

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition for approval of 2016-2018 storm
hardening plan, pursuant to Rule 25-6.0342,
F.A.C., by Tampa Electric Company.

DOCKET NO. 160105-EI
ORDER NO. PSC-16-0569-PAA-EI
ISSUED: December 19, 2016

The following Commissioners participated in the disposition of this matter:

JULIE I. BROWN, Chairman
LISA POLAK EDGAR
ART GRAHAM
RONALD A. BRISÉ
JIMMY PATRONIS

NOTICE OF PROPOSED AGENCY ACTION
ORDER APPROVING TAMPA ELECTRIC COMPANY'S
UPDATED STORM HARDENING PLAN FOR 2016-2018

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 Rules 25-22.029, and 28-106.201, 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, 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 damages and customer outages. State and local government officials, independent technical experts, and Florida's electric utilities participated in the workshop.

On February 27, 2006, this Commission issued Order No. PSC-06-0144-PAA-EI, in Docket No. 060078-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 maintain system components can reduce the impact of hurricanes and tropical

¹Docket No. 060078-EI, In re: Proposal to require investor-owned electric utilities to implement ten-year wood pole inspection program.

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, this Commission issued Order No. PSC-06-0351-PAA-EI, in Docket No. 060198-EI, requiring all IOUs to file plans and estimated implementation costs for ten 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, this Commission viewed these initiatives as a starting point of an ongoing process.³ By Order Nos. PSC-06-0781-PAA-EI (addressing Tampa Electric Company, and Florida Public Utilities Company), PSC-06-0947-PAA-EI (addressing Progress Energy Florida, Inc., and Gulf Power Company), and PSC-07-0468-FOF-EI (addressing Florida Power & Light Company), this Commission addressed the adequacy of the IOU's plans for implementing the Ten Initiatives.

This Commission also pursued rulemaking to address the adoption of distribution construction standards more stringent than the minimum safety requirements of the National Electric Safety Code (NESC) and the identification of areas and circumstances where

²Docket No. 060198-EI, In re: Requirement for investor-owned electric utilities to file ongoing storm preparedness plans and implementation cost estimates.

³Order No. PSC-06-09351-PAA-EI, p.2, issued April 25, 2006, in Docket No. 060198-EI, In re: Requirement for investor-owned electric utilities to file ongoing storm preparedness plans and implementation costs estimates.

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
 - 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

On May 3, 2013, the five IOUs filed 2013-2015 storm hardening plan updates. This Commission approved the storm hardening plans for Duke Energy Florida, LLC (DEF), Florida

⁴Order No. PSC-06-0556-NOR-EU, issued June 28, 2006, in Docket No. 060172-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. 060173-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-07-0043A-FOF-EU, issued January 17, 2007, in Docket No. 060172-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. 060173-EU, In re: Proposed amendments to rules regarding overhead electric facilities to allow more stringent construction standards than required by National Electric Safety Code.

Public Utilities Company (FPUC), Florida Power and Light Company (FPL), Tampa Electric Company (TECO), and Gulf Power Company (Gulf), at the November 14, 2013 Commission Conference.⁶ On May 2 and 3, 2016, four IOUs filed 2016-2018 storm hardening plan updates as required. Docket Nos. 160105-EI (TECO), 160106-EI (FPUC), 160107-EI (DEF) and 160108-EI (Gulf) were opened. FPL filed its 2016-2018 storm hardening plan updates on March 15, 2016, and Docket No. 160061-EI was opened. That docket was consolidated with Docket No. 160021-EI, Petition for rate increase by Florida Power & Light Company. 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. Specifically, this 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 Attachments

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 2013-2015 approved and updated 2016-2018 wooden pole inspection programs and Ten Initiatives, and the cost of implementing the approved and updated programs and initiatives.

This Commission has jurisdiction over this matter pursuant to Sections 366.04 and 366.05, Florida Statutes (F.S.).

⁶Order No. PSC-13-0637-PAA-EI, issued December 3, 2013, in Docket No: 130129-EI, In re: Petition for approval of 2013-2015 storm hardening plan, pursuant to Rule 25-6.0342, F.A.C., by Duke Energy Florida, Inc.; Order No. PSC-13-0638-PAA-EI, issued December 3, 2013, in Docket No: 130131-EI, In re: Petition for approval of 2013-2015 storm hardening plan, pursuant to Rule 25-6.0342, F.A.C., by Florida Public Utilities Company; Order No. PSC-13-0639-PAA-EI, issued December 3, 2013, in Docket No: 130132-EI, In re: Petition for approval of 2013-2015 storm hardening plan, pursuant to Rule 25-6.0342, F.A.C., by Florida Power and Light Company; Order No. PSC-13-0640-PAA-EI, issued December 3, 2013, in Docket No: 130138-EI, In re: Petition for approval of 2013-2015 storm hardening plan, pursuant to Rule 25-6.0342, F.A.C., by Tampa Electric Company; Order No. PSC-13-0641-PAA-EI, issued December 3, 2013, in Docket No: 130139-EI, In re: Petition for approval of 2013-2015 storm hardening plan, pursuant to Rule 25-6.0342, F.A.C., by Gulf Power Company.

Decision

On Attachment B, we provided a summary of TECO's current wooden pole inspection program and Ten Initiatives and the approved changes. In addition, where available, we have shown the costs associated with the wooden pole inspection program and Ten Initiatives for 2013-2015 and 2016-2018. Components of TECO's updated plan are summarized below.

Wooden Pole Inspection Program

TECO is continuing its eight-year wooden pole inspection.⁷ The program identifies poles that require repair, reinforcement or replacement. Currently, TECO is in its sixth 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 2016-2018 related to the eight-year wooden pole inspection is \$112,300,000 as compared to \$126,100,000 spent for 2013-2015.

Ten Initiatives

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

TECO proposed no changes to its previously approved trim cycle.⁸ 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 2016-2018 for Initiative One is \$28,900,000 as compared to \$30,500,000 spent for 2013-2015.

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.⁹ 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 2016-2018 is \$0, as the requesting third party attacher pays for the comprehensive pole loading analyses. The costs for 2013-2015 were \$1,000,000.

⁷Order No. PSC-06-0144-PAA-EI, issued February 27, 2006, in Docket No. 060078-EI, In re: Proposal to require investor-owned electric utilities to implement ten-year wood pole inspection program; Order No. PSC-07-0078-PAA-EU, issued January 29, 2007, in Docket No. 060531-EU, In re: Review of all electric utility wooden pole inspection programs.

⁸Order No. PSC-12-0303-PAA-EI, issued June 12, 2012, in Docket No. 120038-EI, In re: Petition to modify vegetation management plan by Tampa Electric Company.

⁹Order No. PSC-06-0351-PAA-EI, issued April 25, 2006, in Docket No. 060198-EI, In re: Requirement for investor-owned electric utilities to file ongoing storm preparedness plans and implementation cost estimates.

Initiative Three- Six-Year Transmission Structure Inspection Program

TECO proposed a change for this initiative as discussed below. 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:

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 2015.¹⁰ 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 2016-2018 cost for this initiative is \$3,200,000 as compared to \$4,400,000 spent for 2013-2015.

Initiative Four – Hardening of Existing Transmission Structures

There is no change in the plan for this initiative. TECO will continue to replace existing wood transmission structures with non-wood structures by utilizing the 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 reported that 32 percent of its transmission structures remain to be hardened. The costs for 2016-2018 are estimated to be \$2,400,000 as compared to \$2,300,000 spent for 2013-2015.

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

TECO proposed no change for this initiative. TECO implemented its GIS in 2010. The GIS database contains all facility data for transmission, substation, and distribution system. 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.

¹⁰Order No. PSC-14-0684-PAA-EI, issued December 10, 2014, in Docket No. 140122-EI, In re: Petition to modify transmission structure inspection cycle, by Tampa Electric Company.

Initiative Six – Post-Storm Data Collection and Forensic Analysis

There is no change to this initiative. TECO hired a third party to collect the following data in the event a major storm causes damage to its service area.

- 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.

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

TECO proposed no changes to this initiative. TECO's overhead and underground facilities are tracked through its database called 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.

Initiative Eight – Increased Coordination with Local Governments

There is no change in 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.

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

There is no change to this initiative. TECO will continue to participate in the collaborative research effort with the other Florida's 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 has signed an extension of the memorandum of understanding with PURC, which extends the research through December 31, 2018. TECO reported that the incremental cost of this initiative would be determined by the research projects. TECO spent \$21,300,000 in 2013-2015 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. TECO estimated that the cost for this initiative will be \$600,000 for 2016-2018 as compared to \$500,000 spent in 2013-2015.

National Electric Safety Code Compliance

TECO's updated plan addresses how the Utility complies with the National Electric Safety Code (NESC) pursuant to Rule 25-6.0345, F.A.C. In most cases, TECO's distribution facilities exceed the minimum requirements of the NESC. TECO's transmission structures also comply with the NESC. More details are provided in the following sections.

Extreme Wind Loading (EWL) Standards

TECO explained that the pole loading requirements of the NESC are divided into three loading districts: Heavy, Medium, and Light. TECO's service area is located in the light loading district, which assumes no ice build up and a wind pressure rating of nine pounds per square foot or 60 miles per hour (mph). Another part of the NESC requires safety loading factors to be applied to the calculated wind forces to provide a conservative margin of safety when selecting appropriate pole size. Applying the safety loading factor to Grade B construction will result in a

effective wind speed of approximately 116 mph. TECO's service area is divided into two wind regions, 120 mph and 110 mph. TECO ensures that poles used meet the strength and loading requirements up to 116 mph for facilities 60 feet in height and below and 120 mph for facilities exceeding 60 feet. TECO reported that the safety factors considered in the NESC construction Grade B criteria are approximately 87 percent stronger than the NESC construction Grade C. The NESC requires distribution poles to be designed at least to construction Grade C. We note that while Rule 25-6.0342, F.A.C., requires that a utility's plan address the extent to which EWL standards are adopted for various types of facilities, it does not require a utility adopt a particular standard.

New Construction

TECO proposed to continue its practice for distribution and transmission facilities based on the NESC Grade B construction. TECO's transmission structures are designed to withstand 120 mph wind for all 69 kV structures and 133 mph wind for all 138 kV and 230 kV structures.

Major Planned Work

TECO proposed to continue building to Grade B construction for all major planned expansions, rebuilds, or relocations of distribution facilities. TECO reported using the two different wind loads for new construction and replacements is the most cost-effective and reliable standard for its service area.

Critical Infrastructure

Critical infrastructure (CIF) are circuits feeding loads to critical community facilities such as hospitals, emergency shelters, master pumping stations, wastewater plants, major communications facilities, electric and gas utilities, Emergency Operation Centers, and police and fire stations. TECO's downtown network is also considered CIF due to the high concentration of business and governmental buildings in the area. TECO has hardened several CIFs to EWL standards and will continue to evaluate the remaining CIF for opportunities to harden. TECO proposed to test approximately eight network protectors per year in the 12 low-lying vaults downtown. In addition, a restoration plan for the downtown network has been developed to ensure that an efficient network distribution system recovery takes place in the event of total power loss. TECO has developed a plan to storm harden Tampa General Hospital located on Davis Island.

Mitigation of Flooding and Storm Surge Damage

TECO proposed to continue its current standard for all new and maintenance replacement of underground distribution facilities located in Flood Zone 1. TECO will focus on elevation and water resistance of control cabinets and related equipment. TECO reported that it began using submersible padmount switchgear to harden its underground system in 2015. The switchgear will be specifically used for CIF where storm surge is expected. TECO has deployed the switchgear in locations serving the Tampa International Airport and the Downtown Network. TECO plans to install the switchgear at Tampa General Hospital.

Facility Placement

TECO proposed to continue placement of all new distribution facilities in the public right-of-way. TECO's policy is new residential lines shall be front lot and truck accessible, while commercial lines may be rear lot but must be truck accessible. In addition, TECO proposed 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 specification, construction standards and methodologies.

Facilities Affected, Including Specifications and Standards

All of TECO's facilities are affected by the deployment strategy plan. 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 67 miles of new overhead distribution construction, which included reconductoring, line extensions and new circuits/feeders. TECO plans to construct, rerate or rebuild approximately 90 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.

- **Downtown Network:** As discussed earlier, the Downtown Network is 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 15 remaining left to be converted.
- **Submersible Padmount Switchgear:** As discussed earlier, 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.

- 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.

Joint-Use Facilities

TECO plans to perform a pole loading analysis as part of the pole inspection program on any joint use pole with an attachment of one-half inch in diameter cable or greater. If a pole fails the preliminary stress test, a comprehensive pole loading analysis will be conducted to determine if the pole is in fact overloaded. TECO will continue conducting its pole attachment audit to identify the location of each pole, the facilities attached, and to obtain verification of current joint use agreements.

Utility Cost/Benefit Estimates

TECO's updated plan includes estimates of costs to be incurred in connection with its updated plan for 2016 through 2018. This includes pole replacements, inspections of distribution and transmission facilities, vegetation management, and other projects. TECO spent a total of \$168,340,000 on its storm hardening plan for 2013-2015. In 2016-2018, TECO estimated it will spend approximately \$163,020,000. TECO has not quantified the benefits of storm hardening due to a lack of forensic data. As more projects are completed, the incremental benefits will likely be reduced. Therefore, TECO shall consider the rate impact before taking proactive steps to improve its system to withstand severe weather events. Attachment B shows a comparison of cost associated with implementation of TECO's current and updated wooden pole inspections and Ten Initiatives.

Attachers Cost/Benefit Estimates

TECO's updated plan provides Attachment Standards and Procedures that will benefit, at minimal cost, third party attachers. The Utility did report that the largest impact would come from the increased pole inspections, which includes a pole loading analysis. In addition, TECO will conduct a joint-use audit to determine if any unauthorized attachments are found. The cost of this audit will be shared by all attaching entities. If an unauthorized 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 worked with its attachers prior to making the modification to streamline the process for unauthorized attachments and unpermitted service drops.

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 this Commission's Rule and Orders and it shall, therefore, be approved. This Commission notes that approval of TECO's plan does not mean approval for cost recovery. TECO shall consider the rate impact before taking proactive steps to improve its system to withstand severe weather events.

Based on the foregoing, it is

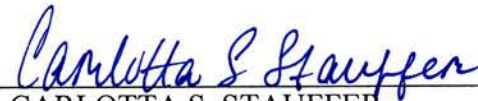
ORDERED by the Florida Public Service Commission that Tampa Electric Company's updated 2016-2018 Storm Hardening Plan is hereby approved. It is further

ORDERED that the findings set forth in the body of this Order are 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 if no person whose substantial interests are affected by the proposed agency action files a protest within 21 days of the issuance of this Order, this docket shall be closed upon the issuance of the consummating order.

By ORDER of the Florida Public Service Commission this 19th day of December, 2016.



CARLOTTA S. STAUFFER
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.

MAL

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 January 9, 2017.

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
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| 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
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| 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
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| 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
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| 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

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| 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 2013-2015 were \$126,100,000.	3. Costs for 2016-2018 are estimated to be \$112,300,000.

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 2013-2015 were \$30,500,000.	3. Costs for 2016-2018 are estimated to be \$28,900,000.

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 2013-2015 were \$1,000,000.	5. Costs for 2016-2018 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 2013-2015 were \$4,400,000.	3. Costs for 2016-2018 are estimated to be \$3,200,000.

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 2013-2015 were \$2,300,000.	3. Costs for 2016-2018 are estimated to be \$2,400,000.

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 2013-2015 were \$0.	2. Costs for 2016-2018 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 2013-2015 were \$21,300,000.	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 2013-2015 were \$500,000.	2. Costs for 2016-2018 are estimated to be \$600,000.