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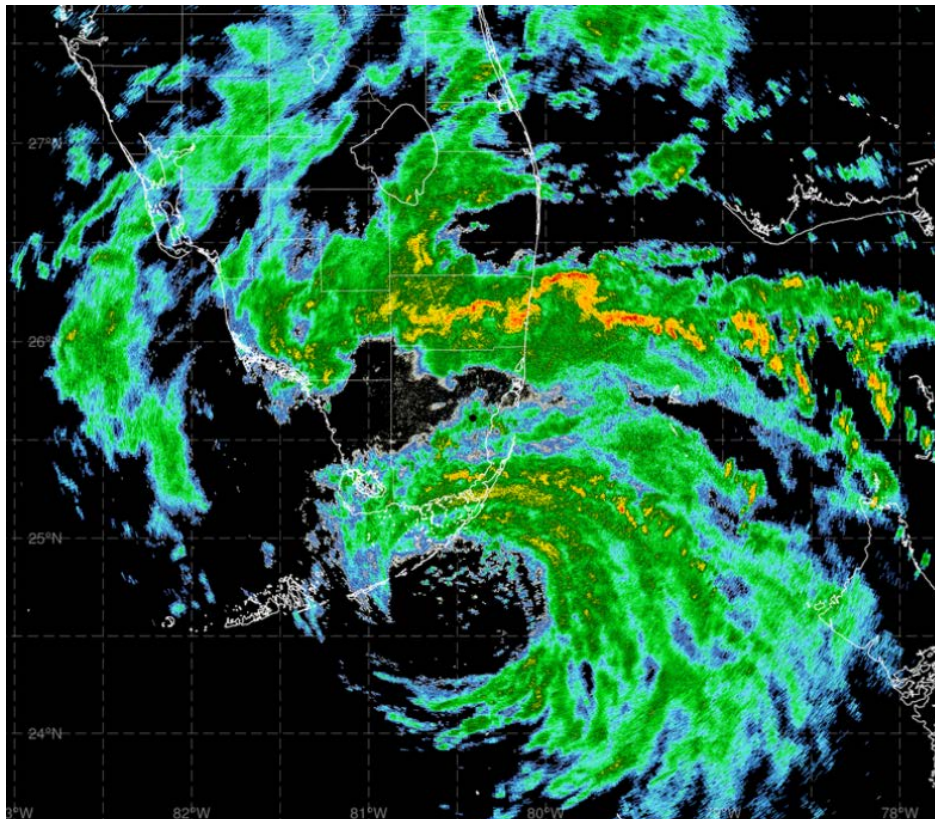
# Power Delivery Performance

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## Hurricane Eta

Storm Date: November 9, 2020

Report Date: September 28, 2021



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**FPL Crews restoring Power in North Port**



This is the Power Delivery Performance Report for Tropical Storm Eta. The purpose of this report is to give an overview of the performance and generalized assessment of the system with specific case studies describing conditions, damage, and system performance.

## Executive Summary

On Saturday November 7, Hurricane Eta impacted the Florida keys with sustained winds of 65mph and produced torrential rains and flooding over portions of South Florida. Although, Hurricane Eta reached Category 4 strength in the Gulf, it was reduced to a tropical storm when making landfall a second time on the Florida Peninsula.

The 48 hour pre-landfall predictive models included a direct hit for the state of Florida. FPL prepared by staging several crews throughout the state to support the restoration efforts for this potentially catastrophic storm.

FPL restored service to approximately 420K customers with the average customer restored in two and a half hours.

Based on the movement of the storm and the investments to the FPL Grid since 2006, the winds effectively did not challenge the structural integrity of the system. During Tropical Storm Eta, implementation of Hardening Programs and Smart Grid worked together to reduce the customer interruptions, severity, and damage to the grid.

**FPL Transmission System and Substations** performed well in Eta with no damage to the BES (Bulk Electric System). FPL experienced no pole failures and no line sections out. In addition, there was no substations out or major substation equipment damages.

**FPL Distribution System** performed well in Eta and demonstrated that the investments in the Distribution Feeder Hardening Program, Pole Inspection Program (PIP) and Smart Grid are providing benefits. The system performed as designed and greatly helped to reduce severe damage, duration of restoration and provided the ability for the grid to self-heal. These investments were key to the speed of storm restoration.

Distribution pole damage was primarily due to vegetation falling into FPL poles or lines. In addition, there were no Hardened feeder poles down and only 7 non-Hardened feeder poles down mainly due to the hardening efforts and the inspections of the non-hardened poles. Total of 19 poles were down and 32% (6 out of 19) of poles down were ATT.

Underground Feeders experienced no outages. Overhead Hardened Feeders performed 2.8 times better than non-Hardened Feeders; however, non-Hardening feeders still benefitted from the Pole Inspection Program (PIP) which has replaced or reinforced over 150,000 poles since the inspection program began in 2006.

Underground Laterals performed 7.5 times better than Overhead Laterals with vegetation (26% of Trouble Tickets) being the leading cause of Overhead Lateral outages. Storm Secure Lateral Undergrounding Program (SSUP), which began in 2018, experienced no outages.

Smart Grid provided benefits with AFS (Automated Feeder Switches) Self-Healing operations avoiding 139.5K Customer Interruptions.



## Quick Stats

### Meteorology

- Eta made landfall twice impacting the Florida Peninsula from Monday November 9, 2020 through Friday November 13, 2020
- First landfall was in the Florida Keys dumping 15-18" of rainfall, sustained winds of 45 mph, and gusts up to 55 mph in Dade and Broward counties.
- Second landfall on November 12, 2020 was near Cedar Key (near the Big Bend) with gusts up to 45mph and exiting on the East coast near St. Augustine.

### Vegetation

- Landfall 1: 10.5% of CI (Customer Interruptions) were due to vegetation  
28.4% of vegetation tickets impacted Feeders or Laterals
- Landfall 2: 25.3% of CI (Customer Interruptions) were due to vegetation  
39.2% of vegetation tickets impacted Feeders or Laterals

### Distribution System Performance

- **Feeders Out 198**
  - UG 7
  - Hardened 62
  - Non-Hardened 129
  - Hardened Feeders performed 2.8 times better than non-Hardened Feeders
- **Laterals Out 1221**
  - OH 1047
  - UG 174
  - Underground Laterals performed 7.5 times better than Overhead Laterals
  - There were no outages on the Storm Secure UG Lateral Hardening program
- **Distribution Transformers**
  - Single phase UG Transformers performed 8.4 times better than OH Transformers
- **Poles Down \***
  - Hardened Feeder 0
  - Non-Hardened Feeder 7
  - ATT, Lateral / Service 6
  - FPL, Lateral / Service 6
  - \* Poles replaced to restore power*
- **Smart Grid**
  - Automatic Feeder Switch (AFS)
    - 139.5K Customer Interruptions (CI) avoided thanks
  - Automatic Lateral Switch (ALS)
    - ALS performed 1.73 times better than non-ALS

### Transmission and Substation System Performance

- Transmission Line Sections Out 4
- Transmission Poles Down 0
- Substations Out 0

### Other

- Injuries OSHA 0
- Forensics Teams Deployed 10
- Drone Teams Deployed 37

### Customers

- Average customer outage was 150 minutes
- Total Customers Restored
  - Landfall 1: 349,600 customers were affected at least once
  - Landfall 2: 70,100 customers were affected at least once

### Carver Tracking (Landfall 1)

- Start All Areas 11/7/20 @ 12AM
- Stop (South and East) 11/10/20 @ 6AM
- Stop (West and North) 11/10/20 @ 3PM

### Carver Tracking (Landfall 2)

- Start (West and North) 11/11/20 @ 10AM
- Stop (West) 11/12/20 @ 7AM
- Stop (North) 11/12/20 @ 10AM

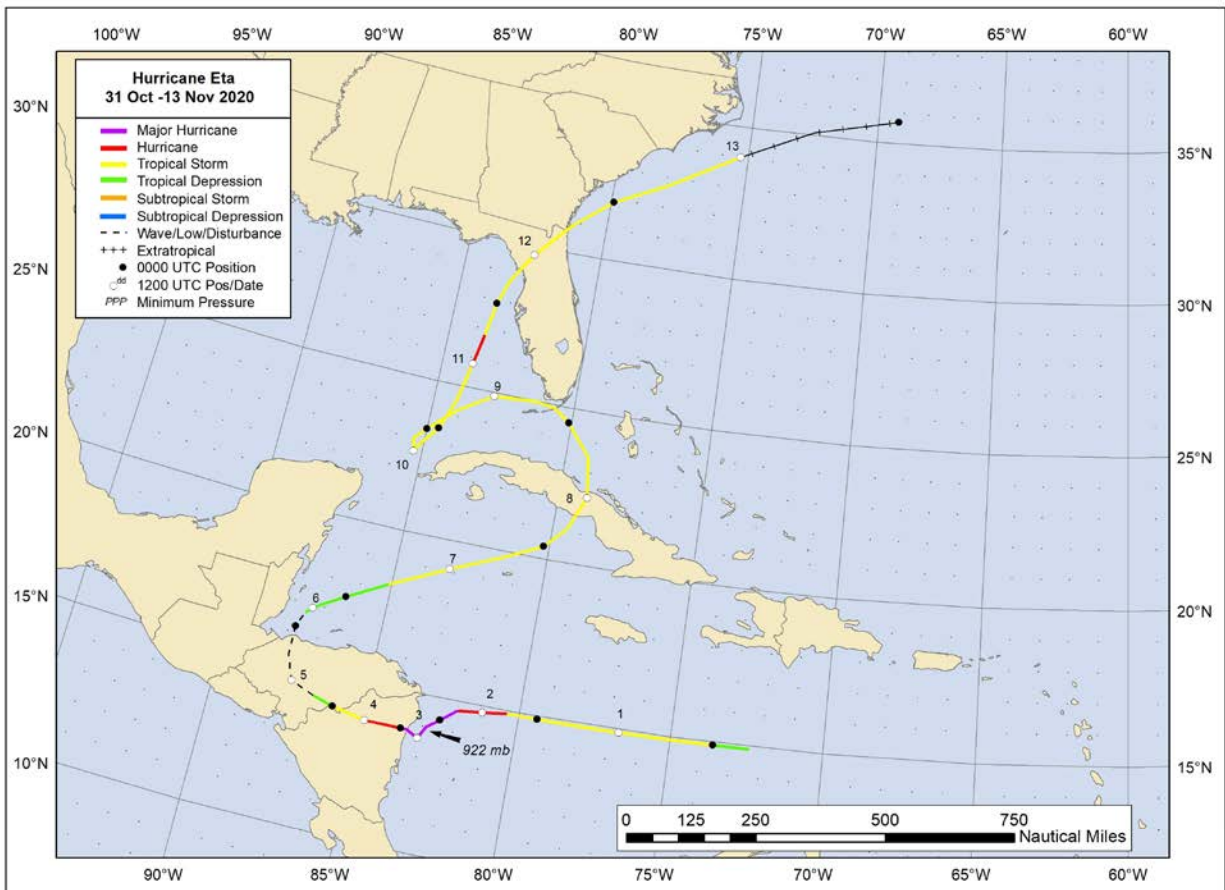


**Hard Rock Stadium (Home to the Miami Dolphins) in Miami Gardens**

## Storm Characteristics and Weather (Source NHC Report)

Tropical Storm Eta made landfall on the Florida Peninsula 2 times. First in the Keys as a Tropical storm with feeder bands impacting Dade and Broward counties with 15-18" of rainfall. After crossing the Florida Keys, Tropical Storm Eta headed west and into the gulf with tropical force winds impacted the southwestern coast of florida. Tropical Storm Eta made a turn in the gulf making second landfall at Cedar Key and moving across the florida peninsula to exit north of St. Augustine.

### Actual Storm Path



Best track positions for Hurricane Eta, 31 October–13 November 2020 (Source NHC)

### Tornados (Source NHC Report)

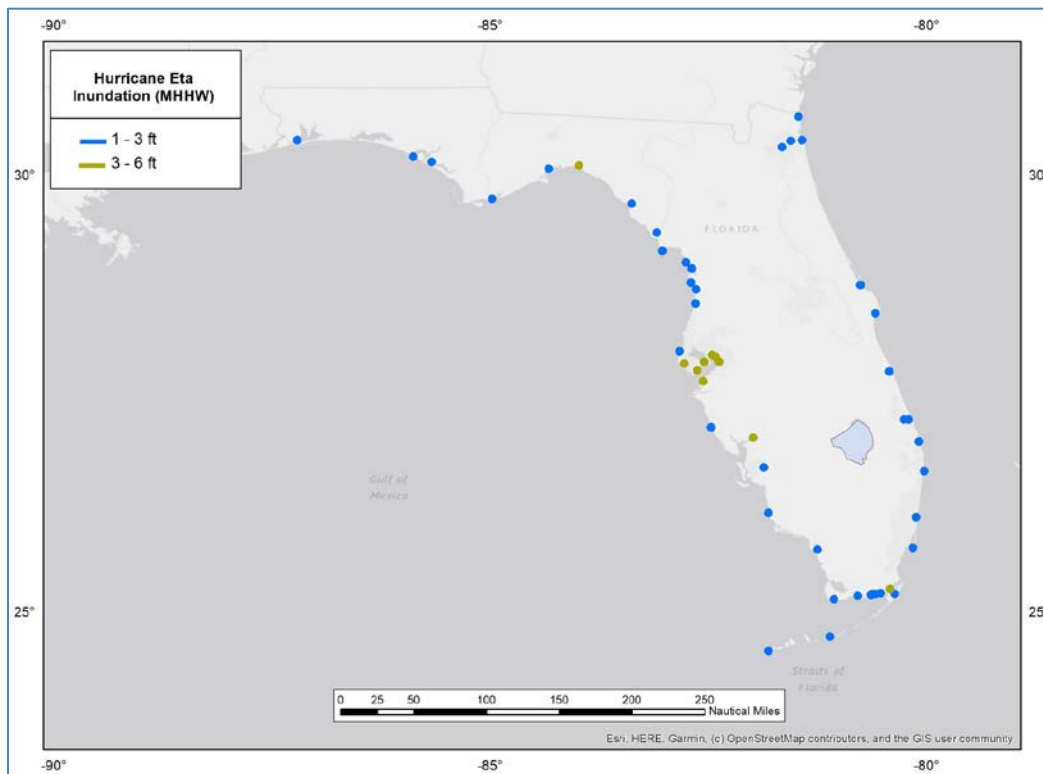
- One EF0 tornado was reported in Manatee County, Florida, caused minor damage.

### Wind (Source NHC Report)

- Sustained winds of 45 mph, and gusts upto 55 mph in Dade and Broward counties.
- gusts upto 45mph at cedar Key

### Storm Surge (Source NHC Report)

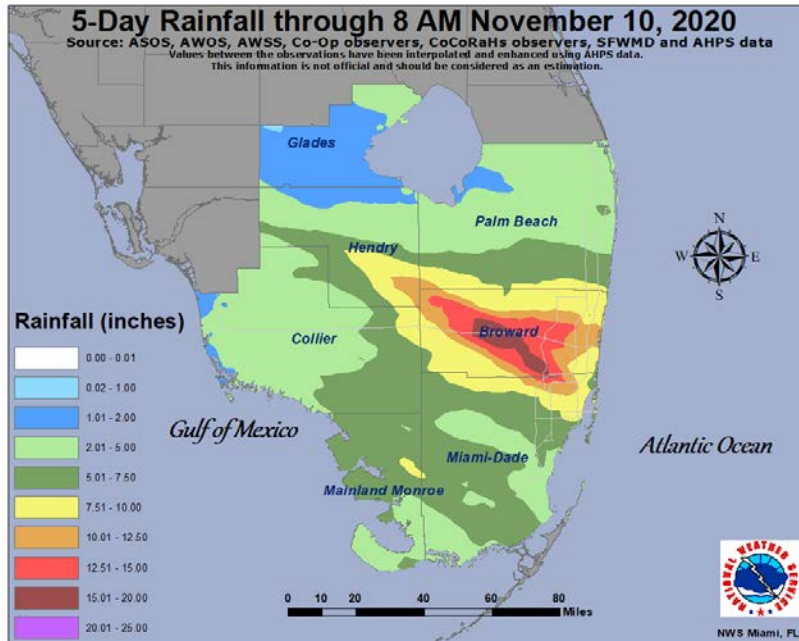
- Storm surge inundation levels along the coast in FPL territories were generally 1 to 3 ft AGL (above ground level).



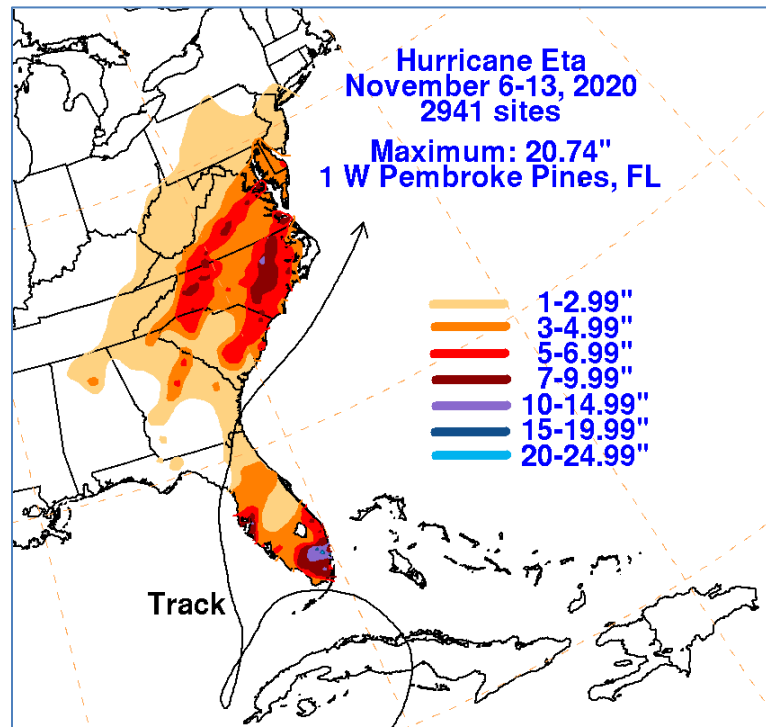
Maximum water levels measured from tide and stream gauges (circles) from Hurricane Eta. Water levels are referenced as feet above Mean Higher High Water (MHHW), which is used as a proxy for inundation (above ground level) on normally dry ground along the immediate coastline.

### Rain Fall (Source NHC Report)

- South Florida was the focus of significant rainfall from Eta in the United States.
- Broward County: The highest rainfall of 20.74 inches occurred in Pembroke Pines
- Dade County: 14.12 inches of rain fell near Biscayne Park and 13.40 inches in N. Miami.
- Numerous other locations in Broward and Miami-Dade Counties received over 10 inches of rainfall, which resulted in widespread major flooding across the areas.



United States rainfall totals (inches) associated with Eta during the period 6–13 November 2020. Figure courtesy of Zackary Taylor and David Roth of the NOAA Weather Prediction Center.



### Flooding (Source NHC Report)

- Eta caused an estimated \$1.5 billion worth of total damage in the United States, primarily in southern Florida.
- Major flooding was Eta's greatest impact in South Florida, with water entering some structures in parts of Broward County including Fort Lauderdale, Lauderdale, and Davie.
- Heavy rains resulted in standing water that made streets impassable in northern Miami-Dade County and portions of downtown Miami and Brickell.
- Floodwaters in the streets were slow to recede and lingered for several days after the storm.



Davie



Southwest Ranches, Broward County

Image courtesy of Daniel P. Brown, NHC



Miami

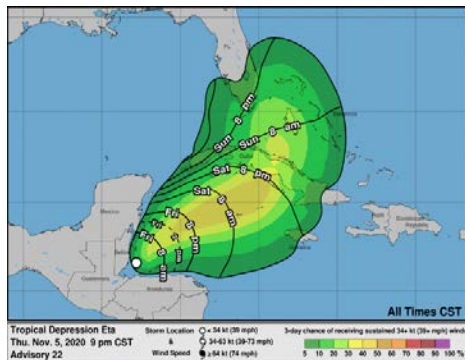


Little Gasparilla Island

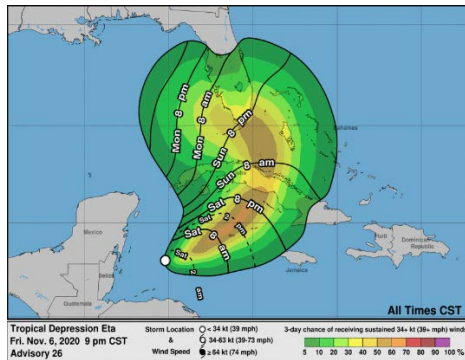
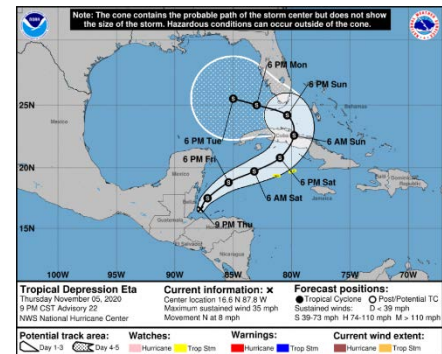


Flooding on Brickell Ave Downtown Miami

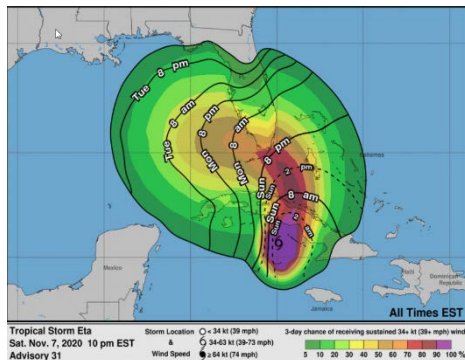
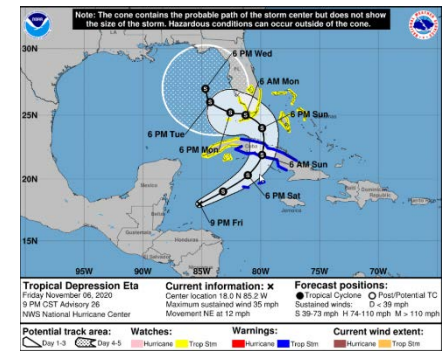
# Pre-Landfall 1 Storm Path (Florida Keys) Source NHC



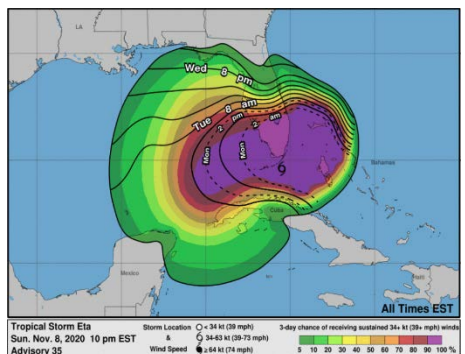
72 Hour



48 Hour



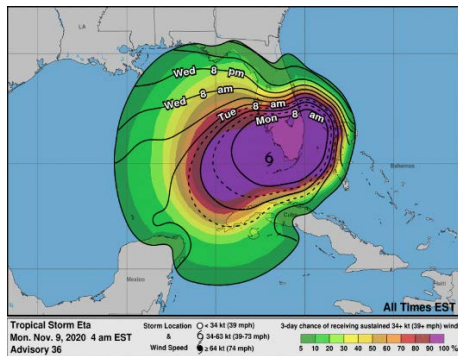
24 Hour



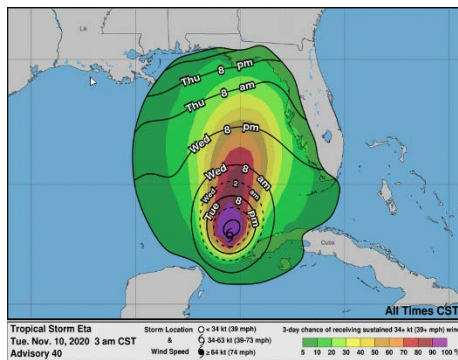
Final Hour



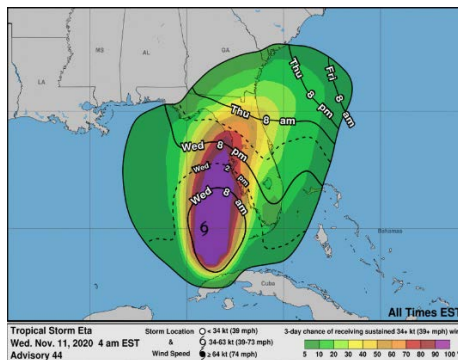
# Pre-Landfall 2 Storm Path (Cedar Key near Big Bend) Source NHC



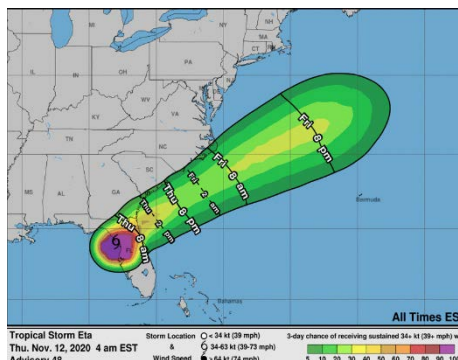
72 Hour



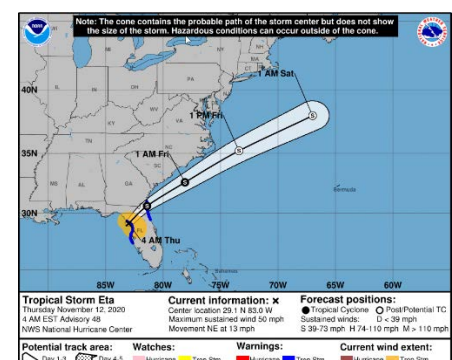
48 Hour



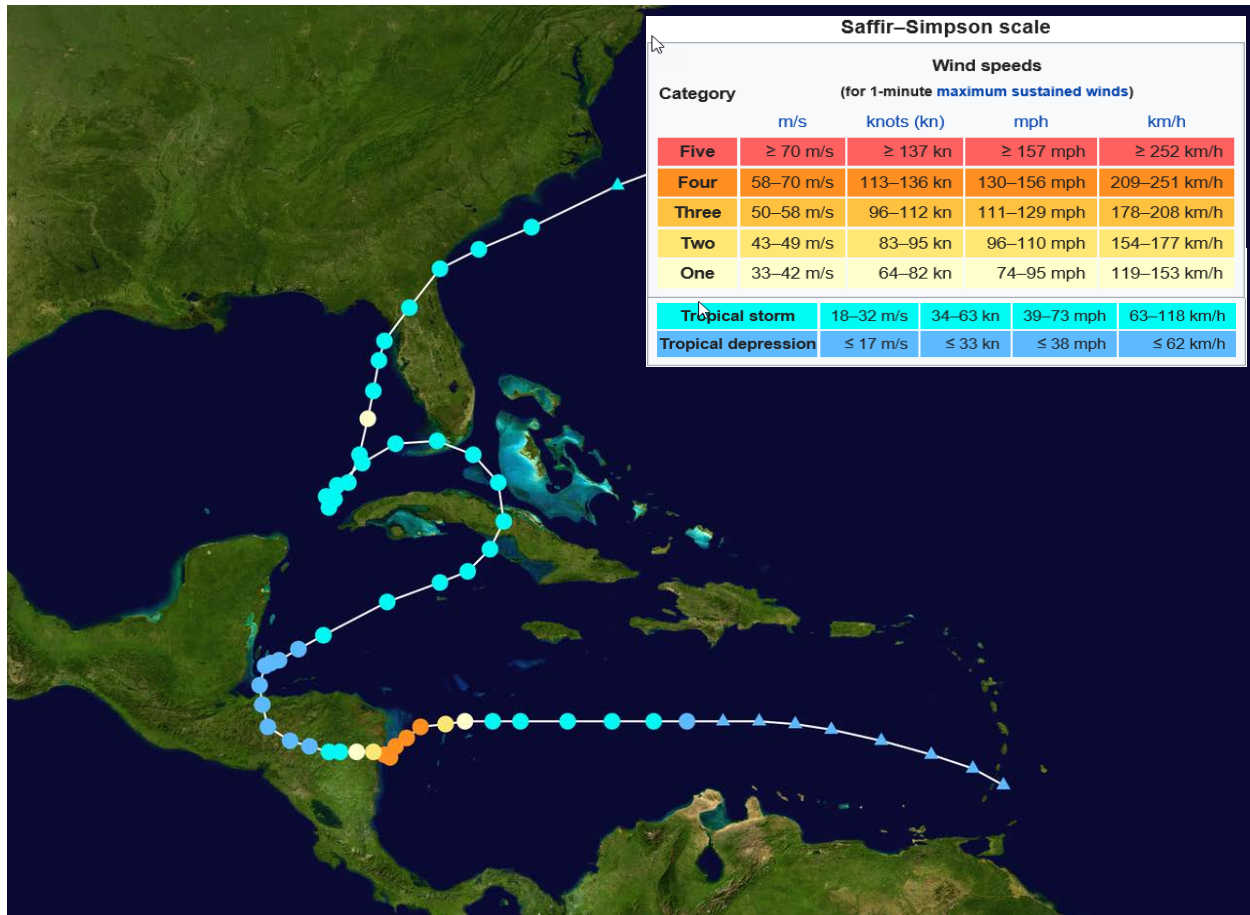
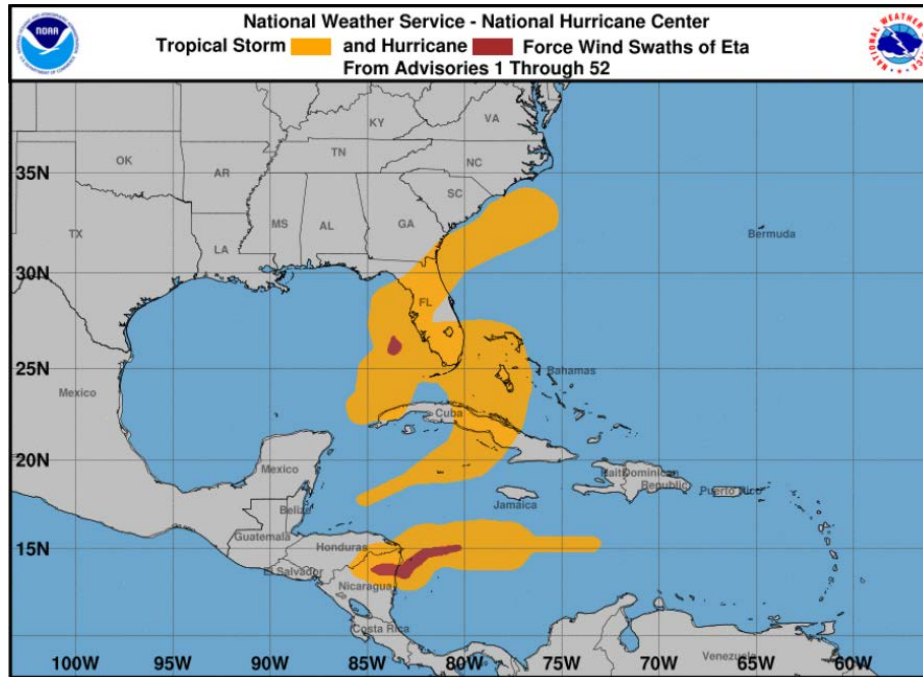
24 Hour



Final Hour



## Actual Storm Path (Source: NHC)



## Transmission and Substation Performance

Overall, Transmission and Substation performed well during the storm event.

### Transmission System Performance

- 4 Transmission Lines Impacted
- 0 Poles Down

### Transmission Line Events

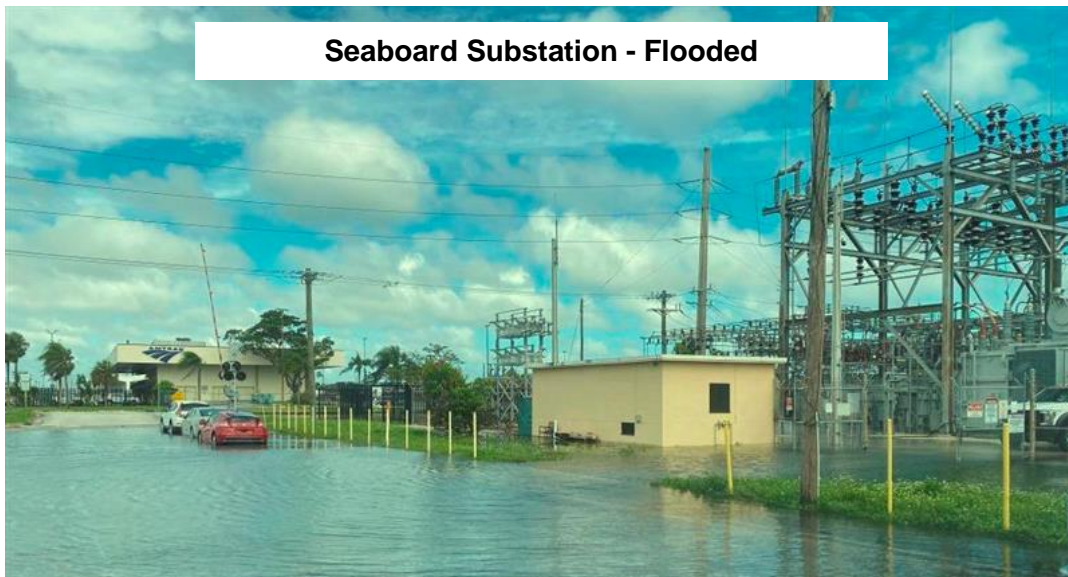
Transmission Line	Line Section	Cause	Structure
Cocoa Beach-Patrick 138kV	Minuteman-Banana River	Polymer suspension insulator	135E7
Daytona Beach-Volusia #2 115kV	Daytona Beach-Halifax	OHGW	113H5
Farmlife-Tavernier 138kV	Farmlife-Tavernier	Terminal pad connector	227A10
Hobe-Plumosus #1 138kV	Hobe-Jupiter	Ceramic suspension insulator	26D8A

### Substation System Performance

- 0 Substations Impacted
- 2 Flooded Substations
  - Seaboard (Dade Area)
  - Verena (Broward Area)

### Relay Misoperation Details

- No Mis-operations occurred



## Substation Pictures

### Seaboard Substation (Dade County) - Flooded



### Verena Substation (Broward County) - Flooded



## Distribution Performance

Distribution System performed well in Eta and demonstrated the investments in the Distribution Hardening Program, Pole Inspection Program (PIP) and Smart Grid have helped to reduce the number and severity of outages during Tropical Storm Eta. This was key to improved speed of restoration.

### Pole Down Summary

- Hardened Feeder 0
- Non-Hardened Feeder 7
- ATT, Lateral / Service 6
- FPL, Lateral / Service 6

### Feeder Summary

	Affected	% Affected
• <b>Feeders Out</b>	<b>198</b>	<b>5.5%</b>
○ UG	7	1.2%
○ Hardened	62	3.6%
○ Non-Hardened	129	10.1%
<i>Excludes outages caused by Transmission and Substation</i>		

- No Hardened Feeder Poles down out of 198,806 poles on 1720 Hardened Feeders
- Hardened Feeders performed 2.8 times better than non-Hardened Feeders
- The primary objective of hardening is to reduce restoration times by minimizing the number of pole failures during extreme wind weather events.

### Lateral Summary

	Affected	% Affected
• <b>Laterals Out</b>	<b>1221</b>	<b>1.4%</b>
○ OH	1047	1.2%
○ UG	174	0.2%
<i>Excludes outages caused by Feeder, Substation or Transmission outages</i>		

- Underground Laterals perform 7.5 times better than Overhead Laterals
- Vegetation is the leading cause of Overhead Lateral outages
- No Hardened Laterals (SSUP) experienced an outage

### Smart Grid Summary

- Self-Healing AFS (Automated Feeder Switch) operations avoided 139K Customer Interruptions (CI) during the storm

## Pole Performance

Distribution Poles performed well in Eta. The investments in the distribution hardening program, pole inspection program (PIP) and smart grid have helped reduce the number and severity of outages during storm events. The severity of damage was minimized and the speed of restoration was faster due to the efforts of the hardening programs that FPL has employed.

- Hardened poles performed better than non-Hardened poles.
- Pole damage was primarily due to vegetation.

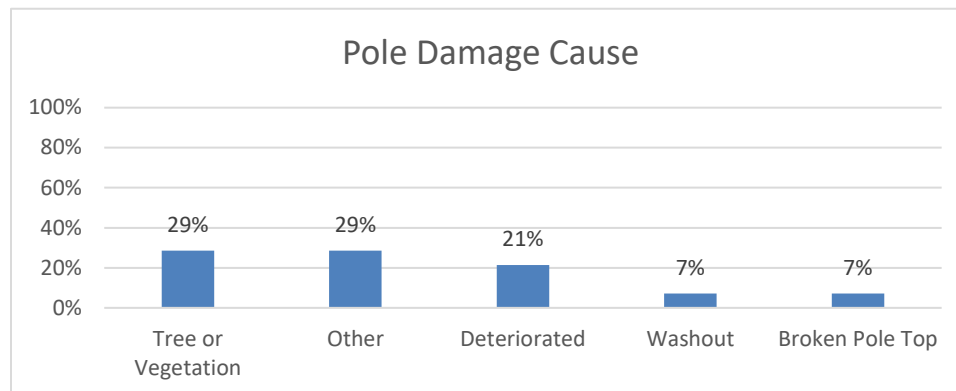
Distribution Pole Failure %				
Pole Type	Landfall 1	Landfall 2	Total # of Poles	Failure Rate
Hardened Feeder	0	0	198,806	0%
non-Hardened Feeder	6	1	199,988*	0.0035%
ATT – Lateral / Service	6	0	232,000**	0.0026%
FPL - Lateral / Service	4	2	737,185*	0.0012%
Overall	16	3	1,367,979	0.0012%

\*The number of poles is an estimate based on 31.78 poles per mile.

\*\* Estimated count

### Type of Pole Damage

- Vegetation was the primary cause for pole damage



## Pole Damage, Pictures, and Details

- Details provided by crews and patrols, when available
- Due to the nature of a small storm, most repairs were completed quickly
- Hardened Feeder, 0 Poles
- Non-Hardened Feeder, 7 Poles
  - FPL, 3 Broken pole top
  - FPL, 1 Pole Fire
  - FPL, 3 No cause given
- Lateral, 8 Poles
  - FPL, 3 No cause given
  - ATT, 3 Deteriorated
  - ATT, 2 Vegetation
- Service, 4 Poles
  - FPL, 2 No cause given
  - FPL, 1 Deteriorated
    - Inherited from Verizon
  - ATT, 1 Vegetation



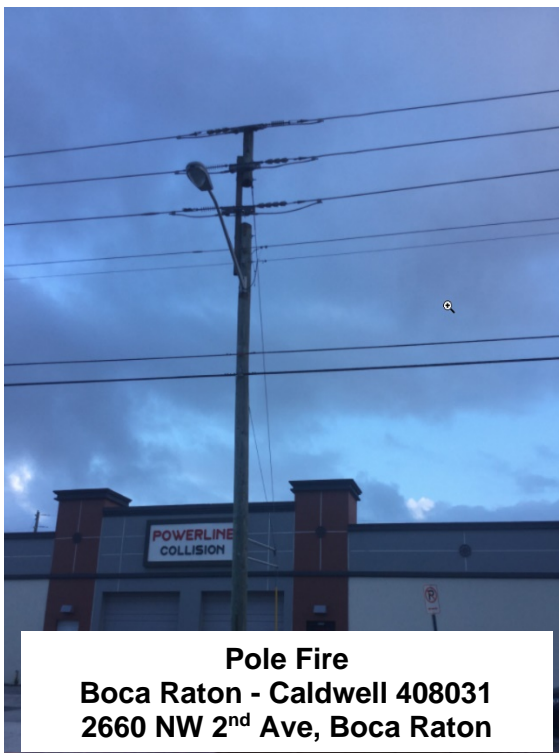
## Pole Damage, Pictures, and Details



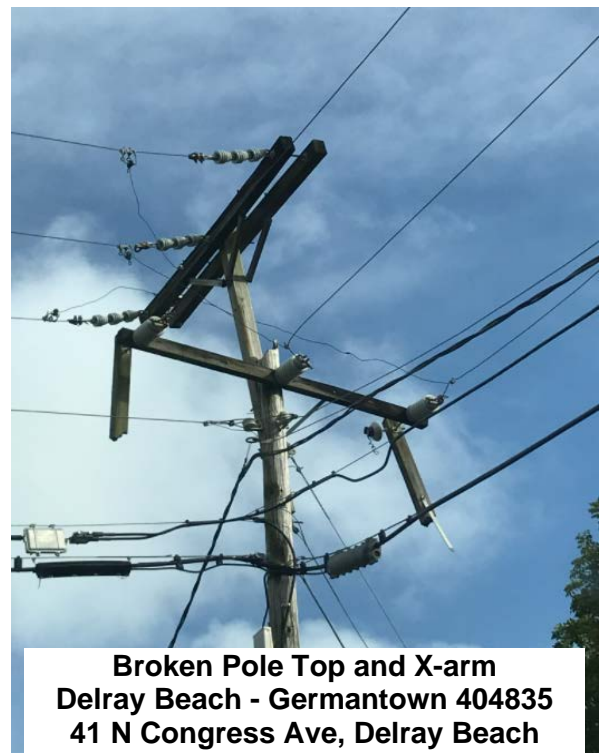
**Broken Pole due to Vegetation**



**Broken Pole Top, TT#1070**



**Pole Fire  
Boca Raton - Caldwell 408031  
2660 NW 2<sup>nd</sup> Ave, Boca Raton**



**Broken Pole Top and X-arm  
Delray Beach - Germantown 404835  
41 N Congress Ave, Delray Beach**

## Feeder Performance

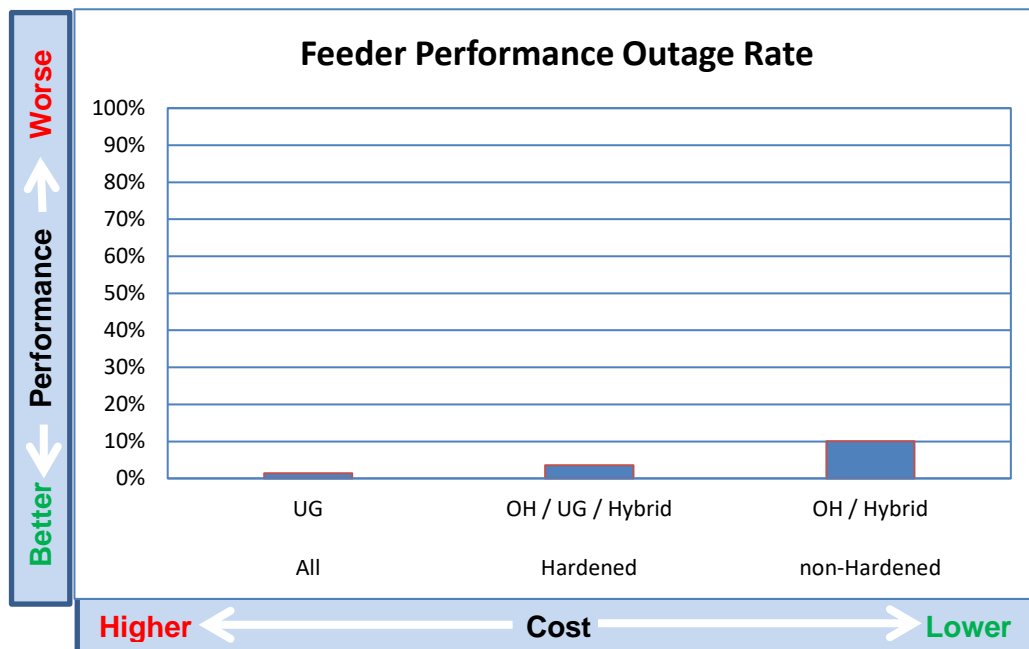
- Underground Feeders performed better than Overhead Feeders.

### Feeder Performance by Feeder Type

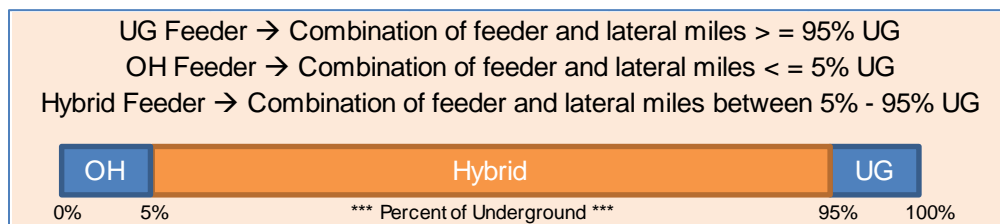
- Excludes Transmission and Substation Outages
- OH Hardened Feeder includes OH-to-UG conversions as a part of Hardening
- Data based on Adjusted Carver Report

Feeder	Type	Outage Landfall 1	Outage Landfall 2	Population	% Affected
UG	All	7	0	462*	1.52%
OH / UG / Hybrid	Hardened	56	6	1495	3.74%
OH / Hybrid	non-Hardened	115	14	1283	10.05%
Total		178	20	3436	5.18%

\*Based on the June 2020 devices file. Filtered for UG feeder types with zero OH feeder and lateral miles



### Definition of Purely Overhead (OH), Purely Underground(UG) and Hybrid Feeders



### Hardened vs non-Hardened Feeder Performance

- Hardened Feeders performed 2.8 times better than non-Hardened Feeders
- Hardened Feeders make up 48 % of the Feeder population.
- 0 Hardened Feeder poles were broken or down during this event.
- Data based on Adjusted Carver Report

$$\text{Hardened Feeder Performance Ratio} = \frac{\text{Number of Non-Hardened Feeders Out*}}{\text{Total Number of Non-Hardened Feeders}} \text{ to } \frac{\text{Number of Hardened Feeders Out*}}{\text{Total Number of Hardened Feeders}}$$

\* Affected = Feeders out at least one time

$$\frac{129/1,283}{62/1,720} = \frac{10.05\%}{3.60\%} = 2.8 \text{ Times Better}$$

### Feeder Outage Causes

- Data based on TCMS tickets
- Due to the large number of resources available during this storm restoration was performed quickly and additional cause analysis was unable to be performed.

Cause Code	Landfall 1 Count of Tickets	Landfall 2 Count of Tickets	Percentage
2,6,14 - Tropical Storm/Storm	84	10	37%
188 - Equip Failed OH	66	5	28%
197 - Other	24	2	10%
20, 21 - Vegetation	18	3	8%
200 - Transmission related	17	0	7%
190 - Unknown	9	1	4%
Balance of outages	13	2	6%
Total	231	23	100%

## Lateral Performance

- UG Laterals performed 1.5 times better than OH Laterals.
- No SSUP (Storm Secure Underground Program) Laterals experienced an outage of the 336 that have been Hardened
- Lateral outages do not include outages caused by Feeder, Substation or Transmission
- Data based on Carver Report

Laterals Out	Landfall 1 & 2	Population	% Affected
OH	1047	87,336	1.20%
UG non-SSUP	174	110,759	0.16%
UG SSUP	0	336	0.0%
Total	1221	197,767	1.36%

$$\frac{1047}{174} \div \frac{87,336}{110,759} = \frac{1.20\%}{0.15\%} = 7.5$$

$$\text{UG Lateral Performance Ratio} = \frac{\text{Number of OH Laterals Out}^*}{\text{Total Number of OH Laterals}} \text{ to } \frac{\text{Number UG Laterals Out}^*}{\text{Total Number of UG Laterals}}$$

\* Affected = Laterals out at least one time

## Lateral Outage Causes

- Data based on TCMS tickets
- Due to the large number of resources available during this storm restoration was performed quickly and additional cause analysis was unable to be performed.

Cause Code	Landfall 1 Count of Tickets	Landfall 2 Count of Tickets	Percentage
2,6,14 - Tropical Storm/Storm	405	111	41%
20,21,25 - Vegetation	194	140	26%
188 - Equip Failed OH	163	23	15%
197 - Other	115	23	11%
190 - Unknown	53	11	5%
Animal or Accident	7	2	1%
Balance of Outages	20	4	2%
Total	957	314	100%

## Distribution Transformer and Padmounted Switch Performance

### Transformer Analytics

- UG transformers performed 8.35 times better than OH transformers
  - $0.35/0.04 = 8.35$

### Transformer Interruptions

- Source Carver file

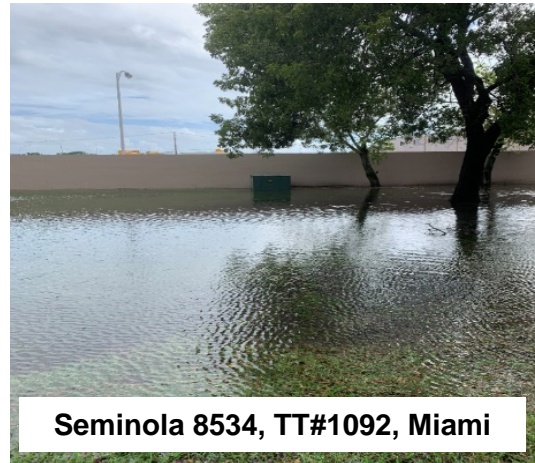
	TX Total	OH TX	UG TX
Landfall 1	1,681	1,546	135
Landfall 2	416	399	17
# of TX	907,227	560,801	346,426
% Interruptions	0.23%	0.35%	0.04%

### Pad Mounted Switches

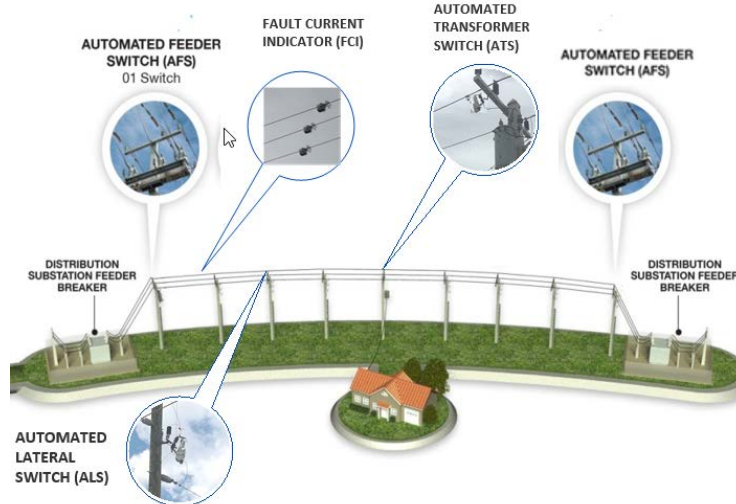
- 7 failed switches were reported based on trouble tickets
  - Flooding and equipment failures were cited as a cause

Feeder Number	Ticket Number	Sub Name	Cause Code	Equipment Code	Support Code
805939	396	COUNTRY CLUB	189	121	
805935	573	COUNTRY CLUB	189	121	313
805937	752	COUNTRY CLUB	6	121	312
805932	793	COUNTRY CLUB	6	121	23
808534	1092	SEMINOLA	189	121	312
811161	1130	SPOONBILL	6	121	313
808433	883	SNAKE CREEK	189	121	23

## Transformer and Padmounted Switch Pictures



- In 2014, FPL began its expansion of its Smart Grid strategy and allow our feeders to prevent and mitigate outages, in addition to speeding up restoration efforts.



### AFS (Automated Feeder Switch)

Automatic Feeder Switches (AFS) isolate, transfer load, interrupt faults and have pulse close capabilities. They automatically reroute electricity to reduce the amount of customers affected when an adverse condition affects the power lines.

AFS Performance	Landfall 1	Landfall 2
Customer Interruptions (CI) Avoided	117,093	22,375
% of AFS Operating Normally	97%	98%

### ALS (Automated Lateral Switch)

Automatic Lateral Switches (ALS) clear temporary faults, provides enhanced protection and coordination. During storm events with extreme winds for extended period of time, ALS performance is similar to a fuse.

- ALS performed 1.73 times better than non-ALS

ALS Performance	Outages Landfall 1	Outages Landfall 2	Population	Percent Outage
NON-ALS Laterals	362	161	27,599	1.89%
ALS Laterals	433	153	59,737	0.98%
Total	795	314	87,336	1.26%
ALS performed times better than non-ALS	1.62	1.84		1.73

## Vegetation

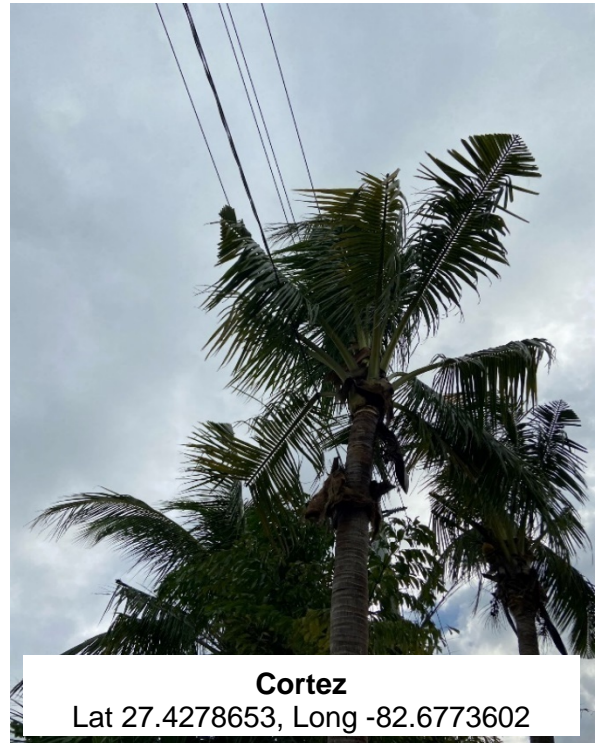
### Summary for Vegetation TCMS Trouble Tickets (TT)

- Landfall 1:
  - 10.5% of CI (Customer Interruptions) were due to vegetation
  - 28.4% of vegetation tickets impacted Feeders or Laterals
  - 71.6% of vegetation tickets impacted Transformers, Services or Secondary
- Landfall 2:
  - 25.3% of CI (Customer Interruptions) were due to vegetation
  - 39.2% of vegetation tickets impacted Feeders or Laterals
  - 60.8% of vegetation tickets impacted Transformers, Services or Secondary
- Other – location ticket not called in by customer and FPL created TCMS ticket

Cause Category	Customers Affected		% of Customers Affected		Total N		% of N	
	1	2	1	2	1	2	1	2
Vegetation	40,201	19,399	10.5%	25.3%	749	375	14.9%	36.0%
Accident	4,239	8	1.1%	0.0%	14	5	0.3%	0.5%
Animal	234	118	0.1%	0.2%	38	4	0.8%	0.4%
Equipment Failure	112,125	14,411	29.1%	18.8%	676	83	13.4%	8.0%
Improper Process	7,196	1,167	1.9%	1.5%	111	17	2.2%	1.6%
Not Available	385	11	0.1%	0.0%	19	3	0.4%	0.3%
Other	41,753	4,659	10.9%	6.1%	710	154	14.1%	14.8%
Request	2,186	2,713	0.6%	3.5%	55	18	1.1%	1.7%
Transmission	14,441	0	3.8%	0.0%	17	0	0.3%	0.0%
Unknown	12,278	1,768	3.2%	2.3%	148	28	2.9%	2.7%
Weather	149,787	32,482	38.9%	42.3%	2,497	356	49.6%	34.1%
<b>Total</b>	<b>384,825</b>	<b>76,736</b>	<b>100.0%</b>	<b>100.0%</b>	<b>5,034</b>	<b>1,043</b>	<b>100.0%</b>	<b>100.0%</b>

"Vegetation" Cause Category	Customers Affected		% of Customers Affected		Total N		% of N	
	1	2	1	2	1	2	1	2
Feeder, Lateral	35,843	17,796	89.2%	91.7%	213	147	28.4%	39.2%
Transformer, Service, Secondary	4,358	1,603	10.8%	8.3%	536	228	71.6%	60.8%
<b>Total</b>	<b>40,201</b>	<b>19,399</b>	<b>100.0%</b>	<b>100.0%</b>	<b>749</b>	<b>375</b>	<b>100.0%</b>	<b>100.0%</b>

## Vegetation Pictures



## Vegetation Pictures



## Forensics

### Data Collection Teams

- Forensic Teams: 4 West and 6 North
- Drone Teams: 27 West and 10 North
  - Drones flew multiple interruption feeders and flooded Seaboard substation.
  - Over 1,800 photos taken.

### Background and Philosophy

FPL's Storm Forensic Organization was formed after the 2004-2005 active storm seasons to help evaluate Distribution infrastructure performance during extreme wind weather events. The data collected serves to meet FPL commitments to the FPSC which include annual summary reporting of infrastructure performance during Tropical Storm events.

The field forensic teams were created to investigate affected areas and collect damage information to analyze performance of:

- Hardened Feeders
- Overhead Feeders
- Overhead vs. Underground Laterals

Note: Forensic investigations exclude locations under safety, property damage or other special investigation teams

### Eta Activation

Based on the projected path and intensity of Tropical Storm Eta the Forensics Team was pre-activated, but not pre-positioned. Teams were deployed as conditions improved and were acceptable to begin patrol.

### ESDA

Since communications were not down, FPL incorporated the use of the ESDA (Emergency Storm Damage Assessment) App on their smart device to collect data on the impacted Hardened Feeders. All Hardened Feeders affected, that were not related to substation or transmission outages, were patrolled using ESDA.

### Hardened Feeders

The primary objective of hardening is to reduce restoration times by minimizing the number of pole failures during extreme wind weather events. Pole failures typically lead to extended restoration times and longer outages. As a result, FPL forensic investigators use pole failure rates as the primary measurement criteria to evaluate performance of Hardened vs. non-Hardened Feeders within the impacted areas. Feeder field forensic data was collected to conduct root

cause analysis and failure mode of previously Hardened Feeders that locked out during the storm. All calculations are based on field data collected from ESDA patrols.

### Overhead Feeders

Investigation of selected Overhead Feeders impacted by extreme wind events is an annual reporting requirement to the FPSC. Inspection locations are defined based on selected routes within the path of the storm. The objective of inspections is to collect sample data on selected Feeder locations in order to evaluate infrastructure performance during extreme wind events. Field data from ESDA patrols, TCMS and other sources will be utilized.

### Overhead vs. Underground Performance

The investigation and performance of Overhead vs. Underground infrastructure during extreme wind events is an annual reporting requirement to the FPSC. Forensic investigators examine selected Underground or Overhead Lateral facilities that were affected within the path of the storm. The objective of these inspections is to collect sample data from Overhead or Underground damage locations in order to evaluate and compare infrastructure performance of Overhead and Underground facilities during extreme wind event. Field data from ESDA patrols, TCMS and other sources will be utilized.

### Defining Storm Affected Areas

The emergency preparedness department performs the storm tracking activities from forecast to actual storm path. This information is available to the GIS group Technology Coordinator and is used to identify the storm affected area. Prior to a storm event, the Forensic Leads and the Technology Coordinator will be in close contact to execute the below plan based on the latest possible forecast or pre-storm plan. After the storm has passed, the Forensics Team executes the pre-storm plan unless the actual event was significantly different, at which time a new plan based on the actual storm path will be developed.

### Eta affected FPL's entire service area including:

#### Southeast Areas:

Central Dade	North Dade	South Dade
West Dade	Central Broward	North Broward
South Broward	Boca Raton	West Palm

#### North Management Areas:

Treasure Coast	Brevard	Central Florida
North Florida		

#### West Management Areas:

Manasota	Naples	Toledo Blade
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## Distribution Hardening Programs

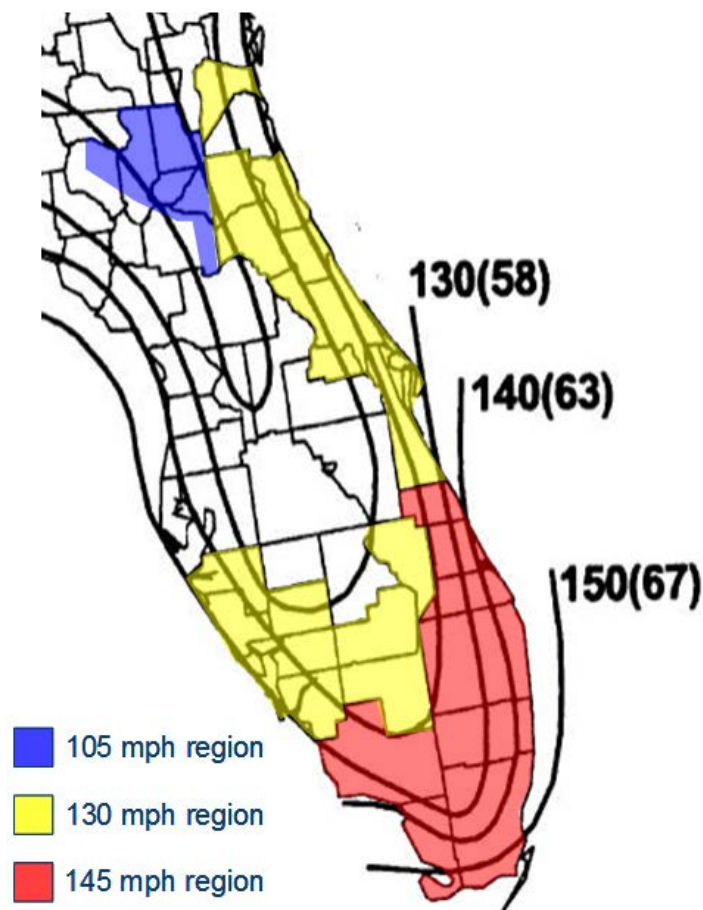
### Storm Hardening Plan

- The Storm Hardening Plan started in 2006 and FPL has:
  - Hardened 198,806 poles through October 2020
- FPL's Storm Hardening Plan is filed with the PSC

### PIP (Pole Inspection Program)

- The Pole Inspection Program started in 2006 and FPL has:
  - Replaced 89,587 poles through October 2020
  - Reinforced 61,124 poles through October 2020
- FPL's Pole Inspection Program is filed with the PSC.

### Distribution Design Gust Wind Speeds



## Staging Sites



**Daytona Speedway**



**Sarasota Fairgrounds**



**Palm Beach Kennel Club**



**The Casino at Dania Beach**