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November 22, 2019

VIA ELECTRONIC FILING

Mr. Adam Teitzman, Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, FL 32399-0850

In re: *Petition by Duke Energy Florida, LLC for Approval of Actual Storm Restoration Costs and Associated Recovery Process Related to Hurricane Michael and Tropical Storm Alberto (the "Petition")*; Docket No. 20190110-EI.

Dear Mr. Teitzman:

On behalf of Duke Energy Florida, LLC ("DEF"), please find the enclosed for electronic filing in the above-referenced proceeding:

- DEF's Petition for approval of actual storm restoration costs and associated recovery process related to Hurricane Michael and Tropical Storm Alberto;
- Direct Testimony of Tom Morris with Exhibit No.__ (TM-1), Exhibit No.__ (TM-2), and Exhibit No.__ (TM-3);
- Direct Testimony of Jason Cutliffe with Exhibit No.__ (JC-1), Exhibit No.__ (JC-2), and Exhibit No.__ (JC-3); and
- Direct Testimony of Jason S. Williams.

Thank you for your assistance in this matter. Please feel free to call me at (813) 227-8114 should you have any questions concerning this filing.

Respectfully,

Shutts & Bowen LLP

for

Daniel Hernandez

Enclosures (as noted)

cc: All counsel for DEF

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Petition by Duke Energy Florida, LLC for limited proceeding for recovery of incremental storm restoration costs related to Hurricane Michael and Tropical Storm Alberto.	Docket No. 20190110-EI Filed: November 22, 2019

PETITION BY DUKE ENERGY FLORIDA, LLC FOR APPROVAL OF ACTUAL STORM RESTORATION COSTS AND ASSOCIATED RECOVERY PROCESS RELATED TO HURRICANE MICHAEL AND TROPICAL STORM ALBERTO

Duke Energy Florida, LLC ("DEF" or the "Company"), pursuant to Section 366.076(1), Florida Statutes ("F.S."), Rules 25-6.0143 and 25-6.0431, Florida Administrative Code ("F.A.C."), and the Second Revised and Restated 2017 Settlement Agreement approved by the Florida Public Service Commission (the "Commission") in Order No. PSC-2017-0451-AS-EU[1] (such agreement, the "2017 Settlement"), hereby files this petition (the "Petition") requesting approval of (a) DEF's actual recoverable storm restoration costs and interest costs related to Hurricane Michael and Tropical Storm Alberto (the "Recoverable Storm Costs") in the amount of $196 million (retail) and (b) DEF's recovery of such Recoverable Storm Costs in accordance with the Second Implementation Stipulation, as approved in the Commissions's Order No. PSC-2019-0268-PCO-EI (the "Settlement Implementation Stipulation"). In support of this Petition, DEF states as follows:

INTRODUCTION

1. DEF is an investor-owned utility operating under the jurisdiction of the Commission pursuant to the provisions of Chapter 366, F.S. The Company's principal place of business is located at 299 1st Avenue North, St. Petersburg, Florida 33701.

[1] Docket No. 20170183-EI, issued on November 20, 2017.

2. This Petition is being filed in accordance with the requirements of Rule 28-106.201, F.A.C.[2]

3. The Commission, located at 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399, is the agency affected by this Petition. The Commission has jurisdiction over this matter pursuant to Sections 366.04, 366.05, 366.06 and 366.076, F.S., and Rules 25-6.0143 and 25-6.0431, F.A.C.

4. For purposes of this Petition and the resulting proceeding, Petitioner's address shall be that of its undersigned counsel. Any pleading, motion, notice, order or other document required to be served upon DEF or filed by any party to this proceeding should be served upon DEF's undersigned counsel.

5. DEF does not know which, if any, of the issues of material fact set forth in the body of this Petition, or the supporting testimony and exhibits, may be disputed by any others who may plan to participate in this proceeding.

BACKGROUND AND OVERVIEW

6. DEF serves more than 1.8 million customers in Florida. Its service area comprises approximately 20,000 square miles, including the densely populated areas of Pinellas and western Pasco Counties and the greater Orlando area in Orange, Osceola and Seminole Counties. DEF supplies electricity at retail to approximately 350 communities and at wholesale to Florida municipalities, utilities, and power agencies in the State of Florida.

7. On April 30, 2019, DEF filed a petition for a limited proceeding seeking authority to implement an interim storm restoration recovery charge to recover estimated Recoverable

[2] Portions of subsections (2)(b)(c) and (f) of Rule 28-106.201, F.A.C., do not apply to this proceeding and are, therefore, not being addressed in this Petition.

Storm Costs that DEF incurred in the amount of $223.5 million in connection with Hurricane Michael (the "Interim Storm Charge") (such petition, the "Interim Recovery Petition"). In the Interim Recovery Petition, DEF proposed spreading the Interim Storm Charge amount over a twelve (12) month period commencing in July 2019 and ending in June 2020 (the "Storm Recovery Period") pursuant to the 2017 Settlement.

8. Together with its Interim Recovery Petition, DEF filed a Second Implementation Stipulation for consideration and approval by the Commission. As described further in Mr. Morris' testimony, the Settlement Implementation Stipulation allows DEF to continue to use the tax savings associated with the Tax Cuts and Jobs Act of 2017 ("Tax Impacts") toward the recovery of storm costs and the replenishment of the storm reserve to avoid unnecessary bill adjustments, while simultaneously providing customers with the benefits of the tax savings and allowing DEF to recover its costs.

9. By the Commission's Order Approving Interim Storm Recovery Charge, PSC-2019-0268-PCO-EI, issued on July 1, 2019 (the "Order"), the Commission authorized DEF to implement the Interim Storm Charge subject to refund based on actual storm restoration costs, while also approving the Settlement Implementation Stipulation. Following the Commission's approval of the Settlement Implementation Stipulation, DEF withdrew its proposed tariff, including the Interim Storm Charge.

10. In its Order, the PSC instructed DEF to file documentation demonstrating its actual storm costs incurred in connection with Hurricane Michael for the purpose of reconciling actual costs with the amounts applied from the Tax Impacts and directed that the docket be kept open for that purpose.

11. Accordingly and pursuant to the Order, DEF is filing with this Petition with documentation to demonstrate the actual storm costs DEF incurred in connection with Hurricane Michael. In addition, DEF is also filing documentation to demonstrate actual storm costs incurred in connection with Tropical Storm Alberto. This documentation consists of the pre-filed testimony, with accompanying exhibits, of DEF witnesses Jason Cutliffe, Jason S. Williams, and Tom Morris, which (a) document DEF's actual Recoverable Storm Costs amount of $196 million; (b) demonstrate that those costs were prudently incurred; (c) demonstrate that DEF accounted for those costs in accordance with the Incremental Cost and Capitalization Approach ("ICCA") methodology prescribed in Rule 25-6.0143, F.A.C.; and (d) explain the process for recovering this amount by applying the Tax Impacts in accordance with the Second Implementation Stipulation.

DEF'S STORM RESTORATION PROCESS FOR HURRICANE MICHAEL AND TROPICAL STORM ALBERTO

12. On October 7, 2018, a tropical depression in the Caribbean was officially upgraded to Tropical Storm Michael. The storm had strengthened quickly and by the next day it attained hurricane status, and within the next 24 hours it was classified as a major hurricane. On October 10, 2018, Hurricane Michael made landfall near Mexico Beach, FL, as a Category 5 storm with winds exceeding 160 mph. This was the most powerful storm to make landfall in the Florida Panhandle in recorded history, and the fourth most-powerful hurricane to strike the U.S. behind the Labor Day Hurricane (1935), Hurricane Camille (1969), and Hurricane Andrew (1992). At its height, approximately 71,000 DEF customers lost power as a result of the damage from Hurricane Michael.

13. On October 5, 2018, DEF began monitoring a low-pressure area that would become Hurricane Michael. Full activation of the DEF Storm Organization was commenced on October 8. DEF mobilized approximately 5,100 total contractors and employee resources to support the restoration work; power was restored to all but 14,800 customers by 4:30 pm October 14, and was restored to essentially all customers available to receive power by October 18. The hurricane damaged a significant portion of the region's electric system, including transmission towers, substations, utility poles, power lines and other major infrastructure components – all of which needed to be repaired or replaced before power could be restored to many of DEF's customers. Restoration and rebuild of the DEF system included 1970 distribution poles, 150 miles of wire conductor, and 773 transformers. Transmission restored 20 Transmission/Distribution substations and 77 transmission circuits, replacing 44 wood poles with 48 steel/concrete poles, and rebuilding 34 miles of the Port St. Joe to Calloway line, replacing 130 transmission towers with 325 steel pole structures. The impact of Hurricane Michael and the related restoration costs incurred by DEF are more fully described in the testimonies and exhibits of Mr. Cutliffe and Mr. Williams.

14. Tropical Storm Alberto was a serious threat, at one point projected to impact a similar portion of DEF's service territory as Hurricane Michael. Further, a material number of mutual aid resources were not available due to ongoing work in Puerto Rico from Hurricane Maria. To ensure an effective restoration response commensurate with the forecast track, expected damage, and Memorial Day weekend impact, 152 resources were secured. Once actual damage was known, 72 resources engaged in restoration work and the remaining 80 resources were released. By prestaging restoration crews and having them ready to work as soon as weather permits, the number of outage days can be significantly reduced. Due to the time it

takes for crews outside Florida to prepare and travel, the Company must incur costs for off-system resources with incomplete information and based on National Hurricane Center tropical weather forecasts. Ultimately, Tropical Storm Alberto veered west, just outside DEF's service territory, resulting in less than expected damage to the DEF grid.

15. Hurricane Michael and Tropical Storm Alberto presented unique challenges as DEF implemented its storm plan to prepare for, respond to, and recover from two major storms in 2018. Although the vast majority of storm costs incurred by the Company resulted from Hurricane Michael, resources expended for Tropical Storm Alberto were necessary based on the risk of significant outage impact and the consequence of inaction had it not drifted west in the final hours.

16. In his pre-filed testimony, Mr. Cutliffe discusses the operation of the Company's storm plan as it relates to DEF's distribution system, including the Company's goals and priorities as it prepares for, responds to, and recovers from a storm's impact on its distribution facilities. He explains the unique challenges faced by DEF to implement its storm plan and restoration processes for Hurricane Michael and Tropical Storm Alberto. Mr. Cutliffe also describes DEF's successful implementation of its storm plan in response to Hurricane Michael and Tropical Storm Alberto, which allowed DEF to restore electric service in a safe and efficient manner for its customers.

17. Mr. Williams' pre-filed testimony provides an overview of DEF's transmission storm plan and the implementation of that plan during Hurricane Michael. Mr. Williams also testifies about the damage that Hurricane Michael caused to DEF's transmission system, including an explanation of the scope and extent of the Company's efforts to prepare for, respond

to, and recover from the storm. As further explained in Mr. Williams' pre-filed testimony, Tropical Storm Alberto did not cause an impact to the DEF transmission system.

DEF'S STORM ACCOUNTING PROCESSES AND CONTROLS

18. In their pre-filed testimonies, Mr. Cutliffe and Mr. Williams provide a general overview of the total transmission and distribution storm-related costs. Further detail regarding each category of costs incurred by DEF as a result of Hurricane Michael and Tropical Storm Alberto and the manner in which such costs were calculated is provided in Mr. Morris' pre-filed testimony.

19. As detailed in Mr. Morris' pre-filed testimony, DEF's actual storm restoration costs of $191 million were calculated in accordance with the ICCA methodology required by Rule 25-6.0143, F.A.C., and where possible, with the Storm Cost Settlement Agreement approved in Order No. PSC-2019-0232-AS-EI. These costs, plus estimated interest costs of $5 million, total $196 million sought for recovery as Recoverable Storm Costs. DEF has projected interest at a rate of 1.66% to finance storm restoration costs based on the commercial paper rate in October 2019; the calculation of actual interest costs will use the commercial paper rate consistent with that utilized each month in the fuel recovery clause (Order No. PSC-2019-0268-PCO-EI).

20. Mr. Morris describes how DEF tracked, recorded, and accounted for storm costs during and after the storm. A key component of Mr. Morris' testimony is his explanation of the processes DEF has in place to ensure costs assigned to Hurricane Michael and Tropical Storm Alberto are in fact attributable to those storms. DEF's accounting records thoroughly track all storm restoration costs charged to DEF and the Company's payment of those charges.

21. Mr. Morris' testimony also describes the process for recovering the Recoverable Storm Costs and replenishment of the storm cost reserve by applying the Tax Impacts in accordance with the Settlement Implementation Stipulation.

DETERMINATION AND IMPLEMENTATION OF STORM COST RECOVERY

22. After the full recovery of the costs authorized for recovery by the Commission in Docket No. 20170272-EI (anticipated by the end of April 2020), but before starting the replenishment of the storm reserve, DEF will utilize the annual Tax Impacts to avoid implementing a charge to customers for the Interim Storm Charge that customers would otherwise be obligated to pay. Accordingly, per the Order and the Commission's approval of the Settlement Implementation Stipulation, DEF shall record a monthly storm reserve accrual equal to one-twelfth of the approved annual Tax Impacts and credit the retail storm reserve from approximately May 2020 until the final approved Recoverable Storm Costs have been fully recovered and the storm reserve has been replenished. Pursuant to the Settlement Implementation Stipulation, in the month following the final month of storm cost recovery, DEF will stop crediting the storm reserve and will reduce base rates in the manner prescribed in the 2017 Settlement and Order No. 2019-0053-FOF-EI, Docket No. 20180047-EI. DEF will file tariff sheets at least sixty (60) days before that date to reflect the reduced rates.

23. As of the date of this filing, the Company has not yet finalized payment of all contractor services related to Hurricane Michael. The Company reserves the right to file supplemental schedules with any necessary adjustments with the Commission as appropriate.

CONCLUSION

Wherefore, DEF respectfully requests that the Commission (a) determine that DEF's actual Recoverable Storm Costs amount of $196 million, which includes recoverale storm

restoration costs of $191 million plus interest expense of $5 million, were prudently incurred and (b) enter an order that, pursuant to the Settlement Implementation Stipulation, DEF shall record a monthly storm reserve accrual equal to one-twelfth of the annual Commission-approved revenue requirement impact of the 2017 Tax Cuts and Jobs Act determined in Docket No. 20180047-EI until the actual Recoverable Storm Costs have been fully recovered and the storm reserve replenished.

Respectfully submitted,

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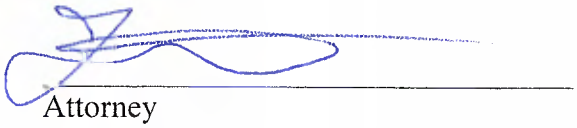
CERTIFICATE OF SERVICE (DOCKET. NO. 20190110-EI)

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished to the following by electronic mail this 22nd day of November, 2019, to all parties of record as indicated below.



Attorney

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BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

IN RE: PETITION FOR LIMITED PROCEEDING FOR RECOVERY OF INCREMENTAL STORM RESTORATION COSTS RELATED TO HURRICANE MICHAEL AND TROPICAL STORM ALBERTO BY DUKE ENERGY FLORIDA, LLC.

FPSC DOCKET NO. 20190110-EI

DIRECT TESTIMONY OF TOM MORRIS

NOVEMBER 22, 2019

I. INTRODUCTION AND QUALIFICATIONS.

Q. Please state your name and business address.

A. My name is Tom Morris. My current business address is 3300 Exchange Place, Orlando, Florida 32746.

Q. By whom are you employed and what are your responsibilities?

A. I am employed by Duke Energy Business Services, LLC, a Service Company affiliate of Duke Energy Florida, LLC ("Duke Energy Florida," "DEF," or the "Company") and a subsidiary of Duke Energy Corporation ("DE"). My current position is the Director of Customer Delivery Florida Finance. I oversee a group that has responsibility for the budgeting and forecasting, expense and capital accounting for Distribution Operations among other responsibilities. I also collaborate with other finance personnel with similar responsibilities for Transmission Operations, Customer Operations and Fossil/Hydro Generation Operations, and thus I am representing the finance and accounting organizations

that provide support to the functional groups of DEF that incur expenses during major storm events.

Q. Please summarize your educational background and professional experience.

A. I have a Bachelor of Science in Accounting from The Florida State University. Following graduation in 1993, I began my career at Ralicki & Thomas CPAs, in Stuart, Florida. I worked three years at Ralicki & Thomas CPAs, focusing on audits of GAAP financial statements and preparing personal and corporate tax returns. In 1999, I joined DE in their Distribution Finance organization where I was responsible for the monthly financial reporting and annual budget preparation. In October 2015, I was promoted to Director of Customer Delivery Finance.

II. PURPOSE OF TESTIMONY.

Q. What is the purpose of your direct testimony?

A. On April 30, 2019, DEF filed estimated storm costs in the instant docket associated with Hurricane Michael. The purpose of my testimony is to explain and support the actual storm costs for Hurricane Michael and Tropical Storm ("TS") Alberto, and to discuss the methods used to comply with Rule 25-6.0143, FAC., and, where possible, with the Storm Cost Settlement Agreement approved in Order No. PSC-2019-0232-AS-EI ("Agreement")[1], to identify and remove non-

[1] The Agreement was entered and approved after Hurricane Michael made landfall and the restoration efforts were largely complete. Per the terms of the Agreement, its provisions and process modifications became applicable as of the date the Commission approved the Agreement, or June 13, 2019. Therefore, the Hurricane Michael restoration and rebuild efforts were undertaken pursuant to the same policies and procedures that existed prior to the Agreement. DEF has endeavored to follow the Agreement's provisions

incremental O&M and capitalized costs from total restoration storm costs. Since the Agreement was not in place during Hurricane Michael, not all calculations are implemented as defined in the Incremental Cost Methodology Addendum. However, in a good faith effort to comply with the Agreement, the Transmission and Distribution teams applied their respective three-year average calculations to payroll, overtime, and labor burdens to calculate non-incremental amounts.

Q. Do you have any exhibits to your testimony?

A. Yes, I am sponsoring the following exhibits to my testimony:

- Exhibit No. __ (TM-1) – Storm Costs Recovery Total
- Exhibit No. __ (TM-2) – Storm Costs by Storm
- Exhibit No. __(TM-3) – Storm Costs Amortization

These exhibits were prepared under my direction and control, and are true and accurate to the best of my knowledge.

Q. Please describe the net costs for which recovery is sought in this proceeding.

A. DEF is seeking recovery for those costs that are incremental, as defined under the Incremental Cost and Capitalization Approach ("ICCA") methodology required under Rule 25-6.0143, F.A.C. The Company has prudently incurred $191 million (retail) of incremental restoration costs for Hurricane Michael and TS Alberto as shown in Exhibit No. __ (TM-1). These costs exclude all non-incremental costs, as defined under the ICCA methodology and, where applicable, adopted under the

related to accounting work, although this was not always possible due to procedures that were in place during the actual restoration work.

Agreement[2], and exclude amounts properly capitalizable under the Company's capitalization policy. These costs, plus estimated interest costs of $5 million, total $196 million sought for recovery in this proceeding. Consistent with the Second Implementation Stipulation approved in Order PSC-2019-0268-PCO-EI, upon recovery of Hurricane Michael costs, DEF will continue to use the Tax Act savings to replenish the storm reserve to $132 million.

Q. Please explain how storm-related costs are tracked and accounted for during and after each storm, and explain the process that the Company uses to verify that costs assigned to the storms were in fact related to the storms and were incremental.

A. When a potential major storm event is approaching its service territory, DEF creates separate project codes for each function (Distribution, Transmission, Customer Operations, Fossil/Hydro Generation) to be used to process and aggregate the total amount of storm restoration costs incurred for financial reporting and regulatory recovery purposes. DEF uses these codes to account for all costs directly related to storm restoration, including costs that will not be recoverable from DEF's storm reserve based on the ICCA methodology and as further clarified in the Agreement.[3] All storm restoration costs charged to these storm projects are initially captured in FERC Account 186, Miscellaneous Deferred Debits. All costs charged to FERC Account 186 are subsequently reviewed, and based on the outcome of that review, are cleared and charged to

[2] *See* footnote 1.
[3] *Id.*

either the storm reserve (FERC Account 228.1), normal O&M expense or capital. See below for further discussion of the Company's process to review incurred costs and ensure only allowable costs as defined in the ICCA methodology and Agreement[4] are included for recovery.

Q. Please further explain the process for accumulating accounting data related to storm costs.

A. For Distribution, major storm costs are initially accumulated in FERC Account 186, including charges that are considered non-incremental or capital. Using the ICCA methodology and Agreement,[5] non-incremental amounts are identified and subsequently credited from FERC Account 186 and debited to base rate O&M expense. Capital costs are also identified and subsequently credited from FERC Account 186 and debited to FERC Account 107, Construction Work in Progress. After non-incremental and capital costs are removed from FERC Account 186, the remaining balance is then credited and a debit is placed in FERC Account 228.1 bringing the FERC Account 186 to zero, and leaving only allowable costs for recovery in Account 228.1. Transmission follows the same process except for any capital work that is done during the major storm is charged directly to specific projects that are mapped to FERC Account 107.

Q. Please explain costs incurred by DEF for Hurricane Michael and TS Alberto?

[4] *Id.*
[5] *Id.*

A. Exhibit No. __ (TM-1) summarizes total recoverable storm costs for both storms:

- Hurricane Michael (2018): $190.8 million
- TS Alberto (2018): $0.6 million

Exhibit No.__(TM-2) breaks-out recoverable storm costs by function for each storm.

While most costs were incurred for Hurricane Michael, and my testimony below is in reference to that storm, DEF's cost accumulation and review processes were similar for both storms. As previously mentioned, all storm-related costs were recorded to FERC Account 186 and subsequently reviewed to determine the amount that was considered non-incremental under the ICCA methodology and Agreement[6] and excluded from this storm recovery request.

In discussing the nature of the costs incurred for Hurricane Michael and TS Alberto, it is essential to have a clear understanding of Rule 25-6.0143, F.A.C. and the Agreement. I will focus on allowable costs, then address the types of costs specifically prohibited under the ICCA methodology in my testimony below.

As shown on Exhibit No.__(TM-2), DEF's incurred costs for Hurricane Michael and TS Alberto fall into the following categories, and, when netted with non-

[6] *Id.*

incremental costs, are consistent with the ICCA methodology and the Agreement[7], where applicable.

1. Regular payroll – Amounts in this category represent regular payroll for employee time spent in direct support of storm restoration, and exclude bonuses. During the storms, payroll costs were incurred related to DEF employees as well as DE affiliate employees assisting in the storm response. To identify the non-incremental amount, the three-year historical average (October of 2015-2017) of non-storm O&M base regular payroll is compared to the actual non-storm amount charged to O&M base regular payroll in October 2018 for Transmission and Distribution ("T&D"). If the average is higher than the amount incurred in October 2018, that difference is removed from FERC Account 186 as the non-incremental amount and charged to Income Statement O&M. If the amount incurred in October 2018 is higher than the three-year historical average, then the entire base regular payroll is considered incremental in FERC Account 186.

2. Overtime Payroll – Amounts in this category represent overtime payroll for employee time spent in direct support of storm restoration for DEF personnel as well as DE affiliates, such as linemen from DE affiliates in the Carolinas and Midwest. To identify the non-incremental amount, the three-year historical average (October of 2015-2017) of non-storm O&M base overtime payroll is compared to the actual non-storm amount charged to O&M base

[7] *Id.*

overtime payroll in October 2018 for T&D. If the average is higher than the amount incurred in October 2018, that difference is removed from FERC Account 186 as the non-incremental amount and charged to Income Statement O&M. If the amount incurred in October 2018 is higher than the three-year historical average, then the entire base overtime payroll is considered incremental in FERC Account 186.

3. Labor Burdens/Incentives – Amounts in this category include employee bonuses and labor burdens.

Bonuses paid to employees for their extraordinary efforts and dedication to DEF's customers were removed from this recovery request. Note, while the Company believes the bonuses paid to employees are properly recoverable, DEF is not seeking recovery of those costs.

Labor burdens represent costs associated with direct payroll and overtime charges, such as 401-K and pension match, medical, payroll tax, and other benefits. To identify the non-incremental amount, the three-year historical average (October of 2015-2017) of non-storm labor burdens is compared to the actual non-storm amount charged to O&M in October 2018 for T&D. If the average is higher than the amount incurred in October 2018, that difference is removed from FERC Account 186 as the non-incremental amount and charged to Income Statement O&M. If the amount incurred in

October 2018 is higher than the three-year historical average, then all labor burdens are considered incremental in FERC Account 186.

4. Overhead Allocations – Amounts in this category include cost allocations related to management and supervision as well as Service Company costs that were allocated to the project based on payroll, overtime, materials, contractors and fleet charges incurred. Costs associated with DEF employees were removed as either non-incremental or included as part of capital. With respect to the overhead costs associated with employees from DE affiliates in the Carolinas and the Midwest, these costs represent the Utility Affiliate Overhead Loader which captures all the costs outlined in DE's Cost Allocation Manual. Once the loader is applied to the labor costs of DE utility employees working for an affiliate, the fully loaded costs of those affiliate employees are captured in the total costs charged to DEF. Therefore, all costs that are recorded within DEF's books and records from the affiliates are truly incremental to DEF.

5. Employee Expenses – Amounts in this category include the cost of lodging such as hotel rooms, as well as other employee expenses such as meals and mileage reimbursement for employees using their personal vehicles.

6. Contractor Costs – Amounts in this category include costs associated with mutual aid utilities, line contractors, vegetation contractors, staging and

logistics personnel and other outside contractors used in storm-restoration related activities.

7. Materials and Supplies – Amounts in this category include the materials and supplies used to repair and restore service and facilities to pre-storm condition, and exclude the portion of materials and supplies used in restoration activities that are included in capitalized cost. Fuel costs associated with fueling services utilized during restoration to re-fuel the contractor's vehicles are coded as part of materials and supplies.

8. Internal Fleet Costs – The costs included in the net recoverable request are only the fuel for fleet vehicles.

9. Uncollectible Account Expenses – Refer to the section below regarding the storm impacts to Customer Operations.

10. Other Expenses – Amounts in this category include other minor amounts of storm-related expenses not coded to one of the categories above.

The Company has support for all storm costs on Exhibit No.___(TM-2) available for Commission review.

Q. Is the Company including for recovery in this filing any costs prohibited from recovery under the ICCA methodology and the Agreement?

A. No. DEF is not including any costs prohibited from recovery under the ICCA methodology and the Agreement. In the preceding section of my testimony, I discussed allowable costs as well as amounts DEF excluded from this recovery request based on DEF's determination that certain of the costs were non-incremental or capitalizable. In this section, I will address the types of costs prohibited for recovery through the storm reserve based on the following sections of Rule 25-6.0143, F.A.C. and the Agreement.[8]

Prohibited costs under the ICCA methodology and the Agreement[9]:

(1)(f) The types of storm related costs prohibited from being charged to the reserve under the ICCA methodology include, but are not limited to, the following:

1. Base rate recoverable regular payroll;

- *Company response – as discussed in the previous section, T&D has excluded from its recovery request the difference between the three-year average and the actual amount incurred in the month of October.*

2. Bonuses or any other special compensation for utility personnel not eligible for overtime pay

- *Company response – as previously discussed, although the Company believes the bonuses paid to employees for their extraordinary efforts and dedication to DEF customers are properly recoverable, DEF is not*

[8] *Id.*
[9] *Id.*

seeking recovery of those costs in this filing and has removed them from this recovery request.

3. Base rate recoverable depreciation expenses, insurance costs and lease expenses for utility-owned or utility-leased vehicles and aircraft;

- *Company response – DEF has not included these types of costs in this cost recovery filing. Regarding fleet costs, fleet allocations that follow payroll and overtime labor were adjusted to only allow the fuel component to be considered incremental and included for recovery in this filing. The remaining parts of the fleet allocation were considered non-incremental. With respect to aircraft, only direct incremental charges were recorded to the storm project. These costs represent incremental jet and transportation expenses, as well as charter flights when additional aircraft were needed. Other similar incremental expenses that supported restoration efforts included Unmanned Aerial Vehicles("UAV") or Drones expenses and contractor UAV operators, as well as helicopter expenses.*

4. Utility employee assistance costs;

- *Company response – DEF has not included these types of costs in this cost recovery filing.*

5. Utility employee training costs incurred prior to 72 hours before the storm event;

- *Company response – DEF has not included these types of costs in this cost recovery filing.*

6. Utility advertising, media relations or public relations costs, except for public service announcements regarding key storm-related issues as listed above in subparagraph (1)(e)10.;

- *Company response – DEF has not included these types of costs in this cost recovery filing, except for allowable public service announcements. For example, advertisements that were placed to distribute needed information related to power restoration and/or safety precautions were charged to the storm reserve. This would have included messaging such as how to report power outages, and to urge customers not to touch downed power lines. However, advertisements that related to corporate image were not charged to the storm reserve. This would have included all "Thank You" ads that were placed.*

7. Utility call center and customer service costs, except for non-budgeted overtime or other non-budgeted incremental costs associated with the storm event;

- *Company response – DEF has only included non-budgeted overtime and other incremental costs associated with its Customer Operations organization in this cost recovery filing.*

8. Tree trimming expenses, incurred in any month in which storm damage

restoration activities are conducted, that are less than the actual monthly average of tree trimming costs charged to operation and maintenance expense for the same month in the three previous calendar years;

- *Company response – DEF has performed the necessary calculations required by this rule and has properly removed vegetation management costs consistent with this rule, resulting in recovery amounts that comply with the ICCA methodology.*

9. Utility lost revenues from services not provided; and

- *Company response – DEF has not included lost revenues in this cost recovery filing.*

10. Replenishment of the utility's materials and supplies inventories.

- *Company response – DEF has not included these types of costs in this cost recovery filing.*

Q. Please explain the amounts capitalized to property, plant and equipment by the Company.

A. The ICCA methodology states, "...capital expenditures for the removal, retirement and replacement of damaged facilities charged to cover storm-related damages shall exclude the normal cost for the removal, retirement and replacement of those facilities in the absence of a storm."

DEF has a process to ensure all units of property installed during storm restoration are capitalized at reasonable material and labor amounts (i.e., resulting in capital amounts at the normal cost for the removal, retirement and replacement of those facilities), resulting in a storm cost recovery request that is incremental under the ICCA methodology. During Hurricane Michael, only the Company's T&D Operations installed capital units of property.

For Transmission Operations, specific projects were issued for capital work, allowing real-time tracking of those projects. As capital work was performed, associated labor, material and equipment costs were charged to the capital projects.

With respect to Distribution Operations, the nature of repair work is so voluminous and time of the essence that the issuance of individual projects for capital versus O&M work is not feasible. However, the Company's tracking of materials allows for accounting of all units of property used during storm restoration, resulting in the proper capitalization of those units of property. This is accomplished by having DEF's Supply Chain organization issue materials directly to the storm project as they ship them from the distribution center to the various base camps, and having Supply Chain personnel at Operating Centers issue materials used during the storm to the storm project. Once the restoration effort has been completed, all materials from the base camps were picked up and brought back to the distribution center where it was placed in a specific area for return processing. All returned materials were segregated and tagged to be

identified as materials initially charged to the storm restoration. The material was returned to the same accounting that was used during the restoration effort, properly resulting in only the actual units installed during storm restoration being capitalized.

Once the number of units of property ("UOP") were confirmed, the Company's Finance organization determined a normal, reasonable total dollar amount to capitalize for those units of property.

- Materials Costs – As noted above, the number of UOP were identified and grouped (e.g., poles, transformers, wire, etc.). The material costs associated with the UOP and the number of UOP then became the basis of the calculation to determine the estimated total capital amount. A material burden was applied to all materials which represents the cost associated with warehousing, handling and shipping, and was reflected in the capital calculation. A working stock burden was also applied for all the ancillary materials needed to install that unit of property.
- Contract Labor - For each grouping of UOP, DEF's Resource Optimization group estimated the average number of hours to install under normal conditions for that type of UOP and number of line resources needed. The average number of hours multiplied by the number of resources generated the total hours to install that UOP. Then a simple average was calculated of internal labor and native contractor rates and that rate was multiplied by the number of hours for each UOP to come up with the estimated capital labor to install.

- Other costs – As part of the normal amount of capital cost for a UOP, an overhead allocation rate was applied based on the total number of estimated hours to install the units of property. This overhead rate is consistent with the rate used in DEF's work management system – Maximo.

For each storm, the amount of storm costs capitalized is outlined in Exhibit No. __ (TM-2).

Q. In addition to Transmission and Distribution, please describe the other functional areas that incurred costs related to the storms.

A. Customer Operations incurred incremental costs that include the same categories of costs similar to T&D. Customer Operations did not follow the same process as described above for T&D, however, only incremental costs as defined under the ICCA methodology are requested for recovery in this filing.

Q. Please explain why there could be further adjustments to the costs for which DEF is seeking recovery in this filing.

A. As of the date of this filing, the Company has not yet finalized payment of all contractor services related to Hurricane Michael. The Company reserves the right to file supplemental schedules with any necessary adjustments with the Commission as appropriate.

Q. Please explain the Storm Cost Amortization schedule included as Exhibit No. __(TM-3).

A: Exhibit No.__(TM-3) shows the amortization of Hurricane Irma (Docket No. 20170272-EI) and Hurricane Michael restoration costs including interest expense, and replenishment of the storm reserve to $132 million using annual Tax Act benefits as approved in the Storm Implementation Stipulation ("Stipulation") in Order No. PSC-2019-0268-PCO-EI. Per the Stipulation, once storm costs that are the subject of Docket No. 20170272-EI are fully recovered, DEF is entitled to continue to record a monthly storm reserve accrual equal to one-twelfth of the annual Commission-approved revenue requirement impact of the Tax Act (i.e. 1/12 of $154.7 million or approximately $12.9 million) and credit the storm reserve until DEF's Hurricane Michael costs are fully recovered and the storm reserve has been replenished. In the month following full recovery of the final Commission-approved actual storm recovery and storm reserve, DEF will cease recording the storm reserve accrual and reduce base rates in a manner set forth in the Second Revised and Restated 2017 Settlement Agreement, approved by the Commission in Order No. PSC-2017-0451-AS-EU.

Q. Does this conclude your testimony?

A. Yes.

Docket No. 20190110-EI
Storm Costs Recovery Total
Exhibit No. TM-1, Page 1 of 1

($000's)

Line No.	Description	Reference	Incremental Storm Cost	
1	Total Storm Costs			
2	Michael	Exhibit TM-2, Page 1, line 29	$190,774	
3	Alberto	Exhibit TM-2, Page 2, line 29	571	
4	Total Recoverable Restoration Costs - Retail	line 2 + line 3		191,345
5	Plus: Interest	Exhibit TM-3		4,889
6	Total Retail Storm Recovery Amount - Retail	line 4 + line 5		$196,234

Duke Energy Florida, LLC

($000's)

Docket No. 20190110-EI
Storm Costs By Storm
Exhibit No. TM-2, Page 1 of 2

Line No.	Description	REF.	(A) Transmission	(B) Distribution	(C) Generation Base	(D) Generation Intermediate	(E) Generation Peaking	(F) Customer Service	(G) Total	
			Estimated Storm Costs By Function							
1	**Pre-Storm Reserve Balance**								0	[a]
2	**Storm Related Restoration Costs - Michael**									
3	Regular Payroll		1,079	1,208				46	2,332	
4	Overtime Payroll		1,460	3,381				119	4,960	
5	Labor Burdens/Incentives		1,792	2,170				114	4,077	
6	Overhead Allocations		12,266	1,532				38	13,836	
7	Employee Expenses		5,436	5,743				47	11,225	
8	Contractor Costs		109,058	143,440				145	252,643	
9	Materials & Supplies		13,222	13,911				8	27,142	
10	Internal Fleet Costs		165	117				-	282	
11	Uncollectible Account Expenses		-					-	-	
12	Other		(3)	-				1	(2)	
13	**Subtotal - Storm Related Restoration Costs - Michael**	lines 3:12	**144,475**	**171,502**	**-**	**-**	**-**	**518**	**316,496**	
14	**Less: Estimated Non-Incremental Costs - Michael**									
15	Regular Payroll		(362)	(710)				(20)	(1,092)	
16	Overtime Payroll		(29)	(429)				(27)	(485)	
17	Labor Burdens/Incentives		(110)	(597)				(68)	(775)	
18	Overhead Allocations		(1,378)	-				(35)	(1,413)	
19	Employee Expenses		-	-					-	
20	Contractor Costs		-	-					-	
21	Materials & Supplies		(940)	-					(940)	
22	Internal Fleet Costs		(1)	(80)					(81)	
23	Uncollectible Account Expenses		-	-					-	
24	Other		-	-				(1)	(1)	
25	**Subtotal - Estimated Non-Incremental Costs - Michael**	lines 15:24	**(2,820)**	**(1,815)**	**-**	**-**	**-**	**(151)**	**(4,786)**	
26	Less: Capitalizable Costs		(90,596)	(14,444)					(105,040)	
27	**Total Recoverable Restoration Costs - Michael - System**	lines (13 + 25 + 26)	**51,059**	**155,243**	**-**	**-**	**-**	**367**	**206,670**	
28	Jurisdictional Factor (Order PSC-2017-0451-FOF-EI)		70.203%	99.561%	92.885%	72.703%	95.924%	100%		
29	**Total Recoverable Restoration Costs - Michael - Retail**	lines (27 x 28)	**$35,845**	**$154,562**	**$0**	**$0**	**$0**	**$367**	**$190,774**	

Notes:

[a] - The Storm Reserve was depleted after Hurricane Irma and Nate. See Order No. PSC-2019-0232-AS-EI.

Duke Energy Florida, LLC

($000's)

Docket No. 20190110-EI
Storm Costs Recovery Total
Exhibit No. TM-2, Page 2 of 2

Line No.	Description	REF.	(A) Transmission	(B) Distribution	(C) Generation Base	(D) Generation Intermediate	(E) Generation Peaking	(F) Customer Service	(G) Total	
			Estimated Storm Costs By Function							
1	**Pre-Storm Reserve Balance**								0	[a]
2	**Storm Related Restoration Costs - Alberto**									
3	Regular Payroll		-	50				-	50	
4	Overtime Payroll		-	200				-	200	
5	Labor Burdens/Incentives		-	117				-	117	
6	Overhead Allocations		-	45				-	45	
7	Employee Expenses		-	48				-	48	
8	Contractor Costs		-	441				-	441	
9	Materials & Supplies		-	57				-	57	
10	Internal Fleet Costs		-	18				-	18	
11	Uncollectible Account Expenses		-	-				-	-	
12	Other		-	-				-	-	
13	**Subtotal - Storm Related Restoration Costs - Alberto**	lines 3:12	**-**	**976**	**-**	**-**	**-**	**-**	**976**	
14	**Less: Estimated Non-Incremental Costs - Alberto**									
15	Regular Payroll		-	(50)					(50)	
16	Overtime Payroll		-	(196)					(196)	
17	Labor Burdens/Incentives		-	(41)					(41)	
18	Overhead Allocations		-	(43)					(43)	
19	Employee Expenses		-	-					-	
20	Contractor Costs		-	-					-	
21	Materials & Supplies		-	-					-	
22	Internal Fleet Costs		-	(15)					(15)	
23	Uncollectible Account Expenses		-	-					-	
24	Other		-	-					-	
25	**Subtotal - Estimated Non-Incremental Costs - Alberto**	lines 15:24	**-**	**(345)**	**-**	**-**	**-**	**-**	**(345)**	
26	Less: Capitalizable Costs		-	(57)					(57)	
27	**Total Recoverable Restoration Costs - Alberto - System**	lines (13 + 25 + 26)	**-**	**574**	**-**	**-**	**-**	**-**	**574**	
28	Jurisdictional Factor (Order PSC-2017-0451-FOF-EI)		70.203%	99.561%	92.885%	72.703%	95.924%	100%		
29	**Total Recoverable Restoration Costs - Alberto - Retail**	lines (27 x 28)	**$0**	**$571**	**$0**	**$0**	**$0**	**$0**	**$571**	

Notes:

[a] - The Storm Reserve was depleted after Hurricane Irma and Nate. See Order No. PSC-2019-0232-AS-EI.

($000's)

Beginning Storm Reserve Balance per Exhibit BB-1 Filed 1/28/2019, in Docket No. 20170272-EI	($367,153)
Bond Issuance Costs	(1,264)
Adjusted Beginning Storm Reserve Balance	(368,417)
Interest (@ Bond rate of 2.1%)	(7,764)
Amortization	352,287
Ending Storm Reserve Balance	($23,895)

Hurricane Irma

Line	(A) Month	(B) Beginning Storm Reserve Balance	(C) Amortization (Exh. MJO-2 Docket No. 20180047)	(D) Cost Settlement Agreement (Note 1)	(E) Interest (2.10% APR)	(F) Net Monthly Activity col. (C) + (D) + (E)	(G) Ending Storm Reserve Balance
1	Jan-18	($368,417)	$12,892			$12,892	($355,525)
2	Feb-18	(355,525)	12,892			12,892	(342,633)
3	Mar-18	(342,633)	12,892		(588)	12,304	(330,329)
4	Apr-18	(330,329)	12,892		(567)	12,325	(318,003)
5	May-18	(318,003)	12,892		(545)	12,347	(305,656)
6	Jun-18	(305,656)	12,892		(524)	12,369	(293,288)
7	Jul-18	(293,288)	12,892		(502)	12,390	(280,897)
8	Aug-18	(280,897)	12,892		(480)	12,412	(268,486)
9	Sep-18	(268,486)	12,892		(459)	12,434	(256,052)
10	Oct-18	(256,052)	12,892		(437)	12,455	(243,596)
11	Nov-18	(243,596)	12,892		(415)	12,477	(231,119)
12	Dec-18	(231,119)	12,892		(393)	12,499	(218,620)
13	Annual Total		154,707		(4,910)	149,797	
14	Jan-19	(218,620)	12,892		(371)	12,521	(206,099)
15	Feb-19	(206,099)	12,892		(349)	12,543	(193,556)
16	Mar-19	(193,556)	12,892		(327)	12,565	(180,991)
17	Apr-19	(180,991)	12,892		(305)	12,587	(168,405)
18	May-19	(168,405)	12,892		(283)	12,609	(155,796)
19	Jun-19	(155,796)	12,892	23,895	(240)	36,546	(119,249)
20	Jul-19	(119,249)	12,892		(197)	12,695	(106,555)
21	Aug-19	(106,555)	12,892		(175)	12,717	(93,837)
22	Sep-19	(93,837)	12,892		(153)	12,739	(81,098)
23	Oct-19	(81,098)	12,892		(131)	12,762	(68,337)
24	Nov-19	(68,337)	12,892		(108)	12,784	(55,553)
25	Dec-19	(55,553)	12,892		(86)	12,806	(42,746)
26	Annual Total		154,707	23,895	(2,728)	175,874	
27	Jan-20	(42,746)	12,892		(64)	12,829	(29,917)
28	Feb-20	(29,917)	12,892		(41)	12,851	(17,066)
29	Mar-20	(17,066)	12,892		(19)	12,874	(4,192)
30	Apr-20	(4,192)	4,196		(4)	4,192	0
31	May-20	0	0		0	0	0
32	Jun-20	0	0		0	0	0
33	Jul-20	0	0		0	0	0
34	Aug-20	0	0		0	0	0
35	Sep-20	0	0		0	0	0
36	Oct-20	0	0		0	0	0
37	Nov-20	0	0		0	0	0
38	Dec-20	0	0		0	0	0
39	Annual Total		42,873		(127)	42,746	
40	Jan-21	0	0		0	0	0
41	Feb-21	0	0		0	0	0
42	Mar-21	0	0		0	0	0
43	Apr-21	0	0		0	0	0
44	May-21	0	0		0	0	0
45	Jun-21	0	0		0	0	0
46	Jul-21	0	0		0	0	0
47	Aug-21	0	0		0	0	0
48	Sep-21	0	0		0	0	0
49	Oct-21	0	0		0	0	0
50	Nov-21	0	0		0	0	0
51	Dec-21	0	0		0	0	0
52	Annual Total		0		0	0	
53	Totals		$352,287		($7,764)	$368,417	

($000's)

Beginning Storm Reserve Balance	($191,345)
Bond Issuance Costs	-
Adjusted Beginning Storm Reserve Balance	(191,345)
Interest (@ Estimated Commercial Paper Rate)	(4,889)
Amortization	266,541
Ending Storm Reserve Balance	$70,307

Hurricane Michael & Tropical Storm Alberto

Line	(A) Month	(B) Beginning Storm Reserve Balance	(C) Amortization	(D) Interest (Note 3)	(E) Net Monthly Activity col. (C) + (D)	(F) Ending Storm Reserve Balance
1	Jan-18					
2	Feb-18					
3	Mar-18					
4	Apr-18					
5	May-18					
6	Jun-18					
7	Jul-18					
8	Aug-18					
9	Sep-18					
10	Oct-18					
11	Nov-18					
12	Dec-18					
13	Annual Total					
14	Jan-19					
15	Feb-19					
16	Mar-19					
17	Apr-19					
18	May-19					
19	Jun-19	(191,345)	-	(313)	(313)	(191,658)
20	Jul-19	(191,658)	-	(294)	(294)	(191,951)
21	Aug-19	(191,951)	-	(277)	(277)	(192,228)
22	Sep-19	(192,228)	-	(269)	(269)	(192,497)
23	Oct-19	(192,497)	-	(266)	(266)	(192,764)
24	Nov-19	(192,764)	-	(267)	(267)	(193,030)
25	Dec-19	(193,030)	-	(267)	(267)	(193,297)
26	Annual Total		-	(1,952)	(1,952)	
27	Jan-20	(193,297)	-	(267)	(267)	(193,565)
28	Feb-20	(193,565)	-	(268)	(268)	(193,832)
29	Mar-20	(193,832)	-	(268)	(268)	(194,101)
30	Apr-20	(194,101)	8,696	(262)	8,434	(185,667)
31	May-20	(185,667)	12,892	(248)	12,644	(173,022)
32	Jun-20	(173,022)	12,892	(230)	12,662	(160,361)
33	Jul-20	(160,361)	12,892	(213)	12,679	(147,681)
34	Aug-20	(147,681)	12,892	(195)	12,697	(134,984)
35	Sep-20	(134,984)	12,892	(178)	12,714	(122,270)
36	Oct-20	(122,270)	12,892	(160)	12,732	(109,538)
37	Nov-20	(109,538)	12,892	(143)	12,750	(96,788)
38	Dec-20	(96,788)	12,892	(125)	12,767	(84,021)
39	Annual Total		111,834	(2,558)	109,276	
40	Jan-21	(84,021)	12,892	(107)	12,785	(71,236)
41	Feb-21	(71,236)	12,892	(90)	12,803	(58,433)
42	Mar-21	(58,433)	12,892	(72)	12,820	(45,613)
43	Apr-21	(45,613)	12,892	(54)	12,838	(32,775)
44	May-21	(32,775)	12,892	(36)	12,856	(19,919)
45	Jun-21	(19,919)	12,892	(19)	12,874	(7,046)
46	Jul-21	(7,046)	12,892	(1)	12,891	5,846
47	Aug-21	5,846	12,892	-	12,892	18,738
48	Sep-21	18,738	12,892	-	12,892	31,630
49	Oct-21	31,630	12,892	-	12,892	44,523
50	Nov-21	44,523	12,892	-	12,892	57,415
51	Dec-21	57,415	12,892	-	12,892	70,307
52	Annual Total		154,707	(379)	154,328	
53	Totals		$266,541	($4,889)	$261,652	

Note 1: Total Adjustment on page 7 of Storm Cost Settlement Agreement:

Page 7, Par 2.A.	18,000
Page 7, Par 2.B.	995
Page 7, Par 3	5,005
Total System Adjustment	24,000
Distrib Retail Sep Factor	99.561%
Total Retail Adjustment	23,895

Note 2: Although these illustrative schedules only show through 2021, tax savings will be applied to replenish the Storm Reserve until it reaches the level contemplated in the 2017 Revised and Restated Stipulation and Settlement Agreement of $132 million (retail).

Note 3: For Hurricane Michael, DEF has projected interest at a rate of 1.66% to finance storm restoration costs based on the commercial paper rate in October 2019; the calculation of actual interest costs will use the commercial paper rate consistent with that utilized each month in the Fuel & Purchased Power Cost Recovery Clause.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

IN RE: PETITION FOR LIMITED PROCEEDING FOR RECOVERY OF INCREMENTAL STORM RESTORATION COSTS RELATED TO HURRICANE MICHAEL AND TROPICAL STORM ALBERTO BY DUKE ENERGY FLORIDA, LLC.

FPSC DOCKET NO. 20190110-EI

DIRECT TESTIMONY OF JASON CUTLIFFE

NOVEMBER 22, 2019

I. INTRODUCTION AND QUALIFICATIONS.

Q. Please state your name and business address.

A. My name is Jason Cutliffe. I am employed by Duke Energy Florida, LLC ("DEF" or the "Company"). My business address is 2166 Palmetto St, Clearwater, Florida.

Q. Please tell us your position with DEF, and describe your duties and responsibilities in that position.

A. I am the General Manager of Emergency Preparedness for Customer Delivery responsible for DEF's annual hurricane season readiness, and when hurricanes strike I serve as the Incident Commander for restoration. In 2018, I was the Planning Section Chief in DEF's Incident Command Structure ("ICS") and will provide testimony regarding the Company's distribution storm plan and the execution of that plan for Hurricane Michael.

Q. Please summarize your educational background and employment experience.

A. I hold a Bachelor of Science in Electrical Engineering from the University of Maine, MBA from the University of Richmond, and I am a licensed professional engineer. I've held various engineering, operational, and leadership positions over a 33-year electric utility career.

II. PURPOSE AND SUMMARY OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. I am testifying on behalf of the Company in support of recovery of the Company's incremental storm-related costs incurred due to Hurricane Michael and Tropical Storm ("TS") Alberto. I will begin by providing an overview of the total distribution storm-related costs and cost categories. I will discuss the operation of the Company's storm plan as it relates to DEF's distribution system, including the Company's goals and priorities as it prepares for, responds to, and recovers from a storm's impact on its distribution facilities. I will conclude my testimony by describing DEF's successful efforts at implementing its plan in response to the storms and, ultimately, to restore electric service safely and efficiently to its customers.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes. I am sponsoring the following exhibits to my testimony:

- Exhibit No. __ (JC-1) – Forensic Analysis of Storm Damage to DEF's Distribution System as a Result of Hurricane Michael ("Accenture Report")
- Exhibit No. __ (JC-2) – Path of Hurricane Michael
- Exhibit No. ___ (JC-3) – Path of Tropical Storm Alberto

Q. Can you please explain the purpose of the Accenture Report?

A. Yes. In the wake of Hurricane Michael, DEF gathered forensic data on pole failures due to the storm and then contracted with Accenture Consulting to assess the major causes of those pole failures. DEF is using this report to gain a better understanding of the factors that cause the greatest amount of damage during a storm event, with the ultimate goal of determining what steps, if any, can be taken to mitigate against such damage in the future.

Q. Please summarize your testimony.

A. Hurricane Michael and TS Alberto presented unique challenges as DEF implemented its storm plan to prepare for, respond to, and recover from tropical systems in 2018. The vast majority of storm costs incurred by the Company resulted from Hurricane Michael. Resources expended for TS Alberto were necessary based on the risk of significant outage impact, and the consequence of inaction had it not drifted west in the final hours.

<u>Hurricane Michael</u>

Hurricane Michael was the fourth strongest storm to impact the U.S. in recorded history, making landfall as a Category 5 storm with winds exceeding 160 mph. It made landfall near Mexico Beach and the devastation it brought to the surrounding area included electric grid infrastructure damage. The sheer strength of Michael's winds and storm surge presented unique challenges as DEF implemented its storm plan to prepare for, respond to, and recover from the storm.

DEF mobilized approximately 5,100 contractor and employee resources to complete restoration and rebuild work. Due to the population density in the storm's path, the number of peak customer outages DEF experienced in the wake of Michael was relatively low given the strength of the storm; approximately 71,000 customers lost power. While the total number of customers without service was relatively low in relation to DEF's customer base, Michael almost completely destroyed the distribution facilities in Mexico Beach and neighboring Port St. Joe Beach requiring complete rebuilds in those areas, and severely impacted the surrounding areas (including requiring a complete rebuild of a Transmission line in the area – which is discussed further in Mr. Williams' testimony).

Work necessary to recover from Hurricane Michael included replacement of more than 773 transformers, 1970 distribution poles, and repair/replacement of 150 miles of wire. DEF also restored 20 substations and 77 transmission circuits. Restoration work was very labor intensive often requiring vegetation clearing, accessing areas on foot, and climbing poles where bucket trucks could not travel. Unique challenges included clearing roads to reach remote Operating Centers, damage assessment where only unmanned aerial vehicles ("UAV" or "drones") could be used, and overcoming loss of commercial cell phone service. As I explain in my testimony, DEF's storm plan proved to be an effective and efficient tool to restore customer service as quickly and safely as possible following Michael.

Tropical Storm Alberto

A summary and impacts of Tropical Storm Alberto are explained later in my testimony.

Q. Did DEF comply with the Storm Restoration Cost Process Improvements included as part of the Storm Cost Settlement Agreement in Order No. PSC-2019-0232-AS-EI ("Agreement")?

A. The Agreement was entered and approved after Hurricane Michael made landfall and restoration efforts were largely complete. Per the terms of the Agreement, its provisions and process modifications became applicable as of the date the Commission approved the Agreement, or June 13, 2019. Therefore, Hurricane Michael restoration and rebuild efforts were undertaken pursuant to the same policies and procedures that existed prior to the Agreement.

III. INCREMENTAL COSTS INCURRED BY DEF AS A RESULT OF HURRICANE MICHAEL

Q. Please identify what incremental costs the Company incurred in connection with Hurricane Michael.

A. Incremental distribution storm-related costs incurred by the Company attributable to Hurricane Michael are $154.6 million, as shown on Mr. Morris' Exhibit No.__(TM-2).

Q. Please describe the Company's process for seeking mutual aid from outside sources and identify the dates on which the Company communicated with mutual aid organizations with respect to Hurricane Michael.

A. Once a tropical system is identified that threatens DEF's service territory, the process to acquire off system restoration personnel is activated. There are primarily two avenues for acquiring off system support. The first is through non-Investor Owned Utility ("IOU") vendors using pre-negotiated agreements. DEF had over 90 vendor agreements in place prior to Hurricane Michael. The second avenue for off system support is through the Southeast Electric Exchange ("SEE") mutual aid process. Mutual aid calls are set up to assess resource availability from outside the projected impact area. Resources typically include: linemen, vegetation management, damage assessment, support, and logistics personnel for both Distribution and Transmission restoration work. Depending on the projected event timing and intensity, the objective is to have resources mobilized and pre-positioned ahead of impact. Due to the time it takes for crews outside Florida to prepare and travel, this requires the Company to incur costs for off-system resources with incomplete information and based on National Hurricane Center tropical weather forecasts, which are subject to change. The Company's communications with mutual aid organizations for Michael began Monday, October 8, 2018.

Q. When did the Company's mutual aid costs for Hurricane Michael begin to accrue?

A. Costs for Hurricane Michael began to accrue October 8, 2018. As is industry standard, mutual aid costs begin to accrue when the responding entities begin actions directly related to travel and work on DEF's system (examples include preparing trucks and equipment for travel and stocking material).

Q. Did the Company issue public announcements in connection with Hurricane Michael?

A. Yes. To keep customers and the public updated on our restoration efforts, DEF issued eight news releases in English and Spanish. In addition, DEF published daily social media posts which covered several topics including safety, storm damage, resources, updated outage and restoration numbers and estimated times of restoration ("ETR"). DEF also issued public service announcements through local radio stations and pushed out messaging using the "screen crawler" on the Weather Channel. In total, over 2.1 million customer contacts were made through a combination of email, outbound call, text and Voice Response Unit.

Q. Did the Company utilize contract labor to help restore power following Hurricane Michael?

A. Yes. DEF mobilized approximately 5,100 contractors and employees to complete restoration work.

Q. When was the Company fully-restored from Hurricane Michael?

A. DEF completed restoration in areas east of Mexico Beach on Thursday, October 18. In the Mexico Beach rebuild area, restoration of service to all buildings capable of receiving it was completed November 3, 2018.

IV. THE COMPANY'S DISTRIBUTION STORM PLAN AND ITS EXECUTION DURING THE 2018 STORM SEASON

Q. Please describe DEF's distribution system storm plan.

A. Preparing for major storms is a year-round activity. Hurricane season readiness begins several months before the start of the season and includes training, drills, and implementation of lessons learned from the prior year. DEF's comprehensive storm plan is modeled on Homeland Security's Incident Command Structure ("ICS") and incorporates the best practices the Company has developed from experiences with past storms. The ICS affords rapid scalability in response to a specific threat.

The scalability of ICS is reflected in DEF's three distinct levels of restoration response. Level 1 is for restoration events lasting 6-12 hours, Level 2 is for 12-24-hour events, and level 3 is for major events exceeding 24 hours and is designed for restoration on the scale of a hurricane. The same basic functions are performed at all storm levels, but as resources increase to match the storm's anticipated threat, the organization expands to ensure efficient restoration of the Company's system. While it is appropriate for an individual to perform parts of several storm roles in a lower level event, those same roles are broken out and staffed by an increasing number of dedicated resources as the scope of restoration

work increases. The decision to activate at a particular response level is made by the storm management team, and is guided by weather forecasts, resource modeling and expected restoration duration. The flexibility of the storm plan is such that, for any given restoration event, DEF may have a region that is operating within the Level 2 model while another region is operating within a Level 3. This allows regions within the Company operating at a lower restoration level to finish sooner and release resources to work in regions operating at a higher restoration levels.

The ICS plan is built around three phases of storm restoration; pre-storm activation, outage repair and restoration, and returning the distribution grid to normal. Pre-storm activation begins as early as 120 hours prior to landfall, and includes detailed weather forecasting, modeling of damage and resource requirements, and preparation for support of logistics needs. The outage repair and restoration phase includes operational activities following impact from the storm that restore service to all customers capable of receiving it. Returning the grid to normal is necessary to restore our electrical infrastructure to its pre-hurricane condition.

Q. Can you please describe the different roles within DEF's storm plan?

A. Yes. Within the storm plan there are a multitude of roles that facilitate an efficient restoration process. These roles are organized along five functional lines: (1) Operations; (2) Planning; (3) Logistics; (4) Governmental Liaison; and (5) External Communication. Operations is focused on restoration of service;

Planning on forecasts, modeling, and situation awareness; Logistics on staging, material, and supplies; Governmental Liaison on coordination with state and county Governmental Agencies; and External Communication on outreach and communication to customers, community leaders and media.

Personnel are assigned roles under the storm plan that may differ from their regular daily responsibilities and, as a result, it is imperative that they are effectively trained. This training is normally completed in the second quarter of each year throughout the Company and within each of the functional areas of responsibility. To further ensure our storm preparedness, we conduct storm readiness drills to test the effectiveness of the training program and employees' ability to execute their assigned storm roles. DEF's storm restoration plan is coordinated with the state-wide storm preparedness efforts through participation in the state Emergency Operations Center ("EOC") coordinated storm drill conducted each May.

Q. When and how do you activate your ICS major storm organization?

A. DEF meteorologists continuously monitor the Tropics and Atlantic basin for threats. Our formal ICS activation process kicks off as soon as a threat is identified, which could be anywhere between 24 and 120 hours prior to landfall. Our initial focus is to ascertain the most detailed weather information available including date, time, and strength of the storm, path, size and strength of the wind fields, precipitation, and exact time when wind is anticipated to diminish and fall below 39 mph (our limit for safe travel).

With each forecast update we use storm modeling tools to predict the amount of damage to our system, where that damage will likely occur, and the amount of resources required to restore projected outages. More specifically, the modeling tools estimate the number of personnel required, such as linemen, tree trimmers and damage assessors. This gives us an estimate of the necessary scale of restoration response. At this point, efforts are focused on notifications to our customers and employees of a potential impact, and beginning our storm readiness activities and initial efforts to procure resources. A progression of checklists is followed each day thereafter.

Q. With regards to preparations in advance of landfall, was there anything unique about Hurricane Michael?

A. Yes. Hurricane Michael became a tropical storm on October 7, 2018 and grew to a Category 1 hurricane on October 8, 2018. Within 2 days of reaching hurricane strength, Michael was a Category 5 major hurricane. In short, Hurricane Michael strengthened from a loose tropical depression to a major hurricane impacting the panhandle in a few short days. In contrast to many storms that we can track much further out from landfall, this storm's short-lived incubation period caused logistical issues (e.g., securing resources from out of state, getting them prepositioned, etc.). Moreover, the impacted area was relatively rural - coupled with the storm's impact and the resulting damage to the surrounding infrastructure (as well as the flood of hurricane evacuees, many of whom ultimately lost their

homes), lodging was difficult to secure resulting in many resources being housed in alternative housing sites.

Q. What occurs as the storm begins to impact DEF's service territory?

A. When the storm-force winds commence in DEF's service territory, the Distribution Control Center ("DCC") is in constant communication with the Energy Control Center ("ECC") and the transmission storm center. The ECC gives both storm centers a thorough description of what transmission lines and substations are dropping out of service as the storm passes, giving us a real-time assessment of the location of the storm damage. Crews in the storm's direct path shelter in place, while crews on the eastern edge of our territory respond to emergency calls. The ECC and distribution and transmission storm centers jointly establish restoration priorities and coordinate the distribution and transmission restoration strategy to maintain grid stability.

Q. What happens after the storm passes?

A. Our initial response has three main components executed simultaneously: (1) governmental and EOC support and response (road clearing); (2) statistical damage assessment; and (3) feeder backbone restoration efforts. These three components enable local and state governments to respond to the storm's impact, and enable DEF to both estimate the amount of storm damage incurred by the distribution system and begin restoration of the highest priority feeders.

As local governments and county EOCs encounter issues that require our immediate attention, we can promptly respond. These issues may involve, for example, support for road clearing teams, or removal of a downed power line with police personnel standing by at the site. By having our personnel assigned to county EOCs, we can facilitate communication with various governmental agencies, such as fire departments also represented at the EOCs, to quickly respond to the site, take care of the issue, and allow government agency staff to pursue other critical assignments.

Concurrent with these activities, we rapidly assess a statistical sample of our total facilities to validate the damage and associated resources that were predicted by the model, and to provide operations management more information for determining the best restoration methodology. As part of our pre-storm season preparation, we identify segments of feeders and their associated branch lines in each area served by an operations center that are representative of the overall network of feeders and branch lines for the local area. As soon as it is safe to travel (sustained winds below 39 miles per hour), damage assessment teams are activated to get a better understanding of the damage to the distribution system. The previously identified representative distribution line segments are assigned to damage assessment teams who are responsible for a pole-by-pole survey of those representative segments. The purpose of this survey is to inventory the extent of damage incurred and return that damage information to be entered in a database. Based on the storm damage found in this representative sample, we extrapolate the amount of storm damage for the rest of the local distribution network and

aggregate these assessments to get a system-wide storm damage estimate. These estimates are used to confirm damage and to adjust as needed to the pre-landfall resource mobilization plan.

The feeder backbone process is a method by which we restore service and catalogue storm damage for further repair. This process is intended to quickly restore the feeder backbone through the operation of switches only, inventory sections of the feeder that we are not able to immediately restore, and identify what devices off the feeder are not in service. We begin planning for this Isolate-and-Restore effort prior to the storm season when each of the local management teams prioritizes the order of restoration for critical feeders within their service areas. Highest priority is assigned to feeders that are crucial to the health, safety, and welfare of the public.

Q. How is the restoration phase of the storm plan carried out?

A. At this juncture of our restoration efforts, we begin to deploy restoration resources to the local operating areas to include them in the storm restoration plan. To efficiently use this first wave of resources, we assign them to the storm damage that was identified through our feeder Isolate and Restore process. This allows us to assign them to the highest priority work on the most critical components of our distribution infrastructure.

Based on information collected from the statistical assessment, any aerial storm damage assessments using helicopters, information reported to our outage

management system, and the knowledge of local management, the management team has the information it needs to determine what feeders require detailed damage assessment. When the detailed assessment of a feeder segment is complete, the results of that effort are compiled into an associated work package. This work package allows us to effectively communicate the scope of the work to be done, and further assists us in managing productivity expectations of our line and tree crew resources. Additionally, the work package information assists local management in allocating resources and determining ETRs.

Q. Were any adjustments to the storm plan necessary due to significant damage in the Mexico Beach area?

A. Yes. Once damage assessment teams could get to the hardest hit area of Mexico Beach, we realized our process of sampling damage would not be adequate. Drones were used to take aerial surveys of the damage, and GIS and circuit maps were used to estimate quantities of material (poles, transformers, and wire) to rebuild feeders. Due to the loss of mobile phone coverage, assessment teams initially had to drive several hours east to send their information back to command centers.

Q. Does the Company update ETRs during the restoration process?

A. Yes. We have three levels of ETRs: 1) an initial system level ETR; 2) a view of ETRs by city and county; and 3) device level ETRs. As the storm restoration progresses, we move from higher level ETRs to increasing specificity. Factors that influence ETR updates include the integration of any new information

collected, extent and severity of storm damage, critical and priority restoration needs received from state and local governments and EOCs, and availability of resources. Additionally, timing of resource arrival can be impacted by many external factors such as road and bridge closures, crews having to travel through the path of the storm (after it has cleared), roads, hotels and lodging clogged by evacuees, and lack of fuel along major routes into the state. As required, we shift line and tree crews, equipment and material to address new priorities or to increase productivity. We constantly strive to update our ETRs and meet or exceed our own ETR goals. Following Hurricane Michael, unique ETRs were communicated for six geographic areas, and all six were achieved. In the Mexico Beach rebuild area, construction milestone dates for feeder backbones and feeder laterals were given to community leaders and both were achieved.

Q. How does the Company wind down its restoration process?

A. As we near the completion of storm restoration work within any part of our service territory, demobilization efforts commence. Local operational leaders provide an assessment of the productivity of restoration personnel. Combining this information with the daily cost of the personnel, we build a plan that retains the most safe, productive, and cost-effective resources to complete restoration efforts.

Q. Is there anything else that must be done after restoration of customers is complete?

A. Yes. The final phase of our hurricane response is the restoration of the system to its pre-storm status. During the storm outage restoration phase, we perform essential work necessary to restore the fundamental operating characteristics of our distribution infrastructure. The primary focus is getting lights on safely and moving to the next repair. For example, DEF will temporarily brace poles that are damaged and in need of replacement, capacitor banks and reclosers are returned to service only if immediately required, and animal mitigation hardware is not installed to our normal operating standards. In this way we bring an end to the community's state of emergency as quickly as possible. After the lights are on, we conduct electrical and physical condition sweeps to identify further work necessary to return the distribution system to its pre-storm condition.

The Company also conducts a "tree sweep" to identify any storm damage to trees, including any cracked or broken limbs caused by the storm that might eventually trigger an outage. Lead and associated vegetation management personnel are responsible for identifying trees or branches damaged by the storm and immediately mitigating any such damage. This process requires considerable subject matter expertise because these issues can be camouflaged when the leaves on damaged portions of trees are still green, meaning that only the most obvious tree damage can be easily identified.

Q. Please describe Hurricane Michael and how you implemented the plan you describe above.

A. Outage events for Hurricane Michael went beyond simply clearing lines, but into extensive infrastructure damage to the distribution system. In Mexico Beach, DEF was required to rebuild essentially all of the distribution facilities – the system was essentially wiped out, meaning there was no repair option available. Due to the nature of the damage and severity of the storm, it is not possible to isolate the biggest driver of these impacts (e.g., wind, storm surge, vegetation, or a combination of these factors).

Notwithstanding this amount of damage, DEF implemented the storm plan as described. DEF had strong adherence to plan processes and methods including storm planning and management, resource mobilization and de-mobilization, materials and supply chain, damage assessment, work prioritization and work package development, and isolate and restore processes and methods.

Q. How do you measure the effectiveness of your storm planning and restoration process?

A. Beginning with restoration effectiveness, one of the main measures that we use is the cumulative percentage of customers restored versus our projection of where we should be at the end of each day. Moving backward from our final ETR goals, we set milestones that must be achieved each day in order for us to achieve our overall goal. We generate these milestones down to the operations center level based on the amount of storm damage on our system, the level of resources that we have at our disposal, and our own restoration history. This analysis tells us whether we are being as effective as we need to be and, if not, helps to highlight

or correct any issues that may be impacting our performance. In regard to Hurricane Michael, DEF set and communicated six unique community level ETRs, and met or exceeded all six.[1] Rebuild completion milestones for Mexico Beach were set and communicated separately for feeder backbones and feeder laterals, both were completed on schedule.

Effective planning comes down to ensuring we have the processes in place to provide maximum flexibility. Due to the nature of these storms, we will never be able to precisely predict the landfall location and timing of storms, or the extent of damage they will create. It is more important that our planning process ensures we have the flexibly to adapt to inevitable changes in landfall location, timing and intensity of storms as they arise. In our judgment, our planning process did in fact provide us with the needed flexibility to cope effectively with the hurricane season.

Finally, another critically important measure of effectiveness is safety. As part of the Hurricane Michael restoration effort, we recorded zero serious injuries. This is a remarkable accomplishment considering the number of people working during the restoration effort and the amount of work required to rebuild entire areas of the system. DEF is proud of the fact that all its workers, and the workers from outside the state, returned home safely to their families after the event.

[1] The six ETRs correspond to six different geographic zones impacted by the storm.

VI. INCREMENTAL COSTS INCURRED BY DEF AS A RESULT OF TS ALBERTO

Q. Please describe your planning and response to TS Alberto and its impact on your system?

A. TS Alberto was a serious threat, at one point projected to impact a similar portion of DEF's service territory as Hurricane Michael. See Exhibit No. ___ (JC-2). Further, a material number of mutual aid resources were not available due to ongoing work in Puerto Rico from Hurricane Maria. To ensure an effective restoration response commensurate with the forecast track, expected damage, and Memorial Day weekend impact, 152 resources were secured. Once actual damage was known, 72 resources engaged in restoration work and the remaining 80 resources were released. By prestaging restoration crews and having them ready to work as soon as weather permits, the number of outage days can be significantly reduced. Due to the time it takes for crews outside Florida to prepare and travel, this requires that the Company incur costs for off-system resources with incomplete information and based on National Hurricane Center tropical weather forecasts. Ultimately, TS Alberto veered west, just outside DEF's service territory, resulting in less than expected damage to the DEF grid.

Q. Please identify what incremental costs DEF incurred in connection with TS Alberto.

A. The incremental distribution costs incurred by the Company in connection with TS Alberto are $571,000, as shown on Mr. Morris' Exhibit No.__(TM-2).

VI. CONCLUSION

Q. Do you have an assessment of the Company's implementation of its Storm Plan during the 2018 storm season?

A. Yes. The Company's restoration efforts were reasonable and prudent, and resulted in the restoration of service to the vast majority of customers as quickly and safely as reasonably possible, and restoration costs were prudently incurred. Third party assessment of hurricane damage (outside the Mexico Beach rebuild area) validated the efficacy of hardening investments.

I believe the strength of a storm plan is its flexibility to adapt to unexpected conditions. The Company faced a significant challenge as a result of Hurricane Michael, and the storm plan proved to be an effective and efficient tool to achieve our goal of restoring customer service as safely and expeditiously as possible.

Q. Does this conclude your testimony?

A. Yes.

DUKE FLORIDA

2019 POLE FORENSIC ANALYSIS

APRIL 1, 2019

accentureconsulting

TABLE OF CONTENTS

DUKE ENERGY FLORIDA

EXECUTIVE SUMMARY

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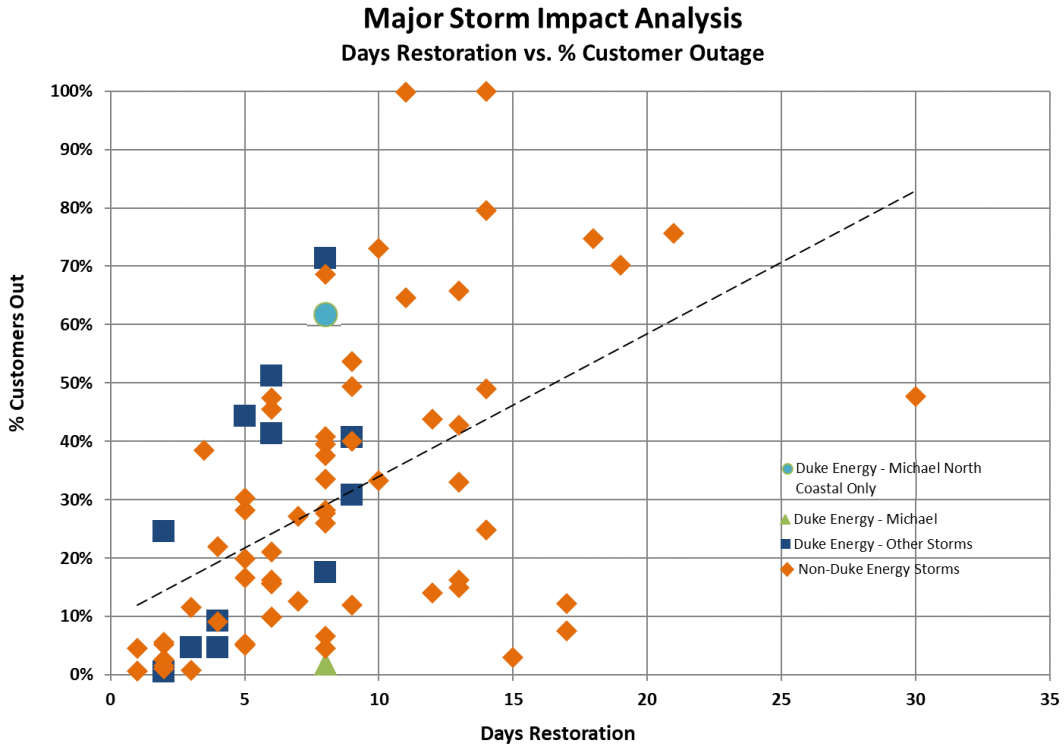
EXECUTIVE SUMMARY

- Hurricane Michael impacted Duke Energy Florida (DEF) service territory on October 10, 2018 as a Category 4 storm causing catastrophic damage in the panhandle of the North Coastal Zone
- DEF collected forensic information on the broken poles in the early stages of the restoration and retained Accenture to conduct a statistical and benchmark analysis using the data collected
- Accenture analysis focused on four key components:
  - **Benchmark Analysis** – leveraged Accenture's "storm benchmark database" and compared DEF performance against comparable storms
  - **Forensic Analysis** – used geospatial analysis, descriptive statistics and multiple logistic regressions to assess the cause and effect of pole failures
  - **Storm Hardening Effectiveness** – applied visual and locational analyses to evaluate the association of any broken poles to the hardening program established in 2006
  - **Drone Analytics for Forensic Damage Assessment** – assessed drone usage during Hurricane Michael and recommended process improvements for future major events

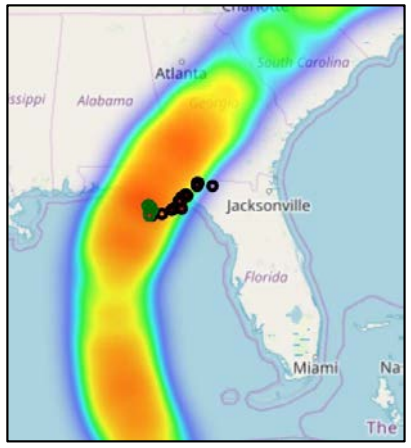
EXECUTIVE SUMMARY – BENCHMARK

- Hurricane Michael impacted the panhandle of DEF's North Coastal Zone causing massive damage to a concentrated area. This area represents approximately three percent (3%) of DEF'S total customer base.
- Sixty-one percent (61%) of DEF's North Coastal Zone was affected by Hurricane Michael with total devastation in the areas of Mexico Beach, Port St. Joe and Cape Sand Blas
- Hurricane Michael was a unique storm for DEF in that the majority of the affected territory was not accessible until 2 days after the storm
- DEF deployed a large contingent of resources to this storm to ensure fast restoration
- The number of poles replaced per customers out at peak was relatively high

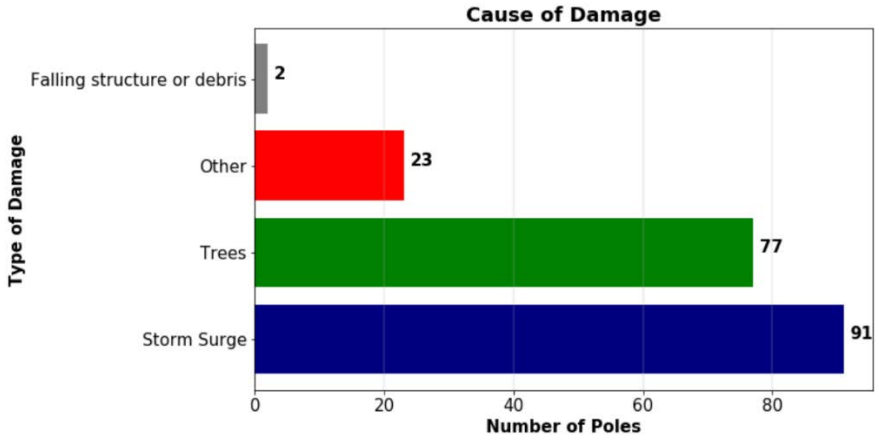


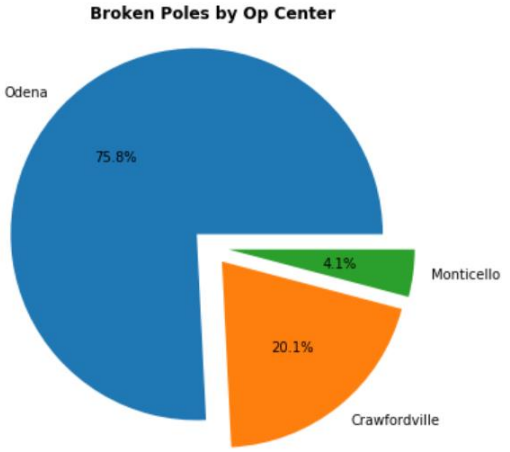
EXECUTIVE SUMMARY – FORENSIC

- Three pronged approach was used in forensic analysis: Geospatial analysis, descriptive statistics and logistic regression.
  - Geospatial analysis showed 16% of poles in the Florida panhandle area were exposed to hurricane force winds. DEF was unable to collect pole data in areas of total devastation.
  - Descriptive statistics on available data showed storm surge as the most common cause of failure with most poles breaking at the base. The Odena Op Center experienced the majority of the pole failures.
  - Results from the logistic regression showed the strongest relationship can be attributed to weather related factors, i.e. storm surge and hurricane force winds; as opposed to pole attributes, i.e., height or year manufactured.



***Higher intensity winds shown as red



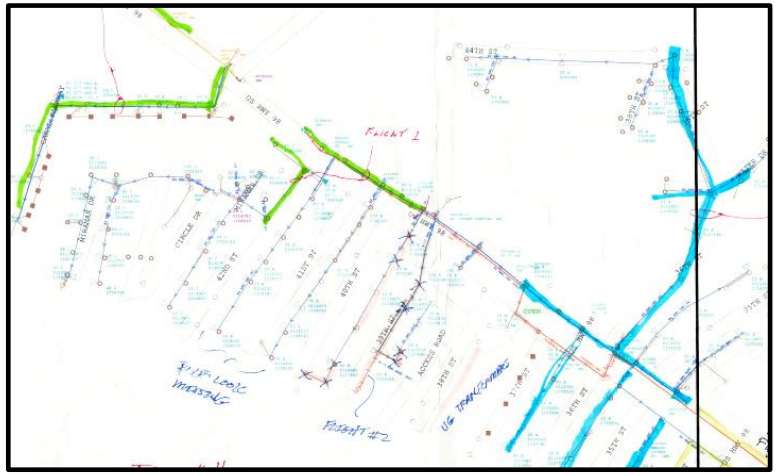


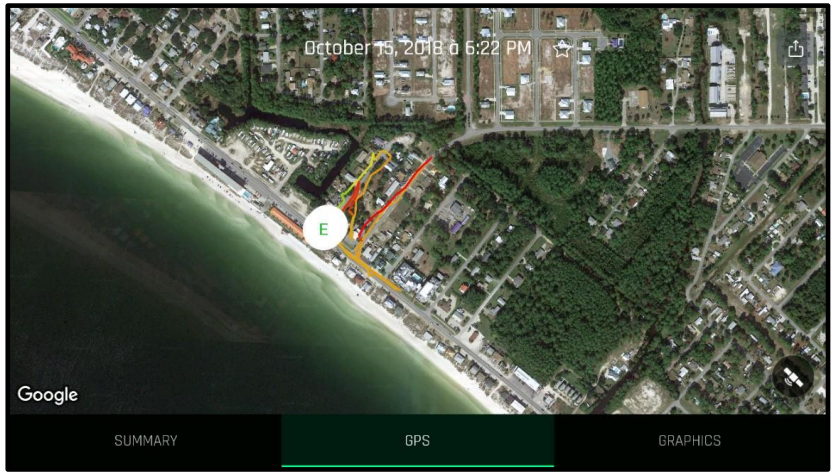
EXECUTIVE SUMMARY – SYSTEM HARDENING

- A forensic assessment of two hundred nineteen (219) randomly selected poles was conducted across DEF's total broken pole population.
- One (1) Class 5 pole was broken and six (6) Class 2 were leaning poles within a storm hardening project Alligator Point Extreme Wind - Phase 2 of 4 (constructed in 2014). Other storm hardening projects experienced no damage.
- Alligator Point experienced tropical storm force windspeeds of 65-75 mph and storm surges of 9-13 ft. As seen in the pictures below the ground gave way and they did not break which shows evidence that extreme wind standards improved their performance.

EXECUTIVE SUMMARY – DRONE USE TO SUPPORT DAMAGE ASSESSMENT

- DEF Forensic Damage Assessment deployed Drone Technology for the first time in the Hurricane Michael response
- This deployment demonstrated the potential for additional benefits to the forensics process by augmenting the existing forensics data collection process with an aerial component
- A total of four hundred forty-nine (449) pictures and forty-two (42) videos were obtained using Drone Technology





DUKE ENERGY FLORIDA

OVERVIEW/ PURPOSE

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OVERVIEW/PURPOSE

Duke Energy Florida ("DEF") conducted a comprehensive analysis of forensic data on pole failures that the company collected in the aftermath of Hurricane Michael. The purpose of the study is to determine the correlations and major causes of failure. Accenture was retained to perform the analysis and performed the following tasks:

1. MOBILIZED THE PROJECT	2. PERFORMED STORM BENCHMARKING COMPARISON	3. CONDUCTED DATA ANALYSIS	4. REVIEWED AERIAL DRONE FOOTAGE	5. SYTHESIZED AND SUMMARIZED
• Organize the available data into a single electronic database (table) to allow for analysis • Identify any gaps in the data and develop strategies to gather the missing information	• Gather key statistics from the DEF response to Hurricane Michael • Identify the comparable events from Accenture's storm benchmarking database to compare against DEF's response • Conduct benchmark comparison and identify key metrics • Develop conclusions based on the benchmark analysis	• Conduct the regression analysis or apply other analytic methods to allow for statistically valid assessment of the correlations of the different factors • Identify the key drivers or pole failures and determine the overall cause and effect • Develop conclusions based on the statistical analysis	• Understand how drones were deployed and used during Hurricane Michael • Work with DEF team to refine the objectives for use of drone footage during and after major storm events	• Prepare a summary report that describes the methodology and conclusions based on the pole failure data analysis and the benchmark comparison

DUKE ENERGY FLORIDA

BENCHMARKING COMPARISON

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BENCHMARKING RESULTS OVERVIEW

- Conducted a Benchmark Survey
  - DEF provided metrics surrounding the restoration efforts of Hurricane Michael
  - Additional surveys were completed by other utilities for storms over the past 25+ years
  - The survey focused on three areas:
    - System Information
    - Storm Magnitude
    - Restoration Performance
- Identified similar category 1 – 4 hurricanes to perform the analysis of DEF's restoration efforts versus other utility companies captured in Accenture's storm benchmarking database from 1989 – 2017
- Highlighted restoration performances from Duke Energy and Progress Energy
- Accenture used numerical redactions to preserve the anonymity of other clients

BENCHMARKING DEMOGRAPHICS

- 26 of 51 utilities included in the benchmarking
- 24 of 57 major events are included in the analysis
- 46 out of 120 distinct restorations

Storm Type	Storm Name	Total
Hurricane Category 1	Fran	2
	Frances	2
	Hermine	1
	Hugo	1
	Humberto	1
	Irene	10
	Katrina	1
	Sandy	5
Hurricane Category 2	Elvis	1
	Georges	1
	Gustav	1
	Gustav + Ike	3
	Juan	1
	Isabel	2

Storm Type	Storm Name	Total
Hurricane Category 3	Ivan	2
	Jeanne	2
	Rita	2
	Wilma	1
Hurricane Category 4	Charley	2
	Hugo	1
	Irma	1
	Matthew	1
	Michael	1
Hurricane Category 5	Floyd	1
Grand Total		**46**

Customers Served Range	# of Companies
0 – 500k	8
500k – 1 mil	2
1 mil – 1.5 mil	5
1.5 mil – 2 mil	2
2 mil – 2.5 mil	6
Over 2.5 mil	3
Grand Total	**26**

BENCHMARKING DEMOGRAPHICS

Company Information	
Total Number of Customers Served	1.8M
Total Number of North Coastal Customers Served	54,484
Total Overhead Distribution Line miles	18,000 miles
Total Underground Distribution Miles	14,000 miles

Storm Description	
Storm Name	Hurricane Michael
Storm Type	Hurricane
Storm Category	4
Start Date	October 10, 2018

Storm Drills	
Number of Storm Drills Per Year	1
Number of Table Top Exercises Per Year	2

Storm Damage Information	
Number of Customers Out at Peak	33,595
Number of Customers Out	71,876
Number of Distribution Poles Replaced	775
Number of Transformers Replaced	351
Number of Conductor Feet Replaced	244,340 feet

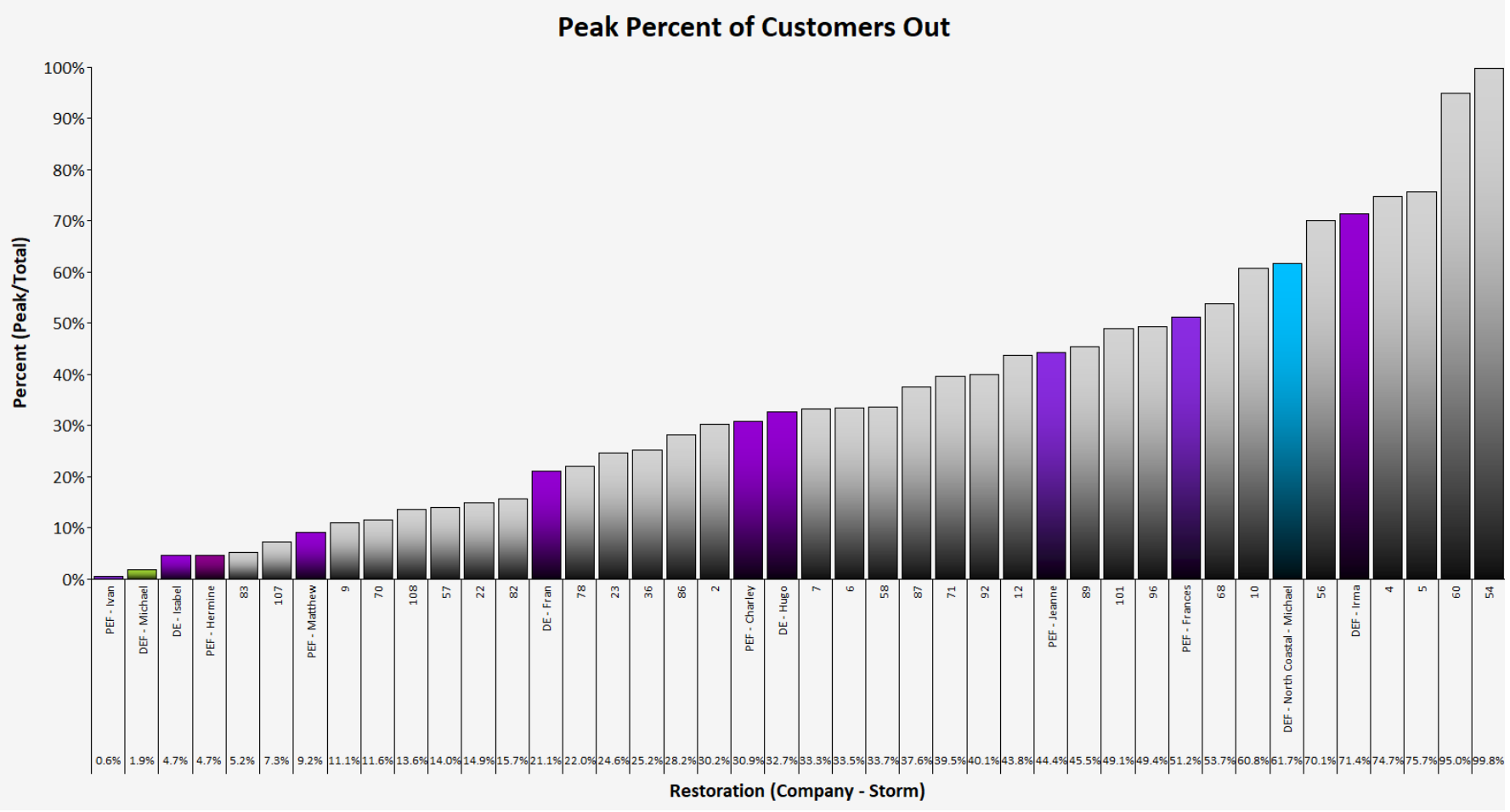
Restoration Resources	
Total Line FTEs	3,400
Total Veg. Management FTEs	1,700

Restoration Duration	
Restoration Duration (# Days)	8 days*

Vegetation Management	
Average Tree-Trimming Cycle	3yr backbone / 5yr branchlines

**Excludes 3 distribution circuits that required a total rebuild. These circuits were rebuilt to an extreme wind standard.*

BENCHMARKING RESULTS



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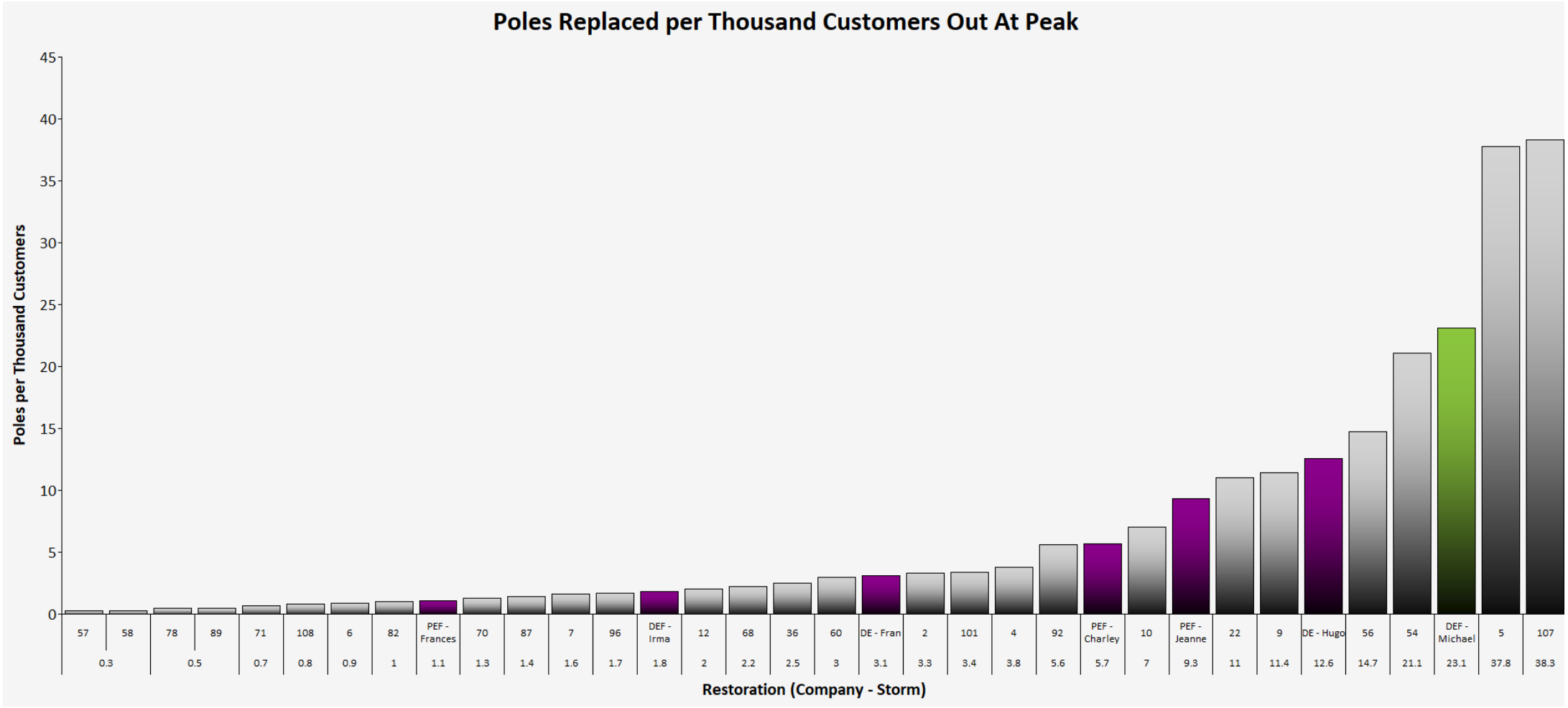

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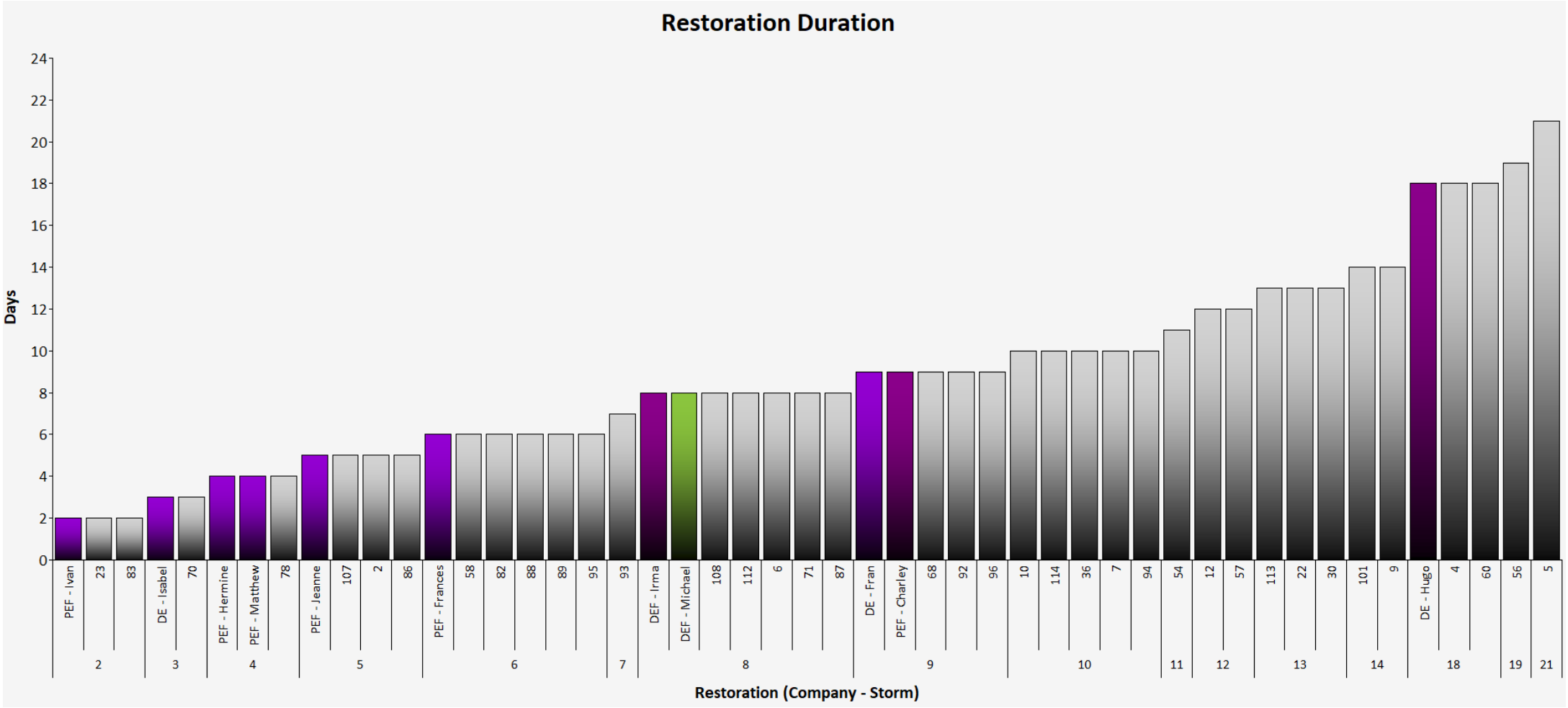

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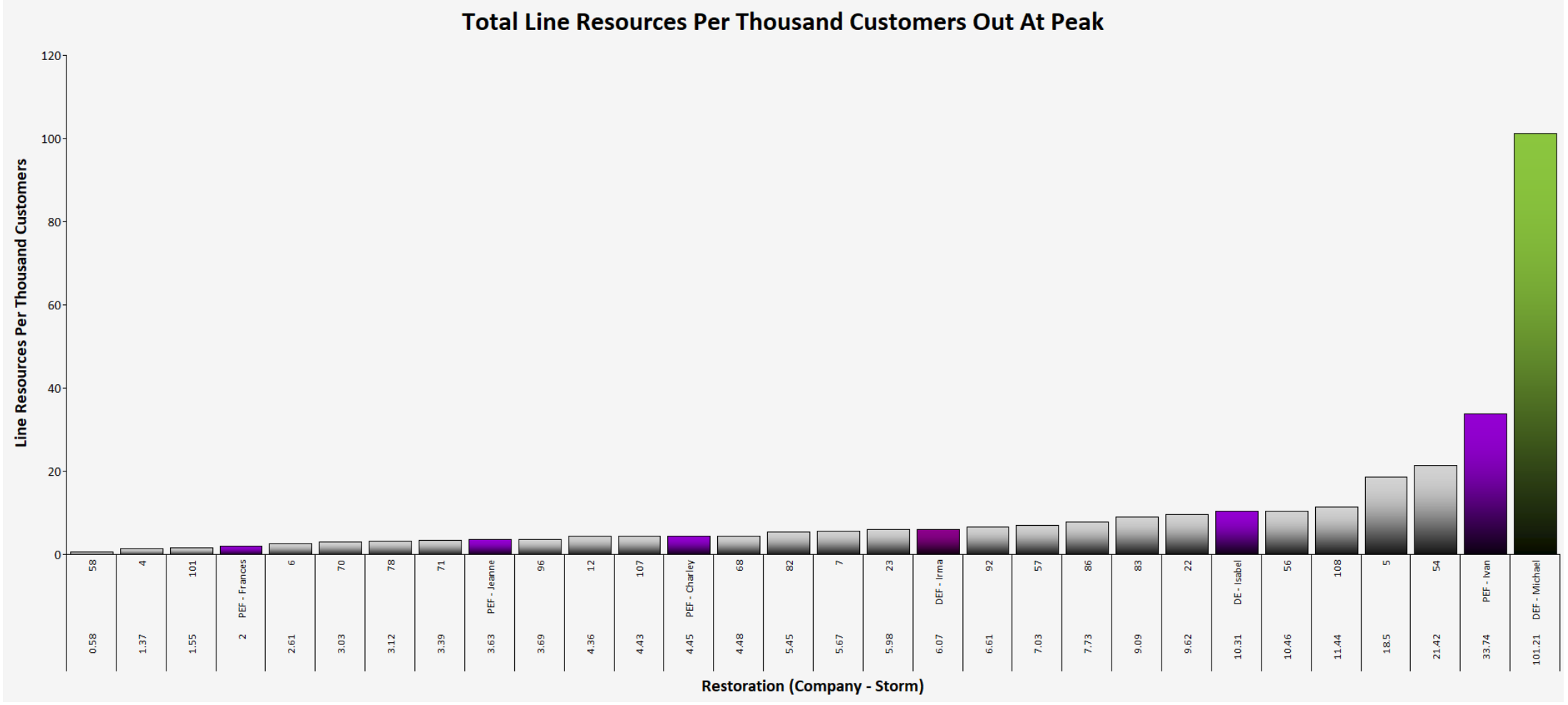
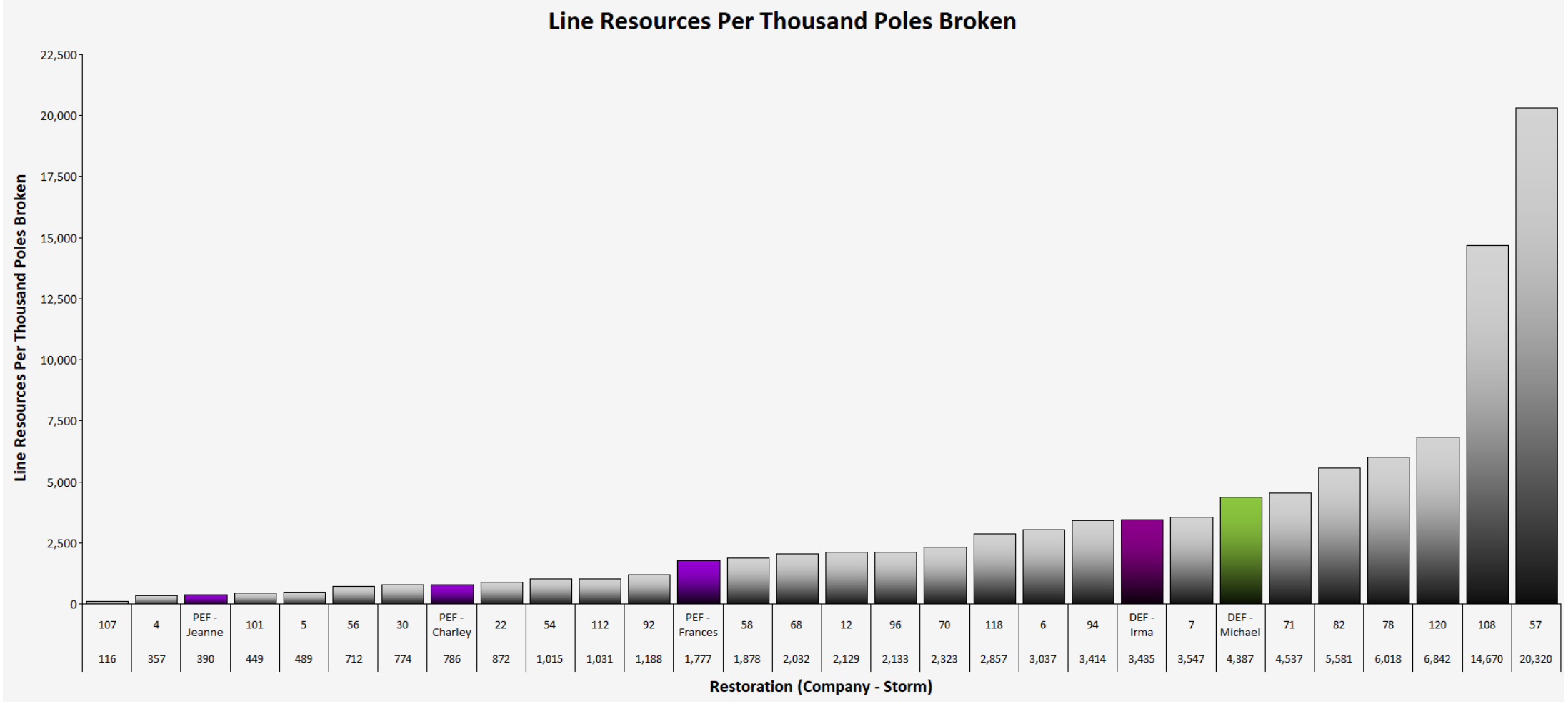
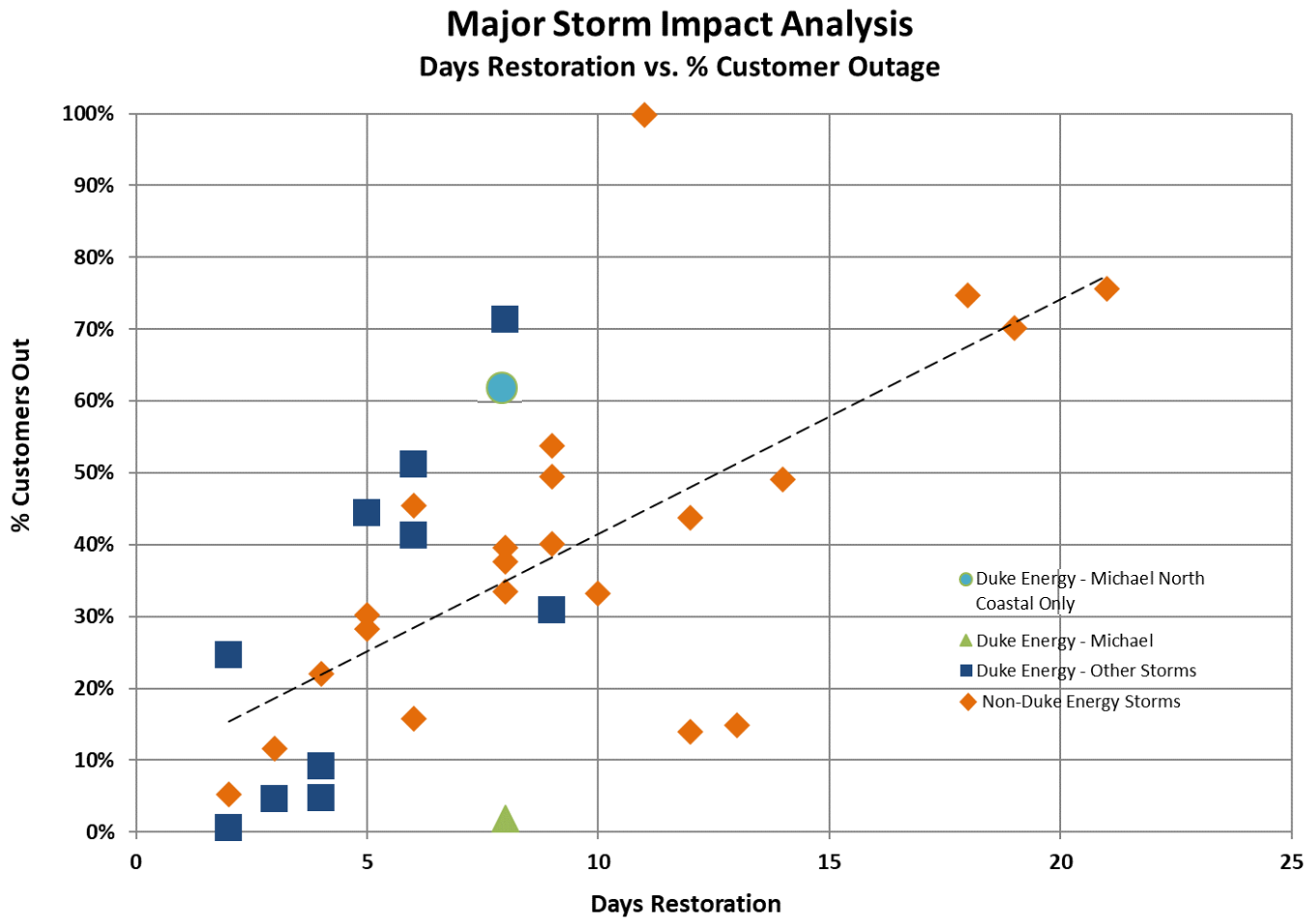


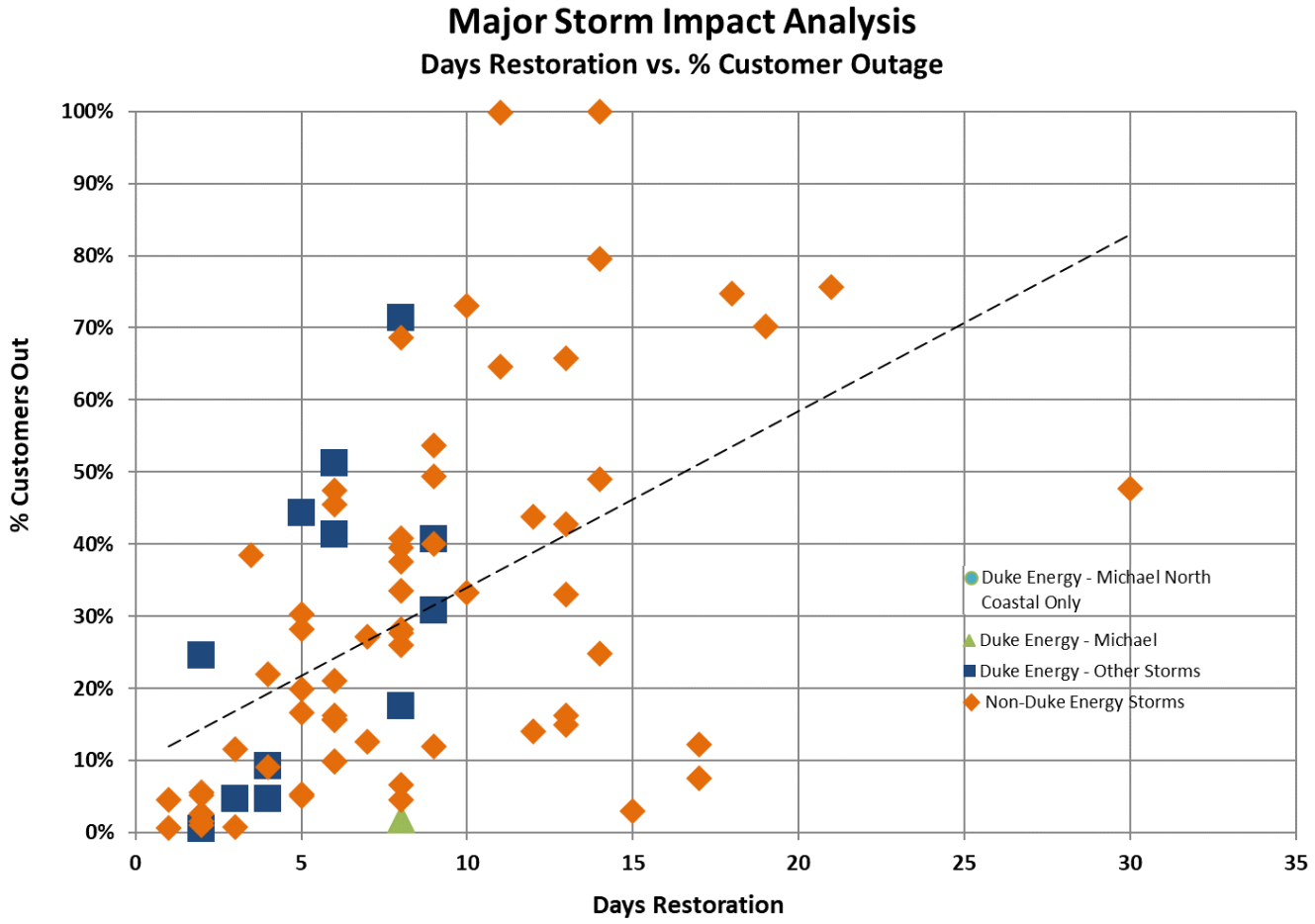
BENCHMARKING RESULTS



BENCHMARKING RESULTS – ALL HURRICANES



BENCHMARKING RESULTS – ALL RESTORATIONS



FINDINGS

BASED ON THE HIGH-LEVEL BENCHMARK ANALYSIS:

- The percentage of customers affected was relatively low when compared to similar events
  - DEF experienced total devastation to its distribution facilities in a concentrated area in the Florida panhandle. Although this area represents approximately three percent (3%) of DEF's customer base, the storm impacted sixty-one percent (61%) of DEF's North Coastal Zone.
  - Number of poles replaced per customers out at peak is relatively high when compared to similar restorations
- DEF took a longer time to restore power to all customers when compared with other storm events
  - Hurricane Michael was a unique storm for DEF in that the majority of the affected territory was not accessible for the first 2 days after the storm. This was due to access bridges requiring structural assessments before vehicles could cross and having to take alternate routes that were indirect and longer.
  - In comparison to other hurricanes in Accenture's database, DEF aggressively deployed a large contingent of resources for this storm.

DUKE ENERGY FLORIDA

FORENSIC ANALYSIS

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ANALYSIS OF SITUATION

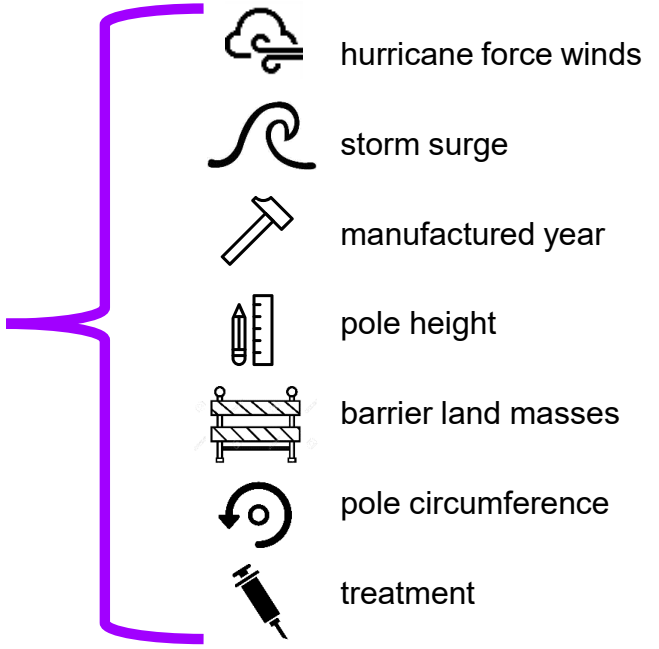
- In the aftermath of Hurricane Michael, DEF collected data on 219 broken poles. However, Michael hit several coastal areas where pole failure information could not be assessed or collected due to total devastation. Poles were destroyed and unable to identify, buried underneath other debris, or washed away. As such, this forensic analysis used the available broken pole attribute data. Poles without these data were visually assessed using geospatial analysis.

- In response to Hurricane Michael, DEF employed a two pronged strategy:
  - Normal restoration of damaged facilities impacted by Hurricane Michael
  - Rebuild of 3 distribution circuits in the area of total devastation (Mexico Beach, Port St. Joe)

METHODOLOGY

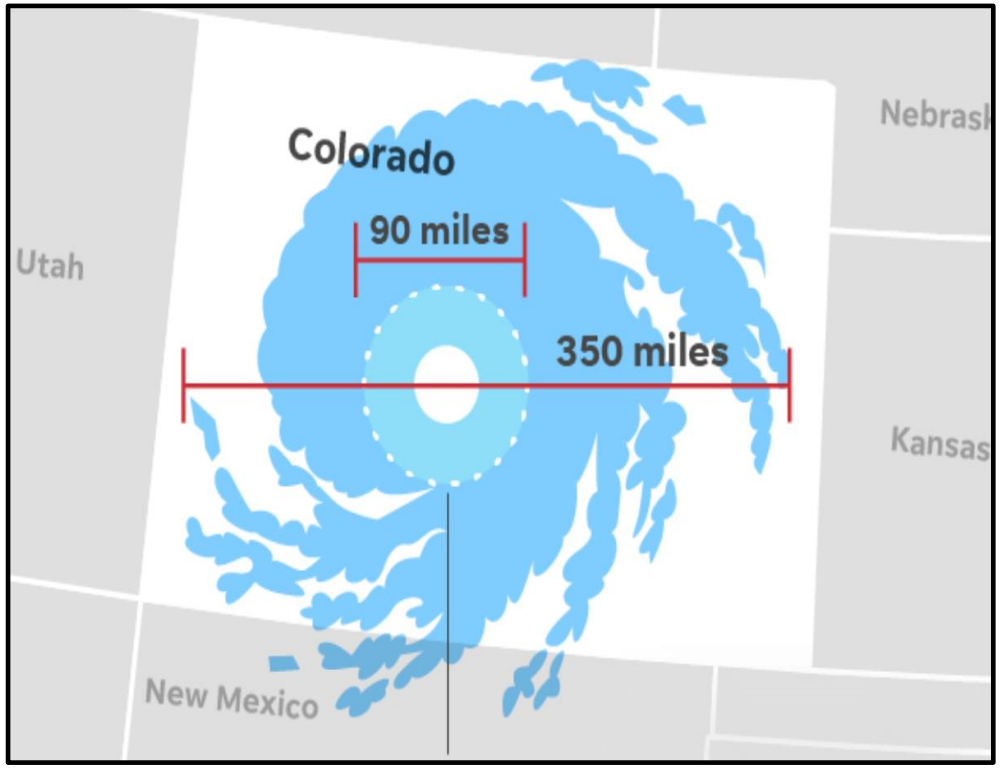
- Created data driven maps to analyze the broken pole population, hurricane path, wind speeds, and storm surge.
- Assessed broken pole properties such as cause of damage and pole height with descriptive statistics
- Identified feature importance using logistic regression

Incorporated Factors:



DATA VISUALIZATION

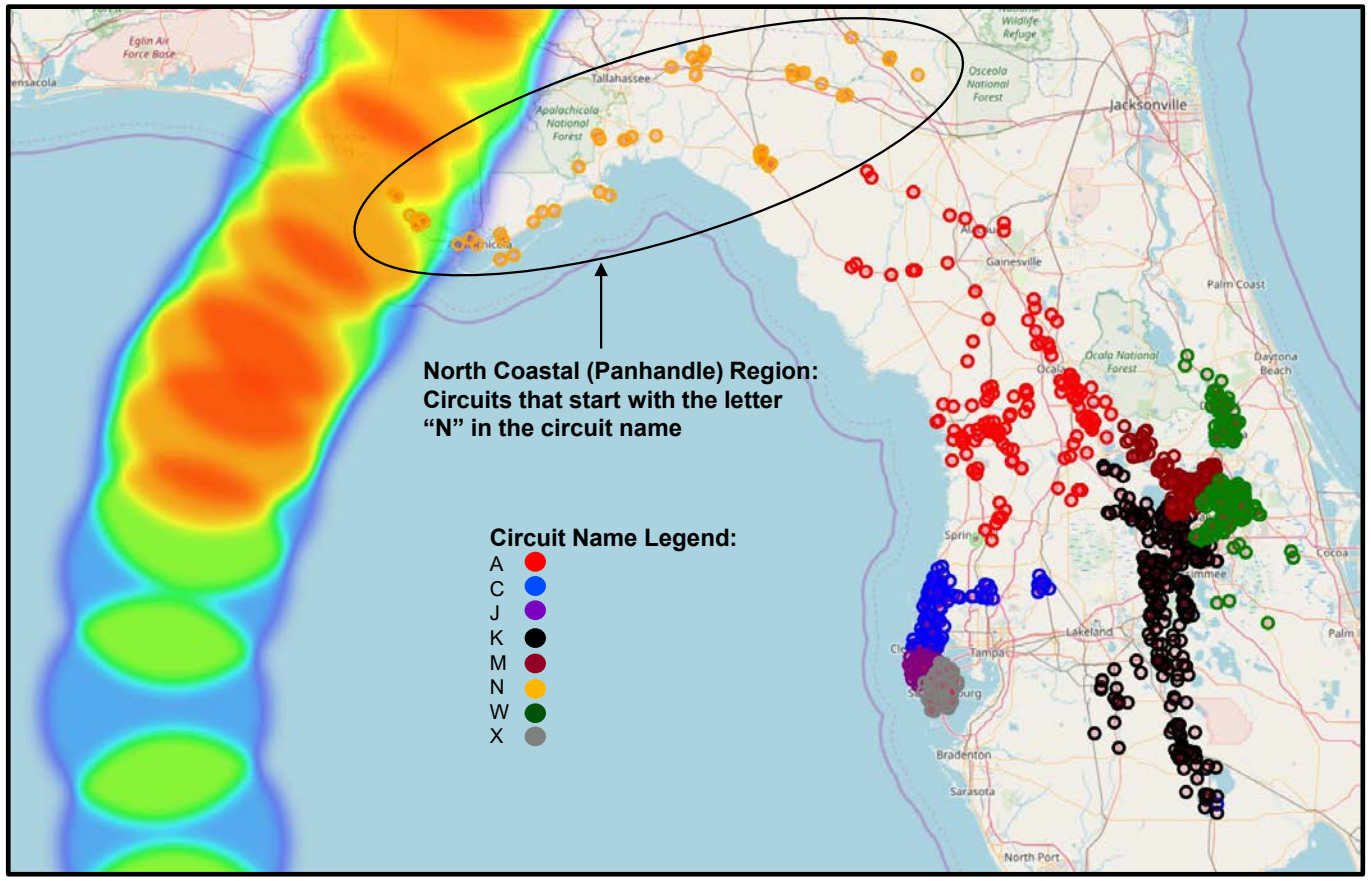
STORM BREADTH



- Hurricane Michael was about 350 miles across. The hurricane-force winds were near 90 miles in diameter and tropical-force winds affected about 96,211 square miles, which is near the size of the entire state of Colorado.

DATA DRIVEN VISUALIZATION

NORTH COASTAL REGION

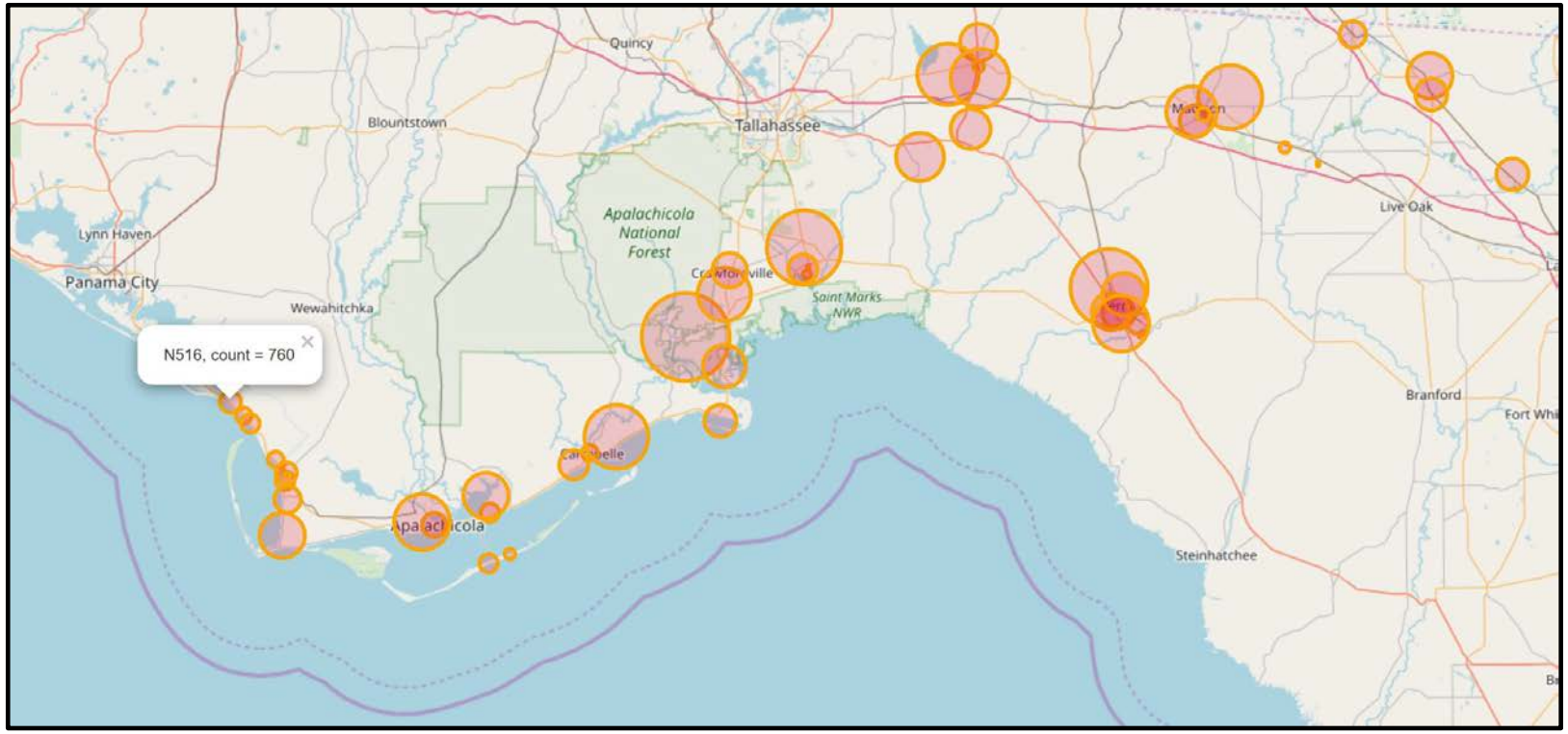


***Higher intensity winds shown as red

- Hurricane path only affected the panhandle of the North Coastal Zone (orange points). In addition, all broken poles were in the panhandle.
- Since the hurricane path only affected the North Coastal Zone, the forensic analysis focused on the pole population within the panhandle of the North Coastal Zone.

DATA DRIVEN VISUALIZATION

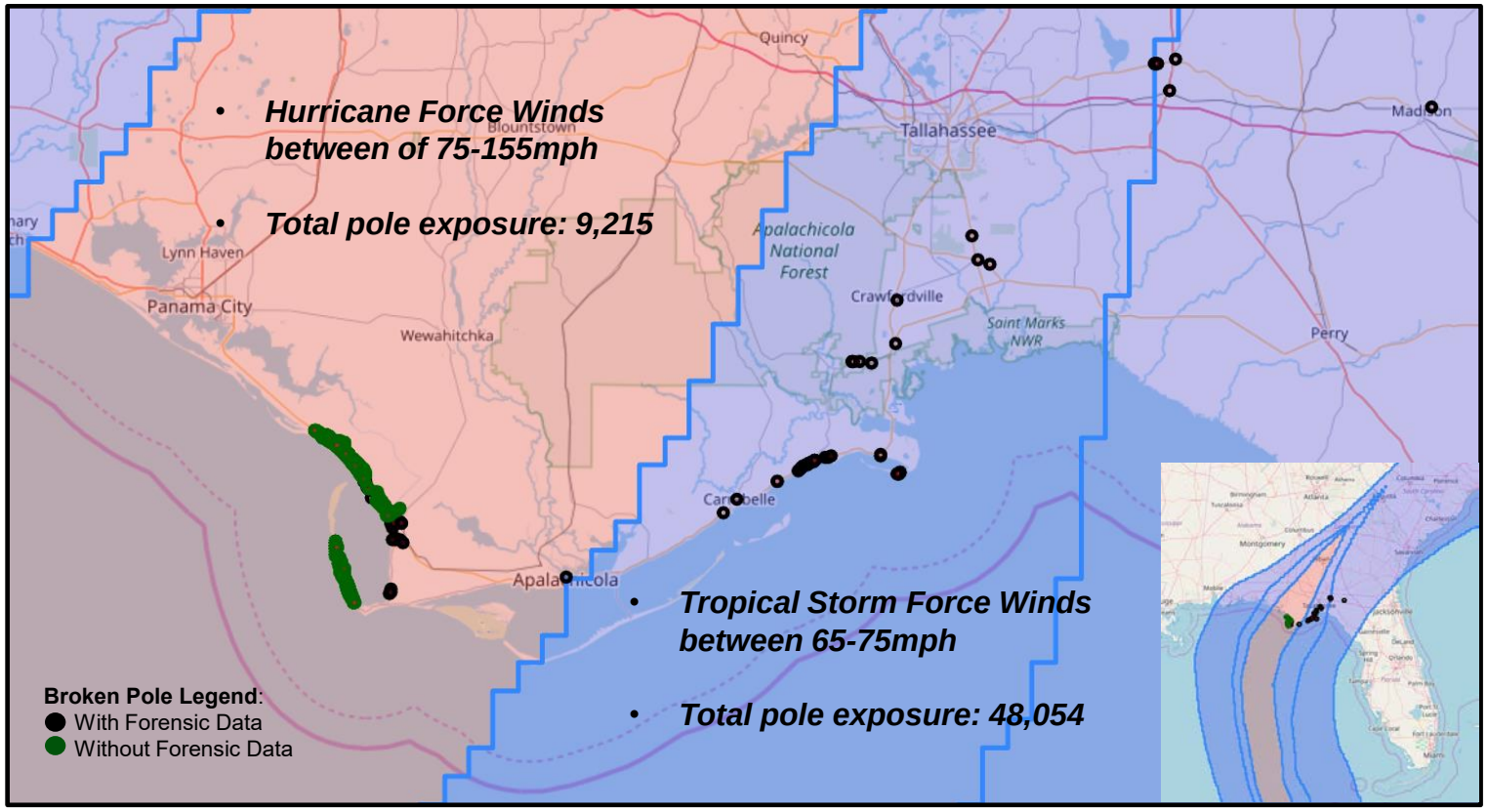
NORTH COASTAL REGION - RELATIVE CIRCUIT SIZE AND EXPOSURE



- The size of orange circles represent the general location and the number of poles on a circuit.
- Circle size is relative to all other circuits. (For example, circuit N516 is comprised of 760 poles and is smaller than circuits comprised of more poles and correspondingly bigger than circuits comprised of fewer poles.)
- This graphic shows pole population exposure and potential risk along coastal areas verses inland areas.

DATA DRIVEN VISUALIZATION

BROKEN POLES AND EXPOSURE

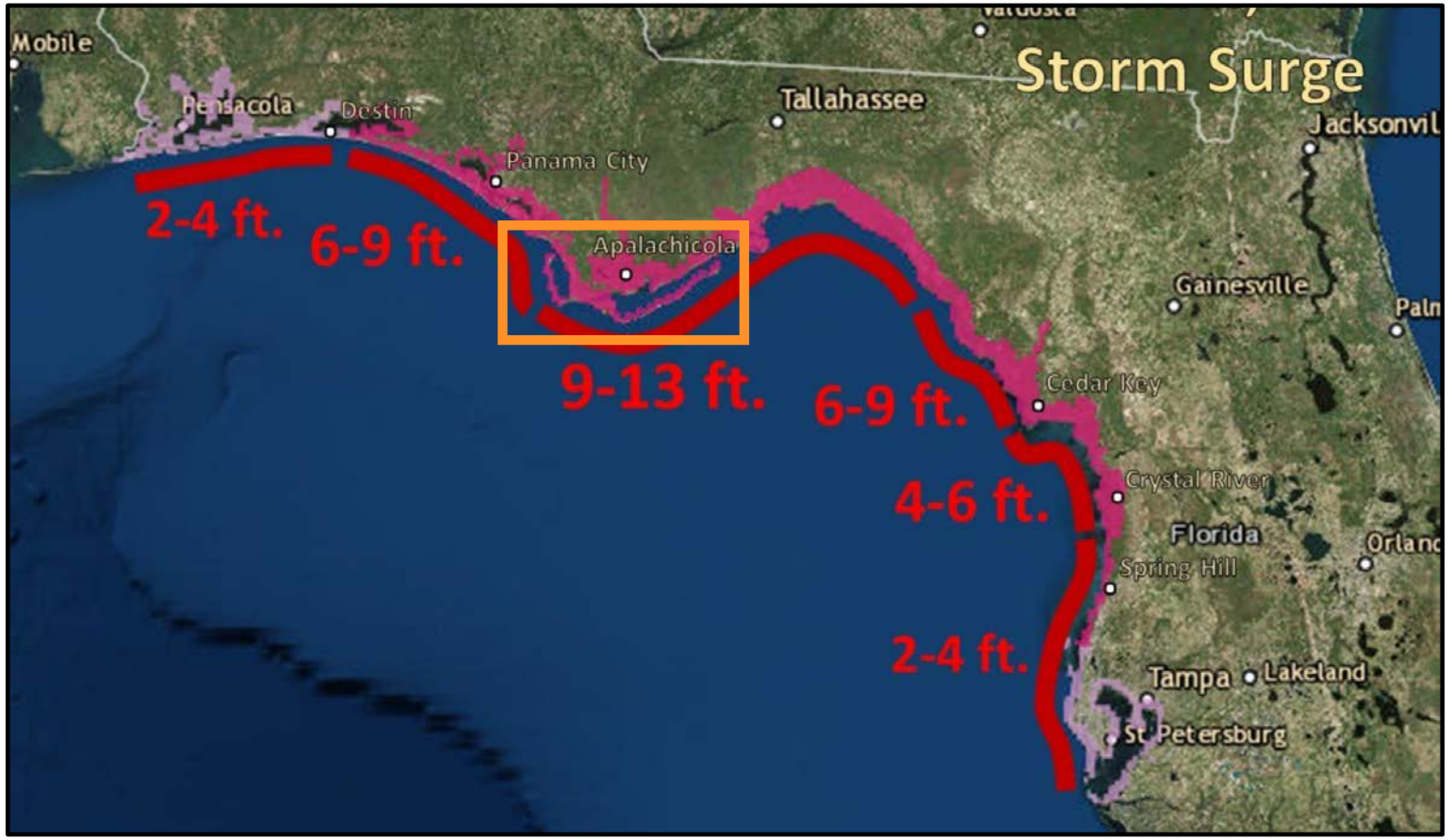


https://www.nhc.noaa.gov/refresh/graphics_at4+shtml/085125.shtml?swath#contents

- Over nine thousand (9,215) poles exposed to hurricane force winds (measured near 155mph at landfall)
- Over forty-eight thousand (48,054) poles were exposed to tropical storm force winds (wind speeds between 65 and 75 mph)

DATA DRIVEN VISUALIZATION

STORM SURGE EXPOSURE



https://twitter.com/NHC_Surge/status/1049770886943924224/photo/1?ref_src=twsrc%5Etfw%7Ctwcamp%5Etweetembed%7Ctwterm%5E1049770886943924224&ref_url=https%3A%2F%2Fwww.wired.com%2Fstory%2Fwhy-hurricane-michaels-storm-surge-is-so-high%2F

- Large areas of the North Coastal Zone were exposed to high storm surge.
- Surge forecasts just prior to Hurricane Michael's landfall identified Mexico Beach as an area of high inundation.
- Poles affected were forecasted to experience between 6 and 13 ft of surge. (Note that some surge sensors recorded approximately 15 ft. of actual surge.)
- The vast majority of DEF's distribution assets are situated along the coastline. As such, they experienced the brunt of the storm surge as well as hurricane force winds.

BROKEN POLE ANALYSIS

AVAILABLE DATA AND DATA ASSUMPTIONS

- Data from 219 poles were used in the descriptive statistic slides to follow, however the total broken pole population modeled was limited to 182 poles due to the following factors:

Final Broken Pole Count:	
Total broken pole population***	219
Unique pole ID unavailable for matching with GIS data source	(11)
Location data unavailable from GIS data source	(18)
Broken poles not: • Owned by Duke • Wood distribution poles	(8)
Final broken pole total	182
*** only includes poles with available forensic data	

USE_CODE
- Primary
- Secondary

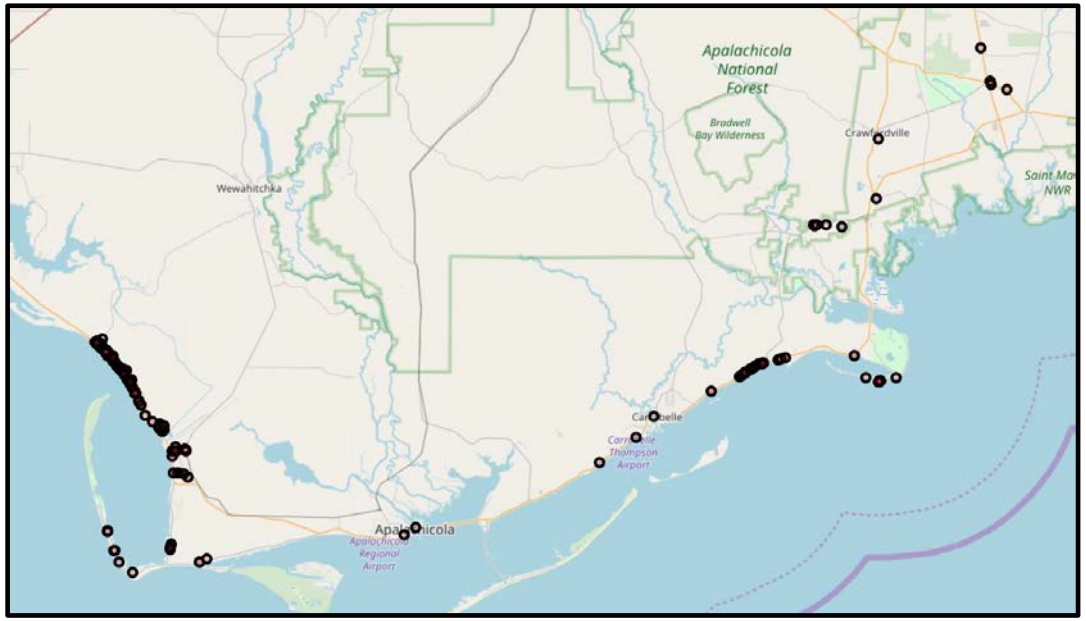
MATERIAL
- Wood

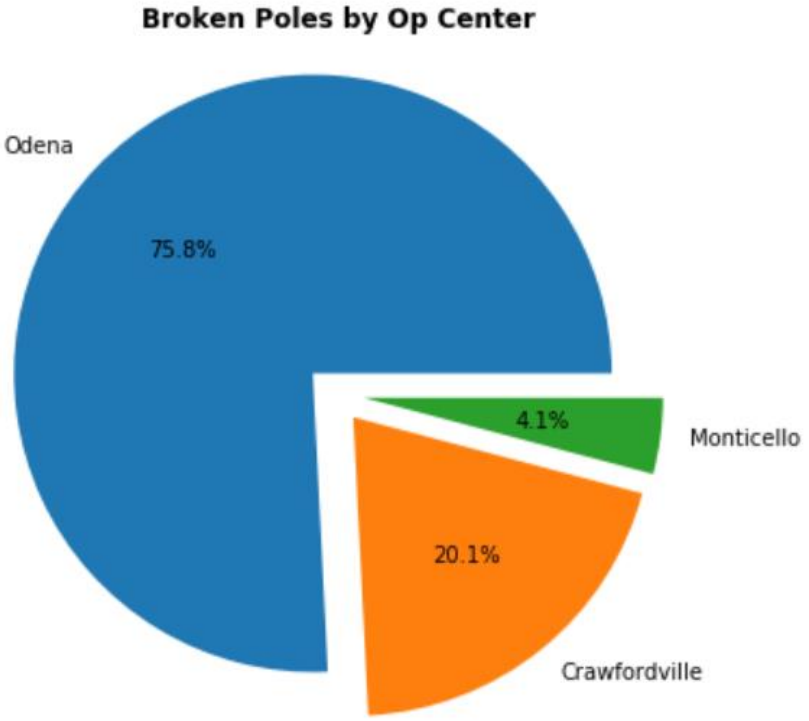
OWNERSHIP
- PEF

OWNERSHIP TYPE
- PGN

BROKEN POLE ANALYSIS

BREAKOUT – POLES WITH DATA

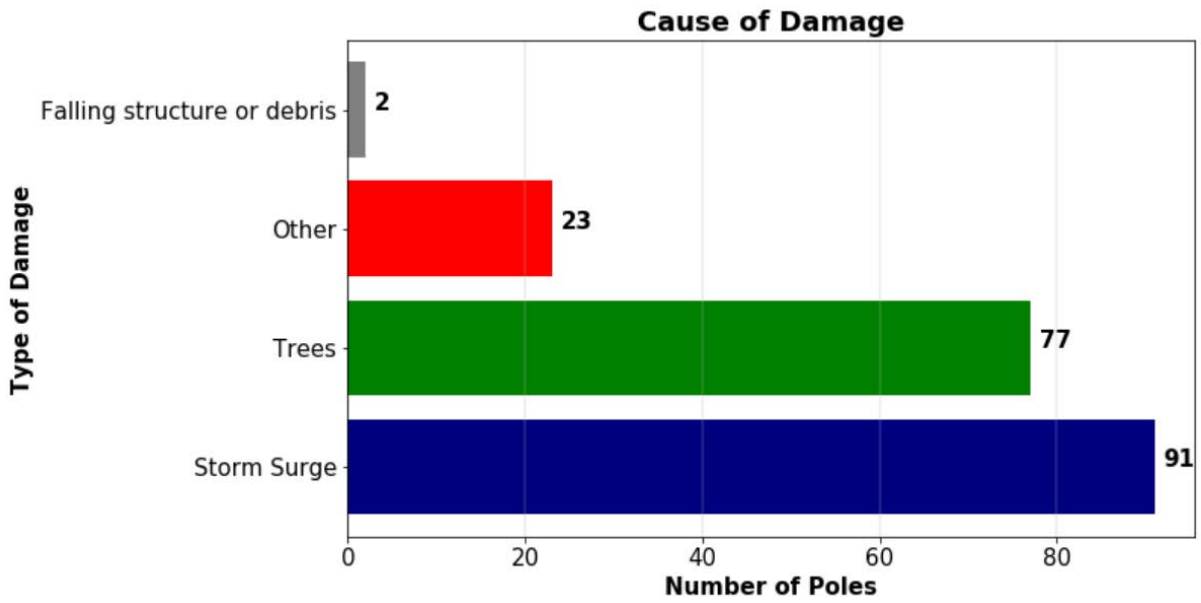


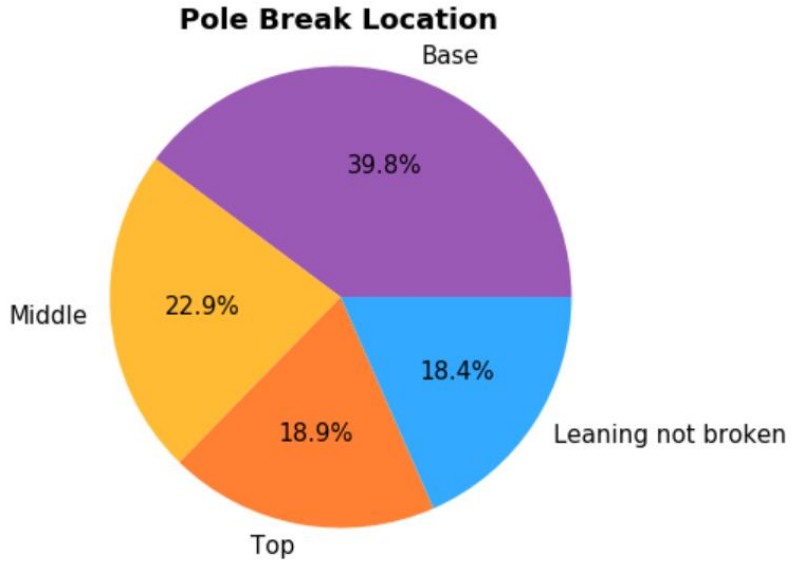


- Graphic depicts only broken poles that have forensic data. The majority of broken poles are in the Odena operating area (75.8%) followed by the Crawfordville operating area (20.1%) followed by the Monticello operating area (4.1%).

BROKEN POLE ANALYSIS

BREAKOUT – POLES WITH DATA

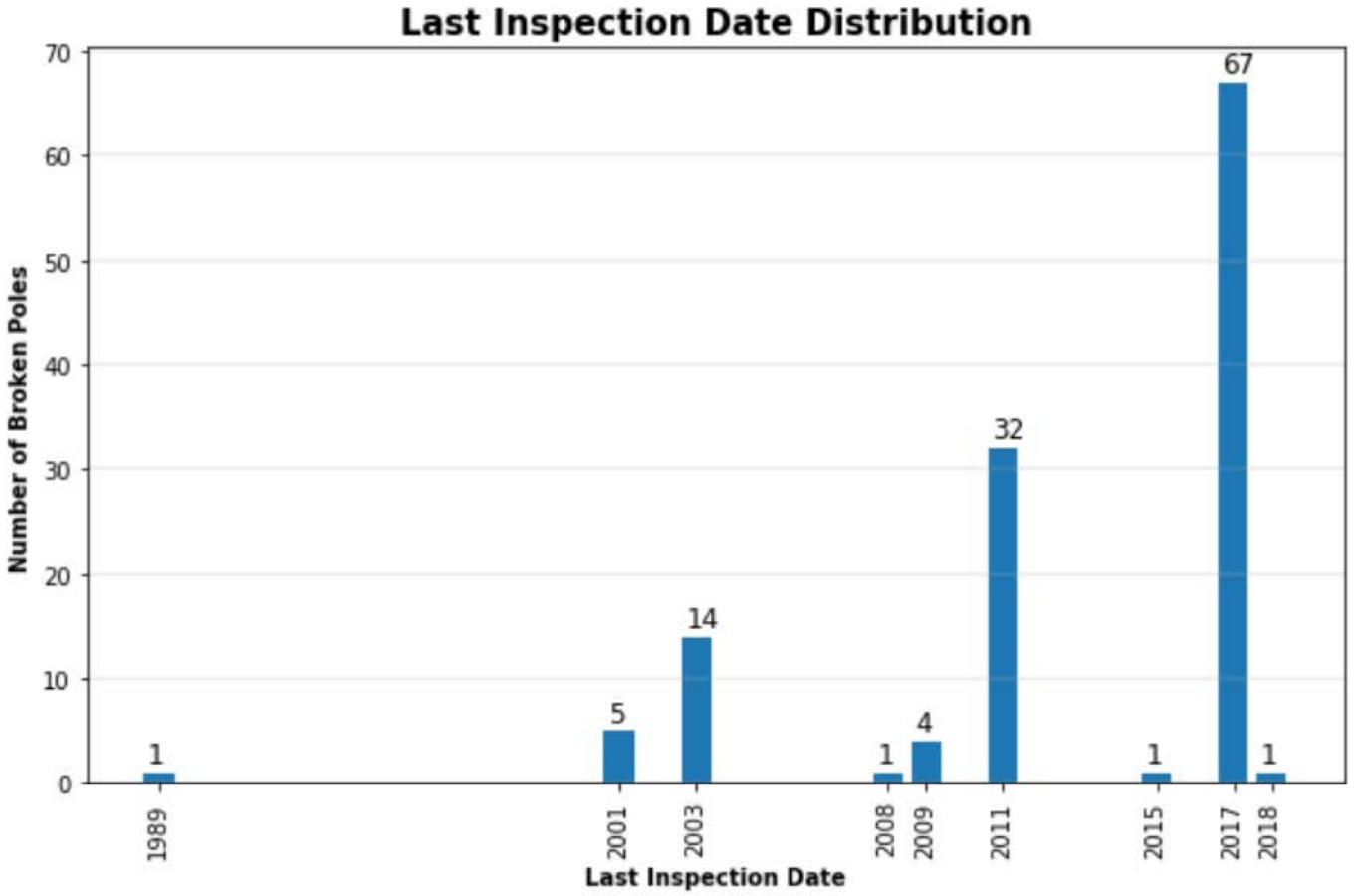




- The predominate cause of recorded damage was Storm Surge (91), followed by Trees (23).
- Twenty-three (23) poles were recorded as 'Other.'
- The majority of broken poles failed at the base of the pole.
- Nearly 20% of poles were not broken, but leaning.

BROKEN POLE ANALYSIS

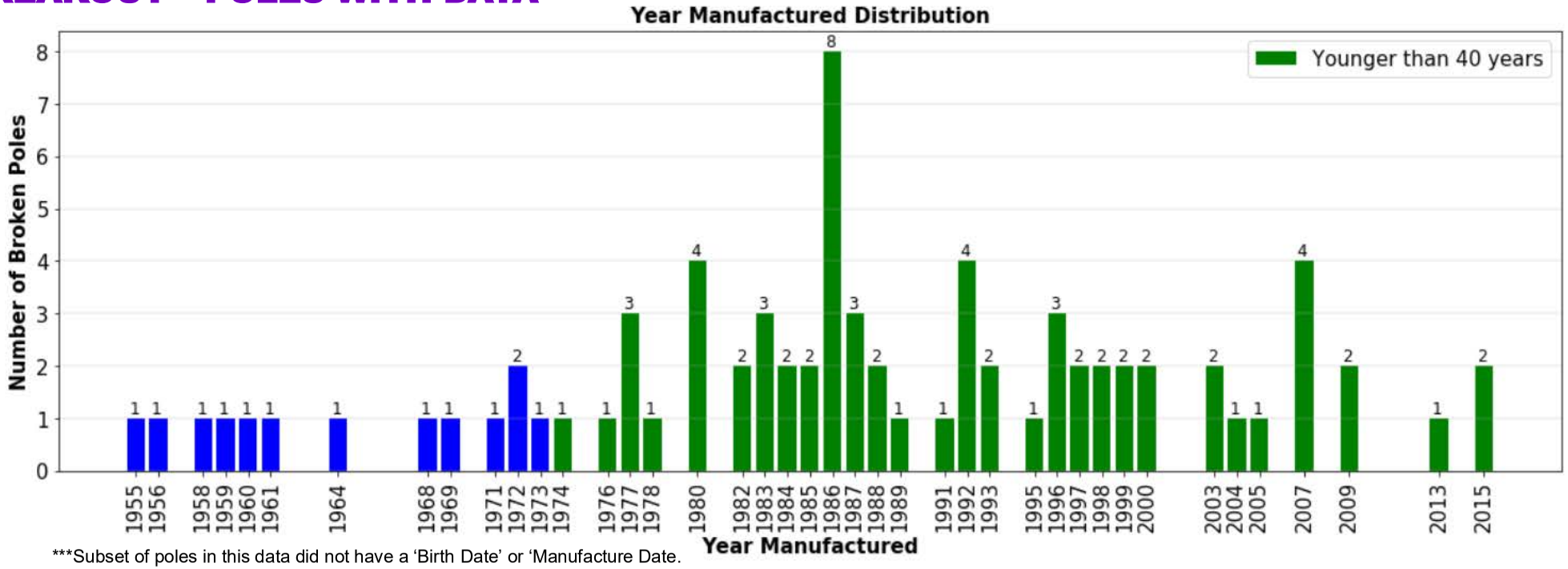
BREAKOUT – POLES WITH DATA



- The majority of the broken poles were last inspected in 2017, 2011 and 2003 respectively.

BROKEN POLE ANALYSIS

BREAKOUT – POLES WITH DATA

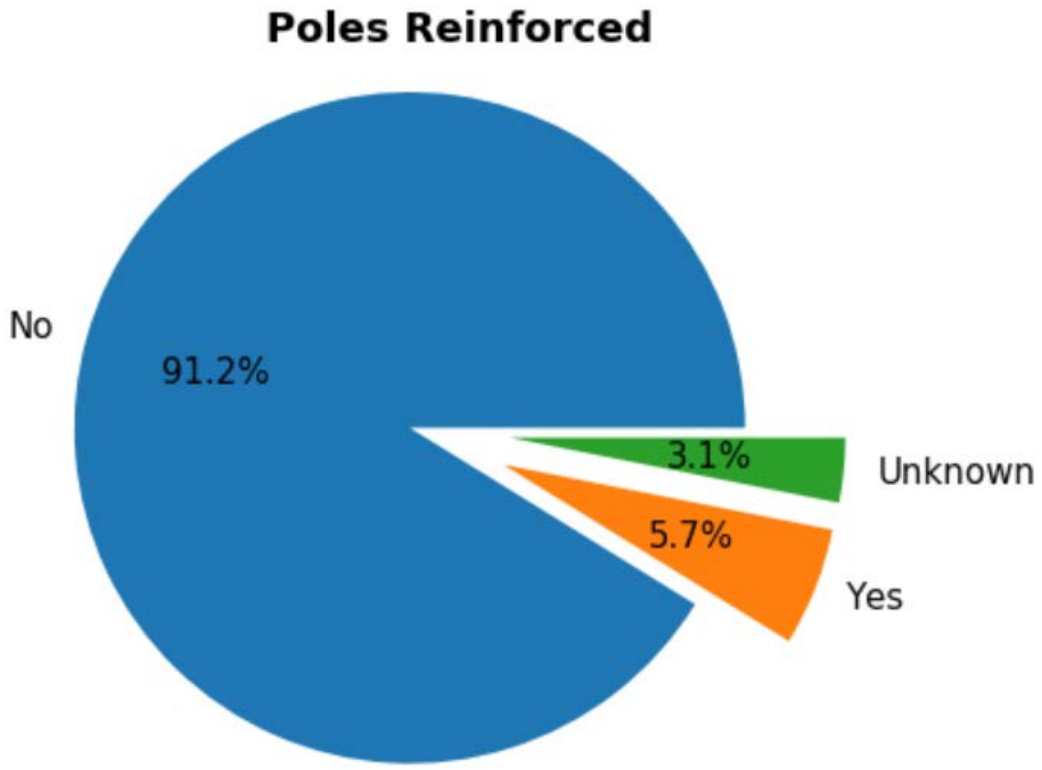


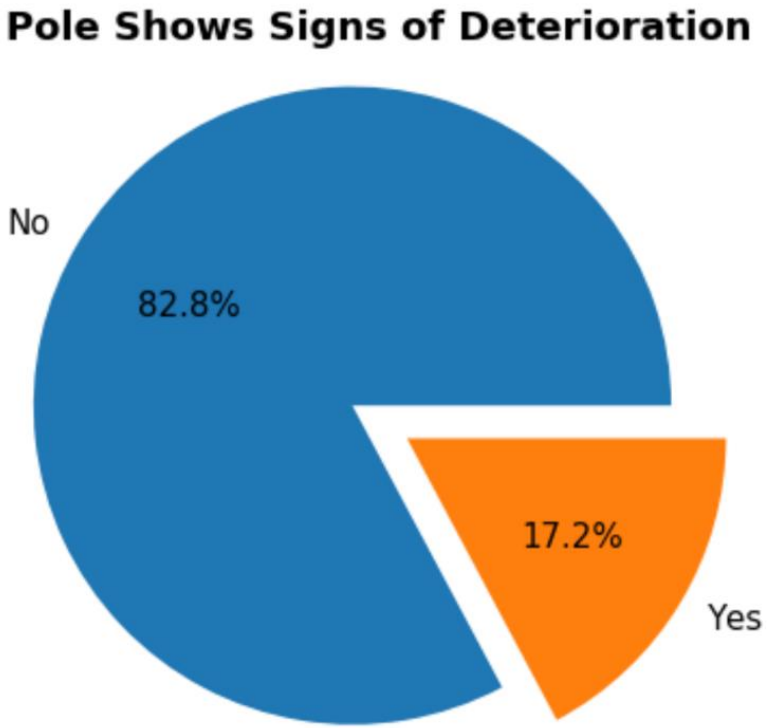
***Subset of poles in this data did not have a 'Birth Date' or 'Manufacture Date.

- From an accounting perspective, the life expectancy of a wood pole is forty-two (42) years. Actual DEF operating experience and Accenture benchmarking data confirms that the expected life of a wood pole is fifty (50) years or more. Additionally, industry research has produced studies that suggest the life expectancy of wood poles can be in the range of ninety (90) years.
- The majority of broken poles were less than 40 years old. The broken poles that were older than forty years did not dominate this distribution.

BROKEN POLE ANALYSIS

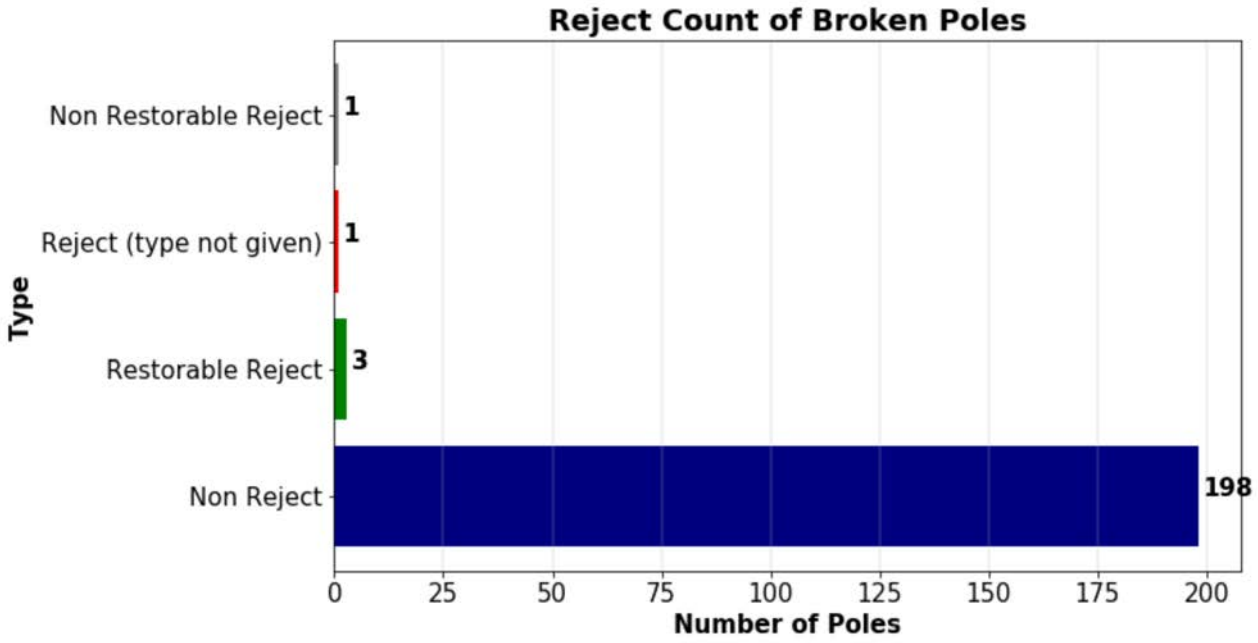
BREAKOUT – POLES WITH DATA

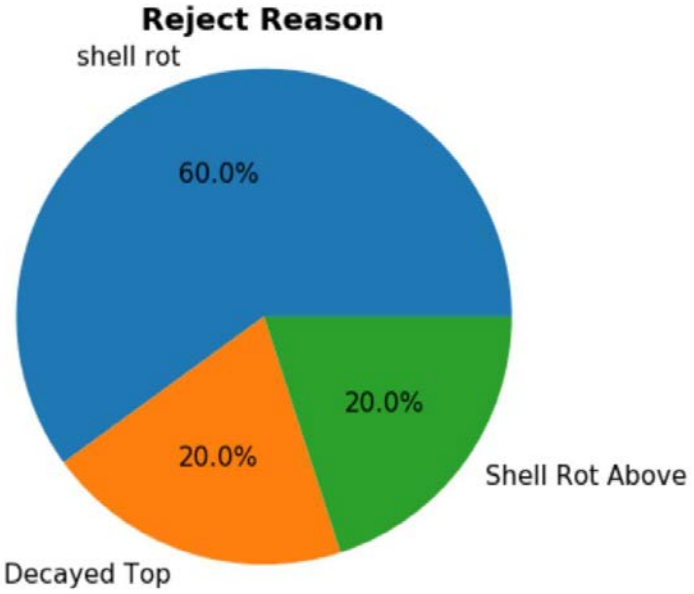




BROKEN POLE ANALYSIS

BREAKOUT – POLES WITH DATA

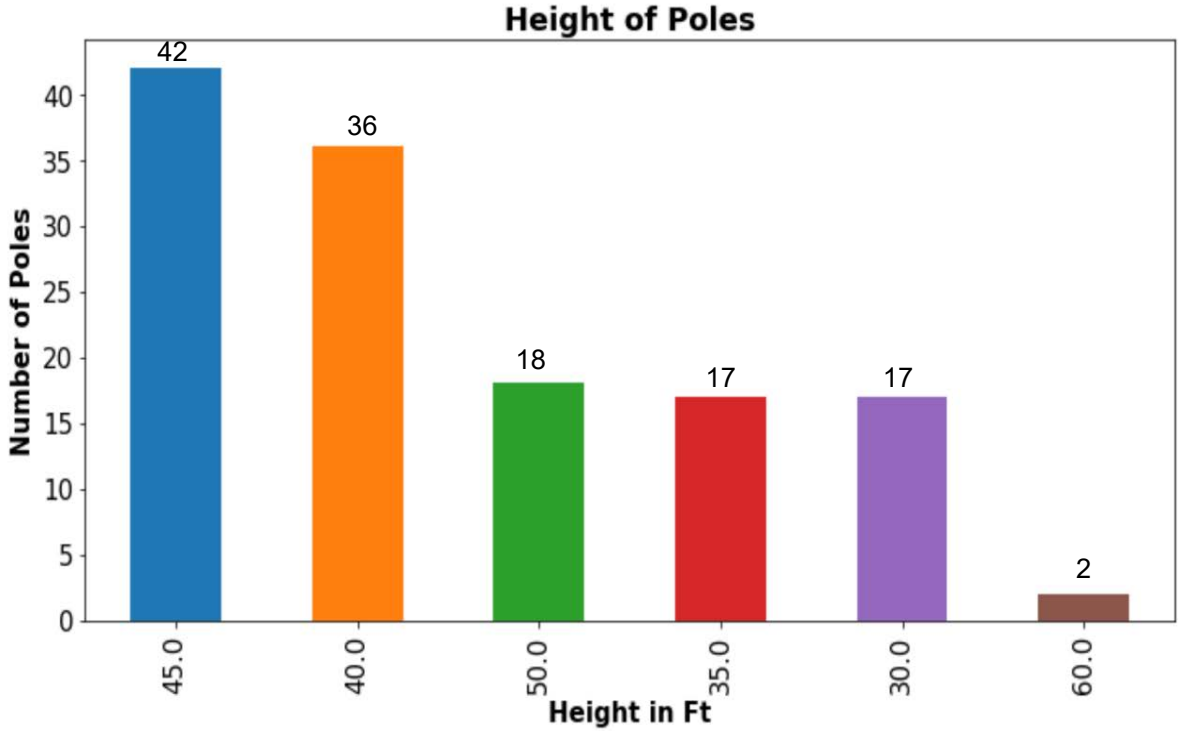


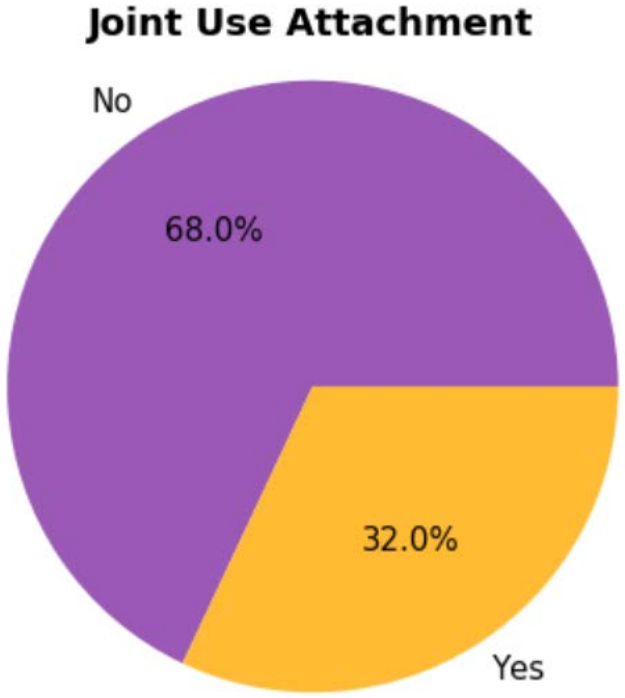


- After reviewing pole inspection data for the 203 broken poles, only 1 pole was not replaced prior to Hurricane Michael. This pole was scheduled to be replaced in January 2019.

BROKEN POLE ANALYSIS

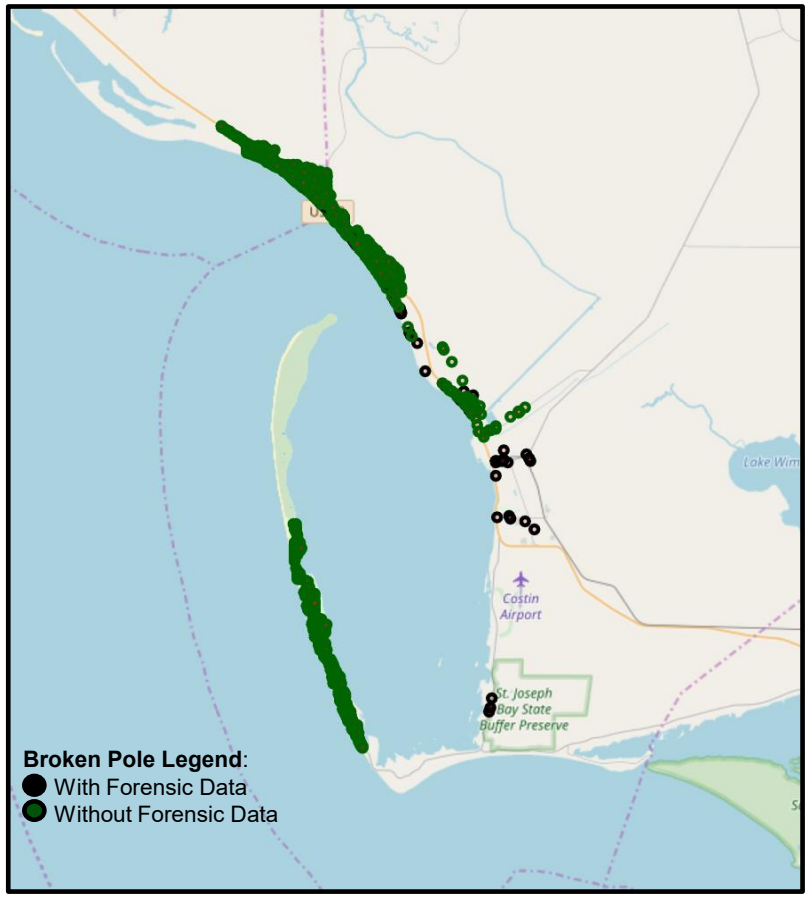
BREAKOUT – POLES WITH DATA





BROKEN POLE ANALYSIS

POLES IN DEVASTATED COASTAL AREA – POLES WITH NO FORENSIC DATA



In addition to broken poles analyzed using forensic data, Accenture also assessed broken poles along the coastline that were totally devastated and were unable to be forensically assessed. These poles are shown in green on the map.

Areas of total devastation include:

- Mexico Beach
- Port St. Joe
- Cape Sand Blas

Circuits within these areas include:

- N516 (760 poles)
- N520 (1 pole)
- N515 (602 poles)
- N527 (680 poles)
- N202 (626 poles)
    - DEF estimated that approximately 10% (63) of these poles on this circuit were broken

BROKEN POLE ANALYSIS

BREAKOUT – POLES WITH AND WITHOUT DATA

Circuit	Assessed broken poles with forensic data	Assessed broken poles without forensic data ***	Total Assessed Broken Poles	Remaining Poles	Total Poles	Op Center
N327	6	0	6	3,274	3,280	CRAWFORDVILLE
N1	1	0	1	2,414	2,415	MADISON
N48	1	0	1	1,054	1,055	CARRABELLE
N69	1	0	1	2,180	2181	MONTICELLO
N67	6	0	6	2,336	2,342	MONTICELLO
N332	3	0	3	2,807	2,810	CRAWFORDVILLE
N42	1	0	1	608	609	CARRABELLE
N43	17	0	17	2,383	2,400	CARRABELLE
N35	1	0	1	2,032	2,033	CRAWFORDVILLE
N38	12	0	12	1,156	1,168	CARRABELLE
N58	1	0	1	904	905	ODENA
N202	25	38	63	563	626	ODENA
N54	12	0	12	820	832	ODENA
N53	7	0	7	1,029	1,036	ODENA
N516	1	759	760	0	760	ODENA
N515	39	563	602	0	602	ODENA
N527	42	638	680	0	680	ODENA
N556	6	0	6	1,681	1,687	ODENA
N520	0	1	1	0	1	ODENA
	182	**1,999**	**2,181**	**25,241**	**27,422**	

Circuits completely rebuilt.

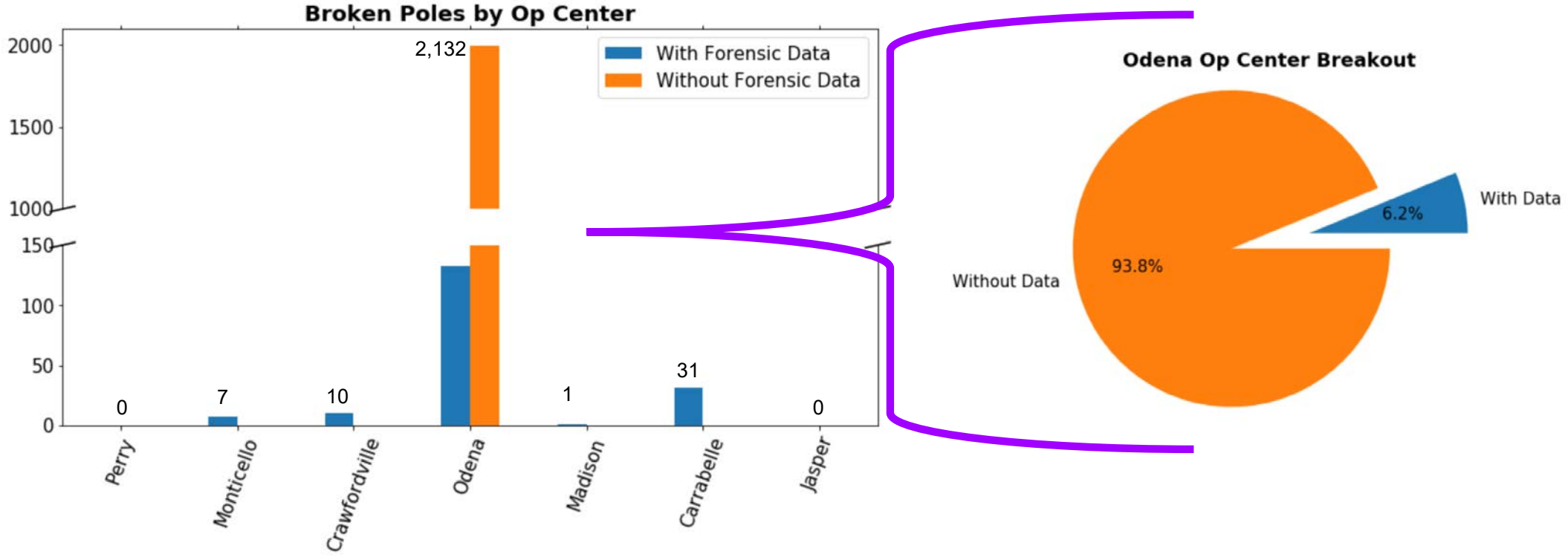
Area of total devastation. Assumed all poles broken.

Area of partial devastation. Assume 10% of poles broken.

***Include poles with incomplete data as well as broken poles in areas of total devastation

BROKEN POLE ANALYSIS

BREAKOUT – POLES WITH AND WITHOUT DATA



- 6.2% of Odena poles have forensic data when combined with poles in devastated coastal circuits.

MODELING

DEVELOPMENT OF LOGISTIC REGRESSION

- Type of classification model that allows to predict a categorical variable from single or multiple input variables
- Predict categorical variables as well as assess other variable importance
  - Produce coefficients and p-values that will be used to ‘rank’ the respective features (inputs)
  - Dependent variable
    - Coded as broken(1) / not broken(0)
  - Independent variable (inputs)
    - Weather (wind speed)
    - Land barrier protection
    - Storm Surge
    - Manufactured year
    - Pole height
    - Pole circumference
    - Pole treatment

MODELING
INTERPRETING LOGISTIC REGRESSION

There are multiple measures we can look at to understand the results of logistic regression. In this analysis we use:

- **Correlation Coefficient Estimate**
- **P Values** of the estimates
- **Psuedo (Mcfadden) R^2 Value**

Correlation Coefficient Estimate – This describes the size and direction of the relationship between a predictor and the response variable. Here we have standardized our independent input variables by subtracting the mean and dividing by standard deviation. This allows us to compare the size of the coefficients with each other.

P Values– These are probabilities that measure the evidence against the null hypothesis. In our problem, the null hypothesis says there is no relationship between our independent variable (i.e. year manufactured, height, etc.) and our binary dependent variable (broken/not broken.) If we reject the null hypothesis then we accept the alternative hypothesis that there is a relationship greater than chance that the independent and dependent variable are related. A p-value below the 0.05 threshold indicates, low chance of incorrectly rejecting the null, thus we have a statistically significant correlation coefficient estimate.

Psuedo (Mcfadden) R^2 Value – This describes the goodness of fit of the entire model. Similar to R squared typically used in linear regression, this can also be interpreted as more variability in the model is explained the closer R squared is to 1.

The ultimate goal of the above measures in this forensic analysis is to provide insight on the importance of the various factors on pole failure or breakage.

MODELING

CONSIDERING POLES WITH FORENSIC

Factors	Coefficients	P-Value	Statistically Significant
Pole Circumference	0.0112	0.917	No
Pole Height**	0.3081	0.001	Yes
Year Manufactured***	-0.1948	0.007	Yes
Treatment	-7.1076	0.818	No
Electrical Attachment	0.0685	0.751	No
Storm Surge	2.0946	0.000	Yes
Barrier Island	-0.2841	0.163	No
Hurricane Force Winds	1.3118	0.000	Yes

Results:

- We have 4 variables that connect in a statistically significant way to the dependent variable of pole breakage. Here, factors where p-values < .05 are Height, Year Manufactured, Storm Surge and Hurricane Force Winds.
  - The size of Hurricane Force Winds and Storm Surge are much higher than Height and Year Manufactured indicating higher likelihood of pole breakage due to surge and winds.
- Pseudo-R^2 for this model is .1501. This may indicate other factors could be involved or more data is needed to increase this models goodness of fit.

****Note on Pole Height:**
Accepting pole height as statistically significant may be misleading. The range of heights in this sample is 30-45 ft. 70% of broken poles are at the top end of that range. This artificially gives more weight to taller poles and is due to the small sample size.

*****Note on Year Manufactured:**
Some poles were missing this date and average year manufactured was used as proxy for actual year. Statistical significance of this variable may not be accurate.

MODELING
CONSIDERING ALL POLES

Factors	Coefficients	P-Value	Statistically Significant
Pole Circumference	-0.0820	0.061	No
Pole Height	-0.0128	0.748	No
Year Manufactured	0.0432	0.070	No
Treatment	-15.6123	0.995	No
Electrical Attachment	-0.0280	0.708	No
Storm Surge	2.5870	0.000	Yes
Barrier Island	0.0531	0.346	No
Hurricane Force Winds	4.2273	0.000	Yes

Results:

- We have 2 variables that connect in a statistically significant way to the dependent variable of pole breakage. Here, factors where p-values < .05 Storm Surge and Hurricane Force Winds.
    - The size of Hurricane Force Winds and Storm Surge are the only statistically significant factors in this model, indicating likelihood of pole breakage due to surge and winds.
- Pseudo-R^2 for this model is .4396. This is higher that previous model suggesting higher importance of surge and wind when including poles in devastated coastal areas in addition to pole with forensic data.

MODELING
SUMMARY

Considering broken poles with forensic data

Of the four significant factors in this model, we can place greater importance on Storm Surge and exposure to Hurricane Force Winds as compared to the other statistically significant factors. Coefficients for height and year manufactured were below one, whereas surge and wind were above one, indicating greater contribution to pole failure.

The Pseudo R^2 of 15.01% indicates the involvement of other factors or more data is needed to increase this models goodness of fit.

***The difficulty of gathering forensic data on broken poles has created an extremely small population to model. Due to this lack of data, we should not place emphasis on pole factors that this model is showing as significant.

Considering all broken poles

When we added in poles from the devastated coastal circuits to the poles with forensic data, only Hurricane Force Winds and Storm Surge showed as statistically significant factors.

This appears consistent with intuition. Poles in devastated coastal circuits were most impacted by storm surge. In addition, the greatest wind speed was recorded just upon landfall.

The Pseudo R^2 of 43.96% indicates the fit of this model is better than the first and we can be more confident in relying on the coefficients when compared.

*** Including poles without forensic data increases the size of the dependent variable. This enables the regression to better assess the importance of model input variables.

DUKE ENERGY. FLORIDA

STORM HARDENING

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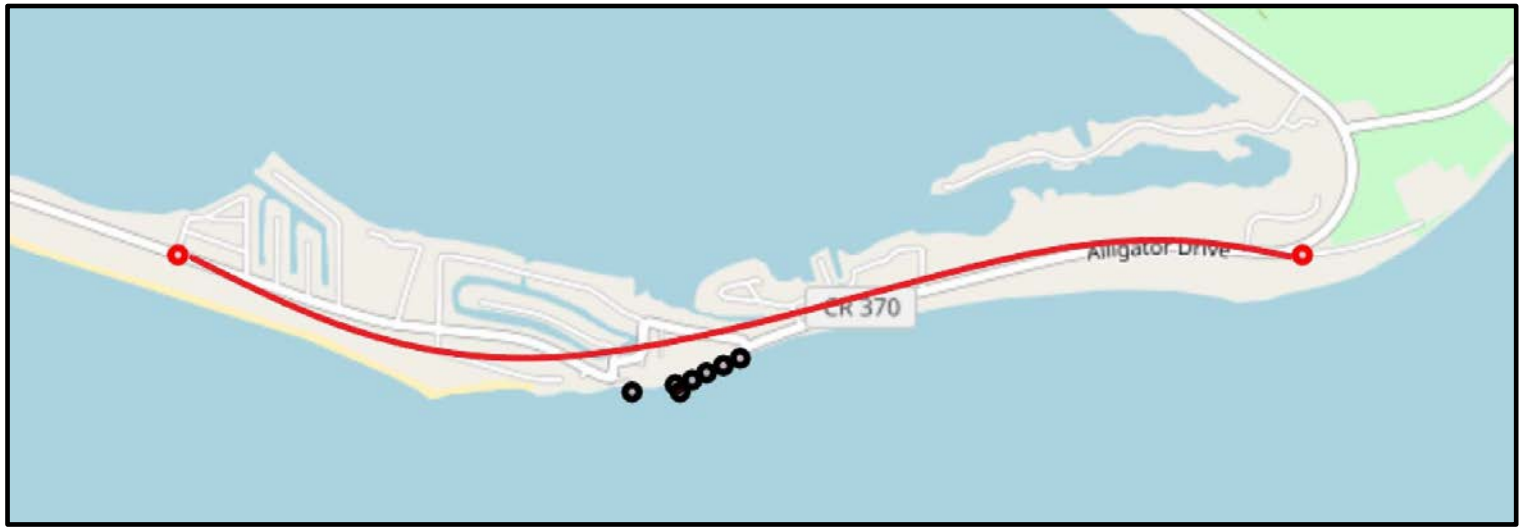
METHODOLOGY/APPROACH

- DEF performed storm hardening on a number of distribution line sections since 2006
  - Selected storm hardening targets that were previously completed from an established repository
  - Traveled to the geotagged location identified for the project
  - Patrolled the entire scope of the project
  - Record any damages to the facilities

- Determined if any poles that failed during Hurricane Michael were a part of the storm hardened circuits by:
  - Mapped broken poles that were reviewed by the forensics team
  - Overlaid storm hardened projects
  - Identified if any broken poles were a part of the storm hardened projects

STORM HARDENED POLES

BROKEN POLE WITHIN STORM HARDENED AREA



- There appeared to be 7 poles within the range of Storm Hardening program labeled Alligator Point Extreme Wind - Phase 2 of 4.
- Of these 7 poles, only 1 broken pole was lying flat on the ground. This pole was class 5 which is smaller than the leaning poles, which were class 2.
- Although this area was impacted by Tropical Storm force winds and not Hurricane force winds, it experienced high storm surge.

STORM HARDENED POLES

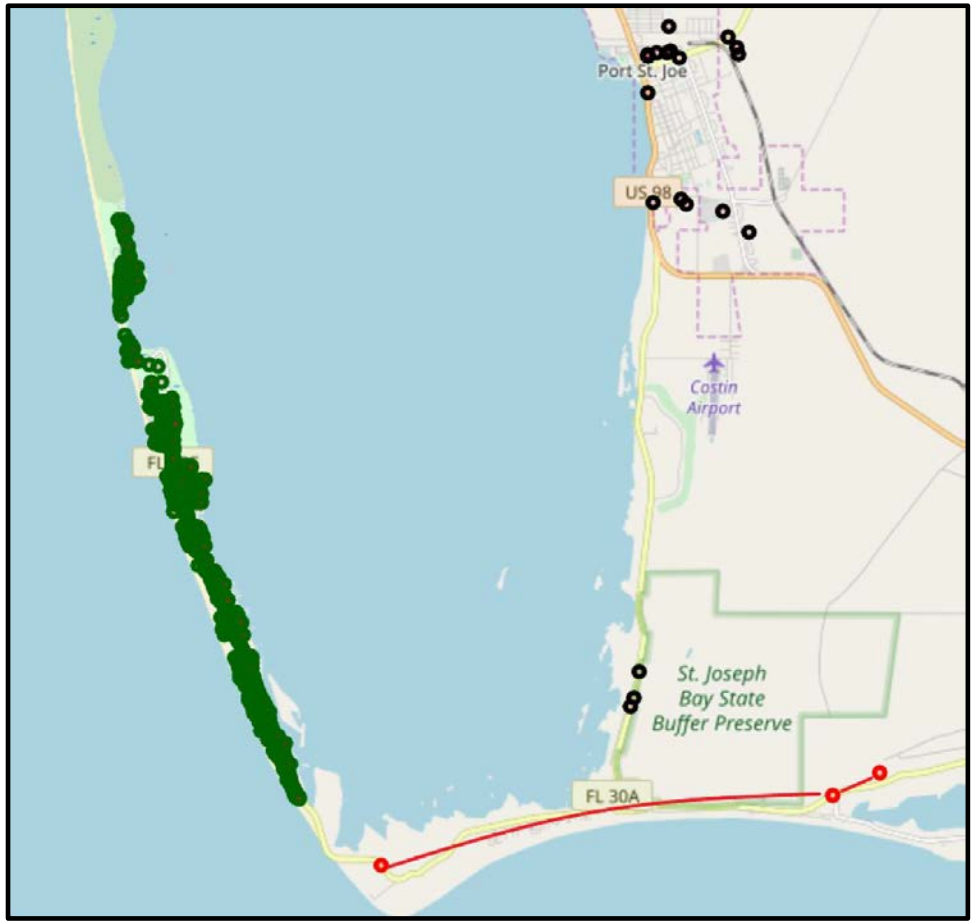
LEANING POLES WITHIN STORM HARDENED AREA

STORM HARDENED POLES

BROKEN POLE WITHIN STORM HARDENED AREA

STORM HARDENED POLES

NO BREAKAGE

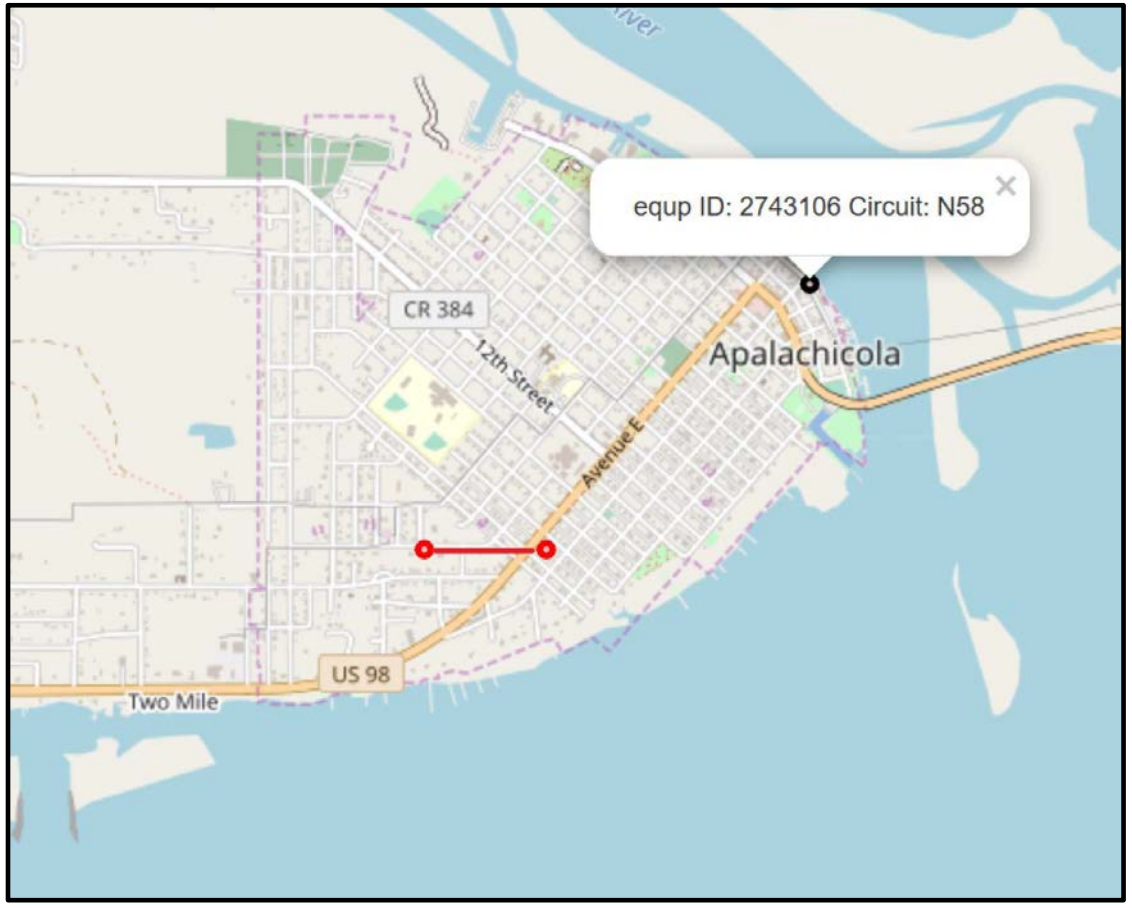


- The area in this map experienced hurricane force winds and storm surge. Although St. Joseph's Peninsula provided some protection, several poles failed.

- The storm hardened poles, in red, experienced similar surge and wind speeds and storm surge. Hardened poles were able to withstand these forces.

STORM HARDENED POLES

NO BREAKAGE



- Although one pole is listed as broken in data, the storm hardening project does not appear to include this broken pole.

DUKE ENERGY FLORIDA

DRONE ANALYTICS FOR FORENSIC DAMAGE ASSESSMENT

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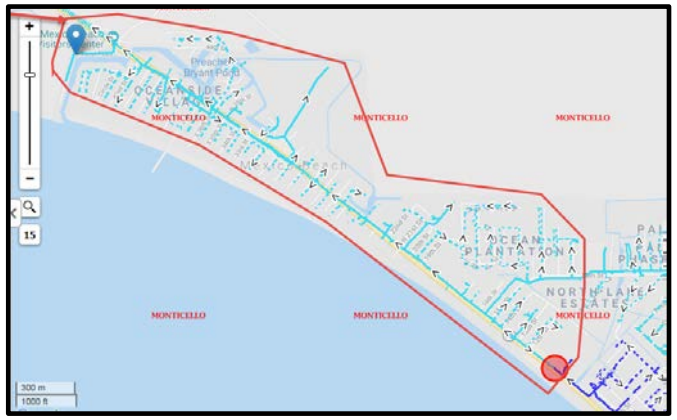
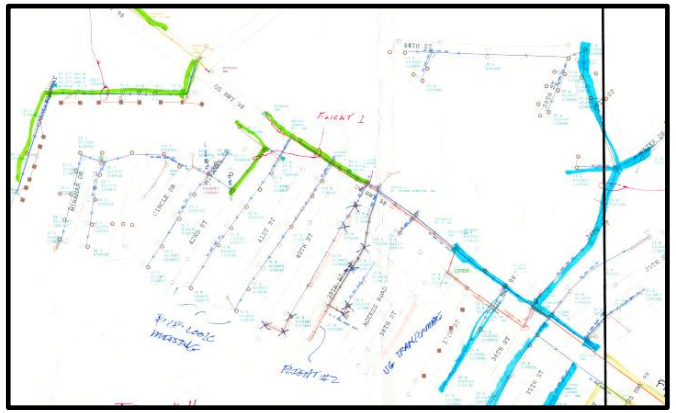
DRONE ANALYTICS
BACKGROUND / OBJECTIVES

- DEF Forensic Damage Assessment deployed Drone Technology for the first time in Hurricane Michael
- The objective of this deployment was to:
  - Obtain aerial footage in areas of total devastation where there was limited access to foot patrols
  - Obtain aerial footage of Storm Hardening circuits as well as circuits adjacent to Storm Hardening circuits.
  - To assess our ability to acquire broken pole forensic data using drone technology
- A manual drone flight plan strategy was developed and executed
  - The plan was modified based on field discussions and on-site conditions
  - Flight plans were provided electronically, some with and some without META data
  - Video and photo drone footage was uploaded onto a DEF shared drive

DRONE ANALYTICS
BACKGROUND





LOCATION:
- **2MILES ALONG HWY 98. MEXICAN BEACH**

- DEF Forensics Damage Assessment deployed drone technology for the first time in the Hurricane Michael response
- This deployment demonstrated the potential for additional benefits to the forensics process by augmenting the existing forensics data collection process with an aerial component

Oct. 13th 2018
Flight 1:
- 18 pics

Flight 2:
- 10 pics

Flight 3:
- 2 videos (total: 2:54)
- 24 pics

Oct. 14th 2018
Flight 1:
- 34 pics

Flight 2:
- 1 video (total: 6:37)
- 25 pics

Flight 3:
- 17 pics

Flight 4:
- 1 video (0:54)
- 20 pics

Oct. 15th 2018
Flight 1:
- 4 videos (total: 4:18)
- 21 pics

Flight 2:
- 1 video (1:25)
- 18 pics

Flight 3:
- 1 video (4:46)
- 32 pics

Flight 4:
- 3 videos (total: 6:41)
- 29 pics

Flight 5:
- 3 videos (total: 3:35)
- 31 pics

Extra Cape San Blas:
- 8 videos (total: 7:14)
- 44 pics

Extra Mexican Beach:
- 18 videos (total: 17:13)
- 126 pics

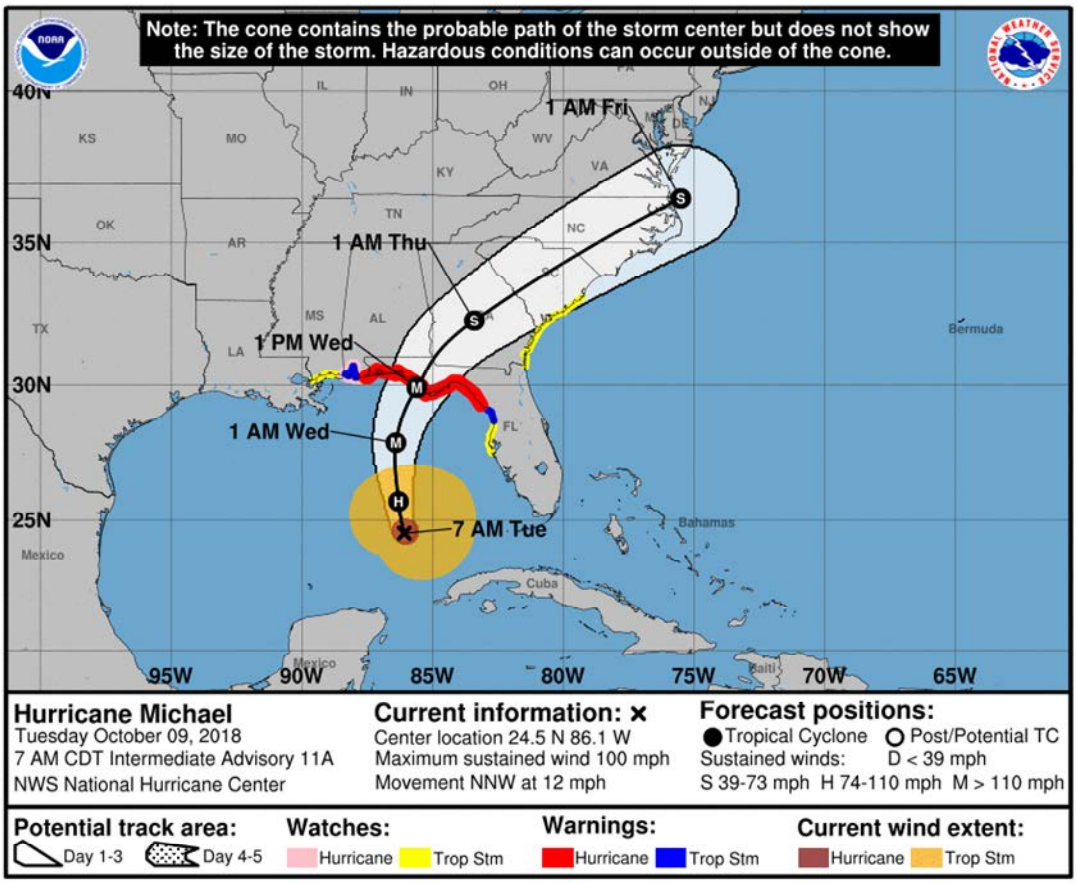
Total:
- 449 pics
- 42 videos (55:37)

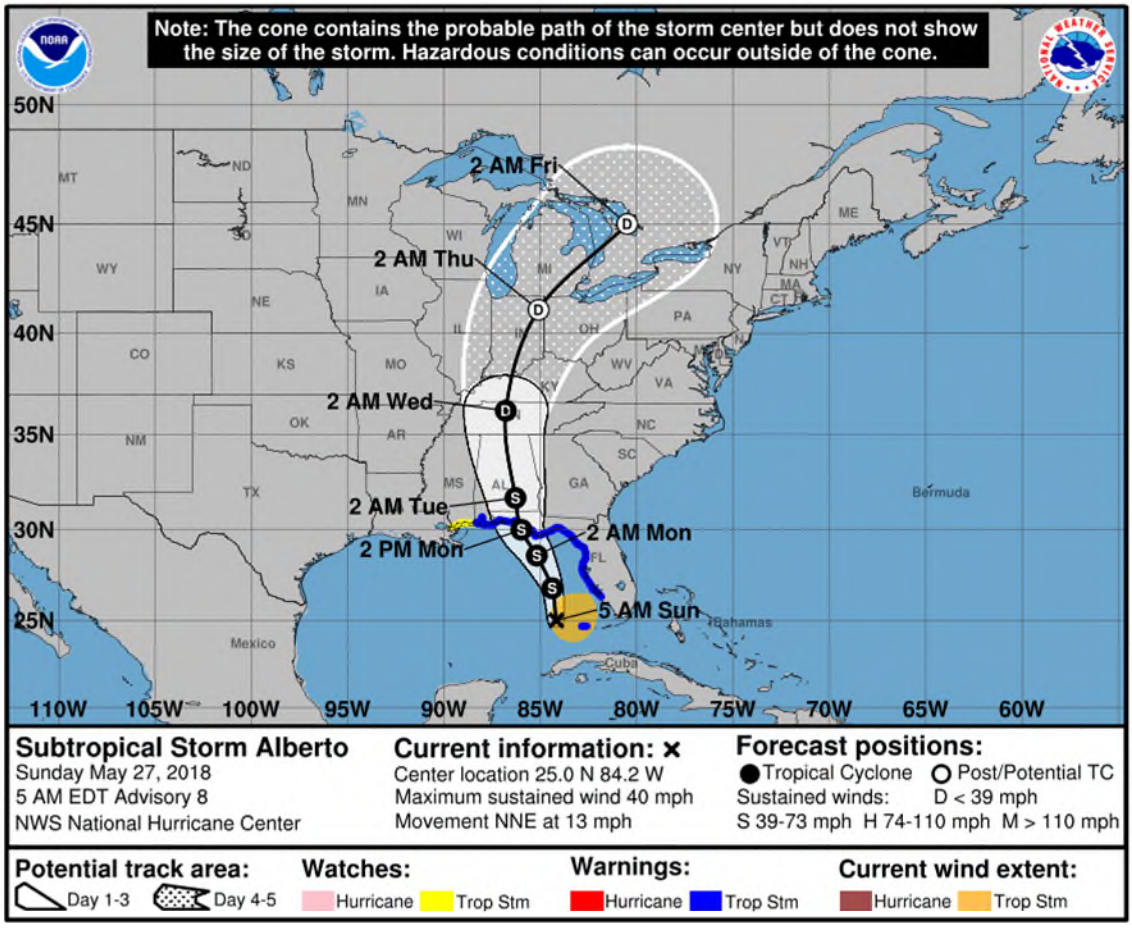
DRONE ANALYTICS
AERIAL FOOTAGE

DRONE ANALYTICS
AERIAL FOOTAGE

DRONE ANALYTICS
AERIAL FOOTAGE

DRONE ANALYTICS
AERIAL VIDEO FOOTAGE


Note: The cone contains the probable path of the storm center but does not show the size of the storm. Hazardous conditions can occur outside of the cone.
1 AM Fri
1 AM Thu
1 PM Wed
1 AM Wed
7 AM Tue
40N
35N
30N
25N
95W
90W
85W
80W
75W
70W
65W
Bermuda
Bahamas
Cuba
Mexico
Hurricane Michael
Tuesday October 09, 2018
7 AM CDT Intermediate Advisory 11A
NWS National Hurricane Center
Current information:
Center location 24.5 N 86.1 W
Maximum sustained wind 100 mph
Movement NNW at 12 mph
Forecast positions:
Tropical Cyclone
Post/Potential TC
Sustained winds:
D < 39 mph
S 39-73 mph H 74-110 mph M > 110 mph
Potential track area:
Day 1-3
Day 4-5
Watches:
Hurricane
Trop Stm
Warnings:
Hurricane
Trop Stm
Current wind extent:
Hurricane
Trop Stm


Note: The cone contains the probable path of the storm center but does not show the size of the storm. Hazardous conditions can occur outside of the cone.
2 AM Fri
2 AM Thu
2 AM Wed
2 AM Tue
2 PM Mon
2 AM Mon
5 AM Sun
50N
45N
40N
35N
30N
25N
110W
105W
100W
95W
90W
85W
80W
75W
70W
65W
60W
Bermuda
Bahamas
Cuba
Mexico
Subtropical Storm Alberto
Sunday May 27, 2018
5 AM EDT Advisory 8
NWS National Hurricane Center
Current information:
Center location 25.0 N 84.2 W
Maximum sustained wind 40 mph
Movement NNE at 13 mph
Forecast positions:
Tropical Cyclone
Post/Potential TC
Sustained winds:
D < 39 mph
S 39-73 mph H 74-110 mph M > 110 mph
Potential track area:
Day 1-3
Day 4-5
Watches:
Hurricane
Trop Stm
Warnings:
Hurricane
Trop Stm
Current wind extent:
Hurricane
Trop Stm

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

IN RE: PETITION FOR LIMITED PROCEEDING FOR RECOVERY OF INCREMENTAL STORM RESTORATION COSTS RELATED TO HURRICANE MICHAEL AND TROPICAL STORM ALBERTO BY DUKE ENERGY FLORIDA, LLC.

FPSC DOCKET NO. 20190110-EI

DIRECT TESTIMONY OF JASON S. WILLIAMS

NOVEMBER 22, 2019

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is Jason S. Williams and I am employed by Duke Energy Florida, LLC ("DEF" or the "Company"). My business address is 420 Quail Trail, Monticello Florida, 32344.

Q. Please tell us your position and describe your duties and responsibilities in that position.

A. I am the Vice President of Construction and Maintenance ("C&M") in the Transmission Department for DEF. In this role, I am responsible for the maintenance, new construction and system modifications to DEF's Transmission System. I am also the Transmission Regional Incident Commander ("RIC") for

DEF's Incident Command Structure in the event of a severe storm or other emergency event. As the Transmission RIC, I am responsible for the implementation of the Transmission System Storm Operational Plan ("TSSOP").

Q. Please summarize your educational background and employment experience.

A. I earned a Bachelor of Science degree in Information Studies from Florida State University and began my career with DEF in 2002 as a distribution lineman apprentice in Port St. Joe, Florida. I was given the opportunity to serve in several positions of increasing responsibility and leadership, including work management, construction management, and maintenance, providing experience leading teams in a variety of work and emergency environments. Before assuming my current position, I was the Manager of North Florida Transmission Maintenance for Duke Energy. In this capacity, I was responsible for north Florida's transmission system, which delivers power to customers spanning portions of more than 30 counties in the state of Florida. I also served as Construction Manager for Florida Transmission leading internal and external (contract) construction resources. With more than 17 years of experience in the energy industry, a proven track record with leading crews, C&M operations, resource management, asset plan development and execution, and organizational dynamics, I have been prepared for my role as Transmission RIC during emergency events.

II. PURPOSE AND SUMMARY OF TESTIMONY

Q. Please describe the purpose of your direct testimony.

A. I am testifying on behalf of the Company in support of recovery of the Company's storm-related transmission costs due to Hurricane Michael. I will begin by providing an overview of the Company's transmission facilities. Next, I will provide a summary of the DEF's TSSOP, and the activation and implementation of that plan for Hurricane Michael. In summarizing the plan, I will address Transmission's use of resources and logistical efforts to support those resources during the storm. Finally, I will testify about the damage caused to DEF's transmission system by Hurricane Michael, including an explanation of the scope and extent of that storm damage, and the Company's efforts to prepare for, respond to, and recover from the storm.

Q. Did DEF comply with the Storm Restoration Cost Process Improvements included as part of the Storm Cost Settlement Agreement in Order No. PSC-2019-0232-AS-EI ("Agreement")?

A. The Agreement was entered and approved after Hurricane Michael made landfall and restoration efforts were largely complete. Per the terms of the Agreement, its provisions and process modifications became applicable as of the date the Commission approved the Agreement, or June 13, 2019. Therefore, Hurricane Michael restoration and rebuild efforts were undertaken pursuant to the same policies and procedures that existed prior to the Agreement.

Q. Are you sponsoring any exhibits to your testimony?

A. No.

III. THE COMPANY'S TRANSMISSION SYSTEM

Q. Please provide an overview of the Company's transmission system.

A. The Company's transmission system transmits nearly 9,500MW of generating capacity stepping down through over 5,200 circuit miles of transmission lines and 489 substations to serve approximately 1.8 million customers in 35 of the state's 67 counties covering over 20,000 square miles of DEF's service territory. Transmission lines are supported by a variety of different structure types including aluminum-alloy and steel towers as well as concrete, steel and wood poles in various configurations. These various structure types include a variety of associated conductors, insulators, overhead ground wires, optical ground wires, connectors, ground rods and accompanying hardware.

Q. How is the Company's transmission system organized and managed?

A. The Company's transmission system is divided into three Transmission Maintenance Areas ("TMA"): North Florida, Coastal Florida and Central Florida. Each of these three areas serve as an Area Incident Command ("AIC") post with a specific storm / emergency plan aligned through DEF's Transmission RIC direction and TSSOP.

Transmission manages and maintains the system with internal leadership and crews assigned to the three areas: Line, Substation, Relay and Vegetation Management that are augmented with on-system contract crews as needed for construction and maintenance work and other initiatives.

IV. OVERVIEW OF TRANSMISSION SYSTEM STORM OPERATIONAL PLAN, RESOURCES UTILIZED AND LOGISTICAL SUPPORT IN RESPONSE TO HURRICANE MICHAEL.

Q. Please describe the overall approach to emergency/storm response captured in the TSSOP.

A. Duke Energy ("DE") has adopted the Incident Command System / Structure ("ICS") outlined by National Incident Management System ("NIMS") - Federal Emergency Management Agency ("FEMA"). Similarly, DEF has developed its TSSOP to follow the general ICS for planning, operations and logistics actions to activate and respond to an emergency / storm event. In responding to a storm or emergency event, DEF considers not only the transmission system in its territory but the entire state electrical grid along with other transmission providers. The TSSOP is designed to provide scalability and immediate communications, while assuring grid stability and decision-making among the Energy Control Center ("ECC"), Distribution Control Center ("DCC"), Distribution system and Transmission system leadership. Appropriately, the TSSOP is structured separately but is aligned with Distribution's storm plan in order to respond safely, efficiently and effectively to any storm event that impacts DEF's transmission system assets.

As Transmission RIC, I work directly with the Distribution RIC to declare an event, activate resources needed for storm restoration, determine the state of the system, and establish a realistic Estimated Time to Restore ("ETR"), while our Incident Management Team prepares and stages resources (based on Meteorology, Planning Sections' modeling, and leadership experience decisions).

Q. Was planning for Hurricane Michael different than recent past storms and was having a plan in place useful?

A. Yes. Due to the Michael's intense strength and speed of development from a tropical system to major hurricane, having an emergency preparedness / storm plan in place allowed DEF leaders and restoration teams to respond to the storm event as soon as it was safe to do so.

Often, hurricanes late in the season develop off Africa and form over the Atlantic giving utilities as much as 120 hours to prepare for impact. Michael turned from a tropical storm to a Category 5 hurricane in approximately 48 hours. National and utility meteorological reports had been focused on Hurricane Leslie, and reported on Friday, October 5, 2018, a gulf tropical system with low chance of forming. Leadership's first situation awareness and planning call regarding Michael occurred on Sunday, October 7, 2018. Situational awareness calls turned into preparatory calls later that day.

On Monday, the incident management team ("IMT") and logistical team were activated. These teams reviewed the storm's projected impacts, and began to plan and make decisions around the volume and skill of restoration resources needed and logistics support. At the same time, the ECC reviewed the configuration of the transmission system considering any C&M work in-progress. The ECC and RIC provided direction to C&M and vegetation management for internal and on-

system crews needed to restore the transmission system to 'ready' state as quickly as possible.

Additionally, internal and on-system crews were instructed to prepare to report to duty for restoration efforts after impact (which was expected Tuesday late night / Wednesday early morning). Off-system crews were notified and placed on standby to report after landfall and damage assessment. Under these circumstances, having a plan in place allowed for immediate decision making and preparations to begin.

The speed at which Hurricane Michael developed and impacted DEF's service territory is what was different about preparing and responding to this storm event than recent past storms. Without a plan in place, DEF Transmission would not have been able to respond as quickly.

Q. How did Transmission determine the number of resources/labor to acquire for Hurricane Michael transmission restoration support?

A. With Hurricane Michael, there was little time to determine and acquire resources needed. Transmission always has a core set of resources ready to activate based on existing employee and on-system crews working on any given day. Events like Hurricane Michael (low probability yet high impact), are part of the reason Transmission is structured with both types of crews to maintain and manage the system. The strength of Hurricane Michael along with meteorological and estimated impact models, and geographical landfall area, supported Transmission

to acquire resources in addition to its available crews. Through its Distribution and Transmission RICs, DEF contacted other DE regions for additional transmission crews and on-system contractors. However, these resources were not deployed until there was a high level of confidence they were needed and their support would increase the efficient and effective restoration of the transmission system. More is not always better in emergency response; knowing what is damaged, how it is damaged, and where the damage is, provides the details for acquiring the right volume of resources to restore swiftly and safely.

Q. When did the Company's mutual aid costs for Hurricane Michael begin to accrue?

A. Costs for Hurricane Michael began to accrue on October 8, 2018. As it is industry standard, mutual aid costs begin to accrue when the responding entities begin action directly related to travel and work on DEF's system (examples include preparing trucks and equipment for travel and stocking material).

Q. Please describe how damage assessment assists in providing accuracy around resource assignment and logistical support.

A. Damage assessment is critical to efficient and effective deployment of resources and storm restoration efforts. Initially, prioritization of system restoration is determined by the ECC; however, the AIC must assess damage and develop a strategic plan to get the transmission system restored and stable. Once safe to do so, DEF assesses damage to the system using a combination of helicopters, Unmanned Aerial Vehicles ("UAV" or drones), and trucks / vehicles to review

every mile of transmission line potentially impacted by the storm. The ground assessment teams remove debris / trees in lines and do minor repairs to the system. The aerial damage assessment team records storm damage, observes, and passes damage information to the RIC, AIC and ECC. The RIC and AIC use the damage information to create restoration plans. Depending on the extent of damage observed and recorded, DEF's Transmission planning team and crew management determine personnel and equipment needed to restore the transmission system. It is at this point (usually within 24-48 hours), that Transmission can determine if additional resources should be deployed to DEF's system.

Once resource needs are determined, logistics obtains and arranges for material and equipment to be supplied to line and vegetation crews as needed. Logistics also acquires housing, activates base camp sites, and ensures vendors and resources are in place to provide meals, fuel and beds to restoration crews.

Determining estimated resource needs prior to storm impact and reviewing actual needs after / during damage assessment allows DEF Transmission to gain accuracy in resource acquisition.

Q. Describe the volume and skills of resources deployed during the Hurricane Michael storm response.

A. During Hurricane Michael, DEF utilized over 5,100 resources. Approximately 850 of those resources were specifically transmission skilled resources including

transmission linemen, electricians, and relay technicians, along with tree trimming personnel working on storm restoration. DEF activated 350 on-system transmission linemen, electricians, relay technicians and tree trimming personnel, and 150 logistics / crew support personnel before acquiring off-system contractors and transmission crews from other DE regions or through Southeastern Electric Exchange ("SEE") / mutual assistance. An additional 350 line and vegetation crews were brought on from the DE Midwest region after impact and initial damage assessments were completed.

The command center staff (RIC and AIC), logistics teams, including base camp / site teams, and damage assessment teams were some of the first to be deployed to make travel clear / safe, identify the types of damage causing outage, and ready base camps (parking, fueling, materials laydown yards), beds, and meals for restoration crews. Damage Assessment teams of ground-crews and air-teams strategically traveled the transmission system to identify and clear hazards (fallen trees, poles, lines) to make the way safe for the restoration crews to work. Logistics supported restoration crews by ensuring they had the necessary equipment, materials and tools to perform restoration work. Logistics also monitored restoration crew travel, booked and assigned lodging / beds, and provided three meals a day whether from a base camp or other arrangements due to work site location / distance / timing.

Due to specialty equipment needed for restoration work, Transmission used resources that were skilled / certified to operate numerous pieces of assessment

and construction equipment such as helicopters, cranes, track digger derricks, marsh masters, light towers, water trucks, tractors, lull type forklifts, backhoes, dump trucks, bulldozers, generators and fuel tanker trucks. Additionally, logistics secured skilled resources in nursing / emergency medical care, flagging and traffic direction, security, environmental and safety.

Just as DEF prioritizes the use of its skilled employees and on-system crews, DEF utilizes all company-owned resources and equipment before it secures additional rental equipment needed during a storm.

Q. Because of the skilled resources required to restore utility services to its customers, how does DEF assure the availability of resources during an emergency event like Hurricane Michael?

A. As previously mentioned, Transmission has a core team of employees and on-system contractors that can respond to a local emergency event. If modeling and experience prove that additional resources are needed for any skilled roles, DEF relies first on resources from other DE regions, second on previously negotiated contract agreements with other in-state vendors and out-of-state vendors in DE regions, and third on mutual assistance contractors / vendors, specifically SEE.

V. HURRICANE MICHAEL

Q. Was the Transmission's Storm Plan implemented for Hurricane Michael?

A. Yes. The TSSOP was implemented on Monday, October 8, 2018, prior to the hurricane making landfall.

Q. What was the impact of Hurricane Michael on DEF's transmission system?

A. During Hurricane Michael, 77 transmission circuits (or line segments) were out of service; 20 DEF substations and 23 wholesale points-of-delivery ("PODs") were out of service at the peak. The Port St. Joe to Callaway tie line with Gulf Power sustained significant damage. Due to severe damage, it was determined that the entire DE section of the line had to be completely rebuilt. In addition to the Port St. Joe to Callaway line, there were 44 transmission wood poles replaced during storm restoration work, allowing nearly immediate restoration of power and stability of the system.

Q. What was Transmission's priority during Hurricane Michael restoration?

A. The overall priority of the Company during any emergency response is first, and utmost, the safety of our employees, contractors, public and customers. As with any emergency event, DEF took steps to ensure that the reliability of the state-wide transmission grid was not undermined due to hurricane damage. As part of the TSSOP, we prioritized its transmission lines in terms of grid security for the state and DEF, and economic impact to DEF and its customers. With the devastation to the transmission system across the panhandle region (impacting multiple transmission-providing utilities), we focused on restoring the Bulk Electric System ("BES") to stable condition until the destroyed lines were rebuilt. We strategically prioritized repairing and restoring damaged assets to support all customers while rebuild projects were completed.

Once the transmission grid was stabilized and connections to generation facilities were secured, our next priority was to repair de-energized substations. Crews focused on repairing these substations by establishing at least one connection to transmission line service that could be energized. Re-establishing substation service was critical to restoring power to customers.

Another priority was to work on the transmission lines with the least damage, which could be repaired quickly. With ECC and RIC agreement, AIC assigned crews, outage by outage, transmission line by transmission line, according to severity of the storm damage. It was in this manner that transmission lines were cleared of trees / debris and repaired to bring the system back on line as quickly as possible.

During Hurricane Michael, the Transmission RIC took direction from the ECC to establish system / grid priorities for storm restoration work. The ECC identified transmission lines that lost power during the storm and prioritized restoration efforts to maintain grid reliability to support DEF generation facilities and restore customer service. The Transmission RIC also consulted with the ECC and AIC regularly, during and following the storm, to determine and adjust restoration priorities which centered around efforts of TMA / AIC crews in the field. This information was used to establish and adjust priorities as the restoration process proceeded.

Additionally, during Hurricane Michael, the Wholesale Customer Emergency Center, in conjunction with AIC, worked closely with DEF wholesale customers to coordinate and prioritize the restoration of the affected POD to their electrical systems. This was a significant part of the strategy and tactics deployed for restoring DEF's transmission system in cooperation with neighboring utilities.

Q. Were there any additional efforts made to coordinate storm restoration?

A. Transmission and Distribution communicated throughout the event at the Incident Command / leadership levels to assure Estimated Time to Restore ("ETR") goals were aligned and that the system was coming online effectively. Because of the damage in the panhandle region of Florida, the Company chose to increase communications and coordinate closely with wholesale customers impacted through regularly scheduled calls and sharing of outage and ETR information.

Q. How do you measure the effectiveness of your storm planning and restoration process?

A. We measure storm restoration effectiveness through daily ETR goals for energizing substations and restoring system stability. Because the transmission system must be up and running before customers can receive power, emphasis is placed on energizing substations that have been damaged by the storm to set the stage for the restoration of customer service. We set and revise ETR goals for substations as we learn more about the storm damage from damage assessment teams and as we prioritize our resources. As with any severe storm event we strive to meet or exceed daily ETR goals.

Specific to Hurricane Michael, Transmission met or exceeded all ETRs. One transmission circuit (Port St. Joe to Callaway Line) was the only ETR that remained open without a defined completion date due to the need to rebuild the entire line. Both the transmission and distribution systems were entirely devastated in the Mexico Beach area and, consequently, had be completely rebuilt.

Q. How did the Company implement its storm plan in response to Hurricane Michael?

A. The Company began to implement its storm plan before Hurricane Michael's landfall and continued to follow the Plan through the course of storm restoration. As soon as the winds died down to a safe level, helicopters were used to fly damage assessors along every out-of-service mile of the Company's transmission system affected by the storm. UAVs were also used to assess damage. Damage assessment crews were also used to assess damage by driving affected transmission lines, where possible. Every mile of the Company's transmission system that was possibly affected by the storm was checked, and any storm damage was assessed and reported back to field construction and engineering crews.

The restoration strategy focused on first restoring lines to generation sites to ensure that adequate generation capacity was available. Beginning with the energized lines, the Company worked to put together a grid to restore as many

substations as possible. The Company did this by dividing transmission lines around breakers into sections to isolate damaged lines and get substations back on line.

The Company prioritized restoration work on transmission lines starting with those with the least damage and then moving on to others according to severity of damage. The Company worked around-the-clock to plan and restore transmission service on all lines that were knocked out of service as a result of the storm. After power was restored to all customers able to receive power, the Company turned to rebuilding the Callaway line which was completed in October of 2019.

Q. Are the company's storm-related efforts complete when downed transmission lines and substations are re-energized?

A. No. Once a hurricane strikes DEF's service territory, the Company works to restore transmission lines to service as quickly as possible. That is the first step in the restoration process. Transmission service from generation facilities to substations must be in place and energized before customer service can be restored. Therefore, the Company will do whatever is necessary to safely energize the line.

Following Hurricane Michael, Transmission worked to expeditiously and methodically secure the transmission system and restore customer service. After customer service was restored, Transmission turned its attention to other storm damaged facilities and equipment that did not need to be repaired to energize

those particular assets. The Company ensured damaged facilities and equipment were repaired or replaced in accordance with Company and industry standards as quickly as possible. As mentioned above, during Hurricane Michael, the Port St. Joe to Callaway line was destroyed. In response, Transmission expedited its repair efforts with respect to this line to meet system restoration requirements.

Following its immediate repair efforts, Transmission conducted sweeps of the transmission system to identify further storm-related damage that necessitated repair or replacement. After the sweeps were completed, Transmission sent out crews to repair any additional storm damage that was identified. In addition, Transmission vegetation management crews continued clean up and trimming efforts so that all transmission rights-of-way were in safe, operational condition.

Q. How would you characterize the Company's implementation of its Transmission Department Storm Plan during Hurricane Michael?

A. The TSSOP played an important role in the efficient and effective restoration of DEF's transmission system given very limited time to prepare for the storm and severe damage caused to parts of the transmission system. The plan assisted the storm team in developing a strategy and tactics to swiftly execute, and meet or exceed restoration goals. Overall, Transmission's restoration efforts were quite successful given the unprecedented nature of Hurricane Michael.

Q. Please identify what incremental costs the Company incurred as a result of Hurricane Michael.

A. Incremental restoration and rebuild costs directly attributable to the Company's transmission system because of Hurricane Michael are $35.8 million, as shown on Mr. Morris's Exhibit No. __ (TM-2).

VI. TROPICAL STORM ALBERTO.

Q. What was the impact of TS Alberto on DEF's transmission system.

A. There was no impact to DEF's transmission system from TS Alberto. Transmission treated TS Alberto as a Level 1 event (TMA level), which required no additional action for the Transmission Department.

Q. Were transmission costs incurred for TS Alberto?

A. No.

Q. Does this conclude your testimony?

A. Yes.