's 2012-2016 distribution service reliability reports.

Figure 3-24 is Gulf's adjusted CAIDI. For 2016, the average CAIDI is 83 minutes and represents a 3 percent decrease from the 2015 value of 86 minutes. In 2016, the Central region had the highest CAIDI value, as the Eastern region had the lowest CAIDI. Staff notes that the average, the maximum and the minimum CAIDI values are trending upward.

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

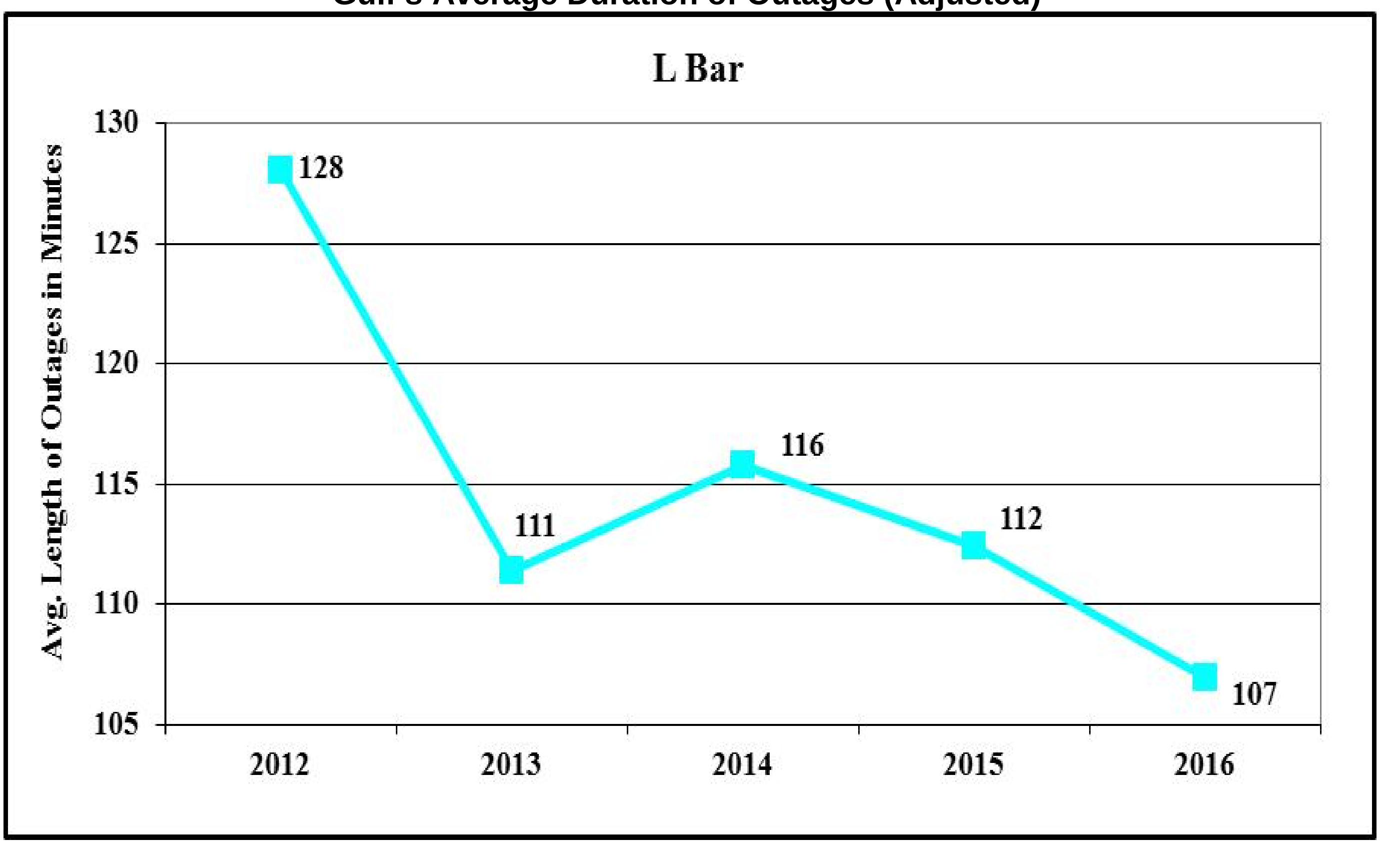
	2012	2013	2014	2015	2016
Highest CAIDI	Western	Eastern	Central	Central	Central
Lowest CAIDI	Central	Central	Western	Eastern	Eastern

Source: Gulf's 2012-2016 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 5 percent decrease from 2015 to 2016. The data for the five-year period of 2012 to 2016 still shows a downward trend.

Gulf reported that all three of its Districts experienced outages due to four non-excludable severe thunderstorms. These severe thunderstorms occurred on January 22, 2016, May 20, 2016, June 17, 2016, and August 4, 2016. During these events, a combined 11,452 customers lost power, primarily due to high wind speeds. Regarding the January 22, 2016 event, Gulf reported that all customers were restored within 16 hours. Gulf reported the majority of customers were restored within 13 hours for the May 20, 2016 event, and the remaining customers were restored within 25 hours. Regarding the June 17, 2016 event, some customer outages were restored within 18 hours. Gulf reported that all remaining outages, except for four, were restored within 31 hours. The final four outages were restored by the end of the day on June 18, 2016. Regarding the August 4, 2016 event, all customers without power were restored within approximately 22 hours.

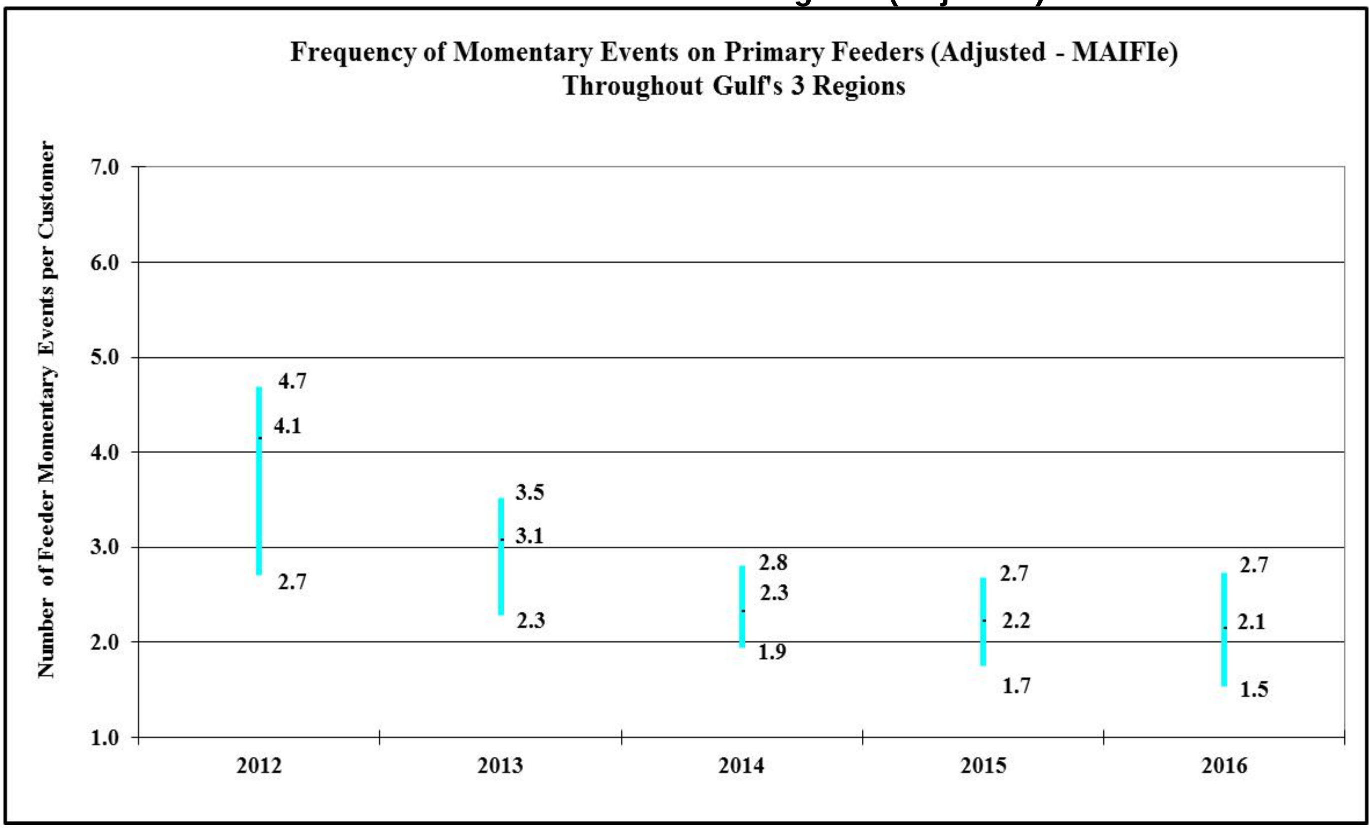
Figure 3-25.
Gulf's Average Duration of Outages (Adjusted)



Source: Gulf's 2012-2016 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 Central region had the lowest frequency of momentary events on primary feeders. The Western region has the highest MAIFIe index in 2016, with a 5 percent improvement when compared to 2015. 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)



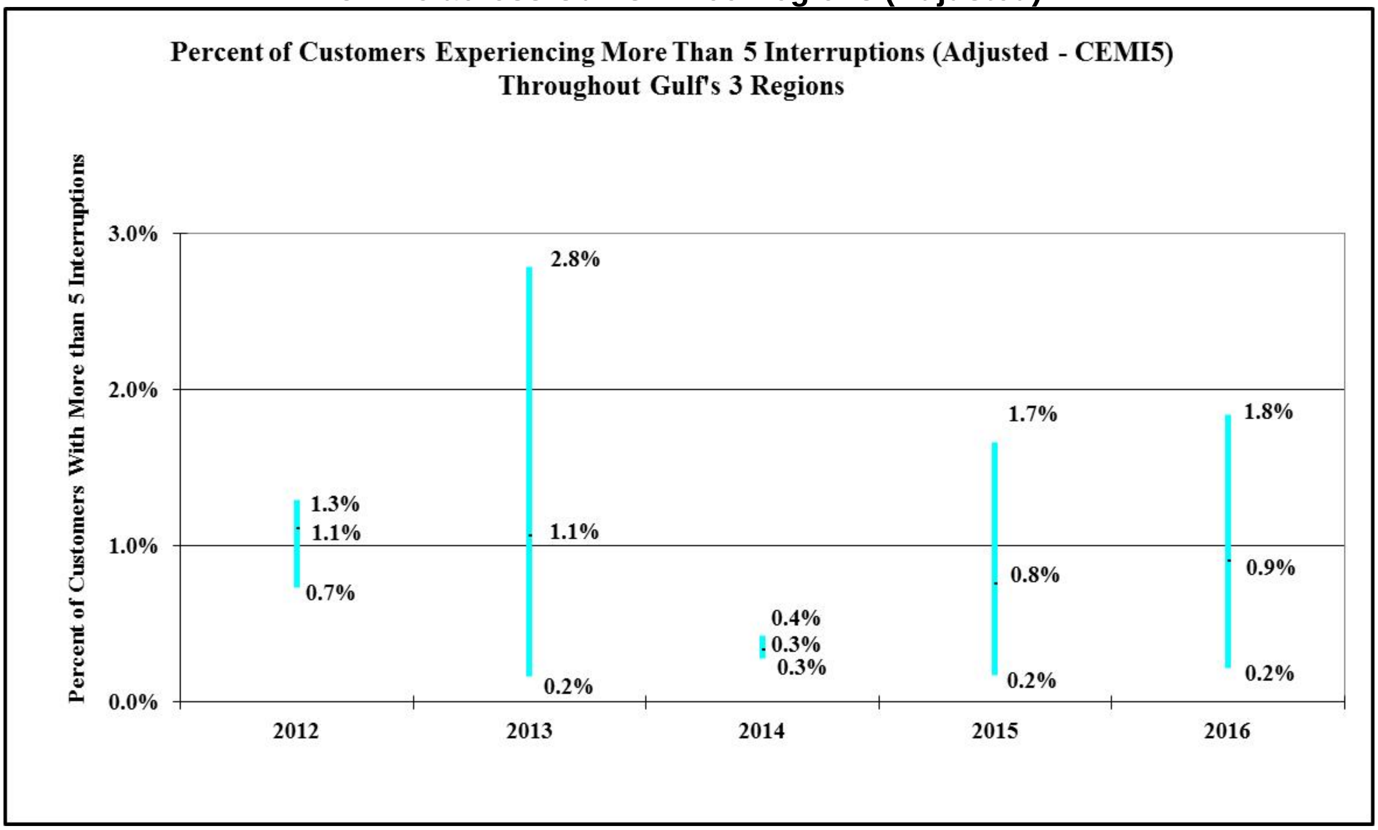
Gulf's Regions with the Highest and Lowest Adjusted MAIFIe Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest MAIFIe	Western	Western	Central	Western	Western
Lowest MAIFIe	Eastern	Eastern	Eastern	Eastern	Central

Source: Gulf's 2012-2016 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 2016 results illustrate an 11 percent increase in the average CEMI5 percentage when compared to 2015. The average and lowest CEMI5 appears to still be trending downward over the five-year period of 2012 to 2016, suggesting that the percentage of Gulf's customers experiencing more than five interruptions is decreasing and improving. The maximum CEMI5 appears to be trending slightly upward for the same period.

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

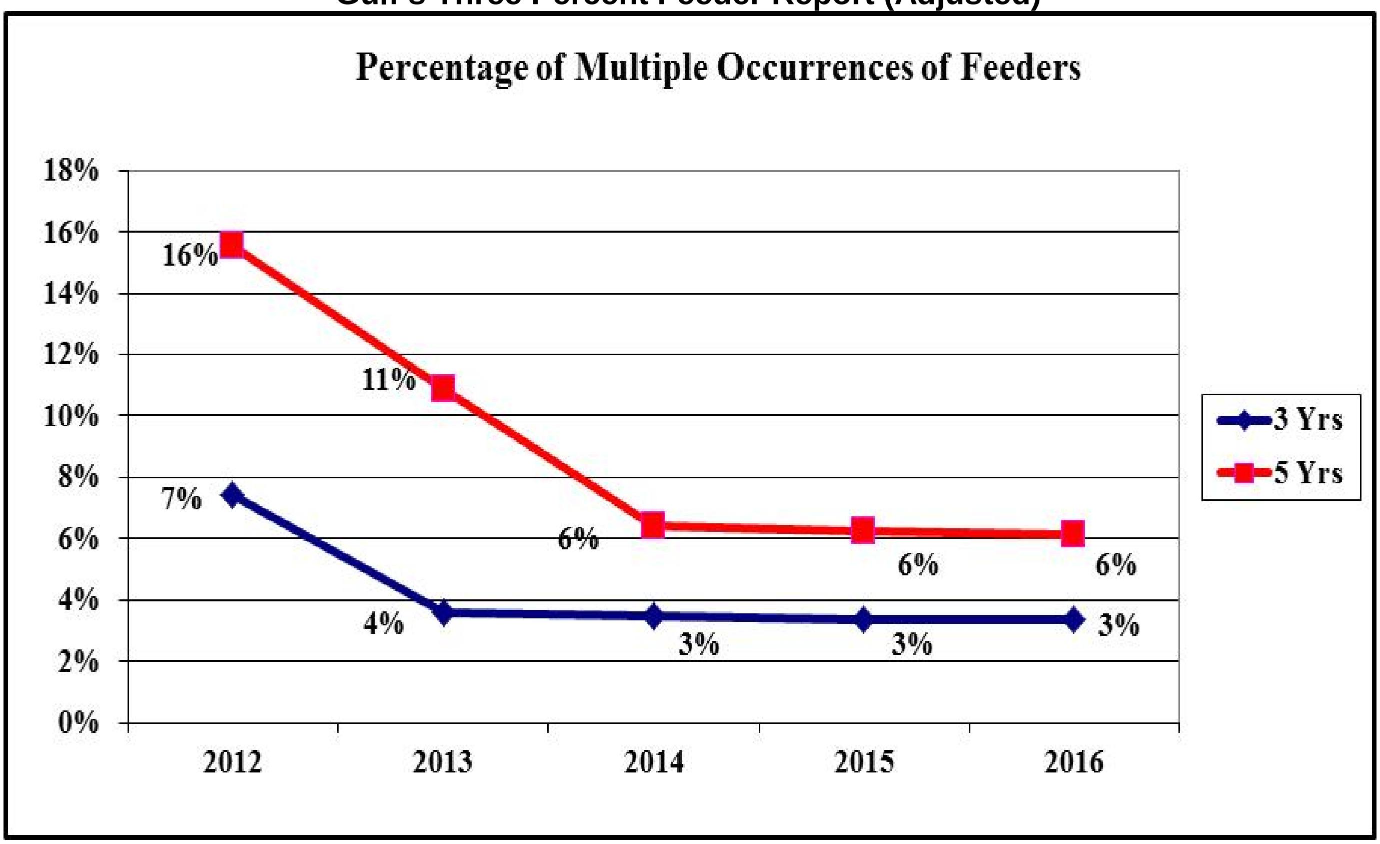
	2012	2013	2014	2015	2016
Highest CEMI5	Western	Eastern	Eastern	Eastern	Eastern
Lowest CEMI5	Eastern	Central	Western	Central	Central

Source: Gulf's 2012-2016 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 2015 to 2016 along with the three-year multiple occurrences. The five-year period of 2012 to 2016 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 for two years. Gulf reported that feeder 9522 experienced five outages in 2016. Two outages were Planned outages and the other outage was a Transmission outage. Gulf replaced 14 hydraulic reclosers with electronic smart reclosers on this feeder. Gulf explained this feeder is a long feeder increasing exposure to tress and sources of faults. Gulf believes the replacement will improve the feeder's response to faults and reduce the number of customers impacted by outages. 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, which would allow the system to limit the number of customers that experience an outage and in some cases may allow operators to sectionalize the feeder and restore customers more quickly.

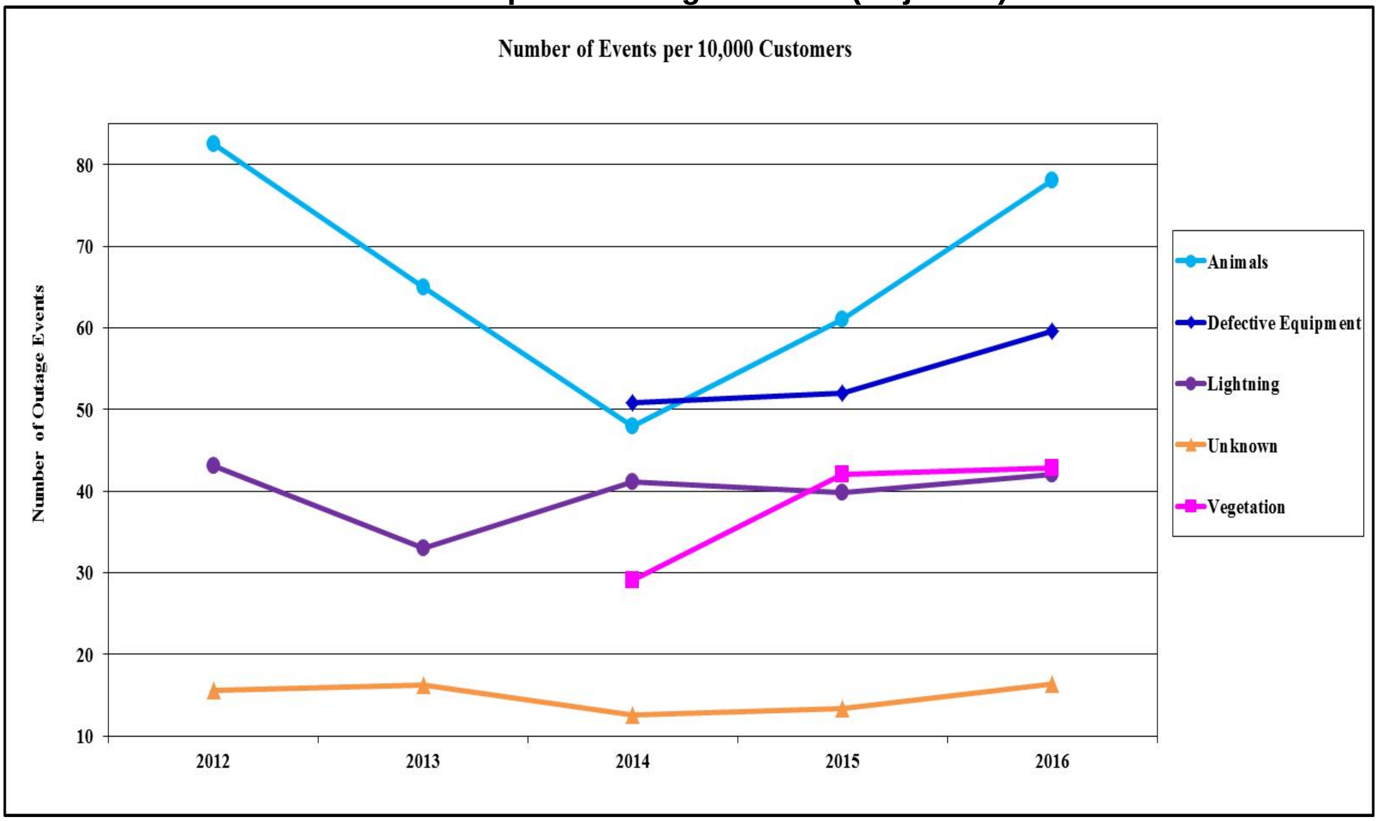
Figure 3-28.
Gulf's Three Percent Feeder Report (Adjusted)



Source: Gulf's 2012-2016 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 2016. The top five causes of outage events were Animals (30 percent), Defective Equipment (23 percent), Vegetation (16 percent), Lightning (16 percent), and Unknown Causes (6 percent). The percentage of outages due to Animals was the highest cause of outages. The number of outage events due to Animals is trending upward and there was a 10 increase in 2016. The numbers of outage events due to Lightning and Unknown causes are trending downward. 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. Gulf continues to focus its process improvement efforts on the system wide top outage causes through its existing programs and storm hardening efforts.

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



Source: Gulf's 2012-2016 distribution service reliability reports.

Observations: Gulf’s Adjusted Data

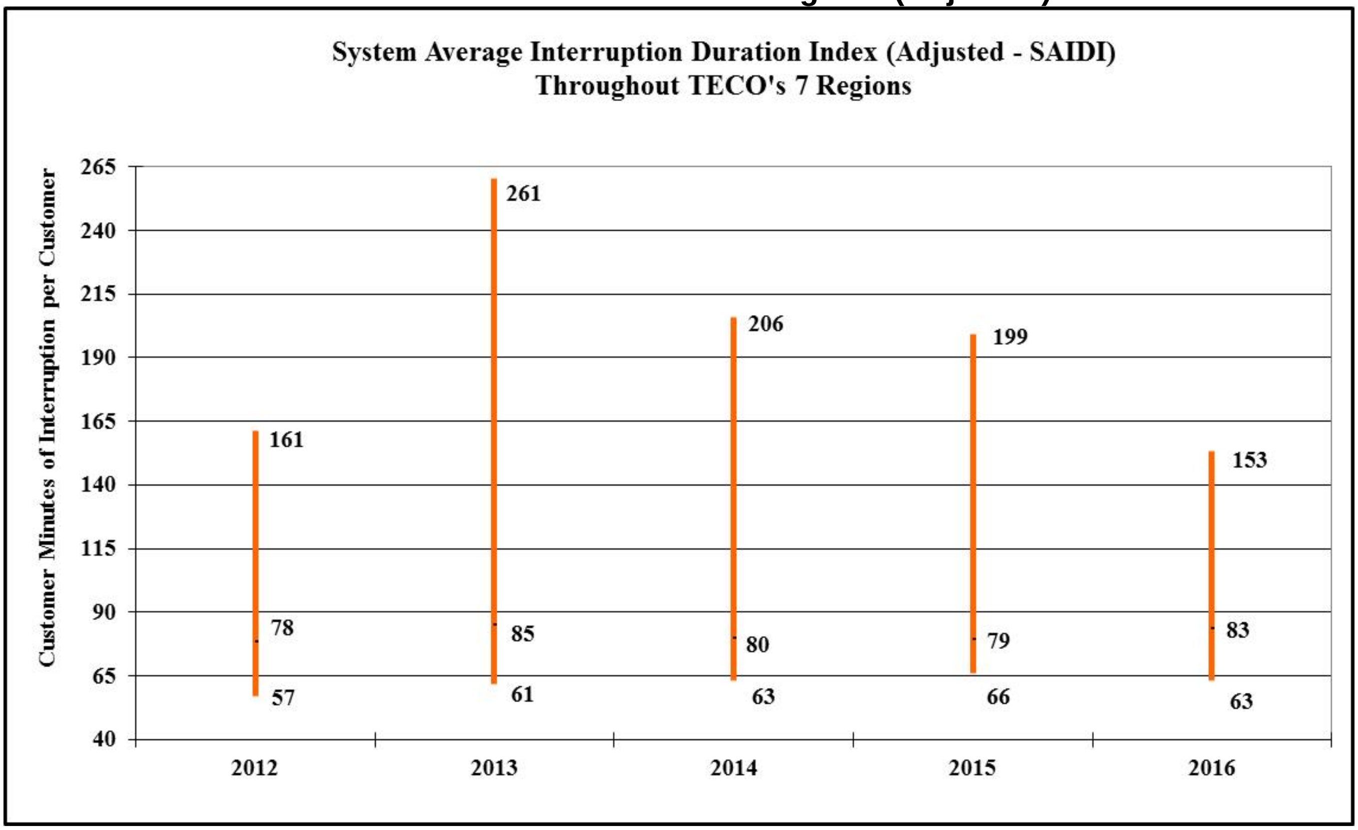
There were improvements seen in Gulf’s CAIDI, MAIFIe, L-Bar indices in 2016 and the SAIDI, SAIFI, and CEMI5 declined. The Five-Year Percentages of Multiple Feeder Outage events and the Three-Year Percentages of Multiple Feeder Outage events had no changes. Overall it appears that the trend lines for the reliability indices for the five-year period of 2012 to 2016 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 2016 data to determine the need for any specific improvement opportunities beyond the current programs and storm hardening initiatives.

Tampa Electric Company: Adjusted Data

Figure 3-30 shows the adjusted SAIDI values recorded by TECO's system. Four of the seven TECO regions had an increase in SAIDI performance during 2016, with Dade City having the highest SAIDI performance results for the five-year period of 2012 to 2016. The lowest SAIDI index for the seven regions appears to be trending upward. The average SAIDI index increased 5 percent from 2015 to 2016 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)



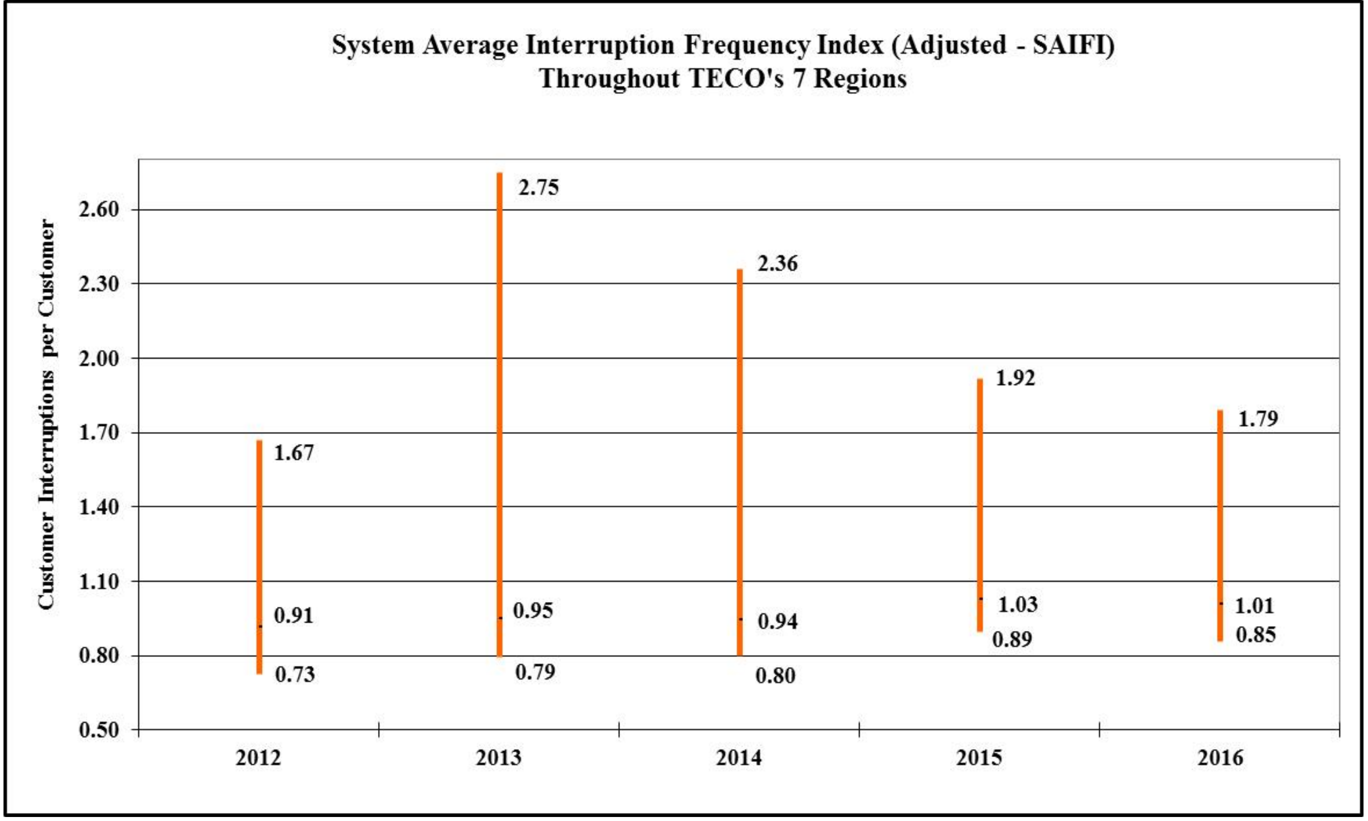
TECO's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest SAIDI	Dade City	Dade City	Dade City	Dade City	Dade City
Lowest SAIDI	Eastern	Winter Haven	Central	Winter Haven	Central

Source: TECO's 2012-2016 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 2 percent decrease in the SAIFI average from 1.03 interruptions in 2015 to 1.01 interruptions in 2016. TECO's Dade City region continues to have the highest frequency of service interruptions when compared to TECO's other regions. The minimum and average SAIFI are trending upward while the maximum SAIFI is trending downward.

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



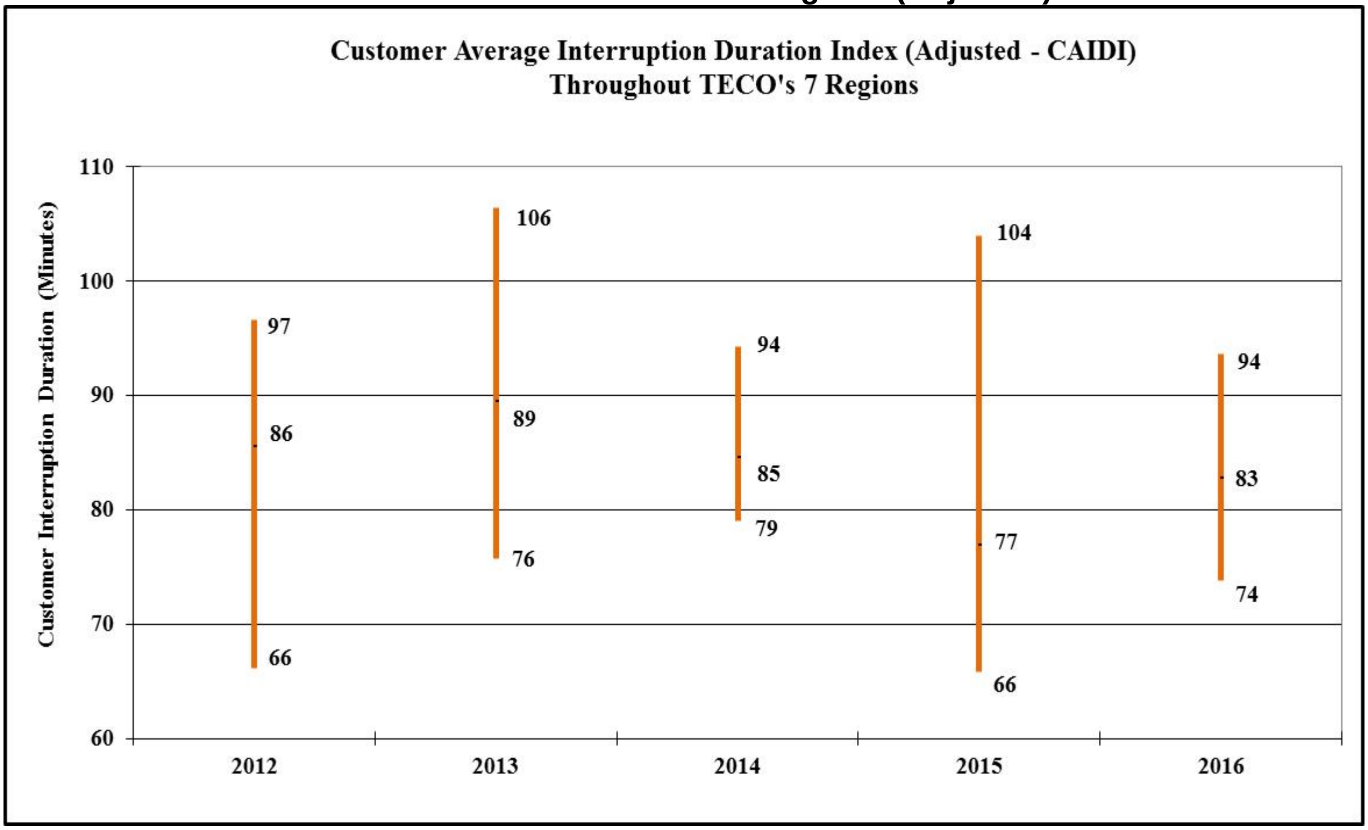
TECO's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest SAIFI	Dade City	Dade City	Dade City	Dade City	Dade City
Lowest SAIFI	Eastern	Central	Central	Western	Central

Source: TECO's 2012-2016 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, Plant City, and Western regions. Winter Haven and Central regions have had the lowest (best) results for the last five years. The average CAIDI is trending downward at this time suggesting TECO's customers are experiencing shorter outages, even though there was an 8 percent increase in the average CAIDI when comparing 2015 to 2016.

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



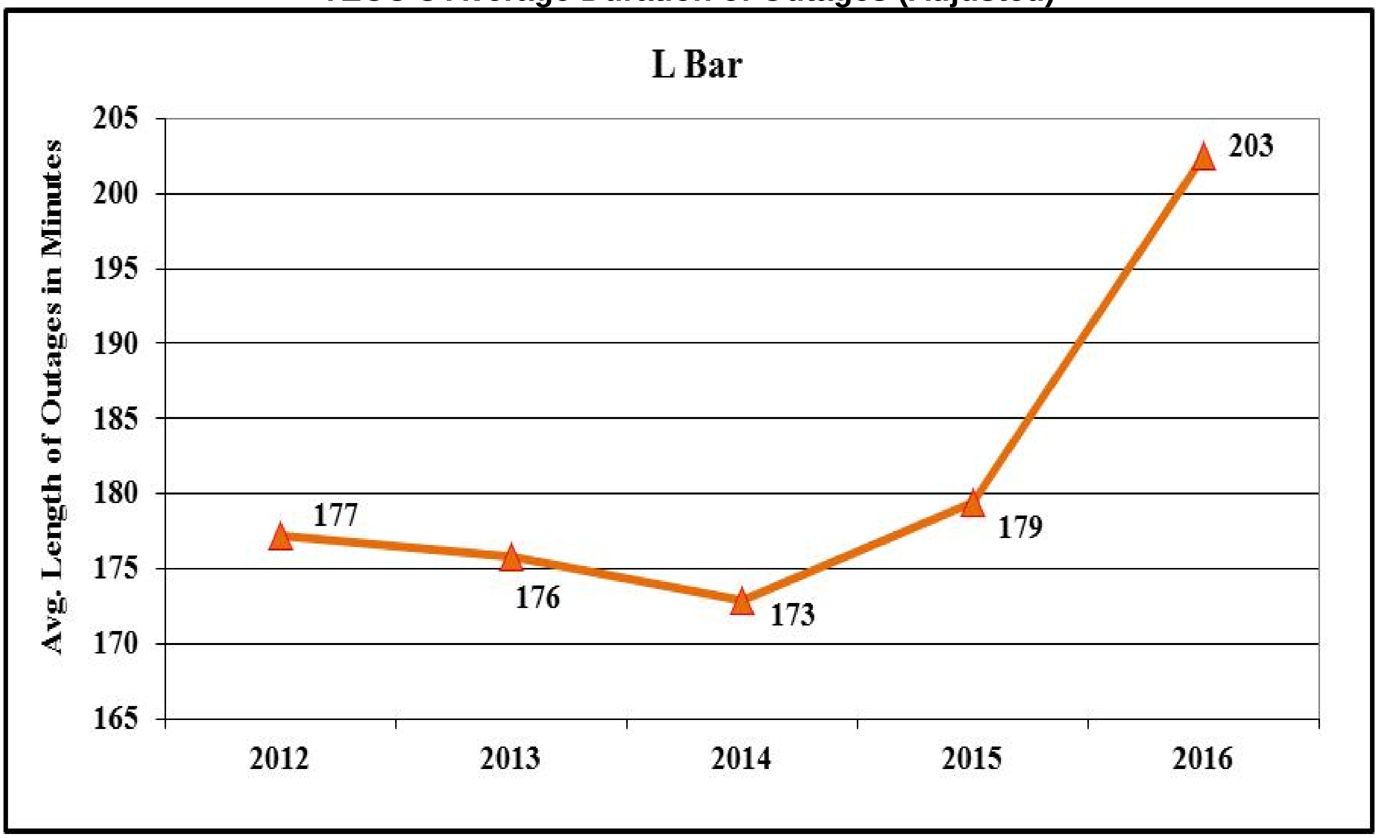
TECO's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest CAIDI	Dade City	Eastern	Western	Dade City	Plant City
Lowest CAIDI	Winter Haven	Winter Haven	Central	Central	Central

Source: TECO's 2012-2016 distribution service reliability reports.

Figure 3-33 denotes a 13 percent increase in outage durations for the period from 2015 to 2016 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 2012 to 2016, suggesting longer restoral times.

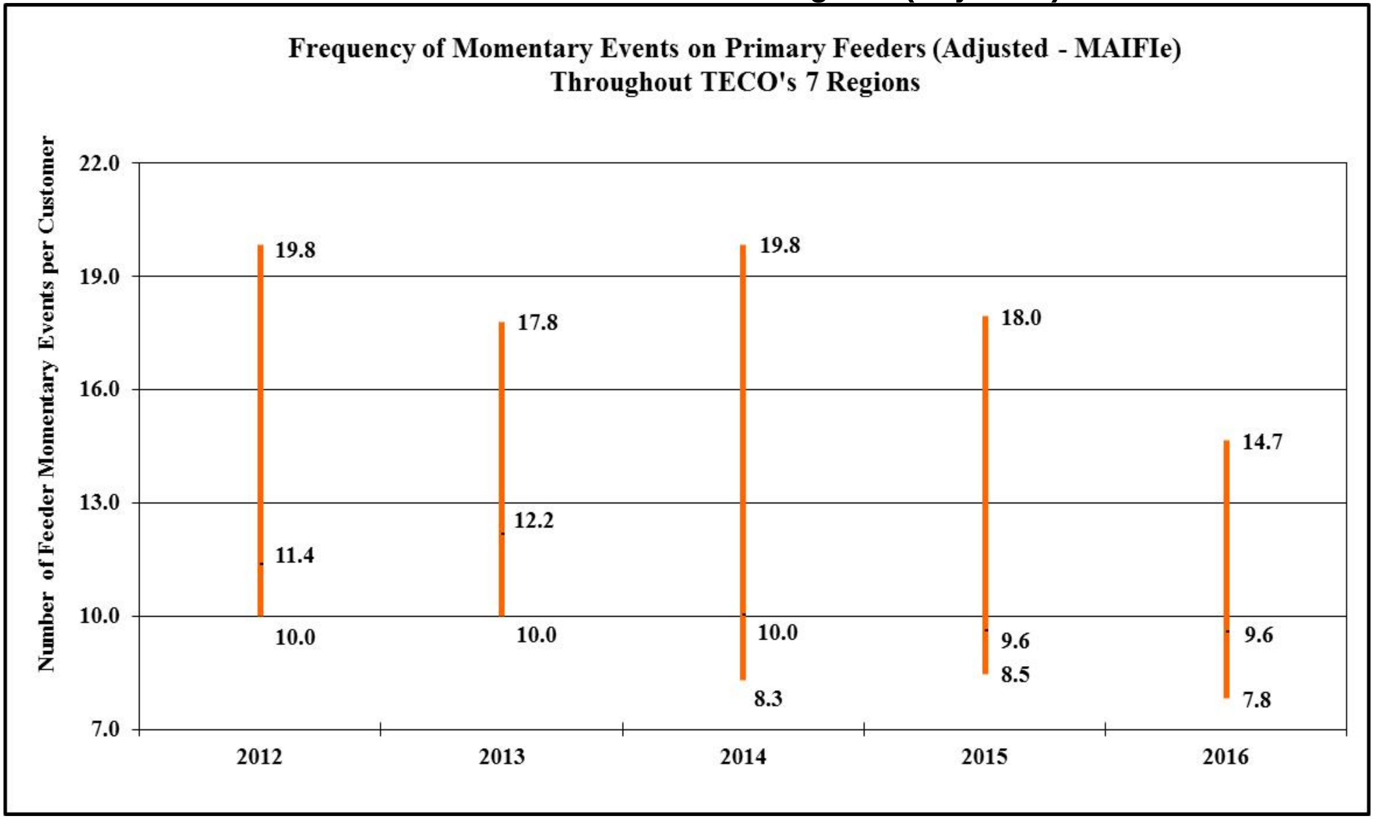
Figure 3-33.
TECO's Average Duration of Outages (Adjusted)



Source: TECO's 2012-2016 distribution service reliability reports.

Figure 3-34 illustrates TECO's number of momentary events on primary circuits per customer recorded across its system. In 2016, the MAIFIe performance improved over the 2015 results in all regions except Eastern, Plant City, South Hillsborough, and Western. The average MAIFIe did not change from 2015 to 2016. **Figure 3-34** shows that the average MAIFIe is trending downward, which suggest an improvement in performance over the five-year period of 2012 to 2016.

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



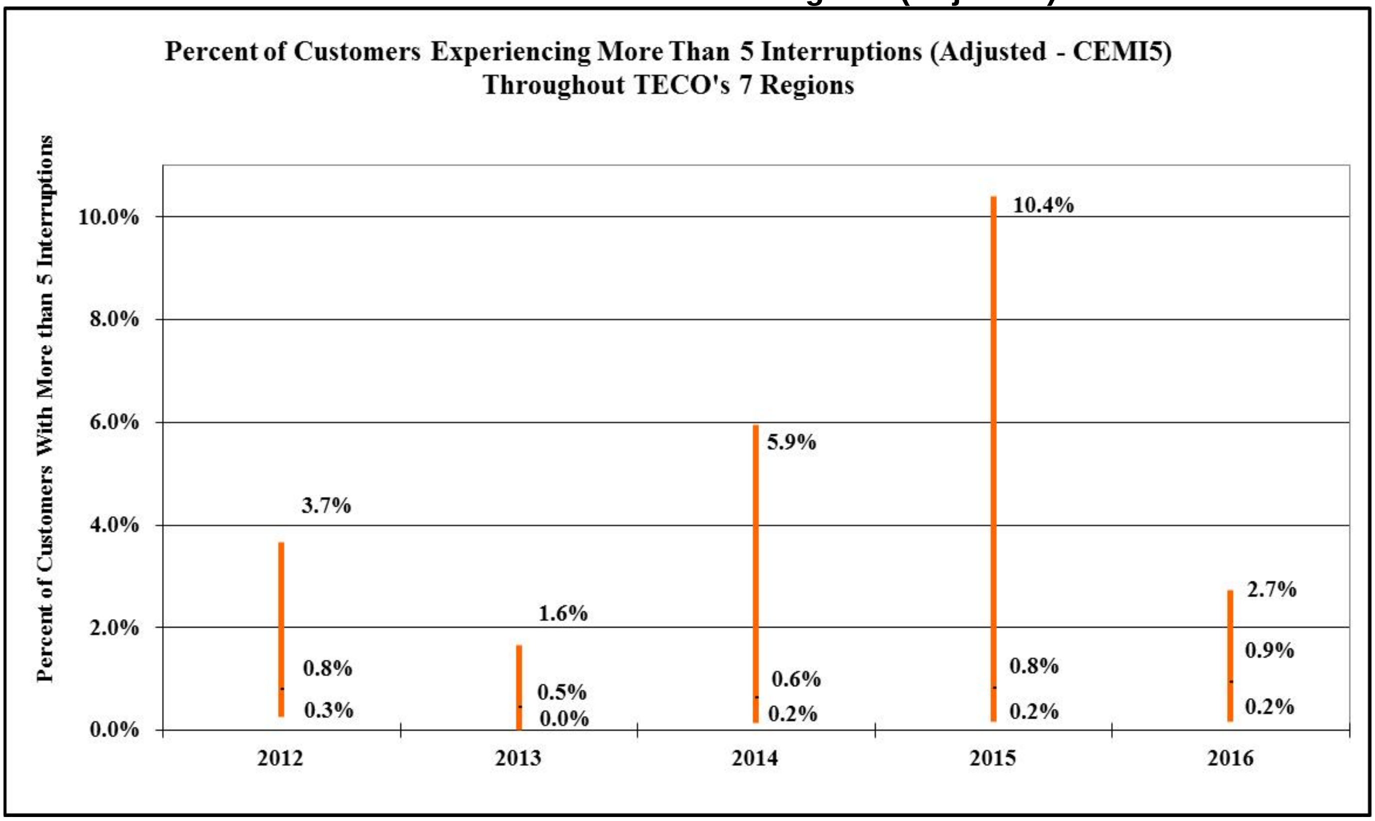
TECO's Regions with the Highest and Lowest Adjusted MAIFIe Distribution Reliability Performance by Year

	2012	2013	2014	2015	2016
Highest MAIFIe	Plant City	Plant City	Dade City	Dade City	Dade City
Lowest MAIFIe	Winter Haven	Central	Central	Central	Central

Source: TECO's 2012-2016 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 2016. The Central, Eastern, Western, and Winter Haven regions experienced an increase in the CEMI5 index. Dade City reported the highest CEMI5 percentage for 2016. With TECO's results for this index varying for the past five years, the average CEMI5 index appears to be trending upward indicating a decline in performance. There was a 13 percent increase in the average CEMI5 index from 2015 to 2016.

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

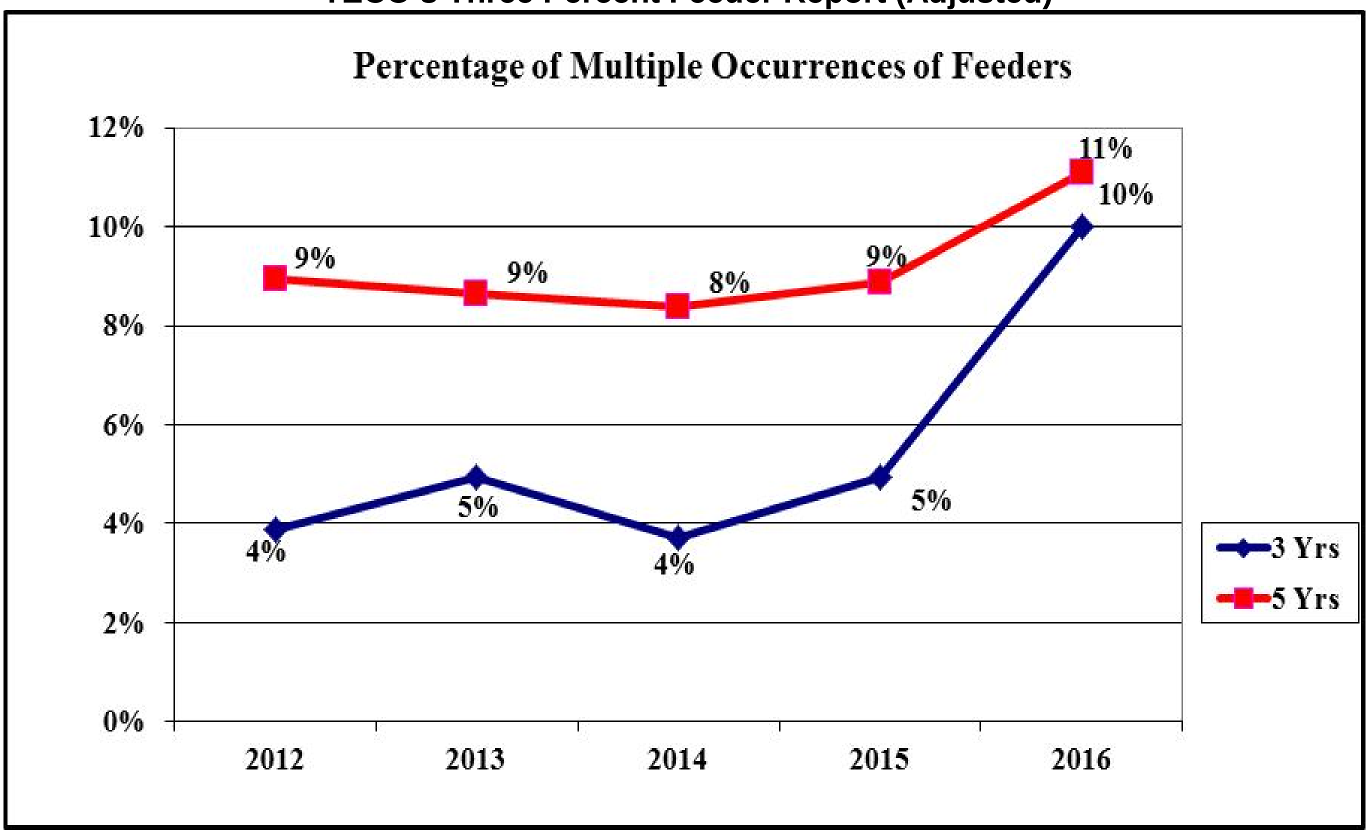
	2012	2013	2014	2015	2016
Highest CEMI5	Dade City	Plant City	Dade City	Dade City	Dade City
Lowest CEMI5	Western	Winter Haven	Western	Winter Haven	South Hillsborough

Source: TECO's 2012-2016 distribution service reliability reports.

Figure 3-36 represents an analysis of TECO's top 3 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 18 percent from 2015 to 2016 and the three-year average of outages also increased from 5 percent in 2015 to 10 percent in 2016. Both the five-year average of outages per feeder and the three-year average of outages appear to be trending upward for the five-year period of 2012 to 2016.

Staff notes that three feeders were on the Three Percent Feeder Report for the last two years consecutively. Seven circuit outages were reported for two of the feeders while the other feeder reported four circuit outages. The causes for the outages varied from Animals, Defective Equipment, Vegetation, to Lightning. In 2016, the corrective action undertaken by TECO included: hotspot tree trimming, and replacing several defective transformers, defective switches, sections of primary cable, and several poles. 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.

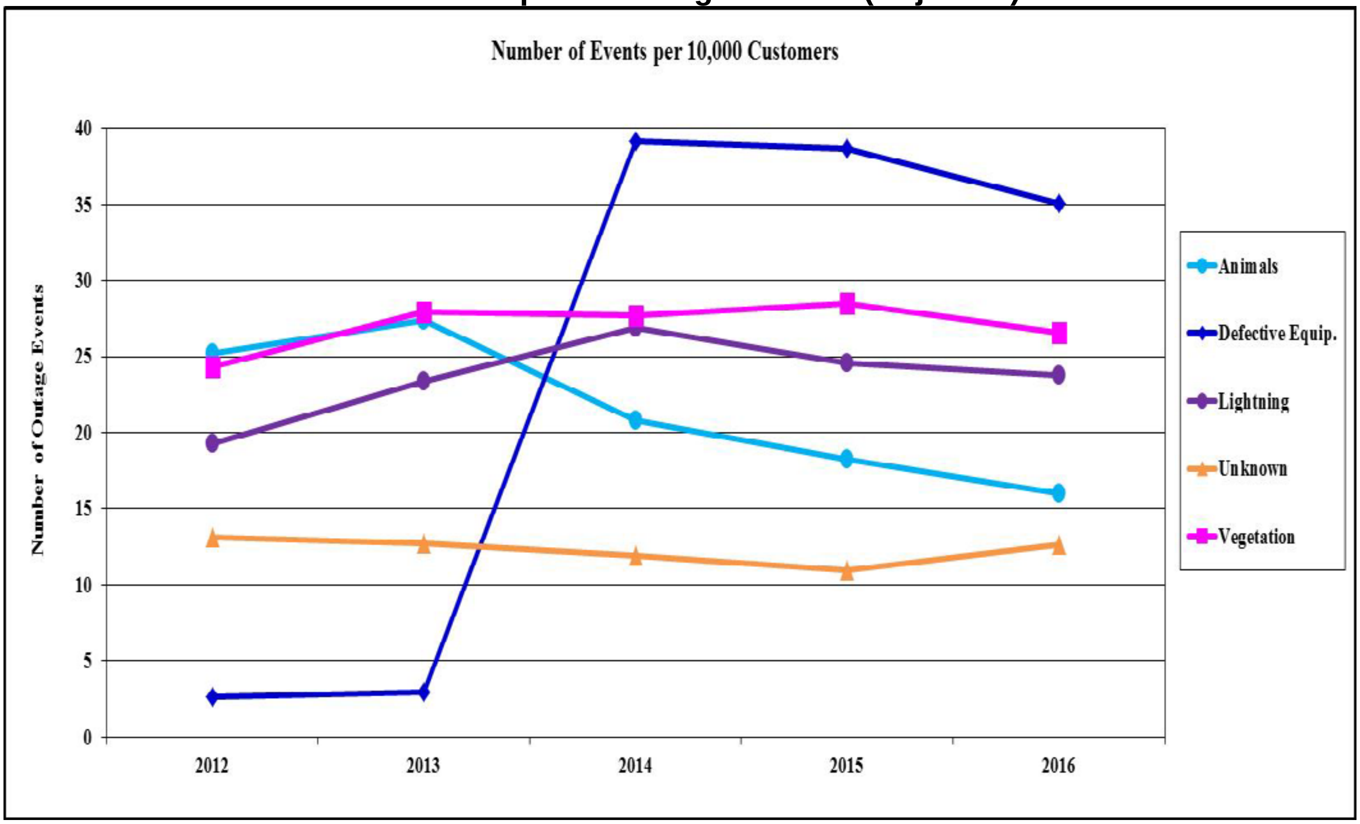
Figure 3-36.
TECO's Three Percent Feeder Report (Adjusted)



Source: TECO's 2012-2016 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 90 percent of the total outage events that occurred during 2016. For the five-year period, the five top causes of outage events included Defective Equipment (28 percent), Vegetation (21 percent), Lightning (19 percent), Animals (13 percent), and Unknown Causes (10 percent) on a cumulative basis. Defective Equipment is the highest cause of outages for 2016. 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 decreased 5.1 percent from 2015 to 2016. The outages from Lightning decreased 1.6 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.

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



Source: TECO's 2012-2016 distribution service reliability reports.

Observations: TECO's Adjusted Data

Only two of TECO's 2016 reliability indices, SAIFI and MAIFIe, showed an improvement in performance compared to 2015. For the five-year period of 2012 to 2016, the indices for SAIDI, SAIFI, CEMI5, L-Bar, the Three-Year Percent of Multiple Feeder outage events, and the Five-Year Percent of Multiple Feeder outage events are all trending upward. The indices for CAIDI and MAIFIe are trending downward. TECO reported the improvement in SAIFI and MAIFIe were attributed to customer's experiencing fewer momentary breaker operations. The increases in SAIDI, CAIDI, CEMI-5 and L-Bar were contributed to a series of severe summer thunderstorms in July 2016. In addition, TECO experienced application issues on the OMS and Computer Aided Dispatch (CAD) systems. The issues with the applications hindered dispatchers and field worker's responsiveness. This manual processing of outage tickets resulted in delayed restoration times. The issues with the OMS and CAD was identified and corrected shortly after discovered.

In 2016, the Dade City region had the highest reliability indices in four of the five indices although Dade City did improve in all five indices. TECO has implemented the following measures to improve reliability in this region: installed reclosers on two poor performing circuits and a tie point between two circuits. TECO also installed eight single-phase reclosers on lateral lines along a feeder to a substation. The reclosers offer protection to upstream customers by giving TECO the ability to isolate faults and shorten the outage time experienced by customers.

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.

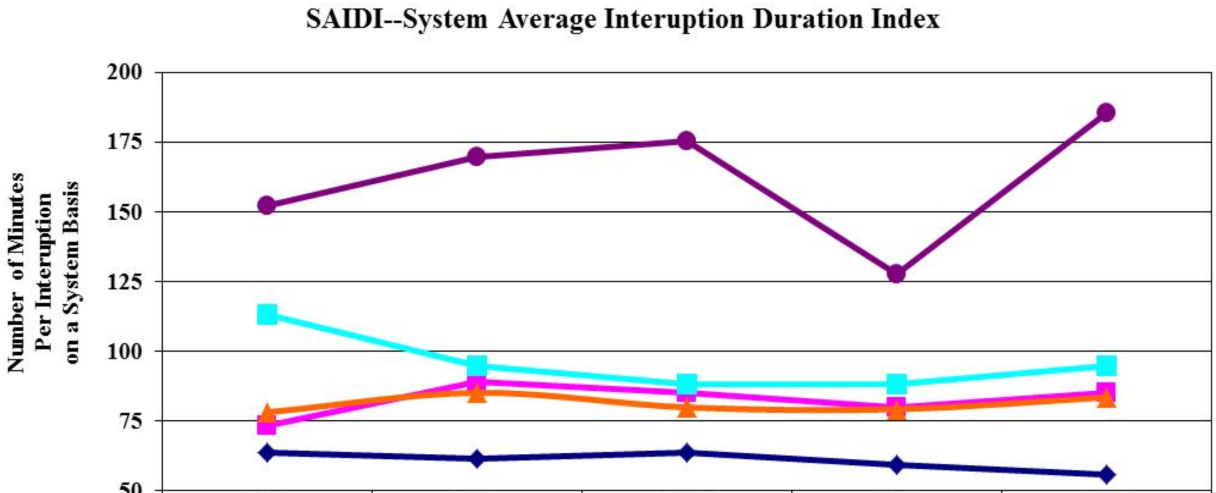
Inter-Utility Reliability Trend Comparisons: Adjusted Data

The inter-utility trend comparison focuses on a graphical presentation that combines all of the IOUs' distribution reliability indices for the years 2012 to 2016. **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 DEF, FPUC and TECO's SAIDI trend has gradually risen since 2012, while FPL and Gulf are trending downward. Comparing 2015 SAIDI values to 2016 SAIDI indices, all utilities, except FPL, have increased. FPL's SAIDI value fell 5 percent from 2015 to 2016. DEF's SAIDI value has increased 6 percent, FPUC increased 31 percent, Gulf increased 7 percent, and TECO increased 2 percent from 2015 to 2016.

SAIDI is the average amount of time a customer is out of service per retail customers 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)



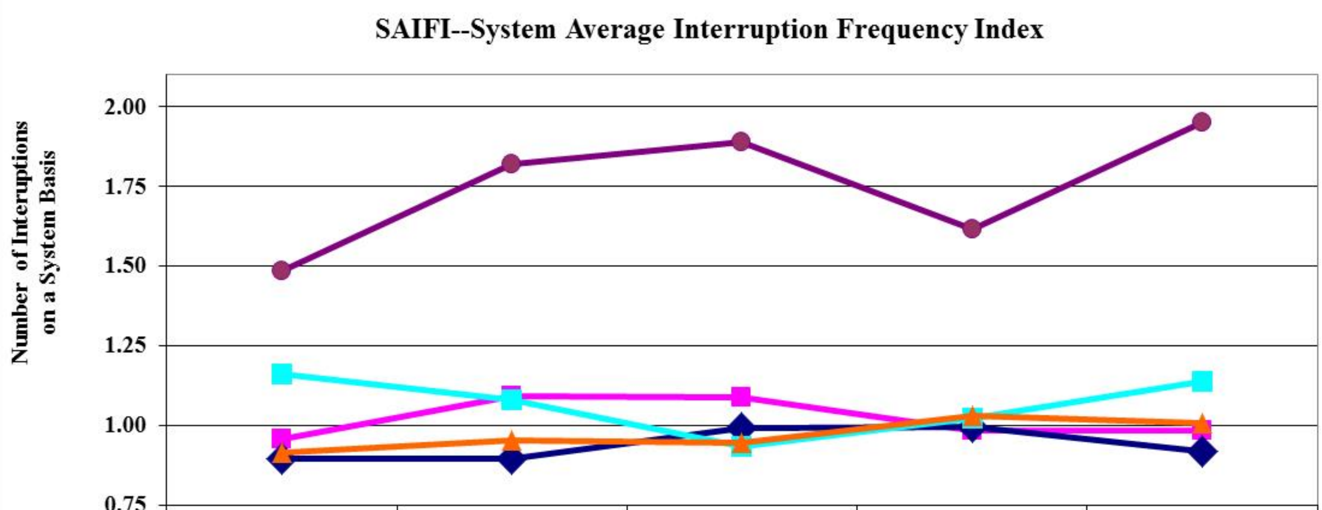
	2012	2013	2014	2015	2016
DEF	73	89	85	80	85
FPL	63	61	64	59	56
FPUC	152	170	175	127	185
Gulf	113	95	88	88	95
TECO	78	85	80	79	83

Source: The IOUs' 2012-2016 distribution service reliability reports.

Figure 4-2 is a five-year graph of the adjusted SAIFI for each IOU. The 2016 data shows FPL and TECO's SAIFI values decreased (improved) from the 2015 results as FPUC and Gulf's SAIFI values increased. DEF's SAIFI value was the same for 2016 as it was in 2015. Over the five-year period of 2012 to 2016, FPL, FPUC, and TECO's SAIFI values are all trending upward. DEF and Gulf's SAIFI value is trending downward for the period of 2012 to 2016.

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)



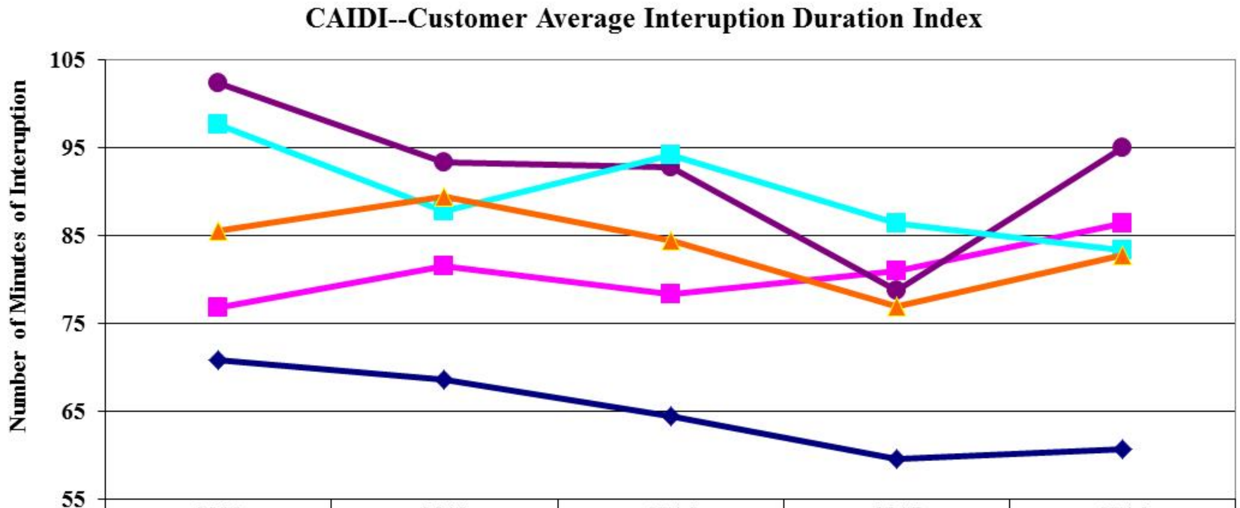
	2012	2013	2014	2015	2016
DEF	0.96	1.09	1.09	0.98	0.98
FPL	0.90	0.89	0.99	1.00	0.92
FPUC	1.48	1.82	1.89	1.62	1.95
Gulf	1.16	1.08	0.93	1.02	1.14
TECO	0.91	0.95	0.94	1.03	1.01

Source: The IOUs' 2012-2016 distribution service reliability reports.

Figure 4-3 is a five-year graph of the adjusted CAIDI for each IOU. Gulf had a decrease in the CAIDI from 2015 to 2016 while DEF, FPL, FPUC, and TECO had increases in the CAIDI. All utilities, except DEF, CAIDI values are trending downward for the five-year period of 2012 to 2016. DEF's CAIDI value is trending upward 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)



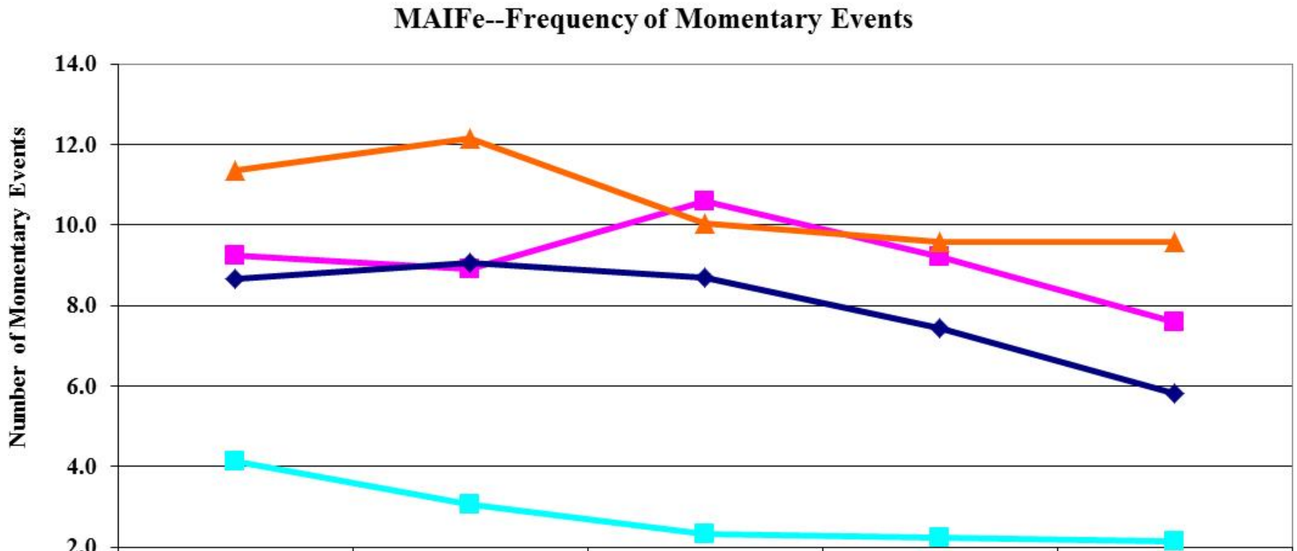
	2012	2013	2014	2015	2016
DEF	77	82	78	81	86
FPL	71	69	65	60	61
FPUC	102	93	93	79	95
Gulf	98	88	94	86	83
TECO	86	89	85	77	83

Source: The IOUs' 2012-2016 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 2012 to 2016. Comparing the MAIFIe for 2015 to 2016, DEF decreased by 17 percent, FPL decreased by 23 percent, Gulf decreased by 5 percent and TECO did not change. FPUC is exempt from reporting MAIFIe and CEMI5 because it has fewer than 50,000 customers.

MAIFIe is the average frequency of momentary interruptions events 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)

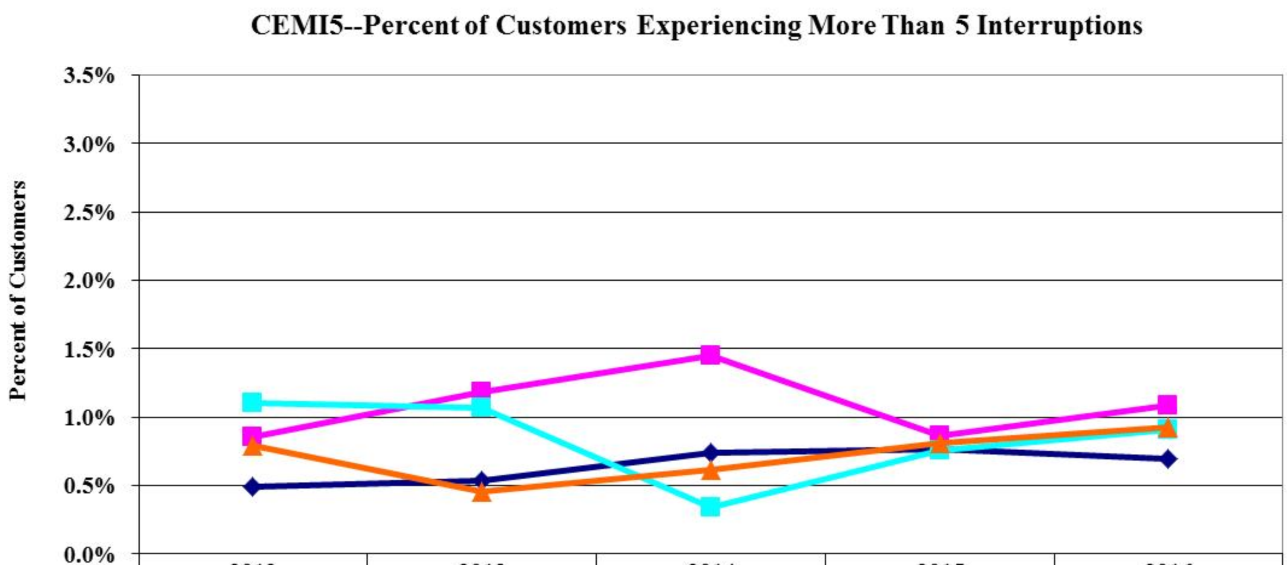


	2012	2013	2014	2015	2016
DEF	9.3	8.9	10.6	9.2	7.6
FPL	8.7	9.1	8.7	7.5	5.8
Gulf	4.1	3.1	2.3	2.2	2.1
TECO	11.4	12.2	10.0	9.6	9.6

Source: The IOUs' 2012-2016 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 2016, Gulf and TECO's CEMI5 percent increased to 0.9 percent from 0.8 percent in 2015. DEF increased from 0.9 percent in 2015 to 1.1 percent in 2016, while FPL decreased from 0.8 percent in 2015 to 0.7 percent in 2016. DEF, FPL and TECO are trending upward as Gulf is trending downward for the period of 2012 to 2016.

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

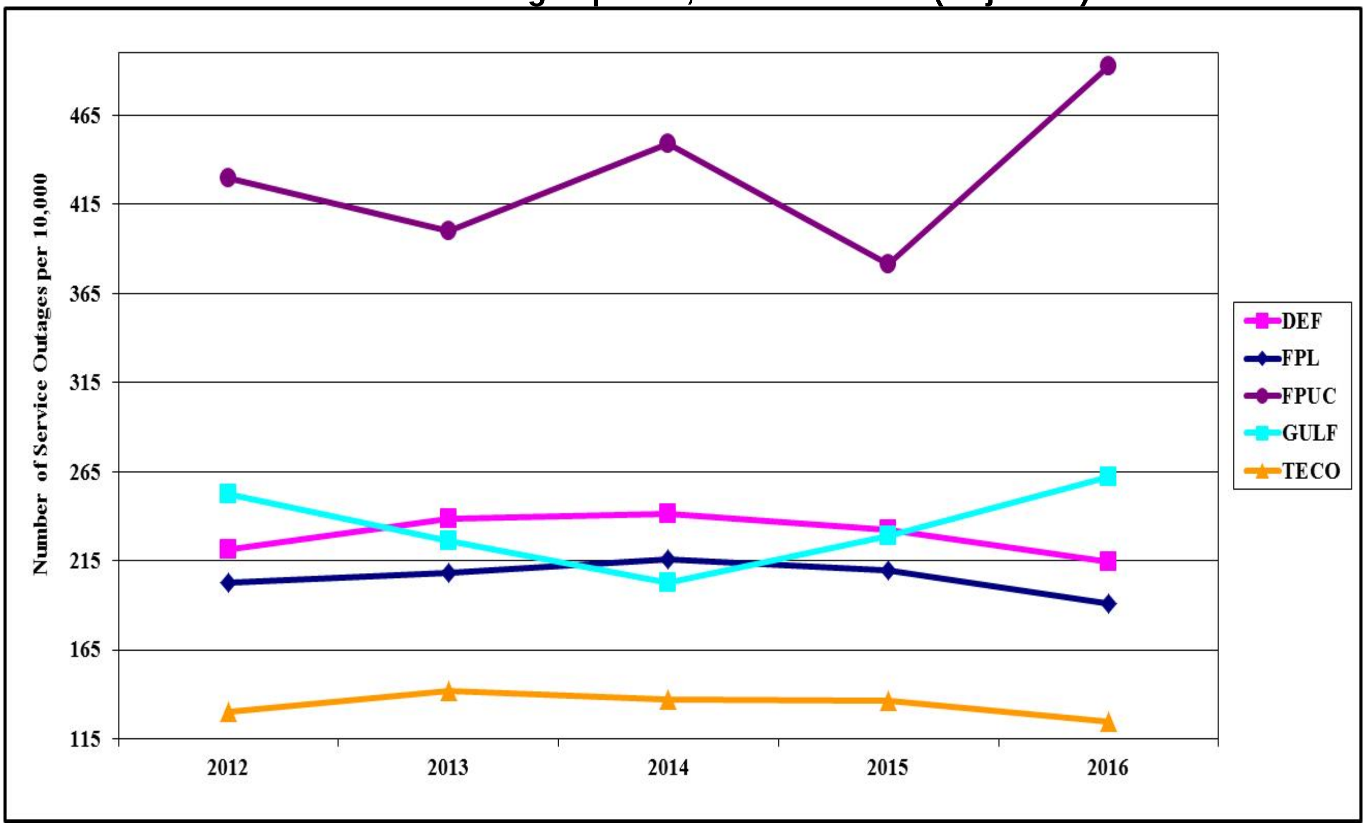


	2012	2013	2014	2015	2016
DEF	0.9%	1.2%	1.5%	0.9%	1.1%
FPL	0.5%	0.5%	0.7%	0.8%	0.7%
Gulf	1.1%	1.1%	0.3%	0.8%	0.9%
TECO	0.8%	0.5%	0.6%	0.8%	0.9%

Source: The IOUs' 2012-2016 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 100,563 in 2015 to 92,686 in 2016, and the number of outages per 10,000 customers is trending downward for the five-year period. TECO's results are trending downward for the five-year period. DEF's number of outages decreased for 2016 and the results are trending downward for the five-year period. Gulf's number of outages increased for 2016, and is trending upward for the five-year period. FPUC's results decreased for 2012 and 2013, increased for 2013 to 2014, decreased for 2014 to 2015 and increased for 2015 to 2016. Due to the small customer base, the line graph for FPUC could be subject to greater volatility.

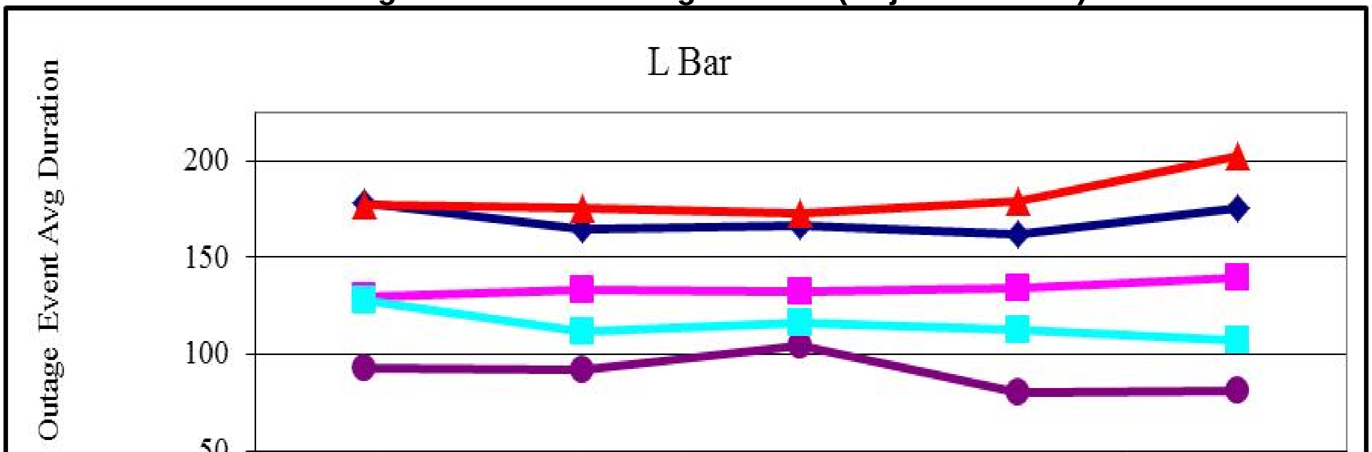
Figure 4-6.
Number of Outages per 10,000 Customers (Adjusted)



Source: The IOUs' 2012-2016 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 have been consistent with their restoral times for the five-year period of 2012 to 2016, even with increases from 2015 to 2016.

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



	2012	2013	2014	2015	2016
DEF	129	133	132	134	140
FPL	178	165	166	162	175
FPUC	93	92	105	80	81
Gulf	128	111	116	112	107
TECO	177	176	173	179	203

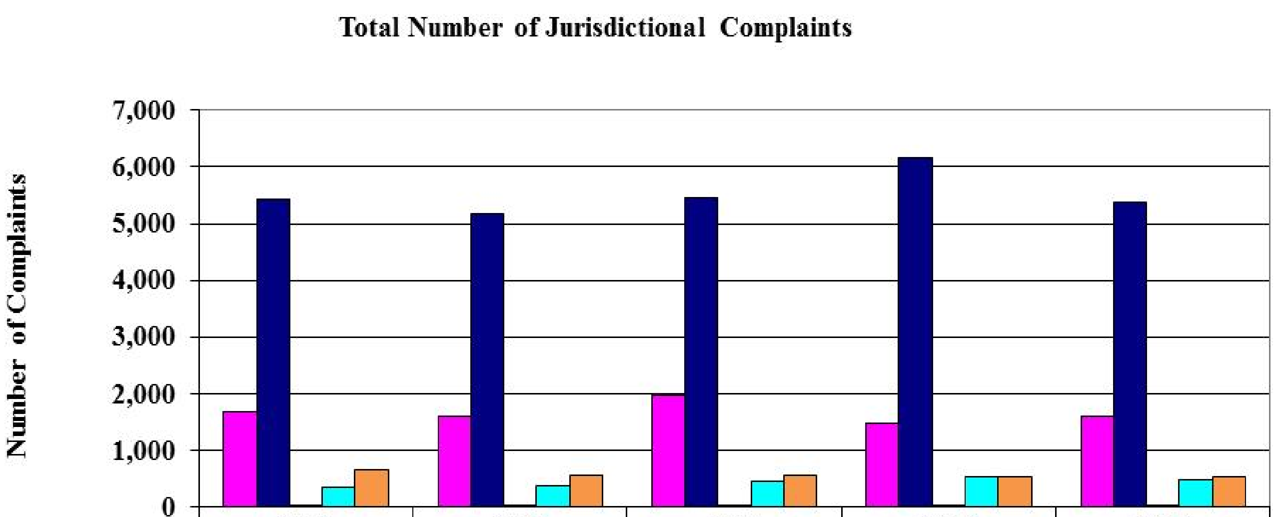
Source: The IOUs' 2012-2016 distribution service reliability reports.

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



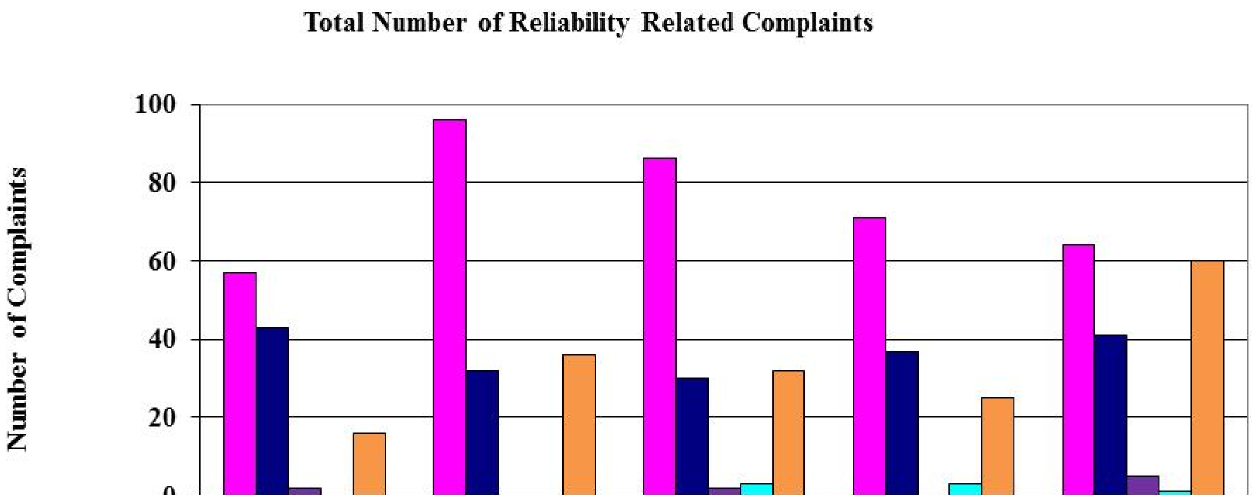
	2012	2013	2014	2015	2016
DEF	1,682	1,613	1,988	1,476	1,600
FPL	5,434	5,162	5,473	6,161	5,381
FPUC	11	8	15	12	18
Gulf	343	371	450	548	494
TECO	662	558	570	534	531

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 2012 to 2016 with FPUC and Gulf showing the least amount. DEF is trending downward in the number of reliability complaints, while FPUC, Gulf and TECO are trending upward. FPL appears to be relatively flat.

Figure 4-9.
Total Number of Reliability Related Complaints

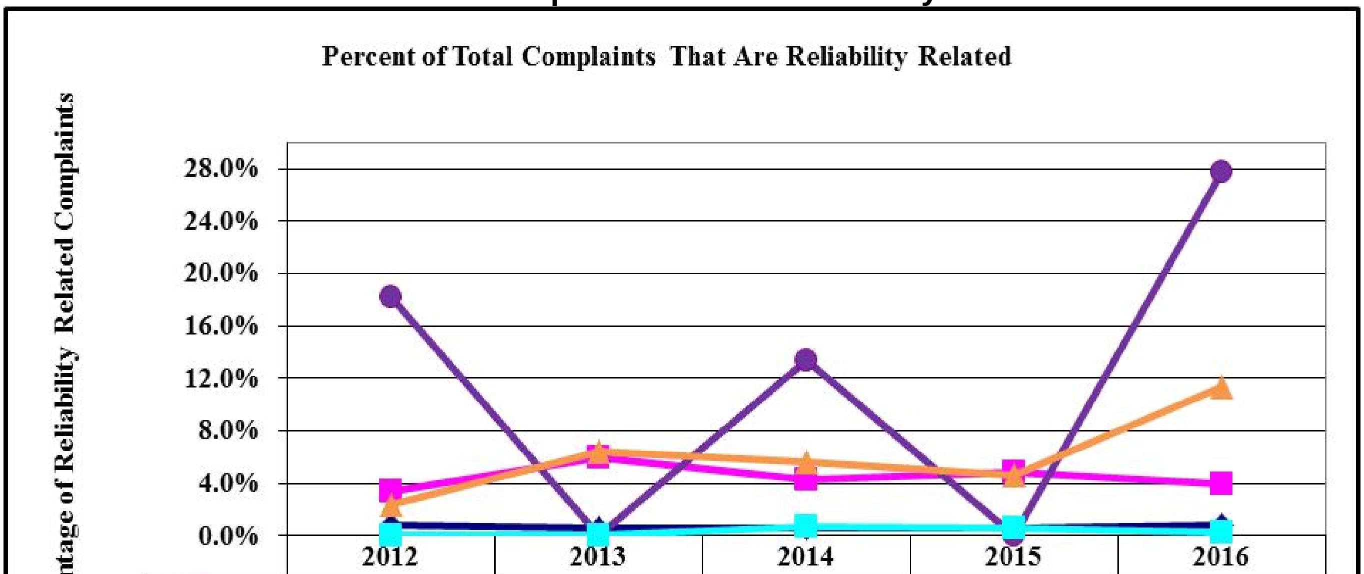


	2012	2013	2014	2015	2016
DEF	57	96	86	71	64
FPL	43	32	30	37	41
FPUC	2	0	2	0	5
Gulf	0	0	3	3	1
TECO	16	36	32	25	60

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. DEF and FPL's are relatively flat as FPUC, 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



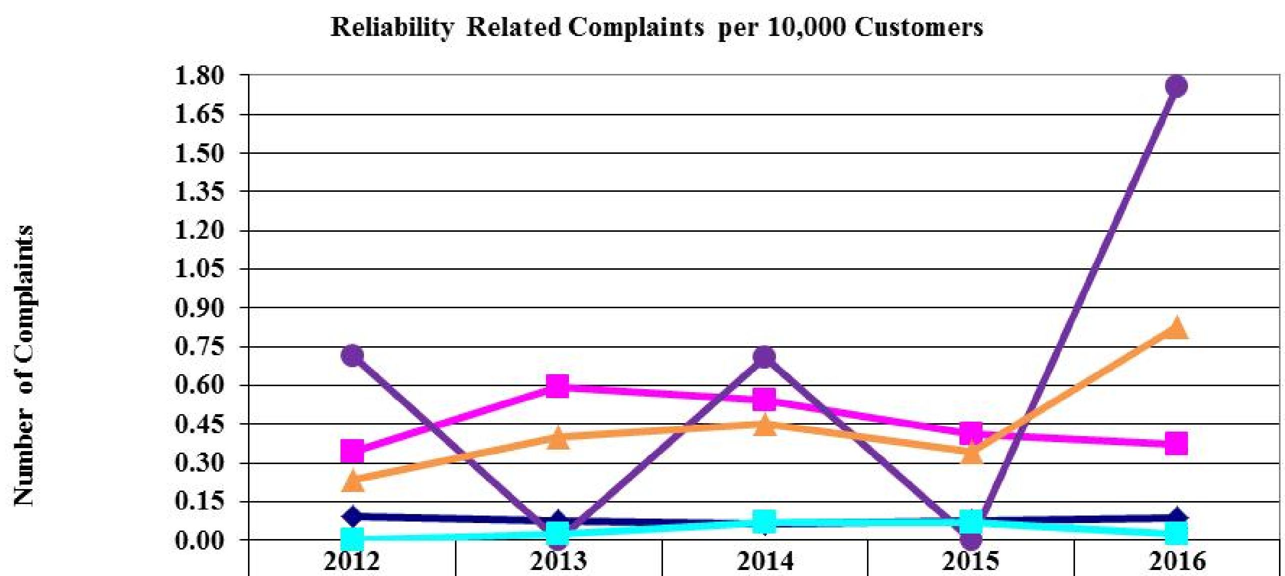
	2012	2013	2014	2015	2016
DEF	3.4%	6.0%	4.3%	4.8%	4.0%
FPL	0.8%	0.6%	0.5%	0.6%	0.8%
FPUC	18.2%	0.0%	13.3%	0.0%	27.8%
Gulf	0.0%	0.0%	0.7%	0.5%	0.2%
TECO	2.4%	6.5%	5.6%	4.7%	11.3%

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 2012 except FPUC. For the five-year period, DEF is trending downward as FPL is staying relatively flat. FPUC, 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



	2012	2013	2014	2015	2016
DEF	0.345	0.592	0.542	0.412	0.371
FPL	0.094	0.073	0.063	0.077	0.085
FPUC	0.714	0.000	0.708	0.000	1.758
Gulf	0.000	0.023	0.068	0.067	0.022
TECO	0.232	0.400	0.449	0.345	0.828

Source: The IOUs' 2012-2016 distribution service reliability reports and FPSC CATS.

Section V: Appendices

Appendix A – Adjusted Service Reliability Data

Duke Energy Florida, LLC

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

	2012	**2013**	**2014**	**2015**	**2016**
North Central	378,198	383,011	388,187	396,395	400,510
North Coastal	193,049	194,394	196,321	198,525	200,565
South Central	428,891	438,088	449,363	458,457	470,534
South Coastal	650,951	656,073	663,973	670,743	677,255
DEF System	**1,651,089**	**1,671,566**	**1,697,844**	**1,724,120**	**1,748,864**

Source: DEF's 2012-2016 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)**				
	2012	**2013**	**2014**	**2015**	**2016**	**2012**	**2013**	**2014**	**2015**	**2016**	**2012**	**2013**	**2014**	**2015**	**2016**
North Central	79	91	84	72	78	0.98	1.11	1.11	0.85	0.90	81	82	76	84	87
North Coastal	136	147	159	145	155	1.48	1.51	1.57	1.47	1.39	92	97	101	99	111
South Central	63	88	83	72	79	0.80	0.97	1.04	0.91	1.01	79	91	80	77	78
South Coastal	58	71	66	71	73	0.89	1.04	0.96	0.97	0.90	66	69	68	74	81
DEF System	**73**	**89**	**85**	**80**	**85**	**0.96**	**1.09**	**1.09**	**0.98**	**0.98**	**77**	**82**	**78**	**81**	**86**

Source: DEF's 2012-2016 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%)**				
	2012	**2013**	**2014**	**2015**	**2016**	**2012**	**2013**	**2014**	**2015**	**2016**
North Central	9.6	8.9	10.8	8.3	8.6	0.82%	1.53%	1.07%	0.32%	0.36%
North Coastal	8.8	8.1	10.0	7.1	7.8	3.46%	4.13%	3.47%	3.96%	4.00%
South Central	7.6	7.8	10.3	8.1	7.0	0.49%	0.80%	1.04%	0.64%	1.06%
South Coastal	10.3	9.9	10.8	11.2	7.3	0.34%	0.38%	1.36%	0.43%	0.68%
DEF System	**9.3**	**8.9**	**10.6**	**9.2**	**7.6**	**0.85%**	**1.19%**	**1.45%**	**0.87%**	**1.09%**

Source: DEF's 2012-2016 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				
	2012	**2013**	**2014**	**2015**	**2016**	**Percentages**	**2012**	**2013**	**2014**	**2015**	**2016**
Animals	6,168	5,488	5,020	5,321	5,369	14.3%	70	71	75	75	80
Storm	3,826	4,755	-	-	-	-	103	115	-	-	-
Tree-Preventable	3,229	3,938	-	-	-	-	120	123	-	-	-
Unknown	2,909	3,333	2,867	1,224	1,097	2.9%	80	84	82	77	90
All Other	6,577	7,015	8,073	7,900	7,390	19.7%	143	147	170	167	174
Defective Equipment	3,122	3,358	7,221	8,572	9,195	24.5%	177	171	150	142	147
Vehicle-Const. Equipment	303	392	-	-	-	-	239	222	-	-	-
Connector Failure	2,892	3,000	-	-	-	-	114	117	-	-	-
Tree Non-preventable	4,438	5,205	-	-	-	-	150	154	-	-	-
UG Primary	2,076	2,039	-	-	-	-	252	252	-	-	-
Lightning	980	1,344	1,647	1,201	1,216	3.2%	192	178	166	145	150
Vegetation	-	-	9,816	8,240	7,879	21.0%	-	-	137	136	145
Other Weather	-	-	5,875	7,141	4,965	13.2%	-	-	108	134	134
Vehicle	-	-	420	412	429	1.1%	-	-	241	227	235
DEF System	**36,520**	**39,867**	**34,644**	**40,011**	**37,540**	**100%**	**129**	**133**	**132**	**134**	**140**

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 2012-2016 distribution service reliability reports.

Florida Power & Light Company

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

	2012	2013	2014	2015	2016
Boca Raton	355,293	361,932	366,503	370,266	374,080
Brevard	287,898	293,491	297,877	301,843	305,151
Central Dade	270,676	277,807	282,155	287,147	292,421
Central Florida	269,890	275,033	279,726	283,868	286,492
Gulf Stream	322,805	327,898	331,643	335,006	337,828
Manasota	366,379	372,514	378,304	384,138	390,400
North Dade	226,633	232,018	235,112	237,328	240,194
North Florida	143,038	146,184	150,052	153,683	157,967
Naples	364,414	371,866	379,012	386,710	394,355
Pompano	301,639	306,692	310,483	314,209	317,731
South Dade	289,808	295,283	299,919	304,336	309,022
Toledo Blade	243,832	249,533	254,982	260,053	265,547
Treasure Coast	274,197	279,202	283,693	287,508	291,334
West Dade	244,838	249,935	254,130	257,539	261,484
West Palm	344,432	351,875	357,064	361,717	364,292
Wingate	258,480	265,120	268,737	271,478	273,692
FPL System	**4,564,252**	**4,656,383**	**4,729,392**	**4,796,829**	**4,861,990**

Source: FPL's 2012-2016 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)				
	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
Boca Raton	63	61	63	54	51	1.14	1.10	1.21	1.08	1.08	55	55	52	50	47
Brevard	61	56	69	53	53	0.87	0.89	1.14	0.96	0.87	70	63	61	55	60
Central Dade	62	51	54	47	41	0.72	0.67	0.80	0.78	0.66	86	75	68	60	63
Central Florida	61	67	61	50	49	0.82	0.93	0.95	0.90	0.80	75	71	64	55	61
Gulf Stream	60	59	58	52	43	0.86	0.93	0.96	0.88	0.83	70	63	60	59	51
Manasota	55	58	57	55	52	0.77	0.83	0.83	1.00	0.91	72	70	68	55	57
North Dade	64	60	77	71	59	0.70	0.68	0.83	0.87	0.72	91	88	92	82	82
North Florida	81	84	77	68	64	1.03	1.10	1.06	1.08	1.00	79	76	73	63	64
Naples	57	55	58	57	56	0.86	0.68	0.88	0.91	0.97	66	79	66	62	57
Pompano	62	49	52	57	48	0.84	0.69	0.86	1.03	0.80	73	71	61	55	60
South Dade	81	77	73	76	68	0.96	0.99	0.90	1.08	0.99	85	77	81	71	69
Toledo Blade	62	72	73	65	75	0.91	1.04	1.16	0.98	1.14	68	70	63	66	66
Treasure Coast	61	72	74	72	81	0.95	1.08	1.07	1.05	1.19	64	67	69	69	68
West Dade	79	59	72	68	56	1.20	0.85	1.20	1.24	0.99	66	69	60	55	57
West Palm	55	54	49	55	51	0.82	0.95	0.85	1.01	0.88	66	57	58	55	58
Wingate	70	70	74	64	58	0.99	0.99	1.25	1.14	0.86	71	71	59	57	67
FPL System	**63**	**61**	**64**	**59**	**56**	**0.90**	**0.89**	**0.99**	**1.00**	**0.92**	**71**	**69**	**65**	**60**	**61**

Source: FPL's 2012-2016 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%)				
	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
Boca Raton	8.4	8.4	8.6	7.4	5.6	0.99%	1.31%	0.89%	0.76%	1.36%
Brevard	10.6	10.1	9.6	7.8	5.2	0.23%	0.58%	0.33%	0.27%	0.17%
Central Dade	6.4	6.7	7.8	7.5	5.0	0.28%	0.08%	0.66%	0.29%	0.55%
Central Florida	9.8	10.0	8.9	6.5	5.2	0.99%	0.52%	0.51%	0.30%	0.15%
Gulf Stream	7.8	8.7	8.8	6.6	5.1	0.40%	0.45%	0.68%	0.79%	0.13%
Manasota	7.7	7.7	7.0	6.1	5.3	0.22%	0.23%	0.33%	0.91%	0.21%
North Dade	6.8	6.8	8.4	7.7	5.3	0.35%	0.45%	0.89%	1.01%	0.28%
North Florida	11.6	10.8	10.3	8.7	5.8	0.49%	0.47%	0.60%	0.71%	0.44%
Naples	6.3	7.0	7.0	7.1	6.8	0.22%	0.36%	0.74%	0.56%	0.44%
Pompano	6.9	7.5	6.9	6.1	4.5	0.17%	0.07%	0.46%	1.01%	1.23%
South Dade	7.8	8.0	7.9	7.1	5.8	0.27%	0.70%	0.61%	0.89%	0.24%
Toledo Blade	10.9	12.9	9.7	8.2	7.8	0.52%	1.21%	1.33%	0.65%	1.57%
Treasure Coast	12.2	14.3	11.0	8.1	6.4	0.64%	0.87%	0.96%	1.03%	2.87%
West Dade	7.8	7.3	8.2	7.8	6.4	1.97%	0.29%	0.60%	1.46%	0.57%
West Palm	9.0	9.8	8.5	7.5	5.5	0.19%	0.73%	1.39%	1.01%	0.50%
Wingate	11.4	11.6	12.9	10.4	7.9	0.23%	0.22%	0.81%	0.59%	0.53%
FPL System	**8.7**	**9.1**	**8.7**	**7.5**	**5.8**	**0.49%**	**0.54%**	**0.74%**	**0.76%**	**0.70%**

Source: FPL's 2012-2016 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				
	2012	2013	2014	2015	2016	Percentages	2012	2013	2014	2015	2016
Equipment Failure	30,801	31,110	-	-	-	-	218	199	-	-	-
Unknown	11,883	12,000	11,703	11,022	10,139	10.9%	130	122	124	124	133
Vegetation	16,636	18,774	21,633	23,155	20,331	21.9%	196	183	187	182	197
Animals	9,870	10,320	9,359	9,878	9,506	10.3%	98	94	94	93	100
Remaining Causes	5,011	5,075	3,410	3,147	2,821	3.0%	211	201	142	140	158
Other Weather	5,708	5,795	10,141	9,426	7,978	8.6%	137	125	160	167	173
Other	6,598	7,826	9,187	8,358	7,340	7.9%	140	143	148	149	161
Lightning	1,528	1,567	1,938	1,770	1,647	1.8%	265	246	245	241	255
Equipment Connect	3,511	3,306	-	-	-	-	157	148	-	-	-
Vehicle	1,008	1,042	877	969	911	1.0%	249	230	251	230	248
Request	-	27	-	-	-	-	-	80	-	-	-
Defective Equipment	-	-	33,733	32,838	32,013	34.5%	-	-	190	179	195
FPL System	**92,554**	**96,842**	**101,981**	**100,563**	**92,686**	**100%**	**178**	**165**	**166**	**162**	**175**

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 2012-2016 distribution service reliability reports.

Florida Public Utilities Company

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

	2012	2013	2014	2015	2016
Fernandina(NE)	15,461	15,509	15,628	15,787	16,037
Marianna (NW)	12,560	12,602	12,621	12,649	12,663
FPUC System	**28,021**	**28,111**	**28,249**	**28,436**	**28,700**

Source: FPUC's 2012-2016 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)				
	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
NE	141	76	88	105	128	1.32	0.95	1.14	1.19	1.41	107	81	77	88	90
NW	165	284	284	155	258	1.69	2.89	2.81	2.15	2.63	98	98	101	72	98
FPUC System	**152**	**170**	**175**	**127**	**185**	**1.48**	**1.82**	**1.89**	**1.62**	**1.95**	**102**	**93**	**93**	**79**	**95**

Source: FPUC's 2012-2016 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				
	2012	**2013**	**2014**	**2015**	**2016**	**Percentages**	**2012**	**2013**	**2014**	**2015**	**2016**
Vegetation	350	265	262	295	436	30.8%	83	83	87	76	78
Animals	294	275	245	201	354	25.0%	67	56	60	53	51
Lightning	44	48	96	148	128	9.1%	82	85	110	90	82
Unknown	83	95	66	75	89	6.3%	67	64	67	64	75
Corrosion	79	65	-	-	12	0.8%	96	92	-	-	102
All Other	63	32	45	27	58	4.1%	107	96	62	94	65
Other Weather	246	299	381	178	148	10.5%	134	136	155	94	147
Trans. Failure	25	29	-	-	-	-	139	148	-	-	-
Vehicle	19	16	25	25	26	1.8%	150	117	108	130	121
Defective Equipment	-	-	138	136	163	11.5%	-	-	232	97	94
FPUC System	**1,203**	**1,124**	**1,258**	**1,085**	**1,414**	**100%**	**93**	**92**	**105**	**80**	**81**

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 2012-2016 distribution service reliability reports.

Gulf Power Company

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

	2012	2013	2014	2015	2016
Central	111,854	113,179	114,363	115,524	116,745
Eastern	111,481	112,462	113,897	115,099	116,702
Western	211,236	213,748	215,787	218,848	221,968
Gulf System	**434,571**	**439,389**	**444,047**	**449,471**	**455,415**

Source: Gulf's 2012-2016 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)				
	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
Central	110	62	115	75	91	1.16	0.79	1.07	0.82	1.04	95	79	107	92	88
Eastern	88	118	73	59	93	0.93	1.25	0.78	0.86	1.21	95	95	93	69	77
Western	128	100	81	110	97	1.28	1.14	0.94	1.21	1.15	100	87	87	91	85
Gulf System	**113**	**95**	**88**	**88**	**95**	**1.16**	**1.08**	**0.93**	**1.02**	**1.14**	**98**	**88**	**94**	**86**	**83**

Source: Gulf's 2012-2016 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%)				
	2012	**2013**	**2014**	**2015**	**2016**	**2012**	**2013**	**2014**	**2015**	**2016**
Central	4.5	3.0	2.8	1.8	1.5	1.11%	0.17%	0.36%	0.17%	0.22%
Eastern	2.7	2.3	1.9	1.7	1.6	0.74%	2.78%	0.43%	1.66%	1.84%
Western	4.7	3.5	2.3	2.7	2.7	1.30%	0.64%	0.28%	0.59%	0.77%
Gulf System	**4.1**	**3.1**	**2.3**	**2.2**	**2.1**	**1.11%**	**1.07%**	**0.34%**	**0.76%**	**0.91%**

Source: Gulf's 2012-2016 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**				
	2012	**2013**	**2014**	**2015**	**2016**	**Percentages**	**2012**	**2013**	**2014**	**2015**	**2016**
Animals	3,585	2,857	2,132	2,743	3,557	29.8%	72	64	64	60	65
Lightning	1,875	1,452	1,827	1,788	1,913	16.0%	187	139	136	134	138
Deterioration	2,219	2,067	-	-	-	-	162	146	-	-	-
Unknown	676	715	557	598	748	6.3%	94	85	86	79	82
Trees	1,195	1,354	-	-	-	-	149	129	-	-	-
Vehicle	275	272	289	293	381	3.2%	187	178	185	170	164
All Other	290	314	445	379	457	3.8%	115	112	113	101	100
Wind/Rain	182	203	-	-	-	-	212	151	-	-	-
Vines	159	237	-	-	-	-	95	91	-	-	-
Other	254	249	-	-	-	-	113	102	-	-	-
Contamination Corrosion	240	211	-	-	-	-	110	118	-	-	-
Vegetation	-	-	1,294	1,888	1,954	16.4%	-	-	123	138	116
Other Weather	-	-	196	251	220	1.8%	-	-	181	137	126
Defective Equipment	-	-	2,257	2,340	2,714	22.7%	-	-	138	137	132
Gulf System	**10,950**	**9,931**	**8,997**	**10,280**	**11,944**	**100%**	**128**	**111**	**116**	**112**	**107**

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 2012-2016 distribution service reliability reports.

Tampa Electric Company

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

	2012	2013	2014	2015	2016
Central	185,005	188,161	190,459	193,436	196,431
Dade City	13,822	13,965	14,165	14,372	14,492
Eastern	111,069	113,053	115,122	117,268	119,286
Plant City	55,472	56,438	57,220	58,472	59,381
South Hillsborough	64,530	67,071	69,431	72,340	75,450
Western	191,083	193,320	196,085	198,224	199,891
Winter Haven	67,735	68,529	69,687	70,799	71,888
TECO System	**688,716**	**700,537**	**712,169**	**724,911**	**736,819**

Source: TECO's 2012-2016 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)**				
	2012	**2013**	**2014**	**2015**	**2016**	**2012**	**2013**	**2014**	**2015**	**2016**	**2012**	**2013**	**2014**	**2015**	**2016**
Central	76	70	63	70	63	0.86	0.79	0.80	1.06	0.85	88	88	79	66	74
Dade City	161	261	206	199	153	1.67	2.75	2.36	1.92	1.79	97	95	87	104	86
Eastern	57	93	76	67	85	0.73	0.87	0.96	0.90	0.99	78	106	80	75	86
Plant City	110	131	117	117	113	1.34	1.49	1.47	1.46	1.20	82	87	79	80	94
South Hillsborough	90	94	74	86	104	1.06	1.11	0.85	1.10	1.35	85	84	88	78	77
Western	77	75	81	78	81	0.81	0.86	0.86	0.89	0.94	96	88	94	87	86
Winter Haven	67	61	77	66	82	1.01	0.81	0.93	0.93	0.94	66	76	83	71	87
TECO System	**78**	**85**	**80**	**79**	**83**	**0.91**	**0.95**	**0.94**	**1.03**	**1.00**	**86**	**89**	**85**	**77**	**83**

Source: TECO's 2012-2016 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%)				
	2012	**2013**	**2014**	**2015**	**2016**	**2012**	**2013**	**2014**	**2015**	**2016**
Central	10.2	10.0	8.3	8.5	7.8	0.44%	0.20%	0.83%	0.51%	0.96%
Dade City	15.8	17.4	19.8	18.0	14.7	3.66%	1.48%	5.94%	10.41%	2.72%
Eastern	10.8	13.8	9.9	9.1	9.2	0.37%	0.41%	0.33%	0.27%	0.47%
Plant City	19.8	17.8	15.1	11.8	13.4	0.90%	1.65%	1.37%	2.61%	2.15%
South Hillsborough	11.2	12.9	8.7	11.0	12.8	3.49%	0.84%	0.23%	0.82%	0.17%
Western	10.6	10.9	9.6	8.7	8.8	0.26%	0.33%	0.15%	0.42%	0.63%
Winter Haven	10.0	12.6	11.4	11.1	9.7	0.71%	0.01%	0.54%	0.15%	1.81%
TECO System	**11.4**	**12.2**	**10.0**	**9.6**	**9.6**	**0.79%**	**0.45%**	**0.62%**	**0.81%**	**0.92%**

Source: TECO's 2012-2016 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				
	2012	2013	2014	2015	2016	Percentages	2012	2013	2014	2015	2016
Lightning	1,327	1,639	1,917	1,779	1,751	19.1%	225	214	199	218	255
Animals	1,736	1,918	1,483	1,321	1,178	12.8%	87	95	98	100	97
Vegetation	1,677	1,959	1,974	2,064	1,959	21.3%	218	202	192	190	214
Unknown	905	892	850	792	931	10.1%	225	143	134	125	144
Other Weather	260	261	209	166	-	-	191	190	82	192	-
Electrical	1,068	1,154	-	-	-	-	184	186	-	-	-
Bad Connection	779	837	-	-	-	-	135	229	-	-	-
Vehicle	315	306	343	397	363	3.9%	221	215	76	199	211
Defective Equipment	181	206	2,788	2,803	2,581	28.1%	182	164	419	198	243
All Other	215	187	182	559	428	4.7%	155	141	165	166	173
Down Wire	525	599	-	-	-	-	165	187	-	-	-
TECO System	**8,988**	**9,958**	**9,746**	**9,881**	**9,191**	**100%**	**177**	**176**	**173**	**179**	**203**

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 2012-2016 distribution service reliability reports.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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.	No poles were inspected in 2016. The City will increase the number of poles inspected by 5 percent over the next 3 years.	From the 2015 inspection report: 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.	From the 2015 inspection report: 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. GIS mapping system is used to track trimming annually and to budget annual trimming projects.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
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 1,346 pole inspections in 2016. This began the City's second round of its eight-year inspection cycle.	260 (19%) distribution poles failed inspection due to pole top rot or rotten ground decay.	73 poles were replaced ranging in size from 30 to 50 feet Classes 3 to 5.	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 2016

	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, 626 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 2016, 300 (5.6%) distribution poles were inspected.	No transmission structures failed the inspection. In 2016, no distribution structures failed inspection.	No transmission structures failed the inspection. In 2016, no 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 2016 have been fully completed and the vegetation management activities for 2017 are on schedule.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
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 1,947 utility poles and does visual inspections of all poles once a year.	100% of all poles are visually inspected annually.	32 (1.6%) poles required replacement because of ground rot, extreme cracking and warping and upgrading the lines. The City also reconductored about 1,500 linear feet of distribution line.	32 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 2017.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

	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 2016, the City postponed inspections while it updated its GIS pole databases and maps for the new vendor that will be conducting the pole inspections.	The City did not conduct any pole inspections in 2016.	No poles were inspected in 2016.	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 2016

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)										
	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
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. The next inspection will be performed in January 2018.	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 City replaced 4 poles in 2016 ranging from 30 to 35 feet, Class 6. The remaining 15 poles will be replaced in 2017.	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 2016

	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**
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.	No poles were inspected in 2016. The City plans to inspect 40% in 2017.	No poles were inspected in 2016.	The City has replaced 7 - 40 foot wooden poles in 2016 that were previously identified.	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 2016 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 2016

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									
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 25 poles in 2016.	The City has approximately 2,730 dist. poles. Of those poles 25 (0.04%) poles failed inspection. The poles failed inspection due to age deterioration & animal infestation.	The City replaced 25 (1.0%) poles with poles ranging from 55 feet to 30 feet, Class 5 to Class 1.	The facilities are on a three-year inspection cycle, and have a low outage rate due to problem vegetation.	The City has completed approximately 52% of trimming. The city reported 96 outages in 2016, with 19% (18) due to vegetation.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
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 2016. 3,361 distribution and 42 transmission poles were inspected in 2016 indicating 19.7% were inspected.	2 transmission pole failed inspection in 2016. 508 (14.92%) distribution pole failed inspection in 2016. 327 failures are non-priority because the calculated strength fell below 67% due to decay at ground line but had sufficient integrity for reinforcement.	FPUA replaced 109 wood distribution poles in 2016. The two transmission poles that failed inspection will be replaced during the third quarter of 2017.	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 2016, 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 2016

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									
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 2016. GRU planned 5,026 distribution pole inspections and completed 5,026 (100%) inspections.	No transmission poles were planned or identified for replacement. 95 (1.9%) distribution poles failed due to shell rot, exposed pockets, and carpenter ants.	There were no transmission poles inspected. 88 (1.7%) distribution poles were replaced in 2016, ranging in size from 25 feet to 60 feet Class 2 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 in 2016, with 29 trees identified for trimming and /or removal. 200 distribution circuit miles were trimmed in 2016.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
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 2016.	The City visually inspects any distribution pole it interfaces with under normal maintenance workflow patterns. In 2016, the City inspected 213 (7.1%) poles. The City has inspected 1,999 (67%) of its 2,996 poles since 2012.	In 2016, 42 (10%) wood distribution poles were replaced. The poles failed inspection due to top rot, splintering, vehicle impacts, and storm damage.	The poles that were replaced ranged from 30 feet to 60 feet, Class 2 to 3.	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 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 2016

	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**
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 2016.	8 (0.68%) poles failed inspection.	Three - 35 foot Class 4 pole and Five - 30 foot Class 4 poles for a total of 8 were replaced. 500 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 2016.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
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 July 2016.	Since 2008, all poles have been inspected. Therefore, during 2015/2016 no poles were inspected. The pole inspection will continue during the 2016-2017 cycle. The entire transmission system was inspected in 2005. The transmission system was not inspected in 2016, but is scheduled to be inspected by helicopter in 2017.	No inspections were completed during this cycle.	During the past year, HES removed 10 defective poles, reworked 2 poles, transferred facilities to 2 storm hardened poles owned by others, installed 6 new poles ranging from 45 to 55 feet, and replaced 25 poles ranging from 35 to 45 feet Class 3 with Class 2 poles.	Trimming services are contracted out and entire system is trimmed on a two-year cycle. HES added an additional tree trimming crew at the end of 2016. 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.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
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.	28 transmission circuits and 24 distribution circuits were inspected in 2016.	Based on 2016 inspection: 4 (14%) transmission wooden poles failed inspection. Based on 2016 inspection: 5.3% distribution poles failed inspection due to ground decay, pole top decay, and middle decay.	29 transmission wood poles were replaced in 2016. In 2016, 179 distribution poles were replaced. The poles listed as emergency poles (under 1%) are replaced immediately. Two poles failing the 2016 inspections were listed as emergency poles.	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 2016 VM activities and is fully compliant with NERC standard for vegetation management. VMP activities are on schedule for 2017.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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)										
	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
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. The KEYS approved a multi-year contract to manufacture 485 new ductile iron poles.	The Keys' 240 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 2016, the Keys had 3 recloser outages, 4 feeder outages, & 9 lateral outages due to trees. Keys will strive to continue to improve its VMP to further reduce outages.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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)										
	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 2016 replaced 4 wooden distribution poles and 13 wood transmission poles with spun concrete and/or steel poles 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 three-year cycle and distribution poles are inspected on an eight-year cycle.	There were no targeted inspections of wooden transmission poles in 2016. 1,169 distribution poles were inspected in 2016, which is 8.19% of the system.	2 (0.17%) distribution poles failed inspection due to split top and decayed top.	8 transmission poles were replaced and 2 distribution poles were replaced in 2016. The transmission poles range from 80 feet to 70 feet and Classes H1 and H2. The distribution poles were 35 feet and Classes 4 and 5.	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 2016. Approximately 94.5 miles (30.3%) of distribution facilities were inspected and remediated in 2016.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
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 2016, CLW inspected 637 poles.	68 poles were deemed unsatisfactory in 2016. Poles are replaced when pole prod penetration exceeds two inches or there is evidence of pole top shell rot.	CLW replaced 52 poles in 2016, with 16 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 2016

	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 81 (12.5%) transmission poles planned for inspection and 101 (15.6%) were completed. There were 7,080 (12.5%) distribution poles planned for inspection and 7,174 (12.7%) completed.	3 (3.0%) transmission poles failed inspection due to decay. 853 (11.9%) distribution poles failed inspection due to decay.	All poles recommended in 2016 were assessed for appropriate action. 465 distribution poles were replaced, repaired, or removed in 2016. 1,562 distribution poles were deferred to 2017. Zero transmission poles were replaced in 2016 and 10 replacements were deferred to 2017.	The facilities are on a three-year inspection cycle for transmission and distribution circuits. VMP also provides in between cycle trim to enhance reliability.	15 miles of 230kV transmission lines were inspected in 2016. 25.25 miles of 69 kV transmission lines were planned and completed in 2016. LE completed 394 of the planned 400 miles of distribution lines for 2016.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
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.	2,827 poles were inspected in 2016. The current inspection cycle was started in 2016 and will be completed in 2021.	182 (6.4%) poles failed inspection due to ground line rot, internal deterioration and animal infestation (squirrels, owls, etc.).	During 2016, 143 poles were replaced, 1,067 poles were treated externally, 1,678 poles were treated internally, 206 guy wires were installed, and 22 ground wires were repaired. Approximately 150 poles are scheduled to be replaced in 2017. The poles treated and replaced in 2016 include pole failures from the previous inspections.	Four-year trim cycle for feeder and lateral circuits. Problem trees are trimmed or removed as identified.	VMP activities were completed as scheduled during 2016. The City reports 77 vegetation outages in 2016, causing 211,353 CMI with an average of 2,745 CMI per vegetation outage. The City reports these outages include outages experienced during Hurricane Matthew and other storm events.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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)										
	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 2016. 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 four 30-foot poles, eighteen 35-foot poles, two 40-foot poles, and one 45-foot pole.	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 2016

	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 2016.	The City had 55 distribution poles in 2016 that failed inspection. The reasons for the failures were tree trimming needed, remove vegetation, low hanging wire, loose or missing guy, damaged or missing guy guard, rotten or damaged pole, missing or damaged squirrel guard, broken pins, insulators or grounds, blown lightning arrestor, damaged switch or jumpers, damaged capacitor bank, and damaged pole attachment.	The city had 1,807 wooden poles as of January 1, 2016. The City's table shows 8 wooden poles were replaced. The wooden replaced range from 40 foot to 45 foot. The wooden poles were replaced with 45 feet concrete, fiberglass, or steel poles.	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 2016

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)										
	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 2016. 100% of the transmission poles inspections were completed in 2012. 1,465 (12.2%) distribution poles were inspected in 2016.	No transmission poles were inspected in 2015. 352 (24.0%) failed inspection due to decay, split top, and woodpecker damage.	The City replaced/ repaired 61 distribution poles. The poles are sizes 30-60 feet and Class 2-5.	The City maintains three 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 2016, 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 2016

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)										
	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 an eight-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 244 (15.7%) of 1,550 the poles in 2016.	141 (58%) of the poles were rejected due to top rot and 6 (2.6%) were rejected due to bottom rot (from the inspection in 2016).	Eight distribution poles were replaced in 2016: 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 2016

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									
Ocala Electric Utility, 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.	No transmission poles were inspected in 2016, since 100% were inspected in 2015. The transmission poles will again be inspected in 2023, which is the beginning of the next cycle. 5,399 (16.6%) of the 32,518 wood distribution poles were inspected in 2016.	175 (3.2%) distribution poles failed inspection due to shell rot, decayed top, woodpecker holes, exposed pocket, and other reasons.	69 (1.3%) of the distribution poles were braced and 175 (3.2%) 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 2016, 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 2016

	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 6,419 (13%) inspections in 2016.	58 poles (0.9%) failed inspection. Failure causes include: decay and others. (Detailed Osmosis Report included).	3 poles were deemed priority replacement, 3 were completed. There are 7 poles pending restoration using reinforcing truss, to be completed the first quarter of 2017. The remaining 55 will be replaced in 2017 and 2018. (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 three-year trim cycle. OUC follows safety methods in ANSI A300 & Z133.1.	For 2016, 333 distribution miles were planned and 100% were completed. For 2016, 107.1 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 2016

	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
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 2016. Detailed inspections were carried out on all 31 transmission poles and 201 distribution poles for 2016. All transmission poles are made of concrete and found to be in good condition.	20 distribution poles (0.7%) 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.	20 distribution poles were replaced as follows: Four 25 foot Class 7, Four 30 foot Class 6, One 35 foot Class 3, Ten 40 foot Class 3 and One 50 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 22.3 miles (29.7%) of vegetation trimming was planned and completed on the distribution system in 2016. 100% of the City's transmission lines were inspected in 2016.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

Utility	The extent to which Standards of construction address: Guided by Extreme Wind Loading per Figure 250-2(d): 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	Transmission & Distribution Facility Inspections: 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	Vegetation Management Plan (VMP): 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. The District has less than 2 miles of overhead distribution lines and approximately 296 miles of underground distribution.	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 a visual inspection monthly, and inspects the distribution facilities every eight years.	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 2016.	All distribution poles passed inspection.	The District's transmission system has no wooden poles in service. The transmission system includes approximately 14 miles of overhead transmission ROW. The distribution system is essentially an underground system with 19 wooden poles.	14 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 2016 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 2016

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									
Starke, City of	Yes	Yes, 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 (1,243) poles were inspected.	In 2016, four poles (0.144%) were found to be rotten.	The City has no transmission poles. The following distribution poles were replaced in 2016: One (0.027%), Class 2, 30 foot, Two (0.075%) Class 2, 40 foot and one (0.055%) Class 2, 45 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 2016. The City will use the information from PURC's VM workshops to improve their VM.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
Tallahassee, City of	Yes	Yes	Non-coastal utility; therefore storm surge is not an issue.	Yes	Yes	Every 8 years a new pole inspection cycle is initiated to inspect all poles over a 3-year period. The inspection includes visual inspection, sound & bore, internal & fumigant treatment, assessment & evaluation for strength standards. The City performs a climbing and physical inspection of its transmission structures on a 5-year cycle.	703 (20.1%) transmission poles were inspected in 2016. All distribution poles were inspected from FY 2013-FY 2014. No distribution pole inspections were performed in 2016. The next cycle will begin in 2020.	The annual climbing inspection identified 14 (0.401%) transmission poles/structures to be rejected due to wood decay or other deteriorating conditions.	14 (0.401%) transmission poles were replaced with poles ranging from 60 feet to 70 feet, Classes 2-3. The City replaced 187 (0.342%) distribution poles and structures in 2016. The poles ranged from 25 feet to 75 feet, Classes 2 to 7.	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 2016. Approximately 1,037 miles of overhead distribution lines were managed in 2015 and 2016.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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)										
	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 30% of distribution poles in 2017-18.	The City of Wauchula has a third-party contractor inspect its substation yearly and 30% of distribution poles in 2017-18.	Less than 1% (out of 3,200 poles) has failed due to poles rotting.	65 distribution poles were replaced in 2016 ranging from 35 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.

Appendix B. Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

	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 2016–2017 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 2016. This is the second year of the three-year cycle.	Five (0.14%) 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 2016

	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, 61.5% 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 2016; however, WPE routinely inspect poles that are involved with daily jobs and work orders.	The City replaced one pole in 2016. The cause was damaged during a seasonal storm.	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. The pole replaced was a 30 foot Class 1 wood pole. This pole was replaced with a 30 foot concrete light pole.	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 approximatel y 65.78 miles of distribution lines in 2016. The City is using the PURC 2007 and 2009 reports to improve VMP practices.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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)										
	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 43 miles of the transmission facilities in 2016. 393 distribution poles were inspected in 2016.	Of the 393 distribution poles inspected in 2016, 20 (5%) were rejected. These poles are scheduled to be replaced in 2017.	254 distribution poles were replaced in 2016. These poles failed the 2015 inspection.	Trees are trimmed or removed within 15 feet of main lines, taps, and guys on a five-year plan.	In 2016, 664 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 2016

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									
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 2016, 7,670 poles or 12.87% of 59,557 total poles were inspected.	317 poles or 4.1% of the poles failed inspection ranging from spit top to wood rot.	100% of 317 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.	500 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 2016

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) 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. Clay performed a climbing inspection in 2016 of 1,697 wooden poles. In 2016, 36,175 distribution poles were inspected.	The inspection found 263 (15%) transmission poles inspected required some form of maintenance and 2 (0.1%) poles resulted in rejects. 1,046 (2.89%) distribution poles were rejected due to ground rot, top decay, holes high, split, rot, and storm damage.	263 (15%) transmission poles required maintenance. 7 (0.27%) (Includes poles from previous inspections) transmission poles were replaced with 50 to 60 feet, Class 1 poles. 602 distribution poles were replaced with poles ranging from 25 feet to 55 feet, Class 2 to 6.	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 2016, Clay mowed 51.97 miles, sprayed 56.44 miles, and recut 44.38 miles of its transmission right-of-way. In 2016, Clay mowed 2336.33 miles, sprayed 2,420.95 miles, and recut 2,006.13 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 2016

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)										
	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 1,774 (5%) inspections were completed in 2016. Escambia River does not own any transmission poles.	57 poles failed inspection in 2016. 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 2016, approximately 210 miles (13.4%) 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 2016

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)										
	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
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 2016 by helicopter. 32 structures in the water alongside Long Key bridge were inspected above and below the water line in 2016. 3,166 (25%) distribution poles were inspected in 2016.	The 32 structures alongside Long Key bridge will have repairs to the foundations to extend the life of the structure. This work will take place in 2017. 52 (1.6%) distribution poles failed inspection in 2016.	No transmission poles were replaced in 2016. 16 distribution poles were replaced and 12 poles were fitted with a C-truss. The remaining 24 poles will be replaced in 2017.	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 2016. The remainder of the transmission system was spot trimmed. All substations were trimmed prior to April 1, 2016. Approximately 120 circuit miles of distribution lines were trimmed in 2016.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
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 2,502 miles of distribution lines and 125 miles of underground distribution lines were planned and inspected in 2016. 4,799 poles were also inspected in 2016.	734 (15%) distribution poles failed due to decay, rot and top splits.	100% distribution poles rejected in 2016 were replaced. The distribution poles ranged from 35 to 40 foot, Class 5 to 6 and were replaced with 35 to 40 foot, Class 3 or Class 5 poles.	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 485 miles of distribution circuits in 2016. 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 2016

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)										
	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 7,054 (14.5%) distribution poles, in 2016 with 118 rejects. Also, in 2016, GECE inspected 255 padmount transformers, 227 pull box cabinets, and 187 secondary pedestals, which accounts for approximately 35.5% of padmounted equipment.	Of the 7,054 poles inspected in 2016, 118 (1.7%) poles were rejected. The poles were rejected due to decay pockets (15, 12.7%), decay/split tops (41, 34.7%), butt rot (47, 39.8%), mechanical damage (7, 5.9%), punk wood (1, 0.8%), and heart rot (7, 5.9%)	In 2016, GCEC replaced 185 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 trimmed approximately 400 miles of ROW in 2016. 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 2016

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 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 2016, 1,007 transmission poles were inspected, which was 100% of the poles that were scheduled. 76,631 (47.8%) distribution poles were inspected, which was 96.0% of the inspections scheduled.	108 (10%) transmission poles failed inspection due to rot, woodpecker damage, and life expectancy. 1,894 (2.5%) distribution poles failed inspection due to rot/split top, and woodpecker damage.	60 transmission poles were replaced with concrete and steel poles. 78 (4.1%) distribution poles were repaired through trussing and patching. 1,894 (100%) poles were replaced in 2016. The sizes varied by Class 1 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 138 kV transmission systems are on an annual cycle.	LCEC completed 3.41 miles (100%) of Transmission trimming, 175 miles (100%) three-phase trimming, and 1,090 (100%) miles of single-phase trimming, 31.19 (100%) miles transmission mowing.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
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 2016, OREMC performed inspections on 6,819 (11.8%) poles. OREMC has 57,830 wood poles as of December 31, 2016.	In 2016, 72 (1.06%) poles were rejected. The causes of the rejection were split top, decay, and mechanical damage.	The 72 poles failing inspection in 2016 are scheduled to be replaced in 2017. During the course of other projects, 310 new poles were added and 294 poles were retired in 2016.	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 766 miles in 2016. Also in 2016, contractors sprayed 634 miles of right-of-way.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
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. 5,091 (8.9%) of 56,988 distribution poles were inspected.	Peace River did not replace any transmission poles in 2016. 393 (7.8%) distribution poles were rejected in 2016.	Peace River replaced 85 poles in 2016. The distribution poles receiving remediation in 2016 varied from 35 foot to 55 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 2016, the Company completed right-of-way maintenance on 469 (16.7%) of its 2,804 miles of overhead distribution.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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)										
	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
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.	39 (3%) transmission poles were planned and 39 (100%) were inspected in 2016. 19,923 (14.5%) distribution poles were planned and 19,923 (100%) were inspected in 2016. 6,888 (11.8%) distribution underground structures were planned and 6,888 (100%) were inspected in 2016.	0 transmission poles failed inspection. 2,562 (37%) distribution poles failed inspection. The causes are due to ground rot and top deterioration.	39 (100%) wooden transmission poles were replaced or remediated. 2,562 distribution poles were replaced (100%). The transmission and distribution poles ranged from 20 to 80 foot and Class 1 to Class 6.	Distribution and transmission systems are on a three-year trim cycle for feeder and laterals. In 2016, due to budgetary constraints, the scheduled miles for trimming were reduced from 1,500 to 1,354, which put Sumter on a 3.5-year cycle. In 2016, Sumter trimmed 1,373 circuit miles, applied herbicide to 1,547 miles and removed 15,438 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 2017.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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									
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 2016. 7,706 (9%) distribution structures were inspected in 2016.	695 (9%) inspections of distribution poles failed due to ground line decay, excessive splitting, & woodpecker damage. Zero inspections of transmission poles failed.	889 (12%) distribution poles of total inspected were remediated by ground line treatment and 496 (6.5%) 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 2016, 967 (29%) miles were cut and 963 miles right-of-way sprayed. 993 (28%) miles are planned for cutting and 967 miles are planned for spraying in 2017.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

Utility	The extent to which Standards of construction address: Guided by Extreme Wind Loading per Figure 250-2(d): Major Planned Work Expansion, Rebuild or Relocation	Guided by Extreme Wind Loading per Figure 250-2(d): 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	Transmission & Distribution Facility Inspections: 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	Vegetation Management Plan (VMP): 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.	9,921 poles were inspected in 2016, which included 53 transmission poles.	335 (3.43%) of the distribution poles inspected were rejected. 24 (45%) of the transmission 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.	503 (18%) miles of distribution and 6.58 (10%) miles of transmission right of ways were treated in 2016. In addition, Talquin received 1,777 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 2016

	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 2016, the transmission poles were visually inspected. Tri-County inspected 6,153 distribution poles in 2016.	280 (4.6%) distribution poles were rejected. The Coop repaired 49 broken ground wires.	The 280-rejected distribution poles found during the 2016 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 2016, approximately 620 distribution miles were trimmed and 425 miles were sprayed.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

	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. In addition, WFEC began a long-range system study in 2016. The goal of this study is to develop a guide to relate long-range plant requirements to present actions and to develop a systematic schedule for developing major facilities in order to meet anticipated future system requirements.	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 2016, West Florida inspected 10.2% of entire system.	Out of the 10.2% inspected, 9.6% required maintenance or replacement.	During 2016, 1,444 poles were replaced. 3.5 miles of single phase line was converted to 3 Phase to correct loading issues. The Company re-insulated and upgraded approximately 40 miles of distribution lines from 12.5 KV to 25 KV. The Company relocated 5 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 2016, the Company mowed and side trimmed 751 miles of its distribution system. Also, the Company chemically sprayed approximately 872 miles of right-of-way. Approximately 751 miles will be sprayed and approximately 685 miles will be trimmed and mowed during 2017.

Appendix C. Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2016

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)										
	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
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 2016, WREC relocated 45 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 (3,276 miles for 2016) by line patrol, physical and visual inspections.	68 miles or 100% of transmission facilities were inspected by walking, riding or aerial patrol. 3,208 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.	4,205 wooden, composite, cement, concrete, steel, ductile iron, aluminum, and fiberglass poles ranging in size from 12 to 95 feet were added; 2,452 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. 27.14 miles of right-of-way issues were addressed in 2016.