Review of Florida's Investor-Owned Electric Utilities 2021 Service Reliability Reports

September 2022

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 2021 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. These data may be used during rate cases, show cause dockets, and 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.).[2] 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 tornadoes and hurricanes. This "adjusted" data provides an indication of the distribution system performance on a normal day-to-day basis.

The active hurricane seasons of 2004 and 2005 revealed the importance of collecting reliability data that reflects the total reliability experience from the customer perspective. 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. These data provide insight concerning the overall reliability performance of each utility.

Also in 2006 and 2007, 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.[3] In 2019, the Florida Legislature enacted Section 366.96, Florida Statutes (F.S.). This statute requires each IOU to file a transmission and distribution storm protection plan (SPP) that covers the immediate 10-year planning period. Section 366.96 (10), F.S., requires that the Commission submit an annual report on the status of the utilities' SPP activities to the Legislature by December 1. As such, IOUs are required to submit an annual status report on their SPP programs and projects to the Commission by June 1.[4] Beginning in

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

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

[3]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.

[4] See Rule 25-6.030(4), Storm Protection Plan, F.A.C.

2021, the updates on storm hardening and preparedness initiatives, that were previously included in this report, were included in the Commission's report to the Legislature. Since Section 366.96, F.S. only requires IOU's to file a SPP, the Municipal Electric Utilities and Rural Electric Cooperative Utilities continue to provide updates of their storm hardening efforts as indicated in Appendixes B and C of this report.

The March 2022 Distribution Reliability Reports of Duke Energy Florida, LLC (DEF), Florida Power & Light Company (FPL), Florida Public Utilities Company (FPUC), Gulf Power Company (Gulf),[5] and Tampa Electric Company (TECO) and responses to staff's data requests were sufficient to perform the 2021 review.

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

[5] While FPL and Gulf merged in 2020, the systems were not fully integrated and therefore, separate reports were filed for the 2020 and 2021 Reliability Reports.

Service Reliability of Duke Energy Florida, LLC

The unadjusted data for DEF indicates that its 2021 allowable exclusions accounted for approximately 21 percent of all excluded Customer Minutes of Interruption (CMI). The "Named Storms" category accounted for approximately 5 percent of the total unadjusted CMI. DEF experienced outages associated with two tornadoes and Tropical Storms Elsa, Fred, and Mindy.

On an adjusted basis, DEF's 2021 System Average Interruption Duration Index (SAIDI) was 75 minutes, decreasing its adjusted SAIDI by 13 minutes from the 2020 results. The trend for the SAIDI over the five-year period of 2017 to 2021 is trending downward. The System Average Interruption Frequency Index (SAIFI) in 2021 was 0.84 interruptions, indicating an 11 percent decrease from 2020. The Customer Average Interruption Duration Index (CAIDI) decreased for 2021 compared to 2020. Over the five-year period, the SAIFI and CAIDI are both trending downward.

In **Figure 2-8**, DEF's Top Five Outage Categories, the category "Defective Equipment" is in the top spot representing 30 percent of the total number of outages. The subsequent categories were "Vegetation" (20 percent) and "Other Causes" (19 percent), followed by "Animals" (14 percent) and "Other Weather" (11 percent). The "Animals" category is trending upward for the five-year period of 2017 to 2021, while having a 38 percent increase in 2021. The "Other Causes" outage category is trending downward for the same period notwithstanding a 0.4 percent increase from 2020 to 2021. The "Defective Equipment" category decreased between 2020 and 2021 and is trending downward for the five-year period. The "Vegetation" and "Other Weather" categories had decreases in 2021 and are trending downward for the five-year period.

The percentage of reliability complaints compared to the total number of complaints filed with the Commission for DEF decreased to 9.4 percent in 2021 from 9.8 percent in 2020. Over the five-year period from 2017-2021, DEF's reliability related complaints have been trending upward.

Service Reliability of Florida Power & Light Company

The unadjusted data for FPL indicates that its 2021 allowable exclusions accounted for approximately 23 percent of the total CMI. The "Named Storms" category accounted for approximately 6 percent of the CMI excluded. In addition, FPL's service area was affected by seven tornadoes, Tropical Storms Claudette, Fred, and Mindy, and Hurricanes Elsa and Ida.

FPL's 2021 metrics on an adjusted basis include SAIDI which was reported as 44 minutes and represents a 3 minute decrease from last year's reported 47 minutes. The SAIFI improved in 2021 and the CAIDI remained the same. The SAIFI decreased from 0.76 interruptions in 2020 to 0.70 interruptions in 2021 and the CAIDI remained at 62 minutes in 2020 and 2021.

"Defective Equipment" (38 percent) and "Vegetation" (21 percent) outages were the leading causes of outage events for 2021. The next three outage causes are "Animals" (11 percent), "Unknown Causes" (9 percent), and "Other Causes" (8 percent). **Figure 2-16** shows a decreasing trend in the number of outage events attributed to "Defective Equipment," which had decreased by 17 percent from 2020 to 2021. The analysis shows an increase in the number of outage events caused by "Animals," and "Unknown Causes;" however, they are trending downward. In

addition, since 2017, "Vegetation" category has remained relatively flat. The analysis shows that the "Other Causes" category is trending downward.

Complaints related to FPL's reliability decreased from 0.9 percent in 2020 to 0.6 percent in 2021. FPL's reliability related complaints appear to remain relativity flat as shown in **Figure 3-10**.

Service Reliability of Florida Public Utilities Company

The unadjusted data for FPUC indicates that its 2021 allowable exclusions accounted for approximately 67 percent of the total CMI. The "Named Storms" category accounted for approximately 59 percent of the CMI excluded. FPUC reported that during 2021, the Northwest division was impacted by Tropical Storm Fred and the Northeast division was impacted by Tropical Storm Elsa. There were no tornadoes that impacted FPUC's service areas in 2021.

The 2021 adjusted data for FPUC's SAIDI was 137 minutes, a 13 percent decrease from 158 minutes reported in the previous year. The SAIFI decreased from 1.74 interruptions in 2020 to 1.36 interruptions in 2021. The CAIDI value in 2021 was 100 minutes, an increase from the 91 minutes in 2020.

FPUC's top five causes of outages included "Vegetation," "Animals," "Unknown," "Defective Equipment," and "Lightning" events. As shown in **Figure 2-21**, "Vegetation" (35 percent) was the number one cause of outages in 2021 followed by "Animals" (16 percent), "Unknown" (15 percent), "Defective Equipment" (13 percent), and "Lightning" (12 percent). "Vegetation," "Unknown," and "Defective Equipment," attributed outages decreased in 2021, as "Animals" and "Lightning" caused outages increased.

FPUC's reliability related complaints were minimal. In 2021, the Utility had one reliability related complaint filed with the Commission. When comparing reliability complaints per 10,000 customers, the changes 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 appears to be trending downward.

Service Reliability of Gulf Power Company

The adjusted data for Gulf indicates that its 2021 allowable exclusions accounted for 48 percent of exclusion to its CMI. The "Named Storms" category accounted for approximately 18 percent of the total CMI excluded. Gulf explained that Tropical Storms Claudette, Fred, Mindy, and Hurricane Ida affected its service area. In 2021, two tornadoes also affected its service area accounting for 28 percent of the total CMI.

The 2021 SAIDI for Gulf was reported to be 39 minutes, which decreased from the 47 minutes reported in 2020. The SAIFI decreased to 0.63 interruptions from 0.71 interruptions the previous year. The CAIDI decreased to 61 minutes from 67 minutes in 2020.

Gulf's top five causes of outages were "Animals" (21 percent), "Vegetation" (20 percent), "Defective Equipment" (18 percent), "Unknown Causes" (16 percent), and "All Other" (10 percent). As shown in **Figure 2-29**, the number of outages decreased for "Vegetation," "Animals," "Defective Equipment," and "All Other" in 2021 when compared to 2020.

There were no complaints reported to the Commission against Gulf that were reliability related in 2021. Gulf's percentage of total complaints for the five-year period of 2017 to 2021 has remained relativity flat. Overall, as shown in **Figure 3-10,** Gulf has the lowest percentage of total complaints related to reliability.

Service Reliability of Tampa Electric Company

The adjusted data for TECO indicates that its 2021 allowable exclusions accounted for approximately 20 percent of the CMI. Hurricane Elsa affected TECO's service area during 2021. The "Named Storms" category accounted for approximately 5 percent of the CMI. No tornadoes impacted TECO's service areas in 2021.

The adjusted SAIDI increased from 68 minutes in 2020 to 85 minutes in 2021 and represents a 25 percent decline in performance. The SAIFI increased to 1.07 interruptions from 0.94 interruptions in the previous year. The CAIDI increased 10 percent, to 79 minutes from 72 minutes reported in 2020. TECO reported the increases in SAIDI, SAIFI, and CAIDI were attributed to two severe weather events and a two-day unnamed storm in April 2021.

"Defective Equipment" (29 percent) and "Vegetation" (15 percent) were the largest contributors to TECO's causes of outage events followed by "Animals" (18 percent), "Other Weather" (12 percent), and "Unknown Causes" (10 percent). **Figure 2-37** illustrates the top five outage causes. "Defective Equipment," the leading cause of outages, has been trending downward since 2017 even though "Defective Equipment" had a 4 percent increase in outages when compared to the previous year. "Vegetation," "Animals," and "Unknown Causes" related causes are also trending downward. "Lightning" related causes are trending upward.

TECO's percentage of total service reliability related complaints decreased from 22.6 percent in 2020 to 17.2 percent in 2021. TECO's percentage of service reliability complaints is trending upward over the period of 2017 to 2021.

Review Outline

This review primarily relies on the March 2022 Reliability Reports filed by the IOUs for the 2021 reliability performance data. A section addressing trends in reliability related complaints is also included. Staff's review consists of four sections:

- **Section I:** Each utility's actual 2021 distribution service reliability data and support for each of its adjustments to the actual service reliability data.

- **Section II:** Each utility's 2021 distribution service reliability based on adjusted service reliability data and staff's observations of overall service reliability performance.

- **Section III:** Inter-utility comparisons and the volume of reliability related customer complaints for 2017 to 2021.

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

Section I: 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 2021 performance data and focuses on the exclusions allowed by the rule.

Duke Energy Florida, LLC: Actual Data

Table 1-1 provides an overview of key DEF metrics: Customer Minutes of Interruption (CMI) and Customer Interruptions (CI) for 2021. Excludable outage events accounted for approximately 21 percent of the minutes of interruption experienced by DEF's customers. DEF experienced outages associated with Tropical Storm Elsa which impacted its service area on July 5-8, 2021, Tropical Storm Fred which impacted its service area on August 15-17, 2021, and Tropical Storm Mindy which impacted its service area on September 8-9, 2021. In addition, two tornadoes affected the following regions:

- South Coastal on February 14, 2021
- North Coastal on August 10, 2021

The "Planned Service Interruptions" events accounted for approximately 10 percent of the excludable minutes of interruptions. "Planned Service Interruptions" include any outages that were part of any work, new customers/load being added to existing services (new revenue), relocations, or upgrades. DEF stated that the transmission events accounted for approximately 6 percent of the minutes of interruptions. DEF asserted that the initiating causes varied from equipment failures to weather. The sustained causes also varied from vegetation to equipment failure.

Table 1-1
DEF's 2021 Customer Minutes of Interruptions and Customer Interruptions

2021	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	% of Actual	Value	% of Actual
Reported Actual Data	**181,617,046**		**2,181,141**	
Documented Exclusions				
Planned Service Interruptions	17,701,344	9.75%	365,060	16.74%
Named Storms	9,876,008	5.44%	53,164	2.44%
Tornadoes	464,110	0.26%	4,631	0.21%
Ice on Lines		0.00%		0.00%
Planned Load Management Events		0.00%		0.00%
Generation/Transmission Events	10,399,161	5.73%	152,508	6.99%
Extreme Weather (EOC Activation/Fire)		0.00%		0.00%
Reported Adjusted Data	**143,176,423**	**78.83%**	**1,605,778**	**73.62%**

Source: DEF's 2021 distribution service reliability report.

Florida Power & Light Company: Actual Data

Table 1-2 provides an overview of FPL's CMI and CI figures for 2021. Excludable outage events accounted for approximately 23 percent of the minutes of interruption experienced by FPL's customers. FPL reported seven tornadoes, and the following named storms: Tropical Storm Claudette impacted FPL's service territories on June 19-20, 2021, Hurricane Elsa on July 5-8, 2021, Tropical Storm Fred on August 13-17, 2021, Hurricane Ida on August 28-September 2, 2021, and Tropical Storm Mindy on September 8-9, 2021. The seven tornadoes affected the following regions:

- North Florida region on February 15, 2021
- Manasota region on April 10, 2021
- Manasota region on April 11, 2021
- Boca Raton region on August 7, 2021
- Manasota region on October 28, 2021
- North Florida region on December 8, 2021
- Naples region on December 21, 2021

Table 1-2
FPL's 2021 Customer Minutes of Interruptions and Customer Interruptions

2021	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	% of Actual	Value	% of Actual
Reported Actual Data (1)	**297,129,823**		**4,373,693**	
Documented Exclusions				
Planned Service Interruptions	23,604,747	7.94%	320,626	7.33%
Named Storms	17,470,412	5.88%	204892	4.68%
Tornadoes	26,293,495	8.85%	170156	3.89%
Ice on Lines	0	0.00%	0	0.00%
Planned Load Management Events	0	0.00%	0	0.00%
Generation/Transmission Events (2)	9,301,177	3.13%	645,399	14.76%
Extreme Weather (EOC Activation/Fire)	0	0.00%	0	0.00%
Reported Adjusted Data	**229,761,169**	**77.33%**	**3,678,019**	**84.09%**

Source: FPL's 2021 distribution service reliability report.
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.

Florida Public Utilities Company: Actual Data

Table 1-3 provides an overview of FPUC's CMI and CI figures for 2021. Excludable outage events accounted for approximately 67 percent of the minutes of interruption experienced by FPUC's customers. The "Named Storms" events accounted for approximately 59 percent of the minutes of interruption. The Northeast division was impacted by Tropical Storm Elsa on July 7-8, 2021, and Tropical Storm Fred affected the Northwest division on August 16-19, 2021.

The Northeast division experienced two substation outages on May 2 and August 25, 2021. The outages were due to equipment failure and a planned outage to perform insulator maintenance. The NW Division experienced a substation outage on December 26, 2021. The outage was due to insulator failure. Additionally, both divisions had several planned outages that allowed FPUC to perform maintenance to different sections of the distribution system.

Table 1-3
FPUC's 2021 Customer Minutes of Interruptions and Customer Interruptions

2021	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	% of Actual	Value	% of Actual
Reported Actual Data	**12,380,348**		**58,257**	
Documented Exclusions				
Planned Service Interruptions	734,886	5.94%	7,361	12.64%
Named Storms	7,341,363	59.30%	7,842	13.46%
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	243,796	1.97%	2,644	4.54%
Extreme Weather (EOC Activation/Fire)	0	0.00%	0	0.00%
Reported Adjusted Data	**4,060,303**	**32.80%**	**40,410**	**69.37%**

Source: FPUC's 2021 distribution service reliability report.

Gulf Power Company: Actual Data

Table 1-4 provides an overview of Gulf's CMI and CI figures for 2021. Excludable outage events accounted for approximately 48 percent of the minutes of interruption experienced by Gulf's customers. The "Named Storms" accounted for approximately 18 percent of the minutes of interruption. Tropical Storm Claudette, on June 19-20, 2021, affected all three regions of Gulf's service area. All three regions were also affected by Tropical Storm Fred on August 16-17, 2021. Hurricane Ida, on August 29-31, 2021, affected the Pensacola region and Tropical Storm Mindy, on September 18, 2021, affected the Panama City region. Gulf reported two tornadoes, which accounted for approximately 28 percent of the minutes of interruption. The tornadoes affected the following regions:

- Panama City on February 15, 2021
- Fort Walton, Panama City, and Pensacola regions on April 10-11, 2021

Table 1-4
Gulf's 2021 Customer Minutes of Interruption and Customer Interruptions

2021	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	% of Actual	Value	% of Actual
Reported Actual Data (1)	**36,104,498**		**454,070**	
Documented Exclusions				
Planned Service Interruptions	720,376	2.00%	16,369	3.60%
Named Storms	6,448,011	17.86%	71,212	15.68%
Tornadoes	10,285,735	28.49%	62,732	13.82%
Ice on Lines		0.00%		0.00%
Planned Load Management Events		0.00%		0.00%
Generation/Transmission Events (2)	1,968,446	5.45%	59,751	13.16%
Extreme Weather (EOC Activation/Fire)		0.00%		0.00%
Reported Adjusted Data	**18,650,376**	**51.66%**	**303,757**	**66.90%**

Source: Gulf's 2021 distribution service reliability report.
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.

Gulf's "Generation/Transmission Events" accounted for 5 percent of CMI. The causes for the transmission events included vines, fire, relay misoperation, deterioration, failed equipment, accidental trip, trip under Energized Work Permit, and unknown. The causes were corrected by either manual operation of the damaged equipment by field personnel or were corrected remotely through SCADA and implement software updates. Gulf reports that no generation events were excluded.

Tampa Electric Company: Actual Data

Table 1-5 provides an overview of TECO's CMI and CI figures for 2021. Excludable outage events accounted for approximately 20 percent of the minutes of interruption experienced by TECO's customers. Hurricane Elsa impacted all of TECO's service area on July 6-7, 2021.

The "Planned Service Interruptions" events accounted for approximately 10 percent of the minutes of interruption. TECO reported that when working "Planned Service Interruptions," the affected system is temporarily de-energized to safely complete work that has been requested by customers for various reasons. In addition, "Generation/Transmission Events" accounted for approximately 5 percent of the minutes of interruptions. TECO reported 107 substation outages in 2021. The causes listed included insulator failure, breaker mechanism, disconnect switch, breaker failure, animal, bushing failure, relay and controls, other/unknown, human interference, and transformer failure. It appears that all equipment failures were tested, reset, cleaned, repaired and/or replaced.

Table 1-5
TECO's 2021 Customer Minutes of Interruptions and Customer Interruptions

2021	Customer Minutes of Interruption (CMI)		Customer Interruptions (CI)	
	Value	% of Actual	Value	% of Actual
Reported Actual Data	**86,825,173**		**1,230,459**	
Documented Exclusions				
Planned Service Interruptions	8,956,635	10.32%	229,697	18.67%
Named Storms	4,273,751	4.92%	22,076	1.79%
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	3,933,494	4.53%	100,196	8.14%
Extreme Weather (EOC Activation/Fire)	0	0.00%	0	0.00%
Reported Adjusted Data	**69,661,293**	**80.23%**	**878,490**	**71.40%**

Source: TECO's 2021 distribution service reliability report.

Section II: Adjusted Distribution Service Reliability Review of Individual Utilities

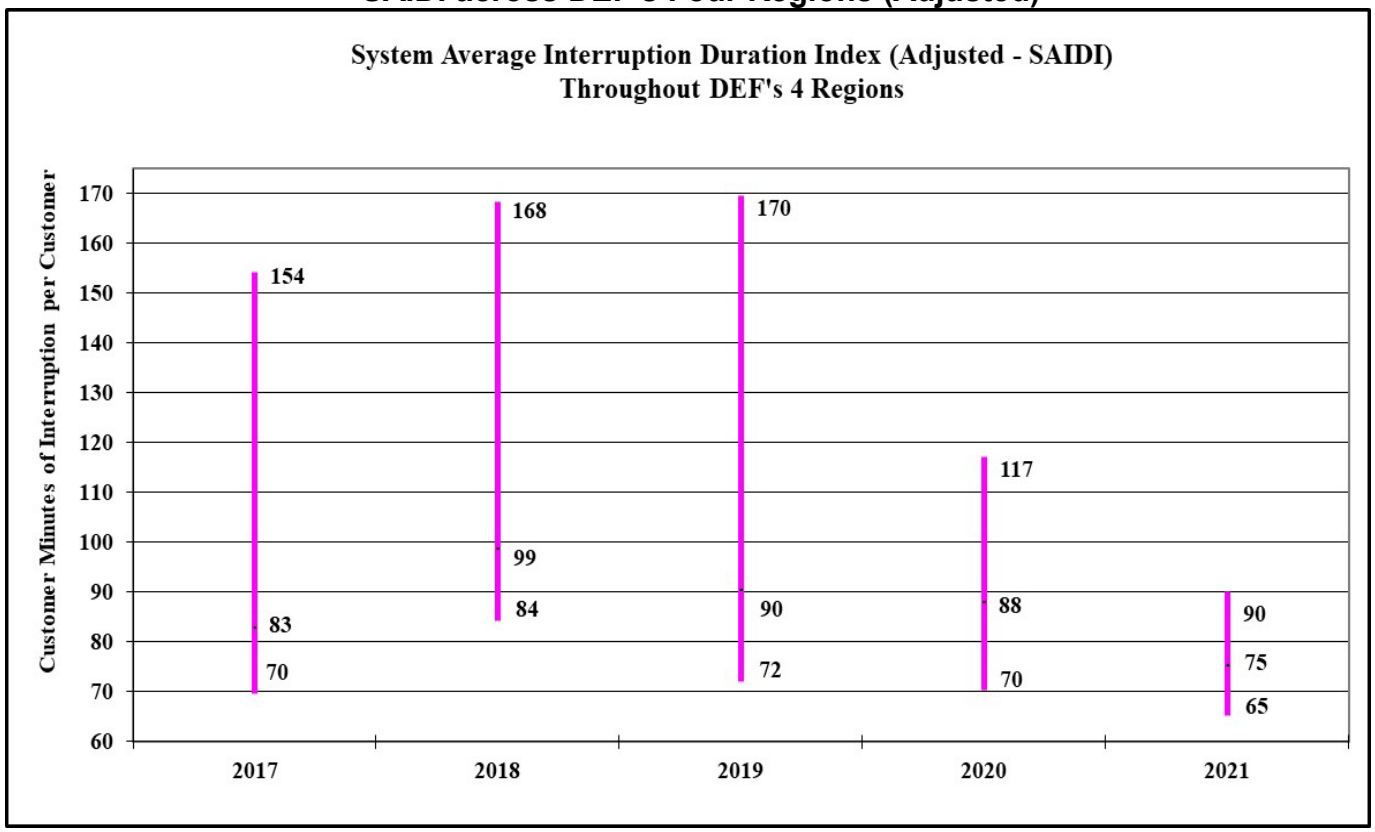
The adjusted distribution reliability metrics or indices provide insight into potential trends in a utility's daily practices and maintenance of its distribution facilities. This section of the review is based on each utility's reported adjusted data.

Duke Energy Florida, LLC: Adjusted Data

Figure 2-1 charts the adjusted SAIDI recorded across DEF's system and depicts decreases in the highest, lowest and the average values in 2021. DEF reported that it experienced two tornadoes and three named storms and there was an overall drop in Excluded Weather SAIDI compared to the previous five-year average.

DEF's service territory is comprised of four regions: North Coastal, South Coastal, North Central, and South Central. **Figure 2-1** illustrates that the North Coastal region continues to report the poorest SAIDI over the last five years, fluctuating between 90 minutes and 170 minutes. While the South Coastal and South Central regions have the best or lowest SAIDI for the same period. The North Coastal region is predominantly a rural area 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 2-1
SAIDI across DEF's Four Regions (Adjusted)



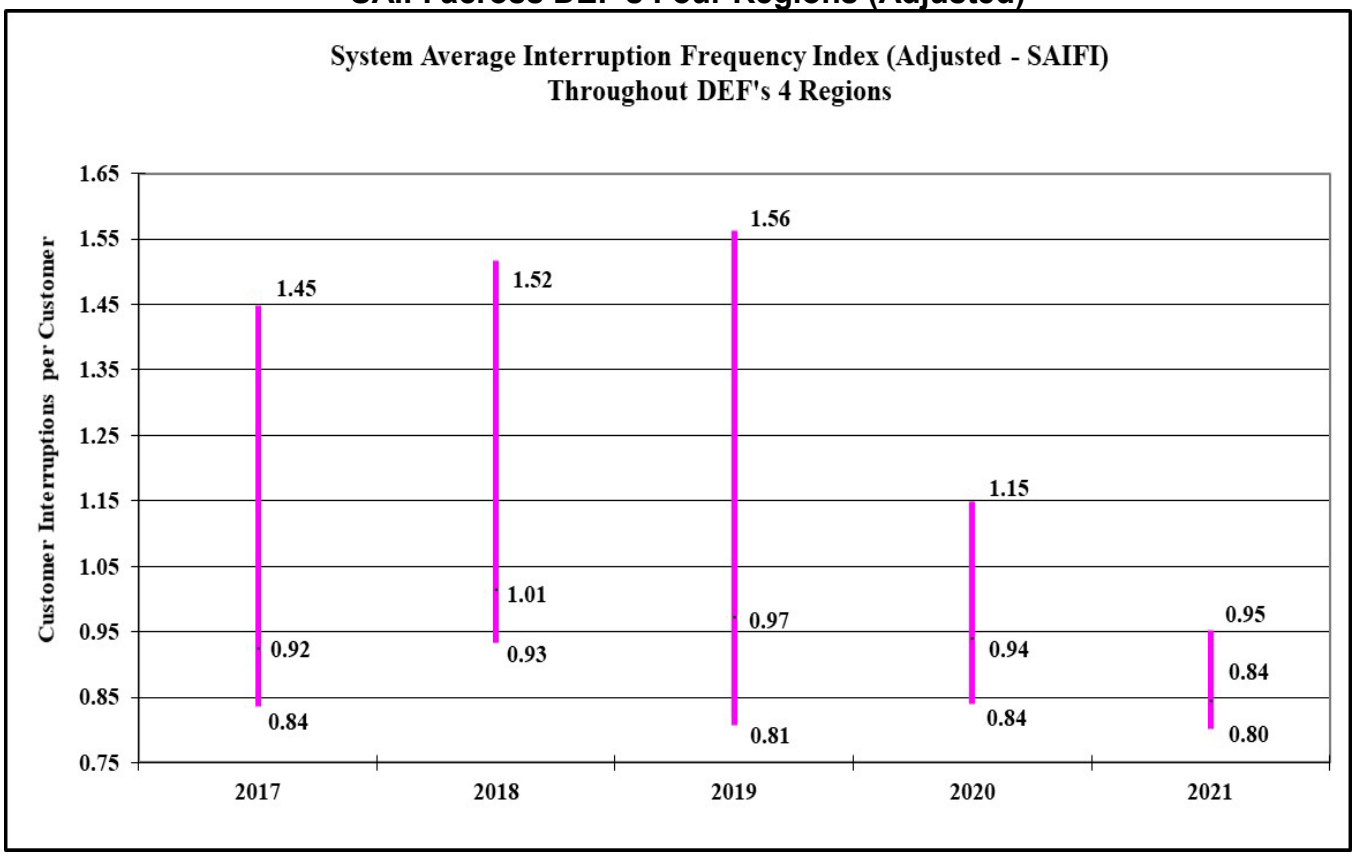
DEF's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest SAIDI	North Coastal	North Coastal	North Coastal	North Coastal	North Coastal
Lowest SAIDI	South Central	South Central	South Coastal	South Central	South Central

Source: DEF's 2017-2021 distribution service reliability reports.

Figure 2-2 shows the adjusted SAIFI across DEF's system. The minimum, average, and maximum SAIFI are trending downward for the five-year period of 2017 through 2021. There was a 5 percent decrease for the minimum value, an 11 percent decrease for the average value, and a 17 percent decrease for the maximum value from 2020 to 2021. The South Central region had the lowest number of interruptions, while the North Coastal region continues to have the highest number of interruptions.

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



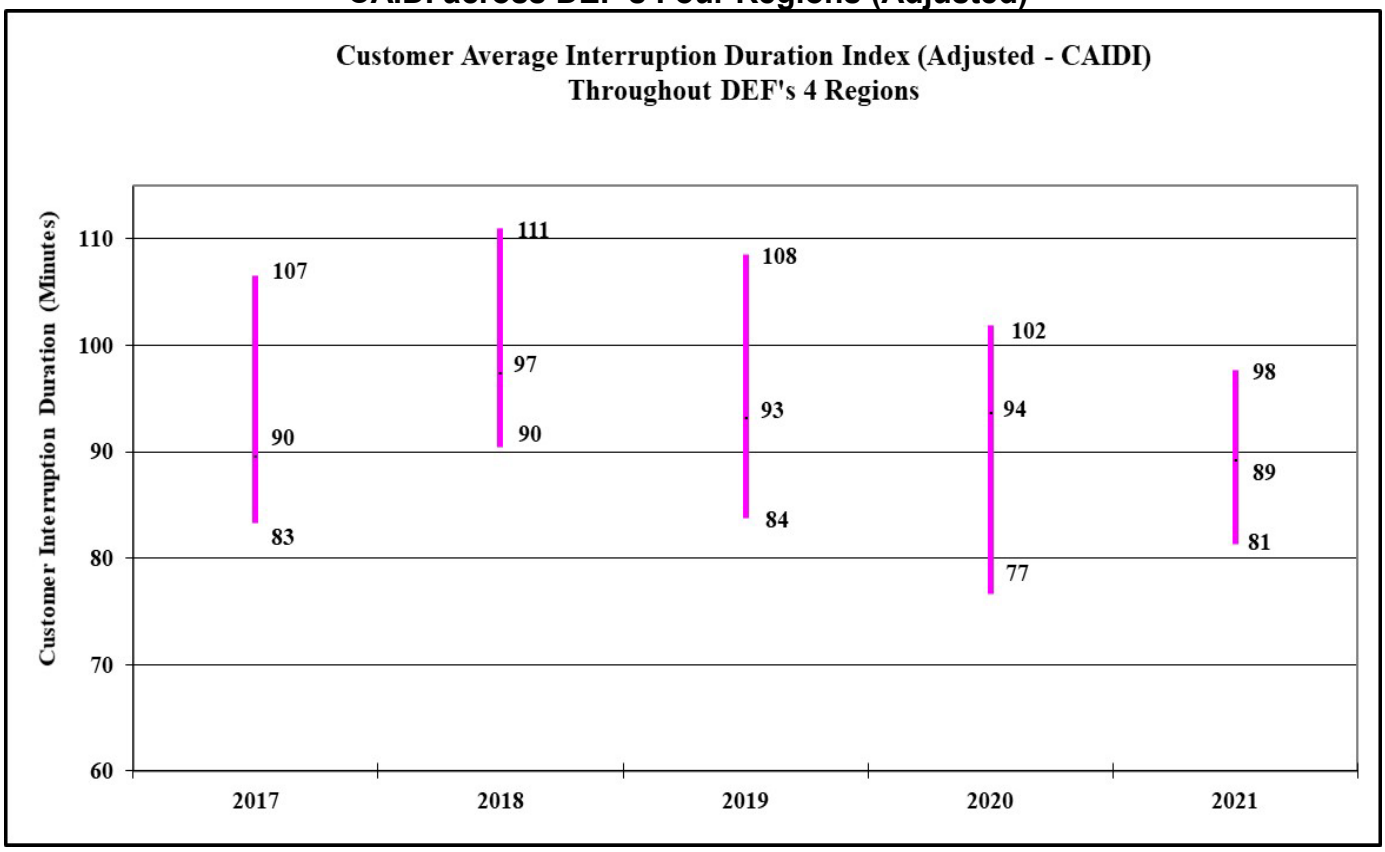
DEF's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest SAIFI	North Coastal	North Coastal	North Coastal	North Coastal	North Coastal
Lowest SAIFI	South Central	South Central	North Central	North Central	South Central

Source: DEF's 2017-2021 distribution service reliability reports.

Figure 2-3 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 decreasing for a five-year period from 90 minutes in 2017 to 89 minutes in 2021. The North Central region had the highest CAIDI level for 2021, with the maximum CAIDI is trending downward. The South Central region had the lowest CAIDI level during the same period with the minimum CAIDI is also trending downward.

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



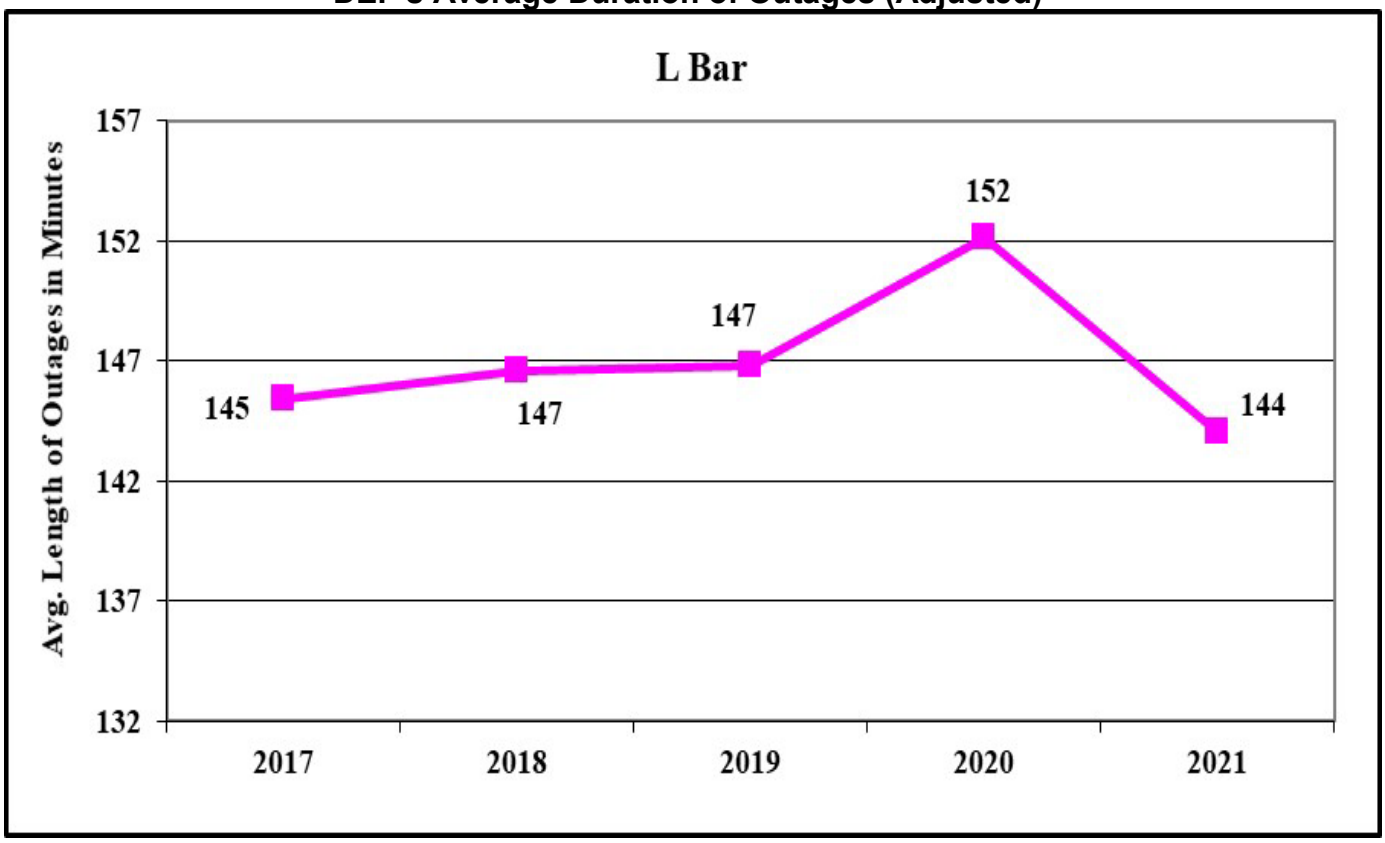
DEF's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest CAIDI	North Coastal	North Coastal	North Coastal	North Coastal	North Central
Lowest CAIDI	South Central	South Central	South Coastal	South Central	South Central

Source: DEF's 2017-2021 distribution service reliability reports.

Figure 2-4 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 0.7 percent decrease of outage durations since 2017 with a 5 percent decrease from 2020 to 2021. However, DEF's overall L-Bar index is trending upward, indicating that DEF is spending more time restoring service from outage events.

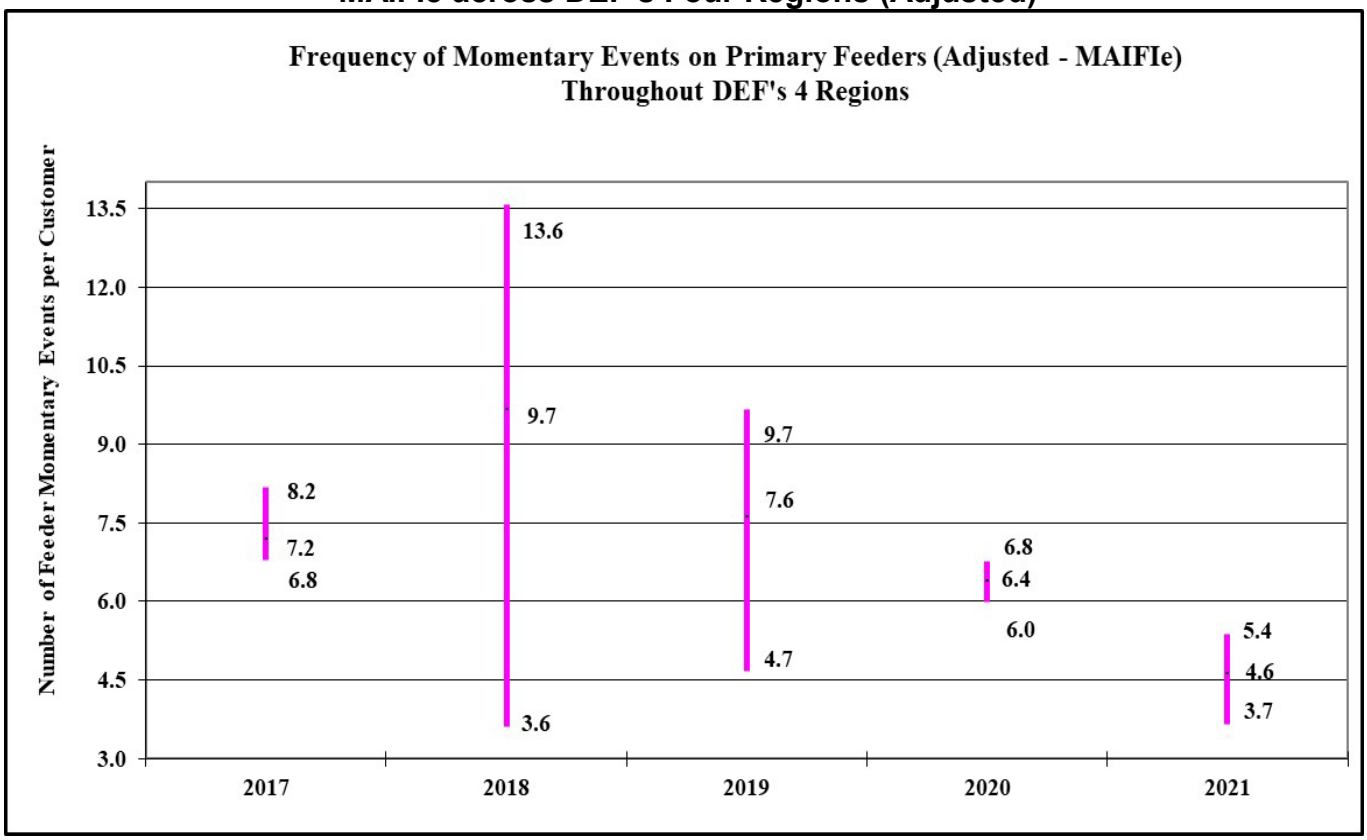
Figure 2-4
DEF's Average Duration of Outages (Adjusted)



Source: DEF's 2017-2021 distribution service reliability reports.

Figure 2-5 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 2017 and 2021 appear to be trending downward showing improvement and there was a decrease in the average MAIFIe of 28 percent from 2020 to 2021. The South Coastal and North Central regions appear to fluctuate between having the best (lowest) results and the North Coastal and North Central fluctuate between having the worst (highest) results. From 2020 to 2021, the highest MAIFIe decreased by 21 percent as the lowest MAIFIe decreased by 38 percent.

Figure 2-5
MAIFIe across DEF's Four Regions (Adjusted)



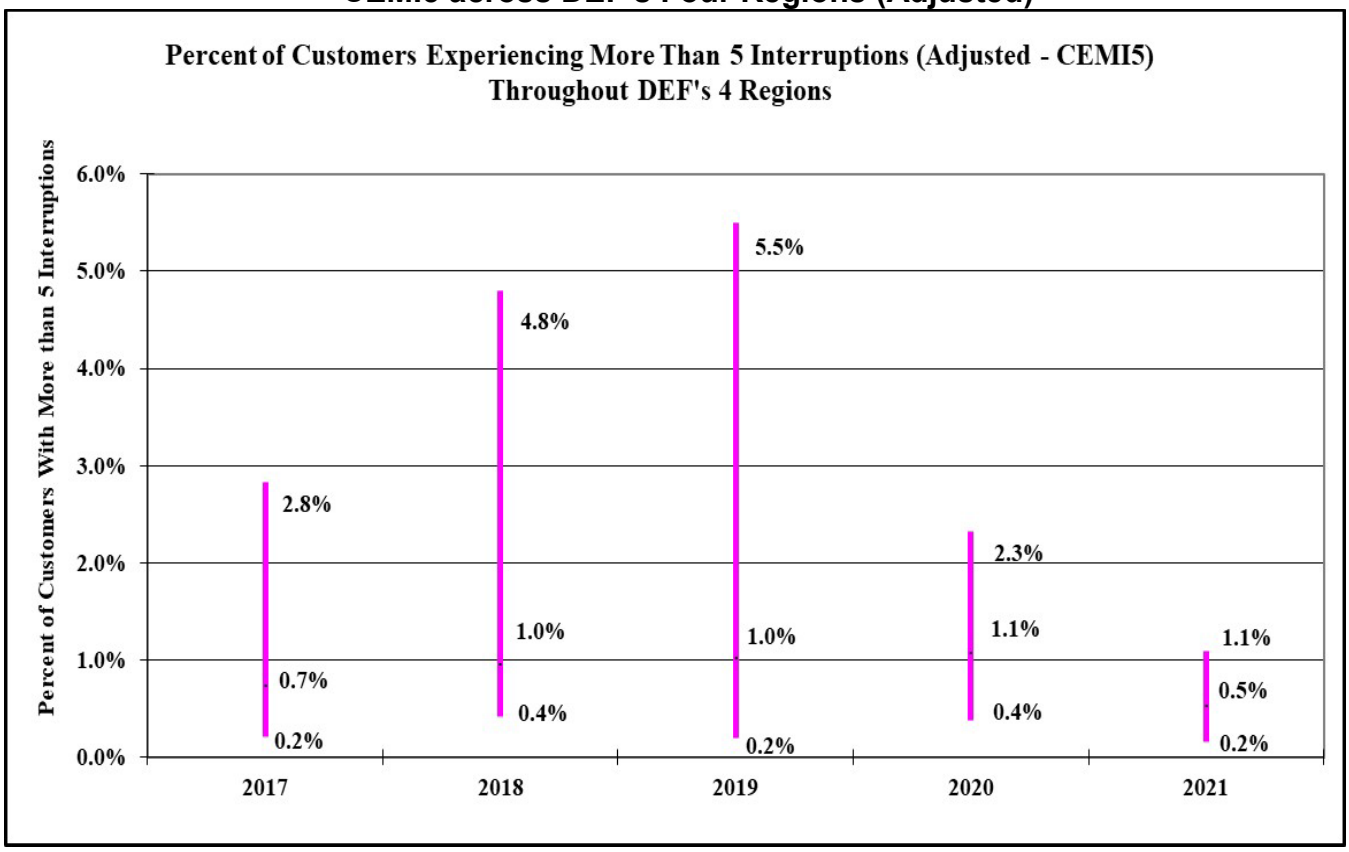
DEF's Regions with the Highest and Lowest Adjusted MAIFIe Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest MAIFIe	North Coastal	North Coastal	North Coastal	North Central	North Coastal
Lowest MAIFIe	South Coastal	North Central	North Central	South Coastal	South Coastal

Source: DEF's 2017-2021 distribution service reliability reports.

Figure 2-6 charts the percentage of DEF's customers experiencing more than five interruptions over the last five years. DEF reported a 55 percent decrease in the average CEMI5 from 2020 to 2021. The average CEMI5 is slightly trending upward over the past five years. The South Coastal 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 2-6
CEMI5 across DEF's Four Regions (Adjusted)



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

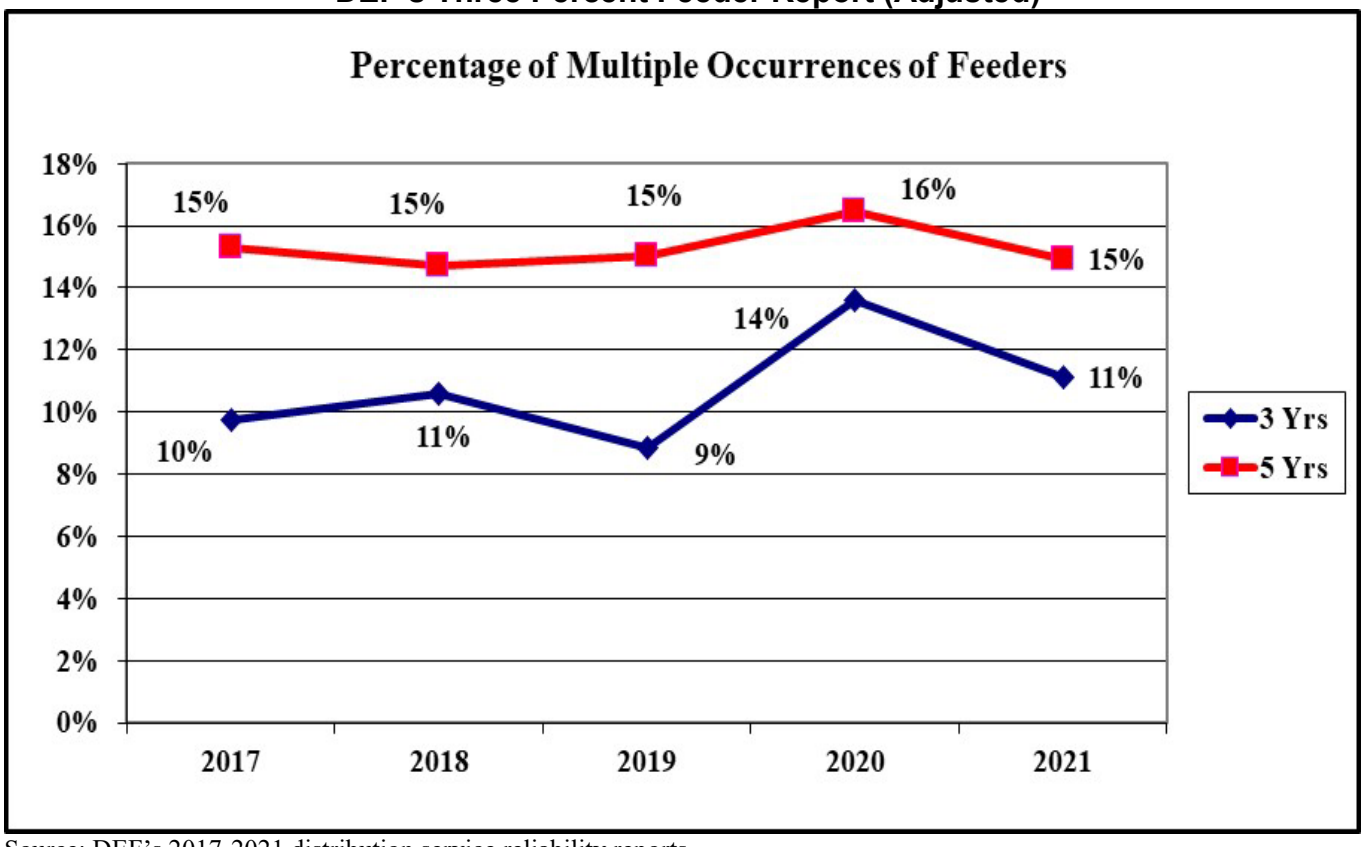
	2017	2018	2019	2020	2021
Highest CEMI5	North Coastal	North Coastal	North Coastal	North Coastal	North Coastal
Lowest CEMI5	South Coastal	North Central	South Coastal	South Coastal	South Coastal

Source: DEF's 2017-2021 distribution service reliability reports.

Figure 2-7 shows the fraction of multiple occurrences of feeders using a three-year and five-year basis. During the period of 2017 to 2021, the five-year fraction of multiple occurrences is trending upward along with the three-year fraction of multiple occurrences. 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.

Three of DEF's feeders have been on the Three Percent Feeder Report for the last two years consecutively. The outages varied from human error, vehicle accident, equipment failure and vegetation. DEF replaced the failing equipment, trimmed trees, and performed infrared scans on the feeders. No issues were found during the infrared scans. One of the three feeders will have work done under DEF's Storm Protection Plan. DEF will continue to analyze the feeders and perform in-depth patrols to identify operational issues and initiate mitigation actions.

Figure 2-7
DEF's Three Percent Feeder Report (Adjusted)

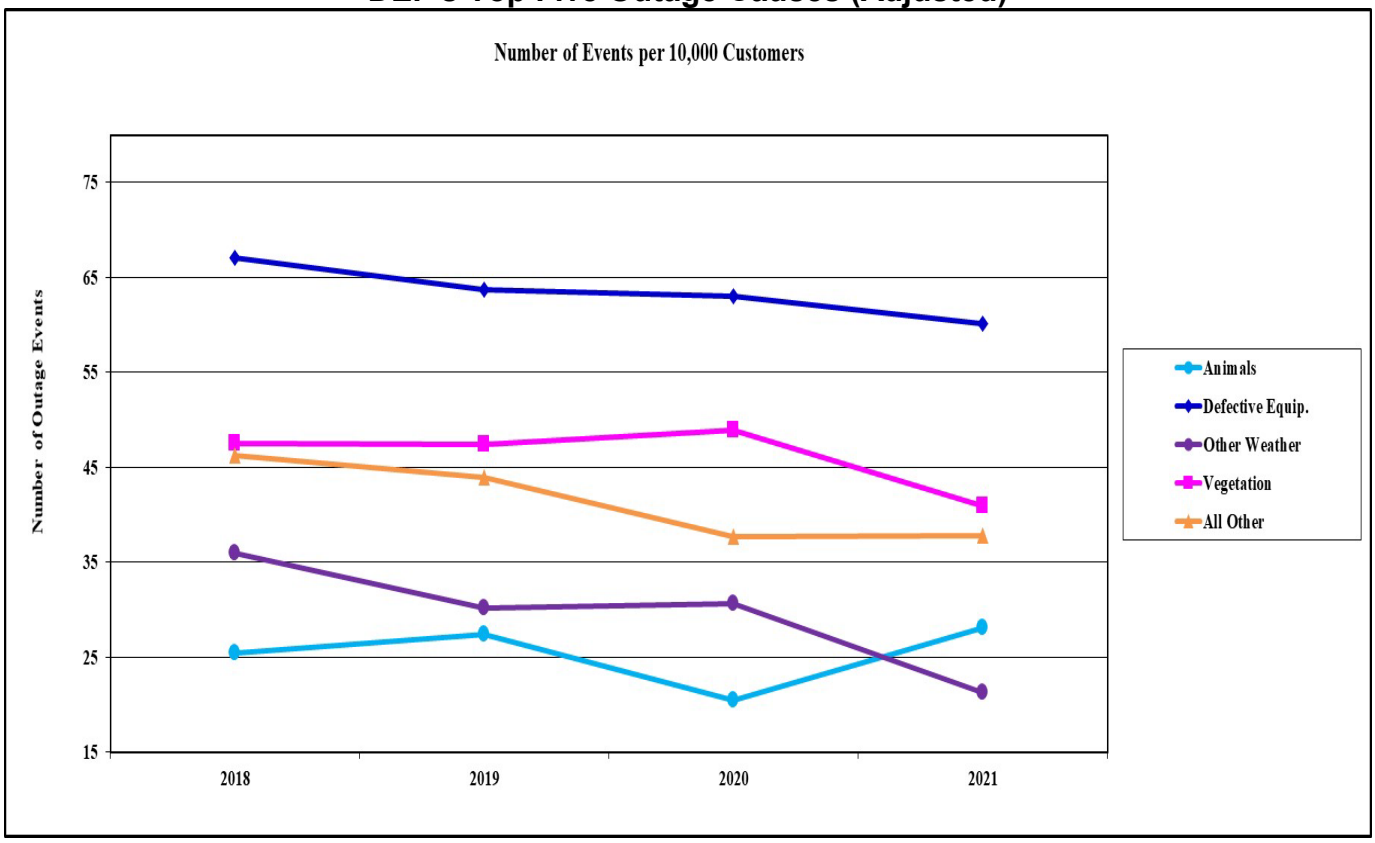


Source: DEF's 2017-2021 distribution service reliability reports.

Figure 2-8 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 94 percent of the top 10 causes of outage events that occurred during 2021. For the five-year period, the top five causes of outage events were "Defective Equipment" (30 percent), "Vegetation" (20 percent), "Other Causes" (19 percent), "Animals" (14 percent), and "Other Weather" (11 percent) on a cumulative basis. The outage events caused by "Defective Equipment," "Vegetation," "Other Causes," and "Other Weather" are trending downward. The "Defective Equipment" category had a 4 percent decrease, "Vegetation" category had a 16 percent decrease, and "Other Weather" category had a 30 percent decrease while the "Other Causes" category had a 0.4 percent increase and "Animals" category had a 38 percent increase in 2021. 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.

DEF will continue several programs that help mitigate outages. The Self-Healing Teams program reduces the impact of all types of outages. The Feeder Hardening, Lateral Hardening, and Substation Optimization Plan programs mitigate the outages caused by "Defective Equipment." The Fuse Replacement Program reduces the impact from "Other Weather," "Vegetation," and "Animals" related outages. In addition, DEF's maintenance programs, such as cable replacements, transformer replacements, recloser replacements, etc., should mitigate outages.

Figure 2-8
DEF's Top Five Outage Causes (Adjusted)



Source: DEF's 2017-2021 distribution service reliability reports.

Observations: DEF's Adjusted Data

DEF's SAIDI, SAIFI, CAIDI, and MAIFIe are trending downward over the past five years. The CEMI5, L-Bar, the Five-Year Percent and the Three-Year Percent of Multiple Feeder Outage Events are all trending upward over the five-year period. All of the reliability indices had decreased from 2020 to 2021. The results for the North Coastal Region have continually demonstrated the highest (poorest) service reliability indices of the five regions within DEF for the past five years; however, there are improvements as the five-year trends for the North Coastal region are trending downward. The North Coastal region is predominantly a rural area and has more square miles compared to DEF's other service territories.

DEF reported that in 2021 it experienced two tornadoes and three tropical storms. The overall impact to DEF from extreme weather was lower than the previous five-year average. DEF will continue to improve its reliability by concentrating on its Grid Investment Plan, its Self-Healing Teams that segments the distribution grid to minimize the number of customers affected by a fault, its Storm Protection Plan, Substation Optimization Plan, and it's Fuse Replacement Program.

In 2021, DEF continued work targeting the North Coastal region. The following are the completed projects:

- 852 transformers under the Transformer Retrofit Program
- 20.61 miles under the Deteriorated Conductor Programs
- 14.3 miles under the Targeted Underground Program
- 9 feeders under the Self-Optimizing Grid Program
- 18 substations under the Fuse Replacement Program
- 4 feeders, 15.7 miles under Feeder Hardening Program

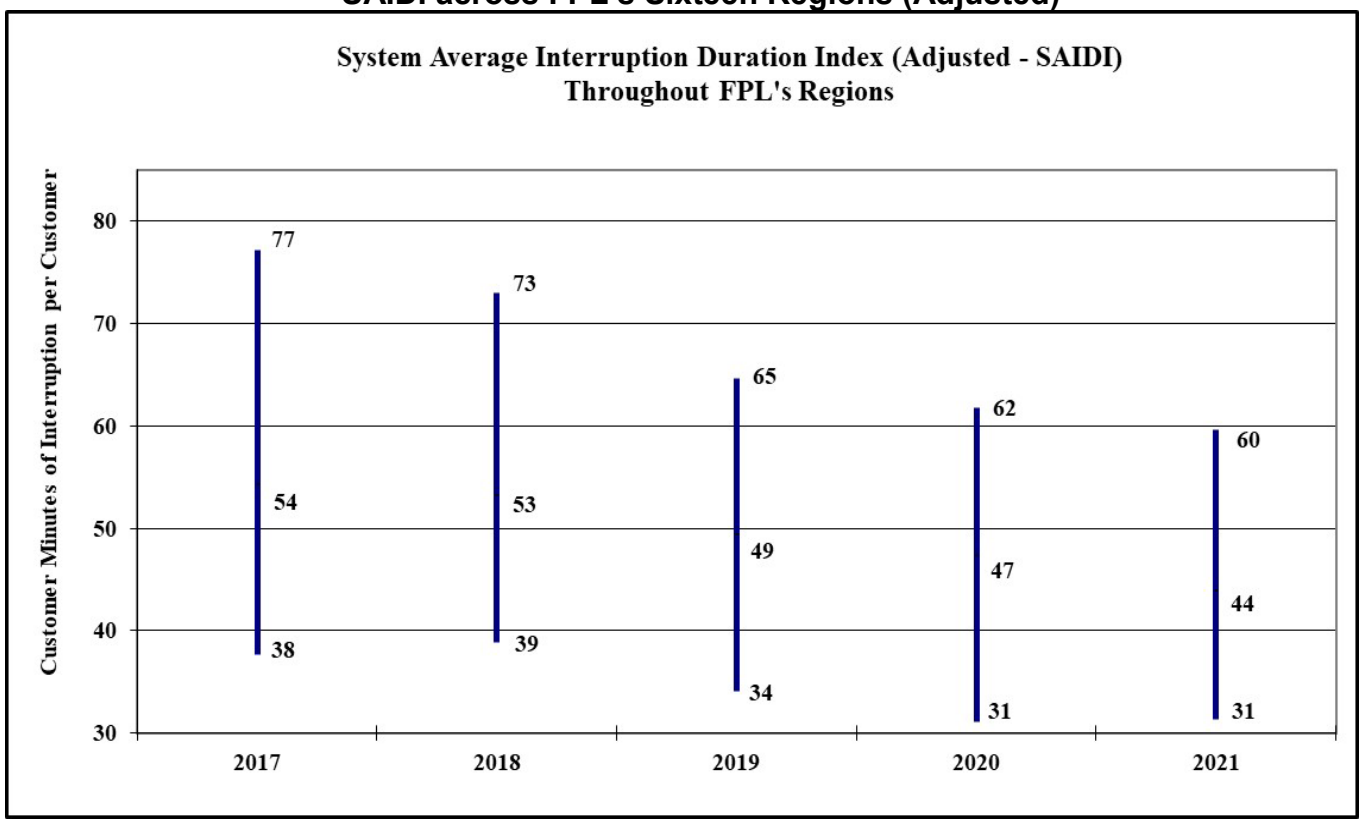
The following projects are planned in 2022:

- 7 substations under the Fuse Replacement Program
- 55 feeders under the Self-Optimizing Grid Program
- 30 miles under the Feeder Hardening Program
- 70 miles under the Lateral Hardening Program
- 49 pad mount transformers under the Flood Mitigation Program

Florida Power & Light Company: Adjusted Data

Figure 2-9 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 3 minute (6 percent) to its average SAIDI results for 2021 compared to 2020. The average SAIDI appears to be trending downward over the five-year period of 2017 to 2021. The North Broward region had the best SAIDI results for 2021.

Figure 2-9
SAIDI across FPL's Sixteen Regions (Adjusted)



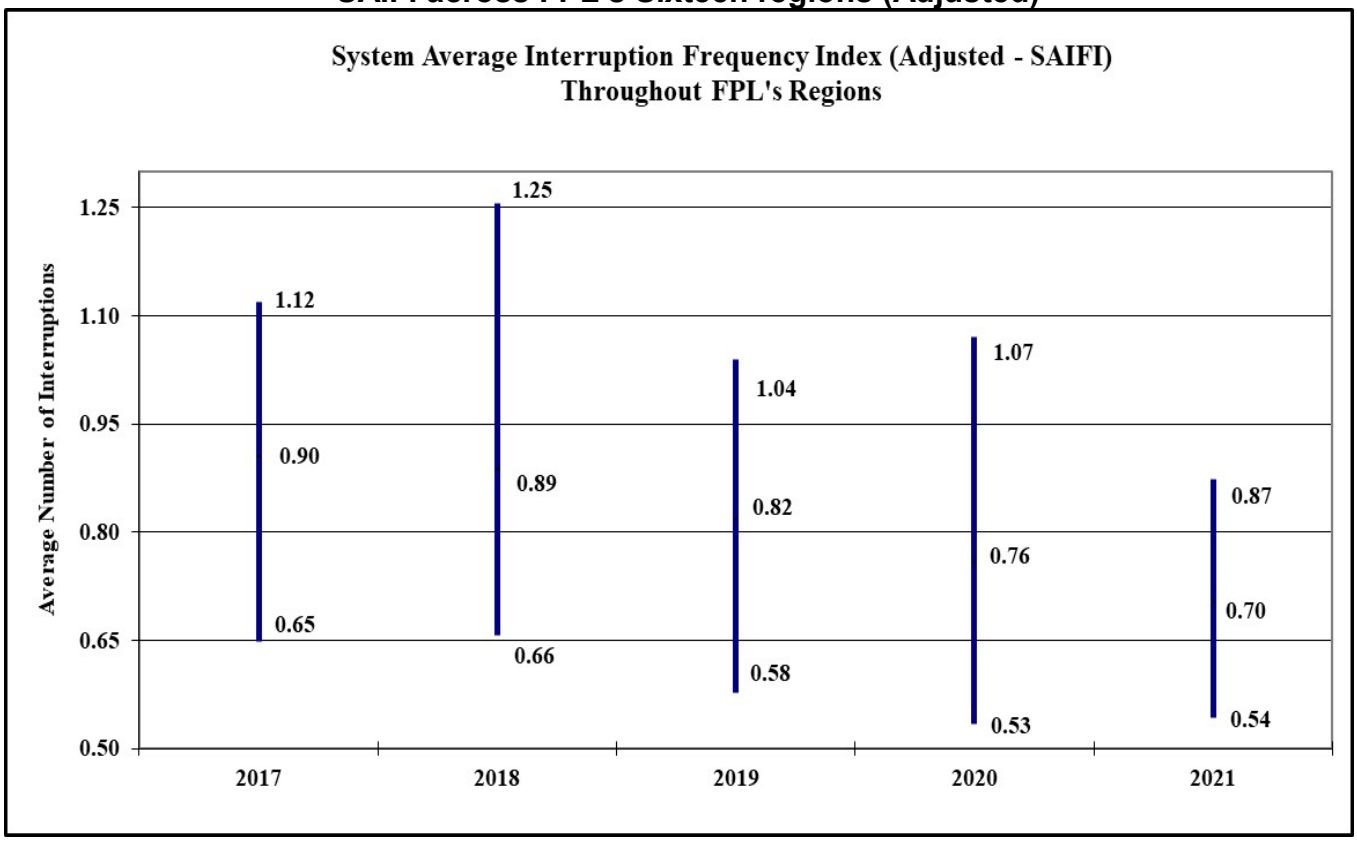
FPL's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest SAIDI	Toledo Blade	North Florida	Central Broward	North Florida	North Dade
Lowest SAIDI	Pompano	North Broward	Manasota	North Broward	North Broward

Source: FPL's 2017-2021 distribution service reliability reports.

Figure 2-10 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 0.70 outages in 2021, compared to 0.76 outages in 2020, which is an 8 percent decrease. FPL reported a decrease in the highest SAIFI of 0.87 interruptions in 2021 compared to 1.07 interruptions in 2020. The region reporting the lowest adjusted SAIFI for 2021 was Manasota at 0.54 interruptions compared to 0.53 interruptions in the North Broward region in 2020. During the period of 2017 to 2021 the highest, average, and lowest SAIFI appears to be trending downward.

Figure 2-10
SAIFI across FPL's Sixteen regions (Adjusted)



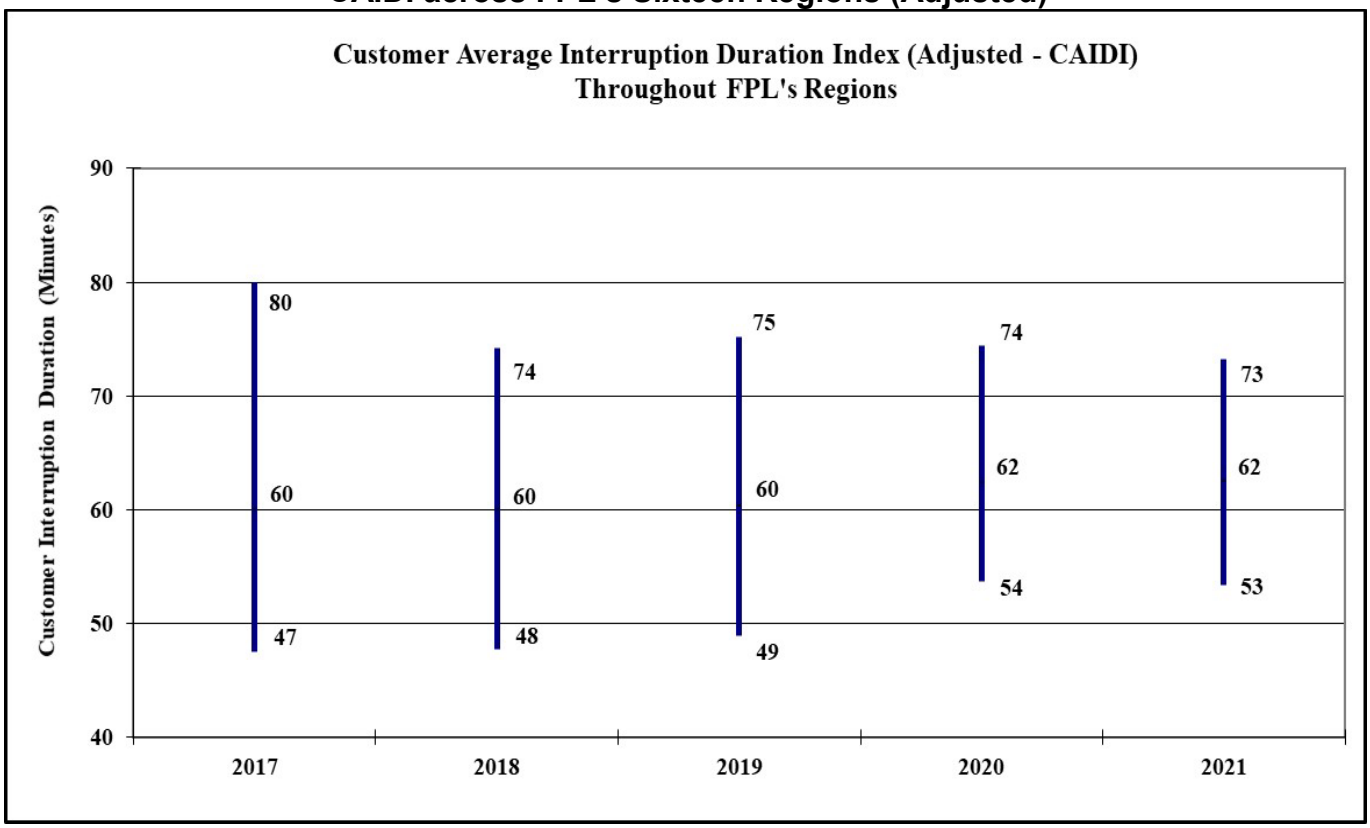
FPL's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest SAIFI	Toledo Blade	North Florida	North Florida	North Florida	North Florida
Lowest SAIFI	Pompano	North Broward	Manasota	North Broward	Manasota

Source: FPL's 2017-2021 distribution service reliability reports.

Figure 2-11 depicts FPL's highest, average, and lowest CAIDI expressed in minutes. FPL's adjusted average CAIDI was 62 minutes in 2020 and 2021. The average duration of CAIDI is trending upward. For 2021, the Boca Raton service area reported the lowest duration of CAIDI at 53 minutes. The highest duration of CAIDI was 73 minutes for the North Dade service area for 2021.

Figure 2-11
CAIDI across FPL's Sixteen Regions (Adjusted)



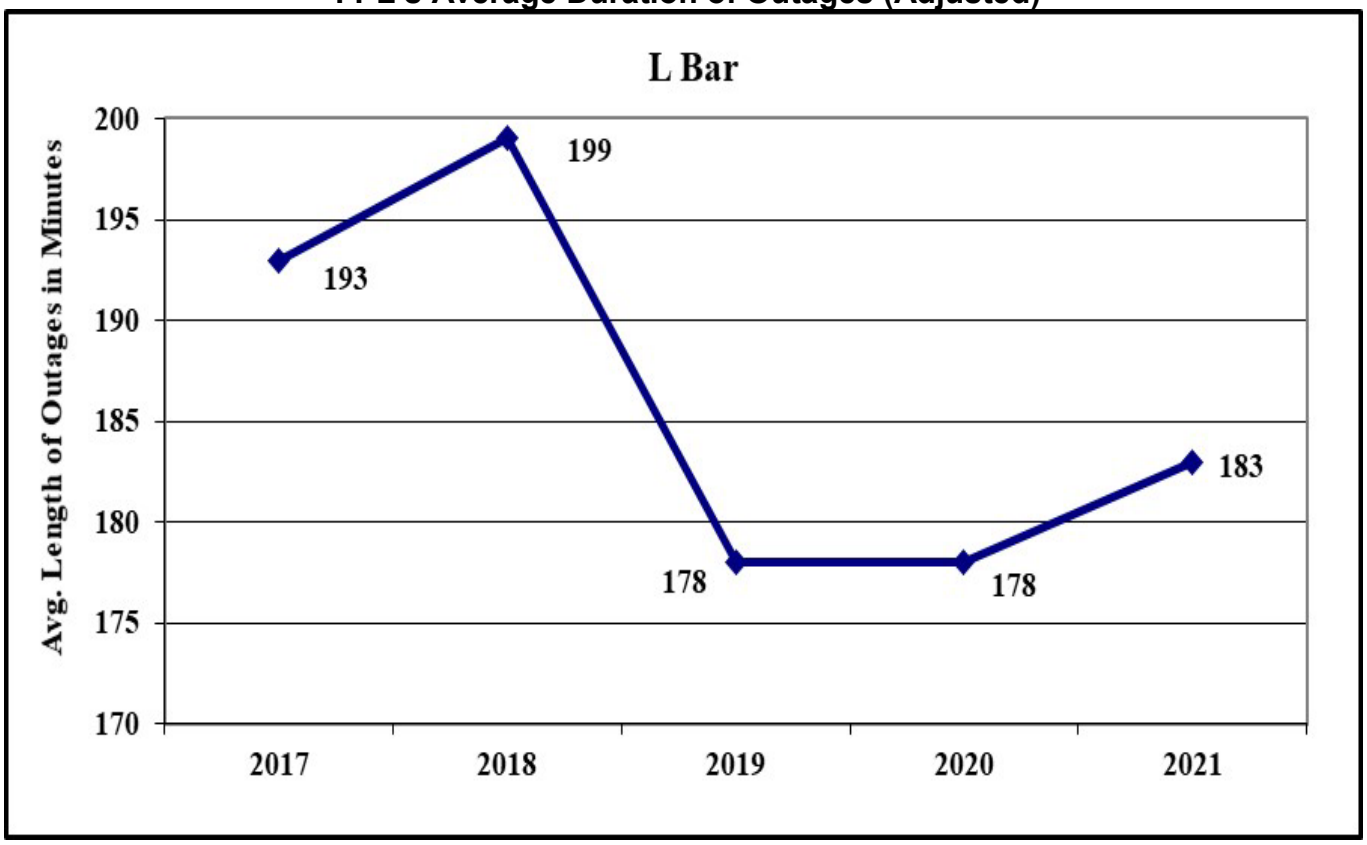
FPL's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest CAIDI	South Dade	North Dade	South Dade	North Dade	North Dade
Lowest CAIDI	West Palm	West Palm	West Palm	Central Florida	Boca Raton

Source: FPL's 2017-2021 distribution service reliability reports.

Figure 2-12 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's L-Bar was 178 minutes in 2020 and increased to 183 minutes in 2021. However, there is a 5 percent overall decrease since 2017, with the L-Bar trending downward, indicating FPL is spending less time restoring service to the last customer for that given outage.

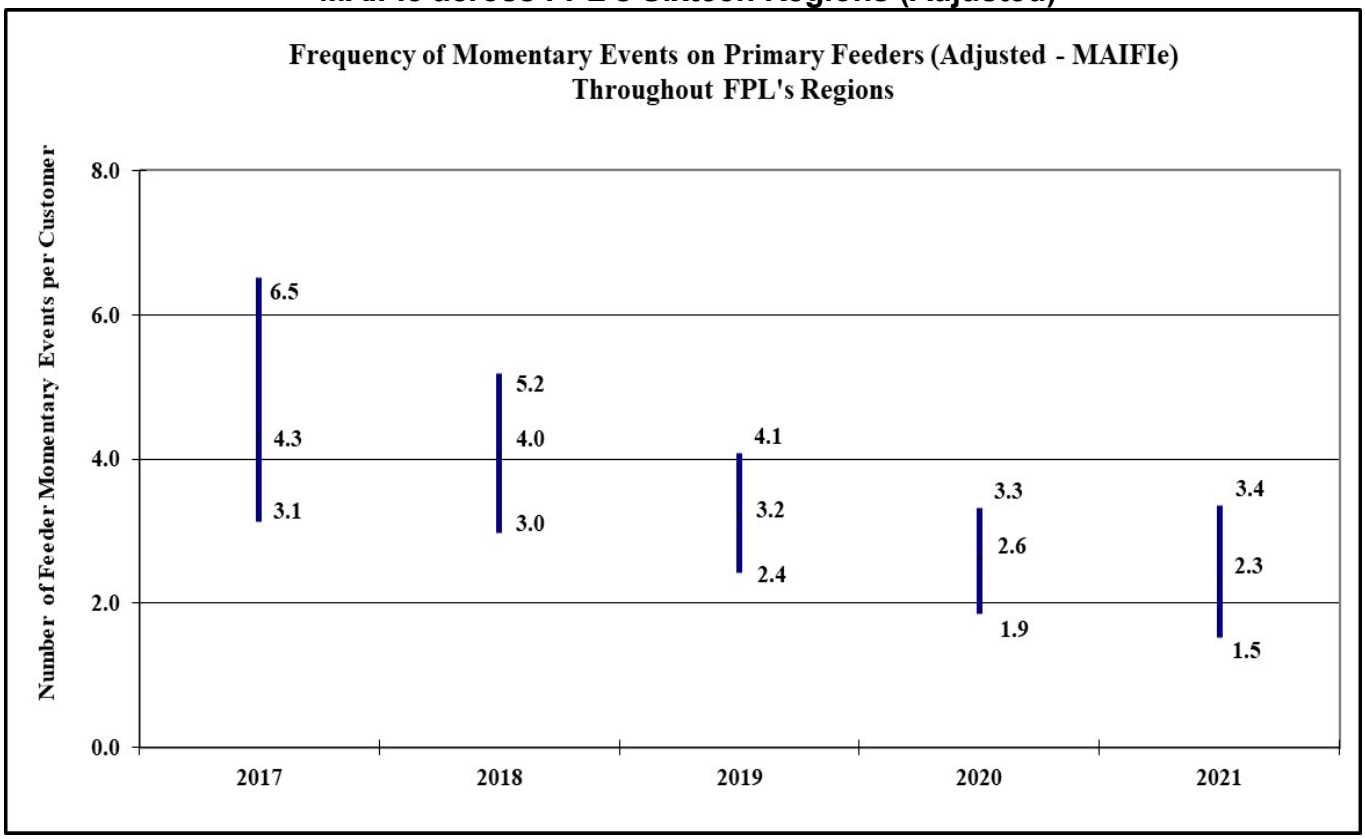
Figure 2-12
FPL's Average Duration of Outages (Adjusted)



Source: FPL's 2017-2021 distribution service reliability reports.

Figure 2-13 is the highest, average, and lowest adjusted MAIFIe recorded across FPL's system. FPL's Central Broward, Toledo Blade, West Palm, Boca Raton, and West Dade service areas have experienced the least reliable MAIFIe results of the 16 service areas of FPL since 2017. The North Broward, Central Dade, and Manasota service areas had the fewest momentary events since 2017. The results have been trending downward (improving) over the last five years. There is a 12 percent decrease in the average MAIFIe results from 2020 to 2021. As a note, FPL calculates MAIFIe differently. Specifically, if a feeder begins in one region and crosses another region, all customers on that feeder are impacted by the MAIFIe event and are counted in the starting region. Therefore, the number of customers per region will be different.

Figure 2-13
MAIFIe across FPL's Sixteen Regions (Adjusted)



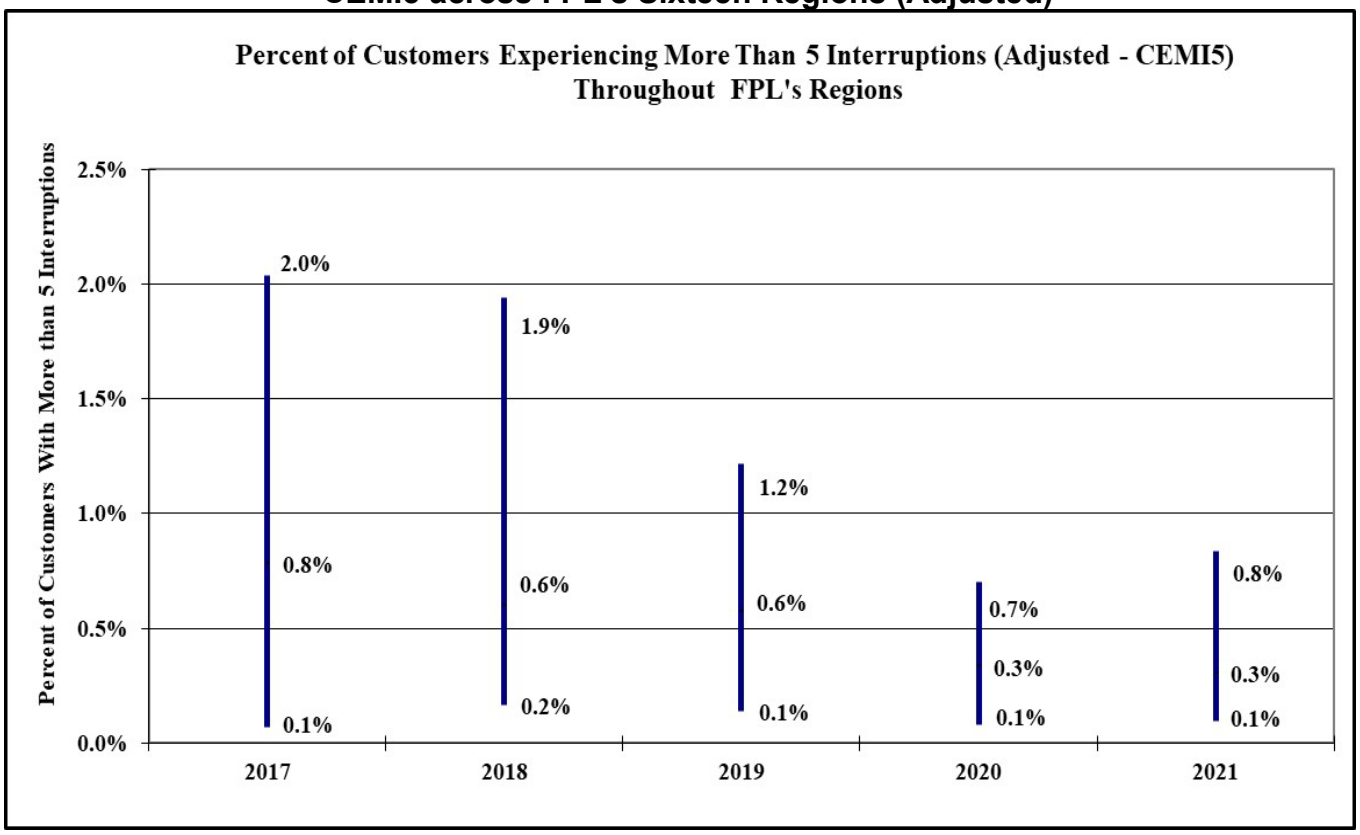
FPL's Regions with the Highest and Lowest Adjusted MAIFIe Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest MAIFIe	Central Broward	Toledo Blade	West Palm	Boca Raton	West Dade
Lowest MAIFIe	North Broward	Central Dade	Manasota	Manasota	North Broward

Source: FPL's 2017-2021 distribution service reliability reports.

Figure 2-14 shows the highest, average, and lowest adjusted CEMI5. FPL's customers with more than five interruptions per year appear to be trending downward. The service areas experiencing the highest CEMI5 over the five-year period appear to fluctuate among Brevard, Treasure Coast, West Palm, Toledo Blade and North Florida. Manasota, South Broward, Central Dade, and North Broward are reported as having the lowest percentages in the last five years. The average CEMI5 result for 2021 was 0.3 percent, which was the same as 2020.

Figure 2-14
CEMI5 across FPL's Sixteen Regions (Adjusted)



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

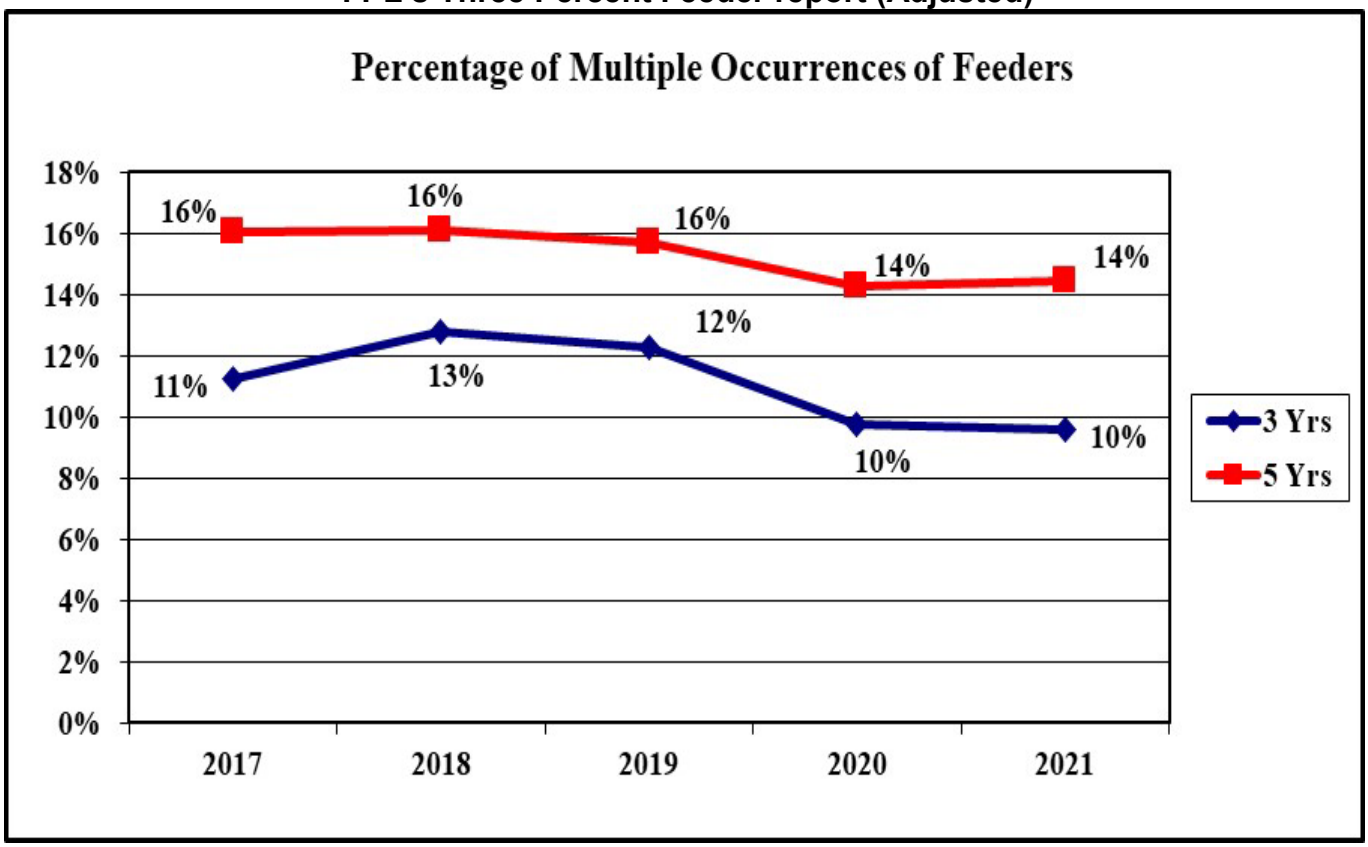
	2017	2018	2019	2020	2021
Highest CEMI5	West Palm	Toledo Blade	Treasure Coast	North Florida	Brevard
Lowest CEMI5	North Broward	South Broward	Central Dade	North Broward	Manasota

Source: FPL's 2017-2021 distribution service reliability reports.

Figure 2-15 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 was the same for 2021 as it was for 2020 at 10 percent. The five-year percentage was 14 percent in 2021, which was the same for 2020. Both the five-year percentage and the three-year percentage appear to be trending downward.

Staff notes six feeders were on the Three Percent Feeder Report the last two years. The outages ranged from defective equipment, vegetation, animals, vehicle, other weather, and unknown. FPL utilized visual, thermovision, and drone assessments, as well as its CEMI Program to repair feeders. Further, to mitigate future feeder outages, FPL will install automated feeder switches on two feeders in 2022. FPL also reported that in 2021, approximately 133 miles of trimming was performed on six feeders. FPL will continue repairs on five of the feeders and plans to harden one of the feeders in 2022. Four of the six feeders have already been hardened.

Figure 2-15
FPL's Three Percent Feeder report (Adjusted)

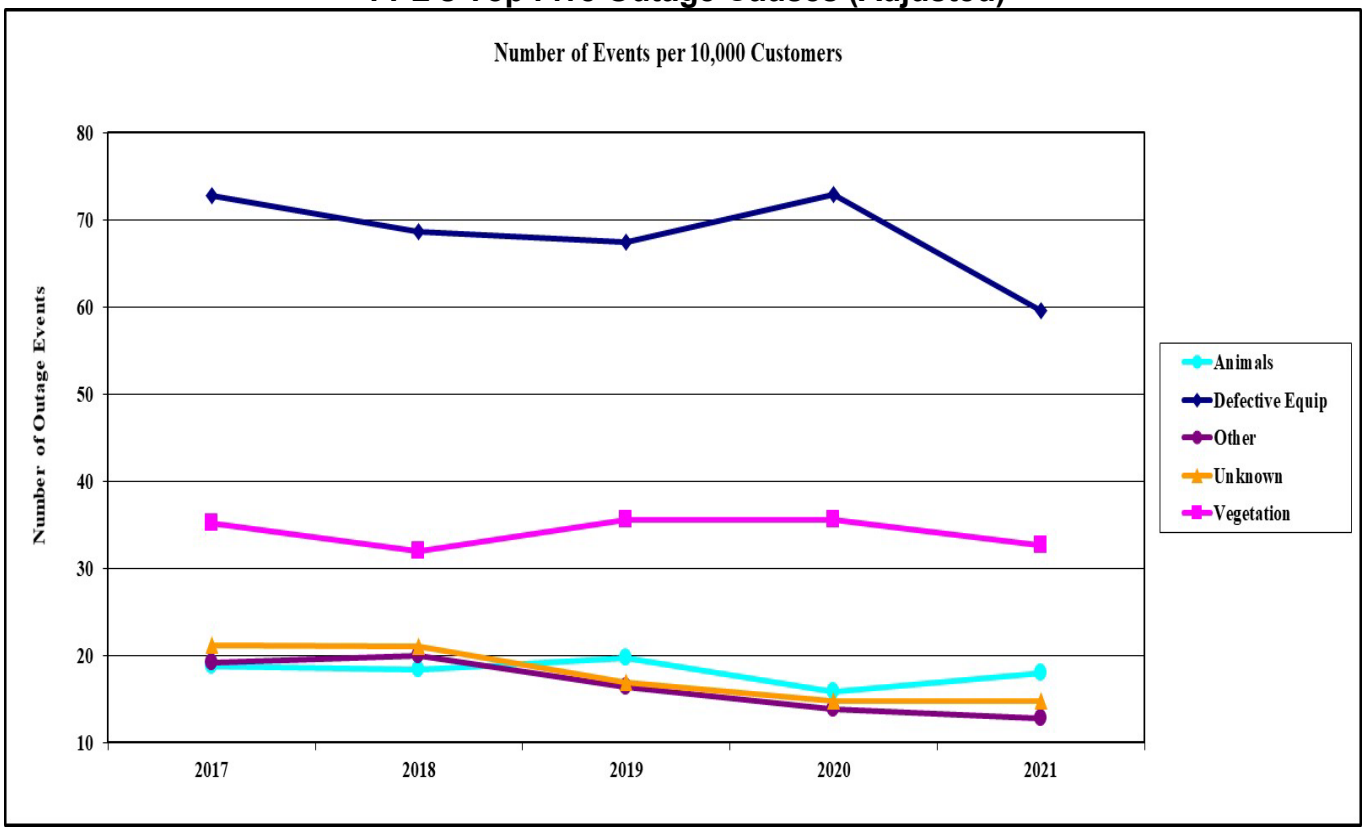


Source: FPL's 2017-2021 distribution service reliability reports.

Figure 2-16 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" (38 percent), "Vegetation" (21 percent), "Animals" (11 percent), "Unknown Causes" (9 percent), and "Other Causes" (8 percent) on a cumulative basis. Since 2017, the outage events due to "Defective Equipment," "Animals," "Unknown Causes," and "Other Causes" are trending downward as the "Vegetation" categories has remained relatively flat. The category "Defective Equipment" dominates the highest percentage of outage causes throughout the FPL regions; however, there was a 17 percent decrease in the number of outages from 2020 to 2021.

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 20 reliability programs listed for its 2022 budget. The programs include; distribution automation, system expansion, reducing the number of direct buried feeder and lateral cables failures, reducing the number of submarine feeder cables failures, replacing oil circuit reclosers with electronic reclosers, and more different programs. Sixteen programs are designed to improve the "Defective Equipment" cause code. Ten programs may improve the "Vegetation" cause code and nine programs may improve the "Animals" cause code. The "Animals" cause code had an increase in 2021 as the "Vegetation" cause code had a decrease.

Figure 2-16
FPL's Top Five Outage Causes (Adjusted)



Source: FPL's 2017-2021 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 2021 report shows the system indices for SAIDI, SAIFI, and MAIFe are lower or better than the 2020 results. There was no change in CAIDI, CEMI5, the Five-Year Percentages, and the Three-Year Percentages of Multiple Feeder Outage events and the L-Bar index had an increased. 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 North Florida region has had the highest SAIDI for two years, highest SAIFI for four years consecutively, and the highest CEMI5 for one year. However, the SAIFI value for the North Florida region decreased by 18 percent in 2021.

FPL stated that in 2021 the following actions were performed in the North Florida region:

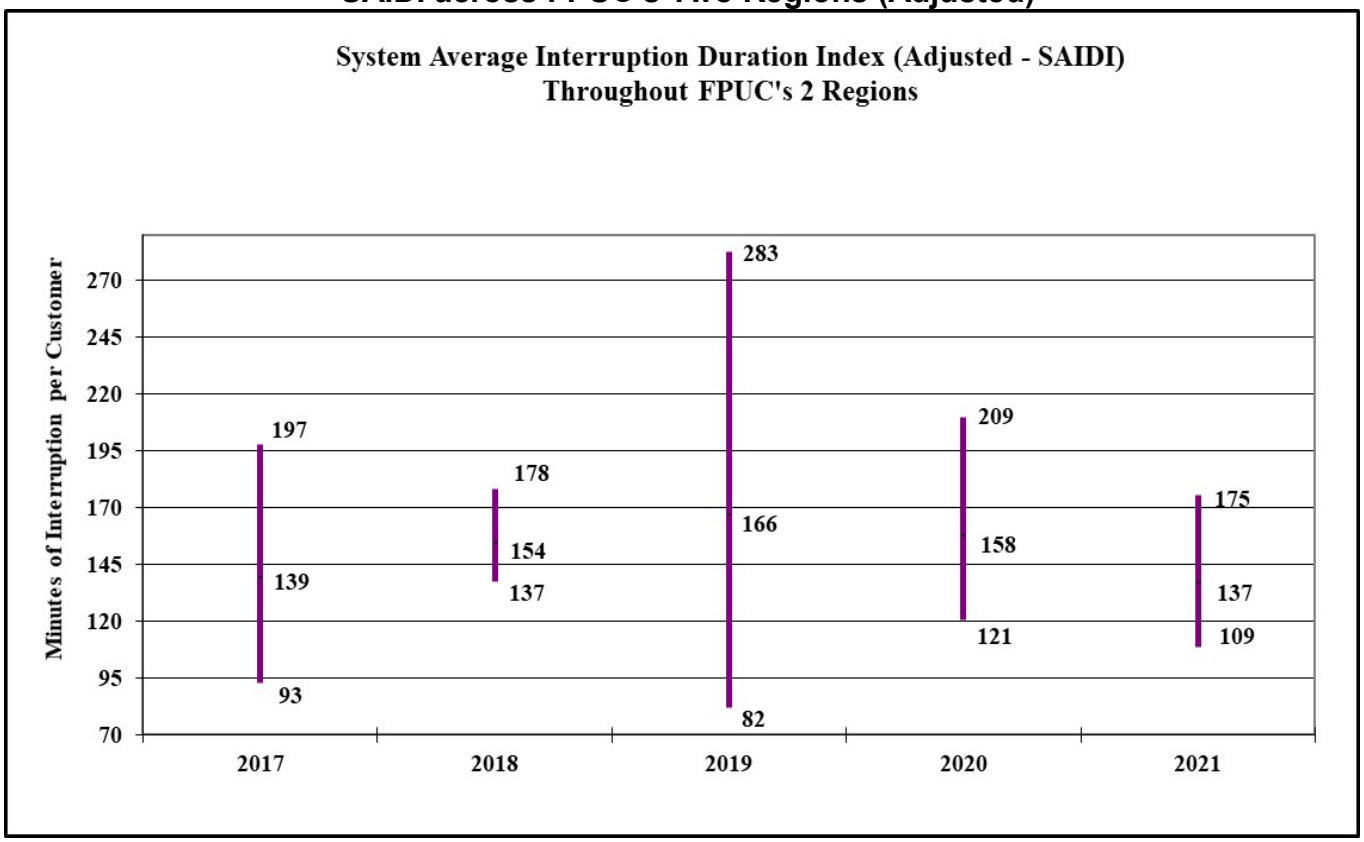
- Vegetation trimming on 651 miles (19 percent) of overhead primary lines
- Commissioned 58 automated feeder switches
- Addressed 17 feeders under the reliability programs
- Completed 29 Immediate Response Jobs (Assess overhead/hybrid feeders visually and perform repairs from the findings)
- Completed 19 CEMI Program Jobs (Conducts trigger based post outage investigation on feeders, which includes thermal and visual assessments, and performs repairs from the findings)
- Completed 119 visual feeder owner assessments

Florida Public Utilities Company: Adjusted Data

FPUC has two electric divisions, the Northwest division, referred to as Marianna (NW) and the Northeast division, referred to as Fernandina Beach (NE). Each division's results is reported separately because the two divisions are 250 miles apart and are 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 2-17 shows the highest, average, and lowest adjusted SAIDI values recorded by FPUC's system. The data shows the average SAIDI index has remained relativity flat for the five-year period of 2017 to 2021 and there was a 13 percent decrease from 2020 to 2021.

Figure 2-17
SAIDI across FPUC's Two Regions (Adjusted)



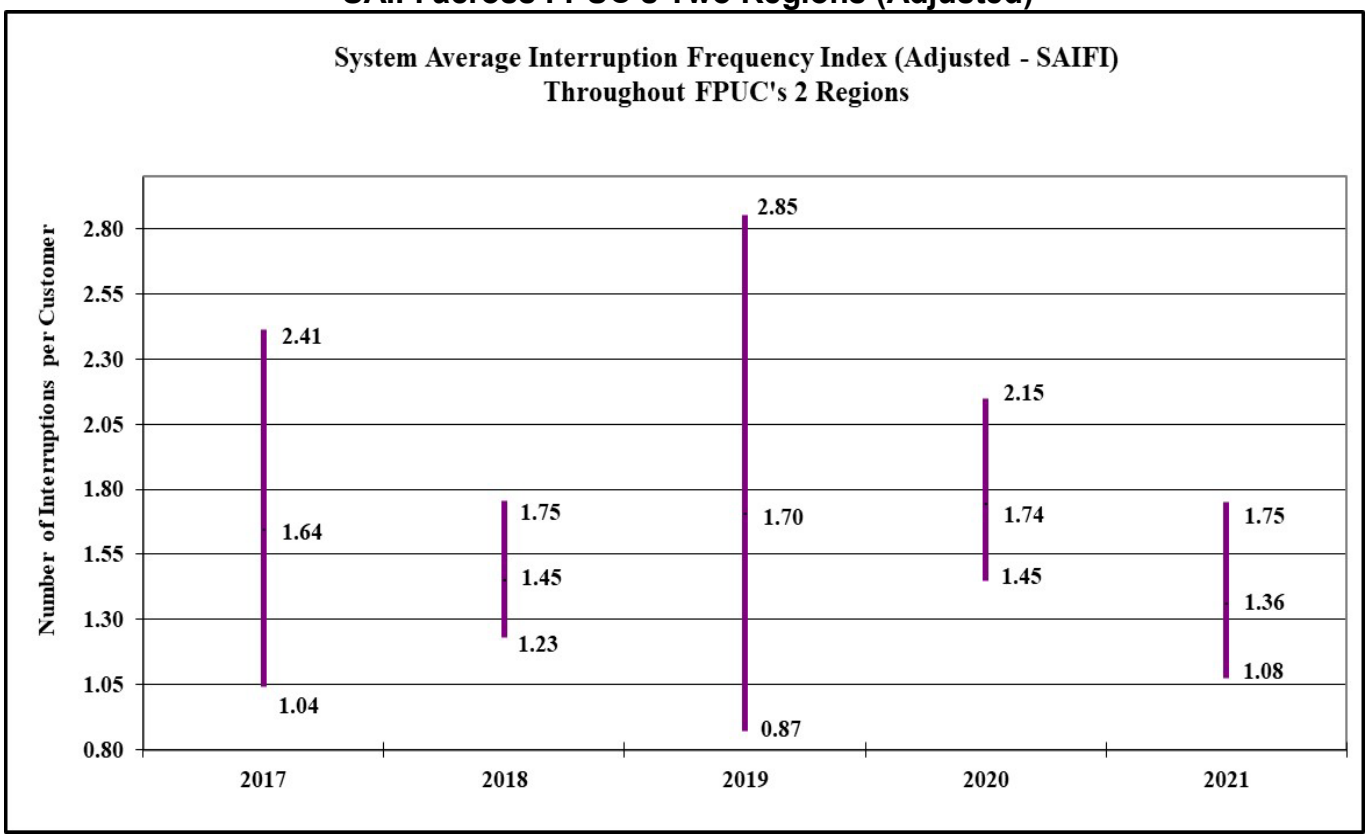
FPUC's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
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 2017-2021 distribution service reliability reports.

Figure 2-18 shows the adjusted SAIFI across FPUC's two divisions. The data depicts a 23 percent decrease in the 2021 average SAIFI reliability index from 2020. The data for the average and maximum SAIFI values are trending downward over the five-year period of 2017 to 2021 as the minimum SAIFI values are trending upward for the same time period.

Figure 2-18
SAIFI across FPUC's Two Regions (Adjusted)



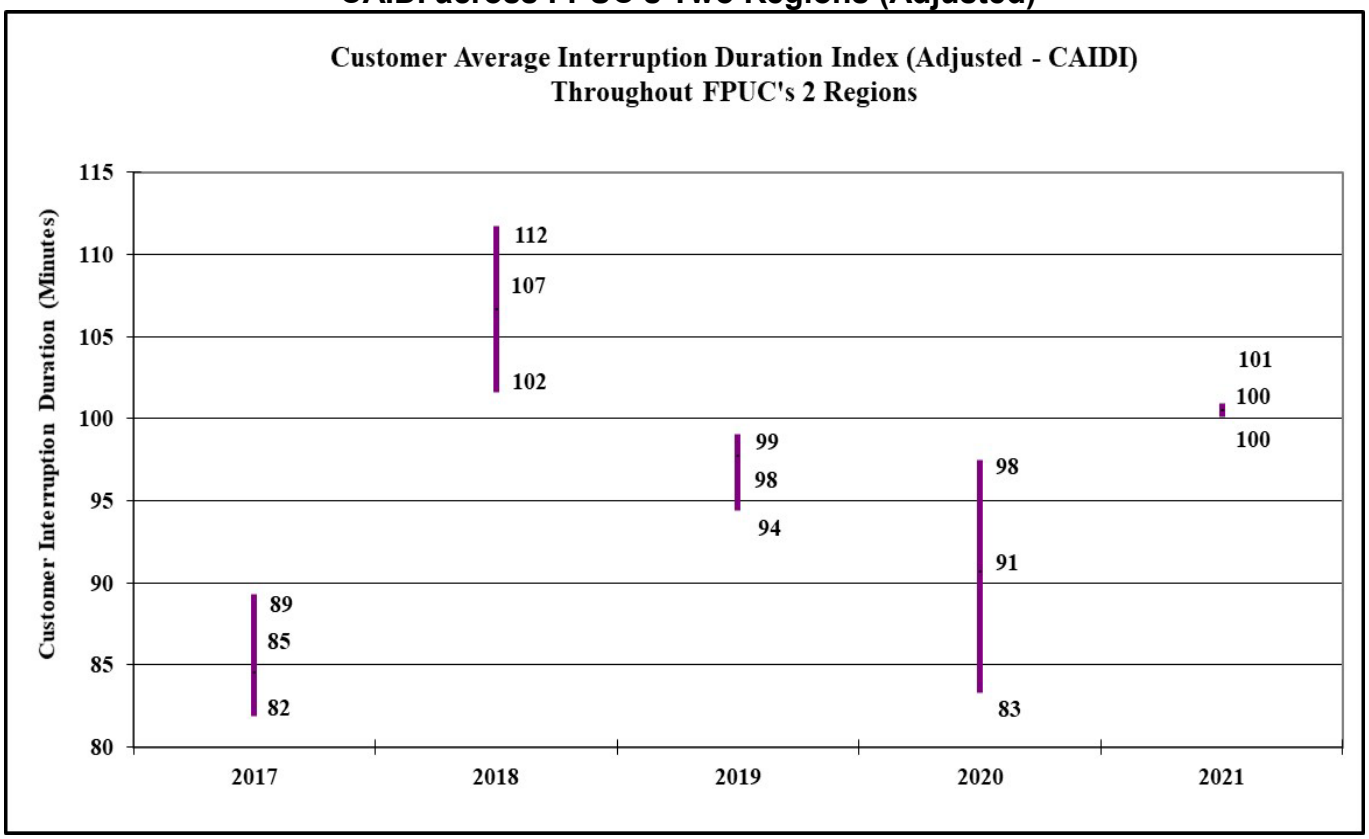
FPUC's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
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 2017-2021 distribution service reliability reports.

Figure 2-19 shows the highest, average, and lowest adjusted CAIDI values across FPUC's system. FPUC's data shows the average CAIDI value increased by 10 percent for 2021 (100 minutes) when compared to 2020 (91 minutes). For the past five years, the minimum, the maximum, and the average CAIDI values are trending upward.

Figure 2-19
CAIDI across FPUC's Two Regions (Adjusted)



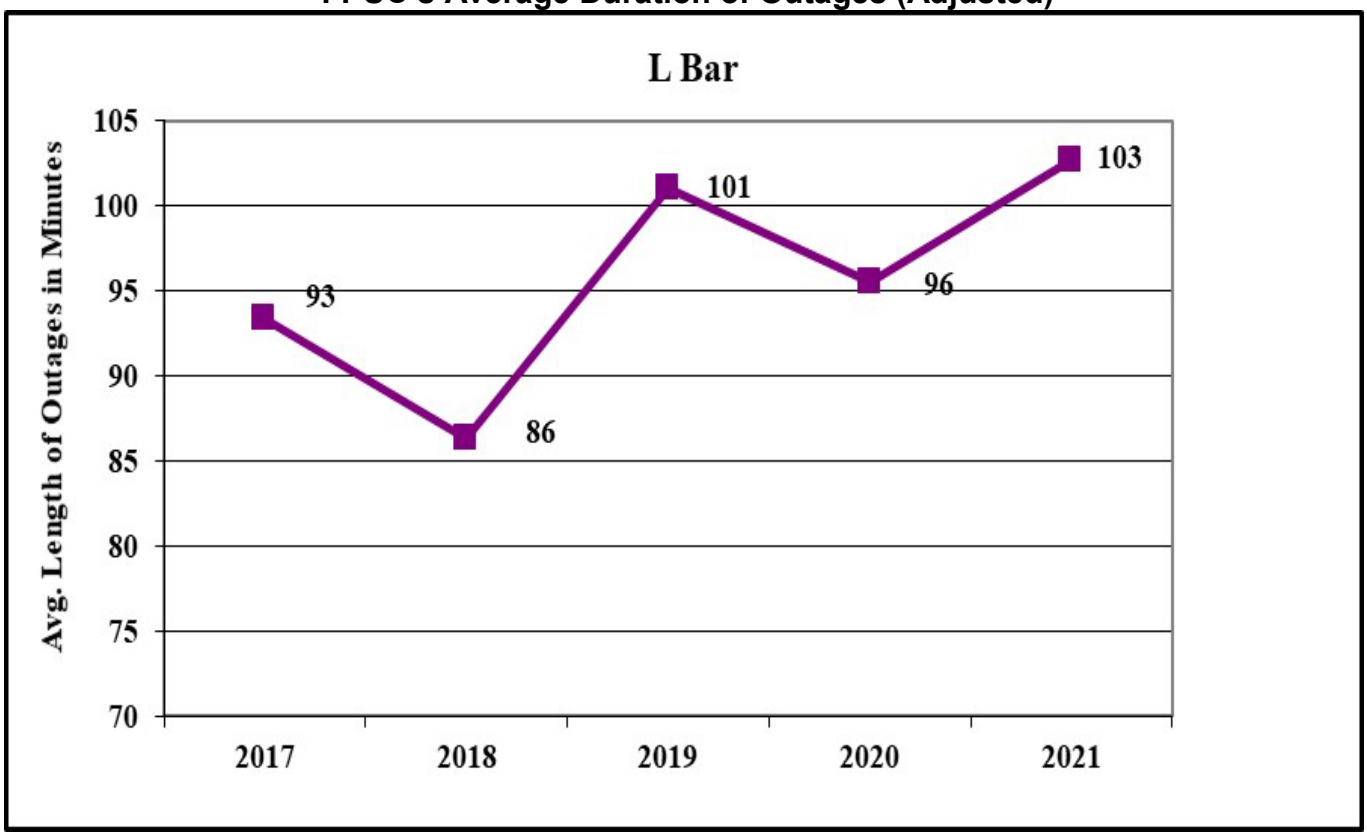
FPUC's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest CAIDI	Fernandina(NE)	Fernandina(NE)	Marianna (NW)	Marianna (NW)	Fernandina(NE)
Lowest CAIDI	Marianna (NW)	Marianna (NW)	Fernandina(NE)	Fernandina(NE)	Marianna (NW)

Source: FPUC's 2017-2021 distribution service reliability reports.

Figure 2-20 is the average length of time FPUC spends recovering from outage events (adjusted L-Bar). There was a 7 percent increase in the L-Bar value from 2020 to 2021. The data for the five-year period of 2017 to 2021 suggests that the L-Bar index is trending upward indicating FPUC is taking additional time to restore service after an outage event.

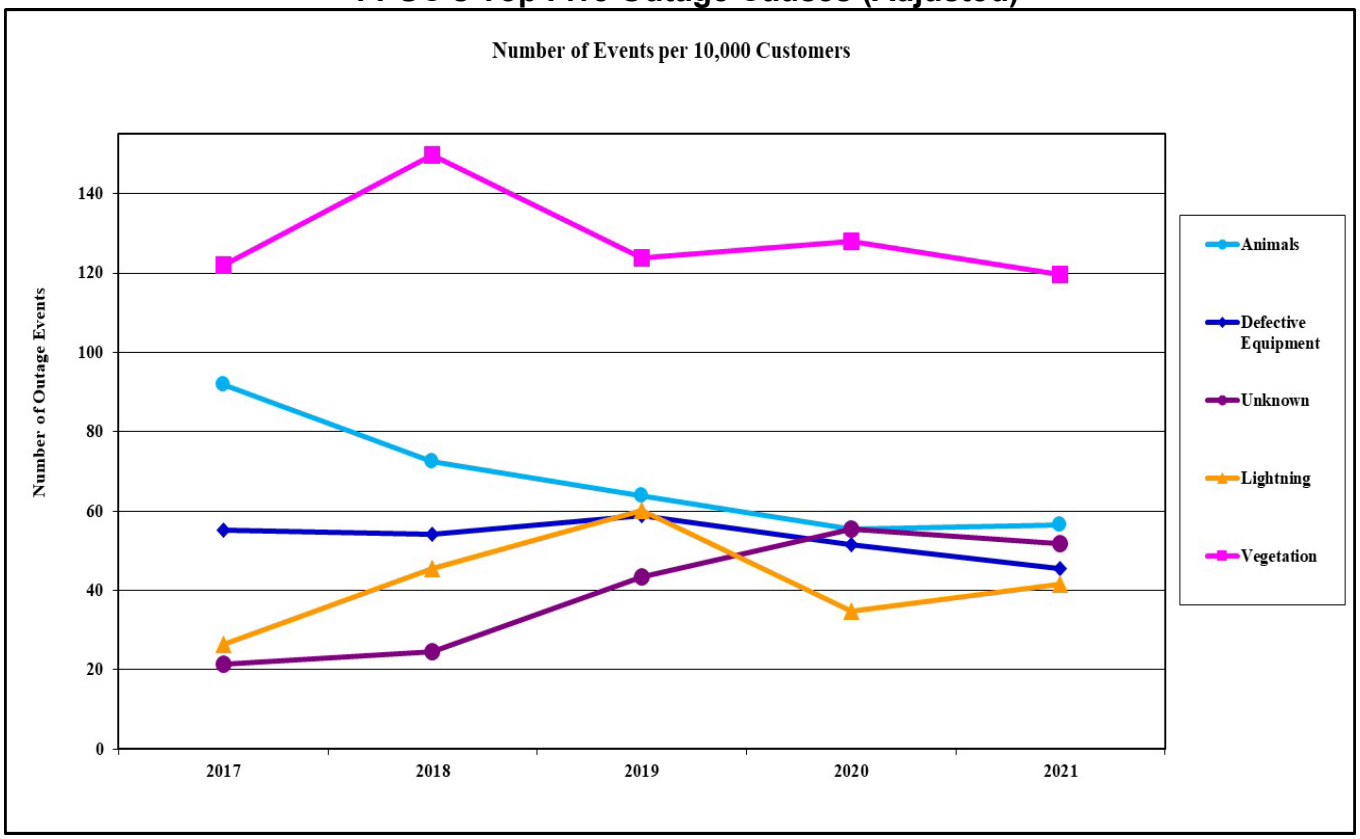
Figure 2-20
FPUC's Average Duration of Outages (Adjusted)



Source: FPUC's 2017-2021 distribution service reliability reports.

Figure 2-21 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 2021, the top five causes of outage events were "Vegetation" (35 percent), "Animals" (16 percent), "Unknown" (15 percent), "Defective Equipment" (13 percent), and "Lightning" (12 percent). These five factors represent 91 percent of the total adjusted outage causes in 2021. The "Vegetation" category is trending downward with a 5 percent decrease from 2020 to 2021. The outage causes by "Animals" is also trending downward. The causes by "Lightning," and "Unknown" are trending upward. "Defective Equipment" is trending downwards with an 11 percent decrease from 2020 to 2021. The "Lightning" category had a 22 percent increase and the "Unknown" category decreased 6 percent during the same time period. The "Animals" category caused outages had a 3 percent increase from 2020 to 2021. FPUC reported that it has continued to work with its vegetation management contractor to study more efficient ways to perform tree trimming and minimize outages. The results of the study have indicated that a four-year tree trimming cycle for both feeders and laterals would contribute towards those objectives and as such, FPUC plans to replace its current three-year feeder and six-year lateral trimming plan with four-year cycles. In addition, FPUC will continue to install new and replace damaged animal guards whenever possible, to overhead transformer bushings and other locations where animal outages occur. These initiatives are being implemented in both divisions.

Figure 2-21
FPUC's Top Five Outage Causes (Adjusted)



Source: FPUC's 2017-2021 distribution service reliability reports.

FPUC filed a Three Percent Feeder Report listing the top 3 percent of feeders with the outage events for 2021. 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 of these feeders was listed on the report for 2017 and 2021. The other feeder was listed on the report only in 2021.

Observations: FPUC's Adjusted Data

The CAIDI average index has increased compared to 2020. For the five-year period of 2017 to 2021, the average index for SAIFI is trending downward as the CAIDI, and L-Bar are trending upward. The average index for SAIDI has remained relativity flat. FPUC reported that it continues to invest in its storm hardening initiatives, infrastructure improvements, and system upgrades in both divisions. FPUC believes this will generate reliability improvements in the future. The Utility reviewed its five-year reliability indicator trends, averages and outage causes, and determined the reliability indexes continue to be significantly influenced by weather.

To improve its reliability, in 2018, FPUC planned to implement a new lateral protection strategy by installing cutout-mounted recloser units. This program deploys TripSaver cutout-mounted reclosers on the worst performing laterals over the last three years. The TripSaver recloser works the same as an electronic recloser but for a smaller number of customers. The reclosers offer protection to upstream customers by giving a utility the ability to isolate faults and shorten the outage time experienced by customers. During 2021, FPUC installed 14 devices in the Northwest division and 11 devices in the Northeast division. Preliminary analysis of the performance improvements showed that an estimated 189 outages in the Northwest division and 31 in the Northeast division were avoided.

As noted above, FPUC worked with its vegetation management contractor to study more efficient ways to perform tree trimming and minimize outages. The results of the study have indicated that a four-year tree trimming cycle for both feeders and laterals would contribute towards those objectives and as such, FPUC plans to replace its current three-year feeder and six-year lateral trimming plan with four-year cycles. FPUC has included the four-year trim cycle as part of its Storm Protection Plan. The Commission will consider these changes in that docket.[6]

FPUC is not required 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.

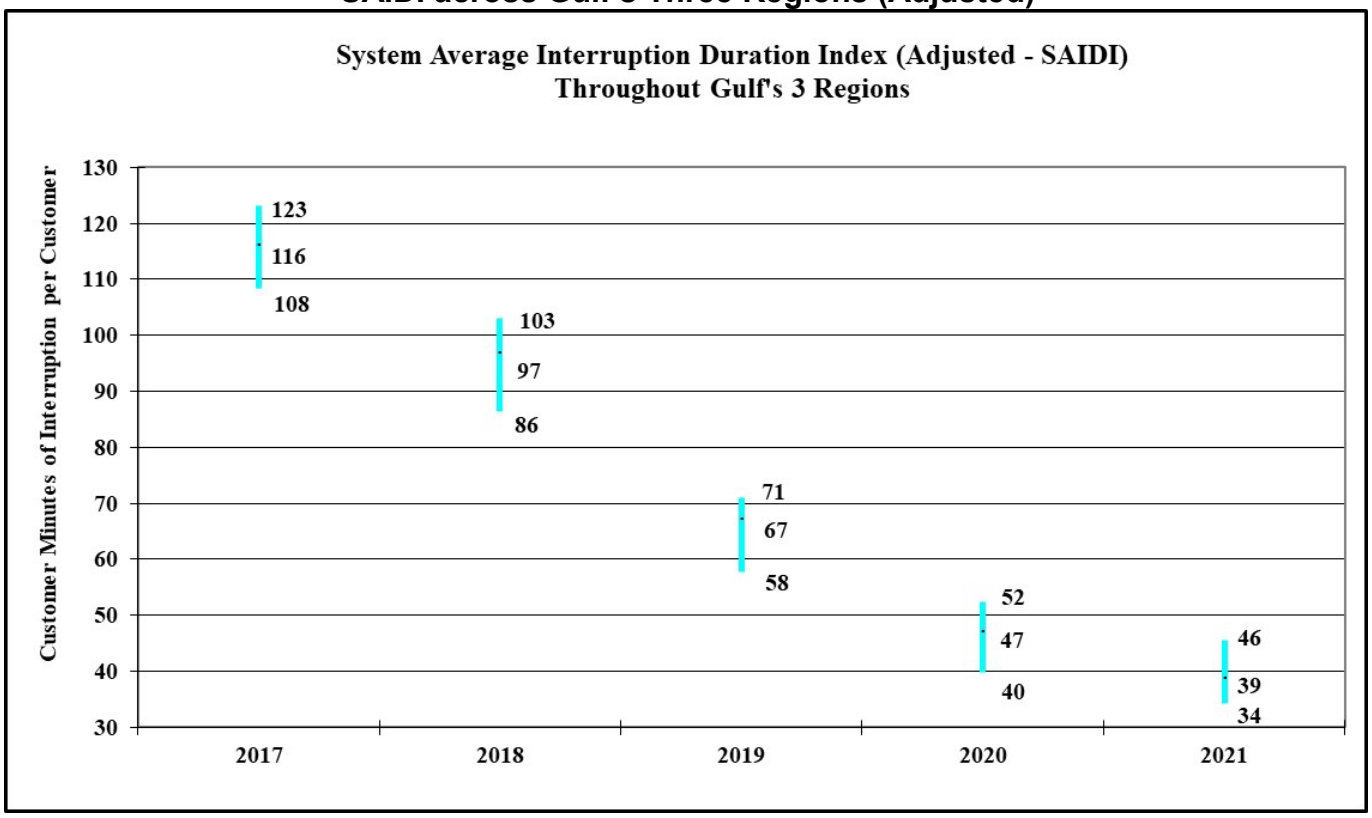
[6] Docket No. 20220049-EI, *In re: Review of Storm Protection Plan, pursuant to Rule 25-6030, F.A.C. (FPUC)*

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 regions: Pensacola, Fort Walton, and Panama City. The region distribution metrics and overall distribution system metrics are presented in the following figures.

Figure 2-22 illustrates Gulf's SAIDI minutes, or the interruption duration minutes on a system basis. The chart depicts a 17 percent decrease in the average SAIDI in Gulf's combined regions when compared to the 2020 results. Gulf's 2021 average performance was 39 minutes compared to 47 minutes in 2020. The highest SAIDI value for 2021 was the Panama City region as the Pensacola region had the best or lowest SAIDI value. The maximum, minimum, and average SAIDI indices are trending downward.

Figure 2-22
SAIDI across Gulf's Three Regions (Adjusted)



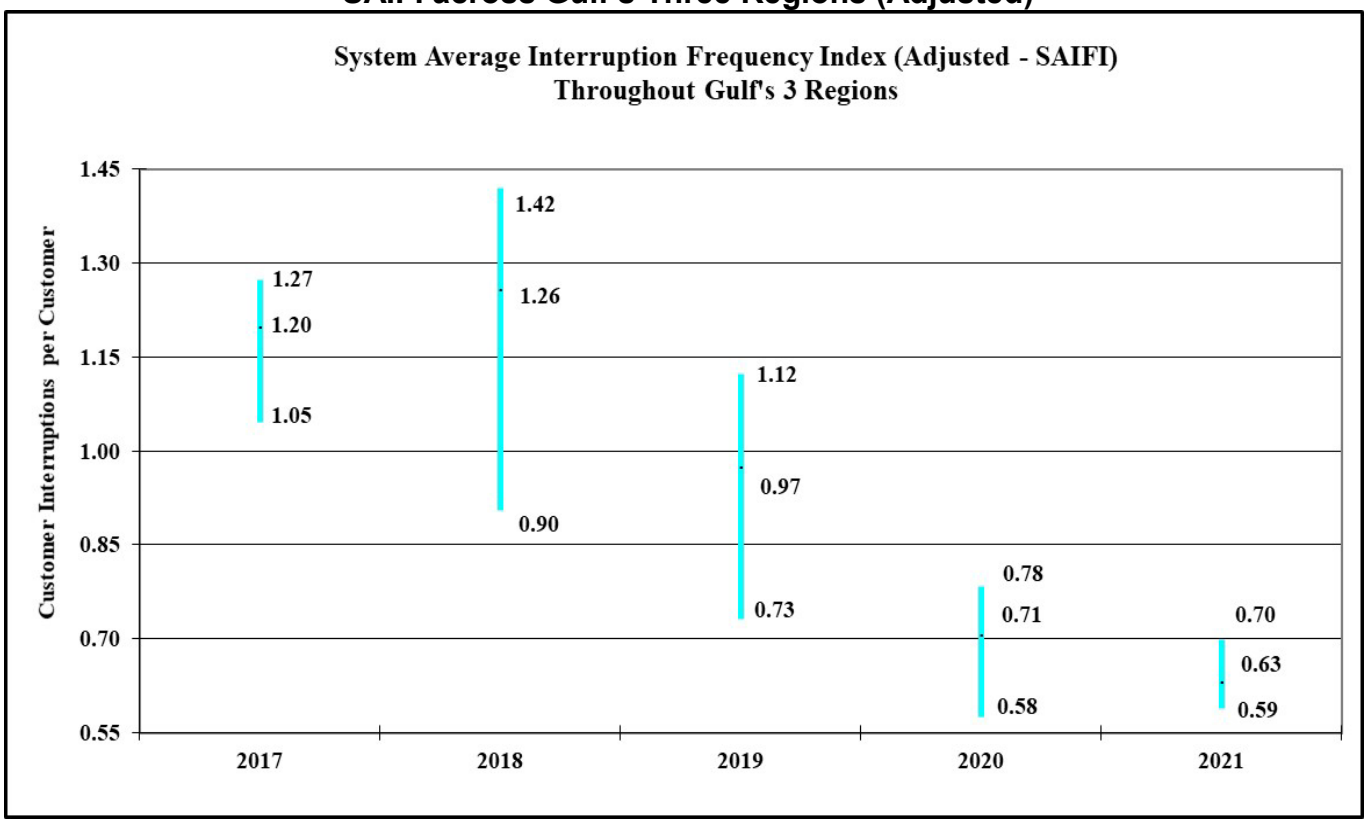
Gulf's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest SAIDI	Pensacola	Panama City	Pensacola	Panama City	Panama City
Lowest SAIDI	Panama City	Fort Walton	Fort Walton	Fort Walton	Pensacola

Source: Gulf's 2017-2021 distribution service reliability reports.

Figure 2-23 illustrates that Gulf's SAIFI had an 11 percent decrease in 2021 when compared to 2020. The highest SAIFI value for the past five years has been mostly in the Panama City region. The lowest values appear to be in the Fort Walton region. The maximum, average, and minimum SAIFI values appear to be trending downward.

Figure 2-23
SAIFI across Gulf's Three Regions (Adjusted)



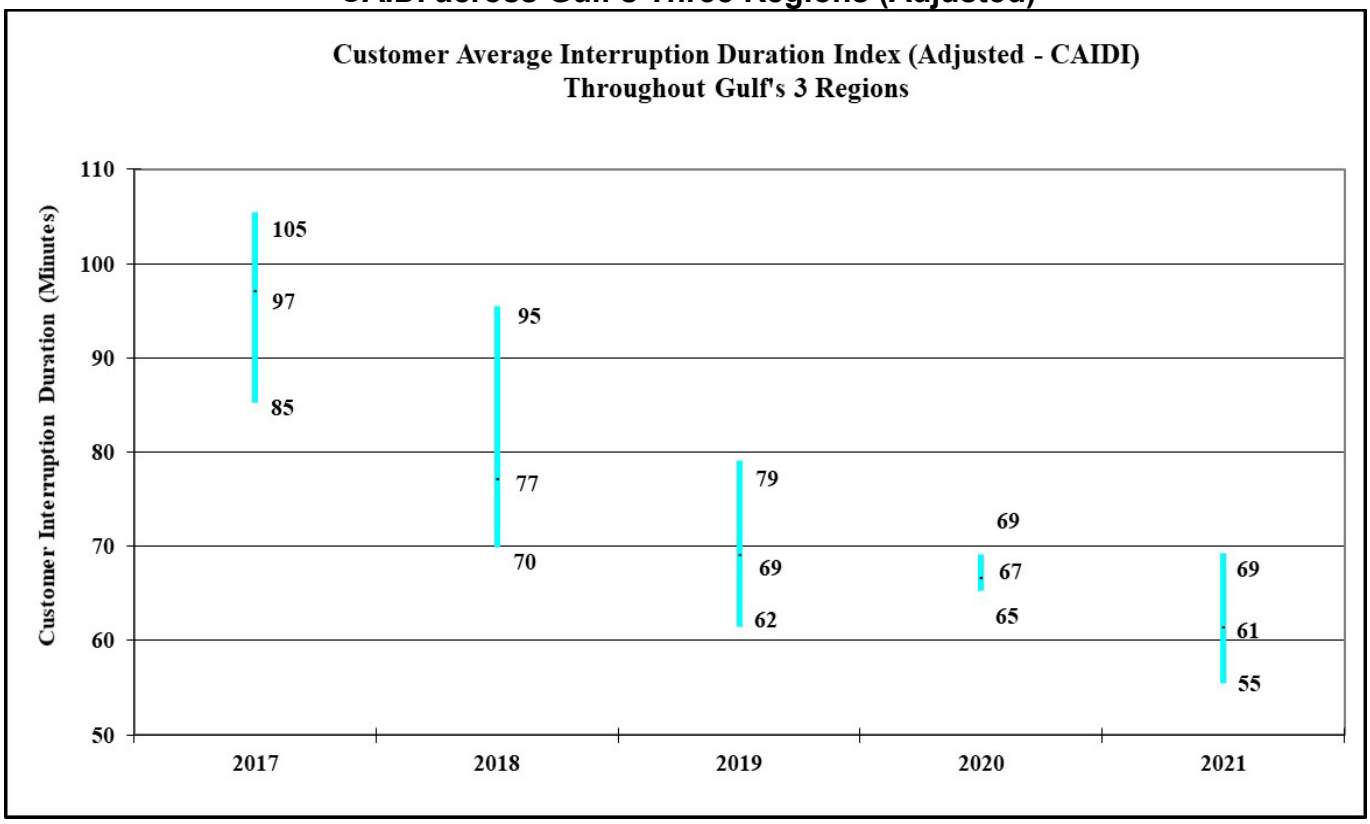
Gulf's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest SAIFI	Panama City	Pensacola	Panama City	Panama City	Panama City
Lowest SAIFI	Fort Walton	Fort Walton	Fort Walton	Fort Walton	Fort Walton

Source: Gulf's 2017-2021 distribution service reliability reports.

Figure 2-24 depicts Gulf's adjusted CAIDI. For 2021, the average CAIDI is 61 minutes and represents a 9 percent decrease from the 2020 value of 67 minutes. In 2021, the Fort Walton region continued to have the highest CAIDI value, as the Pensacola region had the lowest CAIDI. Staff notes that the average, maximum, and minimum CAIDI values are trending downward.

Figure 2-24
CAIDI across Gulf's Three Regions (Adjusted)



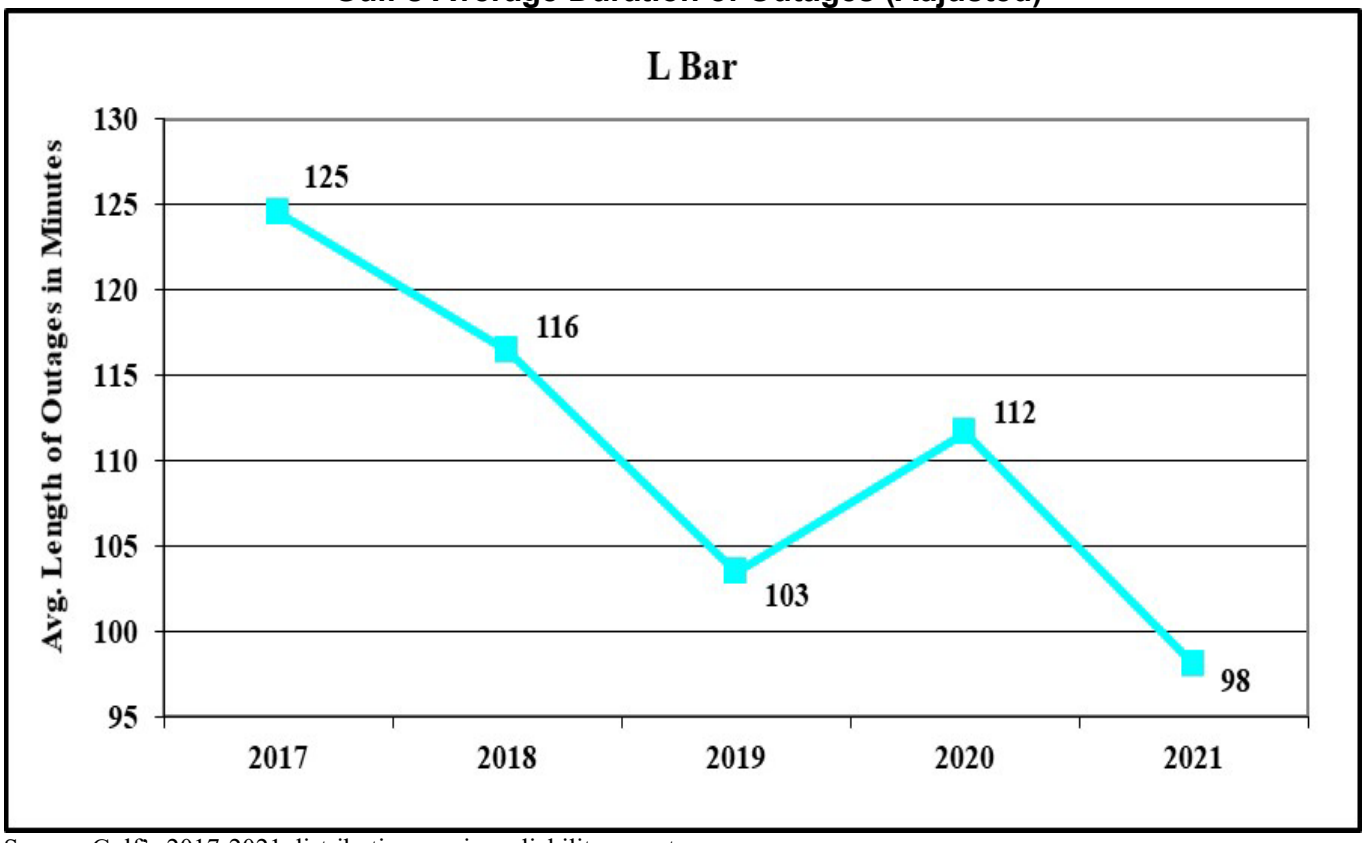
Gulf's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest CAIDI	Fort Walton	Fort Walton	Fort Walton	Fort Walton	Fort Walton
Lowest CAIDI	Panama City	Pensacola	Panama City	Pensacola	Pensacola

Source: Gulf's 2017-2021 distribution service reliability reports.

Figure 2-25 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 13 percent decrease from 2020 to 2021. The data for the five-year period of 2017 to 2021 shows a downward trend. This indicates that Gulf is spending less time restoring service to customers.

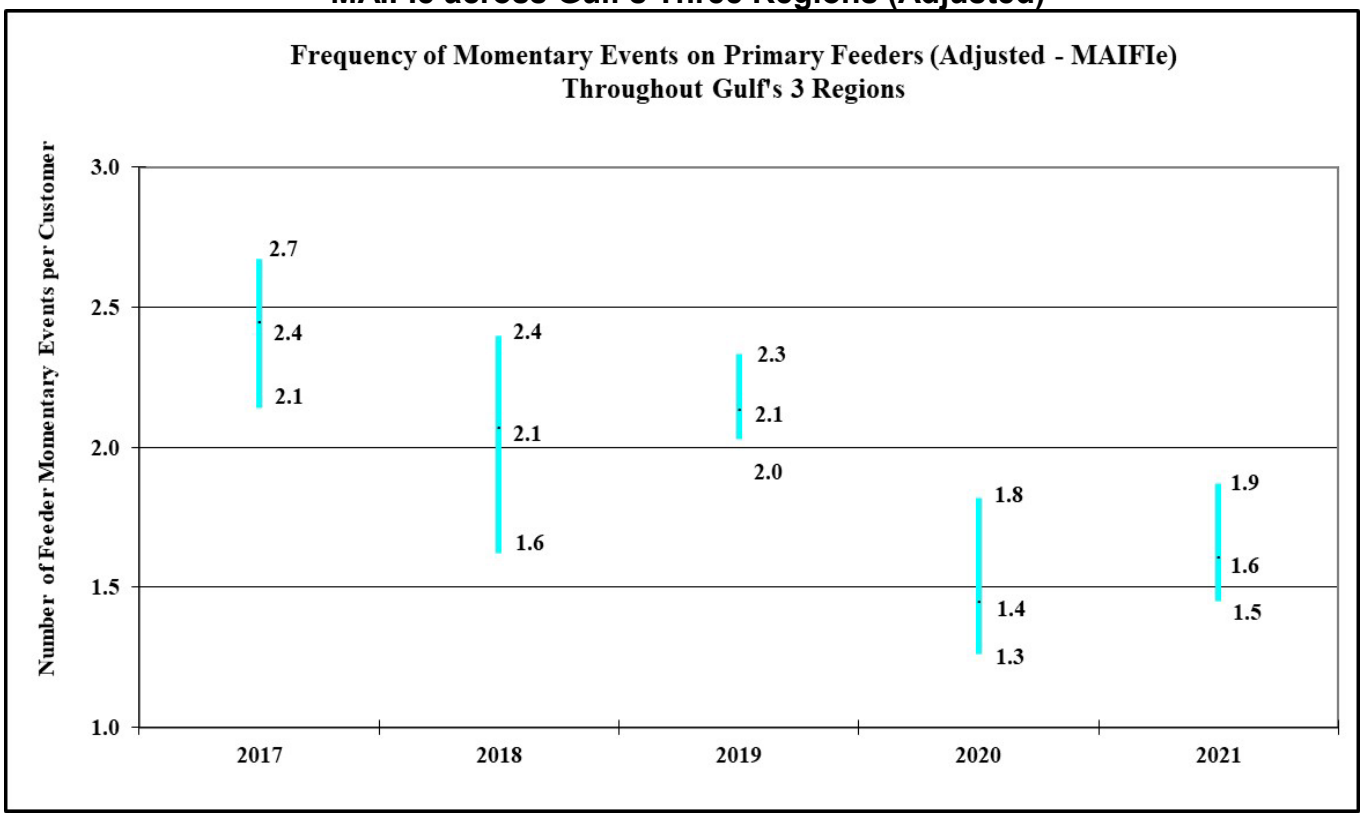
Figure 2-25
Gulf's Average Duration of Outages (Adjusted)



Source: Gulf's 2017-2021 distribution service reliability reports.

Figure 2-26 is the adjusted MAIFIe recorded across Gulf's system. The adjusted MAIFIe results by region show that the Pensacola region had the lowest frequency of momentary events on primary feeders. The Fort Walton region had the highest MAIFIe index in 2021. The average MAIFIe had a 14 percent increase of 1.6 events in 2021 compared to 1.4 events in 2020. The data suggest that the highest, average, and lowest MAIFIe are all continuing to trend downward, suggesting improvement.

Figure 2-26
MAIFIe across Gulf's Three Regions (Adjusted)



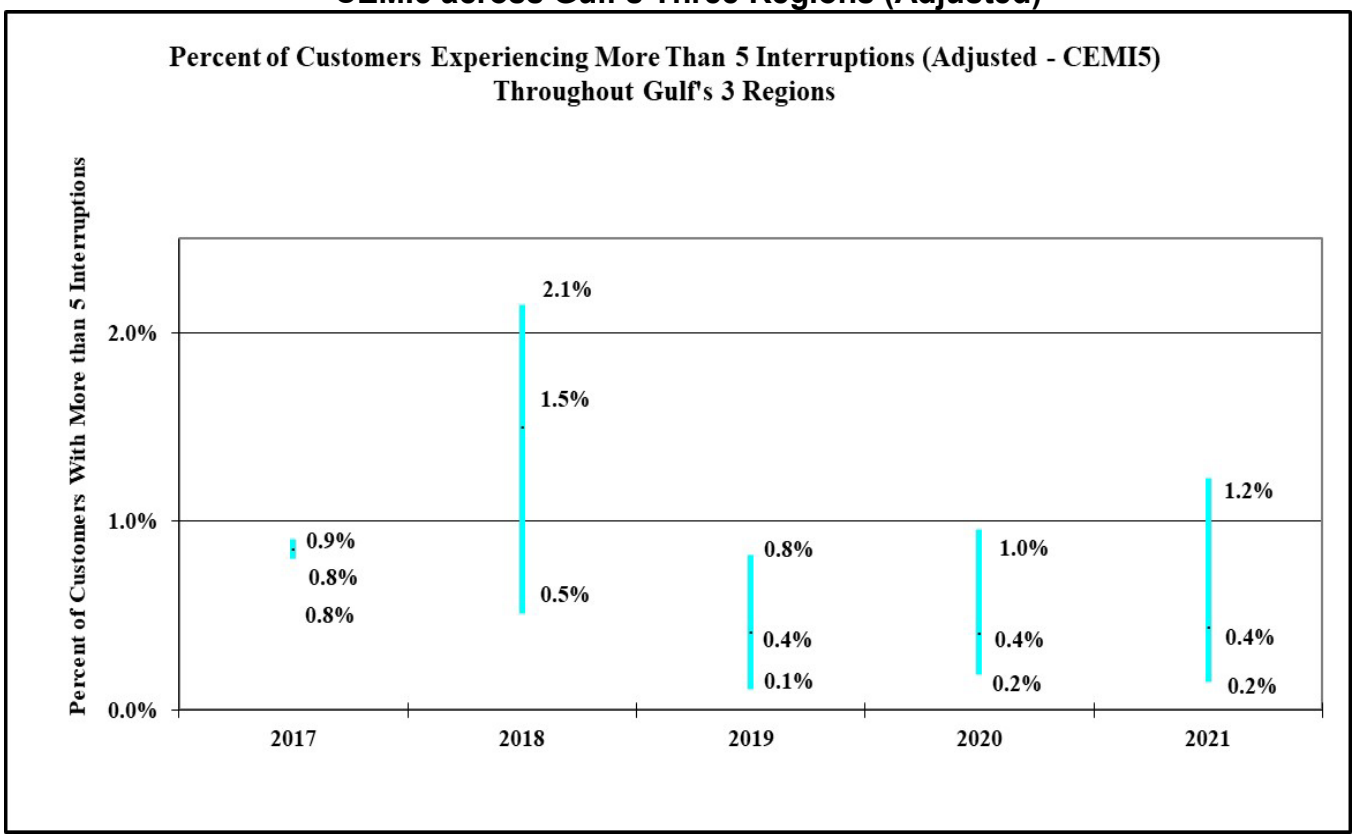
Gulf's Regions with the Highest and Lowest Adjusted MAIFIe Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest MAIFIe	Pensacola	Pensacola	Panama City	Panama City	Fort Walton
Lowest MAIFIe	Fort Walton	Fort Walton	Fort Walton	Pensacola	Pensacola

Source: Gulf's 2017-2021 distribution service reliability reports.

Figure 2-27 shows the highest, average, and lowest adjusted CEMI5 across Gulf's Pensacola, Fort Walton, and Panama City regions. Gulf's 2021 results illustrate no change in the average CEMI5 percentage when compared to 2020, staying at 0.4 percent. The maximum, average, and minimum CEMI5 appears to be trending downward over the five-year period of 2017 to 2021.

Figure 2-27
CEMI5 across Gulf's Three Regions (Adjusted)



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

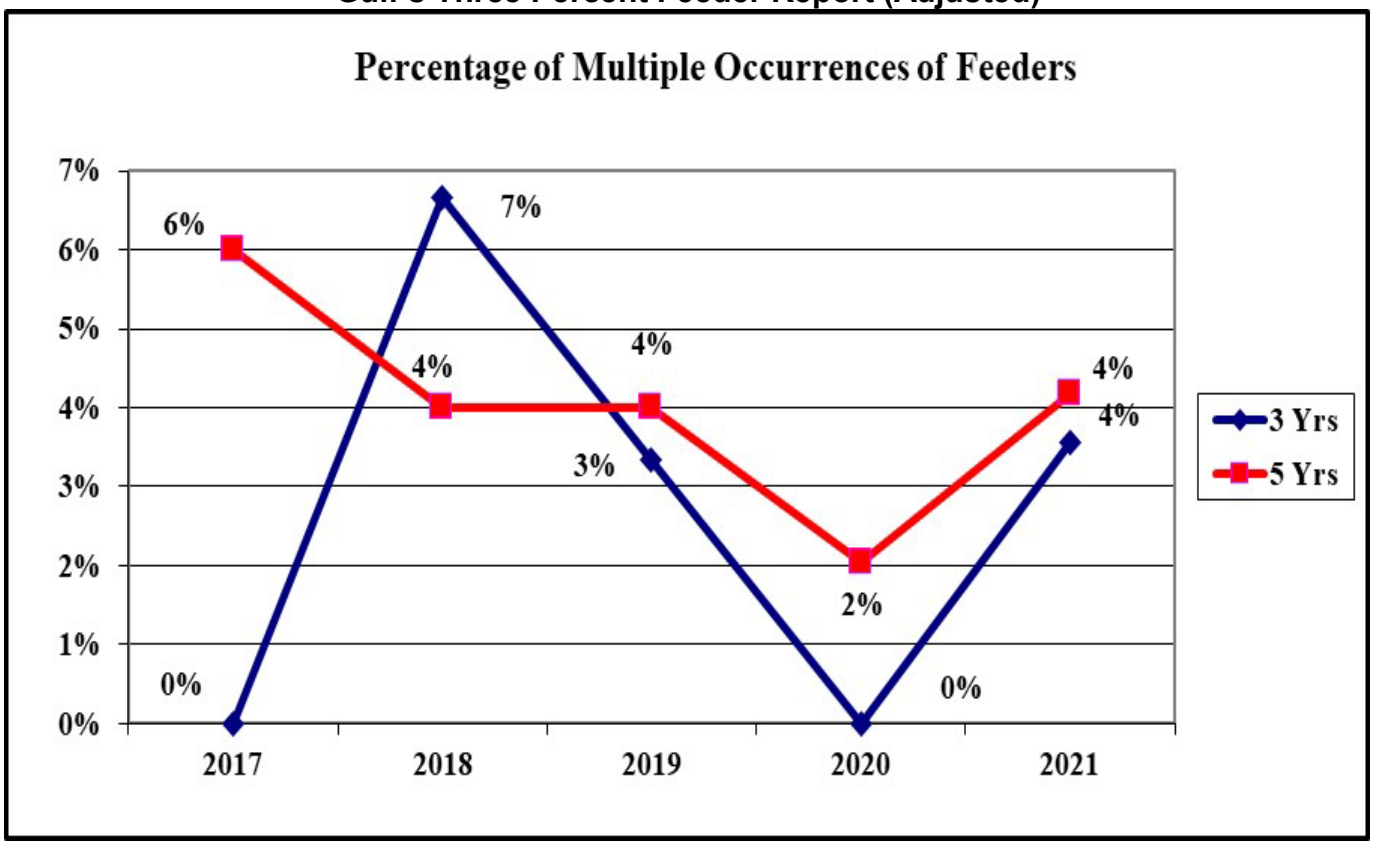
	2017	2018	2019	2020	2021
Highest CEMI5	Fort Walton	Panama City	Panama City	Panama City	Panama City
Lowest CEMI5	Pensacola	Fort Walton	Fort Walton	Fort Walton	Fort Walton

Source: Gulf's 2017-2021 distribution service reliability reports.

Figure 2-28 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 3 percent of feeders that have the most feeder outage events. The supporting data illustrates that the five-year multiple occurrences were increased by 100 percent from 2020 to 2021 as the three-year multiple occurrences increased by 400 percent. The five-year period of 2017 to 2021 indicates overall that the five-year multiple occurrences index is trending downward as the three-year multiple occurrences index is trending slightly upward.

There were nine feeders on the Three Percent Feeder Report. Gulf reported that the three top causes of the outages associated with the nine feeders listed were "Defective Equipment," "Other," and "Vehicle." Gulf explained that three outages under the "Other" category were related to a protective device locking-out under an energized work permit and one outage was related to a fire. Gulf reported that effective January 1, 2022, its service areas were fully consolidated with FPL. As a result, FPL's reliability programs will be applied throughout the former Gulf service area.

Figure 2-28
Gulf's Three Percent Feeder Report (Adjusted)

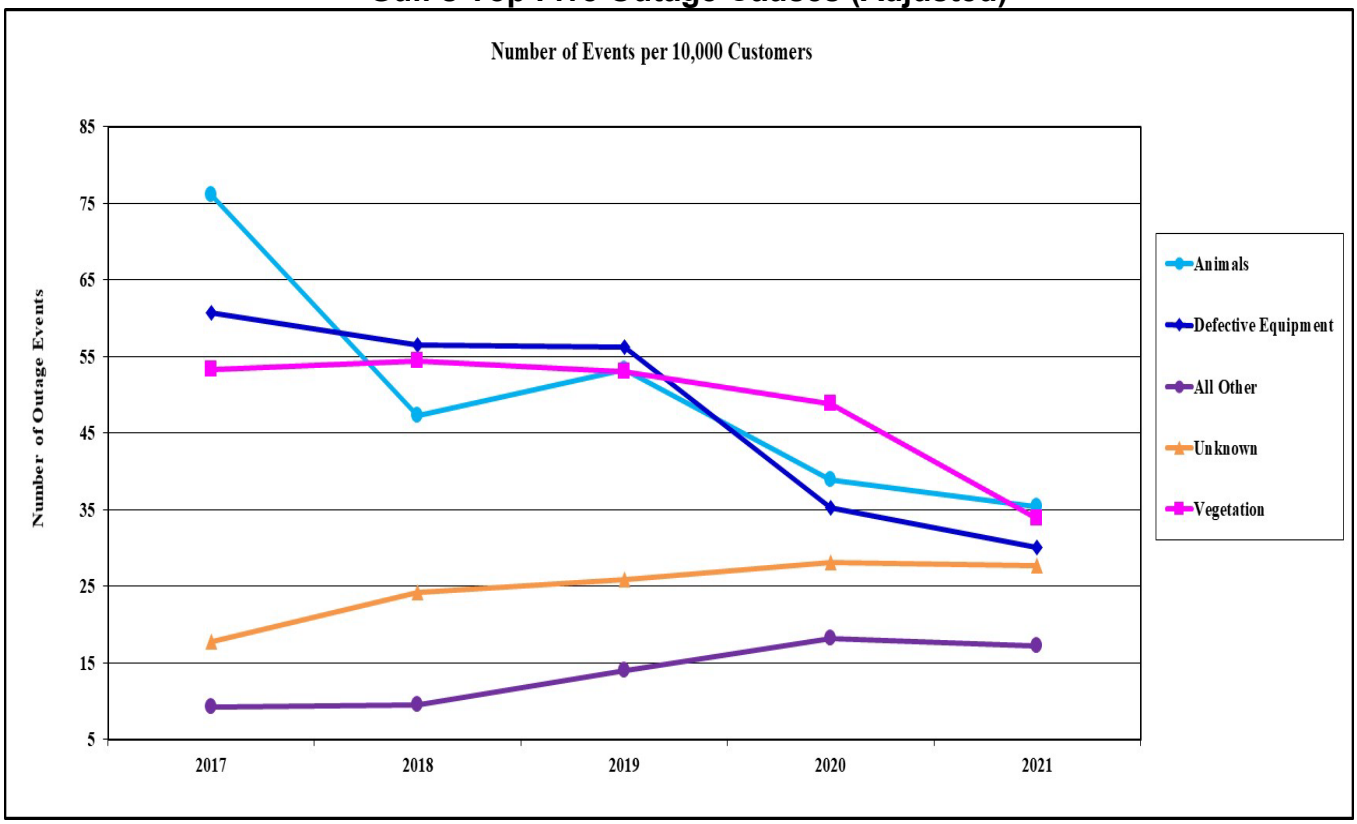


Source: Gulf's 2017-2021 distribution service reliability reports.

Figure 2-29 shows the top five causes of outage events on Gulf's distribution system normalized to a 10,000-customer base. This figure is based on Gulf's adjusted data of the top 10 causes of outage events and represents 85 percent of the total adjusted outage events that occurred during 2020. The top five causes of outage events were "Animals" (21 percent), "Vegetation" (20 percent), "Defective Equipment" (18 percent), "Unknown Causes" (16 percent), and "Other Causes" (10 percent). The percentage of outages due to "Animals" was the highest cause of outages. The number of outage events due to "Animals" is trending downward with a 7 percent decrease in 2021. The number of outage events due to "Unknown Causes" and "Other Causes" are also trending upward. The number of outages due to "Vegetation" and "Defective Equipment" are trending downward.

Gulf annually evaluates its current reliability remediation programs. Gulf is proposing 10 different reliability programs aimed at reducing customer interruptions caused by "Vegetation," "Defective Equipment," "Animals," and "Unknown Causes." These programs include, adding automated equipment to reduce temporary faults and outages, and replacing and modernizing aging equipment. As discussed previously, effective January 1, 2022, Gulf was fully consolidated with FPL, and as a result, FPL's reliability programs will be applied throughout the former Gulf service area. These reliability programs will include scheduled maintenance and demand trimming based on patrols and inspections for vegetation management as well as, avian framing, avian covers, squirrel protection, other protective animal guards and coverup, and platforms for osprey nesting among other preventative measures for animal outage prevention.

Figure 2-29
Gulf's Top Five Outage Causes (Adjusted)



Source: Gulf's 2017-2021 distribution service reliability reports.

Observations: Gulf's Adjusted Data

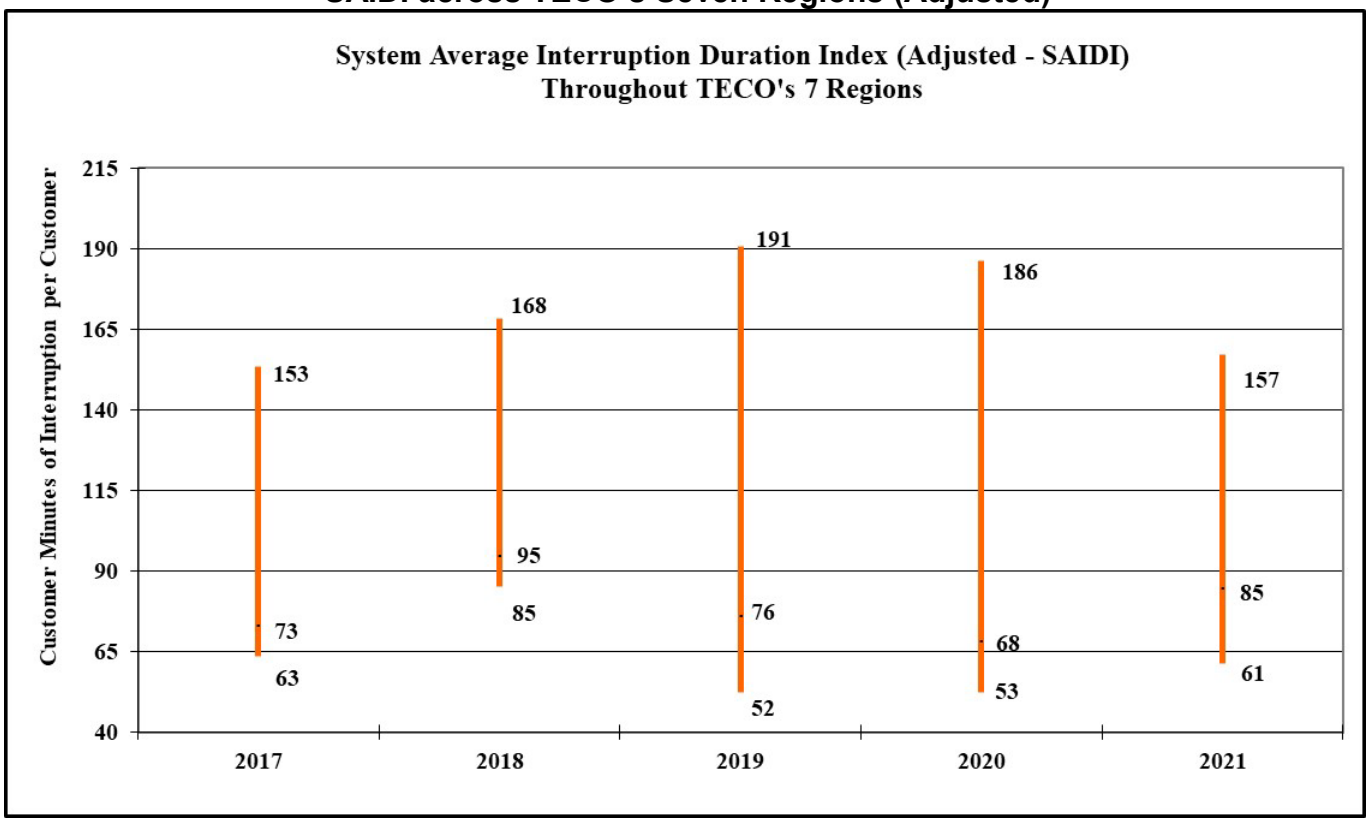
There were improvements seen in Gulf's SAIDI, SAIFI, CAIDI, and L-Bar indices in 2021. The MAIFIe, the Three-Year Percentages of Multiple Feeder Outage events, and the Five-Year Percentages of Multiple Feeder Outage events increased while the CEMI5 did not change in 2021. Overall it appears that the trend lines of the reliability indices for the five-year period of 2017 to 2021 are primarily trending downward.

Gulf tracks the following data associated with each individual interruption: customers affected, minutes interrupted, cause of outage, percentage of customers partially restored, device affected by interruption, and location of the device. Gulf produces daily reports with detailed information such as previous day interruptions by device, as well as month-to-date and year-to-date reliability indices. Management reviews the report to identify lessons learned, any areas for improvement, assessment of upcoming weather, and potential impacts and operational risks. In 2020, Gulf's reliability data detail had been increased to be in line with FPL's standards based on industry practices, internal needs, and external requirements. Effective January 1, 2022, Gulf was fully consolidated with FPL. As a result, FPL's reliability programs will be applied throughout the former Gulf service area.

Tampa Electric Company: Adjusted Data

Figure 2-30 shows the adjusted SAIDI values recorded by TECO's system. Six of the seven TECO regions had declining performance in SAIDI during 2021. The South Hillsborough region having the lowest SAIDI performance results as the Plant City region had the highest. The lowest SAIDI index for the seven regions appears to be trending downward. The average SAIDI index increased 25 percent from 2020 to 2021. The average SAIDI index appears to be relatively flat. The Eastern and South Hillsborough 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 regions.

Figure 2-30
SAIDI across TECO's Seven Regions (Adjusted)



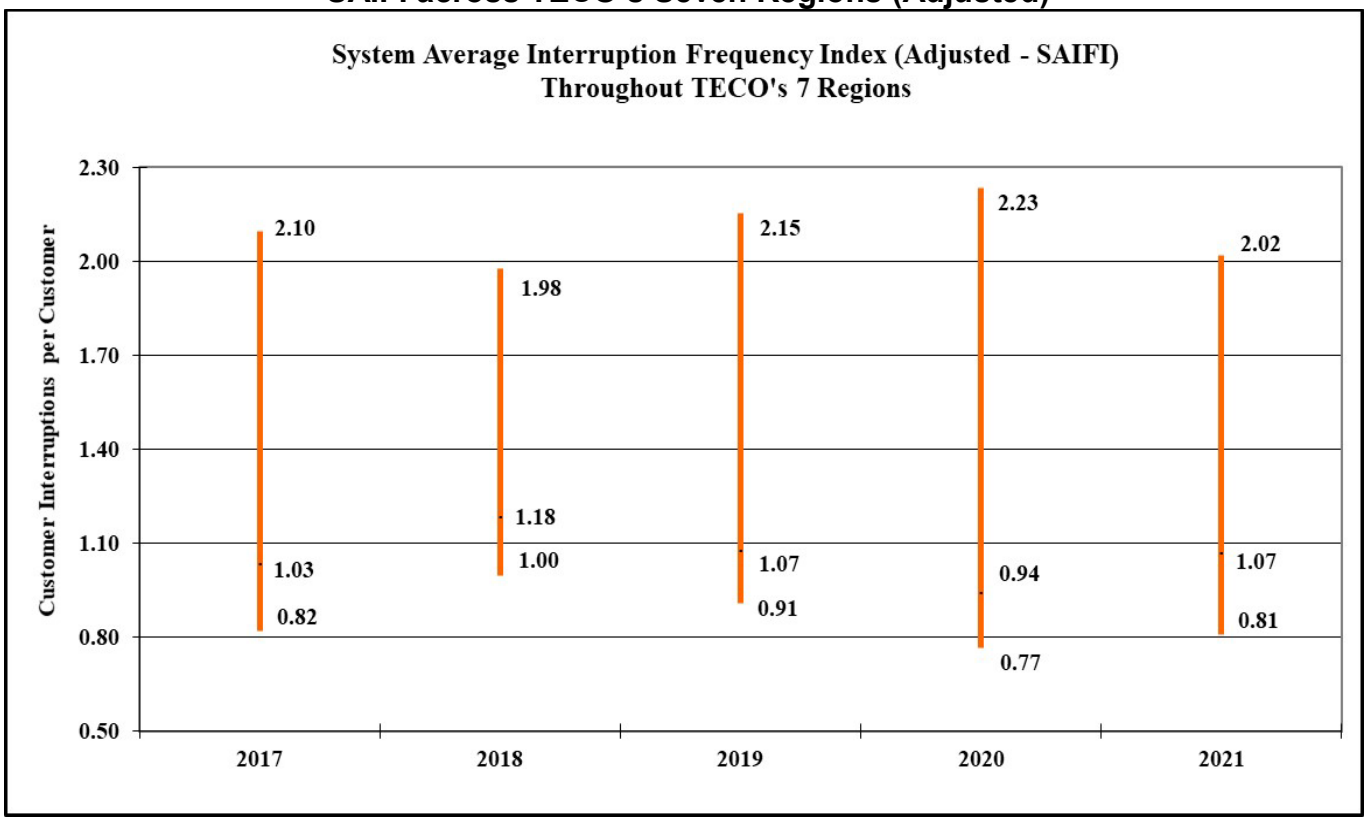
TECO's Regions with the Highest and Lowest Adjusted SAIDI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest SAIDI	Dade City	Dade City	Dade City	Dade City	Plant City
Lowest SAIDI	Eastern	Eastern	South Hillsborough	South Hillsborough	South Hillsborough

Source: TECO's 2017-2021 distribution service reliability reports.

Figures 2-31 illustrates TECO's adjusted frequency of interruptions per customer reported by the system. TECO's data represent a 14 percent increase in the SAIFI average from 0.94 interruptions in 2020 to 1.07 interruptions in 2021. TECO's Dade City region continues to have the highest frequency of service interruptions when compared to TECO's other regions. The maximum SAIFI is trending upward as the average and minimum SAIFI are trending downward.

Figure 2-31
SAIFI across TECO's Seven Regions (Adjusted)



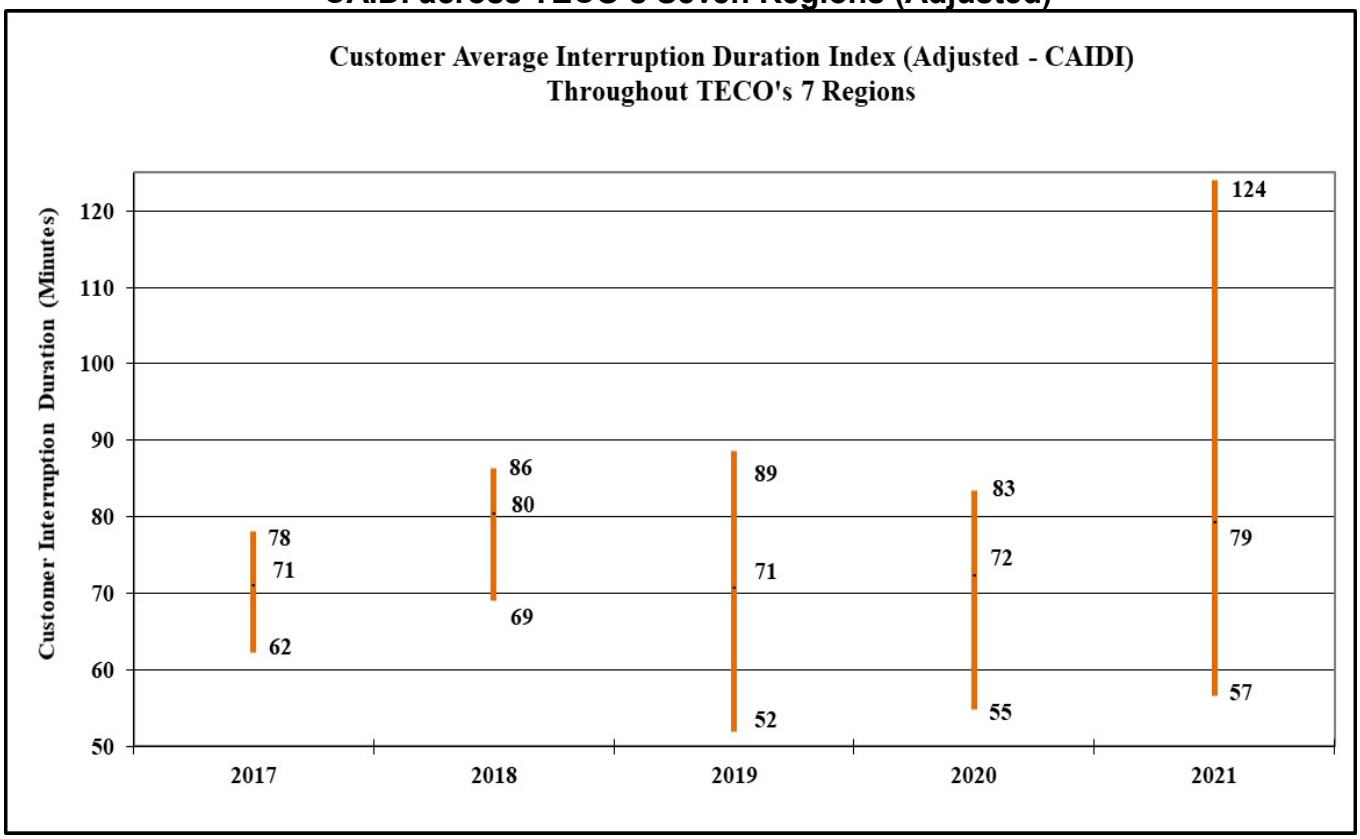
TECO's Regions with the Highest and Lowest Adjusted SAIFI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest SAIFI	Dade City	Dade City	Dade City	Dade City	Dade City
Lowest SAIFI	Central	Eastern	Central	Central	Central

Source: TECO's 2017-2021 distribution service reliability reports.

Figure 2-32 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, Winter Haven, Central, and Western regions. Winter Haven and South Hillsborough 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, notwithstanding the 10 percent increase in the average CAIDI when comparing 2020 to 2021.

Figure 2-32
CAIDI across TECO's Seven Regions (Adjusted)



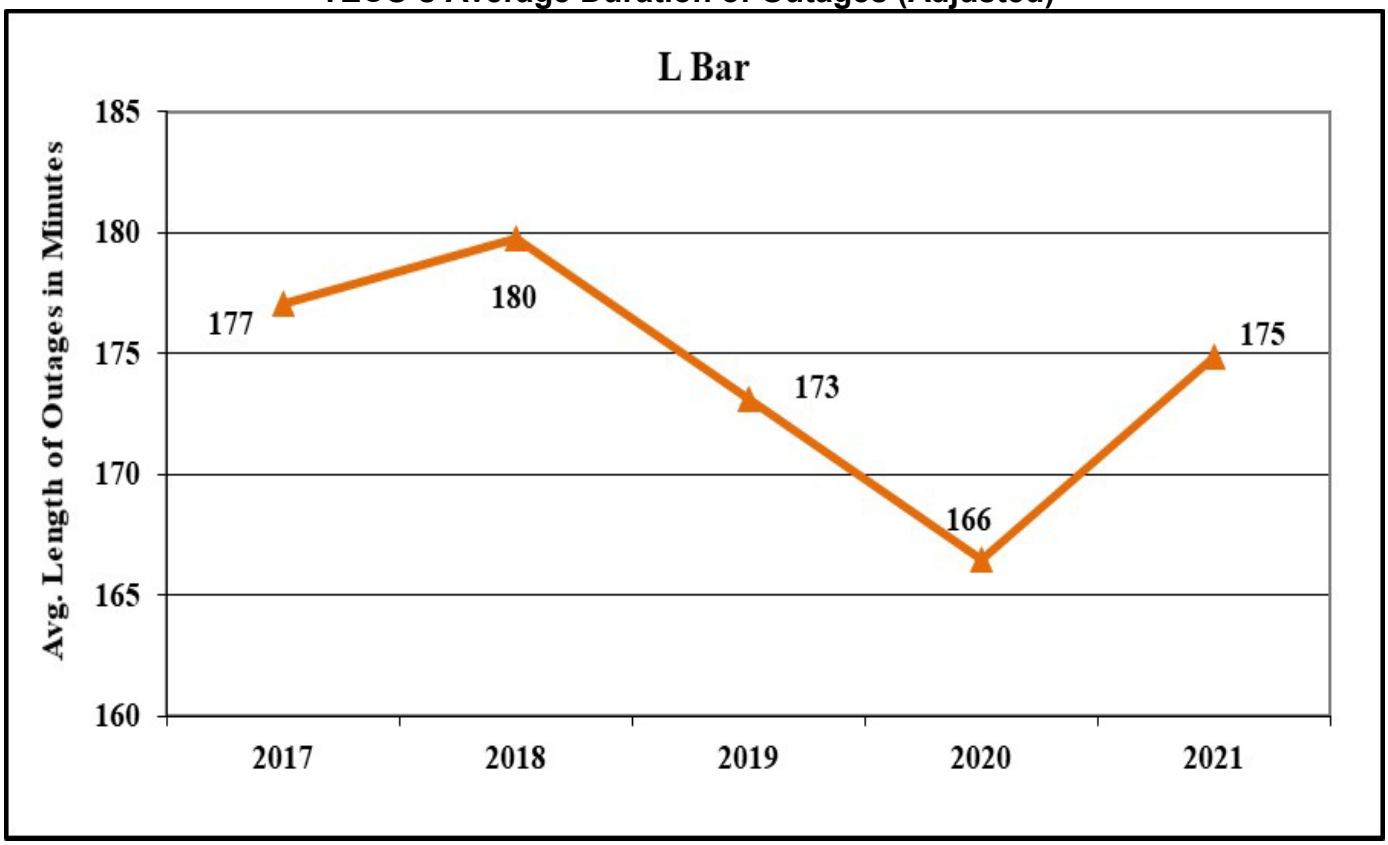
TECO's Regions with the Highest and Lowest Adjusted CAIDI Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest CAIDI	Central	Western	Dade City	Dade City	Winter Haven
Lowest CAIDI	Winter Haven	South Hillsborough	South Hillsborough	South Hillsborough	South Hillsborough

Source: TECO's 2017-2021 distribution service reliability reports.

Figure 2-33 denotes a 5 percent increase in outage durations for the period from 2020 to 2021 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 appears to trend downward for the five-year period of 2017 to 2021, suggesting shorter restoration times.

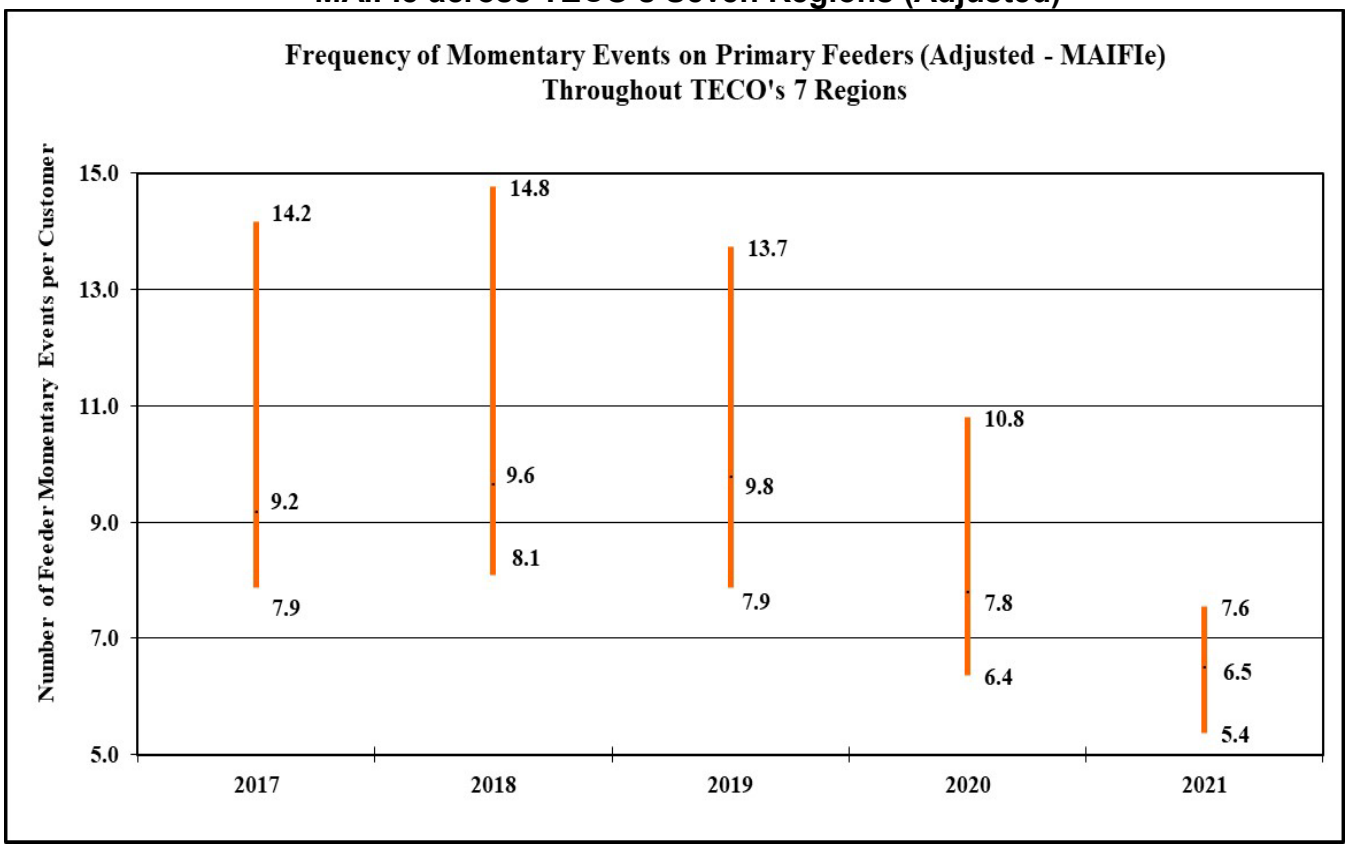
Figure 2-33
TECO's Average Duration of Outages (Adjusted)



Source: TECO's 2017-2021 distribution service reliability reports.

Figure 2-34 illustrates TECO's number of momentary events on primary circuits per customer recorded across its system. In 2021, the MAIFIe performance improved over the 2020 results in all regions. The average MAIFIe decreased by 17 percent from 2020 to 2021. Figure 2-34 also indicates that the average MAIFIe is trending downward, which suggests an improvement in performance over the five-year period of 2017 to 2021.

Figure 2-34
MAIFIe across TECO's Seven Regions (Adjusted)



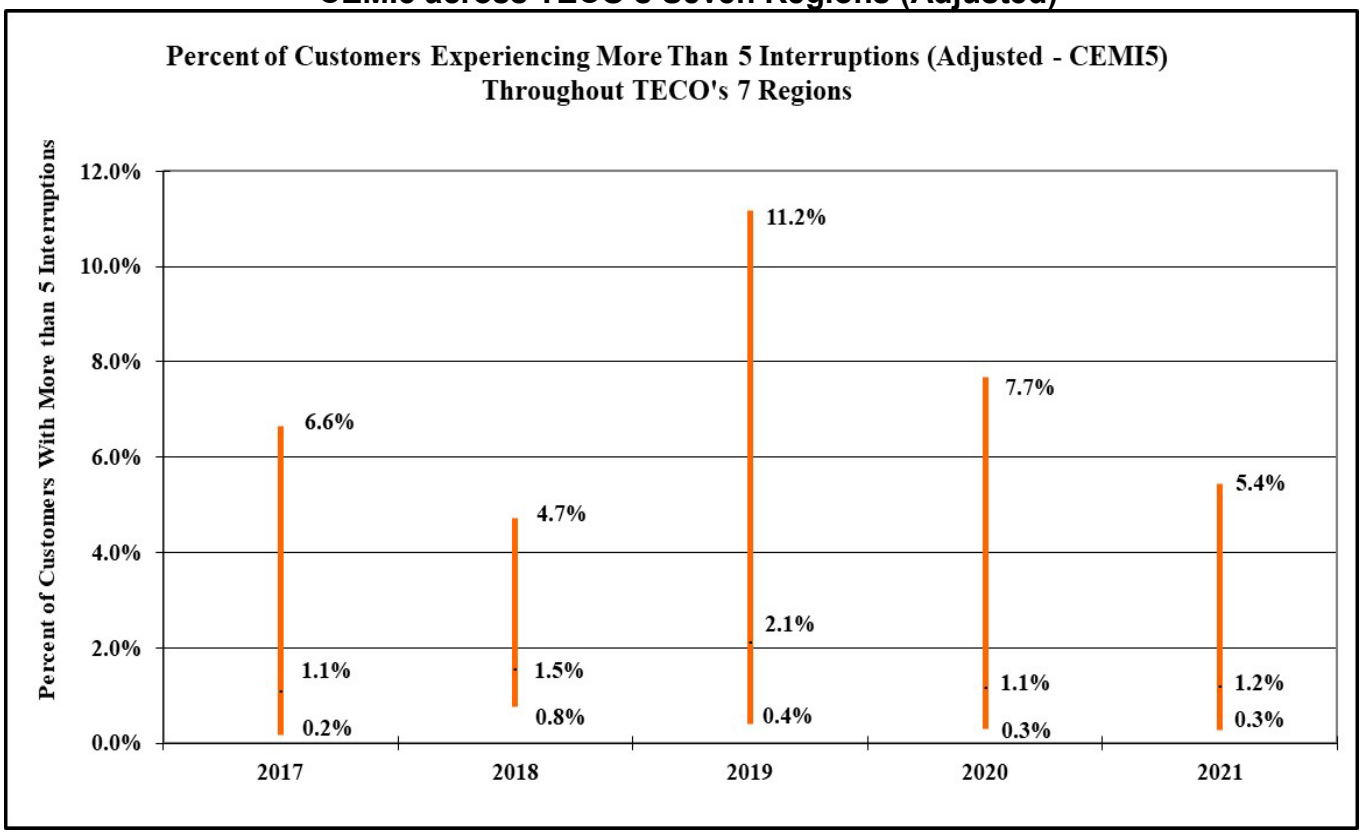
TECO's Regions with the Highest and Lowest Adjusted MAIFIe Distribution Reliability Performance by Year

	2017	2018	2019	2020	2021
Highest MAIFIe	Dade City	Dade City	Plant City	Plant City	Western
Lowest MAIFIe	Central	Central	Central	Central	Central

Source: TECO's 2017-2021 distribution service reliability reports.

Figure 2-35 indicates that the percent of TECO's customers experiencing more than five interruptions. Three of the seven regions in TECO's territory experienced a decrease in the CEMI5 results for 2021. Plant City reported the highest CEMI5 percentage for 2021. With TECO's results for this index varying for the past five years, the average CEMI5 index appears to remain relatively flat, even with a 9 percent increase in the average CEMI5 index from 2020 to 2021.

Figure 2-35
CEMI5 across TECO's Seven Regions (Adjusted)



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

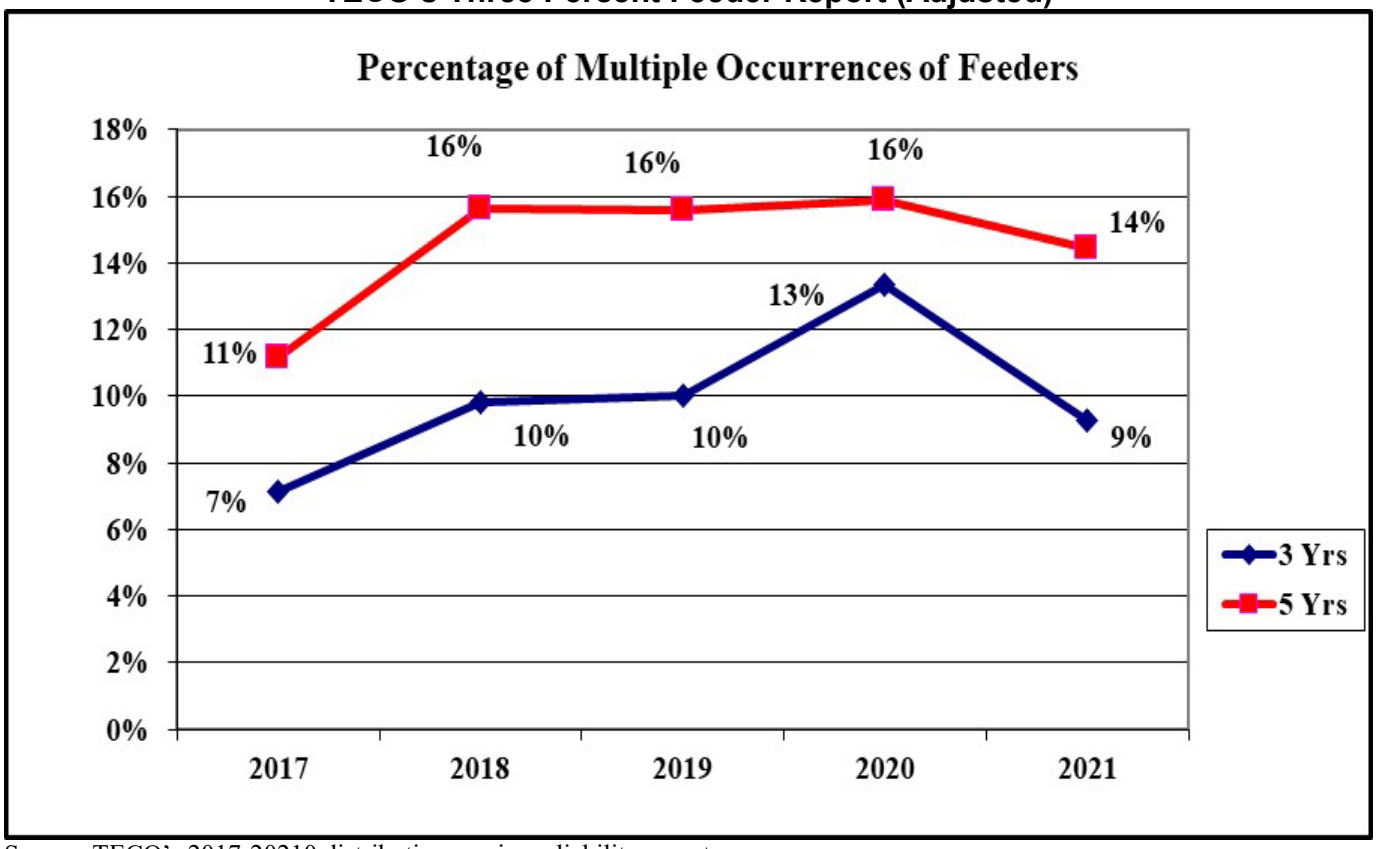
	2017	2018	2019	2020	2021
Highest CEMI5	Dade City	Dade City	Dade City	Dade City	Plant City
Lowest CEMI5	Central	Eastern	Winter Haven	Central	Western

Source: TECO's 2017-2021 distribution service reliability reports.

Figure 2-36 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 decreased by 13 percent from 2020 to 2021. The three-year average of outages had a decrease from 13 percent in 2020 to 9 percent in 2021. However, both the five-year average of outages per feeder and the three-year average of outages appear to continue to trend upward for the five-year period of 2017 to 2021.

Staff notes that there were five feeders on the Three Percent Feeder Report for the last two years consecutively. The causes for the outages reported for these feeders varied from damaged equipment, animals, vegetation, weather, and cutting underground cables. Damaged equipment was repaired or replaced, poles were replaced, and trees and vegetation were trimmed in 2021. 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.

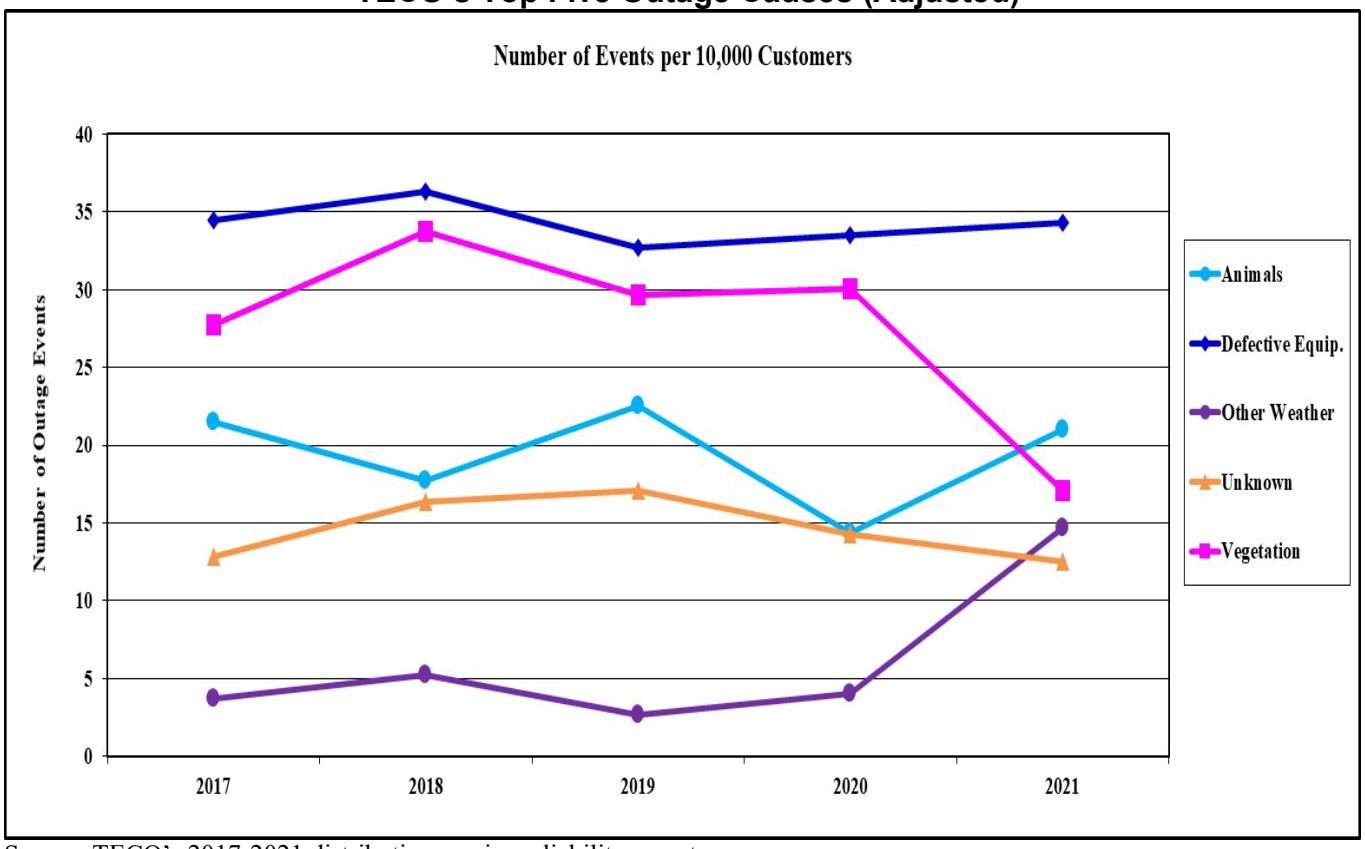
Figure 2-36
TECO's Three Percent Feeder Report (Adjusted)



Source: TECO's 2017-20210 distribution service reliability reports.

Figure 2-37 indicates that the top five causes of outage events on TECO's distribution system normalized to a 10,000-customer base. This figure is based on TECO's adjusted data of the top 10 causes of outage events and represents 83 percent of the total outage events that occurred during 2021. For the five-year period, the five top causes of outage events included "Defective Equipment" (29 percent), "Animals" (18 percent), "Vegetation" (14 percent), "Other Weather" (12 percent), and "Unknown Causes" (10 percent) on a cumulative basis. "Defective Equipment" is the highest cause of outages for 2021. "Animals" and "Vegetation" causes are the next two top problem areas for TECO. The outages due to "Defective Equipment," "Animals," and "Other Weather" increased 4 percent, 49 percent, and 269 percent, respectfully, from 2020 to 2021. The outages from "Vegetation" decreased 42 percent and the outages from "Unknown" decreased 11 percent, all for the same time period. The number of outages due to "Other Weather" is trending upward while the number of outages due to "Defective Equipment," "Animals," "Vegetation," and "Unknown" are trending downward.

Figure 2-37
TECO's Top Five Outage Causes (Adjusted)



Source: TECO's 2017-2021 distribution service reliability reports.

Observations: TECO's Adjusted Data

Three of TECO's 2021 reliability indices improved in performance compared to 2020. For the five-year period of 2017 to 2021, 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 SAIFI, CAIDI, MAIFIe, and L-Bar are trending downward. SAIDI and CEMI5 are remaining relatively flat for the same period. TECO reported the improvement in MAIFIe was attributed to a decrease in breaker events. TECO reported the increases in SAIDI, SAIFI, CAIDI, CEMI-5 and the L-Bar was attributed to two severe weather events, the two-day unnamed storm in April 2021 and Hurricane Elsa. TECO notes that the Dade City, Plant City, and Winter Haven regions have the fewest customers and represent the most rural, lowest customer density per line mile. TECO indicated that the rural areas typically have higher reliability indices due to the greater distance of travel for service restoration.

In 2021, the Plant City region had the highest reliability indices for SAIDI and CEMI5. To improve reliability in the Plant City region, TECO is installing three-phase reclosers at 16 different locations and cutout mounted single-phase reclosers at 59 locations. To help mitigate outages caused by animals, TECO is installing animal protection to equipment that prevents animals from causing faults throughout its regions. TECO is also undertaking distribution inspections throughout its regions using a variety of sensor technologies, such as Infrared (IR), Light Detection and Ranging (Lidar), Ultraviolet (UV), Radio Frequency (RF) and Ultra High Definition (UHD) video.

Section III: Inter-Utility Reliability Comparisons

Section III 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.

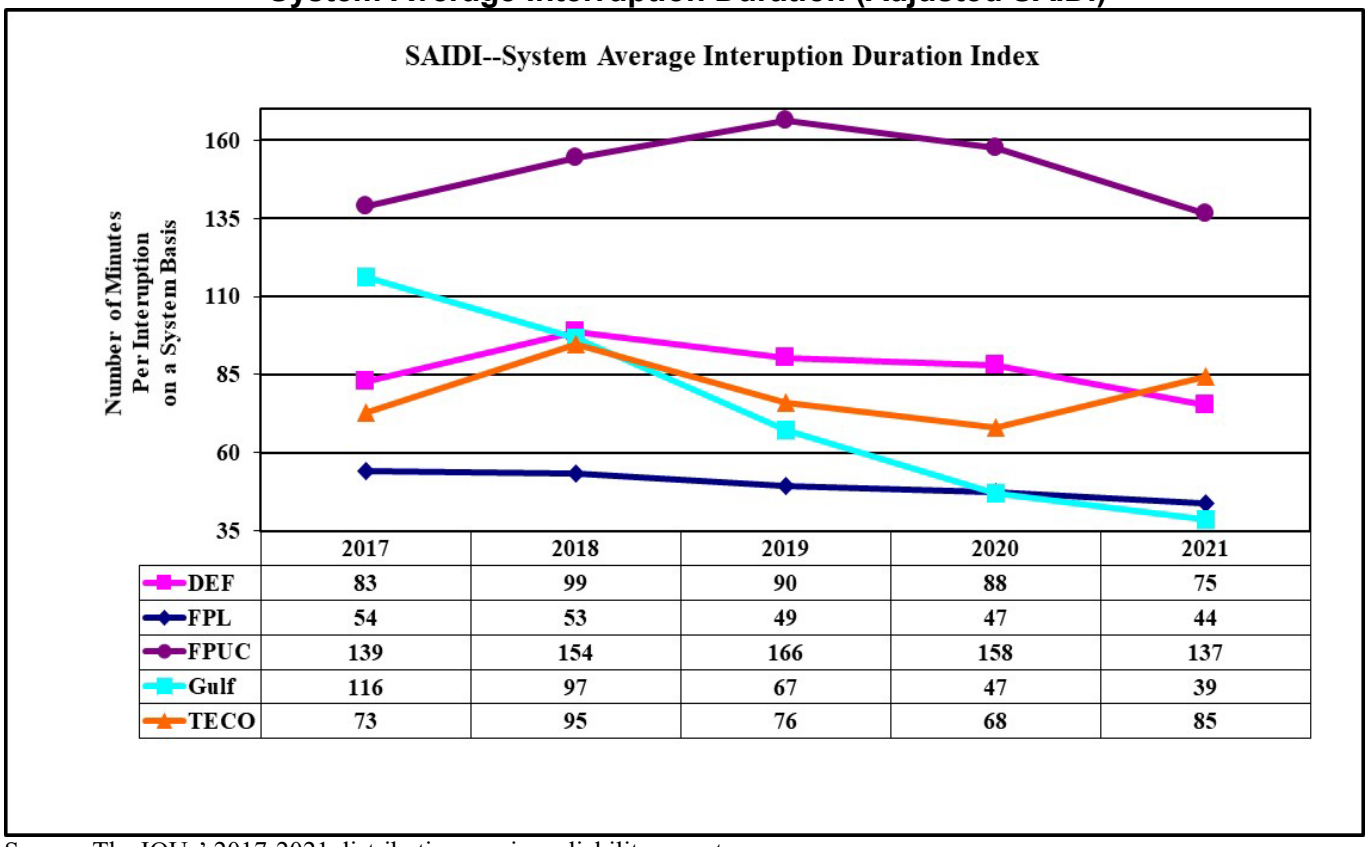
Inter-Utility Reliability Trend Comparisons: Adjusted Data

The inter-utility trend comparison focuses on a graphical presentation that combines all of the IOUs' distribution reliability indices for the years 2017 to 2021. **Figures 3-1** through **3-3** apply to all five utilities while **Figures 3-4** and **3-5** 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 3-1 indicates that DEF's FPL's, and Gulf's SAIDI has been trending downward since 2017, while FPUC and TECO are remaining relatively flat. Comparing the 2020 and 2021 SAIDI values, all utilities except TECO have improved. DEF's SAIDI value decreased 15 percent, FPL decreased 6 percent, FPUC increased by 13 percent, Gulf decreased 17 percent, and TECO increased 25 percent from 2020 to 2021.

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 3-1
System Average Interruption Duration (Adjusted SAIDI)



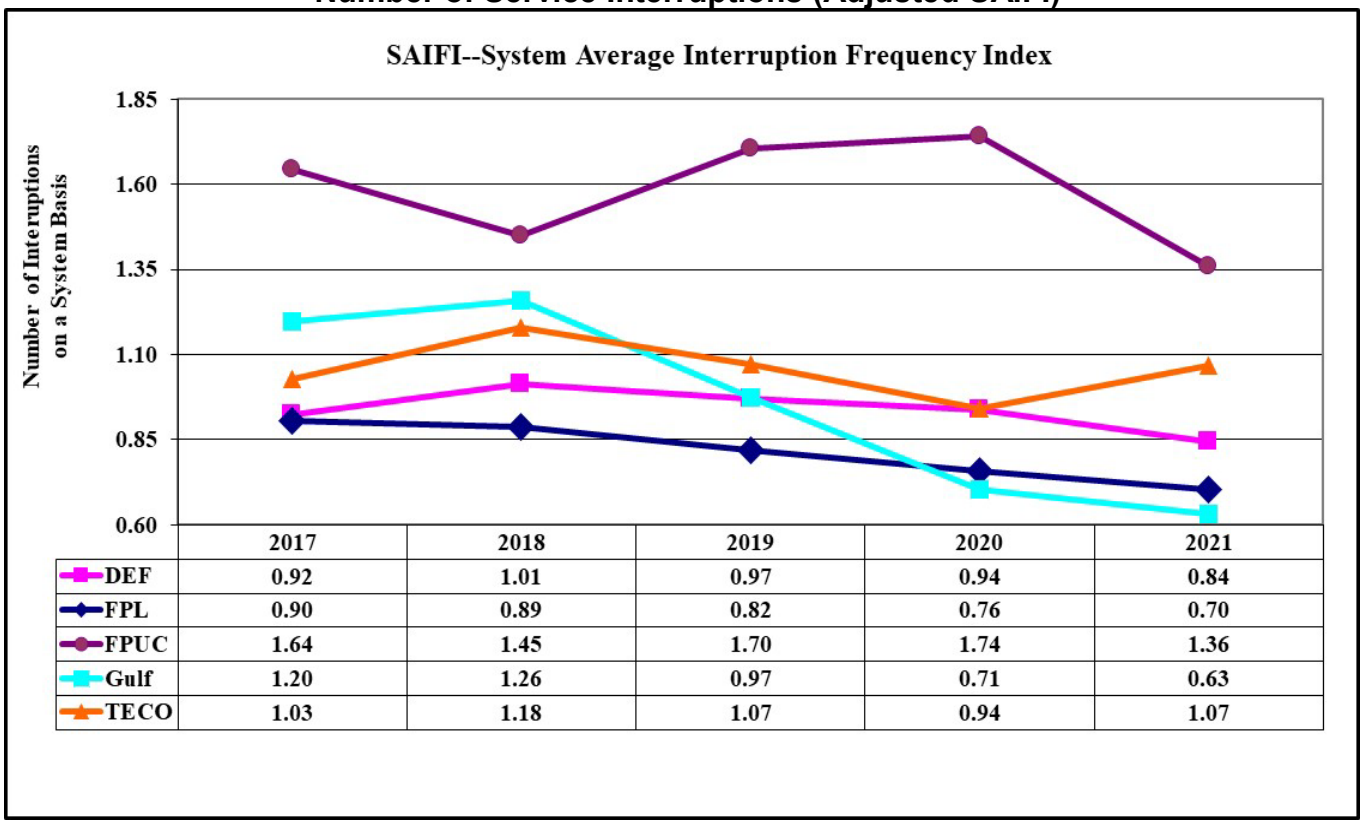
	2017	2018	2019	2020	2021
DEF	83	99	90	88	75
FPL	54	53	49	47	44
FPUC	139	154	166	158	137
Gulf	116	97	67	47	39
TECO	73	95	76	68	85

Source: The IOUs' 2017-2021 distribution service reliability reports.

Figure 3-2 shows a five-year graph of the adjusted SAIFI for each IOU. The 2021 data shows FPL, FPUC, Gulf, and DEF's SAIFI values decreased (improved) from the 2020 results as TECO's SAIFI values increased. Over the five-year period of 2017 to 2021, DEF, FPL, FPUC, Gulf and TECO's SAIFI values are all trending downward.

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 (a/k/a Customer) Interruptions (CI) by the total Number of Customers Served for the respective area of service.

Figure 3-2
Number of Service Interruptions (Adjusted SAIFI)



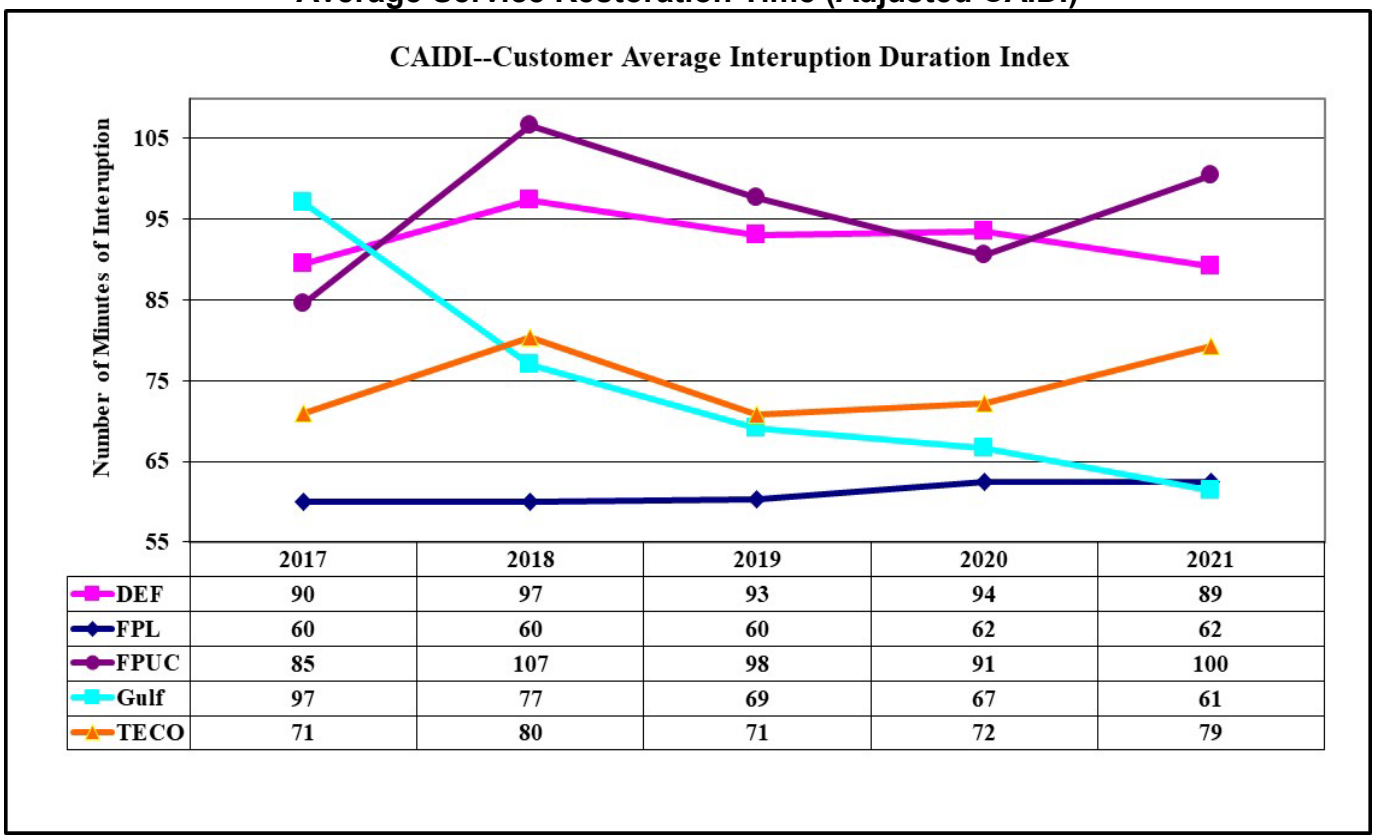
	2017	2018	2019	2020	2021
DEF	0.92	1.01	0.97	0.94	0.84
FPL	0.90	0.89	0.82	0.76	0.70
FPUC	1.64	1.45	1.70	1.74	1.36
Gulf	1.20	1.26	0.97	0.71	0.63
TECO	1.03	1.18	1.07	0.94	1.07

Source: The IOUs' 2017-2021 distribution service reliability reports.

Figure 3-3 shows a five-year graph of the adjusted CAIDI for each IOU. FPUC and TECO had increases in CAIDI from 2020 to 2021 as DEF and Gulf had decreases. FPL had the same number of interruptions in 2021 as it did in 2020. DEF, Gulf and TECO's CAIDI values are trending downward for the five-year period of 2017 to 2021. FPL's and FPUC'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 3-3
Average Service Restoration Time (Adjusted CAIDI)



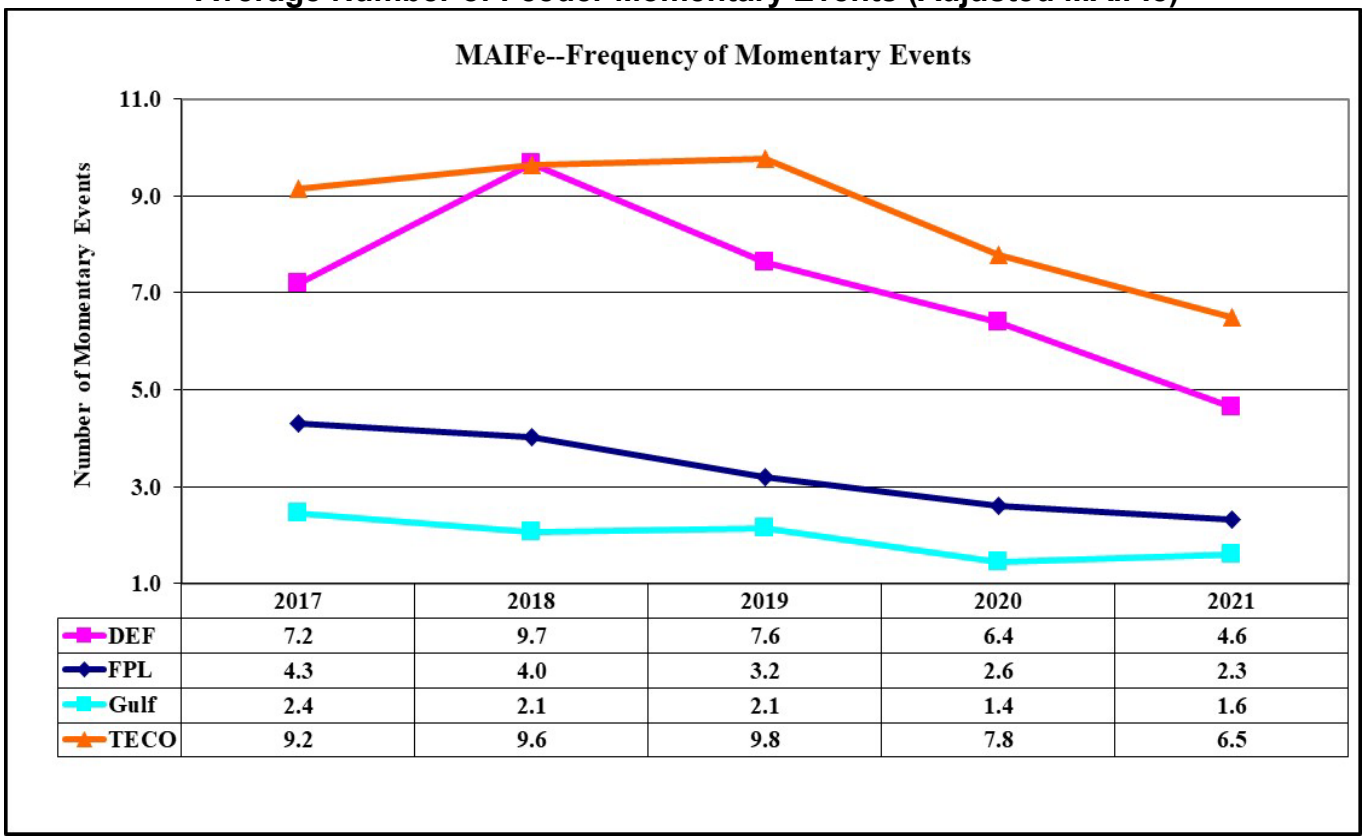
	2017	2018	2019	2020	2021
DEF	90	97	93	94	89
FPL	60	60	60	62	62
FPUC	85	107	98	91	100
Gulf	97	77	69	67	61
TECO	71	80	71	72	79

Source: The IOUs' 2017-2021 distribution service reliability reports.

Figure 3-4 shows a five-year graph of the adjusted MAIFIe for DEF, FPL, Gulf, and TECO. DEF, FPL, Gulf's, and TECO's MAIFIe indices are all trending downward for the five-year period of 2017 to 2021. Comparing the MAIFIe for 2020 to 2021, DEF decreased by 28 percent, FPL decreased by 12 percent, Gulf increased by 14 percent and TECO decreased by 17 percent. FPUC is exempt from reporting MAIFIe and CEMI5 because it has fewer than 50,000 customers.

MAIFIe is the average frequency of momentary interruptions 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 3-4
Average Number of Feeder Momentary Events (Adjusted MAIFIe)

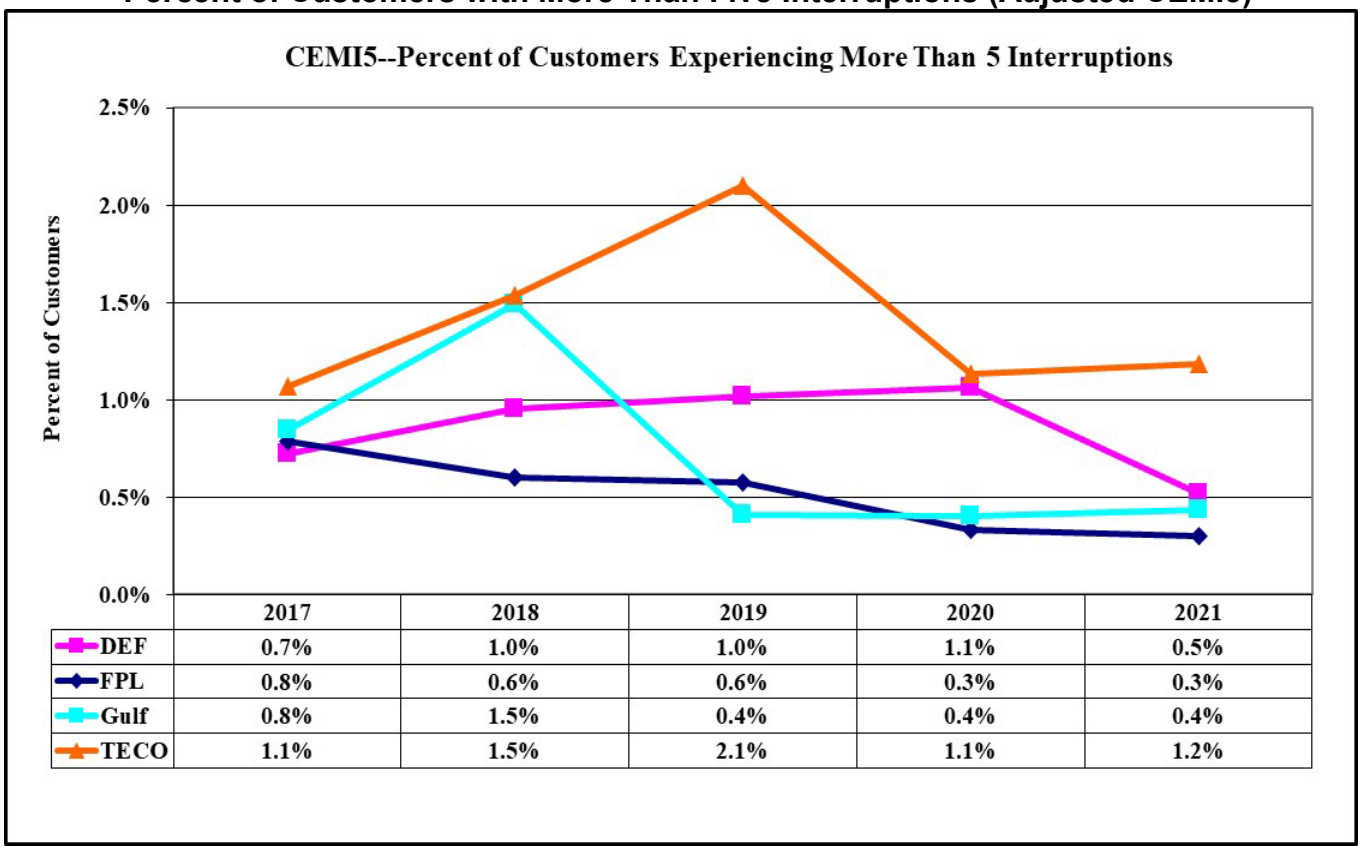


	2017	2018	2019	2020	2021
DEF	7.2	9.7	7.6	6.4	4.6
FPL	4.3	4.0	3.2	2.6	2.3
Gulf	2.4	2.1	2.1	1.4	1.6
TECO	9.2	9.6	9.8	7.8	6.5

Source: The IOUs' 2017-2021 distribution service reliability reports.

Figure 3-5 shows 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 2021, TECO's CEMI5 percent increased to 1.2 percent from 1.1 percent in 2020 as Gulf's CEMI5 percentage remained at 0.4 percent. DEF's CEMI5 percentage decreased to 0.5 percent in 2021 from 1.1 percent in 2020 as FPL's CEMI5 percentage remained at 0.3 percent. FPL and Gulf are trending downward as DEF is trending upward for the period of 2017 to 2021. TECO has remained relatively flat for the same period.

Figure 3-5
Percent of Customers with More Than Five Interruptions (Adjusted CEMI5)

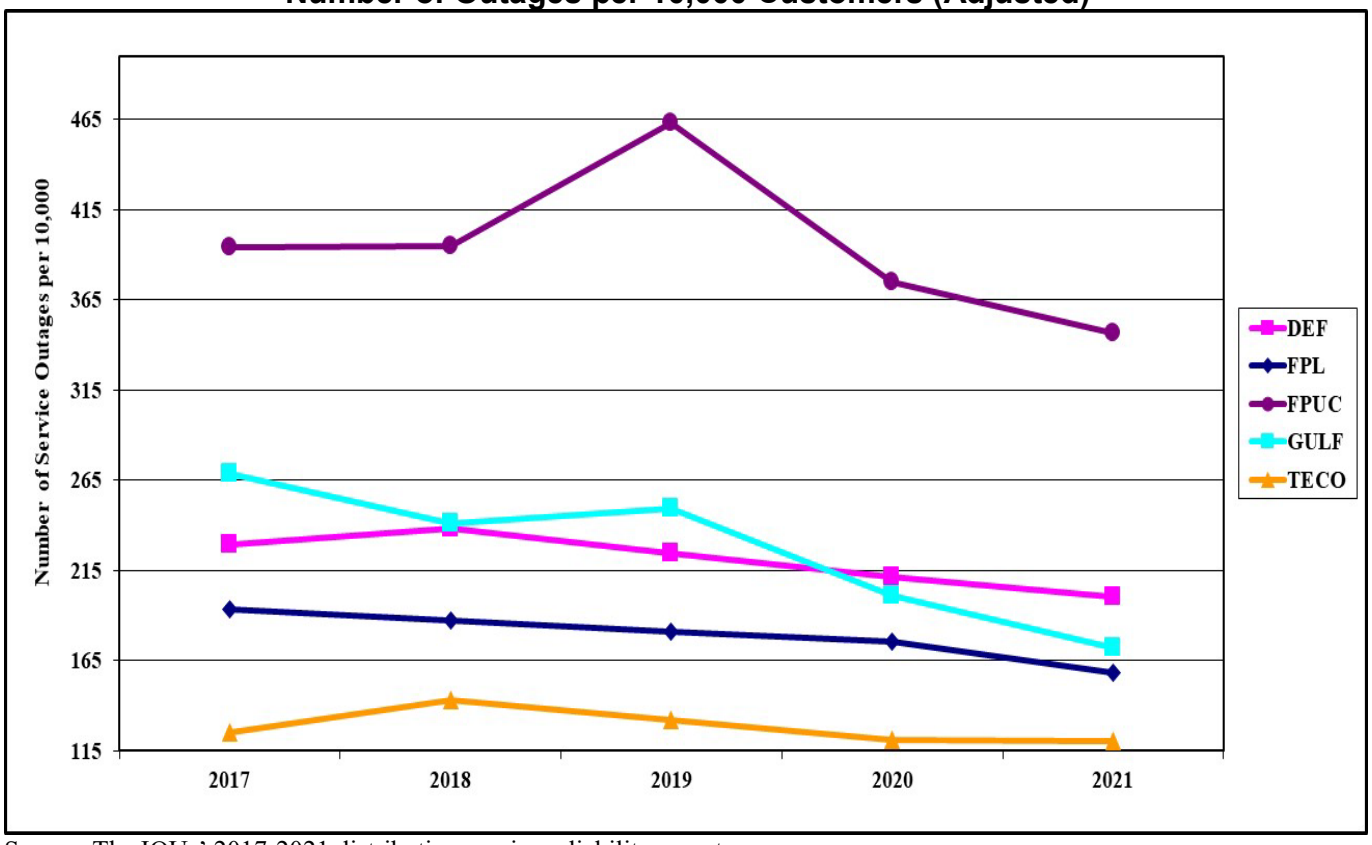


	2017	2018	2019	2020	2021
DEF	0.7%	1.0%	1.0%	1.1%	0.5%
FPL	0.8%	0.6%	0.6%	0.3%	0.3%
Gulf	0.8%	1.5%	0.4%	0.4%	0.4%
TECO	1.1%	1.5%	2.1%	1.1%	1.2%

Source: The IOUs' 2017-2021 distribution service reliability reports.

Figure 3-6 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 90,418 in 2020 to 82,873 in 2021, and the number of outages per 10,000 customers is trending downward for the five-year period. TECO's results are also trending downward the five-year period notwithstanding a slight increase in 2021. DEF's number of outages decreased in 2021 and the results are trending downward for the five-year period. Gulf's number of outages decreased in 2021, and is trending downward for the five-year period. FPUC's results decreased from 2017 to 2018, increased from 2018 to 2019, decreased from 2019 to 2020, and decreased from 2020 to 2021. Due to its small customer base, FPUC's number of outages per 10,000 customers may be more volatile.

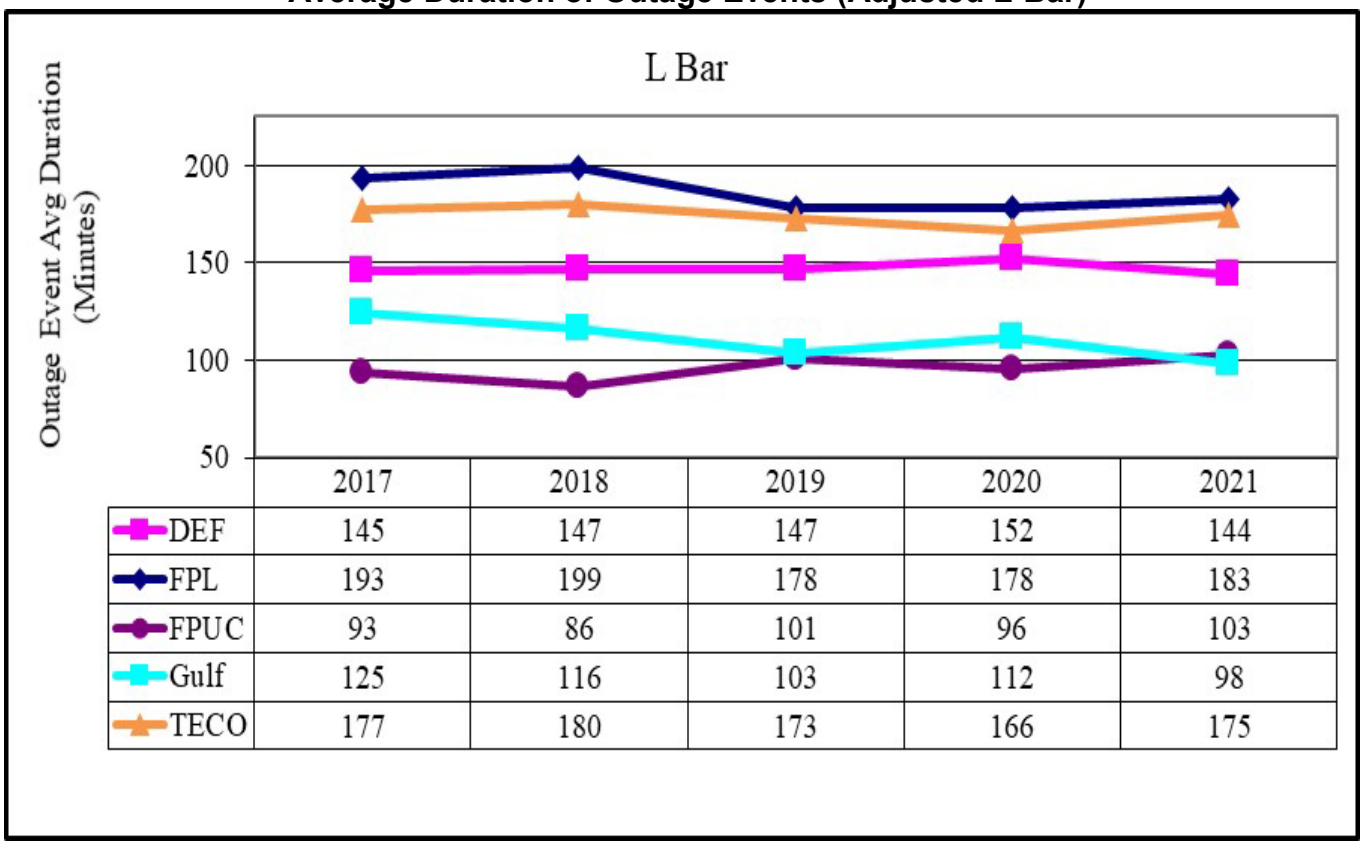
Figure 3-6
Number of Outages per 10,000 Customers (Adjusted)



Source: The IOUs' 2017-2021 distribution service reliability reports.

Figure 3-7 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 from 2017 to 2021, even with increases from 2020 to 2021.

Figure 3-7
Average Duration of Outage Events (Adjusted L-Bar)



	2017	2018	2019	2020	2021
DEF	145	147	147	152	144
FPL	193	199	178	178	183
FPUC	93	86	101	96	103
Gulf	125	116	103	112	98
TECO	177	180	173	166	175

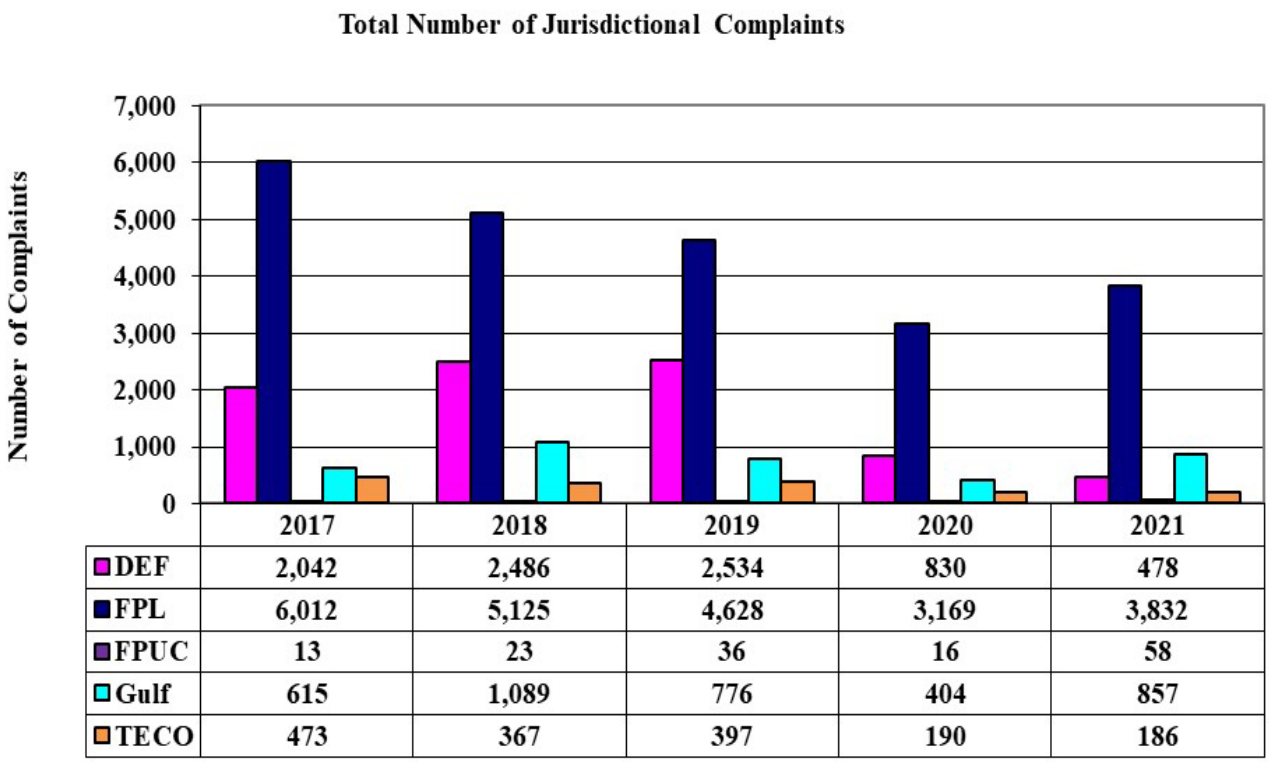
Source: The IOUs' 2017-2021 distribution service reliability reports.

Inter-Utility Comparisons of Reliability Related Complaints

Figures 3-8, **3-9**, **3-10**, and **3-11** 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 3-8 shows the total number of jurisdictional complaints[7] 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 3-8
Total Number of Jurisdictional Complaints



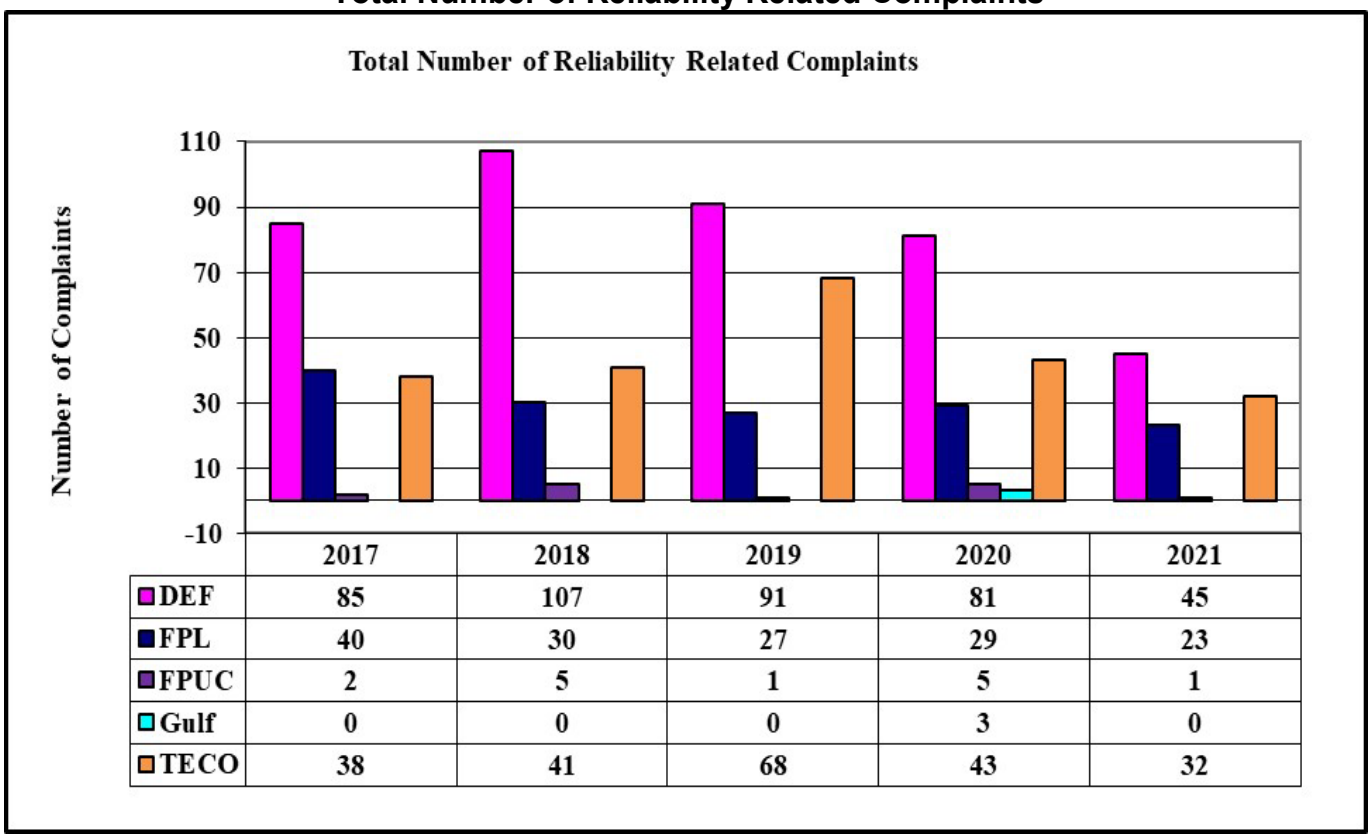
	2017	2018	2019	2020	2021
DEF	2,042	2,486	2,534	830	478
FPL	6,012	5,125	4,628	3,169	3,832
FPUC	13	23	36	16	58
Gulf	615	1,089	776	404	857
TECO	473	367	397	190	186

Source: FPSC CATS.

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

Figure 3-9 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 2017 to 2021 with FPUC and Gulf showing the least amount. DEF, FPL, FPUC, and TECO are trending downward in the number of reliability complaints, while Gulf remains relatively flat.

Figure 3-9
Total Number of Reliability Related Complaints

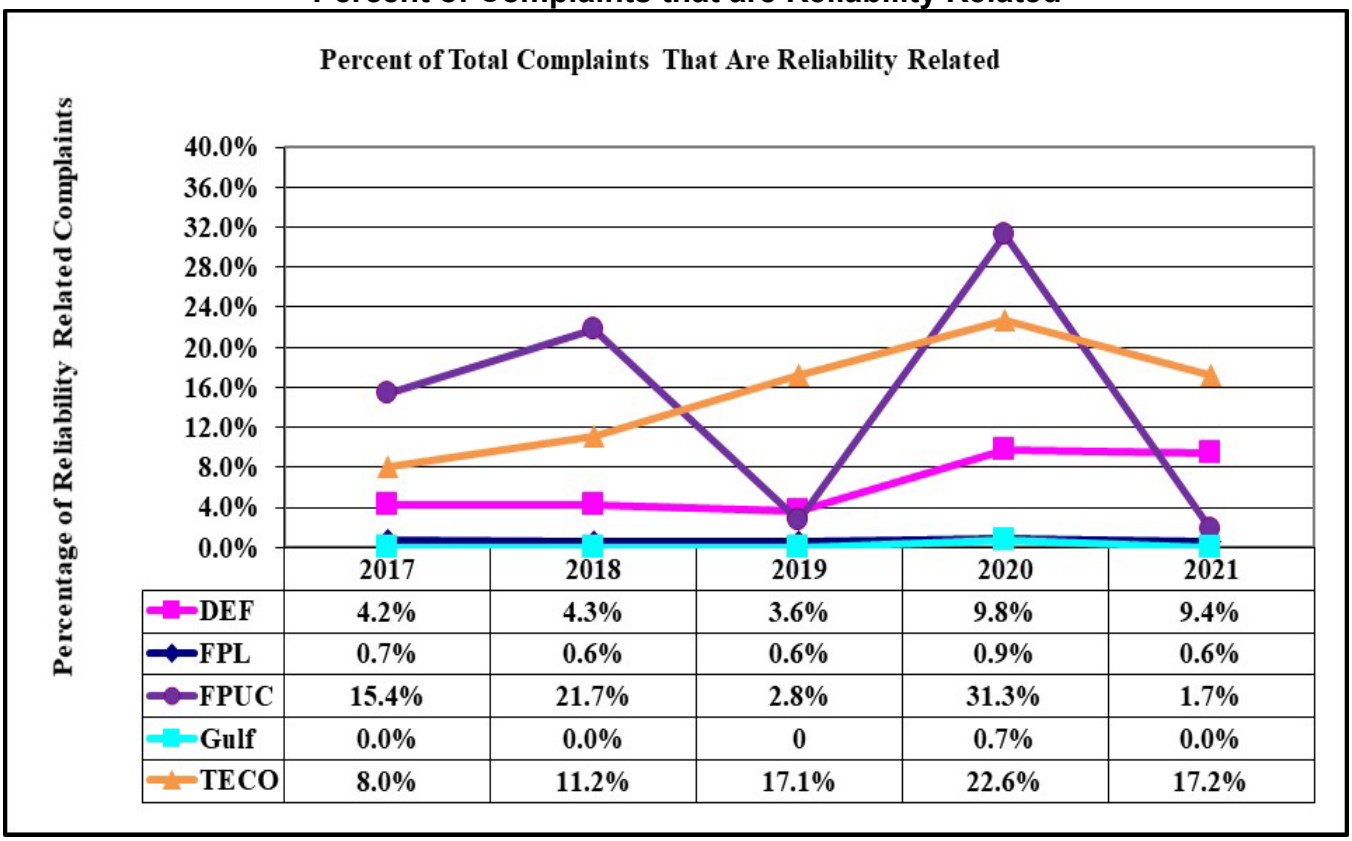


	2017	2018	2019	2020	2021
DEF	85	107	91	81	45
FPL	40	30	27	29	23
FPUC	2	5	1	5	1
Gulf	0	0	0	3	0
TECO	38	41	68	43	32

Source: FPSC CATS.

Figure 3-10 shows the percentage of reliability related customer complaints in relation to the total number of complaints for each IOU. FPUC appears to be trending downward as DEF and TECO are trending upward. FPL and Gulf appear to remain relativity flat. The percentages of FPUC complaints compared to the other companies appears high, however, FPUC has fewer customers and fewer complaints in total.

Figure 3-10
Percent of Complaints that are Reliability Related



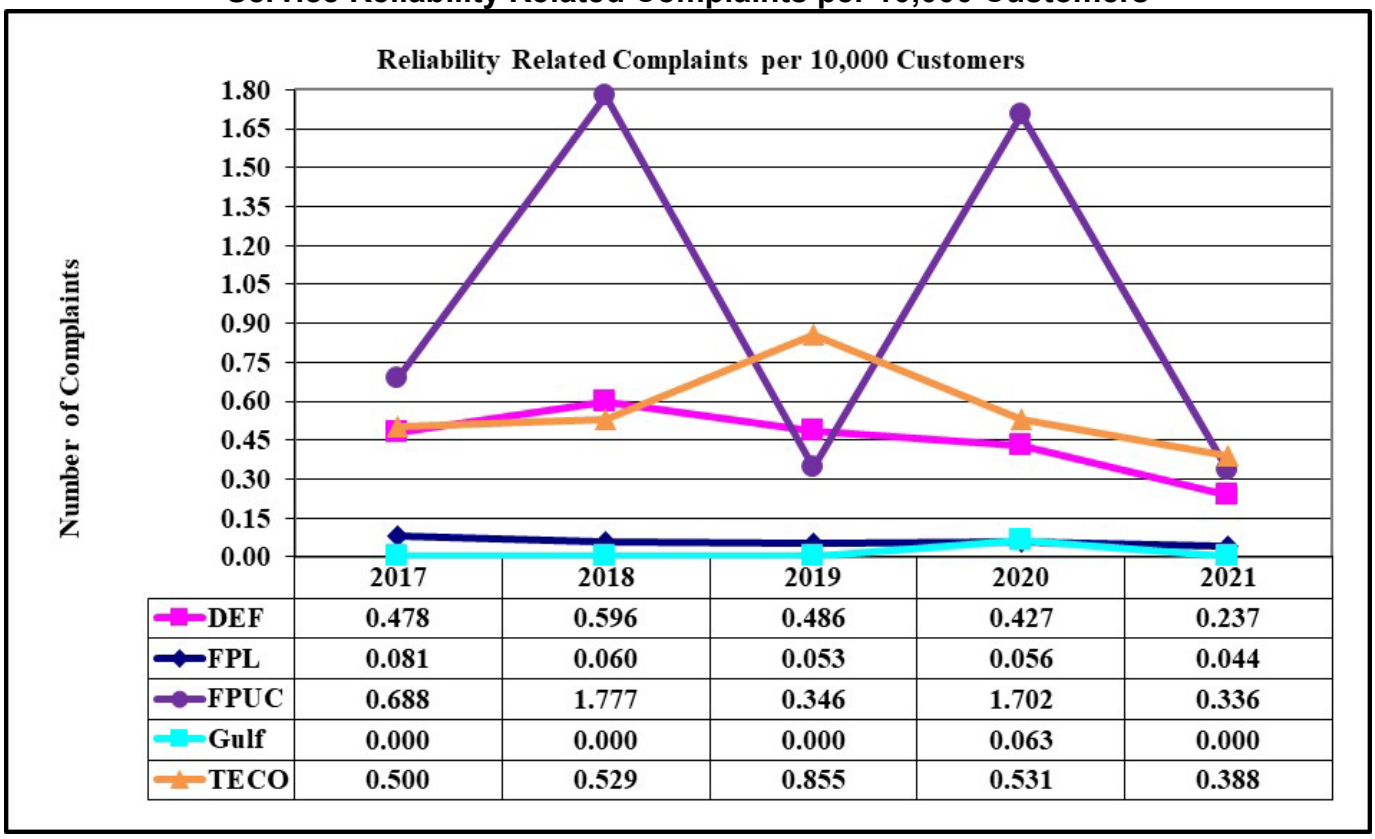
	2017	2018	2019	2020	2021
DEF	4.2%	4.3%	3.6%	9.8%	9.4%
FPL	0.7%	0.6%	0.6%	0.9%	0.6%
FPUC	15.4%	21.7%	2.8%	31.3%	1.7%
Gulf	0.0%	0.0%	0	0.7%	0.0%
TECO	8.0%	11.2%	17.1%	22.6%	17.2%

Source: FPSC CATS.

Figure 3-11 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 the 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 2017 except FPUC. For the five-year period, Gulf and FPL remain relatively flat. DEF, FPUC and TECO are trending downward for the five-year period. The volatility of FPUC's results can be attributed to its small customer base, which typically averages 29,000 customers.

Figure 3-11
Service Reliability Related Complaints per 10,000 Customers



	2017	2018	2019	2020	2021
DEF	0.478	0.596	0.486	0.427	0.237
FPL	0.081	0.060	0.053	0.056	0.044
FPUC	0.688	1.777	0.346	1.702	0.336
Gulf	0.000	0.000	0.000	0.063	0.000
TECO	0.500	0.529	0.855	0.531	0.388

Source: The IOUs' 2017-2021 distribution service reliability reports and FPSC CATS.

Section IV: Appendices

Appendix A – Adjusted Service Reliability Data

Duke Energy Florida, LLC

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

	2017	2018	2019	2020	2021
North Central	406,483	409,949	425,895	429,896	428,394
North Coastal*	203,300	204,915	214,245	445,321	446,742
South Central	484,848	493,782	520,699	532,367	544,915
South Coastal*	682,618	686,076	710,806	490,952	482,484
DEF System	**1,777,249**	**1,794,722**	**1,871,645**	**1,898,536**	**1,902,535**

Source: DEF's 2017-2021 distribution service reliability reports.
Note: *DEF reorganized its Zone boundaries where two operation centers were moved from the South Coastal region to the North Coastal region.

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)				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
North Central	75	86	87	85	81	0.84	0.96	0.81	0.84	0.83	90	90	108	102	98
North Coastal*	154	168	170	117	90	1.45	1.52	1.56	1.15	0.95	107	111	108	102	95
South Central	70	84	86	70	65	0.84	0.93	1.02	0.92	0.80	83	90	85	77	81
South Coastal*	75	95	72	83	68	0.88	0.95	0.86	0.86	0.80	85	100	84	96	84
DEF System	**83**	**99**	**90**	**88**	**75**	**0.92**	**1.01**	**0.97**	**0.94**	**0.84**	**90**	**97**	**93**	**94**	**89**

Source: DEF's 2017-2021 distribution service reliability reports.
Note: *DEF reorganized its Zone boundaries where two operation centers were moved from the South Coastal region to the North Coastal region.

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)				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
North Central	7.62	3.61	4.67	6.76	5.21	0.37%	0.42%	0.41%	0.42%	0.64%
North Coastal*	8.17	13.57	9.66	6.36	5.38	2.83%	4.80%	5.50%	2.32%	1.10%
South Central	6.93	11.44	8.78	6.47	4.42	0.87%	0.44%	0.79%	1.17%	0.28%
South Coastal*	6.80	10.82	7.93	6.00	3.66	0.21%	0.49%	0.19%	0.37%	0.15%
DEF System	**7.18**	**9.66**	**7.62**	**6.39**	**4.63**	**0.73%**	**0.95%**	**1.02%**	**1.06%**	**0.52%**

Source: DEF's 2017-2021 distribution service reliability reports.
Note: *DEF reorganized its Zone boundaries where two operation centers were moved from the South Coastal region to the North Coastal region.

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

	Adjusted Number of Outages Events						Adjusted L-Bar Length of Outages				
	2017	2018	2019	2020	2021	Percentages	2017	2018	2019	2020	2021
Animals	5,597	4,566	5,127	3,882	5,347	14.0%	80	82	82	82	81
Unknown	998	766	859	556	688	1.8%	94	83	85	88	95
All Other	8,287	8,310	8,223	7,170	7,199	18.9%	180	173	169	181	176
Defective Equipment	10,475	12,038	11,921	11,973	11,449	30.0%	150	152	146	146	146
Lightning	1,261	1,517	943	994	1,126	3.0%	151	157	168	157	151
Vegetation	8,143	8,522	8,883	9,291	7,790	20.4%	150	148	160	160	154
Other Weather	5,478	6,463	5,658	5,826	4,060	10.7%	145	144	153	159	140
Vehicle	505	599	445	509	460	1.2%	223	233	250	245	241
DEF System	**40,744**	**42,781**	**42,059**	**40,201**	**38,119**	**100%**	**145**	**147**	**147**	**152**	**144**

Source: DEF's 2017-2021 distribution service reliability reports.
Note: * "Other Causes" category is the sum of diverse causes of outage events which individually are not among the top 10 causes of outage events.

Florida Power & Light Company

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

	2017	2018	2019	2020	2021
Boca Raton	378,125	380,552	383,429	386,305	390,005
Brevard	307,825	312,017	316,529	322,070	327,339
Central Broward*	276,218	278,910	282,135	285,678	289,450
Central Dade	297,237	314,448	320,532	323,326	331,087
Central Florida	289,426	293,507	298,186	305,247	312,544
Manasota	395,636	401,766	408,944	416,122	423,344
Naples	399,295	406,500	414,696	421,646	428,887
North Broward*	319,630	321,508	323,531	325,075	326,654
North Dade	241,259	248,900	251,793	253,181	255,885
North Florida	161,216	166,703	171,801	177,889	183,858
South Broward*	339,518	342,226	344,502	346,004	348,897
South Dade	311,692	299,375	303,306	306,719	310,243
Toledo Blade	269,787	275,688	281,994	289,643	299,091
Treasure Coast	294,545	299,495	340,658	346,884	354,410
West Dade	264,888	266,629	270,975	275,635	278,531
West Palm	366,570	370,077	373,533	376,620	381,083
FPL System	**4,912,867**	**4,978,301**	**5,086,544**	**5,158,044**	**5,241,308**

Source: FPL's 2017-2021 distribution service reliability reports.
Note: *Three management regions were renamed: Pompano became North Broward, Wingate became Central Broward and Gulf Stream became South Broward.

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)				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Boca Raton	45	50	42	41	35	0.89	1.00	0.80	0.73	0.66	50	49	52	56	53
Brevard	56	44	44	49	46	1.04	0.87	0.81	0.88	0.82	54	50	55	56	56
Central Broward*	61	60	65	54	53	1.11	0.90	0.88	0.75	0.80	55	66	74	72	66
Central Dade	42	42	54	41	46	0.79	0.77	0.78	0.57	0.67	53	54	69	72	69
Central Florida	46	47	40	41	43	0.85	0.84	0.77	0.76	0.71	54	56	53	54	60
Manasota	50	52	34	37	37	0.77	0.73	0.58	0.64	0.54	65	72	59	57	67
Naples	64	55	50	45	39	0.92	0.89	0.82	0.69	0.72	69	62	61	66	54
North Broward*	38	39	37	31	31	0.65	0.66	0.61	0.53	0.57	58	59	61	58	55
North Dade	69	69	64	58	60	0.96	0.94	1.00	0.78	0.81	72	74	64	74	73
North Florida	64	73	60	62	55	1.04	1.25	1.04	1.07	0.87	62	58	58	58	63
South Broward*	42	51	51	46	35	0.79	0.90	0.85	0.73	0.55	54	56	60	63	63
South Dade	63	59	56	55	58	0.79	0.83	0.74	0.79	0.80	80	71	75	69	73
Toledo Blade	77	70	56	50	53	1.12	1.01	0.88	0.79	0.86	69	69	64	63	61
Treasure Coast	66	47	54	52	45	1.11	0.81	0.97	0.85	0.74	59	59	55	61	60
West Dade	54	67	61	48	49	0.85	1.03	0.96	0.77	0.72	63	65	63	63	69
West Palm	46	46	41	59	36	0.96	0.97	0.83	0.96	0.58	47	48	49	62	62
FPL System	**54**	**53**	**49**	**47**	**44**	**0.90**	**0.89**	**0.82**	**0.76**	**0.70**	**60**	**60**	**60**	**62**	**62**

Source: FPL's 2017-2021 distribution service reliability reports.
Note: *Three management regions were renamed: Pompano became North Broward, Wingate became Central Broward and Gulf Stream became South Broward.

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)				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Boca Raton	4.6	4.3	3.8	3.3	2.7	0.37%	0.90%	1.01%	0.18%	0.11%
Brevard	4.0	3.5	3.0	2.3	2.4	0.86%	0.27%	0.21%	0.42%	0.84%
Central Broward*	6.5	4.5	3.5	2.8	2.1	0.66%	0.17%	0.47%	0.22%	0.20%
Central Dade	3.6	3.0	2.8	2.3	2.0	0.78%	0.73%	0.14%	0.18%	0.19%
Central Florida	3.4	3.8	2.8	2.3	2.3	0.24%	0.84%	0.37%	0.35%	0.20%
Manasota	4.0	3.8	2.4	1.9	1.7	0.34%	0.26%	0.27%	0.17%	0.09%
Naples	6.0	4.7	3.3	2.4	2.2	0.34%	0.35%	1.00%	0.38%	0.17%
North Broward*	3.1	3.4	2.4	2.0	1.5	0.07%	0.54%	0.20%	0.08%	0.38%
North Dade	3.3	3.2	2.8	2.3	1.8	1.23%	0.70%	1.03%	0.44%	0.52%
North Florida	4.2	3.2	2.8	2.3	2.1	0.72%	1.44%	0.74%	0.70%	0.35%
South Broward*	4.0	4.4	3.4	2.8	2.4	0.60%	0.17%	0.34%	0.19%	0.23%
South Dade	4.3	3.8	3.3	2.8	2.7	0.67%	0.29%	0.72%	0.12%	0.36%
Toledo Blade	4.5	5.2	3.5	3.0	2.6	1.48%	1.94%	0.66%	0.52%	0.53%
Treasure Coast	4.0	3.5	3.2	3.1	2.6	1.73%	0.51%	1.22%	0.62%	0.36%
West Dade	4.4	4.5	3.9	2.9	3.4	0.72%	0.49%	0.61%	0.57%	0.27%
West Palm	4.4	4.7	4.1	3.0	2.3	2.04%	0.63%	0.26%	0.46%	0.26%
FPL System	**4.3**	**4.0**	**3.2**	**2.6**	**2.3**	**0.78%**	**0.60%**	**0.57%**	**0.33%**	**0.30%**

Source: FPL's 2017-2021 distribution service reliability reports.
Note: *Three management regions were renamed: Pompano became North Broward, Wingate became Central Broward and Gulf Stream became South Broward.

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

	Adjusted Number of Outage Events						Adjusted L-Bar Length of Outages				
	2017	2018	2019	2020	2021	Percentages	2017	2018	2019	2020	2021
Unknown	10,436	10,482	8,593	7,619	7,740	9.3%	163	145	132	136	131
Vegetation	17,264	15,949	18,123	18,375	17,090	20.6%	205	199	193	196	207
Animals	9,219	9,131	10,046	8,165	9,436	11.4%	109	104	105	104	110
Remaining Causes	3,308	3,394	3,449	3,560	3,172	3.8%	167	172	147	141	155
Other Weather	7,458	7,335	6,592	5,529	5,275	6.4%	215	194	190	178	187
Other	9,402	9,959	8,367	7,183	6,728	8.1%	217	198	171	167	166
Lightning	1,192	1,902	1,644	1,493	1,270	1.5%	245	282	260	254	265
Vehicle	1,026	954	883	895	946	1.1%	253	275	259	259	261
Defective Equipment	35,772	34,200	34,282	37,599	31,216	37.7%	206	238	198	194	205
FPL System	**92,686**	**95,077**	**93,306**	**91,979**	**82,873**	**100%**	**193**	**199**	**178**	**178**	**183**

Source: FPL's 2017-2021 distribution service reliability reports.
Notes: (1) "Other Causes" 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 Causes."

Florida Public Utilities Company

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

	2017	2018	2019	2020	2021
Fernandina(NE)	16,286	16,410	16,727	17,138	17,307
Marianna (NW)	12,764	11,729	12,135	12,242	12,432
FPUC System	**29,050**	**28,139**	**28,862**	**29,380**	**29,739**

Source: FPUC's 2017-2021 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)				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
NE	93	137	82	121	109	1.04	1.23	0.87	1.45	1.08	89	112	94	83	101
NW	197	178	283	209	175	2.41	1.75	2.85	2.15	1.75	82	102	99	98	100
FPUC System	**139**	**154**	**166**	**158**	**137**	**1.64**	**1.45**	**1.70**	**1.74**	**1.36**	**85**	**107**	**98**	**91**	**100**

Source: FPUC's 2017-2021 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				
	2017	2018	2019	2020	2021	Percentages	2017	2018	2019	2020	2021
Vegetation	354	421	357	376	356	34.6%	83	86	100	91	112
Animals	267	204	184	163	168	16.3%	56	62	66	64	65
Lightning	77	128	174	102	124	12.0%	81	98	115	107	103
Unknown	62	69	125	163	154	15.0%	89	88	78	92	95
All Other	44	61	64	36	29	2.8%	86	76	89	84	129
Other Weather	152	55	130	75	34	3.3%	168	101	140	133	121
Vehicle	30	21	132	36	30	2.9%	94	148	95	135	136
Defective Equipment	160	152	170	151	135	13.1%	117	101	123	112	115
FPUC System	**1,146**	**1,111**	**1,336**	**1,102**	**1,030**	**100%**	**93**	**86**	**101**	**96**	**103**

Source: FPUC's 2017-2021 distribution service reliability reports.
Notes: *"Other Causes" category is the sum of many diverse causes of outage events which individually are not one of the top 10 causes of outage events.

Gulf Power Company

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

	2017	2018	2019	2020	2021
Fort Walton*	118,010	119,219	120,399	119,990	122,136
Panama City*	117,847	114,413	115,446	119,041	118,379
Pensacola*	225,949	229,351	232,438	234,599	241,587
Gulf System	**461,806**	**462,983**	**468,283**	**473,630**	**482,102**

Source: Gulf's 2017-2021 distribution service reliability reports.
Note: *Gulf renamed its regions: Central is Fort Walton, Eastern is Panama City, and Western is Pensacola.

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)				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Fort Walton*	110	86	58	40	41	1.05	0.90	0.73	0.58	0.59	105	95	79	69	69
Panama City*	108	103	69	52	46	1.27	1.30	1.12	0.78	0.70	85	79	62	67	65
Pensacola*	123	99	71	48	34	1.24	1.42	1.02	0.73	0.62	100	70	69	65	55
Gulf System	**116**	**97**	**67**	**47**	**39**	**1.20**	**1.26**	**0.97**	**0.71**	**0.63**	**97**	**77**	**69**	**67**	**61**

Source: Gulf's 2017-2021 distribution service reliability reports.
Note: *Gulf renamed its regions: Central is Fort Walton, Eastern is Panama City, and Western is Pensacola.

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)				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Fort Walton*	2.1	1.6	2.0	1.4	1.9	0.91%	0.51%	0.11%	0.19%	0.15%
Panama City*	2.3	1.9	2.3	1.8	1.6	0.86%	2.15%	0.82%	0.96%	1.23%
Pensacola*	2.7	2.4	2.1	1.3	1.5	0.80%	1.68%	0.36%	0.23%	0.19%
Gulf System	**2.4**	**2.1**	**2.1**	**1.4**	**1.6**	**0.84%**	**1.49%**	**0.41%**	**0.40%**	**0.43%**

Source: Gulf's 2017-2021 distribution service reliability reports.
Note: *Gulf renamed its regions: Central is Fort Walton, Eastern is Panama City, and Western is Pensacola.

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

	Adjusted Number of Outage Events						Adjusted L-Bar Length of Outages				
	2017	2018	2019	2020	2021	Percentages	2017	2018	2019	2020	2021
Animals	3,514	2,189	2,495	1,838	1,704	20.6%	70	69	65	65	66
Lightning	1,633	1,623	1,437	479	586	7.1%	164	131	117	114	113
Unknown	818	1,121	1,211	1,333	1,337	16.1%	101	102	89	96	90
Vehicle	377	389	443	247	236	2.8%	171	181	150	146	148
All Other	428	442	652	863	832	10.0%	113	110	98	147	105
Vegetation	2,460	2,521	2,485	2,311	1,631	19.7%	144	119	102	112	94
Other Weather	366	257	331	766	518	6.2%	243	145	116	148	97
Defective Equipment	2,804	2,618	2,630	1,669	1,447	17.5%	140	140	132	134	129
Gulf System	**12,400**	**11,160**	**11,684**	**9,506**	**8,291**	**100%**	**125**	**116**	**103**	**112**	**98**

Source: Gulf's 2017-2021 distribution service reliability reports.
Notes: *"Other Causes" category is the sum of many diverse causes of outage events, which individually are not among the top 10 causes of outages events.

Tampa Electric Company

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

	2017	2018	2019	2020	2021
Central	202,572	205,611	209,057	211,631	215,086
Dade City	14,801	14,954	15,305	15,604	15,873
Eastern	122,667	125,030	127,437	129,781	131,248
Plant City	61,187	62,131	63,502	63,954	64,369
South Hillsborough	80,194	84,636	91,219	96,568	101,875
Western	203,805	206,962	210,151	211,714	214,077
Winter Haven	74,403	75,778	78,282	80,016	81,794
TECO System	**759,629**	**775,102**	**794,953**	**809,268**	**824,322**

Source: TECO's 2017-2021 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)				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Central	64	87	63	58	64	0.82	1.04	0.91	0.77	0.81	78	83	70	75	79
Dade City	153	168	191	186	138	2.10	1.98	2.15	2.23	2.02	73	85	89	83	68
Eastern	63	85	83	56	65	0.89	1.00	1.15	0.85	1.01	72	86	72	66	64
Plant City	92	112	114	107	157	1.44	1.55	1.60	1.51	1.88	64	72	71	71	84
South Hillsborough	84	99	52	53	61	1.20	1.43	1.01	0.96	1.08	70	69	52	55	57
Western	71	97	77	71	77	0.99	1.12	1.00	0.86	0.97	72	86	78	83	79
Winter Haven	76	93	67	71	153	1.21	1.27	1.01	1.03	1.23	62	73	67	68	124
TECO System	**73**	**95**	**76**	**68**	**85**	**1.03**	**1.18**	**1.07**	**0.94**	**1.07**	**71**	**80**	**71**	**72**	**79**

Source: TECO's 2017-2021 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)				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Central	7.9	8.1	7.9	6.4	5.4	0.18%	1.41%	0.81%	0.29%	0.71%
Dade City	14.2	14.8	12.3	10.5	6.5	6.64%	4.73%	11.17%	7.67%	1.56%
Eastern	8.8	10.2	10.8	6.4	6.0	1.79%	0.77%	2.10%	1.00%	1.94%
Plant City	12.8	14.7	13.7	10.8	7.5	3.02%	1.10%	4.03%	3.38%	5.43%
South Hillsborough	10.8	11.1	9.4	8.3	6.0	2.43%	2.93%	4.62%	2.92%	0.90%
Western	8.4	8.3	9.5	7.8	7.6	0.30%	1.19%	1.69%	0.33%	0.28%
Winter Haven	9.7	10.0	10.7	10.4	7.5	0.20%	2.23%	0.39%	0.47%	0.51%
TECO System	**9.2**	**9.6**	**9.8**	**7.8**	**6.5**	**1.07%**	**1.54%**	**2.10%**	**1.13%**	**1.18%**

Source: TECO's 2017-2021 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				
	2017	2018	2019	2020	2021	Percentages	2017	2018	2019	2020	2021
Lightning	1,258	1,981	1,436	1,340	1,019	10.3%	206	207	222	175	211
Animals	1,632	1,372	1,788	1,162	1,729	17.5%	105	96	94	84	111
Vegetation	2,108	2,614	2,357	2,434	1,409	14.2%	195	200	197	180	184
Unknown	972	1,270	1,356	1,152	1,031	10.4%	141	134	129	116	113
Other Weather	278	404	214	328	1,211	12.2%	158	202	189	219	288
Vehicle	401	360	387	398	300	3.0%	214	78	231	205	170
Defective Equipment	2,616	2,816	2,600	2,711	2,829	28.6%	203	190	190	189	166
All Other	249	286	366	285	368	3.7%	147	188	148	128	183
TECO System	**9,514**	**11,103**	**10,504**	**9,810**	**9,896**	**100%**	**177**	**180**	**173**	**166**	**175**

Source: TECO's 2017-2021 distribution service reliability reports.
Notes: *"Other Causes" category is the sum of many diverse causes of outage events which individually are not among the top 10 causes of outages events.

Appendix B – Summary of Municipal Electric Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2021

	Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
Utility	**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**
Alachua, City of	The City's inspection cycle is on an eight-year cycle (12.5% per year) The City of Alachua owns only distribution poles, no transmission poles. In October 2015, the City completed its first eight-year cycle.	The City inspected 455 (18.2%) of its 2,492 distribution poles in 2021.	Of the 455 poles inspected in 2021, 38 (8.3%) were rejected with 2 being priority rejected due to shell rot at ground line and 36 non-priority rejected due to shell rot, decay top, split top and woodpecker damage. The priority rejects required immediate change-out.	The following poles were evaluated and replaced: two 30 foot Class 6, seven 35 foot, Class 7, three 40 foot, Class 4, three 40 foot, Class 5, two 45 foot, Class 2, twelve 45 foot, Class 4, eight 45 foot, Class 8, and one 50 foot, Class 3.	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 30% of the facilities are trimmed each year. GIS mapping system is used to track trimming annually and to budget annual trimming projects.
Bartow, City of	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 began round two of its eight-year pole inspection cycle in 2016 and elected to perform pole inspections every other year. In 2021, the City did not inspect any poles as it inspected poles in 2020.	No inspections were completed in 2021.	No inspections were completed in 2021.	The City is on a four-year trim cycle with trim out at 6- to 10-foot 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. The City is currently contracting additional line clearance personnel to maintain the four-year cycle.

Appendix B – Summary of Municipal Electric Utility Reports
Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2021

	Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
Utility	**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	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.	424 (100%) transmission structure inspections were planned and completed. In 2021, 118 (2.5%) distribution poles were inspected. This included 100 wood poles and 18 concrete poles.	No transmission structures failed the inspection. In 2021, one distribution structure failed inspection due to decay.	No transmission structures failed the inspection. In 2021, one wood pole was 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 2021 have been fully completed and the vegetation management activities for 2022 are on schedule.
Blountstown, City of	The City owns 2,084 utility poles and does visual inspections of all poles once a year. The City took a direct hit from Hurricane Michael, which resulted in a rebuild of its system. The City retagged all poles due to this event.	100% of all poles are visually inspected annually.	47 (2.3%) poles required replacement because of ground rot, extreme cracking and warping and upgrading the lines. The City also reconductored about 2,950 linear feet of distribution line.	47 Class 5 poles were replaced with Class 3 poles.	The City has a four-year tree trimming cycle with a 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 2022.

Appendix B – Summary of Municipal Electric Utility Reports
Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2021

	Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
Utility	**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	The City has no transmission facilities. All distribution poles are on a five-year cycle. The inspection includes visual, sound/bore, pole condition, and wind loading.	The City inspected 404 (20.2%) poles in 2021.	In 2021, six (1.5%) poles failed inspection due to age, ground rot, and above ground fracture.	Four of the failed poles have been replaced. The other two are being scheduled for replacement. The City replaces Class 4 and Class 5 poles with Class 2 and Class 3 poles.	The City checks vegetation throughout the year and trims on a case-by-case basis. Outside of easement is done on an as needed basis. The City maintains a 10-foot buffer between vegetation and energized lines.	The City has contracted with Davey Tree Service. In 2021, approximately 3 to 4 miles of hot spot trimming was performed. The City is setting up zones for the trimming schedule to provide a more consistent trim plan. The City is putting together a three-year rotation schedule.
Chattahoochee, City of	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 2021.	In 2021, 35 (2%) poles failed the inspection due to ground line and pole top decay.	No poles were replaced. A schedule has yet to be determined.	The City trims the distribution system on an annual basis. This cuts down on animal related 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 2021

	Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
Utility	**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	In 2020, the City contracted with Power Pole Maintenance Company to perform the pole inspections, using sound and bore with calculations. Due to the City's small size, the entire system was completed in three months. The City performs infrared inspections on the facilities on a three- to four-year cycle.	In 2020, 2,300 (100%) poles were inspected. No poles were inspected in 2021. The City will perform an infrared inspection in 2024.	From the 2020 inspection, 180 (7.8%) poles did not pass inspection, due to rot below the ground or excessive split top.	In 2021, the City replaced 29 (1.3%) Class C distribution poles.	The City has a City ordinance that prohibits planting in easements. 100% of the distribution system is inspected annually for excessive tree growth. The City trims the entire system continuously as needed. The City will also accept requests from customers for tree trimming.	All transmission and feeders checked and trimmed in 2021 as every year.
Fort Meade, City of	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 inspected 400 (15.5%) poles in 2021. The City has approximately 2,800 distribution poles.	50 (13%) poles failed inspection. The poles failed inspection due to ground decay, pot rot, top decay, damage caused by wildlife, and motor vehicle accidents.	The City replaced 72 poles in 2021 with poles ranging from 50 foot to 30 foot, Class 5 to Class 3.	The facilities are on a three-year inspection cycle. All vegetation within a 6-foot clearance of the distribution lines are cleared to 6-foot or greater distance.	The City has completed approximately 33% of trimming in 2021.

Appendix B – Summary of Municipal Electric Utility Reports
Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2021

	Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
Utility	**Description of policies, guidelines, practices, procedures, cycles, and pole selection**	**Number and percent of poles and structures planned and completed**	**Number and percent of poles and structures failing inspections with reasons**	**Number and percent of poles and structures by class replaced or remediated with description**	**Description of policies, guidelines, practices, procedures, tree removals, with sufficient explanation**	**Quantity, level, and scope of planned and completed for transmission and distribution**
Fort Pierce Utilities Authority	FPUA utilizes a contractor to perform inspection of all wood distribution poles on an eight-year cycle and the transmission poles on a three-year cycle. The inspection includes visual inspection from ground line to the top and some excavation is performed on older poles.	1,965 distribution and 34 transmission poles were planned for inspection in 2021. These inspections were completed as planned indicating 14% of the system was inspected.	Nine (26%) transmission pole failed inspection in 2021. 256 (13%) distribution pole failed inspection in 2021. The reasons for failure were, above ground conditions, top truss shell, lower band shell and structure material.	FPUA replaced 126 wood distribution poles and one wood transmission pole in 2021.	FPUA maintains a three-year VM cycle for transmission and distribution system. FPUA also aggressively seeks to remove problem trees when trimming is not an effective option. FPUA will establish an in-house tree trimming crew by mid-2022 to provide greater efficiency and customer reliability.	FPUA spent $330,000 for the trimming, removal and disposal of vegetation waste in fiscal year 2021, which was sufficient to meet the yearly target of addressing one-third of the system.
Gainesville Regional Utilities	The facilities 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 inspected 2021. GRU inspected 4,185 distribution poles in 2021.	No transmission poles were rejected. 23 (1%) distribution poles failed due to shell rot, mechanical damage, exposed pocket, enclosed pocket, split top, woodpecker damage, and decayed tops.	23 distribution poles were replaced in 2021, ranging in size from 30 foot to 55 foot Class 1 to Class 6.	The VMP includes 560 miles of overhead distribution lines on a rotating cycle targeting distribution circuits that are 2 to 25 miles in length. The VMP includes an herbicide program and standards from NESC, ANSI A300, and Shigo-Tree Pruning.	The VMP is an ongoing and year round program. 100% of the transmission facilities were inspected in 2021, with 75 trees identified for trimming and /or removal. 150 distribution circuit miles were trimmed in 2021.

Appendix B – Summary of Municipal Electric Utility Reports
Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2021

	Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
Utility	**Description of policies, guidelines, practices, procedures, cycles, and pole selection**	**Number and percent of poles and structures planned and completed**	**Number and percent of poles and structures failing inspections with reasons**	**Number and percent of poles and structures by class replaced or remediated with description**	**Description of policies, guidelines, practices, procedures, tree removals, with sufficient explanation**	**Quantity, level, and scope of planned and completed for transmission and distribution**
Green Cove Springs, City of	The City does not have transmission lines as defined by 69kV and above. The City's goal is to ride its electric distribution system once a year and identify poles that will need to be replaced in the following year budget process.	In 2021, the City planned to inspect 25% of its poles.	In 2021, 74 (7%) wood distribution poles were replaced. The poles failed visual inspection due to base rot and wood decay.	The poles that were replaced ranged from 35 foot to 60 foot, all Class 2. One concrete Class 1, 55 foot pole was replaced.	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 3 phase circuits was trimmed in 2021. PURC held two vegetation management workshops in 2007 and 2009 and the City has a copy of the report and will use the information.
Havana, Town of	Total system is 1,176 poles; inspected several times annually using sound and probe method.	100% planned and completed in 2021.	9 (0.76%) poles failed inspection due to age.	All 9 poles were replaced. The poles were 30 foot, Class 3. The Town did not change out any conductors in 2021.	Written policy requires one-third of entire system trimmed annually. The Town maintains a six foot radius around lines.	10% of the system was trimmed in 2021. The Town intends to trim one-half of the system for the 2021-2022 Fiscal Budget Year and the other half of the system for the upcoming 2022-2023 Fiscal Budget Year.
Homestead Energy Services	All transmission poles concrete. With the use of drone technology, the transmission system will be on a three-year cycle performing thermographic inspection. The distribution facilities are on an eight-year cycle using sound and bore and loading evaluations and the annual thermographic inspection was completed February 2021.	50% of the transmission system was scheduled for inspection during the 2018/2019 fiscal year with 25% of the transmission system inspected. HES completed 7.6% (2,382 poles) of its distribution poles drone inspection during the 2018/2019 fiscal year. Pole inspections and drone inspections are scheduled to resume in 2022.	From the 2017 and 2019 inspections, 4 (1.5%) transmission poles of the 135 poles inspected failed inspection due to cracks in the concrete top and damaged insulators. From the 2017 and 2019 inspections, 101 (2.1%) distribution poles of the 4,713 poles inspected failed inspections due to ground rot, upper roof rot, and split tops.	Two transmission poles were remediation in 2020 and the other two are scheduled to be remedied in 2022. Based on the results of the 2016 and 2017 inspections, HES installed 7 new poles, and replaced 35 poles in 2021. The poles ranged from 40 to 50 foot, Class 2 to Class 4. Three poles were removed and the facilities were placed underground, which is approximately 580 feet.	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.

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JEA	Transmission circuits are on a five-year cycle, except for the critical N-1 240kV, which is on a two-year cycle. Distribution poles are on an eight-year inspection cycle, using sound and bore with excavation.	28 transmission circuits (which includes many poles on each circuit) and 19,129 distribution poles were inspected in 2021.	Based on 2021 inspection: 0 transmission wooden poles failed inspection and 2,762 (14%) distribution poles failed inspection due to ground decay, pole top decay, and middle decay.	In 2021, 25 transmission wood poles from previous inspection and vehicle accidents and 1,442 distribution poles were replaced. The poles listed as emergency poles (under 1%) are replaced immediately.	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 2021 VM activities and is fully compliant with NERC standard for vegetation management.
Keys Energy Services, City of Key West	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. The Keys distribution poles are on an eight-year inspection cycle. 100% of the distribution poles were visually inspected and 50% were sound and bore inspected in 2020 by Osmose, Inc.	An inspection of all transmission facilities was completed in 2019. From the 2020 inspection, 5,826 concrete poles, 1,336 ductile iron poles, and 15,740 wooden distribution poles were inspected. In addition, 344 concrete, 67 ductile iron, and 3,267 AT&T distribution poles were inspected in 2020. The next inspection will be performed in 2023.	No transmission poles failed inspection. 44 (0.8%) concrete poles and 144 (3.4%) wooden poles failed inspection in 2020. The reasons for the failures are decayed top, excessive cracking, hollow, mechanical damage, rotten ground rot, ground shell rot, woodpecker damage and fire damage. 1 concrete and 119 wooden AT&T poles failed inspection.	No transmission facilities failed inspection. The Keys repaired concrete spalling on transmission structures in 2019. The Keys applied for a Hurricane Irma Hazard Mitigation Grant to install lifejacket technology on concrete pole structures not currently exhibiting spalling. This is to proactively prevent the spalling. The Keys will issue a bid for replacement on the failing distribution poles in 2021.	The Keys' 241 miles 3 Phase distribution lines are on a two-year trim cycle and 68 miles of transmission lines are a quarterly cycle. The Keys tree crews remove all invasive trees in the rights-of-way and easements. The trees are cut to ground level and sprayed with an herbicide to prevent re-growth.	In 2021, the Keys had 2 feeder outages and 9 lateral outages due to vegetation. The Keys will strive to continue to improve its VMP to further reduce outages.

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	Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
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Kissimmee Utility Authority	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.	No wooden transmission poles were inspected in 2021 as they were all inspected in 2020. 1,663 distribution poles were inspected in 2021, which is 11.79% of the system.	Three (0.18%) distribution poles failed inspection due to shell rot, decayed top, and woodpecker damage. No new failures were identified during the transmission inspection.	In 2021, no transmission poles were replaced and three distribution poles are scheduled for replacement. The distribution pole was 35 foot, Class 3 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 2021. Approximately 101.6 miles (33.2%) of distribution facilities were inspected and remediated in 2021.
Lake Worth Utilities, City of	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 a three-year cycle. Pole tests include hammer sounding and pole prod penetration 6 inches below ground.	In 2021, CLW visual inspected 114 transmission poles and 490 distribution poles.	342 poles were deemed unsatisfactory in 2021. Poles were unsatisfactory because they reached their maximum life expectancy.	CLW replaced 316 poles in 2021, with 26 poles pending replacement. The poles range from Class 2 to Class 4, 35 foot to 55 foot.	CLW has an on-going VMP on a system wide, three-year cycle for transmission and distribution feeders and six-year cycle for distribution laterals. 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
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Utility	Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
	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	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 2017.	Lakeland Electric did not complete any pole inspections in 2021. It will augment the pole inspections program for 2022 and the next few years to compensate for the interruption in 2021.	Lakeland Electric did not complete any pole inspections in 2021.	All poles recommended in 2021 were assessed for appropriate action. Zero distribution poles were reinforced and 434 distribution poles were replaced, repaired, or removed in 2021. Two transmission poles were repaired or replaced in 2021.	The facilities are on a three-year inspection cycle for transmission and distribution circuits. VMP also provides in between cycle trim to enhance reliability.	27 miles of 230kV transmission lines were inspected in 2021. 22 miles of 69kV transmission lines were inspected in 2021. LE completed 321 miles of distribution lines for 2021.
Leesburg, City of	No transmission facilities. The Distribution facilities are on an eight-year cycle using visual, sound/bore, excavation method, and ground level strength test.	The City has completed the eight-year cycle that begun in 2016. The next round of inspections will start in 2024. 2,935 pole inspections were completed in 2021.	The City saw an estimated 5% failure rate (147 poles) in 2021. The causes were rot at the ground line and damage to pole tops, either by rot or woodpecker damage.	During 2021, 137 poles were replaced. The poles were 12 foot to 20 foot Aluminum poles and 25 to 45 foot, Class 7 to Class 4 wood poles. In some areas, underground distribution facilities were installed in place of the rejected poles.	Five-year trim cycle for feeder and lateral circuits. Problem trees are trimmed or removed as identified.	In 2021, 42.03 miles of distribution lines were trimmed as planned with an additional 3.35 miles of hot spot trimming.
Moore Haven, City of	The City inspects all the distribution facilities annually by visual and sound inspections.	The City continuously inspected the distribution facilities in 2021 by visual and sound method. 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 three 30-foot poles, five 35-foot poles, and, four 40-foot poles.	The City is continuous tree trimming in easements and rights-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.

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Mount Dora, City of	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 engaged a contractor to inspect and treat all wood poles on December 5, 2017. The project was completed in 2019. Inspections are on an eight-year cycle and the next cycle is planned to begin in 2025.	The City completed 100% of annual planned distribution field inspections in 2021.	During the 2017 inspection, all poles were inspected and corrective measures completed.	The city had 1,742 wooden poles as of January 1, 2021. The City's table shows 8 wooden poles were replaced. The wooden replaced range from 30 foot to 40 foot. The wooden poles were replaced with 50 to 55 foot 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 rights-of-way and easements that could create clearance problems.
New Smyrna Beach Utilities Commission, City of	The transmission and distribution facilities are on an eight-year inspection cycle. Additionally, the facilities are inspected as part of the City's normal maintenance when patrolling the facilities.	0 (0%) transmission poles were inspected during 2021 as transmission poles were inspected in 2012 and 2017. The next cycle starts in 2022. 1,500 (8%) distribution poles were inspected in 2021.	0 (0%) transmission poles were rejected in 2021. 56 (4%) distribution poles failed inspection due to decay.	No transmission poles were replaced in 2021. The City replaced/ repaired 269 distribution poles. The poles are sizes 30-60 foot and Class 2-6.	In 2021, the City transitioned its VM to a three-year programmatic power line clearing plan for distribution overhead facilities. This includes professional trimming, clear cutting ROW/Easements and removing trees and other vegetation near distribution power lines. In 2022, the City transmission lines, ROWs, easements will be put on the three-year schedule similar to the distribution system.	The City trimmed approximately 126 (55%) distribution line miles in 2021. 110 trees were removed. In 2021, 8.4 miles of transmission lines were trimmed and 5 miles of ROW mowing was performed.

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Utility	Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
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Newberry, City of	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 has no transmission poles.	The City averages 200 poles a year and were up-to- date in 2021. Therefore, the City did not inspect any poles in 2021.	The City did not inspect any poles in 2021.	The City changed out 12 distribution poles in 2021 that were identified as rejects from the 2020 inspection.	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 rights-of-way are addressed with the property owner.	One third of distribution facilities are trimmed each year to obtain a three-year cycle.
Ocala Electric Utility, City of	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. 2021 is the seventh year in the second eight-year cycle.	No transmission poles were inspected in 2021, since 100% were inspected in 2015. The transmission poles will again be inspected in 2023, which is the beginning of the next cycle. 3,328 (10.4%) of the 31,881 wood distribution poles were inspected in 2021.	29 (0.87%) distribution poles failed inspection due to decayed top, enclosed pocket, shell rot, and woodpecker damage.	18 (0.5%) of the distribution poles were braced and 29 (0.9%) poles were replaced. Ocala noted that poles remediated by bracing are not counted in the rejection numbers, since they still meet the standards with the immediate bracing applied. Bracing occurs at the time of inspection.	The City is on a four-year trim cycle for distribution and three-year trim cycle for transmission, with additional pruning over areas allowed minimal trimming. In 2013, an IVM style-pruning program was implemented which uses manual, mechanical, and chemical control methods for managing brush.	In 2021, the City trimmed one-fourth of the distribution system and 100% the transmission system. Ocala uses mechanical trimmer, trim lifts and herbicide methods for its VM.
Orlando Utilities Commission, City Orlando	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.	Due to Covid-19, OUC's contractor did not inspect any poles in 2020 Alternatively, both the 2020 and 2021 poles were inspected in 2021. For 2021, 16,579 (32%) poles were planned for inspection and 16,532 (32%) were completed.	377 (2.3%) poles failed inspection in 2021.	OUC replaced 320 wood poles in 2021. In addition, OUC restored 16 poles with C-Truss.	222 miles of transmission facilities are on a three-year trim cycle. 1,323 miles of distribution facilities are on a three-year trim cycle. OUC follows safety methods in ANSI A300 & Z133.1.	For 2021, 193 distribution miles were planned and 193 miles (100%) were completed. For 2021, 112 transmission miles were planned and 100% were completed.

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Quincy, City of	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 2,869 distribution poles in 2021. Detailed inspections were completed on 0.31% of distribution poles in 2021. Detailed inspections were carried out on all 31 transmission poles for 2021. All transmission poles are made of concrete and found to be in good condition.	13 distribution poles (1.4%) failed inspection. The poles showed signs of rotting around the base of the pole or the top of the pole. In addition, some poles had stress fractures near third-party attachments. The poles were replaced with wood poles. No transmission poles failed inspection.	14 (2.7%) distribution poles were replaced in 2021. The poles ranged from 25 foot to 40 foot, Class 3 to Class 7.	The City trims its electric system rights-of-way on a regular basis using in-house crews. The City strives to trim 25% of the system per year. The City employed a contractor in 2021 to trim and remove trees on the transmission system.	Approximately 27 miles (29%) of vegetation trimming was completed on the distribution system in 2021. 100% of the City's transmission lines were inspected in 2021.
Reedy Creek Improvement District	The District performs a visual inspection monthly of its overhead transmission system and inspects the distribution facilities every eight years.	All distribution poles were inspected and treated by an outside contractor in 2013. The District has 7 wooden distribution poles. All distribution wood poles (7) were inspected in 2021. The next inspection is scheduled for 2029.	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 7 wooden poles.	14 miles of transmission rights-of-way is ridden monthly for visual inspection. The District contracts tree trimming each spring to clear any issues on rights-of-way.	Periodic inspections in 2021 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.

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Starke, City of	The City is in process of having all their poles GIS mapped. To date, they have approximately two-thirds of their poles mapped and inspected. The poles are replaced as needed on a visual basis.	One-half of the City's poles (1,861) were inspected.	In 2020, 28 poles (1.5%) were found to be rotten or needed support.	The City has no transmission poles. The distribution poles that were replaced in 2020 ranged from Class 2 50-foot poles to Class 2 30-foot poles.	The City trims their trees upon visual inspection along with utilizing tree trimming contractors. The City trims 33% of their electrical distribution system annually. The City uses the standard of trimming 15 feet on both sides of the poles and installing "squirrel guards."	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 2020. The City will use the information from PURC's VM workshops to improve their VM.
Tallahassee, City of	Every 8 years a new pole inspection cycle is initiated to inspect all poles over a three-year period. The inspection includes visual inspection, sound & bore, internal & fumigant treatment, assessment & evaluation for strength standards. The City performs a climbing and physical inspection of its transmission structures on a five-year cycle.	In 2019, a complete inspection of the City's 2,956 transmission poles was completed. All 53,316 distribution poles were inspected in 2020.	The City found 11 (0.4%) wooden transmission poles failed inspection due to rot and animal invasion. 1,301 (2.4%) distribution wooden poles were rejected during the 2020 inspections due to rot and animal invasion.	Six transmission poles were replaced. The City replaced 122 distribution poles and structures in 2021. The poles ranged from 30 foot to 60 foot, Classes 2 to 4. These poles were replaced with a stronger Class size pole. The City also replaced a 90 foot, Class 1 wooden pole with a 100 foot concrete pole.	The transmission facilities are on a three-year trim cycle with target clearance of 20 feet on 115kV lines and 30 feet on 230kV lines. The distribution facilities are on a 36-month trim with a target clearance of 9 to 12 feet. When a tree is removed, the City replaces it with a "utility compatible tree."	The transmission rights-of-way & easements were mowed in 2021. Approximately 1,117 miles of overhead distribution lines were managed in 2021. Tallahassee uses a mechanical trimmer and trim lifts to trim vegetation. In addition, Tallahassee does periodic spot spraying and vegetation maintenance.

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Wauchula, City of	The City of Wauchula has a third-party contractor inspect its substation yearly and 100% of distribution poles in 2016-18. The next scheduled pole inspection will be in 2023.	The City of Wauchula has a third-party contractor inspect its substation yearly and 100% of distribution poles in 2016-2018. The poles have been treated and are expected to have a minimum of 10 years of service left.	Approximately 3% (out of 3,200 poles) have failed due to poles rotting.	78 distribution poles were replaced in 2021 ranging from 35 foot to 60 foot, all Class 4 poles.	The policy on vegetation management includes trimming trees and herbicides for vines annually or as needed.	The City completed herbicide spraying in 2020. The City also uses PURC's 2007 and 2009 vegetation management reports to help improve its practices.
Williston, City of	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.	100% of 1,102 poles were inspected from 2018-2020. This is the third year of the three-year cycle.	In 2020, no poles were found defective during the inspection.	No poles were replaced in 2020 since no poles were found defective.	The distribution lines are on a three-year trim cycle with attention to problem trees during the same cycle. Any problem tree not in rights-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.
Winter Park, City of	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 2021; however, WPE routinely inspect poles that are involved with daily jobs and work orders.	The City did not replace any wood poles in 2021. The City's undergrounding program is eliminating many poles from its system and current practice is to replace poles that are no longer safe or serviceable or underground the applicable section of overhead conductor, if practicable.	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. In 2021, the City replaced one 35 foot distribution pole after a vehicle accident. It was replaced with the same type of pole.	Vegetation management is performed on a three-year trim cycle, which is augmented as needed between cycles.	The City trimmed approximately 116.75 miles of distribution lines in 2018.

Appendix C – Summary of Rural Electric Cooperative Utility Reports Pursuant to Rule 25-6.0343, F.A.C. – Calendar Year 2021

Utility	Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
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Central Florida Electric Cooperative, Inc.	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 2021. 10,359 (12.02%) distribution poles were inspected in 2021.	Of the 10,359 distribution poles inspected in 2021, 53 (0.51%) were rejected. These poles are scheduled to be replaced.	619 distribution poles were replaced in 2021. The poles varied from 30 foot to 65 foot, Class 1 to Class 7.	Trees are trimmed or removed within 15 feet of main lines, taps, and guys on a five-year plan.	In 2021, 655 miles of the 3,972 miles of primary overhead line on the system were trimmed.
Choctawhatchee Electric Cooperative, Inc.	The Coop inspects new construction of power lines on a monthly basis and has an eight-year cycle to cover all poles.	During 2021, 7,750 poles or 12.7% of 61,030 total poles were inspected.	921 poles or 11.9% of the poles failed inspection ranging from spit top to wood rot.	During 2021, CHELCO replaced 534 poles, which included failed poles from the 2021 inspection and remaining poles from the 2020 inspection.	Current rights-of-way program is to cut, mow, or otherwise manage 20% of its rights-of-way on an annual basis. Standard cutting is 15 feet on either side of primary from ground to sky.	In 2021, 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 Coop also established herbicidal spraying program.

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	Transmission & Distribution Facility Inspections				Vegetation Management Plan (VMP)	
Utility	**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**
Clay Electric Cooperative, Inc.	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 now on a ten-year cycle using excavation, sound and bore at the ground line and visual inspection (five-year cycle) and system feeder inspection excluding ground line (five-year cycle).	Clay completed the transmission ground patrol inspection in 2016 & the next inspection will be done in 2026. A climbing inspection was completed on the transmission system in 2020 & the next inspection will be completed in 2022. A helicopter inspection was performed in 2021 consisting of 2,557 poles and 38 substations. Additionally, in 2021, Clay performed the system feeder and ground line pole inspection. The total number of distribution poles inspected was 42,515.	The inspection found 13 (0.5%) of 2,557 transmission poles inspected needed replacement. 2,296 (5.4%) distribution poles were rejected due to various reasons including ground rot, top decay, holes high, and split.	13 transmission poles were replaced with 55 to 85 foot, Class 1 poles. 2,296 distribution poles were replaced with poles ranging from 20 foot to 60 foot, Class 1 to 7. Clay notes that work completed in 2021 may include carryover work from 2020 inspections.	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 2021, Clay mowed 56.66 miles, sprayed 53.08 miles, and recut 54.11 miles of its transmission rights-of-way. In 2021, Clay mowed 2,338.65 miles, sprayed 2,308.58 miles, and recut 2,064.18 miles of its distribution circuits.
Escambia River Electric Cooperative	Escambia River inspects its distribution facilities on an eight-year cycle using visual, sound, and bore techniques in accordance with RUS standards.	4,200 (12%) distribution poles were planned and 3,760 (10.8%) inspections were completed in 2021. Escambia River had contractor delays. Escambia River does not own any transmission poles.	Approximately 195 (5.2%) poles failed inspection in 2021. The common cause was pole rot at the top and bottom of the poles.	In 2021, Escambia River replaced 490 poles. The majority of these poles were reported from the 2019 inspection and carried over to 2020. These numbers reflect various pole sizes and Classes.	Escambia River's distribution facilities are on a five-year trim cycle. Distribution lines and rights-of-way is cleared 20 feet, 10 feet on each side.	In 2021, approximately 530 miles (33.3%) of the power lines were trimmed with 340 miles (20%) planned.

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Florida Keys Electric Cooperative Association, Inc.	The company inspects 100% of the transmission structures annually by helicopter and on the ground. In addition, FKEC started using aerial drones to supplement the helicopter inspections. The distribution poles are on an eight-year cycle and was completed in 2018. All 11,808 distribution poles have been inspected and 10,698 wood poles were tested and treated with a reject rate of 3.85%. The next cycle will start in 2022.	100% of the transmission poles were inspected in 2021 by helicopter patrol and ground-based infrared inspections. Routine distribution pole replacement continues as new construction, upgrades and relocations efforts require.	No transmission structures failed inspections in 2021. 114 transmission water structures were inspected in 2017 and are scheduled for foundation repairs in 2021, which were completed in January 2022.	The inspections resulted in no transmission or distribution structures replacement in 2021.	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 rights-of-way.	100% of the transmission facilities are inspected annually and VM tasks are performed as needed. In addition, all substation properties are inspected annually and VM tasks are performed as needed. Approximately 220 circuit miles of distribution lines were trimmed in 2021. Additionally, over 600 member-requested service requests were competed.
Glades Electric Cooperative, Inc.	The facilities are on a ten-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. 2,388 miles of distribution lines and 146 miles of underground distribution lines were planned and inspected in 2021. GEC inspected 8,165 poles in 2021.	1,093 (13.4%) distribution poles failed during the 2021 inspection due to decay, rot and top splits.	874 distribution poles rejected in the 2021 inspection were replaced. The poles varied in height and Classes. The remaining poles will be replaced in 2022.	All trimming is on a three-year cycle. The rights-of-way are trimmed for 10-foot clearance on both sides, and herbicide treatment is used where needed.	GEC trimmed 513 miles of distribution circuits in 2021 which included “hot spot” trimming. The transmission rights-of-way are inspected annually and 50 miles were trimmed.

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Gulf Coast Electric Cooperative, Inc.	No transmission lines. Performs general distribution pole inspections on an eight-year cycle. Also, GCEC inspects underground transformers and other padmount equipment on a four-year cycle.	In 2021, GCEC inspected 6,483 poles and 863 pad-mounted inspections.	Of the 6,483 poles inventoried in 2021, 62 (0.95%) poles were rejected. The poles were rejected due to mechanical damage.	In 2021, GCEC replaced 325 structures ranging from 40 foot, Class 4 to 65 foot, Class 2 poles.	GCEC owns approximately 2,181 miles of overhead and 451 miles of underground distribution lines. GCEC strives to clear the entire ROW on a five-year cycle. GCEC clears between 20 and 30 feet width, from ground to sky.	GCEC trimmed approximately 420 miles of ROW in 2021. GCEC also works closely with property owners for danger tree removal.
Lee County Electric Cooperative, Inc.	Transmission facilities are inspected ever two years for 138kV 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 ten-year climbing inspection cycle for splitting, cracking, decay, twisting, and bird damage.	In 2021, 945 (41%) transmission poles were inspected, which was 100% of the poles that were scheduled. 31,805 (19%) distribution poles were inspected, which was over 167% of the inspections scheduled.	3 (0.3%) transmission poles failed inspection due to concrete life expectancy. 5,904 (19%) distribution poles failed inspection due to rot/split top and woodpecker damage.	15 transmission poles were replaced with concrete and steel poles. 72 distribution poles were repaired through re-plumbing and patching. 677 poles were replaced in 2021. The sizes varied by Class 1 to Class 6.	VMP strategies include cultural, mechanical, manual, & chemical treatments and the plan is on a five-year cycle for 1 Phase distribution facilities and three years for 2 & 3 Phase distribution facilities. The 138kV transmission systems are on an annual cycle.	LCEC completed 45 miles (105% planned) of Transmission trimming, 447 miles (102% planned) three-phase trimming, and 741 (99% planned) miles of single-phase trimming,
Okefenoke Rural Electric Membership Cooperative	OREMC owns no transmission facilities. The inspections for the distribution systems include visual, sound/bore with excavations, and chemical treatment. The pole inspections are on an eight-year cycle.	In 2021, OREMC performed inspections on 9,378 (15.8%) poles. OREMC has 59,237 wood poles as of December 31, 2021.	In 2021, 96 (1%) poles were rejected. The cause of the rejection was ground rot and above ground damage.	The 96 poles failing inspection in 2021 are scheduled to be replaced in 2022. During the course of other projects, 958 new poles were added and 700 poles were retired in 2021.	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 rights-of-way for trimming and completed 536.5 miles in 2021. Also in 2021, contractors sprayed 285 miles of rights-of-way. In 2021, 1,116 at risk trees were removed.

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Peace River Electric Cooperative, Inc.	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.	393 transmission (172 concrete, 23 steel, 198 wooden) poles are inspected every two years. 6,857 (10.7%) of 63,897 distribution poles were inspected.	Peace River did not replace any transmission poles in 2021. 278 (4.05%) distribution poles were rejected in 2021.	Peace River replaced 274 poles in 2021. The distribution poles receiving remediation in 2021 varied from 30 foot to 60 foot, Class 1 to 6. No transmission poles were changed out for storm hardening.	Peace River utilized guidelines in either RUS bulletins or other materials available through RUS. In addition, Peace River uses a Georgia Rights-of-way program, which uses a ground to sky method by removing trees. The VMP is on a four- to five-year cycle.	In 2021, the Company completed rights-of-way maintenance on 2,700 (94%) of its 2,876 miles of overhead distribution.
Sumter Electric Cooperative, Inc.	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.	Zero transmission poles were planned and inspected in 2021. 17,079 (12.5%) distribution poles were planned and 16,981 (12.4%) were inspected in 2021.	Zero transmission poles failed inspection. 1,189 (7%) distribution poles failed inspection. The causes are due to ground rot and top deterioration	Zero wooden transmission poles were replaced with spun-concrete poles. 1,189 distribution poles were replaced. The distribution poles ranged from 25 to 55 foot and Class 1 to Class 7. The poles replaced include pole failures from both 2020 and 2021 inspections.	Distribution and transmission systems are on a three-year trim cycle for feeder and laterals. SECO's VM includes tree trim cycles, tree removals, and herbicide treatment with a minimum 10-foot clearance and a desired clearance of 15 feet from its distribution system. The transmission system specification is a 30-foot clearance.	In 2021, SECO trimmed 531 miles for its cycle and an extra 13 miles of its transmission and distribution system. SECO removed 50,549 trees in 2021.

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Suwannee Valley Electric Cooperative, Inc.	SVEC inspects all structures on an eight-year cycle using sound/bore and visual inspection procedures.	SVEC inspected five (100%) transmission structures in 2021. 14,224 (16%) distribution structures were inspected in 2021.	455 (3%) inspections of distribution poles failed due to ground line decay, excessive splitting, and woodpecker damage. Zero inspections of transmission poles failed.	985 (7%) distribution poles of total inspected were remediated by ground line treatment and 486 (3%) distribution poles were replaced. Zero transmission structures were remediated.	SVEC's facilities are on a four- to three-year inspection cycle includes cutting, spraying and visual on as-needed basis.	In 2021, 1,136 (31%) miles of rights-of-way were cut and in 2022, there are plans to cut an additional 1,206 (33%) miles. In 2021, zero miles were reported being sprayed (herbicide), nor are there any plans for spraying in 2022.
Talquin Electric Cooperative, Inc.	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 an eight-year rotation cycle since 2007.Talquin performs infrared inspections annually at its substations.	10,934 distribution poles were inspected in 2021. Talquin did not inspect any transmission poles in 2021.	105 (0.95%) of the distribution poles inspected were rejected.	The priority poles were replaced and the rejected poles are being inspected and repaired or replaced if necessary. Talquin replaces 30 foot Class 7 poles with stronger 35-foot Class 6 poles with guys and 35-foot Class 6 poles with 40 foot Class 4 poles as a minimum standard.	Talquin maintains its rights-of-way by mechanical cutting, mowing, and herbicidal applications.	402 (17%) miles of distribution and 0.6 (0.06%) miles of transmission rights-of-way were treated in 2021. In addition, Talquin received 1,119 non-routine requests for tree maintenance.

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Tri-County Electric Cooperative, Inc.	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 2021, the transmission poles were visually inspected. Tri-County inspected 7,092 (12%) distribution poles in 2021.	124 (1.75%) distribution poles were rejected. The Coop repaired broken ground wires.	The 124-rejected distribution poles found during the 2021 inspection, which required replacement, are in the process of being changed out.	The Coop attempts to acquire 30-foot rights-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 2021, approximately 700 distribution miles were trimmed and 450 miles were sprayed. The Coop has approximately 2,796 miles of overhead distribution lines in four counties.
West Florida Electric Cooperative Association, Inc.	West Florida continues to use RUS Bulletin 1730B-121 as its guideline for pole maintenance and inspection.	Prior to Hurricane Michael, WFEC inspected 7% of its poles.	Out of the 7% inspected, 5% required maintenance or replacement.	West Florida suspended its pole inspection in 2019 to concentrate on repairing the damage caused by Hurricane Michael. West Florida expects to restart the program in 2023.	West Florida's VM includes ground to sky side trimming along with mechanical mowing and tree removal.	During 2021, WFEC mowed and side trimmed 751 miles of its distribution system. Also, WFEC chemically sprayed approximately zero miles of rights-of-way.

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Withlacoochee River Electric Cooperative, Inc.	WREC inspects the transmission and distribution facilities annually (approximately 4,981 miles for 2021) by line patrol, drone/infrared, physical and visual inspections.	74 miles or 100% of transmission facilities were inspected by walking, riding or aerial patrol. 4,981 miles of distribution facilities were inspected annually by line patrol, voltage conversion, rights-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. In 2021, zero transmission poles/structures failed inspection.	6,109 wooden, composite, cement, concrete, steel, aluminum, and fiberglass poles ranging in size from 12 to 70 foot were added; 3,162 poles were retired.	In 2017, WREC contracted with an arborist company to assist with the aggressive VMP that includes problem tree removal, horizontal/vertical clearances and under-brush to ground. WREC maintains over 180 overhead feeder circuits (over 7,200 miles of line) on a trim cycle between four to five years.	All transmission lines are inspected annually. 5.6 miles of transmission rights-of-way issues were addressed in 2021. In addition, during 2021, WREC addressed 3,852 rights-of-way service orders ranging from trimming a single account to trimming an entire subdivision or area.