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June 1, 2022

VIA: ELECTRONIC FILING

Mr. Adam J. Teitzman
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

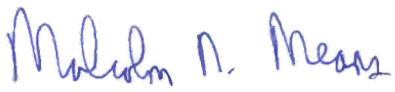
Re: Storm Protection Plan Annual Status Report
Dkt. 20220000-OT

Dear Mr. Teitzman:

Attached for filing is Tampa Electric Company's 2021 Storm Protection Plan Annual Status Report.

Thank you for your assistance in connection with this matter.

Sincerely,



Malcolm N. Means

MNM/bmp
Attachment
cc: Marissa Ramos – mramos@psc.state.fl.us (w/encl.)
Penelope Buys – pbuys@psc.state.fl.us (w/encl.)
Paula Brown – pbrown@tecoenergy.com (w/encl.)

2021
STORM PROTECTION PLAN
ANNUAL STATUS REPORT

FILED: June 1, 2022

TECO TAMPA ELECTRIC AN EMERA COMPANY

Table of Contents

SUMMARY OF 2021

STORM PROTECTION PLAN ACCOMPLISHMENTS

Tampa Electric's Storm Protection Plan ("Plan" or "SPP") sets out a systematic and comprehensive approach to storm protection focused on those Programs and Projects that provide the highest level of reliability and resiliency benefits for the lowest relative cost. The company believes that these activities will achieve the Florida Legislature's goals of "reducing restoration costs and outage times associated with extreme weather events and enhancing reliability" in a cost-efficient manner.

Tampa Electric's 2021 Storm Protection Annual Status Report covers the second year of the company's 2020-2029 Storm Protection Plan, which provides a comprehensive approach to protect and strengthen its electric utility infrastructure to withstand extreme weather conditions as well as to reduce restoration costs and outage times in a prudent, practical and cost-effective manner. Protecting and strengthening Tampa Electric's transmission and distribution electric utility infrastructure against extreme weather conditions can effectively reduce restoration costs and outage times to customers and improve overall service reliability for customers. Tampa Electric received approval of its 2020-2029 Storm Protection Plan in Docket No. 20200067-EI, Order No. PSC-2020-0224-AS-EI, issued June 30, 2020, and finalized by Consummating Order No. PSC-2020-0293-AS-EI issued August 28, 2020.

Distribution Lateral Undergrounding

Tampa Electric's Distribution Lateral Undergrounding Program aims to strategically underground existing overhead lateral primary, lateral secondary and service lines. The expected benefits from this Program are:

- Reducing the number and severity of customer outages during extreme weather events;
- Reducing the amount of system damage during extreme weather;
- Reducing the material and manpower resources needed to respond to extreme weather events;
- Reducing the number of customer complaints from the reduction in outages during extreme weather events; and
- Reducing restoration costs following extreme weather events.

In addition to the many benefits that should be realized from distribution lateral undergrounding during extreme weather events, it will also provide additional blue-sky benefits such as:

- Reducing the number of momentary and prolonged unplanned outages;
- Reducing the number of customer complaints from outages; and
- Improving customer reliability and power quality.

The tables below show the number of distribution lateral undergrounding projects that were designed, constructed and costs in 2021:

Table DLU.1 – 2021 Distribution Lateral Undergrounding

2021 Distribution Lateral Undergrounding			
	Projects Planned	Projects Initiated	Projects Completed
Engineering Design and Right of Way Obtainment	520	439	169
Construction	205	78	39

Table DLU.2 – 2021 Distribution Lateral Undergrounding Revenue Requirements

2021 Distribution Lateral Undergrounding Revenue Requirements Projected versus Actual		
	Projected	Actual
Distribution Lateral Undergrounding	$4,342,580	$2,528,357

Vegetation Management

Tampa Electric's Vegetation Management Program ("VMP") combines a continuation of its existing filed and approved distribution and transmission VMP activities with three additional strategic VM initiatives.

In 2021, Tampa Electric utilized approximately 36 contracted tree trim personnel to manage the company's transmission tree trimming requirements. In addition, Tampa Electric's Transmission Vegetation Management Program ("TVMP") continues to comply with the North American Electric Reliability Corporation ("NERC") standard for Transmission Vegetation Management FAC-003-3.

For 2021, Tampa Electric has 295 dedicated distribution tree trim personnel throughout the company's seven service areas. These dedicated resources are broken out into two categories: Proactive and Reactive. The proactive resources are utilized for circuit tree trimming activities and consist of 261 personnel. The reactive resources consist of 34 personnel and are employed for mid-cycle trims, customer requested work and work orders associated with circuit improvement process. Lastly, Tampa Electric has 36 dedicated personnel responsible for the vegetation management of the company's transmission system.

Tampa Electric continued its efforts toward effective vegetation management as part of a coordinated plan with local governments and communities. Tampa Electric's Line Clearance Department and External Affairs Department hold periodic meetings with local governments and communities related to vegetation maintenance activities, upcoming projects, and emergency recovery strategies. Tampa Electric's External Affairs Department is tasked with communicating with local and state government officials, residential and commercial customers on several topics, including vegetation management. The company's goal is to keep governmental officials aware and briefed on relevant issues regarding these topics while working with internal Tampa Electric departments to resolve vegetation management issues in and around the company's infrastructure in a timely and responsive manner.

In 2021, as part its Florida Arbor Day recognition, Tampa Electric partnered with the Davey Tree Expert Company and the University of South Florida to plant trees around the campus and arboretum.

During the fourth quarter 2021, Tampa Electric submitted its renewal application to the National Arbor Day Foundation's Tree Line USA Program and expects to receive endorsement in the first quarter of 2022. This will be the fourteenth consecutive year Tampa Electric has received the National Arbor Day Foundation's prestigious Tree Line USA Program designation.

Distribution:

Tampa Electric trims the company's distribution system on a four-year cycle. This approach was approved by the Commission in Docket No. 20120038-EI, Order No. PSC 12-0303-PAA-EI, issued June 12, 2012. The four-year cycle is flexible enough to allow the company to change circuit prioritization utilizing the company's reliability-based methodology. The table below shows the number of Four-Year Cycle VM miles completed in 2021:

Table VM.1 – 2021 Distribution Four-Year Cycle

2021 Distribution Vegetation Management Four-Year Cycle (Miles Trimmed)								
3rd Cycle, Year 1								
	Company Service Area							
	CSA	DCA	ESA	PCA	SHA	WSA	WHA	Total
4-Year VM Miles Goal	260.4	92.9	210.3	309.9	182.3	276.0	231.2	1,563.0
4-Year VM Miles Actual	276.9	85.9	133.4	365.6	190.1	294.5	281.4	1,627.7

Some area goals were adjusted during the year to account for customer demand and storm response.

Reactive:

Tampa Electric supports internal and external customer requests through its reactive initiative. Mid-cycle trims, customer requested work and work orders associated with circuit improvement process are the primary categories of reactive work. Work is tracked through the company's work management software. Each work request ("WR") is reviewed by Tampa Electric or contract staff. Those requiring trimming are issued to contract reactive crew. The table below shows the Reactive work requests reviewed and completed in 2021:

Table VM.2 – 2021 Reactive Vegetation Management

2021 Reactive Vegetation Management (Work Requests)								
	Company Service Area							
	CSA	DCA	ESA	PCA	SHA	WSA	WHA	Total
Reactive Work Requests Reviewed	1,231	107	746	370	305	1,240	325	4,324
Reactive Work Requests Trimmed	991	93	627	357	267	1,053	314	3,702

Transmission:

Tampa Electric trims the company's transmission utilizing a comprehensive vegetation management strategy. The company operates four categories of transmission lines 230kV, 138kV, 69kV, and 34kV. For the circuits with voltages above 200kV, the company complies with Federal Energy Regulatory Commission ("FERC") standard FAC-003-4. This standard imposes performance-based, risk-based, and competency-based requirements for vegetation management on these circuits. The company imposes a two-year vegetation management cycle for 138kV circuits, and a three-year cycle for 69kV and 34kV circuits. The company's vegetation management strategy for its transmission system includes the maintenance of the transmission ROW's. The table below shows the Transmission VM completed in 2021 compared to the annual goal:

Table VM.3 – 2021 Transmission Vegetation Management

2021 Transmission Vegetation Management				
	Bulk Transmission (miles)	Non-Bulk Transmission (miles)	Right of Way Transmission (acres)	Total Transmission (miles)
Transmission VM Miles Goal	276.4	247.0	8,000.0	523.4
Transmission VM Miles Actual	276.4	247.0	8,403.8	523.4

New Vegetation Management:

Tampa Electric initiated two additional distribution VM initiatives and one additional transmission VM initiative within the company's 2020-2029 SPP. The purpose of these additional VM initiatives is to enhance the company's current cycles, specifically for the purpose of system storm hardening. These additional VM initiatives are:

Initiative 1: Supplemental Distribution Circuit VM

Initiative 2: Mid-Cycle Distribution VM

Initiative 3: 69 kV VM Reclamation

Initiative 1: Tampa Electric initiated 700 miles of supplemental distribution circuit VM to enhance the current four-year distribution VM cycle to reduce the proximity between vegetation and electrical facilities. Circuit prioritization and selection was centered around storm resiliency and mitigating outage risk on those circuits most susceptible to storm damage. The table below shows the number of miles of supplemental VM by Service Area that was conducted in 2021:

Table VM.4 – 2021 Supplemental Distribution Circuit Vegetation Management

2021 Supplemental Vegetation Management (Miles Trimmed)								
	Company Service Area							
	CSA	DCA	ESA	PCA	SHA	WSA	WHA	Total
Supplemental Miles Goal	159.1	6.2	153.3	25.2	20.5	82.8	63.1	510.2
Supplemental Miles Actual	162.6	14.3	156.6	26.1	20.5	75.2	52.7	508.0

Initiative 2: Tampa Electric initiated Mid-Cycle VM which is an inspection-based approach and is designed to identify and mitigate hazard trees and areas where vegetation cannot be controlled effectively following a four-year distribution VM cycle. In 2021, the company performed VM on 1,382 spans of feeder and removed 451 hazard trees as part of the Mid-Cycle Initiative. The table below shows the number of miles of Mid-Cycle VM by Service Area that was conducted in 2021:

Table VM.5 – 2021 Mid-Cycle Distribution Vegetation Management

2021 Mid-Cycle Distribution Vegetation Management (Miles Inspected)								
	Company Service Area							
	CSA	DCA	ESA	PCA	SHA	WSA	WHA	Total
Mid-Cycle Inspection Miles Goal	40.7	0.0	12.8	42.2	37.0	52.0	58.9	243.6
Mid-Cycle Inspection Miles Actual	40.7	0.0	12.8	42.2	5.9	52.0	58.9	212.5

Initiative 3: Tampa Electric added the 69kV Reclamation Initiative to “reclaim” specific areas of the company’s 69kV system that are particularly problematic due to vegetative

conditions. The focus of this Initiative is to clear the vegetation undergrowth and remove hazard trees. The company will clear the vegetation within the boundaries of the easement or property but outside of the current 15-foot vegetation-to-conductor clearance specification. In 2021, the company focused on real estate research and surveying. The table below shows the number of miles of 69kV Reclamation VM that was conducted in 2021:

Table VM.6 – 2021 69 kV Reclamation Initiative

2021 69 kV Reclamation Initiative			
	Real Estate Research (miles)	Survey (miles)	Vegetation Management (miles)
69 kV Reclamation Initiative Goal	7.2	13.6	0.0
69 kV Reclamation Initiative Actual	7.2	9.3	6.5

Tampa Electric's Vegetation Management Metrics:

2021 - System Vegetation Management Performance Metrics – SYSTEM							
	Feeders			Laterals			Total
	Unadjusted	Adjusted	Diff.	Unadjusted	Adjusted	Diff.	
(A) Number of Outages							
(B) Customer interruptions							
(C) Miles Cleared		853.4			1,494.7		2,348.1
(D) Remaining Miles		934.7			2,970.0		3,903.7
(E) Outages per Mile [A ÷ (C + D)]							
(F) Vegetation CI per Mile [B ÷ (C + D)]							
(G) Number of Mid-Cycle trims		1,382			0		1,382
(H) All Vegetation Management Costs							$24.2M
(I) Customer Minutes of Interruption							
(J) Outage restoration costs							
(K) Vegetation Proj. (current year)							$25.1M
(L) Vegetation Goal (current year)							2,316.9
(M) Vegetation Proj. (next year)							$26.4M
(N) Vegetation Goal (next year)							2,446.8
(O) Trim-Back Distance							10’

Notes:
(G) Mid-Cycle trims are shown in spans.
(H) All Vegetation Management Costs - SERVICE AREA - include ONLY contractor costs, All Vegetation Management Costs - SYSTEM - include ALL costs
(L) & (N) Vegetation Goal shown in miles
(O) 10' Represents an average, however, to comply with ANSI A300, actual trim distances may vary

2021 - System Vegetation Management Performance Metrics - CSA							
	Feeders			Laterals			Total
	Unadjusted	Adjusted	Diff.	Unadjusted	Adjusted	Diff.	
(A) Number of Outages							
(B) Customer Interruptions							
(C) Miles Cleared		191.8			288.4		480.2
(D) Remaining Miles		159.7			402.7		562.4
(E) Outages per Mile [A ÷ (C + D)]							
(F) Vegetation CI per Mile [B ÷ (C + D)]							
(G) Number of Mid-Cycle trims		197			0		197
(H) All Vegetation Management Costs							$4.6M
(I) Customer Minutes of Interruption							
(J) Outage restoration costs							
(K) Vegetation Proj. (current year)							
(L) Vegetation Goal (current year)							460.4
(M) Vegetation Proj. (next year)							
(N) Vegetation Goal (next year)							409.3
(O) Trim-Back Distance							10’

Notes:
(G) Mid-Cycle trims are shown in spans.
(H) All Vegetation Management Costs include ONLY contractor costs.
(L) & (N) Vegetation Goal shown in miles.
(O) 10' Represents an average, however, to comply with ANSI A300, actual trim distances may vary.

2021 - System Vegetation Management Performance Metrics - DCA							
	Feeders			Laterals			Total
(A) Number of Outages							
(B) Customer Interruptions							
(C) Miles Cleared		13.6			86.5		100.1
(D) Remaining Miles		42.6			228.8		271.4
(E) Outages per Mile [A ÷ (C + D)]							
(F) Vegetation CI per Mile [B ÷ (C + D)]							
(G) Number of Mid-Cycle trims		0			0		0
(H) All Vegetation Management Costs							$0.4M
(I) Customer Minutes of Interruption							
(J) Outage restoration costs							
(K) Vegetation Proj. (current year)							
(L) Vegetation Goal (current year)							99.1
(M) Vegetation Proj. (next year)							
(N) Vegetation Goal (next year)							225.6
(O) Trim-Back Distance							10’

Notes:
(G) Mid-Cycle trims are shown in spans.
(H) All Vegetation Management Costs include ONLY contractor costs.
(L) & (N) Vegetation Goal shown in miles.
(O) 10' Represents an average, however, to comply with ANSI A300, actual trim distances may vary.

2021 - System Vegetation Management Performance Metrics - ESA							
	Feeders			Laterals			Total
(A) Number of Outages							
(B) Customer Interruptions							
(C) Miles Cleared		109.4			193.4		302.8
(D) Remaining Miles		193.5			345.0		538.4
(E) Outages per Mile [A ÷ (C + D)]							
(F) Vegetation CI per Mile [B ÷ (C + D)]							
(G) Number of Mid-Cycle trims		75			0		75
(H) All Vegetation Management Costs							$3.1M
(I) Customer Minutes of Interruption							
(J) Outage restoration costs							
(K) Vegetation Proj. (current year)							
(L) Vegetation Goal (current year)							376.4
(M) Vegetation Proj. (next year)							
(N) Vegetation Goal (next year)							317.4
(O) Trim-Back Distance							10’

Notes:
(G) Mid-Cycle trims are shown in spans.
(H) All Vegetation Management Costs include ONLY contractor costs.
(L) & (N) Vegetation Goal shown in miles.
(O) 10' Represents an average, however, to comply with ANSI A300, actual trim distances may vary.

2021 - System Vegetation Management Performance Metrics - PCA							
	Feeders			Laterals			Total
(A) Number of Outages							
(B) Customer Interruptions							
(C) Miles Cleared		125.1			308.8		433.9
(D) Remaining Miles		124.5			681.3		805.8
(E) Outages per Mile [A ÷ (C + D)]							
(F) Vegetation CI per Mile [B ÷ (C + D)]							
(G) Number of Mid-Cycle trims		190			0		190
(H) All Vegetation Management Costs							$2.3M
(I) Customer Minutes of Interruption							
(J) Outage restoration costs							
(K) Vegetation Proj. (current year)							
(L) Vegetation Goal (current year)							377.3
(M) Vegetation Proj. (next year)							
(N) Vegetation Goal (next year)							524.3
(O) Trim-Back Distance							10’

Notes:
(G) Mid-Cycle trims are shown in spans.
(H) All Vegetation Management Costs include ONLY contractor costs.
(L) & (N) Vegetation Goal shown in miles.
(O) 10' Represents an average, however, to comply with ANSI A300, actual trim distances may vary.

2021 - System Vegetation Management Performance Metrics - SHA							
	Feeders			Laterals			Total
(A) Number of Outages							
(B) Customer Interruptions							
(C) Miles Cleared		72.2			144.4		216.5
(D) Remaining Miles		142.9			369.7		512.6
(E) Outages per Mile [A ÷ (C + D)]							
(F) Vegetation CI per Mile [B ÷ (C + D)]							
(G) Number of Mid-Cycle trims		157			0		157
(H) All Vegetation Management Costs							$1.4M
(I) Customer Minutes of Interruption							
(J) Outage restoration costs							
(K) Vegetation Proj. (current year)							
(L) Vegetation Goal (current year)							239.8
(M) Vegetation Proj. (next year)							
(N) Vegetation Goal (next year)							223.0
(O) Trim-Back Distance							10’

Notes:
(G) Mid-Cycle trims are shown in spans.
(H) All Vegetation Management Costs include ONLY contractor costs.
(L) & (N) Vegetation Goal shown in miles.
(O) 10' Represents an average, however, to comply with ANSI A300, actual trim distances may vary.

2021 - System Vegetation Management Performance Metrics - WSA							
	Feeders			Laterals			Total
(A) Number of Outages							
(B) Customer Interruptions							
(C) Miles Cleared		187.1			234.6		421.7
(D) Remaining Miles		172.1			510.1		682.1
(E) Outages per Mile [A ÷ (C + D)]							
(F) Vegetation CI per Mile [B ÷ (C + D)]							
(G) Number of Mid-Cycle trims		507			0		507
(H) All Vegetation Management Costs							$5.1M
(I) Customer Minutes of Interruption							
(J) Outage restoration costs							
(K) Vegetation Proj. (current year)							
(L) Vegetation Goal (current year)							410.8
(M) Vegetation Proj. (next year)							
(N) Vegetation Goal (next year)							440.2
(O) Trim-Back Distance							10’

Notes:
(G) Mid-Cycle trims are shown in spans.
(H) All Vegetation Management Costs include ONLY contractor costs.
(L) & (N) Vegetation Goal shown in miles.
(O) 10' Represents an average, however, to comply with ANSI A300, actual trim distances may vary

2021 - System Vegetation Management Performance Metrics - WHA

	Feeders			Laterals			Total
	Unadjusted	Adjusted	Diff.	Unadjusted	Adjusted	Diff.	
(A) Number of Outages							
(B) Customer Interruptions							
(C) Miles Cleared		154.3			238.7		393.0
(D) Remaining Miles		99.4			432.6		532.0
(E) Outages per Mile [A ÷ (C + D)]							
(F) Vegetation CI per Mile [B ÷ (C + D)]							
(G) Number of Mid-Cycle trims		256			0		256
(H) All Vegetation Management Costs							$1.7M
(I) Customer Minutes of Interruption							
(J) Outage restoration costs							
(K) Vegetation Proj. (current year)							
(L) Vegetation Goal (current year)							353.2
(M) Vegetation Proj. (next year)							
(N) Vegetation Goal (next year)							306.9
(O) Trim-Back Distance							10’

Notes:
(G) Mid-Cycle trims are shown in spans.
(H) All Vegetation Management Costs include ONLY contractor costs.
(L) & (N) Vegetation Goal shown in miles.
(O) 10' Represents an average, however, to comply with ANSI A300, actual trim distances may vary.

Transmission Asset Upgrades

The Transmission Asset Upgrades Program is a systematic and proactive replacement Program of all Tampa Electric's remaining transmission wood poles with non-wood material. The company intends to complete this conversion from wood transmission poles to non-wood material poles during the timeframe of this initial ten-year SPP. Tampa Electric has over 26,000 transmission poles and structures with approximately 1,350 circuit miles of transmission facilities. The table below shows the number of transmission assets that were hardened in 2021:

Table TAU.1 – 2021 Transmission Asset Upgrades

2021 Transmission Asset Upgrades Structures Hardened / System Update		
	Goal	Actual
Transmission Structures – Poles - Non SPP (Note 1)	N/A	85
Transmission Structures – SPP	577	637
Transmission System Hardened (Percentage)	84.0%	84.2%

Note 1: pole replacements outside of SPP Projects

Table TAU.2 – 2021 Transmission Asset Upgrades Revenue Requirements

2021 Transmission Asset Upgrades Revenue Requirements Projected versus Actual		
	Projected	Actual
Transmission Asset Upgrades	$1,806,566	$1,197,249

Substation Extreme Weather Hardening

Tampa Electric's Substation Extreme Weather Hardening Program will harden existing substations to minimize outages, reduce restoration times and enhance emergency response during extreme weather events.

In 2021, Tampa Electric solicited an engineering firm to perform a substation extreme weather hardening study on 24 substations located near or at the coast of Tampa Bay. These substations are in low-elevation areas and are a mix of both transmission and distribution stations. The greatest risk to these substations would be from the impact of water intrusion due to storm surge into the substation control houses and equipment.

The substation hardening study was conducted in three phases (discovery, evaluation, and recommendation). A scorecard was developed for all 24 substations and special attention was paid to substations where outages could impact the grid stability or reliability of service. Out of the 24 substations evaluated, nine (9) substations were recommended for extreme weather hardening with the first proposed projects to start in 2023. Budgetary estimated were given to each substation that includes engineering, permitting, project management, construction, testing and commissioning.

The table below shows the Substation Extreme Weather Hardening revenue requirements that occurred in 2021 due to the completion of the study:

Table SUB.2 – 2021 Substation Extreme Weather Hardening Revenue Requirements

2021 Substation Extreme Weather Hardening Revenue Requirements Projected versus Actual		
	Projected	Actual
Substation Extreme Weather Hardening	$250,000	$143,432

Distribution Overhead Feeder Hardening

Tampa Electric's Distribution Overhead Feeder Hardening Program will strengthen the company's distribution system to withstand increased wind-loading and harsh environmental conditions associated with extreme weather events. The Distribution Overhead Feeder Hardening Program will focus on increasing the resiliency and sectionalizing capabilities of the distribution electrical system to better withstand extreme weather and minimize outages, outage durations and affected customer counts through two primary enhancements: Distribution Feeder Strengthening and Distribution Feeder Sectionalizing and Automation. The tables below provide the work that was done for designing these enhancements, provides the actual equipment that was installed and costs in 2021:

Table OVHF.1 – 2021 Distribution Overhead Feeder Hardening Designed

2021 Distribution Overhead Feeder Hardening Designed Equipment				
Circuit Number	Pole Replacement / Upgrades	Three-Phase Recloser Installations	Single-Phase Recloser Installations	Fuse Coordination Replacements
13227	85	9	20	31
13443	64	7	19	70
13462	90	8	8	62
13633	116	4	15	6
13890	57	4	1	6
13939	59	7	9	43
13461	125	9	60	73
13433	81	1	46	96
14121	35	2	1	12
13101	86	3	10	29
13104	62	2	22	78
13111	38	3	3	30
13309	38	1	6	29
13314	89	2	6	74
13313	69	2	3	17
13339	14	1	0	7
13964	64	2	38	33
13808	119	0	61	15
Total	1,291	67	328	711

Table OVHF.2 – 2021 Distribution Overhead Feeder Hardening Installed

2021 Distribution Overhead Feeder Hardening Installed Equipment				
Circuit Number	Pole Replacement / Upgrades	Three-Phase Recloser Installations	Single-Phase Recloser Installations	Fuse Coordination Replacements
13308	77	5	34	49
13533	35	6	7	8
13745	61	5	1	13
13805	124	5	29	117
13807	156	70	84	69
13227	85	9	20	31
13443	64	7	19	70
13462	53	5	8	30
13633	116	4	15	6
13890	56	4	1	6
13939	59	7	9	43
13461	124	7	60	73
13433	36	0	22	69
14121	35	2	1	11
13101	66	1	10	15
13104	32	0	10	48
13111	22	3	3	20
13309	9	0	1	25
13313	2	1	0	3
13339	5	2	0	7
13964	5	0	0	16
13314	0	0	0	8
Total	1,222	143	334	737

Table OVHF.3 – 2021 Distribution Overhead Feeder Hardening Revenue Requirements

2021 Distribution Overhead Feeder Hardening Revenue Requirements Projected versus Actual		
	Projected	Actual
Distribution Overhead Feeder Hardening	$2,023,449	$1,035,414

Transmission Access Enhancements

The Transmission Access Enhancement Program will help ensure the company always has access to its transmission facilities for the performance of restoration. The Program is divided into two components: Access Roads and Access Bridges.

Access Roads: These Projects are designed to restore access to areas where changes in topography and hydrology have negatively impacted existing access roads or created the need to establish new access roads. In 2021, the company continued focusing on the program's specifications, contracts, and plan; only engineering and permitting work was performed. The tables below show the number of access roads that were completed and costs in 2021:

Table TAE.1 – 2021 Transmission Access Enhancement (Access Roads)

2021 Transmission Access Enhancement (Access Roads)				
	Planned	Engineered	Constructed	Completed
Access Roads	7	11	0	0
2020-2029 SPP Access Roads				
	Planned	Completed	Percent Completed	
Access Roads	25	0	0.0%	

Table TAE.3 – 2021 Transmission Access Enhancement (Access Roads) Revenue Requirements

2021 Transmission Access Enhancements (Access Roads) Revenue Requirements Projected versus Actual		
	Projected	Actual
Transmission Access Enhancements (Access Roads)	$8,069	$4,739

Access Bridges: These Projects are designed to enhance or replace the company's current system of bridges used to access its "off road" transmission facilities. In 2021, the company continued focusing on the program's specifications, contracts, and plan; only engineering and permitting work was performed. The table below shows the number of access bridges that were completed in 2021:

Table TAE.2 – 2021 Transmission Access Enhancement (Access Bridges)

2021 Transmission Access Enhancement (Access Bridges)				
	Planned	Engineered	Constructed	Completed
Access Bridges	11	13	0	0
2020-2029 SPP Access Bridges				
	Planned	Completed	Percent Completed	
Access Bridges	19	0	0.0%	

Table TAE.4 – 2021 Transmission Access Enhancement (Access Bridges) Revenue Requirements

2021 Transmission Access Enhancements (Access Bridges) Revenue Requirements Projected versus Actual		
	Projected	Actual
Transmission Access Enhancements (Access Bridges)	$16,231	$12,336

Infrastructure Inspections

Tampa Electric's Infrastructure Inspection Program is a comprehensive inspection Program that combines the existing Commission approved Storm Hardening Plan Initiatives of: Wood Pole Inspections, Transmission Structure Inspections, and the Joint Use Pole Attachment Audit.

Wood Pole Inspection Program: Tampa Electric's Wood Pole Inspection Initiative is part of a comprehensive program initiated by the FPSC for Florida investor-owned electric utilities to harden the electric system against severe weather.

This inspection program complies with Order No. PSC-06-0144-PAA-EI, issued February 27, 2006, in Docket No. 060078-EI which requires each investor-owned electric utility to implement an inspection program of its wooden transmission and distribution poles on an eight-year cycle based on the requirements of the NESC. Tampa Electric has approximately 285,000 distribution and lighting wood poles and 26,000 transmission poles appropriate for inspection for a total pole inspection population of approximately 311,000. Approximately 12.5 percent of the known system will be targeted for inspections annually although the actual number of poles may vary from year to year due to recently constructed circuits, de-energized circuits, reconfigured circuits, etc. This program provides a systematic identification of poles that require repair, reinforcement or replacement to meet strength requirements of the NESC.

The wood pole inspections will be conducted on a substation circuit basis with a goal of inspecting the entire wood pole population every eight years. An average of 36,000 wooden distribution poles will be inspected annually with each pole receiving a visual inspection, a sound & bore procedure and a groundline/excavation inspection (except for chromated copper arsenate "CCA" poles less than 16 years of age.)

Inspection Method and Procedure: Tampa Electric will utilize three basic inspection procedures for determining the condition of wooden poles. These procedures include a visual inspection, sound and bore, and excavation when required.

Visual Inspection: An initial visual inspection shall be made on all poles from the ground line to the pole top to determine the condition of the pole before any additional inspection work is completed. The visual inspection shall include a review of the pole condition itself and any attachments to the pole for conditions that jeopardize reliability and are in need of replacement, repair or minor follow-up. After a pole passes the initial visual inspection, the balance of the required inspection methods will be performed.

Sound and Bore: After passing the visual inspection, the pole shall be sounded to a minimum height of seven feet above the ground line to locate any rotten conditions or pockets of decay inside the pole. Borings shall be made to determine the location and extent of internal decay or voids. All borings shall be plugged with preservative treated wooden dowels. After the pole has passed the sound and bore inspection, an excavation inspection will be performed, if required.

Excavation: For poles requiring excavation, the pole shall be excavated to a minimum depth of 18 inches below the ground line. Any external decay shall be removed to expose the remaining sound wood. The remaining pole strength shall be calculated.

For a pole in concrete or pavement where excavation is not possible, Tampa Electric will utilize a shell boring technique. This will consist of boring two 3/8-inch holes at a 60-degree angle to a depth of 16 to 18 inches below ground level. Upon withdrawing the drill bit, the technician will examine the condition of the wood shavings to determine whether decay is present. A “Shell Gauge” is used to determine the thickness of the shell, which is then used to calculate the pole strength. All borings shall be plugged as previously described.

Hardware Inspection: The inspector shall inspect all of Tampa Electric’s guying, grounding provisions and hardware that is visible from the ground. Any

deficiencies or problems will be corrected as directed or reported to Tampa Electric to correct.

Inspection and Treatment Labeling: After completion of the ground line inspection, an aluminum tag identifying the contractor and date of inspection shall be attached to the pole above the birthmark. Additionally, a tag shall be attached identifying any preservative treatments applied and the date of application.

Data Collection: The collected data shall be managed in a database and include information related to pole class, material, vintage, location, pole strength and any pole deficiencies that required follow-up actions, if any.

Inspection in Conjunction with Other Field Work: As part of day-to-day operations, operation personnel are at times required to climb poles to perform different types of field work. Prior to climbing any pole, personnel will assess the condition of the pole. This will include a visual check and may include sounding to determine pole integrity. This type of inspection will supplement the systematic inspection approach otherwise outlined in this pole inspection program.

Disposition of Poles: Poles with early stage decay that do not require remediation to meet the NESC strength requirements shall be treated with an appropriate preservative treatment. Poles with moderate decay that have substantial sound wood shall be considered for reinforcement. Analysis shall be performed to determine if reinforcement will bring the deficient pole into compliance with the requirements of the NESC. If it is determined that the pole can be reinforced, the pole shall be treated with an appropriate preservative treatment and may be reinforced or replaced if needed. Poles with advanced decay shall fail the inspection and be replaced.

Shared Poles: Tampa Electric supports the Commission’s effort to establish pole inspection requirements on the owners of all utility poles. Tampa Electric will

coordinate with third-party owners of utility poles that carry the company's facilities. With regard to the third-party's inspection process, the company will rely upon the third-party's inspection requirements and share data requested by the third-party to be utilized in their inspection procedure. Tampa Electric will cooperate, as requested, in the work associated with pole replacement where joint use exists. Third-party poles are visually inspected and sounded for internal decay. Issues found are provided to the third-party owner for resolution.

Chromated Copper Arsenate Pole Inspections: In Docket No. 20080219-EI, Order No. PSC-2008-0615-PAA-EI, issued September 23, 2008, the FPSC approved a modification to Tampa Electric's Wood Pole Inspection Program involving chromated copper arsenate ("CCA") poles. Specifically, the modification requires CCA treated poles less than 16 years of age to be sound and selectively bored. Selective boring shall be performed on poles suspected of internal decay. Additionally, one percent of the annual number of CCA treated poles inspected less than 16 years of age shall be excavated to validate this inspection method. Finally, all CCA treated poles over 16 years of age shall be excavated.

Reporting: Tampa Electric includes the Annual Wood Pole Inspection Report with the company's Annual Reliability Performance Reports, by March 1st of each year in full accordance with the reporting requirements set forth in Docket No. 20070634-EI, Order No. PSC-2007-0918-PAA-PU, issued November 14, 2007. The report will contain the methods used to determine the strength and structural integrity of wooden poles, the selection criteria for inspected poles, a summary of the results of the inspections, the cause(s) of inspection failures, and the corrective action taken for the failures.

Transmission and Substation Inspections: Tampa Electric continues to conduct the multi-pronged inspection approach the company has historically applied to the system which has led to the transmission system having a history of strong reliability performance. This approach includes the eight-year above ground structure inspection

cycle, eight-year ground line wood inspection cycle, annual ground patrol, annual aerial infrared patrol, annual substation inspection cycle and the pre-climb inspection requirement. Tampa Electric continues these inspections and also continues the company's ongoing efforts to monitor and evaluate the appropriateness of its transmission structure inspection program to ensure that any cost-effective storm hardening, or reliability opportunities found are taken advantage of.

Standardized reports are provided for each of the formal inspections. Deficiencies identified during the inspections are entered into a maintenance database. This maintenance database is used to prioritize and manage required remediation. Deficiencies identified during the pre-climb inspections are assessed by the on-site crew and reported to supervisory personnel for determination of corrective action.

The table below shows the number of transmission inspections that were completed in 2021:

TRA.1 – 2021 Transmission Inspections

2021 Transmission Inspections		
Transmission Inspection Type	Number of Inspections (Circuits)	Number of Poles
Groundline	24	284
Above Ground	68	3,886
Ground Patrol	212	
Infrared Patrol	212	

Pre-climb Inspections: Tampa Electric crews are required to inspect wooden transmission & distribution poles prior to climbing. As part of these inspections, the employee is required to visually inspect each pole prior to climbing and sound each pole with a hammer if deemed necessary. These pre-climbing inspections serve to provide an additional safety-oriented integrity check of poles prior to the employee ascending the pole and may also result in the identification of any structural deterioration issues.

Substation Inspections: Tampa Electric performs inspections of distribution substations and inspections of transmission substations annually. The substation inspections include visual inspection of the substation fence, equipment, structures, control buildings and the integrity of grounding system for all equipment and structures. The table below shows the number of distribution and transmission substation inspections that were completed in 2021:

Sub.1 – 2021 Substation Inspections

2021 Substation Inspections		
	Distribution Substations	Transmission Substations
Number of Inspections	460	218

Transmission, Substation and Other Equipment Inspections Summary

Transmission Circuit, Substation and Other Equipment Inspections

	Activity		Current Budget		Next Year	
	Goal	Actual	Budget	Actual	Goal	Budget
(A) Total transmission circuits.		211				
(B1) Planned transmission circuit inspections – Groundline (Poles)	15 (215)		$61,000		20 (538)	$62,424
(B2) Planned transmission circuit inspections – Above Ground (Poles).	68 (3,634)		$10,000		24 (3,386)	$10,404
(C1) Completed transmission circuit inspections – Groundline (Poles)		24 (284)		$19,150		
(C2) Completed transmission circuit inspections – Above Ground (Poles)		68 (3,228)		$12,408		
(D1) Percent of transmission circuit inspections completed – Groundline		160%				
(D2) Percent of transmission circuit inspections completed – Above Ground.		100%				
(E) Planned transmission substation inspections.	76				82	
(F) Completed transmission substation inspections		218				
(G) Percent transmission substation inspections completed.		100%				
(H) Planned transmission equipment inspections (other equipment). – Ground Patrol/ IR Patrol	216/ 216		$204,000/ $112,000		212/ 212	$150,858/ $114,444
(I) Completed transmission equipment inspections (other equipment) – Ground Patrol/ IR Patrol		216/216		$176,208/ $117,676		
(J) Percent of transmission equipment inspections completed (other equipment) – Ground Patrol/ IR Patrol		100%/ 100%				

Transmission Pole Inspections

	Activity		Current Budget		Next Year	
	Goal	Actual	Budget	Actual	Goal	Budget
(A) Total number of transmission poles		24,689[1]				
(B) Number of transmission poles strength tested		0[2]				
(C) Number of transmission poles passing strength test		N/A				
(D) Number of transmission poles failing strength test (overloaded)		N/A				
(E) Number of transmission poles failing strength test (other reasons)		N/A				
(F) Number of transmission poles corrected (strength failure)		0				
(G) Number of transmission poles corrected (other reasons)		0				
(H) Total transmission poles replaced (Structures)		629			474[3]	

Note 1: The transmission pole count on the entire system is currently 24,689 this is a fluid number that will change as a function of time. Standards have been set to calculate this number based off of the Geographical Information System and provide an annual update prior to the submission of this report.

Note 2: The transmission pole strength test is budgeted as part of the ground line inspection. This information is included in the Transmission Circuit, Substation and Other Equipment Inspections section.

Note 3: The budget information for this table is included in the information supplied in the Hardening of Existing Transmission Structures section.

Joint-Use Pole Attachments Audits: Tampa Electric continues to conduct comprehensive loading analyses to ensure the company's poles with joint use attachments are not overloaded and meet the NESC or Tampa Electric Standards, whichever is more stringent. These loading analyses are a direct effort to lessen storm related issues on poles with joint use attachments. All current joint use agreements require attaching entities to apply for and gain permission to make attachments to Tampa Electric's poles**.**

In 2021, Tampa Electric conducted comprehensive loading analyses and continued to streamline processes to better manage attachment requests from attaching entities. The comprehensive loading analysis was performed on 568 poles and all poles determined to be overloaded will be corrected.

For 2022, Tampa Electric will continue conducting comprehensive loading analyses where necessary.

Due to the size of Tampa Electric's service area and the number of poles the company has, there will always be the potential for unknown foreign attachments to exist on facilities which could place additional loading on a facility which may create an overload situation. To help mitigate these potential overload situations, all Tampa Electric joint use agreements have provisions that allow for periodic inspections and/or audits of all joint use attachments to the company's facilities. In addition, all agreements have provisions that require the attaching party to build and maintain attachments within NESC guidelines or Tampa Electric specifications, whichever are more stringent. All of Tampa Electric's existing joint use agreements require attaching parties to receive authorization from the company prior to making all attachments to its facilities.

In 2021, Tampa Electric reviewed all known attachment records and verified that the company has joint use agreements with all attaching entities. Tampa Electric added one new third-party agreement for a total of 37 attachment agreements with attaching entities

and continue negotiations with others requesting permission to attach to Tampa Electric poles.

In 2021, Tampa Electric had steady requests for small cell permit applications. The company's Joint Use department processed 50 pole attachment applications for 568 poles. As a result, the company identified one (1) distribution pole that were overloaded due to joint use attachments and eight (8) poles were overloaded due to Tampa Electric's attachments. Out of the 568 poles that were assessed through the pole attachment application process and the comprehensive loading analysis, there were 76 that had NESC violations due to joint use attachments and no poles with NESC violations due to Tampa Electric attachments. All poles with NESC violations were either corrected by adjustments to attachments, pole replacements or joint use entities' removal of the attachments in violation.

In 2021, effort was made by third party "attachers" to notify Tampa Electric of poles planned for over-lashing. Over-lashing is one specific area of concern which is when a joint use entity attaches to an existing attachment without prior Tampa Electric engineering and authorization.

For 2022, Tampa Electric's Joint Use Department will continue working with small cell companies to finalize attachment agreements. Tampa Electric will continue performing make ready for the small cell and fiber deployments across the company's entire service territory.

Joint Use Metrics - Joint-Use Pole Attachments Audit: The extent of the audit and results as it pertains to pole reliability and NESC safety matters, is to assure the Commission that utilities know the status of their facilities and that reasonable efforts are taken to address pole reliability and NESC safety matters.

a) Percent of system audited: 100 percent feeders: N/A laterals: N/A
b) Date audit conducted: Quarter four of 2018 through quarter one of 2020.

c) Date of previous audit: Total system-wide audit completed 2020.

d) List of audits conducted annually

- Tampa Electric began the process for the implemented joint-use pole attachment audit that began in last quarter of 2018, with active field employees in the first quarter of 2019. The audit was completed in the first quarter of 2020.
- Through Tampa Electric's Pole Attachment Permit Application process, the company performed the following audits: attachment verification, NESC violation analysis and pole loading assessment.

e) State whether pole rents are jurisdictional or non-jurisdictional. If pole rents are jurisdictional, then provide an estimate of lost revenue and describe the company's efforts to minimize the lost revenue.

- Tampa Electric does not have any non-jurisdictional distribution poles.

Joint-Use Attachment Data Table

(A) Number of company owned distribution poles.	284,528
(B) Number of company distribution poles leased.	13,379(1)
(C) Number of owned distribution pole attachments	201,547
(D) Number of leased distribution pole attachments.	13,379(2)
(E) Number of authorized attachments.	317,370
(F) Number of unauthorized attachments.	0(3)
(G) Number of distribution poles strength tested.	568
(H) Number of distribution poles passing strength test.	559
(I) Number of distribution poles failing strength test (overloaded).	9
(J) Number of distribution poles failing strength test (other reasons).	525(4)
(K) Number of distribution poles corrected (strength failure).	8(5)
(L) Number of distribution poles corrected (other reasons).	0(6)
(M) Number of distribution poles replaced.	1,412
(N) Number of apparent NESC violations involving electric infrastructure	0
(O) Number of apparent NESC violations involving 3rd party facilities	76

Note 1: These are the number of poles where Tampa Electric leases space on foreign owned poles.
Note 2: Each attachment is counted as one per pole on leased poles.
Note 3: Tampa Electric identified any unauthorized attachments upon the completion of the audit in the first quarter of 2020.
Note 4: These poles were identified for replacement during Tampa Electric's Pole Inspection Program and failed the strength test due to wood damage at ground line or other locations on the pole.
Note 5: These poles were re-guyed or re-configured to pass strength loading.
Note 6: The company reinforced these poles with trusses

Infrastructure Inspections Summary

2021 Infrastructure Inspections Summary			
	Notes	Projected	Actual
Joint Use Audit	Note 1		
Joint Use Inspections			520
Distribution			
Wood Pole Inspections		19,650	19,861
Transmission			
Wood Pole/Groundline Inspections		215	284
Above Ground Inspections		3,895	3,886
Aerial Infrared Patrols		Annually	Completed
Ground Patrols		Annually	Completed
Substation Inspections		Annually	Completed

Note 1: the Joint Use audit was completed in the first quarter of 2020

Legacy Storm Hardening Initiatives

The final category of storm protection activities consists of those legacy Storm Hardening Plan Initiatives that are well-established and steady state and for which the company did not propose any specific Storm Protection Projects for inclusion in the company's 2020-2029 SPP. Tampa Electric continues these activities because the company believes they continue to offer the storm resiliency benefits identified by the Commission in Order No. PSC-06-0351-PAA-EI, which required the company to perform these activities. In addition, these initiatives are all integrated into the company's ongoing operations.

Geographic Information System: Tampa Electric's Geographic Information System ("GIS") will continue to serve as the foundational database for all transmission, substation and distribution facilities. Development and improvement of the GIS continues. All new computing technology requests and new initiatives are evaluated with a goal to eliminate redundant, exclusive and difficult to update databases as well as to place emphasis on full integration with Tampa Electric's business processes. These

evaluations further cement GIS as the foundational database for Tampa Electric's facilities.

In 2021, Tampa Electric continued to implement changes and enhancements to the company's GIS system. These changes included data updates, plus metadata and functionality changes, to closer align with business processes and improve user performance.

Post-Storm Data Collection and Forensic Analysis: Tampa Electric has implemented a formal process to randomly sample system damage following a major weather event in a statistically significant manner. This information will be used to perform forensic analysis to categorize the root cause of equipment failure. From these reports, recommendations and possible changes will be made regarding engineering, equipment and construction standards and specifications. A hired third party of data collection specialists will patrol a representative sample of the damaged areas of the electric system following a major storm event and perform the data collection process. At a minimum, the following types of information will be collected:

- Pole/Structure – type of damage, size and type of pole, and likely cause of damage;
- Conductor – type of damage, conductor type and size, and likely cause of damage;
- Equipment – type of damage, overhead or underground, size, and likely cause of damage; and
- Hardware – type of damage, size and likely cause of damage.

Third party engineering personnel will perform the forensic analysis of a representative sample of the data obtained to evaluate the root cause of failure and assess future preventive measures where possible and practical. This may include evaluating the type of material used, the type of construction and the environment where the damage

occurred including existing vegetation and elevations. Changes may be recommended and implemented if more effective solutions are identified by the analysis team.

In 2021, Tampa Electric was not impacted by any major hurricanes. Tampa Electric has an established process in place to gather the necessary data for forensic analysis following a Category One or greater storm that significantly impacts the company's service area. This data will be used to determine the root cause of damage after a storm event.

Outage Data Differentiating Between Overhead and Underground Systems: Tampa Electric tracks and stores the company's outage data for overhead and underground systems in a single database called the Distribution Outage Database ("DOD"). The DOD is linked to and receives outage data from the company's EMS and OMS. The DOD tracks outage records according to cause and equipment type and can support the following functionality:

- Centralized capture of outage related data;
- Analysis and clean-up of outage-related data;
- Maintenance and adjustment to distribution outage database data;
- Automatic Generation and distribution of canned reliability reports; and
- Generating ad hoc operational and managerial reports.

The DOD is further programmed to distinguish between overhead and underground systems and is specifically designed to generate distribution service reliability reports that comply with Rule 25-6.0455, F.A.C.

In addition to the DOD and supporting processes, the company's overhead and underground systems are analyzed for accurate performance. The company also has established processes in place for collecting post-storm data and performing forensic analysis to ensure the performance of Tampa Electric's overhead and underground systems are correctly assessed.

Increase Coordination with Local Governments: Tampa Electric representatives continue to focus on maintaining existing vital governmental contacts and participating on disaster recovery committees to collaborate in planning, protection, response, recovery and mitigation efforts. In addition, Tampa Electric representatives will continue to communicate and coordinate with local governments on vegetation management, search and rescue operations, debris clearing, and identification of critical community facilities. Tampa Electric will participate with local and municipal government agencies within its service area, as well as the Florida Division of Emergency Management ("FDEM"), in planning and facilitating joint storm exercises. In addition, Tampa Electric will continue to be involved in improving emergency response to vulnerable populations.

In 2021, Tampa Electric's Emergency Management Department communication efforts continued to focus on local, state, and federal governments and agencies for all emergency management missions. Since COVID-19 consumed state and local agencies' resources, limited storm-related exercises were conducted by external partners, some agencies conducted hurricane briefings and/or training instead. Tampa Electric did conduct its own internal exercises. Communication efforts were focused on continued changes to emergency response plans and Emergency Operations Center ("EOC") activations during a pandemic, as well as health and safety protocols being followed. Tampa Electric participated in storm planning meetings with government officials and agencies in Hillsborough, Pasco, Pinellas, and Polk counties.

In 2021, community focused communications included pre-hurricane season news releases to all major media outlets that serve Tampa Electric customers. All releases were posted on Tampa Electric's website. Hurricane guides were published in several major newspapers including the Tampa Bay Times, Lakeland Ledger, the Winter Haven News Chief, Centro (Spanish), and the Florida Sentinel Bulletin. In addition, Tampa Electric continued to promote its storm restoration video, which is available on the company's website.

Emergency Operations Centers – Key Personnel Contact: In 2021, one (1) named tropical weather event (Hurricane/Tropical Storm Elsa) triggered various county and municipal agencies to activate their EOC at either full or partial activation levels to support emergency response activities. During Hurricane/Tropical Storm Elsa, Tampa Electric was activated virtually by the City of Oldsmar, Hillsborough County, and Pasco County to support emergency response activities; in addition, Tampa Electric reported in person to Pinellas County and the City of Tampa EOCs. Lastly, the State of Florida activated its EOC at full activation for Hurricane/Tropical Storm Elsa. Tampa Electric personnel supported outage reporting and EOC requests virtually from Tallahassee.

The table below shows the activation levels for the tropical weather events by county or municipal EOC which covers Tampa Electric's service area:

EOC	Hurricane Elsa
City of Oldsmar	Partial
City of Plant City	
City of Tampa	Partial
City of Temple Terrace	
Hillsborough County	Partial
Pasco County	Partial
Pinellas County	Partial
Polk County	
State of Florida	Full

Tampa Electric continues to work with local, state and federal governments to streamline the flow of information and incorporate lessons learned to restore electric service as quickly and as safely as possible. Prior to June 1st of each year, the company's Emergency Response Plan is reviewed and updated to ensure Tampa Electric representatives are fully trained to support EOC activation.

Staffing Practices at Local Emergency Operations Centers: Tampa Electric provides representatives to each of the four (4) County EOCs within the company's service territory, including Hillsborough, Pasco, Pinellas and Polk counties. In addition, depending upon the magnitude of the event, representatives are provided to the four (4) municipalities (Cities of Oldsmar, Plant City, Temple Terrace, and Tampa), when requested. The number of liaisons provided is dependent upon various factors (e.g., seating capacity at the EOC, amount of damage, EOC operating hours, available personnel, etc.). Lastly, representatives are also provided to support the State of Florida EOC to support the State and the Florida Public Service Commission ("FPSC") for power restoration issues.

The representatives who staff the EOCs have business acumen and experience in customer service and/or electric or gas distribution. Since the EOC representative role is not a day-to-day job function, the company strives to maintain a balance of seasoned and less experienced representatives during both day and night operations in the EOC when possible. In some EOCs, the company utilizes representatives from the gas company (Peoples Gas System) to supplement Tampa Electric personnel, especially in areas where the company has a natural gas presence. In any case, EOC representatives are trained to deal with both electric and gas issues.

Staffing hours at the EOC are dictated by each EOC's operational periods and are dependent upon the magnitude of the event. EOCs have and may require company representatives to report for duty before the onset of tropical storm force winds and ride-out the storm at the EOC with other Emergency Support Function ("ESF") personnel. Initially, EOCs may, at their discretion, operate 24 hours/day until the event is stabilized. To support the 24-hour cycle, company staffing hours at EOCs are generally based on two (2), 12-hour shifts based on the EOCs operational cycle and vary by County; however, the hours of operation may be adjusted based on EOC needs to support emergency response.

The table below further shows the number of company representatives available to support EOC activation. The table does not represent the number of representatives on-site at the same time.

Utility staffing practices at local EOCs		
EOC in Service Territory	**Number of Utility staff**	**Planned daily hours scheduled for working in the EOC**
Hillsborough County	6-8	Dependent on EOC operational period
City of Plant City	2	Dependent on EOC operational period
City of Oldsmar	2	Dependent on EOC operational period
City of Tampa	4	Dependent on EOC operational period
Pasco County	4	Dependent on EOC operational period
Pinellas County	3	Dependent on EOC operational period
Polk County	3	Dependent on EOC operational period

Responsibilities: The role of the company's EOC representative is to facilitate and respond to critical community issues in support of life safety and power restoration efforts. The representatives are responsible for maintaining situational awareness and communicating any public safety issues or concerns to the company. In addition, the representatives work closely with other ESF liaisons to facilitate or coordinate any requests made by the company or in support of community citizens. The representatives will utilize all available "lifelines" to respond to requests which originate from the EOC or company personnel. Lastly, the EOC representative communicates outage updates and provides restoration status, as requested.

Communications: Because the company has representatives dedicated to each of the county and city EOCs within its service territory, there are limited opportunities for an EOC to not be staffed. In the remote situation where an EOC representative is unavailable, the local EOCs have contact information for their assigned EOC

representatives, as well as the company's Emergency Management personnel, which can be called upon for assistance. In addition, the company's External Affairs Department personnel have established relationships throughout the communities served and are also available to provide support, as needed.

Search and Rescue Teams – Assistance to Local Government: In 2021, Tampa Electric did not receive any requests for Search and Rescue Team assistance, therefore, no Tampa Electric resources were deployed to support local government.

Tree Ordinances, Planting Guides and Trip Procedures: For 2022, the company's Manager of Line Clearance will continue to work with Tampa Electric's External Affairs staff to offer meetings with local government's staff on how Tampa Electric can best work with city staff in pre-storm and post-storm events and to better coordinate the company's tree trimming procedures with governmental ordinances.

Utility's Coordination of Critical Facilities with local governments: Tampa Electric works closely with County Emergency Management ("EM") officials and other stakeholders throughout the year to identify and prioritize facilities deemed most critical to the overall health of the whole community (e.g., public health, safety, security or national/global economy). Tampa Electric has discussions with EM officials through email and phone communications. The identification of public and private critical facilities during preparedness planning supports the goal of a coordinated and flexible restoration process for all critical infrastructure and is directly related to business continuity and continuity of the government. Critical facilities for municipalities are identified and incorporated into the respective County data.

The table below provides the dates that Tampa Electric had discussion with local governments during 2021 that involved critical facilities:

Meetings with Local Government				
Entity	**Date(s)**	**Topics**	**Pending Issues/Follow-up Items**	**Contact Information Provided to Local Authorities**
Hillsborough County	1/06/2021 2/02/2021 4/05/2021 4/06/2021 4/22/2021 5/05/2021	Critical Facility Discussion	N/A	Yes
Pasco County	4/06/2021 4/22/2021	Critical Facility Discussion	N/A	Yes
Pinellas County	4/05/2021 4/06/2021 6/11/2021 6/15/2021	Critical Facility Discussion	N/A	Yes
Polk County	3/08/2021 5/27/2021	Critical Facility Discussion	N/A	Yes

Matrix of Tampa Electric's coordination with local governments:

Government Entity	Municipal	Communication Efforts Presentations, Material, Etc.	Storm Workshop, Planning and Training With Local Gov't Officials and Fire and Police Personnel	Emergency Operation Centers Key Personnel Contact	Search and Rescue Teams Assistance to Local Gov't	Vegetation Management Tree Ordinances, Planting Guides, and Trim Procedures	Undergrounding Share Information, Estimates, and Materials
FEDERAL	---	Water Resilience Forum - Utilities from across the US were in attendance (8 hours)					Discussions with Congressional staff on challenges, benefits, and costs of undergrounding (2 hours)
	---		FEMA Hurricane Readiness & HURREVAC training (9 hours)				

STATE	---		Florida Department of Transportation (FDOT) Hurricane Season Seminar with government, fire, and police (3 hours)	Hurricane Elsa - EOC Activation (30 hours)			
	---						Permit Conversation w/ FDOT permitting staff on project scope and impacts to r/w (1hr). Also, several conversations on an individual project level.

HILLSBOROUGH COUNTY	---	Hurricane Preparedness event in Sun City Center for community, worked with Hillsborough County (EM, HCSO) and Florida DOH from Hillsborough (6 hours)	Public Safety - First Responder Outreach meeting (1 hour)	Emergency Action Group (EAG) meetings (10 hours)	No Search and Rescue Team assistance requested	Meeting with Community Redevelopment Agency Director for East Hillsborough County (2 hours)	Discussion with Westchase Homeowners Association re Storm Protection Program (2 hours)
	---	Cousins Properties Town Hall meeting (2 hours)	Joint Meeting for Damage Assessment, PUSH Routes and TSAR (2 hours)	Hurricane Elsa - EAG meetings (3 hours)			
	---	Emergency Management Prep for Metro Delta Sigma Theta Non-Profit Organization meeting (1 hour)	Southshore Bay First Responder Walk-Thru (2 hours)	Local Mitigation Strategy (LMS) Working Group meetings (12 hours)			Hyde Park Neighborhood Association (2 hours)
	---	Meeting with Community Redevelopment Agency Director for East Hillsborough County (2 hours)	Association of Contingency Planners (ACP) meetings - Presentations by local EM officials (3 hours)	Hurricane Elsa - EOC Activation (22 hours)			Easement conversations with staff (20 hours - minimum of 2 formal meetings, many staff level conversations regarding this ongoing challenge.)
	---		Community Rating System (CRS) Committee meetings with local EM officials (2 hours)				Permit conversations - with permitting staff & county inspector supervisor (1 hour/ (2) meetings and several conversations on individual projects regarding scope & timeline. Also several conversations on permitting releasing time frames and permit status.
	---		Storm Evacuation Virtual Open House (2 hours)				
	---		Critical Facility Prep and Meetings (16 hours)				
	---		County Commissioner briefings (5 hours)				
	---		Storm Protection Plan Presentation (1 hour)				
	---	Storm Protection Plan Easement Agreement Implementation (2 hours)					
	City of Tampa		WebEOC Training (5 hours)	Push Team exercise (6 hours)	No Search and Rescue Team assistance requested	City Council meeting (2 hours)	City of Tampa canal widening (2 hours)
	City of Tampa			Hurricane Elsa EOC Activation (31 hours)			Progress Village outreach on Storm Protection Program (2 hours)
	City of Tampa		City Council briefings (5 hours)				Meeting with Neighborhood Engagementlead (4 hours - three separate meeting dates)
	City of Tampa						Permit conversations - with permitting staff (2 hour/ (2) meetings and several conversations on individual projects regarding scope & timeline. Also several conversations on permitting releasing time frames and permit status.
	City of Plant City		Discussion with Mayor (2 hours)		No Search and Rescue Team assistance requested		
	City of Temple Terrace				No Search and Rescue Team assistance requested		Walk down a project with Mayor (2 hours)
POLK COUNTY	Winter Haven		Critical Facility Prep and Meetings (4 hours)		No Search and Rescue Team assistance requested		
	Winter Haven		Community outreach (10 hours)				
	Winter Haven		Critical infrastructure review (4 hours)				
	Winter Haven						
	Winter Haven						
	County at large						Permit conversations with permitting staff & county inspector (1 hour) and several conversations on individual projects regarding scope & timeline.
PASCO COUNTY	New Port Richey	Storm preparations and news releases to municipalities (2 hours)	Local Mitigation Strategy (LMS) Working Group meetings (4 hours)	Hurricane Elsa - EOC briefing (1 hour)	No Search and Rescue Team assistance requested	County hurricane preparation with Tree Line USA (2 hours)	
	New Port Richey		WebEOC Training (5 hours)	Hurricane Elsa - EOC Activation (16 hours)			
	New Port Richey		Critical Facility Prep and Meetings (3 hours)	Various EOC Calls (8 hours)			
	New Port Richey						
	Dade City	Storm preparations and news releases to municipalities (2 hours)					
	San Antonio	Storm preparations and news releases to municipalities (2 hours)					
	St. Leo	Storm preparations and news releases to municipalities (2 hours)					
PINELLAS COUNTY	Largo		WebEOC Training (6 hours)	Hurricane Elsa - Response Operations Coordination (ROC) calls (7 hours)	No Search and Rescue Team assistance requested		
	Largo		Hurricane Preparedness Summit (2 hours)	Hurricane Elsa - EOC Activation (27 hours)			
	Largo		Critical Facility Prep and Meetings (3 hours)				
	Oldsmar		Discussion with elected officials (2 hours)	Hurricane Elsa - EOC Activation (8 hours)	No Search and Rescue Team assistance requested		

Collaborative Research: Tampa Electric will continue the company's participation in collaborative research effort with Florida's other investor-owned electric utilities, several municipals and cooperatives to further the development of storm resilient electric utility infrastructure and technologies that reduce storm restoration costs and outages to customers.

This collaborative research is facilitated by the Public Utility Research Center ("PURC") at the University of Florida. A steering committee comprised of one member from each of the participating utilities provides the direction for research initiatives. Tampa Electric signed an extension of the memorandum of understanding with PURC in December 2018, effective January 1, 2019, for two years. The memorandum of understanding will automatically extend for successive two-year terms on an evergreen basis until the utilities and PURC agree to terminate the agreement.

PURC Collaborative Research Report:

Report on Collaborative Research for Hurricane Hardening

Provided by

The Public Utility Research Center
University of Florida

To the

Utility Sponsor Steering Committee

Final Report dated April 2022

I. Introduction

The Florida Public Service Commission (FPSC) issued Order No. PSC-06-00351-PAA-EI on April 25, 2006 (Order 06-0351) directing each investor-owned electric utility (IOU) to establish a plan that

increases collaborative research to further the development of storm resilient electric utility infrastructure and technologies that reduce storm restoration costs and outages to customers. This order directed IOUs to solicit participation from municipal electric utilities and rural electric cooperatives in addition to available educational and research organizations. As a means of accomplishing this task, the IOUs joined with the municipal electric utilities and rural electric cooperatives in the state (collectively referred to as the Research Collaboration Partners) to form a Steering Committee of representatives from each utility and entered into a Memorandum of Understanding (MOU) with the University of Florida's Public Utility Research Center (PURC). In 2018 the Research Collaboration MOU was renewed for an initial term of two years, effective January 1, 2019, and will be automatically extended for successive two-year terms.

PURC performs the administration function for research collaboration, including financial management, logistics, production and distribution of documents, and preparation of reports. PURC also coordinates and performs research as agreed upon with the Steering Committee by facilitating the exchange of information from the Research Collaboration Partners with individuals conducting research projects and facilitating the progress of each research project. The collaborative research has focused on undergrounding, vegetation management, hurricane-wind speeds at granular levels, and improved materials for distribution facilities.

This report provides an update on the activities of the Steering Committee since the previous report dated February 2021.

II. Undergrounding

The collaborative research on undergrounding has been focused on understanding the existing research on the economics and effects of hardening strategies, including undergrounding, so that informed decisions can be made about undergrounding policies and specific undergrounding projects.

The collaborative has refined the computer model developed by Quanta Technologies and there has been a collective effort to learn more about the function and functionality of the computer code.

In addition, PURC has worked with doctoral and master's candidates in the University of Florida Department of Civil and Coastal Engineering to assess some of the inter-relationships between wind speed and other environmental factors on utility equipment damage. PURC has also been contacted by engineering researchers at the University of Wisconsin and North Carolina State University with an interest in the model, though no additional relationships have been established. In addition to universities, PURC has been in contact with stakeholders in Puerto Rico due to PURC Director Mark Jamison's service on the Southern States Energy Board Blue Ribbon Task Force on the future of Puerto Rico's energy system. The stakeholders, government and task force discussed strategies to make Puerto Rico's system more resilient and are interested in the role that the model could play. PURC has been contacted by California stakeholders interested in applying the principles of the model to the mitigation of the interactions between the electricity grid and the surrounding vegetation, potentially reducing the risk of wildfires. In the wake of Hurricane Ida, PURC has been contacted by stakeholders in New Orleans regarding the process of assessing the costs and benefits of storm hardening. Finally, PURC has been contacted by stakeholders in New York, Pennsylvania, and New Jersey with interest to model the impact of storm hardening to winter storms. Despite the outside interest, there are no concrete plans to expand

the scope of the model at this time. Every researcher that contacts PURC cites the model as the only non-proprietary model of its kind.

III. Wind Data Collection

The Project Sponsors entered into a wind monitoring agreement with WeatherFlow, Inc., in 2007. Under the agreement, Florida Sponsors agreed to provide WeatherFlow with access to their properties and to allow WeatherFlow to install, maintain and operate portions of their wind monitoring network facilities on utility-owned properties under certain conditions in exchange for access to wind monitoring data generated by WeatherFlow's wind monitoring network in Florida. WeatherFlow's Florida wind monitoring network includes 50 permanent wind monitoring stations around the coast of Florida, including one or more stations located on utility-owned property. The wind monitoring agreement expired in early 2012; however, it was renewed in April 2017 and will renew automatically annually on the effective date for an additional one year period, unless terminated by the parties to the agreement.

IV. Public Outreach

We have previously discussed the impact of increasingly severe storms and the increased population and utility infrastructure along the coast on greater interest in storm preparedness. PURC researchers continue to discuss the collaborative effort in Florida with the engineering departments of the state regulators in New York, New Jersey, and Pennsylvania, and regulators in Jamaica, Grenada, Curacao, St. Lucia, the Bahamas, Samoa, and the Philippines. In 2019, stakeholders in Puerto Rico and California also showed interest in the collaborative's efforts. While all of the regulators and policymakers showed great interest in the genesis of the collaborative effort, and the results of that effort, they have not, at this point, shown further interest in participating in the research effort. In 2021, there continued to be considerable interest in Florida's hardening efforts from the popular media in California, in light of continued wildfire problems in the state and their aftermath. Interest in Florida's storm hardening efforts continued in the popular media with PURC Director of Energy Studies Ted Kury publishing op-eds in the Hill[1] and Barron's[2], and featured in media outlets such as the Washington Post.

VI. Conclusion

In response to the FPSC's Order 06-0351, IOUs, municipal electric utilities, and rural electric cooperatives joined together and retained PURC to coordinate research on electric infrastructure hardening. The steering committee has taken steps to extend the research collaboration MOU so that the industry will be in a position to focus its research efforts on undergrounding research, granular wind research and vegetation management when significant storm activity affects the state.

[1] "No easy decisions to ensure a resilient power grid" https://thehill.com/opinion/energy-environment/572704-no-easy-decisions-to-ensure-a-resilient-power-grid/

[2] "America's Electrical Grids are Under Threat: For Fixes, Look to Florida" https://www.barrons.com/articles/americas-electrical-grids-are-under-threat-for-fixes-look-to-florida-51625092251?tesla=y

Disaster Preparedness and Recovery Plan: A key element in minimizing storm-caused outages is having a natural disaster preparedness and recovery plan. A formal disaster plan provides an effective means to document lessons learned, improve disaster recovery training, pre-storm staging activities, and post-storm recovery. The Commission's Order No. PSC-2006-0351-PAA-E1, issued on April 25, 2006, within Docket No. 20060198-E1 required each investor-owned electric utility to develop a formal disaster preparedness and recovery plan that outlines its disaster recovery procedures and maintain a current copy of its utility disaster plan with the Commission.

Tampa Electric will continue to be active in many ongoing activities to support the restoration of the system before, during and after storm activation. The company will continue to lead or support disaster preparedness and recovery plan activities such as planning, training and working with other electric utilities and local government to continually refine and improve the company's ability to respond quickly and efficiently in any restoration situation.

Tampa Electric's Emergency Management plans address all hazards, including extreme weather events and are reviewed annually. Tampa Electric follows the policy set by TECO Energy for Emergency Management and Business Continuity which delineates responsibilities at the employee, company and community levels.

Tampa Electric will also continue to plan, participate in, and conduct internal and external preparedness exercises, collaborating with government emergency management agencies, at the local, state and federal levels. Internal company exercises focus on testing lessons learned from prior exercises/activations, new procedures, and educating new team members on roles and responsibilities in the areas of incident command, operations, logistics, planning and finance. The scope and type of internal exercises vary from year to year based on exercise objectives defined by a cross-functional exercise design team, following the Homeland Security Exercise and Evaluation Program ("HSEEP"). External preparedness exercises are coordinated by local, state

and federal governmental emergency management agencies. Tampa Electric personnel participate in these exercises to test the company's internal emergency response plans, including coordination with Emergency Support Functions ("ESF") to maintain key business relationships at local Emergency Operation Centers ("EOC"). Like Tampa Electric, the exercise type (tabletop, functional or full-scale) and scope varies from year to year, and depending upon the emergency management agencies' exercise objectives, Tampa Electric participants may not be included.

With the exception of 2020 and 2021, Tampa Electric annually participates in the State of Florida's hurricane exercise with the FPSC, which often coincides with exercises conducted by Hillsborough, Pasco, Pinellas and Polk counties. In addition, municipalities within Tampa Electric's service area (Oldsmar, Plant City, Tampa and Temple Terrace) may also host exercises and/or pre-storm season briefings. In 2021, the State of Florida did not conduct its annual hurricane exercise. Tampa Electric participated in FEMA's Integrated Emergency Management Course ("IEMC") with Hillsborough County and participated in trainings and workshops with Polk and Pinellas counties, and the City of Tampa. In 2022, Tampa Electric expects to participate in storm-related exercises at local and state levels.

In 2021, Tampa Electric participated in the following disaster preparedness and recovery plan activities which included in-depth coordination with local, state and federal emergency management in the following areas:

- Principal member of the National Fire Protection Association ("NFPA") 1600 – Committee on Continuity, Emergency, and Crisis Management
- Member of NFPA Technical Committee
- Member of the Edison Electric Institute ("EEI") Business Continuity Leadership Team
- Member of the EEI Mutual Assistance Committee
- Member of the Electric Subsector Coordinating Council ("ESCC") Leadership Working Group

- Member of the Local Mitigation Strategy ("LMS") and Vulnerable Population Committees
- Member of Critical Facility Working Group to review restoration priorities
- Member of the Florida Statewide Mutual Aid Assistance ("MAA") Working Group
- Member of the Southeastern Electric Exchange ("SEE") Mutual Assistance Committee
- Member of the SEE Logistics Subcommittee
- Member of the Florida Emergency Preparedness Association ("FEPA")
- Member of the FEPA Higher Education Working Group
- Member of the Association of Contingency Planners ("ACP")
- Member of the International Association of Emergency Managers ("IAEM")
- Member of the Disaster Recovery Institute ("DRI") International

Tampa Electric continues to participate in internal and external preparedness exercises, collaborating with government emergency management agencies, at local, state and federal levels.

For 2022, Tampa Electric will continue in leadership roles in county and national preparedness groups: Hillsborough County and the COT PDRP, EEI, FEPA Higher Education Working Group, ESCC, the NFPA 1600 Committee on Continuity, Emergency, and Crisis Management, and the NFPA Technical Committee. In addition, Tampa Electric will continue to be active participants in LMS, Vulnerable Population Committees, SEE's Mutual Assistance Committee and Logistics Subcommittee, EEI Mutual Assistance Committee, Florida Statewide MAA Working Group, as well as the Critical Facility Working Groups. Tampa Electric will also continue to promote growth of its website, Twitter and Facebook followers.

Distribution Pole Replacements: Tampa Electric's distribution pole replacement initiative starts with the company's wood pole inspections and includes designing,

utilizing conductors and/or supporting structures, and constructing distribution facilities that meet or exceed the company's current design criteria for the distribution system. The company will continue to appropriately address all poles identified through its Infrastructure Inspection Program.

Overhead to Underground Conversion of Interstate Highway Crossings: The continued focus of this activity is to harden limited access highway crossings to prevent the hindrance of first responders, emergency vehicles and others due to fallen distribution lines blocking traffic. The restoration of downed overhead power lines over interstate highways can be lengthy due to heavy traffic congestion following a major storm. Tampa Electric's current preferred construction standard requires all distribution line interstate crossings to be underground. Therefore, the company initially converted several overhead distribution line crossings to underground on major interstate highways. Through 2021, a total of 16 distribution crossings have been converted. Any remaining distribution interstate highway crossings will be converted to underground as part of the company's SPP or when construction and/or maintenance activities present opportunities.

Storm Season Status

For 2022, the company's Emergency Response Plan will be reviewed prior to hurricane season to ensure it is up to date and ready for the upcoming storm season. In addition, emergency assignments will be reviewed to ensure all Tampa Electric employees have at least one assignment to support storm restoration efforts. Tampa Electric will use preparedness resources such as emergency notification system, weather services, resilience management products, internal and external training, and exercises to test plans. In addition, Tampa Electric expects to participate in the following initiatives to enhance the company's emergency response capabilities:

- Retain and train additional Tampa Electric Certified Business Emergency Response Team ("BERT") members
- Continue to participate in the NFPA 1600 Standard and Technical Committees

- Continue to participate in EEI Business Continuity Leadership committee
- Participate in local, state and federal emergency management and business continuity forums
- Participate in the Florida Statewide MAA Working Group
- Participate in the SEE Mutual Assistance Committee
- Participate in the SEE Logistics Subcommittee
- Participate in the EEI Mutual Assistance Committee
- Participate in Integrated Preparedness Planning for training and exercises
- Support of Hillsborough County in communicating the national flood insurance program to county residents
- Support the ESCC strategy
- Support Hillsborough County and the COT PDRP planning, State of Florida Division of Emergency Management and Department of Homeland Security ("DHS")
- Participate in the Critical Facilities Working Groups to support the review of restoration priorities for critical facilities
- Participate with the COT in their "Push Team" (debris clearing) exercise
- Support community preparedness through participation in various government committees (e.g., Maritime Security, Florida Department of Law Enforcement, Regional Domestic Security Task Force), and activate as necessary during major community events
- Support the local county LMS Working Groups
- Participate in public/private storm related exercises
- Attend annual FEPA Conference and participate in the FEPA Higher Education Working Group
- Conduct all-hazards internal preparedness exercises and training sessions using the company ICS model to test plans

In 2021, Tampa Electric's Energy Delivery Department was involved in many activities throughout the entire storm season. Various activities were performed to ensure team

members were ready to respond to a storm. These activities included an extensive base camp review at each incident base site as well as mock storm drills to further enhance the skills of Tampa Electric team members.

Tampa Electric's Emergency Management Department continued to serve as a member of the state-wide Mutual Assistance Working Group. Efforts continue to focus on initiatives to improve the state's utilities abilities to obtain crews quickly and efficiently to speed restoration efforts.

Tampa Electric annually reviews sites for incident bases, base camps and staging sites which ensure primary and backup locations for distribution, transmission and materials. Additionally, logistical needs and equipment requirements are reviewed for each incident base site. Throughout Tampa Electric's service territory, the company is constantly developing and maintaining relationships with property owners for potential incident bases, base camps and staging sites. Energy Delivery also annually reviews existing purchase orders and contacts vendors who would assist the company with restoration efforts. Corporate Emergency Management annually reviews purchase orders and vendor contact information on those who would provide logistics' support (i.e., meals, transportation, laundry services, etc.) to Energy Delivery during restoration. All these activities were performed in 2021.

Prior to hurricane season, Energy Delivery management reviewed all employees' storm assignments and communicated roles and expectations. Meetings and training were held as needed throughout the year.

Mutual Assistance

In 2021, Energy Delivery participated in numerous conference calls with other SEE utilities regarding hurricanes, tropical storms, and ice events. The company's participation in these calls was to both offer and request mutual assistance to assist in restoration activities.

In February 2021, Tampa Electric deployed 50 team members to AEP SWEPCO to assist with the restoration work for outages caused by a winter ice storm.

In July 2021, Tampa Electric requested 154 team members to assist with restoration work for outages caused by Tropical Storm Elsa.

In August 2021, Tampa Electric deployed 60 team members to assist CLECO with restoration work for outages caused by Hurricane Ida.

Mutual Assistance Lessons Learned

In 2021, Tampa Electric provided mutual assistance for restoration efforts as a result of other utilities being impacted by storm events. As a result of providing this assistance, Tampa Electric learned many lessons that will help improve the company's existing Emergency Management plan and reinforce several existing provisions already contained within the plan. Most of the lessons learned revolve around storm response during a pandemic. Some of the common lessons learned themes from Mutual Assistance activities in 2021 include:

- Social distancing at all incident base sites and hotel lobbies
- Utilizing more vehicles so that team members are only assigned as one per truck

2022 Energy Delivery Emergency Management

For 2022, Tampa Electric's Energy Delivery Department is currently planning the next mock storm exercise. Tentative plans are to conduct a department wide exercise to practice all existing processes and to ensure the new processes introduced in the last year are fully integrated and functional. Follow-up items and lessons learned will be recorded.

Prior to hurricane season, Tampa Electric's Energy Delivery management will review all employees' storm assignments and communicate roles and expectations. Meetings, training and exercises will be scheduled at various locations. Additionally, employee preparedness will be emphasized prior to storm season via training materials and presentations.

Contingency Planning and Response

Roadway Congestion: In the event of roadway congestion that is impacting travel by foreign crews into Tampa Electric's service area, the company will seek to resolve the situation by obtaining information through various sources to find an alternative route. In the event that traffic congestion is so pervasive that there are no available alternative routes, Tampa Electric will work through company representatives at local Emergency Operations Centers ("EOC") or the State of Florida EOC depending on the location, nature and severity of the congestion. The company's representatives will communicate the situation to the law enforcement or appropriate Emergency Support Function ("ESF") personnel to obtain assistance.

Fuel: Tampa Electric has agreements in place with two bulk fuel vendors to supply diesel and gasoline fuel on a daily/ as needed basis in response to a storm event. The company also has an agreement with one mobile fuel vendor.

Prior to the storm: Upon notification the bulk fuel vendor(s) will top off Tampa Electric's on-site fuel storage tanks which consists of 50,000 gallons of diesel and 50,000 gallons of gasoline.

During the storm: The bulk fuel vendor(s) will top off the on-site fuel storage tanks as described above daily or as needed. These vendors typically obtain their fuel supply from Port Tampa Bay. In the event that the Port Tampa Bay is unable to supply fuel, the vendors will obtain their fuel supply from a main fuel supply facility in Georgia.

The mobile fuel vendor will provide 500-gallon bulk fuel tanks to each incident base or base camp Tampa Electric establishes to support restoration efforts. The mobile fuel vendor will also fuel all Tampa Electric, Tampa Electric's native crews and any foreign crew resource vehicles that are being used to assist the company in restoration of the system during a storm event on a daily basis after hours at each incident base.

Lodging Accommodations: Lodging accommodations are acquired, when the leadership of Tampa Electric's Electric Delivery department deems it is necessary to bring "foreign crew" resources into Tampa Electric's service area to support power restoration. The amount of lodging accommodations is based on the forecasted severity of the storm, strength, storm surge and the path of the storm. Tampa Electric's Electric Delivery department will estimate the damage to the area, and the number of power outages that will affect the company's customers, to determine the number of resources needed to help with power restoration. Once the decision to request outside resources is made, Tampa Electric's Logistics Chief will activate those company employees that make up the lodging unit to start acquiring hotel rooms and/or alternative housing.

Tampa Electric's Real Estate Department and Logistics section keeps a list of hotels of which there are verbal agreements to utilize hotel rooms in their establishment if they are available. It is customary to double bunk (two people) to a room. The rooms are secured pre-storm for post-storm occupancy.

Tampa Electric also has a contract in place with a Base Camp Operator to provide turnkey support for lodging, meals and laundry in the event hotel accommodations are limited or mutual assistance requirements are significant.

Communications: Tampa Electric is continuing to explore alternative communications means in the event public communications systems such as cellular, satellite and hard lines are rendered unavailable due to an event. Currently, Tampa Electric has fixed and portable Satellite phone capabilities, and key personnel have Government Emergency Telecommunications Service (GETS) and Wireless Priority Service (WPS). In addition

to carrier-based solutions, a third-party portable cellular long-range product was purchased and will be utilized to improve communications by accessing multiple cellular carriers.

Program Summary

Tampa Electric's 2022 Storm Season Readiness preparation focuses on a number of areas including additional distribution circuit protection equipment installations, pre-storm transmission inspections and maintenance, wood pole inspections and replacements, vegetation management, capacitor maintenance, local government interaction, increased equipment inventory, circuit priority reviews, hurricane preparation exercises, and industry research for best practices and procedures for storm restoration.

Transmission Inspections and Maintenance

Prior to hurricane season, all 230 kV, 138 kV and all priority 69 kV circuits will be patrolled with the remaining transmission circuits being completed by the end of 2022.

Tampa Electric plans to change out approximately 474 wood transmission poles throughout the year with steel or concrete structures. Also, Tampa Electric intends to replace existing insulators with polymer insulators as needed.

Pole Inspections

In 2021, Tampa Electric continued the ground line inspections by completing 19,861 inspections to ensure the company remains on pace for completing the eight-year inspection cycle.

For 2022, future inspections coupled with the company's pole replacement program will enhance the storm resiliency of Tampa Electric's transmission and distribution system.

Capacitor Maintenance Program

For 2022, the company will continue to monitor and make improvements to capacitor banks with proactive scheduled inspections. Tampa Electric will continue the pace

throughout the spring of 2022 for inspections in preparation for summer peak loads and in anticipation of potential impacts of summer storms on workforce availability and capacitor failure rates. Repairs during the summer are generally limited to an as needed basis. Regularly scheduled inspection will continue in the fall of 2022 as the need and weather permits. For 2022, the company estimates that the remaining of the capacitor banks in Tampa Electric's service area will be field visited, tested and repaired if needed.

Communication with Local Governments

In 2022, Tampa Electric will continue its communication efforts focusing on maintaining vital governmental contacts and participation on standing disaster recovery planning committees. Tampa Electric is planning to participate in joint storm exercises with the FPSC, Hillsborough, Pasco, Pinellas and Polk Counties, as well as various cities within the company's service area.

Increase Equipment Inventory

As was the case in 2021, the company will review and increase storm stock in 2022 to ensure a four-day supply of overhead distribution materials such as splices, fuses, connectors, service clamps, brackets, wire, poles, transformers, etc., as well as transmission and substation materials. The company will also ensure that procurement contracts are in place to support additional supplies being delivered within four days of landfall and it will replenish required stock for the duration of a major restoration event. For 2022, to ensure these additional materials are onsite and ready for restoration responses, Tampa Electric is shifting the additional materials order from the March/April timeframe to February to recognize the current market conditions that is requiring longer material lead times to receive material onsite.

Circuit Priority Review

For 2022, Tampa Electric will continue working with county and municipal agencies in reviewing and updating the restoration priorities for the areas served by the company.

Hurricane Preparedness Exercise

For 2022, Tampa Electric's Energy Delivery Department is currently planning the next mock storm exercise. Tentative plans are to conduct a department wide exercise to practice all existing processes and to ensure the new processes introduced in the last year are fully integrated and functional. Follow-up items and lessons learned will be recorded.

Prior to hurricane season, Tampa Electric's Energy Delivery management will review all employees' storm assignments and communicate roles and expectations. Meetings, training and exercises will be scheduled at various locations. Additionally, employee preparedness will be emphasized prior to storm season via training materials and presentations.

In addition, hurricane preparedness exercises will be conducted by corporate Emergency Management for other key functions, including Leadership, Logistics, Planning, and EOC representatives.

Storm Protection Plan Cost and Rate Impact Summary

Tampa Electric filed its 2020-2029 Storm Protection Plan on April 10, 2020. The SPP was approved by the Commission on August 8, 2020, by Final Order No. PSC-2020-0293-EI. Within Tampa Electric's first SPP, the following chart contains the company's estimated costs to be incurred during the 2021 through 2023 period for all related storm protection plan activities:

Tampa Electric's 2021-2023 Storm Protection Plan Total Costs by Program (in Millions)			
Capital	**2021**	**2022**	**2023**
Distribution Lateral Undergrounding	$79.45	$108.08	$101.44
Transmission Asset Upgrades	$15.21	$14.98	$16.51
Substation Extreme Weather Protection	$0.00	$0.00	$0.00
Distribution Overhead Feeder Hardening	$15.38	$29.58	$33.39
Transmission Access Enhancements	$1.38	$1.52	$1.56
Distribution Pole Replacements	$11.18	$14.72	$15.16
O&M	**2021**	**2022**	**2023**
Distribution Vegetation Management - planned	$19.76	$21.18	$24.00
Distribution Vegetation Management - unplanned	$1.30	$1.20	$1.10
Transmission Vegetation Management - planned	$3.53	$3.59	$3.66
Transmission Vegetation Management - unplanned	$0.00	$0.00	$0.00
Transmission Asset Upgrades	$0.30	$0.30	$0.33
Distribution Overhead Feeder Hardening	$0.38	$0.40	$0.79
Distribution Infrastructure Inspections	$1.00	$1.02	$1.04
Transmission Infrastructure Inspections	$0.47	$0.48	$0.49
SPP Planning & Common	$0.39	$0.20	$0.20
Other Legacy Storm Hardening Plan Items	$0.28	$0.29	$0.29
Distribution Pole Replacements	$0.62	$0.81	$0.83

The chart above contains the costs for all storm protection plan activities (“All in” Costs), which includes prior existing storm hardening and other costs that will not be recovered through the Storm Protection Plan Cost Recovery Clause (“SPPCRC”). The following Storm Protection Plan Activities were chosen to remain in rate base:

- Distribution Pole Replacements (Capital and O&M)
- Distribution Vegetation Management – Unplanned
- Transmission Vegetation Management – Unplanned
- Other Legacy Storm Hardening Plan Items

The following chart contains the company's estimated costs to be incurred during the 2021 through 2023 period that would be sought for cost recovery through the SPPCRC:

Tampa Electric's 2021-2023 Storm Protection Plan Total Costs by Program (in Millions)			
Capital	**2021**	**2022**	**2023**
Distribution Lateral Undergrounding	$79.45	$108.08	$101.44
Transmission Asset Upgrades	$15.21	$14.98	$16.51
Substation Extreme Weather Protection	$0.00	$0.00	$0.00
Distribution Overhead Feeder Hardening	$15.38	$29.58	$33.39
Transmission Access Enhancements	$1.38	$1.52	$1.56
O&M	**2021**	**2022**	**2023**
Distribution Lateral Undergrounding	$0.00	$0.00	$0.00
Distribution Vegetation Management - planned	$19.76	$21.18	$24.00
Transmission Vegetation Management - planned	$3.53	$3.59	$3.66
Transmission Asset Upgrades	$0.30	$0.30	$0.33
Substation Extreme Weather Protection	$0.25	$0.00	$0.00
Distribution Overhead Feeder Hardening	$0.38	$0.40	$0.79
Transmission Access Enhancements	$0.00	$0.00	$0.00
Distribution Infrastructure Inspections	$1.00	$1.02	$1.04
Transmission Infrastructure Inspections	$0.47	$0.48	$0.49
SPP Planning & Common	$0.39	$0.20	$0.20
Total	$137.51	$181.34	$183.43

The following chart contains the comparison of the actual SPPCRC costs incurred in 2021, the actual/estimated SPPCRC costs for 2022, and the projected SPPCRC costs for 2023 versus the filed SPPCRC costs estimated to be incurred in the company's 2020-2029 Storm Protection Plan:

Tampa Electric's 2021-2023 Storm Protection Plan Total Costs by Program Comparison (in Millions)						
Capital	**2021**	**2021 Actual**	**2022**	**2022 Act/Est**	**2023**	**2023 Proj**
Distribution Lateral Undergrounding	$79.45	$53.55	$108.08	$105.92	$101.44	$104.54
Transmission Asset Upgrades	$15.21	$18.29	$14.98	$16.48	$16.51	$17.46
Substation Extreme Weather Protection (Distribution)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.70
Substation Extreme Weather Protection (Transmission)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Distribution Overhead Feeder Hardening	$15.38	$17.35	$29.58	$32.84	$33.39	$30.12
Transmission Access Enhancements	$1.38	$0.70	$1.52	$2.41	$1.56	$3.04
O&M	**2021**	**2021 Actual**	**2022**	**2022 Act/Est**	**2023**	**2023 Proj**
Distribution Lateral Undergrounding	$0.00	$0.14	$0.00	$0.18	$0.00	$0.18
Distribution Vegetation Management - planned	$19.76	$19.39	$21.18	$21.16	$24.00	$24.00
Transmission Vegetation Management - planned	$3.53	$3.04	$3.59	$3.61	$3.66	$3.66
Transmission Asset Upgrades	$0.30	$0.23	$0.30	$0.49	$0.33	$0.52
Substation Extreme Weather Protection (Distribution)	$0.25	$0.14	$0.00	$0.00	$0.00	$0.00
Substation Extreme Weather Protection (Transmission)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Distribution Overhead Feeder Hardening	$0.38	$0.07	$0.40	$0.56	$0.79	$0.62
Transmission Access Enhancements	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Distribution Infrastructure Inspections	$1.00	$0.57	$1.02	$1.02	$1.04	$1.04
Transmission Infrastructure Inspections	$0.47	$0.53	$0.48	$0.58	$0.49	$0.54
SPP Planning & Common	$0.39	$1.23	$0.20	$0.96	$0.20	$0.87
Total	$137.51	$115.23	$181.34	$186.21	$183.43	$187.29

The following chart contains the company's estimated rate impacts in Percent for the 2021 through 2023 period of the company's filed 2020-2029 Storm Protection Plan. These amounts included all Storm Protection Plan costs regardless of where they would be recovered:

	Tampa Electric's Storm Protection Plan "Total Cost" Customer Bill Impacts (in percent)			
	Customer Class			
	Residential 1,000 kWh	Residential 1,250 kWh	Commercial 1 MW 60 percent Load Factor	Industrial 10 MW 60 percent Load Factor
2021	2.22	2.21	2.14	0.84
2022	3.09	3.06	2.98	1.13
2023	4.12	4.07	3.95	1.46

The following chart contains the comparison of customer bill impacts in dollars based upon the actual SPPCRC rate that would have been incurred in 2021 based upon the actual costs, the current SPPCRC 2022 rate, and the projected SPPCRC 2023 rate that was filed on May 2, 2022, in Docket No. 20220010-EI using the current cost of service methodology that was approved in Docket No. 20210034-EI for the same rate classes and usage as the chart directly above:

	Tampa Electric's Storm Protection Plan Cost Recovery Clause Customer Bill Impacts (in dollars)			
	Customer Class			
	Residential 1,000 kWh	Residential 1,250 kWh	Commercial 1 MW 60 percent Load Factor	Industrial 10 MW 60 percent Load Factor
2021	$1.90	$2.38	$420.76	$278.98
2022	$3.29	$4.11	$526.65	$638.02
2023	$3.73	$4.66	$536.52	$566.03

The following chart contains the customer bill impacts in dollars based upon total costs that were incurred in 2021 for all of the company's SPP activities, the 2022 actual/estimated SPP activities, and the projected 2023 SPP activities. These customer bill impacts use the current cost of service methodology that was approved in Docket No. 20210034-EI for the same rate classes and usage as the chart above. These amounts include all SPP costs regardless of where they are recovered. The SPP activities that are not included in the SPPCRC include the following:

Unplanned Vegetation Management – Distribution (O&M)

Unplanned Vegetation Management – Transmission (O&M)

Distribution Pole Replacements (O&M and Capital)

Legacy Storm Hardening Activities (O&M)

Tampa Electric's Storm Protection Plan Costs Customer Bill Impacts (in dollars)				
	Customer Class			
	Residential 1,000 kWh	Residential 1,250 kWh	Commercial 1 MW 60 percent Load Factor	Industrial 10 MW 60 percent Load Factor
2021	$2.09	$2.61	$462.06	$279.15
2022	$3.26	$4.08	$571.23	$593.45
2023	$5.00	$6.25	$628.15	$891.36