

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Review of 2019-2021 storm hardening
plan, Florida Power & Light Company.

DOCKET NO. 20180144-EI
ORDER NO. PSC-2019-0301-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 FLORIDA POWER & LIGHT 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:

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

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 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) 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 or Utility), 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 FPL'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 FPL'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 FPL'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 FPL's updated plan are summarized below.

Wooden Pole Inspection Program

FPL proposes to continue its eight-year Wooden Pole Inspection Program.⁹ FPL completes inspections on its entire pole population to identify poles that require repair, reinforcement or replacement. Currently, FPL has completed its fifth year of its second eight-year cycle. FPL will continue to file the results of these inspections in FPL's Annual Electric Utility Distribution Reliability Report. The costs for 2019 related to the eight-year Wooden Pole Inspection Program are estimated to be between \$45,000,000 and \$55,000,000; however, cost estimates for 2020 and 2021 were not provided. For 2016-2018, FPL spent \$164,000,000 for its Wooden Pole Inspection Program.

Ten Initiatives

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

FPL proposes no changes to its previously approved trim cycle.¹⁰ Currently, FPL has a three-year average trim cycle for feeders and a six-year average trim cycle for distribution laterals. Since a feeder outage affects a larger number of customers than a lateral outage, a shorter trim cycle is utilized for feeders. Additionally, FPL has a mid-cycle trimming program that addresses tree conditions that could result in outages before its next planned trim cycle. This includes targeted trimming and maintenance of tree species that often grow faster than others. FPL also proposes to continue trimming and/or removing trees that are leaning, damaged, dead, or trees reported by customers as needing attention. The cost for 2019-2021 for Initiative One is estimated between \$196,000,000 and \$206,000,000 as compared to \$189,000,000 spent in 2016-2018.

Initiative Two – Audits of Joint-Use Attachment Agreements

There are no proposed changes to this initiative. FPL completes annual audits of joint-use facilities and attachments to the Utility's poles by cable television (CATV) companies and telecommunication companies. These audits are conducted on a five-year cycle with approximately 20 percent of FPL's service territory audited each year. The pole attachment audits focus on compliance with existing pole attachment agreements for all FPL-owned and joint-use poles. FPL proposes to continue conducting pole strength assessments in conjunction with its eight-year Wooden Pole Inspection Program. FPL does not specifically track or budget for the costs associated with Initiative Two.

⁹Order 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-07-0468-FOF-EI, issued May 30, 2007, in Docket No. 20060198-EI, *In re: Requirement for investor-owned electric utilities to file ongoing storm preparedness plans and implementation cost estimates*.

Initiative Three – Six-Year Transmission Structure Inspection Program

There are no proposed changes to this initiative. FPL's transmission structure inspection program incorporates different cycles depending on the type of inspection and structure. Below is a list of the types of inspections:

1. One-year cycle: Ground level visual inspections (wood, concrete, and steel poles/structures)
2. Six-year cycle: Climbing or bucket truck inspections (wood poles/structures)
3. Ten-year cycle: Climbing or bucket truck inspections (steel and concrete poles/structures)

In addition, FPL also inspects the condition of various transmission pole/structure components, including attachments, insulators, cross-arms, cross-braces, foundations, bolts, conductors, overhead ground wires, guy wires, anchors, and bonding. The 2019-2021 cost for this initiative is estimated to be between \$93,000,000 and \$113,000,000 as compared to \$112,000,000 spent for 2016-2018.

Initiative Four – Hardening of Existing Transmission Structures

There are no proposed changes to this initiative. FPL plans to replace all wooden transmission structures with round spun concrete poles and all ceramic post insulators on concrete poles with polymer post insulators. In addition, FPL has plans to increase the replacement rate for wood transmission structures and ceramic post insulators on square concrete poles. FPL will prioritize these two existing transmission storm hardening initiatives based on factors including proximity to high wind areas, system importance, customer count, and coordination with the distribution critical infrastructure (CIF) storm initiative. FPL reports that at the end of 2018, 93 percent of transmission structures were steel or concrete. The 2019-2021 cost for this initiative is estimated to be between \$105,000,000 and \$150,000,000 as compared to \$136,000,000 spent for 2016-2018.

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

There are no proposed changes to this initiative. FPL has established GIS databases for data on its distribution system, such as pole inspection records (e.g., pole locations and attributes), joint-use audit data, levels of hardening, and information on streetlights. As part of GIS improvements for post-hurricane forensic analysis, FPL developed a mobile tool for electronic inspection, which creates routes within the hurricane-force wind area. Using these routes, field employees can collect information on observed damage and document the cause of the damage. FPL will continue to update its GIS as needed and maintain updated information on the Utility's distribution system. FPL does not specifically track or budget for the costs associated with Initiative Five.

Initiative Six – Post-Storm Data Collection and Forensic Analysis

There are no proposed changes to this initiative. To conduct forensic data collection and analysis, FPL will collect information on the storm path and corresponding wind bands. For overhead distribution, teams will be assigned to specific areas in the path of the storm, and damage that meets patrol criteria will be investigated. For overhead hardened distribution feeders, forensic teams will cover a statistical sample of feeders that experience an interruption in the impacted area. Damage locations are to include poles, wires, and distribution equipment that are damaged or caused a customer outage. While storm damage data is collected in certain areas, restoration crews will begin their work in other locations. This will allow the collection of sample observations for forensic analysis without impeding early restoration work. FPL was impacted by Hurricanes Matthew and Irma in 2016 and 2017, respectively, and forensic data was collected and analyzed for both storms. FPL does not specifically track or budget for the costs associated with Initiative Six.

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

There are no proposed changes to this initiative. FPL's plan proposes to continue managing its assets and performing forensic analysis on the performance of overhead and underground systems; however, these metrics are only available on a non-differentiated basis and are not for overhead and underground separately. This is primarily due to FPL's feeders being overhead/underground hybrids and performing calculations on data that could be differentiated may yield misleading results. Evaluation of equipment performance by type may also be available from forensics, depending on the specific characteristics of a given storm and if forensic teams have time to collect adequate data. Data gathered by the teams will depend on whether the restoration process lasts for an extended period of time, and whether or not the equipment is impacted. FPL does not specifically track or budget for the costs associated with Initiative Seven.

In response to information requested in the Hurricane Review Docket, FPL outlined the type of comparable data that the Utility plans to provide for overhead and underground facilities. FPL stated that it will continue to collect and analyze data concerning the performance of its transmission and distribution facilities when they are impacted by storms. The storm damage forensic data will be collected and obtained through field observations and will include pole failures by the type of damage and whether the pole was hardened or non-hardened. In addition, FPL will collect information on non-hardened and hardened overhead and underground facilities for feeders, laterals, and transmission, which will include the number of customers out of service and the population of customers. FPL indicates that depending on the storm's strength, size, path, damage, and speed of restoration, the samples of observation and collection of forensic infrastructure storm damage will vary.

Initiative Eight – Increased Coordination with Local Governments

There are no proposed changes to this initiative. FPL proposes to continue meeting with local governments and communities to discuss critical infrastructure functions, line clearing, storm readiness, joint-use of public rights-of-way, fuel/rate adjustments, and underground conversions. The Utility uses e-mail communication and an online Government Portal website, which allows governments to access information on customer outages, estimated restoration times, FPL crew resources, and outage maps. In addition, FPL participates in annual hurricane exercises, which provides the Utility input on how to better collaborate in emergency situations. FPL does not specifically track or budget for the costs associated with Initiative Eight.

In response to information requested in the Hurricane Review Docket, FPL discussed its coordination with local governments regarding vegetation management and identification of critical facilities. FPL continues to work with cities, counties, and customers to reinforce the importance of tree maintenance and planting the right tree in the right place. Before storm season, FPL meets with local government representatives and officials to prioritize power restoration for identified facilities that are determined to be critical to the needs of the local communities. FPL provided a list of meetings with seven counties and eight cities, which involved discussions on vegetation management issues. FPL also listed 45 meetings with 29 counties to address critical infrastructure and restoration processes.

FPL has 66 staff assigned to EOCs in 26 counties. FPL strives to have two representatives at each county EOC; however, this number may vary based on the populations of FPL customers in the area. In counties with smaller populations, EOCs receive assistance, information, and support from an assigned External Affairs Manager, while staffing at county EOCs with larger populations will receive additional staff. Staffing also depends on the strength and projected landfall of a storm.

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

There are no proposed changes to this initiative. FPL 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. FPL entered into an extension of the memorandum of understanding with PURC in 2018 for two years, effective January 1, 2019, with a provision that the memorandum of understanding will be automatically extended for successive two-year terms. FPL does not specifically track or budget for the costs associated with Initiative Nine.

Initiative Ten – Natural Disaster Preparedness and Recovery Program

There are no proposed changes to this initiative. FPL will continue to refine its Storm Emergency Management Plan, which identifies emergency conditions and the responsibilities and duties of the FPL emergency response organization for severe storms. This plan covers the

roles and responsibilities of key positions and includes FPL's overall severe storm emergency processes. These processes describe the planning activities, restoration work, public communications, coordination with government, training, practice exercises, and lessons learned evaluation systems. This plan is reviewed and revised annually. FPL does not specifically track or budget for the costs associated with Initiative Ten.

In response to information requested in the Hurricane Review Docket, FPL provided its contingency plans for roadway congestion, fuel availability, and lodging accommodation issues. In the event of roadway congestion, FPL communicates with local, state, and federal authorities for assistance. This includes support from agencies such as the Department of Transportation, state/local law enforcement, and the National Guard. FPL also utilizes information from the All Hazards Consortium (AHC), which is a non-profit organization with over 45,000 stakeholders in industry and government that works to improve the capacity to prevent, prepare for, respond to and recover from crises. FPL uses information from the AHC to identify road closures, as well as locating open and/or closed fueling stations, which assists with route selection. FPL has contracts in place to guarantee the availability of fuel and maintains fuel tanks at several company facilities. Additional fuel is procured prior to storm season, which FPL stores in multiple areas throughout its service territory. For lodging accommodations, FPL utilizes a third-party vendor to evaluate room availability and secure lodging in needed areas. Additionally, alternative lodging may be employed, which includes mobile sleepers, cots and tents, and cots in fixed facilities.

National Electrical Safety Code Compliance

Prior to 2007, FPL had generally utilized construction Grade B for all distribution lines. Since construction Grade B is stronger than Grade C, FPL's distribution facilities comply with and, in most cases, exceed the minimum requirements of the NESC. FPL's Distribution Engineering Reference Manual and Distribution Construction Standards have been revised as required to ensure compliance with all applicable rules and regulations. FPL's transmission structures are designed to meet EWL under NESC Rule 250C EWL (extreme wind loading) and are constructed to meet construction Grade B under NESC. 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 or strongest.

Extreme Wind Loading (EWL) Standards

FPL's service area covers multiple wind zones on the NESC extreme wind map for Florida, Figure 250-2(d). FPL determined the most effective option for implementing the extreme wind map would be by county. FPL proposes to continue to divide the application of EWL into three wind regions corresponding to expected extreme winds of 105, 130, and 145 mph. The Utility indicated the use of a smaller number of wind regions generates advantages through efficiency of work methods, training, engineering, and administrative aspects. FPL also indicated that using 105, 130, and 145 mph wind zones is a well-balanced approach that recognizes differences in the EWL requirements in the counties within each region.

New Construction

FPL's 2019-2021 Plan continues with its previously approved approach to apply EWL and its Design Guidelines to harden existing feeders and to design and construct new pole lines. FPL indicates this approach will continue to strengthen its electric system.

Major Planned Work

FPL proposes to continue to apply EWL to existing overhead feeders and to the design and construction of major planned work, including pole line extensions, relocations and certain pole replacements. In achieving the EWL design criteria, FPL proposes to continue to utilize its Design Guidelines, which are primarily associated with changes in pole class, pole type, and desired span lengths to be used.

Critical Infrastructure (CIF)

FPL indicated that it has been strengthening its infrastructure by applying the EWL criteria on infrastructure that serve hundreds of critical facilities and other essential community needs, such as hospitals, police and fire stations, grocery stores, and highway crossings. As stated above, FPL will continue to use its Design Guidelines to achieve the EWL design criteria.

Mitigation of Flooding and Storm Surge Damage

FPL reports that approximately 20 percent of its underground distribution infrastructure is within the Category 1 to Category 3 floodplain as defined by the Florida Department of Community Affairs. FPL implemented a storm surge initiative that utilized the installation of submersible equipment to strengthen the 12 above-grade vaults in the downtown Miami distribution network system. FPL indicated these vaults are more susceptible to storm surge/flooding. This was due to lessons learned in 2014 and 2015. In addition, FPL uses 24-inch concrete pads for transformers that are located in more flood prone areas. This provides an additional 18 inches of flood protection. FPL also has guidelines in place for the prompt post-storm inspection and mitigation of damage to equipment exposed to flooding or storm surge. The guidelines include the necessary steps to purge any sand and water that has impacted the equipment and to restore it to service.

Facility Placement

FPL proposes to continue its existing Distribution Guidelines, which address the location of new and replacement poles. The guidelines state that poles should be placed in front lot lines or accessible locations where feasible. It further states that new poles, when making replacements, should be set as close as possible to the existing pole to avoid the creation of a new pole location. Furthermore, it states that concrete poles are not to be placed in inaccessible locations or locations that could potentially become inaccessible.

Deployment Strategies

FPL will continue to prioritize storm hardening projects based multiple on factors including geographic area, system importance, customer count, and cost. FPL's DERM and DCS provide details on specific engineering information about the design and construction of its distribution and transmission systems. FPL revises its DERM and DCS as required to ensure compliance with all applicable rules and regulations. FPL's plan contains its Design Guidelines and Quick Reference Guide. This Guide contains information for determining pole class, type, and desired span lengths for overhead construction.

Facilities Affected, Including Specifications and Standards

FPL lists feeder and lateral projects in all of its service areas. In 2019, FPL will continue to apply EWL to 312 feeders. FPL reported that as current hardening projects are multi-year projects, some projects are carryovers from prior years. In addition to hardening feeders, FPL plans to complete the conversion of 152 overhead laterals to underground. In 2020 and 2021, FPL will target 260-325 feeders for hardening projects and 250-500 overhead laterals for underground projects. The projects will be spread throughout FPL's service territory.

Areas of Infrastructure Improvements

FPL reported that all new feeder hardening projects are considered wind zone projects. FPL no longer tracks the different types of projects, such as 01 switches, highway crossings, or geographic feeder projects, since FPL is planning to harden all feeders by 2024. However, the methods used to achieve EWL for each feeder will be different. The methods that FPL will continue to utilize are:

- Storm Guying: installing a guy in each direction perpendicular to the line.
- Equipment Relocation: moving equipment on a pole to a near by stronger pole.
- Intermediate Pole: installing a single pole when long span lengths are present, which reduces the span length and increases the wind rating of both adjacent poles.
- Upgrading Pole Class: replacing the existing pole with a higher class pole to increase the pole's wind rating.
- Underground Facilities: utilized if there are significant barriers to building overhead or if it is a more cost-effective option for a specific application.

In addition to hardening feeders, FPL began an underground pilot program to convert overhead lateral to underground. FPL will use two design options for the underground project, the North American and European designs. The North American design will be utilized when the lateral is in the front lot and the European design will be utilized when the lateral is in the rear lot. FPL explained that while it prefers and will attempt to relocate existing facilities from the rear to the front of the customer's premises, there would be instances where that option will not be available. As part of the conversion process, FPL will be installing meter base adaptors, which

provide a means to receive underground service to the customers by utilizing the existing meter and meter enclosure.

Joint-Use Facilities

FPL's joint-use pole agreements require pole owners, at their own expense, to maintain poles in a safe and serviceable condition. If a pole is identified as unstable or on the verge of failing, then the pole owner has the financial responsibility for the pole replacement regardless of who performs the pole replacement. In its March 1, 2019, status report on storm hardening activities, FPL noted that approximately 20 percent of its jointly used poles are audited annually through its joint-use surveys. Additionally, FPL-owned joint-use poles are inspected through FPL's pole inspection program.¹¹ As of year-end 2017, FPL owned approximately 1.2 million distribution poles and was attached to approximately 224,000 non-electric utility distribution poles.

Utility Cost/Benefit Estimates

FPL's updated plan includes estimates of costs to be incurred in connection with its updated plan for 2019 through 2021. The estimates are based upon current work methods, products, and equipment and assume the necessary resources will be available to execute the plan. However, the estimates do not include the incremental costs associated with implementing EWL hardening criteria for the design and construction of new pole lines and major planned work, including pole line extensions and relocations and certain pole replacements. FPL indicated the incremental costs are not specifically tracked. FPL spent a total of \$600,800,000 on its wooden pole inspections and Ten Initiatives for 2016-2018. In 2019-2021, FPL estimates it will spend approximately \$2,270,000,000 for its complete storm hardening plan. Part of the increase is attributed to FPL's underground lateral pilot project. FPL expects 72 percent of its system-wide feeder network will be hardened or underground by year-end 2021 with the execution of its 2019-2021 plan.

FPL claims that the hardening of feeders to EWL has provided significant benefits to its customers and FPL expects the benefits to be recognized in the future. Because the lateral undergrounding project has only recently been initiated, there are no historical results or analyses to quantify the benefits. Attachment B shows a comparison of costs associated with implementation of FPL's current and updated wooden pole inspections and Ten Initiatives.

FPL also considers alternatives before implementing storm hardening projects. FPL explained that for feeder projects, each pole on a feeder is evaluated independently, with various alternatives considered for that pole. Within the same feeder, there could be several different hardening alternatives utilized. The alternatives would include the same methods for hardening a feeder as discussed above. FPL explained that the selected alternative would have been

¹¹FPSC, Florida Power & Light Company's 2019 Status/Update Report on Storm Hardening/Preparedness and Distribution Reliability, <http://www.floridapsc.com/Files/PDF/Utilities/Electricgas/DistributionReliabilityReports/2018/2018%20Florida%20Power%20and%20Light%20Company%20Distribution%20Reliability%20Report.pdf>, accessed June 6, 2019.

determined based on the considerations including sound engineering practices and feasibility, potential to mitigate damage, potential to improve restoration efficiencies and overall cost.

Attachers Cost/Benefit Estimates

FPL shared a draft of its plan with representatives from all of its third-party attaching entities and solicited input and comments. However, only one entity responded with a question concerning base rate impacts. No information was provided by third-party attachers concerning estimates of their respective costs or benefits stemming from FPL's storm hardening plan.

Attachment Standards and Procedures

FPL's updated plan includes Attachment Standards and Procedures addressing safety, reliability, pole loading capacity, and the storm hardening plan. For example, the procedures specify that "before any additional load is added to an FPL owned pole it is incumbent upon the third-party attacher to verify that their additions meet FPL's Design Guidelines and Electric Infrastructure Storm Hardening Plan."

Conclusion

FPL's updated plan is largely a continuation of its current Commission-approved plan. Based on the review above, FPL's plan has the information required by our rule and orders, and therefore it is hereby approved. We note that approval of FPL's plan does not mean approval for cost recovery. FPL 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 Florida Power & Light 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.

Florida Power & Light 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 \$164,000,000.	3. Costs for 2019 are estimated to be between \$45,000,000 - \$55,000,000.

Initiative 1 – A Three-Year Vegetation Management Cycle for Distribution Circuits	
Current Plan	Updated Plan
1. Average three-year trim cycle for feeders.	1. No change
2. Average six-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 \$189,000,000.	3. Costs for 2019-2021 are estimated to be between \$196,000,000 - \$206,000,000.

Initiative 2 – Audit of Joint-Use Attachment Agreements	
Current Plan	Updated Plan
1. (a) Includes auditing 20% of its joint-use facilities annually.	1. (a) No change
(b) Includes auditing all FPL-owned and third-party poles during the eight-year wooden pole inspection cycle.	(b) No change
2. All required data will be collected during inspections and stored in the attachment information database.	2. No change
3. Verify attachments have been made pursuant to current joint-use agreements through a five-year system wide pole attachment survey.	3. No change
4. Stress calculations will be performed during eight-year wooden pole inspection cycle.	4. No change

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 either annually, six-year cycle or ten-year cycle.	1. No change.
2. Substations are fully inspected quarterly.	2. No change
3. Costs for 2016-2018 were \$112,000,000.	3. Costs for 2019-2021 are estimated to be between \$93,000,000 - \$113,000,000.

Initiative 4 – Hardening of Existing Transmission Structures	
Current Plan	Updated Plan
1. Incremental upgrades during relocations and other maintenance. Upgrade un-guyed single wooden pole structures. Ceramic post line insulator replacements.	1. No change
2. In 2008, FPL enhanced its hardening initiative to include replacement of all wooden transmission structures over the next 25 to 30 years.	2. No change
3. Costs for 2016-2018 were \$136,000,000.	3. Costs for 2019-2021 are estimated to be between \$105,000,000 - \$150,000,000.

Initiative 5 – Transmission and Distribution Geographic Information System	
Current Plan	Updated Plan
1. FPL's plan includes forensic reviews.	1. No change
2. FPL's plan includes underground versus overhead.	2. No change
3. Plan includes determination of appropriate maintenance.	3. No change
4. Plan includes evaluation of storm hardening options.	4. No change
5. Currently being implemented.	5. No change

Initiative 6 – Post-Storm Data Collection and Forensic Analysis	
Current Plan	Updated Plan
1. Divide a sample of damaged poles among forensics teams; observations will be made on all damaged samples. Capture information such as location, attachments, and area wind speed.	1. No change
2. Data is dependent upon storm events in FPL’s service area.	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. FPL’s distribution feeders are hybrids, i.e., they contain both overhead and underground facilities. FPL will utilize laterals as a proxy for assessing overhead versus underground system performance.	1. No change
2. Implementation is ongoing and storm performance results are obtained from forensics and available storm work tickets.	2. No change

Initiative 8 – Increased Coordination with Local Governments	
Current Plan	Updated Plan
1. FPL focuses on storm preparation coordination and communication with External Affairs representatives working with county planners and post-storm communications. In addition, FPL implements ongoing planning with External Affairs representative, special e-mail program, government websites, and Community Outreach Teams.	1. No change

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. FPL will solicit participation from other utilities and organizations.	3. No change
4. Implementation is ongoing	4. FPL has entered into a Memorandum of Understanding with the University of Florida’s PURC, which extends research through December 31, 2018.

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.