

# Florida Power & Light Company Grid Hardening and Hurricane Response

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# **FPL Power Delivery infrastructure**

3,000 employees
75,000 miles of
power lines
890,000 transformers
1.2 million poles and
structures

VAST MAJORITY OF CUSTOMERS LIVE WITHIN 20 MILES OF COAST



#### Service area characteristics challenge us









- Approximately 530 miles of coastline, one of the longest of any U.S. utility
- Florida climate promotes one of the fastest vegetation growth rates in the U.S.
- Salt spray produces corrosive environment
- Lightning capital of North America
- Most susceptible to hurricanes

# Our history shows why our preparation

is essential

Year	Storm	Customers	Restored
2004	Charley	874,000	13 days
2004	Frances	2,786,300	12 days
2004	Jeanne	1,737,400	8 days
2005	Dennis	508,800	3 days
2005	Katrina	1,453,000	8 days
2005	Rita	140,000	2 days
2005	Wilma	3,241,400	18 days
2016	Matthew	1,185,000	4 days
2017	Irma	4,454,000	10 days







# After seven storms in two years, we began executing our Storm Secure program

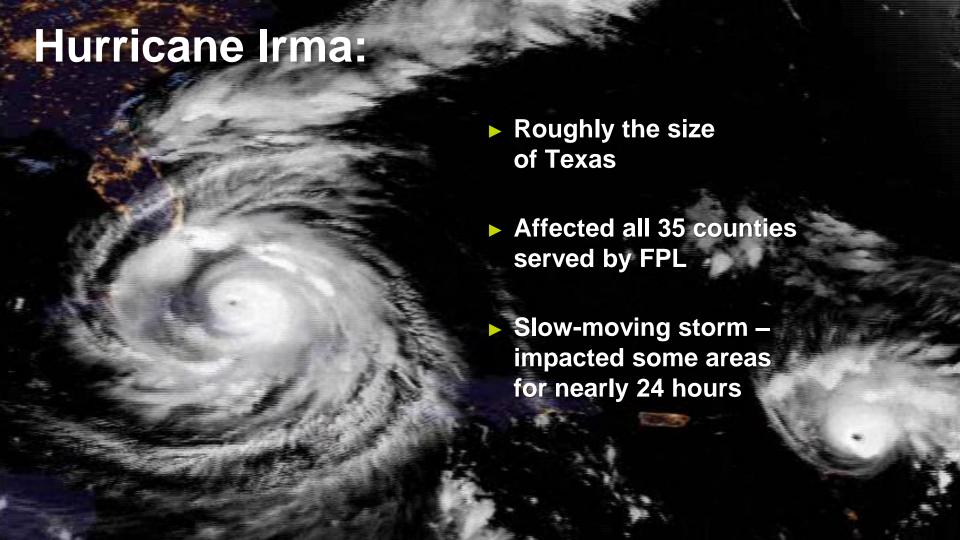
Hardening

**Pole Inspections** 

**Vegetation Management** 

**Underground Conversions** 

Obtained FPSC approval of FPL's specific storm hardening and preparedness initiatives and plans



# Winds alone weren't the biggest issue

major damage from and

most outages caused by

fallen trees

and

wind-blown

debris

# Flooding and storm surge on both coasts











# Most distribution outages caused by falling trees and wind-blown debris













#### Wilma vs. Irma

- Hurricane winds (74+ mph)
- Strong tropical storm winds (55-73 mph)
- Moderate tropical storm winds (39-54 mph)





Saffir-Simpson Scale	Category 3	Category 4
Maximum Sustained Winds in Florida	120 mph	130 mph
Cyclone Damage Potential Index*	2.8	4.3
FPL Counties Impacted	21	35
Customer Impacted	3.2 million	4.4 million
% of FPL Customers	75%	90%

#### Wilma vs. Irma Restoration





Poles damaged	12,400	4,600
Substations De-energized	241	92
Substations Restored	5 days	1 day

# Wilma vs. Irma Restoration

**Average Customer Outage** 





2.3 days

Customer Restoration	18 days	10 days
50% of Customers Restored	5 days	1 day
75% of Customers Restored	8 days	3 days
95% of Customers Restored	15 days	7 days

5.4 days

#### Largest restoration workforce in our history



# More staging sites to support crews than in any other hurricane











#### Underground systems are not indestructible...



...but they generally perform well



# Local partners are key to recovery efforts



# Key improvements moving forward

Working to enhance
Restoration Information

Power Outages

To report or check the status of an outage, please select from the options below.

Call 1-800-4-OUTAGE (1-800-468-8243) immediately to report a dangerous condition such as a downed power line. Please note, if you have already reported a downed power line, there is no need to report it again. Call 911 for life-threatening emergencies.

Educating communities about Right Tree, Right Place



Building on proven

Hardening Investments



### **FPL supports Puerto Rico**

- ▶ 140 lineworkers, management and support staff on island since early January
- Employees are working with 10person FPL Incident Management Team
- Restoring service to residents in Bayamon









# Our crews face many challenges in the restoration effort

- Inaccessible locations are part of the daily work
  - Man-baskets and rear-of buckets help overcome challenges with terrain and construction practices
- Crews continually adjust work methods to safely and quickly restore customers
- Crews reusing materials
- Driving, MOT and road conditions are a large safety issue





# We're finding opportunities to make an impact

- Meetings between PREPA, USACE, Fluor and vendors to coordinate work
- Crews are giving back to the community
  - Local children have received gifts from lineworkers, which has been meaningful to families







