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February 19, 2018

VIA ELECTRONIC FILING

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

RE: Docket No. 20170215-EU
Review of electric utility hurricane preparedness and restoration activities

Dear Ms. Stauffer:

On behalf of Duke Energy Florida ("DEF"), please find attached for electronic filing in the above referenced docket:

- DEF's Response to Staff's Third Data Request (Nos. 1-12)

Thank you for your assistance in this matter. Please feel free to call me at (850) 521-1428 should you have any questions concerning this filing.

Sincerely,

/s/ Matthew R. Bernier

Matthew R. Bernier

MRB/cmkn
Enclosures

cc: Parties of record

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished to the following by electronic mail this 19th day of February, 2018, to all parties of record as indicated below.

/s/ Matthew R. Bernier

Attorney

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Docket 20170215-EU
Review of electric utility hurricane preparedness and restoration actions

DEF's Response to Staff's Third Data Request

1. Please refer to question no. 11 of DEF's responses to staff's first data request, document no. 10722-2017. 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 hurricane Irma, there were 173 customers who were unable to receive power for the reasons described in DEF's response to question no. 11. They were all restored between 9/20/17 and 9/28/17.

For hurricane Hermine there were 148 customers who were unable to receive power for the reasons described in DEF's response to question no. 11. They were all restored on 9/7/2016.

For hurricanes Matthew and Nate there were no customers who were unable to receive power.

2. Please refer to DEF's response to question no. 11. For Hurricane Irma, the date that the first outages occurred was stated to be 9/11/17. Based on the State Emergency Operations Center's outage data, the first outages were reported on 9/9/17 with 86 customers out. Please provide an explanation for this discrepancy.

RESPONSE:

The State Emergency Operations Center requested that all utilities begin reporting outages on September 9, 2017, at 6 am. Although DEF customers were not yet being impacted by the storm, DEF provided the outage information as requested; DEF explained to the EOC at the time that DEF did not believe the outages reported were necessarily related to the storm, but were rather the total number of system outages at the time of the request. At the time of this first report, DEF had 86 customers experiencing outages.

3. Please refer to DEF's responses to question no. 12. Has DEF 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:

The location and scope of projects that deliver hardening benefits varies by type of construction, maintenance, or replacement activity. Primary factors considered when determining the most cost-effective location for a hardening project include operational and storm performance, remaining life, condition assessment of equipment as determined by inspection, and cost to repair or replace. Without cross-checking the local list of critical infrastructure for each impacted county against the storm hardening projects performed since 2006, and tracing down-stream impacts of each such project, DEF cannot definitively answer the question as posed.

4. Please refer to DEF's response to question no. 12. Please provide an explanation for the peak number of outages exceeding the number of customers for the following:
 - a. Hermine - Columbia County
Peak number of customers out = 601
Customers served = 553
 - b. Irma - Hardee County
Peak number of customers out = 2,680
Customers served = 2,661
 - c. Irma - Osceola County
Peak number of customers out = 229,895
Customers served = 48,065

RESPONSE:

4a. This appears to be an error in the computer routine which assigns customer outages to counties. The peak customers out should be 553.

4b. This appears to be an error in the computer routine which assigns customer outages to counties. The peak customers out should be 2,661.

4c. This was a scrivener's error when compiling the original response. The peak customers out was 23,995 and occurred on September 11, 2017 at 6 pm.

5. Please refer to DEF’s response to question no. 30 for the following:
- Please explain why there is no data available on what facilities were replaced or repaired during Hurricanes Hermine, Matthew, and Irma.
 - Please describe what facilities were included in the reported damage to feeders, laterals, and service for Hurricanes Hermine, Matthew and Irma.
 - The three provided tables listing damage reported during Hurricanes Hermine, Matthew and Irma show that underground feeders, laterals, and service performed better than overhead, with the exception of underground feeders during Hurricanes Matthew and Irma. Please explain the reason for the difference in performance.

RESPONSE:

- Data regarding which specific facilities are replaced versus repaired is not tracked during Duke Energy’s restoration process. Outages are dispatched to line resources without knowledge of whether the facilities will need to be repaired or replaced; a restoration plan is devised based on the damage encountered. The status of the overall restoration effort is tracked and reported daily. Duke Energy has a Forensics Analysis Damage Assessment process that reviews a subset of wooden poles that are damaged during major events.

After a storm event, DEF is able to reconcile the infrastructure replaced. Please see below.

Non-Hardened Facilities		
Hurricane	Number of Facilities Requiring	
Hermine	Repair	Replacement
<i>Distribution</i>		
Poles		75
OH Conductors		105,830
OH Transformers		154

Non-Hardened Facilities		
Hurricane	Number of Facilities Requiring	
Matthew	Repair	Replacement
<i>Distribution</i>		
Poles		213
OH Conductors		177,509
OH Transformers		140

Non-Hardened Facilities		
Hurricane	Number of Facilities Requiring	
Irma	Repair	Replacement
<i>Distribution</i>		
Poles		1841
OH Conductors		940,634
OH Transformers		1,106

- b.** Both overhead and underground distribution facilities are included in the reported damage to feeders, laterals and services including: poles, wires, transformers, capacitors, regulators, etc.
- c.** Outage Management System data (OMS) was used to support the response regarding the performance of Overhead vs. Underground feeders and laterals. While an outage is classified as “underground” within the system, that designation only represents how service is ultimately provided to the customer. It does not reflect overhead portions of the circuit that feed the underground circuit. The fact that there was a greater number of underground customers out is an indication that there were significant impacts to sections of the overhead primary that served the underground feeders.

Please Note: In the original response to Staff’s question no. 30, there was a reporting error in the Transmission tables; please see the correction to the first two tables – Hermine and Matthew, provided below.

In the original response, Matthew showed 2 structures in the Transmission Replacement Column; those 2 structures were actually damaged and replaced as a result of Hermine, not Matthew. There were 0 (zero) non-hardened Transmission structures damaged and replaced in Matthew.

Any N/A reference in charts below are to Not Applicable because no (zero) substations were ‘replaced’ as a result of any of the named events. Any N/A is meant to be 0 (zero).

Non-Hardened Facilities		
Hurricane HERMINE	Number of Facilities Requiring	
	Repair	Replacement
<i>Transmission</i>		
Structures	0	2
Substations	0	N/A
Total		
<i>Distribution</i>		
Poles		
Substation		
Feeder OH		
Feeder UG		
Feeder Combined		
Lateral OH		
Lateral UG		
Lateral Combined		
Total		
<i>Service</i>		
Service OH		
Service UG		
Service Combined		
Total		

N/A – Not Applicable

Non-Hardened Facilities		
Hurricane MATTHEW	Number of Facilities Requiring	
	Repair	Replacement
<i>Transmission</i>		
Structures	0	0
Substations	0	N/A
Total		
<i>Distribution</i>		
Poles		
Substation		
Feeder OH		
Feeder UG		
Feeder Combined		
Lateral OH		
Lateral UG		
Lateral Combined		
Total		
<i>Service</i>		
Service OH		
Service UG		
Service Combined		
Total		

N/A – Not Applicable

6. For Highlands, Marion, and Volusia counties in DEF’s service territory, please respond to the following questions for Hurricane Irma.
- Identify and describe the areas in each county that sustained the most damage.
 - When was the last time tree trimming was performed in those high damage areas? How many miles were trimmed during that time?
 - Were there any preventive measures that could have been taken before Hurricane Irma impacted those high damage areas?

RESPONSE:

This answer will be provided later per discussions with Staff.

7. 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:

As part of the Hurricane Irma restoration effort, a forensic assessment of twenty-nine (29) randomly selected, storm-hardened circuits was conducted in all four operating zones.

- a) There was minor damage to primary wire and services on four of the storm-hardened circuits. No poles were broken on any of the storm-hardened circuits.
- b) Wire had to be repaired and services re-connected.
- c) If the circuits would not have been hardened, additional wire sections would have to be repaired or replaced and the likelihood of pole breakage would have increased.

No storm hardened Transmission structures were damaged due to Hurricane Irma.

8. 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:

Post-Irma forensics data indicates that vegetation outside of the right of way of clearing caused a significant portion of the broken poles experienced on the distribution system. DEF suggests that the utility, PSC staff and local governments work to enhance the vegetation management rights of utilities to further target areas with higher risk factors outside of the right of way.

9. 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:

The post-Irma forensic data indicates that neither decay to wooden poles nor DEF's pole maintenance programs were predominant causal factors of outages in the wake of hurricane Irma. DEF suggests that the existing 8 year cycle should be reviewed to determine if lengthening the period could save resources without reducing system integrity or performance. By lengthening the inspection period, resources could be freed up and redeployed to focus on trees outside of the right of way, which was a significant driver of outages in Hurricane Irma. Resources could also be freed up to perform other storm hardening initiatives.

Data from the first and second inspection cycles as well as post-Irma forensic data indicates CCA treated poles between 16 and 25 years of age have an extremely low failure rate when compared to CCA treated poles older than 25 years. Duke Energy suggests moving to visual inspections for CCA treated poles between 16 and 25 years of age so that the resources can be allocated to other work.

10. 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:

Duke Energy's experience in Hurricane Irma reinforces the belief that the current code allows for flexibility and for incorporation of lessons learned from events to improve the hardening and resiliency of the system.

11. Assuming DEF 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. Decreasing the feeder vegetation cycle from the current three-year weighted average system maintenance cycle to a two-year cycle would result in annual incremental cost increases of approximately 50% over current budget levels, or between \$5-\$6M, annually.
- b. DEF believes that reducing the feeder vegetation cycle from its current 3 year weighted average system maintenance cycle to a 2 year weighted average system maintenance cycle would provide negligible improvement in reliability metrics. However, DEF would need sufficient time to develop and conduct an in-depth study across its service territory to verify the impacts of the proposed changes on reliability metrics. Outage history and post-Irma forensics data suggest that a significant portion of vegetation related outages are caused by trees outside of the right of way clearing zone.

12. Assuming DEF decreased its lateral vegetation cycle from its current 5 year cycle to a 4 year cycle, please provide the following:

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

RESPONSE:

- a. Decreasing the lateral vegetation cycle from the current five-year weighted average system maintenance cycle to a four-year cycle would result in annual incremental cost increases of approximately 25% over current budget levels, or between \$6-\$7M annually.

- b. DEF believes that reducing the lateral vegetation cycle from its current 5-year weighted average system maintenance cycle to a 4-year weighted average system maintenance cycle would provide negligible improvement in reliability metrics. However, DEF would need sufficient time to develop and conduct an in-depth study across its service territory to verify the impacts of the proposed changes on reliability metrics. Outage history and post-Irma forensics data suggest that a significant portion of vegetation related outages are caused by trees outside of the right of way clearing zone.