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-VIA ELECTRONIC FILING-

Ms. Carlotta S. Stauffer
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, FL 32399-0850

RE: Docket No.: 20170215-EU

In re: Review of electric utility hurricane preparedness and restoration actions.

Dear Ms. Stauffer:

Enclosed please find Florida Power & Light Company's responses to Staff's Third Data Request in the above referenced docket.

If you should have any questions regarding this transmittal, please contact me at (561) 691-2512.

Sincerely,

/s/ Kenneth M. Rubin
Kenneth M. Rubin
Fla. Bar No. 349038

Enclosure

QUESTION:

Please refer to question no. 11 of FPL's responses to staff's first data request, document no. 10675-2017. Please provide the number of customers that were unable to receive power and the amount of time it took to restore those customers.

RESPONSE:

For Hurricanes Matthew and Irma, FPL had approximately 570 and 1,300 customers, respectively, that were unable to take electric service due to damage to their facilities/homes. There were some instances where facilities/homes were completely destroyed and had to be rebuilt. Once customers complete their repairs/rebuild and provide a certified inspection from their respective counties, FPL schedules and completes the service reconnection within 3 days. The amount of time to restore power for each of these customers is not available, as this information is not specifically tracked/aggregated by FPL and can only be obtained by looking up each individual customer's record.

QUESTION:

Please refer to FPL's responses to question no. 12. Has FPL storm hardened its facilities serving the local community critical infrastructure facilities that experienced outages? If yes, please describe the hardening efforts. If not, please explain why not.

RESPONSE:

Yes. As of 12/31/2017, FPL has hardened 93% of all CIF (e.g., hospitals, 911 centers) and community project (e.g., grocery stores, gas stations) feeders in its system. In all but seven counties that FPL serves, 100% of the CIF and community project feeders in each county have been hardened. In the seven counties with CIF and community project feeders still pending, 88% of all CIF and community project feeders in these counties have been hardened. While the vast majority of the CIF and community project feeders still pending completion have been delayed as a result of issues beyond FPL's control (e.g., permitting, obtaining easements, FDOT relocation projects and municipal overhead to underground conversions), FPL has still been able to make significant progress on the vast majority of these pending feeders. For example, over half of the pending feeders are 75-95% complete and another quarter of the feeders are 50-74% complete.

The primary purpose of hardening CIF and community feeders is to ensure that these feeders are strengthened such that they meet the NESC's extreme wind loading criteria. Depending on the location of the feeder (e.g., the NESC's criteria is different in north Florida vs. south Florida), these feeders must meet extreme wind loading criteria winds of 105, 130 or 145 mph. Hardening to extreme wind loading criteria can be achieved in various ways, for example, replacing poles with stronger poles, installing intermediate poles, guying of poles and placing facilities underground.

QUESTION:

For Brevard, Broward, Charlotte, Collier, Flagler, Indian River, Lee, Manatee, Martin, Miami-Dade, Palm Beach, Sarasota, Seminole, St. Johns, St. Lucie, and Volusia counties in FPL's service territory, please respond to the following questions for Hurricane Irma.

- a. Identify and describe the areas in each county that sustained the most damage.
- b. When was the last time tree trimming was performed in those high damage areas? How many miles were trimmed during that time?
- c. Were there any preventive measures that could have been taken before Hurricane Irma impacted those high damage areas?

RESPONSE:

- a. FPL does not track or aggregate damage information such that it can identify the area within a county that sustained the most damage. However, FPL is providing a perspective of total damage within each of the counties requested based on the number of poles and transformers and miles of conductor replaced as a result of Hurricane Irma. These counts are preliminary and subject to true-up (e.g., the counts do not include replacements installed as a result of follow-up work, which is still on-going at this time).

County	Poles Replaced*	Transformers Replaced	Miles of Conductor Replaced
Brevard	656	551	45
Broward	233	683	126
Charlotte	0	0	0
Collier	240	486	77
Flagler	295	208	33
Indian River	0	0	32
Lee	0	0	0
Manatee	0	0	0
Martin	67	174	0
Miami-Dade	1577	1361	162
Palm Beach	650	368	92
Sarasota	406	423	98
Seminole	0	0	0
St. Johns	0	236	53
St. Lucie	441	37	3
Volusia	0	0	6
*Includes poles replaced on behalf of AT&T			

- b. While FPL is unable to provide the information requested as it pertains to high damage areas (see FPL's response to subpart (a) above), FPL is providing trimming information for feeders and laterals for each county requested above. Specifically, for feeders, FPL is providing the

total number of feeder miles in each county and the number of feeder miles actually trimmed (cycle and mid-cycle) over the last three years (2015-2017). For laterals, FPL is providing the total number of lateral miles in each county and the number of lateral miles actually trimmed over the last six years (2012-2017). FPL notes that forensics and other observations indicated that in many instances (and even in areas that had been recently trimmed by FPL), FPL facilities were impacted by trees (e.g., trees that toppled over) that were outside of utility easements or authorized rights-of-way.

County	Total Feeder Miles	Total Feeder Miles Trimmed 2015-2017
Brevard	970	2663
Broward	1582	4035
Charlotte	394	1117
Collier	425	1181
Flagler	241	706
Indian River	324	857
Lee	644	1758
Manatee	442	1211
Martin	449	1131
Miami-Dade	2112	4419
Palm Beach	1951	4591
Sarasota	719	2001
Seminole	216	627
St Johns	399	1123
St Lucie	505	1215
Volusia	604	1684

County	Total Lateral Miles	Lateral Miles Trimmed 2012-2017
Brevard	2079	1813
Broward	1600	1521
Charlotte	1493	1547
Collier	788	915
Flagler	658	727
Indian River	647	678
Lee	1237	1120
Manatee	652	521
Martin	618	592
Miami-Dade	2526	3000

Palm Beach	2049	1967
Sarasota	1668	1636
Seminole	400	403
St Johns	775	752
St Lucie	1243	996
Volusia	1169	1185

FPL notes that, consistent with its approved plan to implement its approved 6-year average lateral cycle, it did not start to achieve trimming approximately 1/6 of its lateral miles until 2013.

- c. FPL's current preparation plans include significant preventive measures to mitigate damage when it appears that a storm is likely to strike its service territory. These preparations include: performing additional trimming on feeders serving critical infrastructure facilities; patrolling feeders serving critical infrastructure facilities to identify and repair findings, to the extent possible; working around the clock to complete work on critical projects that are currently in construction; securing all equipment, materials and vehicles at current FPL construction projects, service centers, substations and other FPL facilities; securing FPL's substations, service centers and other buildings (e.g., installing storm shutters and sandbags); and notifying builders/developers working near FPL's facilities to ensure that they securing their equipment, materials and vehicles (e.g., large cranes). At this time, FPL has not identified any new preventive measures to avoid damage (that is within its control) that should be taken in advance of the storm.

In addition, please see FPL's Response to Staff's Third Data Request No. 5.

QUESTION:

Please provide the following information for an instance where storm hardened structures incurred damage and required repair or replacement due to Hurricane Irma.

- a. A description of the damage incurred (i.e. broken pole, displaced underground vault, etc.).
- b. A description of the repair process, including a description of any temporary repairs that required a follow-up trip.
- c. A description of the repair process if the facilities had not been hardened.

RESPONSE:

- a. The only hardened structures that failed during Hurricane Irma were 26 hardened distribution feeder poles. The highest cause for broken hardened feeder poles was trees. In each of these instances, the broken pole was removed and replaced with a new pole.
- b. As mentioned in subpart (a) above, each of the broken poles was removed and replaced with a new pole. There were no temporary repairs associated with these broken poles.
- c. FPL expects that if the broken hardened distribution feeder poles were not hardened, they too would have broken, been removed and replaced with a new pole.

QUESTION:

In Order No. PSC-06-0351-PAA-EI, the Commission ordered Florida's investor-owned utilities to file plans for Ten Storm Preparedness Initiatives. The Ten Initiatives are:

- Three-Year Vegetation Management Cycle for Distribution Circuits
- Audit of Joint-Use Agreements
- Six-Year Transmission Inspections
- Hardening of Existing Transmission Structures
- Transmission and Distribution Geographic Information System
- Post-Storm Data Collection and Forensic Analysis
- Collection of Detailed Outage Data Differentiating Between the Reliability Performance of Overhead and Underground Systems
- Increased Utility Coordination with Local Governments
- Collaborative Research on Effects of Hurricane Winds and Storm Surge
- A Natural Disaster Preparedness and Recovery Program

Please provide suggested improvements, if any, to the Ten Initiatives, including modifications to existing initiatives and/or possible alternatives, based on lessons learned.

RESPONSE:

At this time, FPL does not have any suggested improvements/modifications/alternatives for Storm Preparedness Initiatives, Nos. 2-7, 9 and 10.

For Storm Preparedness Initiative No. 1: The primary cause for distribution pole failures and outages during Hurricanes Matthew and Irma was trees. Trees and tree branches were also a significant barrier during restoration, as uprooted and fallen trees and branches blocked roadways. FPL's forensics and other observations indicate that many of these uprooted and fallen trees and branches that caused broken poles and outages were outside of utility easements and authorized rights-of-way. As a result, no amount of feeder or lateral trimming by electric utilities in the areas currently trimmed would prevent these same types of events from occurring again. Legislation, particularly at the local level (e.g., municipal and county ordinances) could be enacted that restricts the type and location of vegetation that can be planted in the vicinity of power lines. Legislation could also provide electric utilities additional rights to address existing vegetation conditions on customers' property that impede operation or maintenance of utility facilities, while also preventing property owners from impeding or obstructing the line clearing work. In addition to the adoption of this type of legislation (again primarily at the local level), local governments would need to be committed to enforcement of these ordinances. FPL recognizes that these may be significant changes for many municipalities and their residents, but if these issues are ignored, Florida residents will continue to see damage to the electric system and interruption of power related to vegetation that has been planted in the wrong place and/or that has not been properly maintained by the property owner, including the local governmental entities themselves.

FPL is committed to work with the state and our local municipalities and communities to help address these issues. We are encouraged that several local governmental entities are beginning to consider local ordinances that would institute these types of changes regarding type and location of vegetation (e.g., Broward and Palm Beach counties). <http://www.sun-sentinel.com/local/broward/fl-reg-broward-targets-trees-near-powerlines-20180117-story.html>

FPL also notes that, in some cases, targeted undergrounding (particularly laterals) may be the best solution for eliminating vegetation-related outages.

For Storm Preparedness Initiative No. 8: FPL continually looks at how to improve coordination with local governments during a storm. As an example, following Hurricane Irma FPL has made presentations to a number of local governmental entities to address storm preparations, critical infrastructure functions, vegetation management, hardening, underground projects, and other matters related to preparation and restoration activities. The Company has also revised and improved its processes to facilitate the identification of Critical Infrastructure Functions by Emergency Operations Center personnel to coordinate with FPL in prioritizing restoration activities. We are currently reviewing any opportunities from lessons learned, but no additional specific modifications to existing initiatives have been decided at this time.

Additionally, in June of 2017 FPL proposed, and in January of 2018 the Commission ultimately approved FPL's revisions to the calculation of an applicant's contribution in aid of construction (CIAC) in the Company's underground distribution conversion tariff (Sheet No. 6.300). The new formula generally reduces the costs for a governmental entity to undertake an overhead to underground conversion of feeders and should facilitate the ability of more local governments to pursue this course of action.

QUESTION:

Please provide suggested improvements, if any, to the 8 year wooden pole inspection program, including modifications to the existing program and/or possible alternatives, based on lessons learned.

RESPONSE:

FPL believes that this program has provided and will continue to provide significant customer benefits, as it is ensuring that the electric pole population in Florida is strong and not overloaded. For instance, for Hurricanes Matthew and Irma, forensic results indicate that zero distribution poles failed as a result of deterioration.

At this time, FPL does not have any suggested improvements to the 8-year wooden pole inspection program for electric utilities. However, FPL believes that re-extending the requirements of the 8-year inspection program previously mandated by the Commission to entities that are non-electric utilities that own poles with electric facilities attached is necessary to ensure that the strength of and loading on all poles with electric facilities attached meet safety and current construction standards. FPL recognizes that a change in law would be required to ensure compliance with these requirements by non-electric utilities.

QUESTION:

Please provide suggested improvements, if any, to the electric infrastructure storm hardening plan filed pursuant to Rule 25-6.0342, F.A.C., including modifications to the existing rule and/or possible alternatives, based on lessons learned.

RESPONSE:

At this time, FPL does not have any suggested modifications to Rule 25-6.0342 as it relates to FPL's hardening initiatives (e.g., hardening existing critical infrastructure feeders to the NESC's extreme wind loading criteria, replacing wood transmission structures and installing flood monitoring equipment at more flood prone substations). Implementation of the requirements of Rule 25-6.0342 has provided significant benefits to FPL's customers. For example, results from recent storms indicate: significant reductions in hardened feeder pole and transmission structure failures; hardened distribution feeders performed significantly better than non-hardened feeders; substation flood monitoring equipment prevented potential significant damage from occurring; and customers were restored significantly faster than before adoption and implementation of the Rule. Customers also benefit day-to-day as hardened feeders perform significantly better than non-hardened feeders.

FPL notes that it currently expects that by 2024, 100% of its distribution feeders will be hardened or underground and that by 2022, 100% of its transmission structures will be either steel or concrete.

While FPL considers its hardening efforts to date to be successful, as they have provided significant benefits to our customers, both day-to-day as well as during storms, FPL is aware that our customers want the electric grid to be even more storm resilient. While hardening feeders has been and will remain (through 2024) the highest priority for hardening, as it provides the largest initial benefit for customers, the full benefits of a hardened electrical grid cannot be realized without the hardening of laterals. Laterals, which extend off of feeders, are the final step in the distribution primary voltage delivery system. As laterals make up the most significant portion of the overhead miles in FPL's distribution system, hardening laterals is necessary to provide the full benefits of a hardened distribution system to all customers.

As such, in 2018, FPL is planning to move ahead with its initiative to harden laterals, which was included in FPL's most recent three-year hardening plan filing (for 2016-2018) approved by the FPSC. However, as a result of Hurricanes Matthew and Irma storm experiences (e.g., significant number of outages and damage caused by trees, and underground facilities performing significantly better than overhead facilities), FPL is planning to shift some of its overhead lateral hardening planned for 2018 to underground lateral hardening. Specifically, FPL is planning to conduct an underground hardening pilot that will convert certain selected overhead laterals to underground. While the details of this initiative are still being finalized, FPL expects the pilot to provide valuable insight for future lateral overhead to underground conversion considerations and plans. This insight will include the identification of barriers, lessons learned and experience with infrastructure design options, customer participation and property repairs, customer acceptance/resistance, obtaining easements and land rights, permitting and municipal

coordination, constructability, project duration, resource impacts, cost impacts and pole attachment considerations. FPL notes that several other utilities in the U.S. (e.g., Dominion) have also recently announced intentions to implement or have already implemented long-term underground lateral initiatives to improve infrastructure resiliency and storm restoration response. FPL will work to obtain information regarding these other utility underground lateral initiatives and benefit from lessons learned on those projects.

QUESTION:

Assuming FPL decreased its feeder vegetation cycle from its current 3 year cycle to a 2 year cycle, please provide the following:

- a. Additional cost per year.
- b. Incremental benefits (e.g. reduced number of outages)

RESPONSE:

- a. While a more detailed and time-consuming analysis would be required to produce a more refined and complete estimate, FPL estimates that the incremental cost to trim one half of the system feeder miles annually instead of one-third of the system feeder miles annually would result in an approximately \$8-\$9 million cost increase per year. This estimate was developed utilizing current tree trimming contractor rates.

FPL notes that its feeder miles currently have an average trim age of 1.4 years. The average trim age does not include mid-cycle trimming.

- b. While some incremental day-to-day reliability benefits may be achieved by increasing the amount of feeder miles trimmed annually, FPL is unable to quantify these benefits, as FPL has not prepared such an analysis. For storm resiliency/avoided restoration benefits, FPL is unable to quantify benefits (if any), as FPL has not prepared such an analysis. As provided in FPL' response to Staff's Third Data Request No. 5, no amount of feeder trimming would prevent damage and outages associated with the many uprooted and fallen trees and branches located outside of utility easements and authorized rights-of-way.

QUESTION:

Assuming FPL decreased its lateral vegetation cycle from its current 6 year cycle to a 5 year cycle, please provide the following:

- a. Additional cost per year.
- b. Incremental benefits (e.g. reduced number of outages)

RESPONSE:

- a. While a more detailed and time-consuming analysis would be required to produce a more refined and complete estimate, FPL estimates that the incremental cost to trim one fifth of the system lateral miles annually instead of one sixth of the system lateral miles annually would result in an approximately \$5-\$6 million cost increase per year. This estimate was developed utilizing current tree trimming contractor rates.
- b. While some incremental day-to-day reliability benefits may be achieved with increasing the amount of lateral miles trimmed annually, FPL is unable to quantify these benefits as FPL has not prepared such an analysis. For storm resiliency/avoided restoration benefits, FPL is unable to quantify benefits (if any), as FPL has not prepared such an analysis. As mentioned in FPL' response to Staff's Third Data Request No. 5, no amount of feeder trimming would prevent damage and outages associated with the many uprooted and fallen trees and branches located outside of utility easements and authorized rights-of-way.

FPL notes that an analysis developed by FPL and an FPL consultant (provided to the FPSC in Docket No. 20060198-EI) indicated that the improvement in day-to-day tree related SAIFI after 10 years - comparing a 5-year average vs. a 6-year average trim cycle for laterals – was 0.01 (0.15 vs. 0.16). For storms, that same analysis showed that a 6-year average lateral trim cycle was more cost effective (i.e., comparing the difference between restoring a customer interrupted and the projected cost of avoiding a customer interrupted) than a 5-year average lateral trim cycle.