

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Review of 2019-2021 storm hardening
plan, Tampa Electric Company.

DOCKET NO. 20180145-EI
ORDER NO. PSC-2019-0302-PAA-EI
ISSUED: July 29, 2019

The following Commissioners participated in the disposition of this matter:

ART GRAHAM, Chairman
JULIE I. BROWN
DONALD J. POLMANN
GARY F. CLARK
ANDREW GILES FAY

NOTICE OF PROPOSED AGENCY ACTION
ORDER APPROVING TAMPA ELECTRIC COMPANY'S
UPDATED STORM HARDENING PLAN FOR 2019-2021

BY THE COMMISSION:

NOTICE is hereby given by the Florida Public Service Commission that the action discussed herein is preliminary in nature and will become final unless a person whose interests are substantially affected files a petition for a formal proceeding, pursuant to Rule 25-22.029, Florida Administrative Code (F.A.C.).

Background

The hurricanes of 2004 and 2005 that made landfall in Florida resulted in extensive storm restoration costs and lengthy electric service interruptions for millions of electric investor-owned utility (IOU) customers. On January 23, 2006, the Florida Public Service Commission (Commission) staff conducted a workshop to discuss the damage to electric utility facilities resulting from these hurricanes and to explore ways of minimizing future storm damage and customer outages. State and local government officials, independent technical experts, and Florida's electric utilities participated in the workshop.

On February 27, 2006, we issued Order No. PSC-06-0144-PAA-EI, in Docket No. 20060078-EI, requiring that the IOUs begin implementing an eight-year inspection cycle of their respective wooden poles.¹ In that Order, we noted:

The severe hurricane seasons of 2004 and 2005 have underscored the importance of system maintenance activities of Florida's electric IOUs. These efforts to

¹Docket No. 20060078-EI, *In re: Proposal to require investor-owned electric utilities to implement ten-year wood pole inspection program.*

maintain system components can reduce the impact of hurricanes and tropical storms upon utilities' transmission and distribution systems. An obvious key component in electric infrastructure is the transmission and distribution poles. If a pole fails, there is a high chance that the equipment on the pole will be damaged, and failure of one pole often causes other poles to fail. Thus, wooden poles must be maintained or replaced over time because they are prone to deterioration. Deteriorated poles have lost some or most of their original strength and are more prone to fail under certain environmental conditions such as high winds or ice loadings. The only way to know for sure which poles...must be replaced is through periodic inspections. [p. 2]

On April 25, 2006, we issued Order No. PSC-06-0351-PAA-EI, in Docket No. 20060198-EI, requiring all IOUs to file plans and estimated implementation costs for 10 ongoing storm preparedness initiatives (Ten Initiatives) on or before June 1, 2006.² The Ten Initiatives are:

1. A Three-Year Vegetation Management Cycle for Distribution Circuits
2. An Audit of Joint-Use Attachment Agreements
3. A Six-Year Transmission Structure Inspection Program
4. Hardening of Existing Transmission Structures
5. A Transmission and Distribution Geographic Information System
6. Post-Storm Data Collection and Forensic Analysis
7. Collection of Detailed Outage Data Differentiating Between the Reliability Performance of Overhead and Underground Systems
8. Increased Utility Coordination with Local Governments
9. Collaborative Research on Effects of Hurricane Winds and Storm Surge
10. A Natural Disaster Preparedness and Recovery Program

These Ten Initiatives were not intended to encompass all reasonable ongoing storm preparedness activities. Rather, we viewed these initiatives as a starting point of an ongoing process.³ By Order Nos. PSC-06-0781-PAA-EI addressing Tampa Electric Company (TECO, or Utility) and Florida Public Utilities Company (FPUC), PSC-06-0947-PAA-EI addressing Progress Energy Florida, Inc. [now Duke Energy Florida, LLC (DEF)] and Gulf Power Company (Gulf), and PSC-07-0468-FOF-EI addressing Florida Power & Light Company (FPL), we addressed the adequacy of the IOU's plans for implementing the Ten Initiatives.

²Docket No. 20060198-EI, *In re: Requirement for investor-owned electric utilities to file ongoing storm preparedness plans and implementation cost estimates.*

³Order No. PSC-06-0351-PAA-EI, p. 2, issued April 25, 2006, in Docket No. 20060198-EI, *In re: Requirement for investor-owned electric utilities to file ongoing storm preparedness plans and implementation costs estimates.*

We also pursued rulemaking to address the adoption of distribution construction standards more stringent than the minimum safety requirements of the National Electrical Safety Code (NESC) and the identification of areas and circumstances where distribution facilities should be required to be constructed underground.⁴ Rule 25-6.0342, F.A.C., was ultimately adopted.⁵

Rule 25-6.0342, F.A.C., requires each IOU to file an Electric Infrastructure Storm Hardening Plan for review and approval by this Commission which includes a description of construction standards, policies, practices, and procedures to enhance the reliability of overhead and underground electrical transmission and distribution facilities. The rule calls for, at a minimum, each IOU's plan to address the following items:

- a. Compliance with the NESC
- b. Extreme Wind Loading (EWL) standards for:
 - i. New construction
 - ii. Major planned work, including expansion, rebuild, or relocation of existing facilities
 - iii. Critical infrastructure facilities and along major thoroughfares
- c. Mitigation of damage due to flooding and storm surges
- d. Placement of facilities to facilitate safe and efficient access for installation and maintenance
- e. A deployment strategy that includes:
 - i. The facilities affected
 - ii. Technical design specifications, construction standards, and construction methodologies
 - iii. The communities and areas where the electric infrastructure improvements are to be made
 - iv. The impact on joint-use facilities on which third-party attachments exist
 - v. An estimate of the costs and benefits to the utility of making the electric infrastructure improvements

⁴Order No. PSC-06-0556-NOR-EU, issued June 28, 2006, in Docket No. 20060172-EU, *In re: Proposed rules governing placement of new electric distribution facilities underground, and conversion of existing overhead distribution facilities to underground facilities, to address effects of extreme weather events*; and Docket No. 20060173-EU, *In re: Proposed amendments to rules regarding overhead electric facilities to allow more stringent construction standards than required by National Electric Safety Code*.

⁵Order No. PSC-07-0043-FOF-EU, issued January 16, 2007, as amended by Order No. PSC-07-0043AFOF-EU, issued January 17, 2007, in Docket No. 20060172-EU, *In re: Proposed rules governing placement of new electric distribution facilities underground, and conversion of existing overhead distribution facilities to underground facilities, to address effects of extreme weather events*; and Docket No. 20060173-EU, *In re: Proposed amendments to rules regarding overhead electric facilities to allow more stringent construction standards than required by National Electric Safety Code*.

- vi. An estimate of the costs and benefits to third-party attachers affected by the electric infrastructure improvements

f. The inclusion of Attachment Standards and Procedures for Third-Party Attachers

FPL filed its 2016-2018 storm hardening plan updates on March 15, 2016, which was consolidated with its petition for rate increase. FPL's plan was approved at the November 29, 2016 Commission Conference through a settlement.⁶ On May 2-3, 2016, the other four IOU's filed their 2016-2018 storm hardening plan updates. We approved the storm hardening plans for DEF, FPUC, TECO, and Gulf, at the December 6, 2016 Commission Conference.⁷

After four hurricanes impacted Florida in 2016-2017, we opened Docket No. 20170215-EU to review electric utility storm preparedness and restoration actions (Hurricane Review Docket), and to identify areas where infrastructure damage, outages, and recovery time for customers could be minimized in the future. On May 2-3, 2018, we held a workshop during which information was presented by utilities, customers and their representatives, and local governments. Topics discussed at the workshop included preparation and restoration processes, hardened versus non-hardened facility performance, underground versus overhead performance, impediments to restoration, customer and stakeholder communication, and suggested improvements based on lessons learned.

On July 24, 2018, we issued our "Review of Florida's Electric Utility Hurricane Preparedness and Restoration Action's 2018."⁸ At the July 10, 2018 Internal Affairs meeting, we directed Commission staff to open the storm hardening plan review dockets earlier than previously scheduled and to begin collecting additional details related to:

- Meetings with local governments regarding vegetation management and the identification of critical facilities.
- Utility staffing practices at local emergency operations centers (EOC).
- Planned responses to roadway congestion, motor fuel availability, and lodging accommodation issues.
- Alternatives considered before electing a particular storm hardening project.

⁶Order No. PSC-16-0560-AS-EI, issued December 15, 2016, in Docket No. 20160021-EI, *In re: Petition for rate increase by Florida Power & Light Company*.

⁷Order No. PSC-16-0569-PAA-EI, issued December 19, 2016, in Docket No. 20160105-EI, *In re: Petition for approval of 2016-2018 storm hardening plan, pursuant to Rule 25-6.0342, F.A.C., by Tampa Electric Company*; Order No. PSC-16-0570-PAA-EI, issued December 19, 2016, in Docket No. 20160106-EI, *In re: Petition for approval of 2016-2018 storm hardening plan, pursuant to Rule 25-6.0342, F.A.C., by Florida Public Utilities Company*; Order No. PSC-16-0571-PAA-EI, issued December 19, 2016, in Docket No. 20160107-EI, *In re: Petition for approval of 2016-2018 storm hardening plan, pursuant to Rule 25-6.0342, F.A.C., by Duke Energy Florida, LLC*; Order No. PSC-16-0572-PAA-EI, issued December 19, 2016, in Docket No. 20160108-EI, *In re: Petition for approval of 2016-2018 storm hardening plan, pursuant to Rule 25-6.0342, F.A.C., by Gulf Power Company*.

⁸ Document No. 04847-2018, issued July 24, 2018, in Docket No. 20170215-EU, *In re: Review of electric utility hurricane preparedness and restoration actions*.

- The collection of more uniform performance data for hardened versus non-hardened and underground facilities, including sampling data where appropriate.

On March 1, 2019, the five IOUs filed their 2019-2021 storm hardening plan updates as requested. Docket Nos. 20180144-EI (FPL), 20180145-EI (TECO), 20180146-EI (DEF), 20180147-EI (Gulf) and 20180148-EI (FPUC) were opened. Commission staff did not conduct a workshop for these updated storm hardening plans as data request responses were sufficient in understanding the updated plans.

This order addresses TECO's plan updates as required by Rule 25-6.0342, F.A.C. Our order addresses:

- I. Wooden Pole Inspection Program
- II. Ten Initiatives
- III. National Electric Safety Code (NESC) Compliance
- IV. Extreme Wind Loading (EWL) Standards
- V. Mitigation of Flooding and Storm Surge Damage
- VI. Facility Placement
- VII. Deployment Strategies
- VIII. Attachment Standards and Procedures for Third-Party Attachers

Attachment A describes the storm hardening requirements of the Wooden Pole Inspection Program and the Ten Initiatives for each IOU. Attachment B contains a comparison of TECO's provisions of the 2016-2018 approved and updated 2019-2021 Wooden Pole Inspection Programs and Ten Initiatives, and the cost of implementing the approved and updated programs and initiatives.

We have jurisdiction over this matter pursuant to Sections 366.04 and 366.05, Florida Statutes (F.S.).

Decision

On Attachment B, we provide a summary of TECO's current Wooden Pole Inspection Program and Ten Initiatives and the proposed changes. In addition, where available, we have shown the costs associated with the Wooden Pole Inspection Program and Ten Initiatives for 2016-2018 and 2019-2021. Components of TECO's updated plan are summarized below.

Wooden Pole Inspection Program

TECO proposes to continue its eight-year Wooden Pole Inspection Program.⁹ The program identifies poles that require repair, reinforcement or replacement. Currently, TECO has completed its fifth year of its second eight-year cycle. TECO will continue to file the results of these inspections in TECO's Annual Electric Utility Distribution Reliability Report. The estimated cost for 2019-2021 related to the eight-year wooden pole inspection is \$3,349,000 as compared to \$3,290,000 spent for 2016-2018.

Ten Initiatives

Initiative One – Three-Year Vegetation Management Cycle for Distribution Circuits

TECO proposes no changes to its previously approved trim cycle.¹⁰ Currently, both feeder and lateral circuits are trimmed, on average, every four years. TECO reported that its plan allows for the flexibility to change the prioritization of the feeders and laterals depending on growth, reconfiguration or equipment additions to the distribution system. The estimated cost for 2019-2021 for Initiative One is \$38,699,000 as compared to \$26,546,000 spent for 2016-2018.

Initiative Two – Audits of Joint-Use Attachment Agreements

There are no proposed changes to this initiative. TECO will conduct an audit of all pole attachments on an eight-year cycle at a minimum.¹¹ TECO conducts a comprehensive loading analysis on the joint-use poles to ensure the poles are not overloaded and meet the NESC or TECO's standards, whichever is more stringent. Once TECO receives an application for permission to attach to its poles, an engineering assessment, which includes a comprehensive loading analysis, is performed. The estimated cost for 2019-2021 is \$0, as the requesting third-party attacher pays for the comprehensive pole loading analysis. The costs for 2016-2018 were \$0.

Initiative Three – Six-Year Transmission Structure Inspection Program

There are no proposed changes to the plan for this initiative. TECO's transmission structure inspection program is a multi-pronged approach with different types of inspections performed on different cycles. Below is a list of the type of inspections:

⁹Order No. PSC-06-0144-PAA-EI, issued February 27, 2006, in Docket No. 20060078-EI, *In re: Proposal to require investor-owned electric utilities to implement ten-year wood pole inspection program*; and Order No. PSC-07-0078-PAA-EU, issued January 29, 2007, in Docket No. 20060531-EU, *In re: Review of all electric utility Wooden Pole Inspection Programs*.

¹⁰Order No. PSC-12-0303-PAA-EI, issued June 12, 2012, in Docket No. 20120038-EI, *In re: Petition to modify vegetation management plan by Tampa Electric Company*.

¹¹Order No. PSC-06-0351-PAA-EI, issued April 25, 2006, in Docket No. 20060198-EI, *In re: Requirement for investor-owned electric utilities to file ongoing storm preparedness plans and implementation cost estimates*.

1. One-year cycle:
 - (i) Ground patrol
 - (ii) Aerial infrared patrol
 - (iii) Substation inspection
2. Eight-year cycle:
 - (i) Above ground inspection
 - (ii) Ground line inspection

The above ground inspection cycle was shifted from a six-year cycle to an eight-year cycle starting in 2015.¹² TECO will continue the one-year cycle inspections of the transmission structures. TECO will also continue to monitor and evaluate the appropriateness of the inspection program to ensure cost-effective storm hardening or reliability opportunities are taken advantage of. The estimated 2019-2021 cost for this initiative is \$1,511,000 as compared to \$1,264,000 spent for 2016-2018.

Initiative Four – Hardening of Existing Transmission Structures

There are no proposed changes to the plan for this initiative. TECO will continue to replace existing wood transmission structures with non-wood structures by utilizing its inspection and maintenance programs. All new transmission line construction projects, system rebuilds and line relocations will be engineered with non-wood structures. TECO will continue to replace insulators that have deteriorated with polymer insulators. TECO reports that 21 percent of its transmission structures remain to be hardened. The costs for 2019-2021 are estimated to be \$13,607,000 as compared to \$37,605,000 spent for 2016-2018.

Initiative Five – Transmission and Distribution Geographic Information System (GIS)

There are no proposed changes to the plan for this initiative. TECO implemented its GIS in 2010. The GIS database contains all facility data for transmission, substation, and distribution systems. The system will help with post-storm damage assessment, forensic analysis, joint-use administration, and the evaluation of construction standards and potential hardening projects. TECO will continue the development of its GIS to improve the functionality and ease of use. There are no incremental costs associated with this initiative.

Initiative Six – Post-Storm Data Collection and Forensic Analysis

There are no proposed changes to the plan for this initiative. TECO hired a third-party to collect the following data in the event a major storm causes damage to its service area:

¹²Order No. PSC-14-0684-PAA-EI, issued December 10, 2014, in Docket No. 20140122-EI, *In re: Petition to modify transmission structure inspection cycle, by Tampa Electric Company.*

- Pole/Structure:
 - Type of damage
 - Size and type of pole
 - Likely cause of damage
- Conductor:
 - Type of damage
 - Conductor type and size
 - Likely cause of damage
- Equipment:
 - Type of damage
 - Overhead or underground
 - Size
 - Likely cause of damage
- Hardware:
 - Type of damage
 - Size
 - Likely cause of damage

The third-party personnel will perform the forensic analysis on the data to evaluate the root cause of failure and assess future preventive measures where possible and practical. TECO reported the incremental cost is estimated to be approximately \$113,000 per storm, and will depend on the severity of the storm and the extent of its system damage. The costs for 2019-2021 are estimated to be \$330,000 as compared to \$100,000 spent for 2016-2018.

Initiative Seven – Collection of Detailed Outage Data Differentiating Between the Reliability Performance of Overhead and Underground Systems

There are no proposed changes to the plan for this initiative. TECO's overhead and underground facilities are tracked through its Distribution Outage Database (DOD). The DOD is programmed to distinguish between overhead and underground systems when tracking outage data. TECO has also established a process for collecting post-storm data and performing forensic analysis to ensure the performance of overhead and underground systems are correctly assessed. TECO reported the incremental cost of this initiative is estimated to be \$100,000 per storm.

In response to information requested in the Hurricane Review Docket, TECO outlined the type of comparable data that the Utility plans to provide for overhead and underground facilities. TECO will collect data on distribution facilities that were impacted by severe storms. The data will include the type of facility damaged, down/broken wires, cause of damage, damage locations, and if the structures were hardened or not. In addition, data will be collected on

underground systems, which will include damage to pad mounted equipment. TECO will compare damage to overhead hardened structures to damage of underground facilities in the same geographic areas.

Initiative Eight – Increased Coordination with Local Governments

There are no proposed changes to the plan for this initiative. TECO will continue to participate with local and municipal government agencies within its service area in planning and facilitating joint storm exercises. TECO will also continue to maintain governmental contacts and participate in disaster recovery committees. Participating in the committees will help with collaboration in planning, protection, response, recovery and mitigation efforts during disaster recovery efforts. There is no estimated cost for this initiative.

In response to information requested in the Hurricane Review Docket, TECO discussed its coordination with local governments regarding vegetation management and identification of critical facilities. Annually, TECO communicates with local and state governmental officials on various topics, including vegetation management, joint emergency recovery strategy planning, and resource sharing for clearing power lines from roads. To identify and prioritize critical facilities, TECO works with County Emergency Management officials and other stakeholders throughout the year. Additionally, TECO provided a list of the meetings that took place with local governments, and the topics that were discussed. TECO met with Hillsborough, Pasco, Pinellas, and Polk counties to discuss issues such as prioritization of power restoration, public shelters, and updates for water and wastewater facilities. TECO also met with the City of Temple Terrace and Plant City regarding emergency preparations and push crew options.

Other information that TECO provided was a summary of its staffing practices at local EOCs. The number of staffing varied from two to eight Utility staff at each local EOC, depending on several factors such as the magnitude of the event, EOC capacity, amount of damage, EOC operating hours, and available personnel. TECO representatives at the EOCs are responsible for facilitating and responding to critical community issues in support of safety and power restoration.

Initiative Nine – Collaborative Research on Effects of Hurricane Winds and Storm Surge

There are no proposed changes to the plan for this initiative. TECO will continue to participate in the collaborative research effort with the other Florida IOUs, municipals, and cooperatives. The collaborative research is facilitated by the Public Utility Research Center (PURC) at the University of Florida and focuses on: (1) undergrounding of electric utility infrastructure; (2) hurricane wind effects; and (3) public outreach. TECO signed an extension of the memorandum of understanding with PURC in December 2018 for two years, with a provision that the memorandum of understanding will be automatically extended for successive two-year terms. TECO reported that the incremental cost of this initiative would be determined by the research projects. TECO spent \$0 in 2016-2018 for this initiative.

Initiative Ten – Natural Disaster Preparedness and Recovery Program

TECO will continue to refine this initiative. TECO's Emergency Management Plan addresses all hazards, including extreme weather events. The plan is reviewed annually. TECO continues to use the policy labeled Emergency Management and Business Continuity, which delineates the responsibility at employee, company, and community levels. TECO will also continue to participate in internal and external preparedness exercises, collaborating with government emergency management agencies, at local, state, and federal levels. TECO has a full time position to work with other utilities and utility trade association committees to bring new technology and best practices to TECO, and guide the implementation and integration into TECO's emergency response plan. TECO will implement a Damage Assessment System software tool, which will automate input, tracking, reporting and dispatching of restoration work by June 2017.

In response to information requested in the Hurricane Review Docket, TECO provided its contingency plans for roadway congestion, fuel availability, and lodging accommodation issues. In the event of roadway congestion, TECO will obtain information to determine any viable alternative routes, or work with local or State EOCs depending on the location, nature and severity of the congestion. With respect to fuel availability, TECO has agreements with two bulk fuel vendors and a mobile fuel vendor to supply diesel and gasoline fuel when needed. The vendors obtain fuel supplies from Port Tampa Bay, or a main fuel supply facility in Georgia if Port Tampa Bay is unable to supply fuel. If lodging is required for mutual aid crews, TECO maintains a list of hotels that it has verbal agreements with to utilize hotel rooms, which are secured pre-storm for post-storm occupancy. During Hurricane Irma, TECO utilized alternative housing, where cots and mattresses were placed in open gym style facilities, as well as employing camp style facilities.

National Electrical Safety Code Compliance

TECO's 2019-2021 storm hardening plan addresses how the Utility complies with the NESC pursuant to Rule 25-6.0345, F.A.C. TECO indicates that its transmission and distribution facilities are designed to meet NESC construction Grade B. The Grades of construction are specified in the NESC on the basis of the required strengths for safety. The relative order of Grades is B, C, and N, with Grade B being the highest.

Extreme Wind Loading (EWL) Standards

TECO's service territory is divided into two wind regions. The western half is in the 120 mph zone and the eastern half is in the 110 mph zone. For design consistency, the 120 mph wind standard is applied on all 69 kV structures throughout the service area. In addition, a 133 mph wind standard is applied to all 138 kV and 230 kV structures throughout TECO's service area. TECO uses pole loading software, PoleForeman and PLS-CADD, to assure compliance with all NESC loading requirements. PoleForeman is used to design distribution facilities. To design transmission facilities, TECO uses PLS-CADD. TECO complies with NESC Rule 250B instead of NESC Rule 250C EWL to design the installation of its distribution structures. TECO asserts

that its pole loading analysis has shown that the Utility's design for poles shorter than 60 feet above ground, which relies on the NESC Rule 250B and construction Grade B, meet or exceed the strength requirements of NESC Rules 261A1c, 261A2e, and 261A3d.

New Construction

TECO utilizes NESC construction Grade B to design new transmission and distribution facilities. To replace its transmission and distribution facilities, TECO also utilizes NESC construction Grade B. All TECO's distribution structures are shorter than 60 feet above ground or water level. TECO's standard for all new distribution poles is chromated copper arsenate treated wood poles. TECO's street light structures are designed to meet NESC Rules 250C, 261A1c, 261A2e, and 261A3d.

Major Planned Work

TECO utilizes NESC construction Grade B loading criteria as the basis for the Company's construction standard for all new construction, major planned work, expansions, rebuilds and relocations on the overhead distribution system.

Critical Infrastructure (CIF)

TECO, in conjunction with local government emergency management, has identified the Utility's critical facilities and associated circuits feeding loads, which are deemed necessary for business continuity and continuity of government. As such, critical community facilities are identified based on being most critical to the overall health of the community. Such facilities include hospitals, emergency shelters, master pumping stations, wastewater plants, major communications facilities, flood control structures, electric and gas utilities, emergency operation centers, as well as police and fire stations. The circuits serving these facilities have the highest restoration priority level. TECO has hardened several circuits, which feed extreme wind criteria data to critical need customers.

Mitigation of Flooding and Storm Surge Damage

TECO has adopted the use of submersible switchgear for critical customers in areas predicted to be impacted by storm surge and in areas prone to flooding as identified by the Federal Emergency Management Agency (FEMA) flood maps. Since 2004, all the primary switchgear has been specified using 100 percent stainless steel enclosures, and since 2008 all pad mounted transformers have been specified using 100 percent stainless steel enclosures to reduce the corrosive effects from salt spray, effluent irrigation spray and to help harden the equipment against the corrosive effects of a saltwater storm surge. TECO has not experienced any storms that have had a significant impact on the underground distribution system. Therefore, no lessons learned have been obtained from actual damage to the Company's underground system.

Facility Placement

TECO proposes to continue placement of all new distribution facilities in the public right-of-way. TECO's policy is that new residential lines must be front lot and truck accessible, while commercial lines may be rear lot but must be truck accessible. In addition, TECO proposes to continue evaluating community and customer requests to relocate overhead facilities from rear lot locations to the front of a customer's property on a case-by-case basis.

Deployment Strategies

TECO's updated plan contains a detailed three-year deployment strategy, which is a continuation of inspection programs, technical design specifications, construction standards and methodologies. TECO indicated that its deployment strategy will enhance system reliability and reduce storm restoration costs.

Facilities Affected, Including Specifications and Standards

For all new transmission, distribution and substation facilities, TECO will implement its enhanced construction standards. TECO reported that the majority of new distribution facilities are placed underground; however, it has approximately 106 miles of new overhead distribution construction, which included reconductoring, line extensions and new circuits/feeders. TECO plans to construct, rerate or rebuild approximately 41 miles of overhead transmission. TECO's maintenance programs will strengthen and upgrade its system, along with its storm hardening initiatives as addressed above. TECO will continue its construction programs piloting the EWL standard for distribution facilities serving CIF, also addressed above.

Areas of Infrastructure Improvements

TECO's updated plan provides a detailed description of areas where electric infrastructure improvements will be made. Below is a list of projects and a brief description:

- **TECO Downtown Network:** The Downtown Network is considered a CIF. TECO will inspect and test eight low-lying vaults per year and if leaks are found, all pertinent gaskets will be replaced.
- **Overhead to Underground Conversion of Interstate Highway Crossings:** A fallen distribution line over an interstate highway can block traffic and the repairs can be lengthy. To help first responders and others during emergencies, all new distribution line interstate crossings will be underground. TECO has converted 16 interstate highway crossings with 22 remaining left to be converted.
- **Submersible Padmount Switchgear:** TECO is using submersible padmount switchgear designed to withstand intrusion from water while remaining in service. TECO's deployment strategy plan is to deploy the submersible gear for all new CIF and to retrofit switchgears serving CIF loads.

- Hospital Hardening/Resiliency Improvements: In 2017, TECO initiated its storm hardening/ resiliency improvements for six major hospitals: Tampa General Hospital, St. Joseph Hospital, Memorial Hospital, South Bay Hospital, South Florida Baptist Hospital and Winter Haven's Women's Hospital. The improvements included installing additional switchgears, loop-thru transformers, underground primary cables, and updating the primary feeds.
- Advanced Distribution Management System (ADMS) and Advances Metering Infrastructure (AMI): TECO will be implementing a new ADMS and installing new AMI meters throughout its service territory. The ADMS will increase reliability and provide transparency of information. The benefits will include quicker response time to outages resulting in shorter outage times, efficient integration of distributed energy resources and an overall increased electrical system situational awareness. The customers will have more information on their energy usage, which will provide for better control and increased flexibility. In addition, the customers will have access to more convenient services such as on-demand remote connections or disconnection when moving. At this time, the ADMS is not operational. TECO plans to install a total of 270,000 AMI meters at the end of 2019, with 130,000 meters already installed at the end of March 2019. TECO plans to install 340,000 AMI meters in 2020 and 130,000 AMI meters in 2021.
- Tampa General Hospital: Tampa General Hospital is a CIF and is located on Davis Island. TECO will replace three existing switchgears with submersible switchgears and relocate the primary feeds attached to the bridge. The primary feeds will be placed under the channel adjacent to the hospital.
- 69 kV Transmission Circuit No. 66042: This transmission circuit has structures currently located in Tampa Bay. TECO plans to underground the section of transmission line currently located in an open tidal area of Tampa Bay.

Joint-Use Facilities

TECO will conduct joint-use audits. The cost of these audits will be shared by all attaching entities. If an unauthorized third-party attacher is found, the attachment owner will be responsible to pay for a complete engineering study and corrective actions required to meet the NESC standards. TECO performs pole loading stress tests as part of its pole inspection program on any joint-use pole that contains new attachments following a new permitting process. If a pole fails the preliminary stress test, a comprehensive pole loading analysis will be conducted to determine if the pole is overloaded. TECO will continue conducting its pole attachment audits to identify the location of each pole, the facilities attached, and to obtain verification of current joint-use agreements. As of year-end 2017, TECO had a total of 262,910 utility distribution poles and was attached to 13,440 non-electric utility distribution poles.

Utility Cost/Benefit Estimates

TECO's updated plan includes estimates of costs to be incurred in connection with its updated plan for 2019 through 2021. This includes pole replacements, inspections of distribution and transmission facilities, vegetation management, and other projects. TECO spent a total of

\$68,885,000 on its Ten Initiatives for 2016-2018. In 2019-2021, TECO estimates it will spend approximately \$155,752,000 on the complete storm hardening plan. Attachment B shows a comparison of costs associated with implementation of TECO's current and updated wooden pole inspections and Ten Initiatives.

TECO indicated that the storm hardening projects are determined based upon potential negative impacts on public safety and health, magnitude and impact on customers likely affected by an outage, environmental impacts and access constraints that may exist following a potential major storm. Once a project has been selected, TECO will perform an internal formal cost analysis. Alternatives are considered for each project. Alternatives could include not undergrounding a whole circuit due to excessive costs and only a portion that went through significant tree canopy.

Attachers Cost/Benefit Estimates

TECO states that its updated plan is expected to provide benefit to all joint-users and have minimal impact on third-party attachers to the Company's system. TECO states that the largest impacts will come from increased pole inspections. TECO did not report any additional third-party attacher cost or benefit information.

Attachment Standards and Procedures

TECO's updated plan includes Attachment Standards and Procedures addressing safety, reliability, and pole loading capacity. The updated plan also addresses engineering standards and procedures for attachments by others to the Utility's transmission and distribution poles that meet or exceed the NESC (ANSI C-2) pursuant to Rule 25-6.034, F.A.C.

Conclusion

TECO's updated plan is largely a continuation of its current Commission-approved plan. Based on the review above, TECO's plan has the information required by our rule and orders, and we therefore find it shall be approved. We note that approval of TECO's plan does not mean approval for cost recovery. TECO should consider the rate impact before taking proactive steps to improve its system to withstand severe weather events.

Based on the foregoing, it is

ORDERED by the Florida Public Service Commission that Tampa Electric Company's 2019-2021 storm hardening plan is hereby approved. It is further

ORDERED that the provisions of this Order, issued as proposed agency action, shall become final and effective upon the issuance of a Consummating Order unless an appropriate petition, in the form provided by Rule 28-106.201, Florida Administrative Code, is received by the Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on the date set forth in the "Notice of Further Proceedings" attached hereto. It is further

ORDERED that in the event this Order becomes final, this docket shall be closed.

By ORDER of the Florida Public Service Commission this 29th day of July, 2019.



ADAM J. TEITZMAN
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399
(850) 413-6770
www.floridapsc.com

Copies furnished: A copy of this document is provided to the parties of record at the time of issuance and, if applicable, interested persons.

JSC

NOTICE OF FURTHER PROCEEDINGS OR JUDICIAL REVIEW

The Florida Public Service Commission is required by Section 120.569(1), Florida Statutes, to notify parties of any administrative hearing that is available under Section 120.57, Florida Statutes, as well as the procedures and time limits that apply. This notice should not be construed to mean all requests for an administrative hearing will be granted or result in the relief sought.

Mediation may be available on a case-by-case basis. If mediation is conducted, it does not affect a substantially interested person's right to a hearing.

The action proposed herein is preliminary in nature. Any person whose substantial interests are affected by the action proposed by this order may file a petition for a formal proceeding, in the form provided by Rule 28-106.201, Florida Administrative Code. This petition must be received by the Office of Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on August 19, 2019.

In the absence of such a petition, this order shall become final and effective upon the issuance of a Consummating Order.

Any objection or protest filed in this/these docket(s) before the issuance date of this order is considered abandoned unless it satisfies the foregoing conditions and is renewed within the specified protest period.

Storm Hardening Requirements: Wooden Pole Inspection Program & Ten Initiatives

Eight-Year Wooden Pole Inspection Program

1. Implement an eight-year wooden pole inspection cycle by Order Nos. PSC-06-0144-PAA-EI and PSC-07-0078-PAA-EU.
2. File an annual report with the Commission.
3. Provide cost estimates.

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

1. Three-year tree trim cycle for primary feeders (minimum).
2. Three-year cycle for laterals as well, if not cost-prohibitive.
3. Provide cost estimate.

Initiative 2 – Audit of Joint-Use Attachment Agreements

1. (a) Each investor-owned electric utility shall develop a plan for auditing joint-use agreements that includes pole strength assessments.
(b) These audits shall include both poles owned by the electric utility poles owned by other utilities to which the electric utility has attached its electrical equipment.
2. The location of each pole, the type and ownership of the facilities attached, and the age of the pole and the attachments to it should be identified.
3. Each investor-owned utility shall verify that such attachments have been made pursuant to a current joint-use agreement.
4. Stress calculations shall be made to ensure that each joint-use pole is not overloaded or approaching overloading for instances not already addressed by Order No. PSC-06-0144-PAA-EI.
5. Provide compliance cost estimate and cost estimate for alternative action, if any.

Initiative 3 – Six-Year Transmission Inspection Program

1. Develop a plan to fully inspect all transmission towers and other transmission supporting equipment (such as insulators, guying, grounding, splices, cross-braces, bolts, etc.).
2. Develop a plan to fully inspect all substations (including relay, capacitor, and switching stations).
3. Provide compliance cost estimate and cost estimate for alternative actions, if any.

Initiative 4 – Hardening of Existing Transmission Structures

1. Develop a plan to upgrade and replace existing transmission structures. Provide a scope of activity, limiting factors, and criteria for selecting structure to upgrade and replace.
2. Provide a timeline for implementation.
3. Provide compliance cost estimate and cost estimate for alternative actions, if any.

Initiative 5 – Transmission and Distribution Geographic Information System
1. To conduct forensic review.
2. To assess the performance of underground systems relative to overhead systems.
3. To determine whether appropriate maintenance has been performed.
4. To evaluate storm hardening options.
5. Provide a timeline for implementation.
The utilities have the flexibility to propose a methodology that is efficient and cost-effective.

Initiative 6 – Post-Storm Data Collection and Forensic Analysis
1. Develop a program that collects post-storm information for performing forensic analyses.
2. Provide a timeline for implementation.
The utilities have the flexibility to propose a methodology that is efficient and cost-effective.

Initiative 7 – Collection of Detailed Outage Data Differentiating between the Reliability Performance of Overhead and Underground Systems
1. Collect specific storm performance data that differentiates between overhead and underground systems, to determine the percentage of storm-caused outages that occur on overhead and underground systems, and to assess the performance and failure mode of competing technologies, such as direct bury cable versus cable-in-conduit, concrete poles versus wooden poles, location factors such as front-lot versus back-lot, and pad-mounted versus vault.
2. Provide a timeline for implementation.
The utilities have the flexibility to propose a methodology that is efficient and cost-effective.

Initiative 8 – Increased Coordination with Local Governments
1. Each utility should actively work with local communities year-round to identify and address issues of common concern, including the period following a severe storm like a hurricane and also ongoing, multi-hazard infrastructure issues such as flood zones, area prone to wind damage, development trends in land use and coastal development, joint-use of public right-of-way, undergrounding facilities, tree trimming, and long-range planning and coordination.
2. Incremental plan costs.

Initiative 9 – Collaborative Research
1. Must establish a plan that increases collaborative research.
2. Must identify collaborative research objective.
3. Must solicit municipals, cooperatives, educational and research institutions.
4. Must establish a timeline for implementation.
5. Must identify the incremental costs necessary to fund the organization and perform the research.

Initiative 10 – A Natural Disaster Preparedness and Recovery Program
1. Develop a formal Natural Disaster Preparedness and Recovery Plan that outlines the utility's disaster recovery procedures if the utility does not already have one.

Tampa Electric Company

Eight-Year Wooden Pole Inspection Program	
Current Plan	Updated Plan
1. Implement an eight-year wooden pole inspection cycle for distribution poles.	1. No change
2. File the progress of this inspection in the Annual Reliability Report.	2. No change
3. Costs for 2016-2018 were \$3,290,000.	3. Costs for 2019-2021 are estimated to be \$3,349,000.

Initiative 1 – A Three-Year Vegetation Management Cycle for Distribution Circuits	
Current Plan	Updated Plan
1. Average four-year trim cycle for feeders.	1. No change
2. Average four-year trim cycle for laterals. Targeted trimming is also achieved through its “mid-cycle” program that addresses critical circuits.	2. No change
3. Costs for 2016-2018 were \$26,546,000.	3. Costs for 2019-2021 are estimated to be \$38,699,000.

Initiative 2 – Audit of Joint-Use Attachment Agreements	
Current Plan	Updated Plan
1. (a) Perform pole strength assessment during eight-year wooden pole inspection cycle.	1. (a) No change
(b) Audit all TECO-owned poles and third-party poles per Joint-Use contract agreements on an eight-year cycle.	(b) No change
2. All required data will be collected during eight-year wooden pole inspection cycle and stored in GIS database.	2. No change
3. Verify attachments have been made pursuant to current joint-use agreements during the eight-year wooden pole inspection cycle.	3. No change
4. Stress calculations will be performed during eight-year wooden pole inspection cycle.	4. No change
5. Costs for 2016-2018 were \$0 due to paying the requesting third-party attacher for the analysis.	5. Costs for 2019-2021 are estimated to be \$0 due to paying the requesting third-party attacher for the analysis.

Initiative 3 – Six-Year transmission Inspection Program	
Current Plan	Updated Plan
1. Wooden pole inspection activities (PSC-06-0144-PAA-EI, Docket No. 060078-EI). Structures on a six-year cycle, all other portions of the system inspected annually.	1. Per Order No. PSC-14-0684-PAA-EI, Docket No. 140122-EI, the inspection cycle was shifted from a six-year cycle to an eight-year cycle starting in 2015.
2. Substations inspected annually.	2. No change
3. Costs for 2016-2018 were \$1,264,000.	3. Costs for 2019-2021 are estimated to be \$1,511,000.

Initiative 4 – Hardening of Existing Transmission Structures	
Current Plan	Updated Plan
1. Incremental phase out of wooden transmission structures during all new construction, relocations, and other maintenance.	1. No change
2. Plan is ongoing with no completion date.	2. No change
3. Costs for 2016-2018 were \$37,605,000.	3. Costs for 2019-2021 are estimated to be \$13,607,000.

Initiative 5 – Transmission and Distribution Geographic Information System	
Current Plan	Updated Plan
1. Forensic reviews on statistical sampled basis.	1. No change
2. Forensic review with respect to types of materials and construction, and location.	2. No change
3. Plan includes determination of appropriate maintenance.	3. No change
4. Access future preventive measures where possible.	4. No change
5. Implementation began in 2010.	5. No change

Initiative 6 – Post-Storm Data Collection and Forensic Analysis	
Current Plan	Updated Plan
1. Hire consultant to perform forensic analyses.	1. No change
2. Implementation is dependent on the severity of the weather event.	2. No change

Initiative 7 – Collection of Detailed Outage Data Differentiating between the Reliability Performance of Overhead and Underground Systems	
Current Plan	Updated Plan
1. Measures are in place should it experience a major storm.	1. No change
2. Implementation will begin when TECO experiences major storm activity.	2. No change

Initiative 8 – Increased Coordination with Local Governments	
Current Plan	Updated Plan
1. TECO’s Plan calls for building on past community involvement by including local government, fire, police and water officials in storm preparation workshops, including local government in local Emergency Operations Centers, increased vegetation management including government and consumer education, undergrounding planning and education, and damage reporting prior, during, and after storms.	1. No change
2. Costs for 2016-2018 were \$0.	2. Costs for 2019-2021 are estimated to be \$0.

Initiative 9 – Collaborative Research	
Current Plan	Updated Plan
1. Collaborative research efforts, led by PURC, which began in 2007.	1. No change
2. Research vegetation management during storm and non-storm times, wind during storm and non-storm events, hurricane and damage modeling towards further understanding the costs and benefits of undergrounding.	2. No change
3. TECO will solicit participation from other utilities and organizations.	3. No change
4. Implementation is ongoing	4. TECO has entered into a Memorandum of Understanding with the University of Florida’s PURC, which extends research through December 31, 2018.
5. Costs for 2016-2018 were \$0.	5. Costs would be determined by the research projects.

Initiative 10 – A Natural Disaster Preparedness and Recovery Program	
Current Plan	Updated Plan
1. Disaster Preparedness/Recovery Plan has been developed and filed.	1. Continue to refine.
2. Costs for 2016-2018 were \$0.	2. Costs for 2019-2021 are estimated to be \$0.