



Kenneth M. Rubin
Senior Counsel
Florida Power & Light Company
700 Universe Boulevard
Juno Beach, FL 33408-0420
(561) 691-2512
(561) 691-7135 (Facsimile)
ken.rubin@fpl.com

April 20, 2018

-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

Dear Ms. Stauffer:

Enclosed for filing is Florida Power & Light Company's revised Power Point presentation for the Commission Workshop scheduled for May 2-3, 2018. The only revision to the previously filed presentation is found at page 12 (Restoration) in the chart identifying the average days to restore power following the named storms. The original Power Point incorrectly indicated that the average days to restore power following Hurricane Matthew was more than one day (" >1 "), when in fact the average days to restore power following Hurricane Matthew was less than one day (" <1 "). That revision has been made on the attached Power Point.

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

Respectfully submitted,

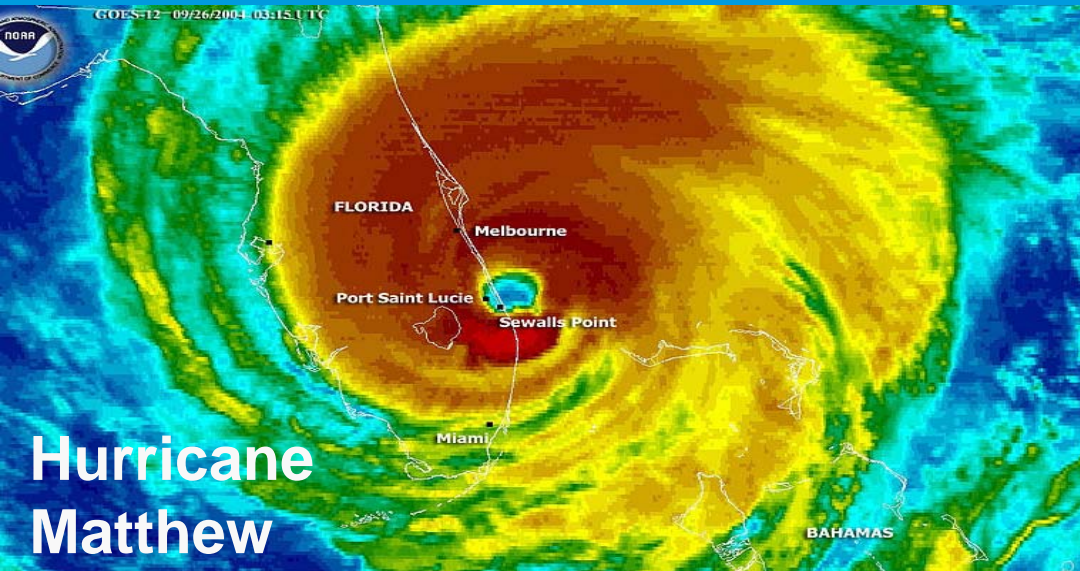
/s/ Kenneth M. Rubin
Kenneth M. Rubin
Fla. Bar No. 349038

Enclosures

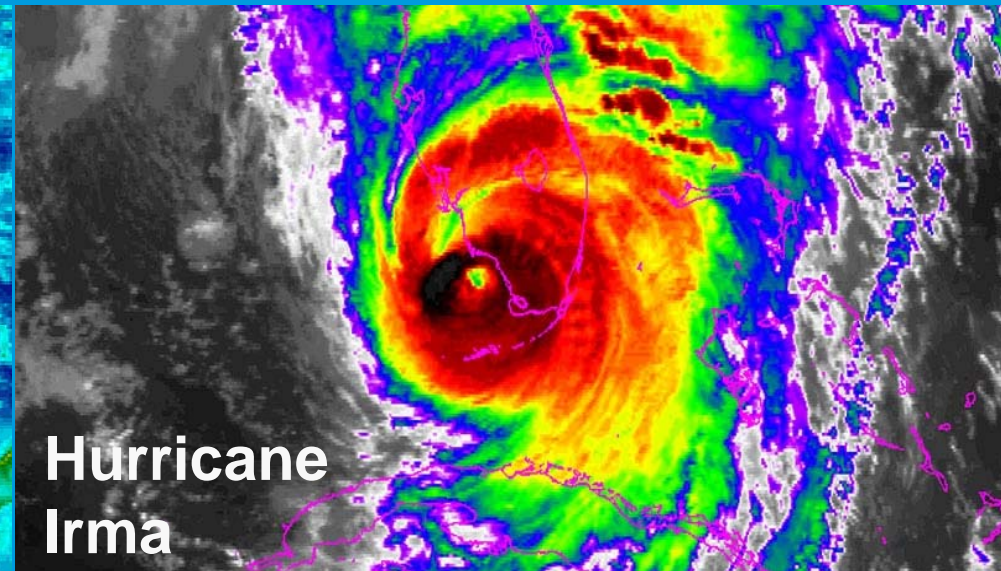
cc: Counsel for Parties of Record (w/encl.)



FPL®



Hurricane
Matthew



Hurricane
Irma

May 2, 2018 FPSC Workshop Storm Preparedness/Response

Bryan Olnick, Vice-President - Distribution Operations

FPL Power Delivery (Transmission and Distribution)

3,000 employees

75,000 miles of power lines

1.2 million poles and structures

600+ substations

serving more than

half of Florida

vast majority of customers live within 20 miles of coast



Requested Workshop Presentation Topics

- ▶ Overview - Prevention & Restoration
- ▶ Infrastructure Performance – Hardened vs. Non-hardened / Other
- ▶ Infrastructure Performance – Overhead vs. Underground Facilities
- ▶ Impediments to Restoration
- ▶ Customer and Stakeholder Communication
- ▶ Suggested Improvements

2016 & 2017 Storm Seasons Overview

- ▶ FPL's service territory threatened with Category 4 and 5 storms
- ▶ Hurricanes Matthew and Irma were massive storms that impacted FPL's entire service territory
- ▶ For both Matthew and Irma, FPL's infrastructure hardening investments, storm preparedness initiatives and well-tested storm restoration processes resulted in improved infrastructure resiliency performance and reduced restoration times

Overview - Prevention & Restoration



- ▶ Infrastructure hardening
- ▶ Smart grid / technology
- ▶ Pole/structure inspections
- ▶ Tree trimming / vegetation management
- ▶ Storm preparedness
- ▶ Restoration

Infrastructure Hardening - Distribution



- ▶ **Investments in feeder hardening have reduced outages and restoration times**
 - ▶ Day-to-day and storm reliability benefits
 - ▶ 95% of CIF/Community feeders hardened
 - ▶ >40% of all feeders hardened / UG
 - ▶ By 2024, 100% of feeders hardened / UG
- ▶ **Consistently supports municipal OH to UG conversions**
- ▶ **Hardening does not prevent all outages, but provides for faster restoration when outages occur**

Infrastructure Hardening - Transmission



- ▶ **Two initiatives completed**
 - ▶ Replaced all ceramic post insulators (line protective device) – Wilma lesson learned
 - ▶ Installed flood monitoring/mitigation equipment in over one-third of FPL's substations - Sandy lesson learned
- ▶ **Replacing all wood structures**
 - ▶ >90% are now steel / concrete
 - ▶ 100% steel / concrete by 2022
- ▶ **Hardened transmission system performed well during Matthew and Irma**

Smart Grid / Technology



- ▶ **Automated Feeder Switches (AFS)**

- ▶ Self-healing technology
- ▶ Help avoid customer interruptions – day-to-day and storms



- ▶ **Drones**

- ▶ Facilitate damage assessments

- ▶ **Mobile Command Centers/Community Response Vehicles/Mobile Office Containers**

- ▶ Deployed to storm impacted areas



- ▶ **Smart Meters**

- ▶ Help reduce restoration time – day-to-day / storms

Pole / Structure Inspections



- ▶ **FPL annually inspects / tests for strength and loading**
- ▶ **1.2 million distribution poles**
 - ▶ Annually inspect/test 1/8 of system (wood/concrete)
 - ▶ First 8-year cycle completed; 50% through second cycle
- ▶ **65,000 transmission structures**
 - ▶ Visually inspect 100% of structures annually
 - ▶ Strength/load test: Wood (6-year cycle); concrete (10-yr. cycle)

Tree Trimming / Vegetation Management



▶ Distribution

- ▶ Trim 15,000 miles annually
- ▶ Feeders: 3-yr. avg. cycle
- ▶ Laterals: 6-yr. avg. cycle
- ▶ Before peak of storm season – inspect/trim all CIF feeders

▶ Transmission

- ▶ Meet mandatory NERC-established requirements
- ▶ Inspect at least 2 times per year
- ▶ Maintain clearances on all 6,900 miles annually



Storm Preparedness



▶ Preparations

- ▶ Storm preparedness is a year-round focus
- ▶ Train all storm functions for understanding / process efficiency
- ▶ Conduct annual corporate-wide storm drill
- ▶ Conduct annual staging site drill
- ▶ Secure contractor/mutual aid agreements
- ▶ Secure staging sites/logistics agreements
- ▶ Increase material and supply inventories

Restoration



▶ Hurricanes Matthew & Irma

- ▶ Most severe storms to impact FPL in recent history
- ▶ Both impacted FPL's entire service territory
- ▶ Irma, slow moving & much more damaging
- ▶ Largest resource pre-staging events in FPL's history

	Wilma	Matthew	Irma
Customer outages	3.2M	1.2M	4.4M
Staging sites	20	22	29
% Restored / days	50% / 5	99% / 2	50% / 1
All restored (days)	18	4	10
Avg. days to restore	5.4	<1	2.1

Requested Workshop Presentation Topics

- ▶ Overview - Prevention & Restoration
- ▶ Infrastructure Performance – Hardened vs. Non-hardened / Other
- ▶ Infrastructure Performance – Overhead vs. Underground Facilities
- ▶ Impediments to Restoration
- ▶ Customer and Stakeholder Communication
- ▶ Suggested Improvements

Infrastructure Performance – Hardened vs. Non-hardened / Other



Hurricane Irma hits Biscayne Bay in Miami on Sept. 10, 2017 | Wilfredo Lee-AP

- ▶ Distribution Poles / Feeders
- ▶ Transmission Structures / Flood Mitigation
- ▶ Smart Grid / Technology

Infrastructure Performance – Distribution Poles / Feeders



Pole failures	Hardened	Non-hardened
Matthew	0	408
Irma	26	2,834

Feeders (outages) – Hardened vs. Non-hardened	
Matthew	Hardened - 32% better
Irma	Hardened – 16% better

Feeders (restoration) - Hardened vs. Non-hardened	
Irma	Hardened – 50% faster

Hardened facilities performed significantly better than non-hardened facilities

Infrastructure Performance – Transmission Structures & Flood Mitigation



Structure failures	Hardened	Non-hardened
Matthew	0	0
Irma	0	5



Substations pro-actively de-energized as a result of flood monitoring system notifications

Matthew	1
Irma	2

Transmission system performed well overall, with hardened facilities performing better than non-hardened facilities

Infrastructure Performance – Smart Grid / Technology



- ▶ **Self-healing AFS avoided customer outages**
 - ▶ Matthew 118,000
 - ▶ Irma 546,000
- ▶ **Drones facilitated damage assessments, reducing restoration time**
- ▶ **Mobile Command Centers & Community Response Vehicles enabled situational awareness and improved customer interactions**
- ▶ **Smart meters reduced restoration times**

Requested Workshop Presentation Topics

- ▶ Overview - Prevention & Restoration
- ▶ Infrastructure Performance – Hardened vs. Non-hardened / Other
- ▶ Infrastructure Performance – Overhead vs. Underground Facilities
- ▶ Impediments to Restoration
- ▶ Customer and Stakeholder Communication
- ▶ Suggested Improvements

Infrastructure Performance – Overhead vs. Underground Facilities



- ▶ Feeders
- ▶ Laterals
- ▶ Outage Causes

Infrastructure Performance – Overhead vs. Underground Facilities

Feeder Outages

	Matthew	Irma
Hybrid vs. Underground	Underground 94% better	Underground 66% better
Overhead vs. Underground	Underground 96% better	Underground 78% better

Lateral outages

	Matthew	Irma
Overhead vs. Underground	Underground 95% better	Underground 83% better

Note – Hybrid feeders consist of both OH and UG facilities

Underground facilities performed significantly better than overhead facilities

Infrastructure Performance – Primary Outage Causes



Infrastructure Performance – Primary Outage Causes



Requested Workshop Presentation Topics

- ▶ Overview - Prevention & Restoration
- ▶ Infrastructure Performance – Hardened vs. Non-hardened / Other
- ▶ Infrastructure Performance – Overhead vs. Underground Facilities
- ▶ Impediments to Restoration
- ▶ Customer and Stakeholder Communication
- ▶ Suggested Improvements

Impediments to Restoration



- ▶ **Uprooted / broken trees**

- ▶ Wrong trees in the wrong place was the primary cause of outages
- ▶ Downed trees also required clearing to gain access, extending restoration

- ▶ **Storm surge / flooding**

- ▶ Delayed restoration access / repairs



- ▶ **Traffic congestion**

- ▶ Extended crews travel time



Requested Workshop Presentation Topics

- ▶ Overview - Prevention & Restoration
- ▶ Infrastructure Performance – Hardened vs. Non-hardened / Other
- ▶ Infrastructure Performance – Overhead vs. Underground Facilities
- ▶ Impediments to Restoration
- ▶ **Customer and Stakeholder Communication**
- ▶ Suggested Improvements

Customer and Stakeholder Communication



Expanded digital/face-to-face communications



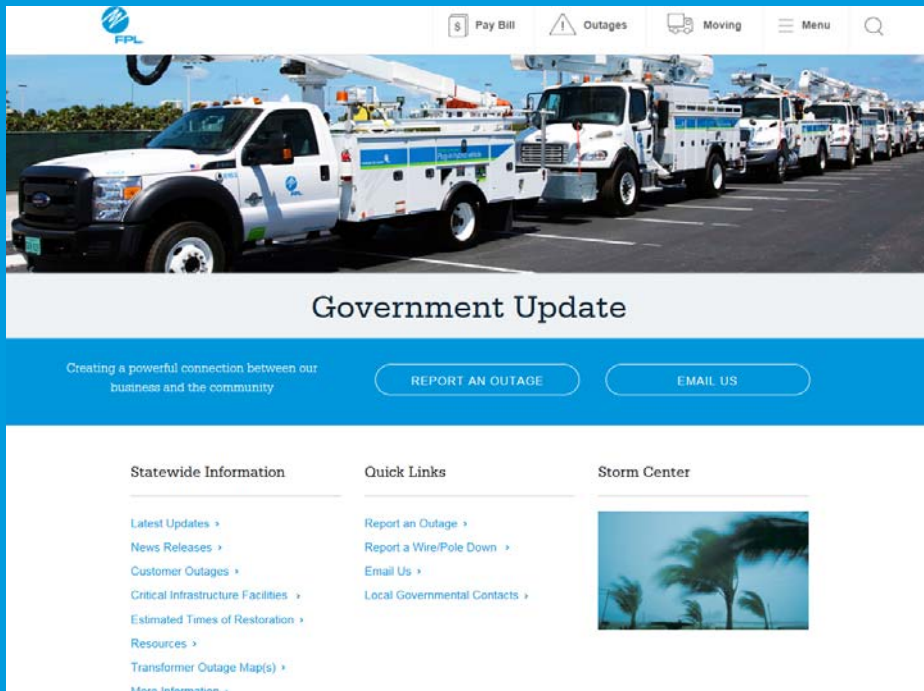
- ▶ Frequently used Facebook Live broadcasts to provide broad restoration updates
- ▶ Targeted social posts with area-specific information
- ▶ Pushed texted communications to update customers



- ▶ Launched new FPL Mobile App for easy access to information
- ▶ Established community response kiosks in hardest hit areas

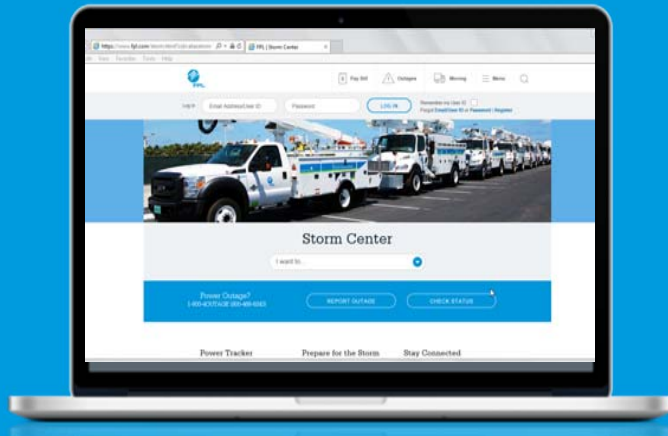
Proactive local stakeholder engagement

- ▶ FPL personnel, staffed at 32 EOCs, maintained steady contact with 100% of counties served
- ▶ FPL President/CEO hosted multiple conference calls with key local government leaders to provide updates/obtain input
- ▶ Company leaders (at times accompanied by local leaders) made daily in-person site visits to impacted areas
- ▶ Sent daily e-mail updates and provided hourly updates to Governmental Portal website with franchise-level information



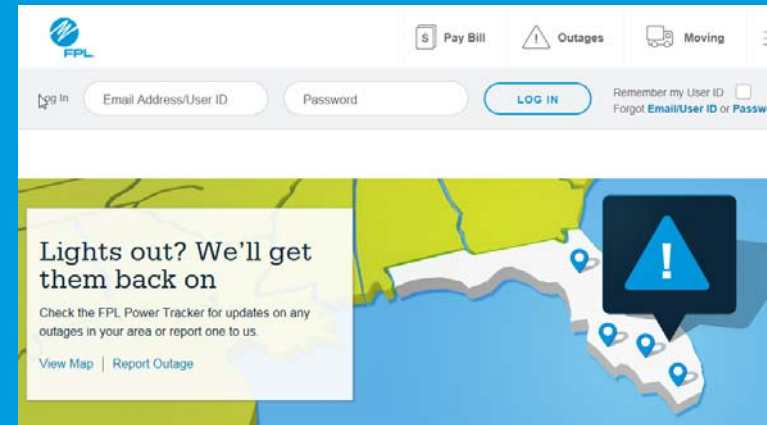
Key communication improvements

Digital Systems



- Completed initial system improvements to ensure the capacity of our digital systems can now handle extreme volumes of customer traffic – even beyond the volume experienced during Hurricane Irma.

Restoration Information



- Working to provide more consistent, accurate and timely restoration information to our customers and stakeholders.

Requested Workshop Presentation Topics

- ▶ Overview - Prevention & Restoration
- ▶ Infrastructure Performance – Hardened vs. Non-hardened / Other
- ▶ Infrastructure Performance – Overhead vs. Underground Facilities
- ▶ Impediments to Restoration
- ▶ Customer and Stakeholder Communication
- ▶ Suggested Improvements

Suggested Improvements

- ▶ **2018-2020 Underground Lateral Pilot**
 - ▶ Initiated primarily as a result of Matthew/Irma learnings
 - ▶ Will provide valuable insight for future lateral overhead to underground conversions
 - ▶ Barriers
 - ▶ Experience with infrastructure design options
 - ▶ Customer acceptance/resistance/participation
 - ▶ Customer property repairs/meter can conversions
 - ▶ Easements/land rights
 - ▶ Permitting/municipal coordination
 - ▶ Project duration
 - ▶ Resource/cost impacts
 - ▶ Pole attachment considerations
 - ▶ Involves laterals spread throughout all 16 FPL management areas and 10 of the most populated counties in FPL's service territory
 - ▶ Estimating construction to begin July 2018

Suggested Improvements (continued)

▶ **Vegetation Management**

- ▶ Change state laws/local ordinances to adopt/enforce “Right Tree, Right Place” philosophy and provide utilities’ rights to clear/remove vegetation near electric facilities – including outside of rights-of-way or easements

▶ **Pole Inspections**

- ▶ Work with legislature to enact law requiring pole inspection program for non-electric utilities that own poles with electric facilities attached

Questions?

