State of Florida

# Public Service Commission

CAPITAL CIRCLE OFFICE CENTER • 2540 SHUMARD OAK BOULEVARD
TALLAHASSEE, FLORIDA 32399-0850

**-M-E-M-O-R-A-N-D-U-M-**

**DATE:** February 19, 2018

**TO:** Carlotta S. Stauffer, Commission Clerk, Office of Commission Clerk

**FROM:** Emily Knoblauch, Engineering Specialist, Division of Engineering EK RG

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

Please file the attached TECO's response to OPC's 1st set of interrogatories (Nos. 1-43) in the above mentioned docket file.

Thank you

AUSLEY MCMULLEN

ATTORNEYS AND COUNSELORS AT LAW

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January 16, 2018

**VIA: ELECTRONIC FILING**

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

Re: Review of electric utility hurricane preparedness and restoration actions
FPSC Docket No. 20170215-EU

Dear Ms. Stauffer:

Attached for filing in the above docket is Tampa Electric Company's Notice of Service of Answers to the First Set of Interrogatories Nos. 1-43 of the Citizens of the State of Florida, propounded and served by electronic mail on December 14, 2017.

Thank you for your assistance in connection with this matter.

Sincerely,

James D. Beasley

JDB/pp
Attachment

cc: All Parties of Record (w/attachment)

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

| | | |
|---|---|---|
| In re: Review of electric utility hurricane preparedness and restoration actions. | ) ) ) ) | DOCKET NO. 20170215-EU<br><br>FILED: January 16, 2018 |

**TAMPA ELECTRIC COMPANY'S NOTICE OF SERVICE OF ANSWERS TO FIRST SET OF INTERROGATORIES (NOS. 1-43) OF THE CITIZENS OF THE STATE OF FLORIDA**

Tampa Electric Company has this date furnished by hand delivery to Erik L. Sayler, Associate Public Counsel, Office of Public Counsel, c/o The Florida Legislature, 111 West Madison Street, Room 812, Tallahassee, FL 34399, its Answers to Citizens' First Set of Interrogatories (Nos. 1-43), propounded and served by electronic mail on December 14, 2017.

DATED this 16th day of January 2018.

Respectfully submitted,

JAMES D. BEASLEY
J. JEFFRY WAHLEN
Ausley McMullen
Post Office Box 391
Tallahassee, Florida 32302
(850) 224-9115

ATTORNEYS FOR TAMPA ELECTRIC COMPANY

## CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing Notice of Service, filed on behalf of Tampa Electric Company, has been furnished by electronic mail on this 16th day of January 2018 to the following:

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ATTORNEY

# BEFORE THE

# FLORIDA PUBLIC SERVICE COMMISSION

| | | |
|---|---|---|
| **In re: Review of Electric Utility Hurricane Preparedness and Restoration Actions.)** | ) ) ) | **DOCKET NO. 20170215-EI FILED: JANUARY 16, 2018** |

## TAMPA ELECTRIC COMPANY'S

## ANSWERS TO FIRST SET OF INTERROGATORIES (NOS. 1-43)

## OF

## OFFICE OF PUBLIC COUNSEL

Tampa Electric files this its Answers to Interrogatories (Nos. 1-43) propounded and served on December 14, 2017 by the Office of Public Counsel.

TAMPA ELECTRIC COMPANY
DOCKET NO. 20170215-EI
INDEX TO OPC'S FIRST SET OF INTERROGATORIES (NOS. 1-43)

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| 1 | Roche | Please describe the Company's storm hardening activities on an annual basis from 2006 through 2017 to date excluding vegetation management and tree trimming activities. | 1 |
| 2 | Roche | How much did the Company spend (capital and O&M expenditures) on storm hardening activities on an annual basis from 2006 through 2017 to date excluding vegetation management and tree trimming activities? | 3 |
| 3 | Roche | For storm hardening activities 2006 through 2017 to date,<br>a. How much did the Company budget annually for storm hardening activities?<br><br>Please provide a break-out for transmission, distribution, pole replacement, line replacement, and other storm hardening activities.<br><br>b. How much did the Company spend annually on storm hardening activities? Please provide a break-out for transmission, distribution, pole replacement, line replacement, and other storm hardening activities.<br><br>c. Please explain the year-by-year variances between the budgeted amount and actual amount, and why the variances occurred.<br><br>d. How much of the hardening costs were capitalized to rate base and how much was expensed?<br><br>e. Were those cost recovered through base rates or some other mechanism? | 4 |
| 4 | Roche | Please describe the Company's vegetation management and tree trimming activities (tree trimming) on an annual basis from 2006 through 2017 to date. Please include if there is a long-range plan, how the process is staffed (whether through employees or outside contractors, or a mix of both), the cyclical time frames, any geographical considerations, and other priorities. | 6 |

| | | | |
|---|---|---|---|
| 5 | Roche | How much did the Company spend (capital and O&M expenditures) on vegetation management and tree trimming activities on an annual basis from 2006 through 2017 to date? | 7 |
| 6 | Roche | For vegetation management and tree trimming activities 2006 through 2017 to date,<br><br>a. How much did the Company budget annually for tree trimming activities?<br><br>b. How much did the Company spend annually on tree trimming activities?<br><br>c. Please explain the year-by-year variances between the budgeted amount and actual amount, and why the variances occurred.<br><br>d. How much, if any, of the tree trimming costs were capitalized to rate base and how much was expensed?<br><br>e. Were those cost recovered through base rates or some other mechanism?<br><br>f. How did the Company decide which areas were to be trimmed each year?<br><br>g. Were some areas trimmed more frequently than others, if so, how often, and how did the Company make those decisions? | 8 |
| 7 | Roche | For wooden poles inspected from 2006 through 2017 to date:<br><br>a. Please describe the Company's wooden pole inspection cycle.<br><br>b. How many wooden poles were planned to be inspected each year<br><br>c. How may wooden poles were inspected each year,<br><br>d. Please explain the variance between the planned number and actual number inspected each year. | 11 |

| | | | |
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| 8 | Roche | For wooden poles replaced from 2006 through 2017 to date:<br><br>a. Please describe the Company's wooden pole replacement plan.<br><br>b. How many wooden poles were planned to be replaced annually?<br><br>c. How many wooden poles were replaced annually?<br><br>d. Please explain the variance between the planned and replaced number of poles.<br><br>e. In each named storm since 2006, how many wooden poles were affected (damaged requiring repair or replacement) during the named storm? | 14 |
| 9 | Roche | For poles upgraded to concrete from 2006 through 2017 to date:<br><br>a. Please describe the Company's plan to replace poles with concrete poles.<br><br>b. How many poles were planned to be replaced with concrete annually?<br><br>c. How many wooden poles were replaced with concrete annually?<br><br>d. What other types of poles were replaced with concrete and of those how many were replaced annually?<br><br>e. Please explain the variance between the planned and replaced number of poles.<br><br>f. In each named storm since 2006, how many concrete poles were affected (damaged requiring repair or replacement) during the named storm? | 17 |
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| | | | |
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| 12 | Roche | Please describe the distribution system inspection cycle and hardening efforts. | 21 |
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| 14 | Roche | Please describe the tree trimming quality control review performed by the Company on the work of its contract tree trimming crews? | 23 |
| 15 | Roche | Please describe the tree trimming quality control review performed by the Company on the work of its employees performing tree trimming? | 24 |
| 16 | Roche | Please describe whether the Company was prohibited or restricted in its tree trimming activities by local governments, ordinances, or franchise agreements, and if so, where and why. | 25 |
| 17 | Roche | Please describe the ways the Company communicates information to its customers prior to, during, and after a named storm since 2015. | 26 |
| 18 | Roche | Please describe the ways customers can communicate information to the Company prior to, during, and after a named storm since 2015. | 28 |
| 19 | Roche | Please describe how customers can report power outages. | 29 |
| 20 | Roche | Please describe how customers can report maintenance needs such as leaning poles or overgrown lines, both during a storm recovery and in ongoing operations. | 30 |
| 21 | Roche | Several customers filed comments stating they were unable to communicate with the Company regarding unsafe conditions such as live downed power lines or trees on wires. Does the Company have a process for these people to report such conditions? Please describe and explain how it functioned after Irma. | 31 |
| 22 | Roche | Please describe smart phone apps, website services, social media, and other means of relaying information to customers prior to, during, and after a named storm. | 33 |
| 23 | Roche | How many complaints did the Company receive during and after the named storm? | 35 |

| | | | |
|---|---|---|---|
| 24 | Roche | Please provide the number of maintenance requests (e.g., leaning poles, overgrown lines, trees on poles/lines, etc.) per year from 2006-present from customers and how each request was resolved. | 36 |
| 25 | Roche | Please describe how customers with medically necessary equipment are identified, how they are communicated with, and if they receive a higher priority for restoration efforts. | 37 |
| 26 | Roche | Please describe how the Company communicates with customers who do not have access to the internet or phone, both during a storm recovery and in ongoing operations. | 39 |
| 27 | Roche | Please describe how the Company communicates using the radio or postal service. | 40 |
| 28 | Roche | Please describe how the Company communicates with customers whose first language is neither English nor Spanish. | 41 |
| 29 | Roche | Has the Company reviewed all comments addressing customer communication and power restoration (received by the Company, received during post recovery at the Commission, filed for purposes of this docket, as well as complaints received by governmental units and other entities)? What follow up has the Company initiated with the customer? | 42 |
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| | | | |
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| 43 | Roche | If applicable, has the securitization for the prior 2004 and 2005 storms ended? If yes, when; if not, when? | 56 |

Mark Roche
Manager, Rates

Tampa Electric Company
702 N. Franklin Street
Tampa, Florida 33602

**1.** Please describe the Company's storm hardening activities on an annual basis from 2006 through 2017 to date excluding vegetation management and tree trimming activities.

**A.** The links on the Florida Public Service Commission website below contain the summaries of Tampa Electric Storm Hardening activities on an annual basis from 2006 through 2016. These annual filings are due to the Commission on March 1 of each year covering the storm hardening activities for the preceding year. The report for 2017 will be submitted on March 1, 2018 to the Commission.

2016:
http://www.floridapsc.com/Files/PDF/Utilities/Electricgas/DistributionReliabilityReports/2016/2016%20Tampa%20Electric%20Company%20Distribution%20Reliability%20Report.pdf

2015:
http://www.floridapsc.com/Files/PDF/Utilities/Electricgas/DistributionReliabilityReports/2015/2015%20Tampa%20Electric%20Company%20Distribution%20Reliability%20Report.pdf

2014:
http://www.floridapsc.com/Files/PDF/Utilities/Electricgas/DistributionReliabilityReports/2014/2014%20Tampa%20Electric%20Company%20Distribution%20Reliability%20Report.pdf

2013:
http://www.floridapsc.com/Files/PDF/Utilities/Electricgas/DistributionReliabilityReports/2013/2013%20Tampa%20Electric%20Company%20Distribution%20Reliability%20Report.pdf

2012:
http://www.floridapsc.com/Files/PDF/Utilities/Electricgas/DistributionReliabilityReports/2012/2012%20Tampa%20Electric%20Company%20Distribution%20Reliability%20Report.pdf

2011: Pages 692 through 934 of 1,679
http://www.floridapsc.com/Files/PDF/Utilities/Electricgas/DistributionReliabilityReports/Archive/2011_Electric_Reliability_Reports.pdf

2010: Pages 1,368 through 1,572 of 1,572
http://www.floridapsc.com/Files/PDF/Utilities/Electricgas/DistributionReliabilityReports/Archive/2011_Electric_Reliability_Reports.pdf

2009: Pages 1,384 through 1,700 of 1,701
http://www.floridapsc.com/Files/PDF/Utilities/Electricgas/DistributionReliabilityReports/Archive/2009_FPL_report.pdf

2008: Pages 841 through 1,025 of 1,450
http://www.floridapsc.com/Files/PDF/Utilities/Electricgas/DistributionReliabilityReports/Archive/2008DistributionReliabilityReport.pdf

2007: Pages 1,352 through 1,706 of 2,293
http://www.floridapsc.com/Files/PDF/Utilities/Electricgas/DistributionReliabilityReports/Archive/2008_Reliability_Report.pdf

2006: Pages 235 through 625 of 3,458
http://www.floridapsc.com//library/filings/2007/02092-2007/02092-2007.pdf

**2.** How much did the Company spend (capital and O&M expenditures) on storm hardening activities on an annual basis from 2006 through 2017 to date excluding vegetation management and tree trimming activities?

**A.** The table below provides the company's capital and operations and maintenance (O&M) spend on storm hardening activities on an annual basis for actuals for 2006 through 2016 and forecasted for 2017 excluding vegetation management and tree trimming activities: (note – the capital and O&M spend for 2017 at the time required of this filing has not been finalized)

| | O&M | Capital | Job Orders | Total |
|---|---|---|---|---|
| **2006** | $11.2 | $6.7 | $0.0 | $17.9 |
| **2007** | $13.6 | $13.2 | $0.7 | $27.4 |
| **2008** | $13.2 | $22.9 | $1.2 | $37.3 |
| **2009** | $15.8 | $22.9 | $0.0 | $38.7 |
| **2010** | $16.3 | $28.5 | $0.0 | $44.8 |
| **2011** | $14.7 | $28.9 | $0.0 | $43.7 |
| **2012** | $11.5 | $37.1 | $0.0 | $48.6 |
| **2013** | $13.4 | $40.6 | $0.3 | $54.3 |
| **2014** | $14.5 | $41.3 | $0.7 | $56.4 |
| **2015** | $15.7 | $37.0 | $0.0 | $52.7 |
| **2016** | $18.1 | $53.6 | $0.0 | $71.7 |
| **2017** | $10.4 | $39.7 | $0.0 | $50.1 |

Numbers provided in Millions

**3.** For storm hardening activities 2006 through 2017 to date,

a. How much did the Company budget annually for storm hardening activities?

Please provide a break-out for transmission, distribution, pole replacement, line replacement, and other storm hardening activities.

b. How much did the Company spend annually on storm hardening activities? Please provide a break-out for transmission, distribution, pole replacement, line replacement, and other storm hardening activities.

c. Please explain the year-by-year variances between the budgeted amount and actual amount, and why the variances occurred.

d. How much of the hardening costs were capitalized to rate base and how much was expensed?

e. Were those cost recovered through base rates or some other mechanism?

**A.** a. Tampa Electric projects each year the annual amount that will be spent on storm hardening activities. These amounts are included in the annually filed storm hardening plan updates provided to the Commission each year. These values are included in Response No. 1 of this set for each of the years requested.

b. The accompanying CD provides the company's spend annually on storm hardening activities for actuals for 2006 through 2016 and forecasted for 2017 broken out by the individual storm hardening category. (note – the final capital and O&M spend for 2017 at the time required of this filing has not been finalized)

c. Tampa Electric's variance from each year is included in the annually filed storm hardening plan updates provided to the Commission each year. These values are included in Response No. 1 of this set for

each of the years requested with the exception of 2017 which will be reported on March 1, 2018.

d. Tampa Electric expenses all O&M related storm hardening costs. Storm hardening costs that are capitalized are include in rate base.

e. Tampa Electric's storm hardening costs are recovered through base rates.

**4.** Please describe the Company's vegetation management and tree trimming activities (tree trimming) on an annual basis from 2006 through 2017 to date. Please include if there is a long-range plan, how the process is staffed (whether through employees or outside contractors, or a mix of both), the cyclical time frames, any geographical considerations, and other priorities.

**A.** Tampa Electric's Vegetation Management Plan ("VMP") incorporates a balanced approach to electrical safety and reliability while adhering to National Electric Safety Code ("NESC") and the American National Standards Institute ("ANSI") A300 pruning standards and previously called for trimming one-third of the distribution system every three years. The company's current VMP calls for a four-year tree trim cycle approved by the Commission in Docket No. 120038-EI, Order No. PSC-12-0303-PAA-EI, issued June 12, 2012.

Tampa Electric began ramping up its VMP at the end of 2005, with an emphasis on critical trimming needed in areas identified by the company's reliability based methodology. The VMP incorporates the flexibility to change circuit prioritization. The VMP utilizes ANSI A300 standards which are implemented through Tampa Electric's Transmission and Distribution Line Clearance Specification. This comprehensive document covers specifications related to operations, notification guidelines, tree trimming and removal, chemical application, targeted completion dates, overtime, and non-compliance. Tampa Electric's Line Clearance arborists, in conjunction with a contracted tree trim general foreman, evaluate whether to remove a tree, hotspot trim, or execute full circuit trimming based on several variables. These variables include the date the circuit was last trimmed, circuit reliability data, and visual inspection of the circuit. In 2016, Tampa Electric's VMP utilized eight full time company employees and approximately 219 contracted tree trim personnel to manage the company's distribution tree trimming requirements. Tampa Electric continually reviews current reliability-based information and pertinent field and customer information along with the company's annual trimming plan to maximize the overall effectiveness of the company's VMP.

**5.** How much did the Company spend (capital and O&M expenditures) on vegetation management and tree trimming activities on an annual basis from 2006 through 2017 to date?

**A.** The table below provides the company's capital and O&M spend on vegetation management and tree trimming activities on an annual basis for actuals for 2006 through 2016 and forecasted for 2017: (note – the capital and O&M spend for 2017 at the time required of this filing has not been finalized)

| | O&M | Capital | Total |
|---|---|---|---|
| **2006** | $8,777,024 | $270,601 | $9,047,625 |
| **2007** | $10,321,798 | $597,975 | $10,919,773 |
| **2008** | $9,738,068 | $1,769,339 | $11,507,407 |
| **2009** | $14,593,775 | $554,213 | $15,147,988 |
| **2010** | $14,917,476 | $1,852,284 | $16,769,760 |
| **2011** | $13,266,439 | $1,658,755 | $14,925,194 |
| **2012** | $10,428,301 | $426,393 | $10,854,694 |
| **2013** | $10,748,829 | $2,267,953 | $13,016,782 |
| **2014** | $10,880,338 | $4,499,218 | $15,379,556 |
| **2015** | $12,697,982 | $916,191 | $13,614,173 |
| **2016** | $13,663,377 | $1,019,563 | $14,682,940 |
| **2017** | $9,164,897 | $979,617 | $10,144,514 |

**6.** For vegetation management and tree trimming activities 2006 through 2017 to date,

a. How much did the Company budget annually for tree trimming activities?

b. How much did the Company spend annually on tree trimming activities?

c. Please explain the year-by-year variances between the budgeted amount and actual amount, and why the variances occurred.

d. How much, if any, of the tree trimming costs were capitalized to rate base and how much was expensed?

e. Were those cost recovered through base rates or some other mechanism?

f. How did the Company decide which areas were to be trimmed each year?

g. Were some areas trimmed more frequently than others, if so, how often, and how did the Company make those decisions?

**A.** a. The table below provides how much the company budgeted annually on O&M tree trimming activities on an annual basis for 2006 through 2017:

| | Tree Trimming Budget |
|---|---|
| 2006 | $9,423,098 |
| 2007 | $9,374,513 |
| 2008 | $10,000,000 |
| 2009 | $14,852,226 |
| 2010 | $14,744,509 |
| 2011 | $13,798,856 |
| 2012 | $11,359,299 |
| 2013 | $10,293,112 |
| 2014 | $10,797,572 |
| 2015 | $11,013,662 |
| 2016 | $10,758,324 |
| 2017 | $9,164,897 |

b. The table below provides how much the company spent on O&M tree trimming activities on an annual basis for actuals for 2006 through 2016 and forecasted for 2017: (note – the O&M spend for 2017 at the time required of this filing has not been finalized)

| | Tree Trimming Spend |
|---|---|
| 2006 | $8,777,024 |
| 2007 | $10,321,798 |
| 2008 | $9,738,068 |
| 2009 | $14,593,775 |
| 2010 | $14,917,476 |
| 2011 | $13,266,439 |
| 2012 | $10,428,301 |
| 2013 | $10,748,829 |
| 2014 | $10,880,338 |
| 2015 | $12,697,982 |
| 2016 | $13,663,377 |
| 2017 | $9,164,897 |

c. The year-by-year variances between the budget amounts and actual amounts were due to a variety of operational factors such as customer needs, reliability demands, weather events, tree density and circuit selection criteria. Tampa Electric's variance from each year is included in the annually filed storm hardening plan updates provided to the Commission each year. These values are included in Response No. 1 of this set for each of the years requested with the exception of 2017 which will be reported on March 1, 2018.

d. Tampa Electric capitalized all tree trimming costs to rate base.

e. Tampa Electric recovers all tree trimming costs through base rates.

f. Tampa Electric's System Reliability and Line Clearance Departments utilize a third-party vegetation management software application to decide which areas of the company's electrical system will be trimmed each year. Using this application, an analysis is completed which takes into consideration multi-year circuit performance data, trim cycles and associated costs. This analysis has resulted in the development of a multi-year VMP which optimizes activities from both a reliability based and cost-effective standpoint within the company's overall VMP.

g. Tampa Electric's current VMP calls for trimming one-fourth of the distribution system each year. The company's VMP incorporates the flexibility to change circuit prioritization utilizing the company's reliability based methodology. Tampa Electric continually reviews current reliability-based information and pertinent field and customer information along with the company's annual trimming plan to maximize the overall effectiveness of the company's VMP.

**7.** For wooden poles inspected from 2006 through 2017 to date:

a. Please describe the Company's wooden pole inspection cycle.

b. How many wooden poles were planned to be inspected each year

c. How may wooden poles were inspected each year,

d. Please explain the variance between the planned number and actual number inspected each year.

**A.** a. Tampa Electric's wood pole inspection program is on an eight-year inspection cycle for wooden Distribution and Transmission structures. Each structure is visually inspected above ground and sounded for internal voids in the area from the ground to seven feet above ground. Subterranean inspection is performed poles greater than 16 years old and a screening load evaluation is performed on distribution poles with one half inch or larger joint use conductors.

The company has a transmission wood pole population of approximately 5,800 wood poles and a distribution wood pole population of approximately 285,000 wood poles at the end of 2017. Tampa Electric started the second inspection cycle in 2014 and will run through 2021. The first six-year inspection cycle ran from 2006 through 2013. Tampa Electric obtained Commission approval to transition to an eight-year inspection cycle in 2014. In the current eight-year inspection cycle, the company has completed 4,646 wood pole inspections which corresponds to approximately 80 percent of the total transmission wood pole population.

In addition to the usual pole inspections, the company performs an aerial infrared ("IR") inspection as well as a ground patrol of the entire transmission system (wood and non-wood) annually.

b. The table below provides the many wood poles were planned to be inspected from 2006 through 2017:

| | Planned Wood Pole Inspections | |
|---|---|---|
| | Distribution | Transmission |
| 2006 | 23,771 | Note 1 |
| 2007 | 38,732 | 3,611 |
| 2008 | 38,205 | 3,412 |
| 2009 | 38,895 | 3,736 |
| 2010 | 38,695 | 3,736 |
| 2011 | 49,068 | 3,607 |
| 2012 | 49,176 | 3,342 |
| 2013 | 49,176 | 0, Note 2 |
| 2014 | 49,176 | 3,250 |
| 2015 | 39,500 | 3,250 |
| 2016 | 0, Note 3 | 0, Note 2 |
| 2017 | 0 | 0 |

*Note 1: in 2006, Transmission wood pole were counted in the distribution number.*
*Note 2: Transmission wood pole inspections were completed near the end of the preceding year.*
*Note 3: No distribution inspections were planned at beginning of the year, additional available resources created an opportunity to perform inspections late in 2016*

c. The table below provide how wood poles were inspected by the company on an annual basis for 2006 through 2017

| | Actual Wood Pole Inspections | |
|---|---|---|
| | Distribution | Transmission |
| 2006 | 17,771 | 1,898 |
| 2007 | 49,893 | 5,720 |
| 2008 | 38,202 | 4,420 |
| 2009 | 38,895 | 4,852 |
| 2010 | 49,545 | 3,865 |
| 2011 | 49,402 | 3,100 |
| 2012 | 49,212 | 4,762 |
| 2013 | 49,362 | 0, Note 1 |
| 2014 | 49,079 | 949 |
| 2015 | 51,959 | 877 |
| 2016 | 60,634 | 2,820 |
| 2017 | 0 | 0, Note 1 |
| *Note 1: Transmission wood pole inspections in these years were completed near the end of the preceding year.* | | |

d. Tampa Electric has completed all transmission and distribution wood poles planned for inspection to date and is on track for achieving the eight-year inspection requirement for both transmission and distribution.

**8.** For wooden poles replaced from 2006 through 2017 to date:

a. Please describe the Company's wooden pole replacement plan.

b. How many wooden poles were planned to be replaced annually?

c. How many wooden poles were replaced annually?

d. Please explain the variance between the planned and replaced number of poles.

e. In each named storm since 2006, how many wooden poles were affected (damaged requiring repair or replacement) during the named storm?

**A.** a. Tampa Electric replaces all wood poles that have been inspected and have been found to have deficiencies at the ground line or above ground. The company will prioritize these replacements based upon remaining pole strength and potential reliability impacts to ensure the replacement work is performed in an efficient and cost-effective manner.

b Tampa Electric's wood pole failures that require replacement annually depend on the results of the company's multi-pronged inspection approach. The table below provides how many wood poles were planned to be replaced from 2006 through 2017:

| | Planned Wood Pole Replacements | |
|---|---|---|
| | Distribution | Transmission |
| 2006 | Note 1 | Note 1 |
| 2007 | 2,240 | 337 |
| 2008 | 2,111 | 261 |
| 2009 | 3,401 | 633 |
| 2010 | 5,913 | 735 |
| 2011 | 8,023 | 535 |
| 2012 | 8,274 | 476 |
| 2013 | 8,792 | 0 |
| 2014 | 8,765 | 87 |
| 2015 | 8,073 | 363 |
| 2016 | 3,334 | 550 |
| 2017 | 6,262 | 0 |
| Note 1: The data for 2006 is unavailable due to transitioning to the company's current GIS system | | |

c. The table below provide how many transmission and distribution wood poles were replaced by the company on an annual basis for 2006 through 2016. The number of wood poles replaced in 2017 at the time required of this filing has not been finalized.

| | Actual Wood Pole Replacements | |
|---|---|---|
| | Distribution | Transmission |
| 2006 | Note 1 | Note 1 |
| 2007 | 1,536 | 494 |
| 2008 | 2,056 | 781 |
| 2009 | 1,640 | 713 |
| 2010 | 2,815 | 900 |
| 2011 | 3,328 | 1,060 |
| 2012 | 4,957 | 683 |
| 2013 | 6,572 | 866 |
| 2014 | 6,038 | 720 |
| 2015 | 5,392 | 649 |
| 2016 | 6,701 | 940 |
| Note 1: The data for 2006 is unavailable due to transitioning to the company's current GIS system | | |

d. Tampa Electric replaces all transmission and distribution wood poles that are identified for replacement.

e. Since 2006, Tampa Electric has had to only replace eight transmission wood poles due to named storms. Two of the eight wood poles during Tropical Storm Debbie in 2012 and the other six wood poles during Hurricane Irma in 2017.

Since 2006, Tampa Electric has had to replace 249 distribution wood poles due to named storms due to named storms. In 2016, 41 distribution poles were replaced due to Hurricane Hermine. In 2017 one distribution pole was replaced due to Hurricane Matthew and 207 distribution poles were replaced due to Hurricane Irma.

**9.** For poles upgraded to concrete from 2006 through 2017 to date:

a. Please describe the Company's plan to replace poles with concrete poles.

b. How many poles were planned to be replaced with concrete annually?

c. How many wooden poles were replaced with concrete annually?

d. What other types of poles were replaced with concrete and of those how many were replaced annually?

e. Please explain the variance between the planned and replaced number of poles.

f. In each named storm since 2006, how many concrete poles were affected (damaged requiring repair or replacement) during the named storm?

**A.** a. Tampa Electric replaces all wood transmission poles that fail inspection with either concrete or steel poles that are substantially stronger than their wood pole equivalents. The strengths and structural performance of concrete and steel transmission poles are nearly identical. All new or replaced wood transmission poles have been either concrete or steel since the early 1990's, as per Tampa Electric's Transmission Design Requirements and Guidelines.

Tampa Electric does not have a distribution wood pole to concrete upgrade plan.

b. Tampa Electric's wood pole failures that require replacement annually depend on the results of the ground line, above-ground and IR inspections. Wood poles that require replacement are prioritized and scheduled in a cost-effective manner with consideration given to customer impacts, community impacts, outage constraints, time of year issues and resource availability.

Tampa Electric does not have a distribution wood pole to concrete upgrade plan.

c. All transmission wood poles replaced referenced in Response No. 8c of this set were replaced with steel or concrete poles.

Tampa Electric does not have a distribution wood pole to concrete upgrade plan.

d. No other types of transmission poles were replaced with concrete.

Tampa Electric does not have a distribution wood pole to concrete upgrade plan.

e. Tampa Electric replaces all transmission wood poles that are identified for replacement.

f. None.

**10.** Were any wooden poles replaced with steel for fiberglass reinforced poles from 2006 through 2017 to date? Please give the number of poles replaced by different type each year.

**A.** All wood transmission poles failing inspection are replaced with concrete or steel poles that are substantially stronger than their wood equivalents. The strengths and structural performance of concrete and steel transmission poles are near identical. All new or replaced wood transmission poles have been either concrete or steel since the early 1990's, as per Tampa Electric's Transmission Design Requirements and Guidelines.

Tampa Electric does not have a distribution wood pole to concrete upgrade plan.

**11.** In each named storm since 2006, how many steel or fiberglass reinforced poles were affected (damaged requiring repair or replacement) during the named storm?

**A.** In each of the 169 named storms since 2006, Tampa Electric had no transmission or distribution poles affected that were either steel or fiberglass reinforced poles.

**12.** Please describe the distribution system inspection cycle and hardening efforts.

**A.** The annual storm hardening activities and description of each of the individual distribution structure inspection cycles for that year is included in each of the annual filings that are due to the Commission on March 1 of each year for the preceding year. The links to each of these annual filings is included in Response No. 1 of this set.

**13.** Please describe the transmission structure inspection cycle and the hardening of those structures.

**A.** The annual storm hardening activities and description of each of the individual transmission structure inspection cycles for that year is included in each of the annual filings that are due to the Commission on March 1 of each year for the preceding year. The links to each of these annual filings is included in Response No. 1 of this set.

**14.** Please describe the tree trimming quality control review performed by the Company on the work of its contract tree trimming crews?

**A.** The tree trimming quality control review performed by Tampa Electric on the work performed by the company's contract tree trimming crews is completed regularly and by qualified subject matter experts. Tampa Electric's VMP utilizes eight full time company employees, five arborists, one coordinator, one transmission field specialist and one manager. Reviews to ensure the quality of the tree trimming work include performing regular field inspections, review data from completed work with follow up and discussions and information reviews at management meetings.

**15.** Please describe the tree trimming quality control review performed by the Company on the work of its employees performing tree trimming?

**A.** The tree trimming quality control review performed by Tampa Electric on the work of the company's employees is completed regularly and by qualified subject matter experts. Tampa Electric's VMP utilizes eight full time company employees, five arborists, one coordinator, one transmission field specialist, and one manager. In addition, the company's centralized Line Clearance department conducts regular staff meetings and peer reviews.

**16.** Please describe whether the Company was prohibited or restricted in its tree trimming activities by local governments, ordinances, or franchise agreements, and if so, where and why.

**A.** Tampa Electric experiences some restrictions related to the company's tree trimming activities by local governments and franchise agreements. These restrictions stem from landscape ordinances which makes appropriate tree trimming and vegetation removal within the jurisdiction problematic. In addition, some local governments have permit processes that are required to be followed creating delays and costs which negatively impact Tampa Electric's VMP efficiency and efficacy.

**Communications**

**17.** Please describe the ways the Company communicates information to its customers prior to, during, and after a named storm since 2015.

**A.** Tampa Electric utilized the following methods to submit and collect customer contacts before, during and after Hurricanes Hermine, Matthew and Irma. Tampa Electric was not impacted by Hurricane Maria or Nate.

Before Storm: Before each of the above listed hurricanes, the following methods were used to communicate with the customer:

- Tampa Electric Interactive Voice Response ("IVR") system – customers were able to call 813-223-0800 to contact the company for any questions or issues.
- Outbound email campaigns were used to promote enrollment in Power Updates.
- Social media was used to communicate with customers on storm-related issues including the process for restoring customers post-storm, how to enroll in Power Updates, safety considerations, etc.
- Outbound phone calls to customers on medical watch letting them know about Hurricane Irma and advising them to plan ahead.
- Outbound emails were sent to customers on Energy Planner alerting them to the storm.

During Storm: During each of the above listed storms, the following methods were used to communicate with the customer:

- Reporting an outage:
  - Phone: customers can utilize the IVR to report an outage by calling 1-877-588-1010.
  - Text: customers can report an outage by texting OUT to 35069.
  - TampaElectric.com: customers can view the outage map by going to www.tampaelectric.com and report an outage.
  - Customer Portal: customers can log into their account at www.tecoaccount.com and report an outage.
  - Routed to CSP: customers can call Tampa Electric IVR at 813-223-0800 and report an outage by speaking directly with a Customer Service Professional ("CSP").

- Social media was used to communicate with customers on storm-related issues including the process for restoring customers post-storm, how to enroll in Power Updates, safety considerations, etc. Customers are also able to send message with questions/issue utilizing social media.
- Emails – customers were able to send an email regarding their question/issue through the following link http://www.tampaelectric.com/contact/
- Outage map – customers viewed the outage map, Estimated Time to Restoration ("ETR") and reported outages through www.tampaelectric.com
- Web banners/alerts were added to Tampa Electric's home page www.tampaelectric.com to communicate with the customer on storm-related issues.

After Storm:

- Social media was used to communicate with customers on storm-related issues including updates on the restoration progress, safety considerations, etc.
- Automated outbound calls, texts and emails were made to customers with an update on restoration progress.
- Manual outbound calls were made by Tampa Electric's Customer Experience staff to customers with updates on restoration progress.
- Web banners/alerts were added to Tampa Electric's home page www.tampaelectric.com to communicate with the customer on storm-related issues.

**18.** Please describe the ways customers can communicate information to the Company prior to, during, and after a named storm since 2015.

**A.** Tampa Electric keeps consistent processes for customers to communicate information to the company. These consistent processes are used prior to, during and after any storm, including named storms. The following communication methods can be used by customers to communicate information to the company:

- Reporting an outage:
  - Phone: customers can utilize the IVR to report an outage by calling 1-877-588-1010.
  - Text: once enrolled in Power Updates, customers can report an outage by texting OUT to 35069.
  - TampaElectric.com: customers can view the outage map by going to www.tampaelectric.com and report an outage.
  - Customer Portal: customers can log into their account at www.tecoaccount.com and report an outage.
  - Routed to CSP: customers can call Tampa Electric's IVR system at 813-223-0800 and report an outage by speaking directly with a CSP.
- Tampa Electric's IVR system – customers are able to call 813-223-0800 to contact the company for any questions or issues.
- Social media – customers can utilize social media to communicate with the company by sending messages, commenting on posts, etc.
- Emails – customers are able to send an email regarding their question/issue through the following link http://www.tampaelectric.com/contact/

**19.** Please describe how customers can report power outages.

**A.** Tampa Electric keeps consistent processes for customers to report power outages to the company. These consistent processes are used prior to, during and after any storm, including named storms. Tampa Electric's customers are able to call, email, text message, login to their customer portal or visit the company's website to report outage information. Details of how to report the outage for each of these is detailed below:

- Phone - customers can utilize the IVR to report an outage by calling 1-877-588-1010.
- Text - once enrolled in Power Updates, customers can report an outage by texting OUT to 35069.
- TampaElectric.com - customers can view the outage map by going to www.tampaelectric.com and report an outage.
- Customer Portal - customers can log into their account at www.tecoaccount.com and report an outage.
- Routed to CSP - customers can call Tampa Electric's IVR system at 813-223-0800 and report an outage by speaking directly with a CSP.

**20.** Please describe how customers can report maintenance needs such as leaning poles or overgrown lines, both during a storm recovery and in ongoing operations.

**A.** Tampa Electric keeps consistent processes for customers to report maintenance or other non-power outage issues to the company. These consistent processes are used prior to, during and after any storm, including named storms. Any emergency issue will take priority over any non-emergency type situation immediately followed by issues that require power restoration. All other maintenance or non-power outage issues will be assigned to the company's appropriate service area or trouble department to be scheduled for investigation and follow up. Customers can report these maintenance and non-power outage issues to the company using one of the two following methods:

- Customer Portal - customers can log into their account at www.tecoaccount.com and report the issue.
- Routed to CSP - customers can call Tampa Electric's IVR system at 813-223-0800 and report an outage by speaking directly with a CSP.

**21.** Several customers filed comments stating they were unable to communicate with the Company regarding unsafe conditions such as live downed power lines or trees on wires. Does the Company have a process for these people to report such conditions? Please describe and explain how it functioned after Irma.

**A.** Tampa Electric's Contact Center operated 24 hours a day seven days week to assist with all emergency calls and operated at a very high service level during the entire storm period. Tampa Electric's CSPs report all outage and emergency conditions as reported by customers. The only time when these reported conditions were not worked by field personnel was when the hurricane was on top of the company's service area due to safety reasons. As soon as the wind speed dropped below the required wind speed for safe travel and field work, work immediately resumed. In some cases, the company contacted 9-1-1 to assist with pending emergency situations such as downed power lines until the company's line workers arrived.

Tampa Electric did experience the issues below that potentially impacted the company's customers' ability to make inbound calls.

- The Fort Lauderdale office had a phone outage which was promptly reported to the company telecom carrier. This situation only affected gas customers made directly to that office and was quickly resolved by redirecting that number.
- When Mutual Assistance Routing Systems ("MARS") was activated, there was an issue where phantom calls were being delivered to agents. The MARS was stopped and restarted multiple times to resolve the issue. Even though the issue was resolved relatively quickly, during the stopping and restarting of the MARS, this potentially impacted customer's ability to call in to the company.
- Tampa Electric received feedback from some customers of difficulties getting through to a CSP. The company investigated this issue early into the storm and believe it was caused when customers transferred out of the company's vendor that facilitates an automated high-volume call system service to access a live agent in order to report an outage or retrieve an outage update during a large volume of calls. During the transfer process, which may have taken several seconds, customers may not have received an audible alert or message indicating the transfer. The company believes that customers may have concluded that the lack of notification suggested technical difficulties or an inability to get through. Technical changes with

Tampa Electric's vendor were made shortly after investigating to reduce the transfer time. Further customer reports, feedback or concerns were not received.

**22.** Please describe smart phone apps, website services, social media, and other means of relaying information to customers prior to, during, and after a named storm.

**A.** Tampa Electric uses many methods to relay beneficial information to customers throughout each year, this includes relaying information to customers prior to, during, and after named storms. The methods used to relay this information is described below:

**Annual Storm Preparedness Print Advertising ("ad"):** develop/publish an annual storm preparedness print ad that appears in newspapers across Tampa Electric's service territory. The ad appears within the storm guide (if the paper offers one) or storm section of the paper.

- Tampa Bay Times
- Centro (Spanish) – Tampa Bay Area
- Lakeland Ledger
- Winter Haven News Chief
- Florida Sentinel Bulletin

**News Release** - issue an annual Storm Preparedness news release prior to storm season.

**Bill Communications** - develop/program a full-page storm preparedness inset (pagesert) that appears on all April bills.

**E-Mail Communications** - develop/send an e-mail communication (e-News Update) prior to storm season reminding customers to prepare. This channel can be used to communicate restoration updates as well.

**Print Materials** - develop/print a comprehensive "Stay Safe This Hurricane Season" brochure that's distributed at events throughout the year.

**Website** - Tampa Electric Storms & Safety Web page provides customers with information on how to prepare year-round for storm season.

**Blog** - several articles are posted each year on Tampa Electric's Power Blog that provide customers with valuable safety tips and information on how to prepare year-round for storm season.

**Radio** - Tampa Electric has utilized this channel to provide restoration updates, safety tips and to thank the community for having patience while restoration efforts are underway.

**Outage Map** - Tampa Electric's Outage Map updates every five minutes to show the size, location and status of outages.

**Banner Ads/Alerts** - Tampa Electric uses banner ads/alerts to communicate the status of storm activities on www.tampaelectric.com and www.tecoaccount.com

**Social Media** - Tampa Electric activates a social media plan when severe weather is imminent. The company posts preparation tips and other helpful information, including how to enroll in Power Updates, prior to a storm.

During and after the storm, the company posts restoration updates and safety information, with a focus on the dangers of floodwaters and how to operate generators safely. The company also posts videos related to pre- and post-storm activities.

After Hurricane Irma, the company's CSPs responded to customer inquiries received via Facebook and Twitter. When appropriate, answers are made public in order to benefit all customers.

**Media Event at the Energy Control Center ("ECC")** - Tampa Electric hosts local media prior to storm season at the company's ECC. Media participate in a guided tour and demonstration of company's equipment and systems that would be used during storm preparation and restoration (in 2017, media toured the mobile command center and the new field portable offices).

**IVR Up-Front Messages** - During Hurricane Irma, "All Caller" messages were updated on our phone systems throughout the storm event to communicate the status of storm activities.

**Automated outbound calls** - During restoration activities the company can utilize automated outbound calls to communicate the status of storm activities.

**23.** How many complaints did the Company receive during and after the named storm?

**A.** Tampa Electric received 39 complaints during and after Hurricane Irma. The breakdown categories from the complaints are given in the table below:

| **Complaints received by Tampa Electric during and after Hurricane Irma** | |
|---|---|
| FPSC Transfer Connect | 27 |
| FPSC eWarm | 4 |
| Agency/Hillsborough Consumer Protection | 1 |
| Walk In | 3 |
| Executive | 4 |

**24.** Please provide the number of maintenance requests (e.g., leaning poles, overgrown lines, trees on poles/lines, etc.) per year from 2006-present from customers and how each request was resolved.

**A.** The attached Excel spreadsheet on the accompanying CD contains the number of maintenance requests per year from 2011 to present. The company does not have these records for the years 2006 through 2010.

**25.** Please describe how customers with medically necessary equipment are identified, how they are communicated with, and if they receive a higher priority for restoration efforts.

**A.** The following information regarding Tampa Electric's Medical Watch Program is maintained on the Company's website at www.tampaelectric.com /residential/programs/ and identifies residential customers who use electrically powered, life-sustaining equipment.

The objective of the Medical Watch Program is to encourage customers to notify Tampa Electric of their situations so that special procedures can be implemented when either disconnection of customer electric service is required in response to electric bill non-payment or planned service interruptions must occur for power line equipment maintenance.

To qualify (in accordance with Florida Statute Title XXXVII, Chapter 366.15), the patient residing at the customer of record's address must be dependent upon electrically powered medical equipment to sustain life and be certified as eligible by his or her Florida-licensed attending physician.

Customers are solely responsible for any backup equipment or power supply. Tampa Electric recommends that customers have a well-planned course of action in the event of a power outage or interruption of service, like Hurricane Irma.

Customers can call Tampa Electric to apply for participation in the Medical Watch Program:

- 813-225-5051 (Hillsborough County)
- 863-298-6051 (Polk County)
- 1-888-223-0800 (All other counties & out-of-state)

Tampa Electric customers are identified using applicable codes and interaction records in the company's customer relations management database. The company also maintains a spreadsheet with customer contact information (including telephone numbers) to cross reference with the received paper application submitted by the customer and physician. This is to also utilize the company's Business Objects report to ensure coding is up to date and correct.

Once the company recognizes that a potential storm event is likely and begins storm preparations, the Medical Watch telephone numbers are loaded into an outbound dialer campaign that will remind these customers to prepare for the storm and have some type of back-up power for essential medical equipment. The outbound dialer campaign also notifies customers requiring special assistance in the event of a hurricane of the special needs registry numbers for their area. Participation in the Medical Watch Program does not guarantee uninterrupted electric service, nor does it provide priority restoration.

The program does allow us to know where medically sensitive customers are, communicate with them in advance of the storm to ensure proper preparation. In partnership with local Emergency Operations Centers ("EOC"), the company works with customers on the Medical Watch Program to ensure they have transportation to shelters or locations where they can have power during the storm and restoration efforts. Likewise, during Hurricane Irma, the company worked with the EOCs, local shelters and hospitals to ensure properties had power restored before medically sensitive customers were released to return back home.

**26.** Please describe how the Company communicates with customers who do not have access to the internet or phone, both during a storm recovery and in ongoing operations.

**A.** The following methods are utilized by the company to relay information to customers who do not have access to the internet or phone, both during a storm recovery and in ongoing operations:

- Bill messaging
- Press releases (picked up by media)
- Public Service Announcements ("PSAs") on radio and TV – (sometimes live/taped with the company's spokesperson or picked up from press releases)

**27.** Please describe how the Company communicates using the radio or postal service.

**A.** Tampa Electric utilizes radio to provide restoration updates, safety tips and to thank the community for having patience while restoration efforts are under way. Tampa Electric also uses both paid media/advertising and earned media/news content on local radio stations. Tampa Electric does not communicate to customers via direct mail with the postal service due to timelier other channels. The company does use bill/pageserts inserts to communicate storm preparedness that appear on all April bills.

**28.** Please describe how the Company communicates with customers whose first language is neither English nor Spanish.

**A.** The company utilizes Google's Translation Service on Tampa Electric's website which allows customers to select their language from the drop-down menu at the top of the home page.

**29.** Has the Company reviewed all comments addressing customer communication and power restoration (received by the Company, received during post recovery at the Commission, filed for purposes of this docket, as well as complaints received by governmental units and other entities)? What follow up has the Company initiated with the customer?

**A.** Yes, the company has reviewed all comments addressing customer communication and power restoration. The company promptly initiated follow up actions to correct the issue or communicate to the customer what was happening that would eventually resolve the customer's concern. The Excel spreadsheet attached on the accompanying CD details the follow up that the company initiated with customers to resolve the issue or their concern.

**30.** What problem areas has the Company identified with customer communication and power restoration based on experience and customer complaints during the recovery period after Hurricane Irma?

**A.** Based on customer feedback received during the recovery period after Hurricane Irma, the main topic is related to obtaining the status and prioritization of the customer's individual restoration timeline.

The company's overall restoration approach consists of the following:

1. Inform customers of the storm including necessary precautions to take
2. Once the storm hits, weather the storm until conditions are safe to start the restoration process
3. Assess the damage of the company's infrastructure due to the storm
4. Prioritize restoration efforts
5. Repair or rebuild if necessary the company's infrastructure and restore power to customers in a safe and efficient manner.

During Hurricane Irma, the Company had restoration information about circuits and areas, but maintained a global ETR due to the widespread damage and complexity of restoration efforts. Tampa Electric recognizes that some customers were frustrated with not having a specific time of restoration for their specific property or street. The company's current large-scale restoration efforts, processes and technologies do not provide for the ability for real-time updates to individual customers. In addition, the focus during day-time hours is to keep Tampa Electric and Foreign Crew resources actively engaged on being safe and working on restoration efforts. The company will continue to educate and communicate with customers on the company's restoration and prioritization processes and will look for potential opportunities in the future for providing the ability to provide real-time updates to individual customers. One addition that is already planned for the near future is the company's planned deployment of an Advanced Meter Infrastructure ("AMI") system which will be critical to address more robust outage restoration information for customers in the future.

**31.** How does the Company plan to address these problem areas?

**A.** The company is reviewing business processes, assessing gaps and identifying opportunities for business process and technology improvements. The Company will also be identifying opportunities to better manage customer expectations and to enhance customer communications in advance of the next storm season. The Company also plans to deploy an AMI system which, as mentioned above, will be critical to address more robust outage restoration information for customers.

**32.** Please explain why some customers lost power prior to the storm making landfall (i.e., high winds experienced in the customers' vicinity).

**A.** Tampa Electric did experience some customers losing power prior to the storm making landfall. These outages were primarily attributed to the high winds the company was experiencing due to the large size of the storm.

**33.** Did the Company de-energize the grid in advance of the storm, if so, when, why, and what was communicated to customers prior to the Company's actions?

**A.** Tampa Electric did not de-energize any portions of the company's electrical system in advance of the storm.

**34.** How many linear feet of overhead lines does the Company have, and what percentage suffered an outage?

**A.** Tampa Electric has 40,072,431 linear feet of overhead lines (or approximately 7,589 miles). Tampa Electric estimates that during Hurricane Irma, 17.5 percent of these overhead lines experienced an outage due to a feeder circuit breaker operating to a lock-out condition. This percentage is estimated due to the number of outages that occurred on Tampa Electric's electrical system during Hurricane Irma and the number of outages that were restored by foreign crews.

**35.** How many linear feet of underground lines does the Company have and what percentage suffered an outage?

**A.** Tampa Electric has 27,826,826 linear feet of underground lines (or approximately 5,270 miles). Tampa Electric estimates that during Hurricane Irma, 13.6 percent of these underground lines experienced an outage due to a feeder circuit breaker operating to a lock-out condition. This percentage is estimated due to the number of outages that occurred on Tampa Electric's electrical system during Hurricane Irma and the number of outages that were restored by foreign crews.

**36.** What analysis has the Company performed regarding the outage frequency for overhead versus underground power lines, and please describe the results.

**A.** Tampa Electric has not performed an analysis on the outage frequency for overhead versus underground power lines. The storms that have impacted the company since 2006 have been mainly wind events. Wind events primarily only impact the overhead system, whereas if a hurricane that approached the service territory through Tampa Bay would result in a storm surge that would test the durability and reliability of the underground system.

**37.** Please explain what caused power outages in areas that had underground power lines.

**A.** Tampa Electric's power outages which involved underground power lines during Hurricane Irma were primarily caused by upstream outages on overhead lines.

**38.** How many homes that have underground power lines experience power outages?

**A.** Tampa Electric estimates that 3,697 homes that are served by underground power lines experienced an outage due to a feeder circuit breaker operating to a lock-out condition. This percentage is estimated due to the number of outages that occurred on Tampa Electric's electrical system during Hurricane Irma and the number of outages that were restored by foreign crews.

**39.** How many substations does the Company own

**A.** Tampa Electric owns 220 substations which consists of 155 distribution stations and 65 transmission stations.

**40.** How many of the Company's substations had to be de-energized due to flooding?

**A.** None of Tampa Electric's substations had to be de-energized due to flooding. The flood monitoring system the company utilizes was fully operational during the hurricanes and the facilities that it monitors did not experience flooding.

**41.** How many of the Company's substations were taken out of service due to tree or debris damage?

**A.** None of Tampa Electric's substations were taken out of service due to tree or debris damage. Some of the company's perimeter fencing around substations experienced minimal damage.

**42.** What does the Company plan to do in the future to eliminate flooding and tree/debris damage at the Company's substations?

**A.** Tampa Electric has prescribed procedures in place and will continue to follow these procedures which includes the live monitoring of the flood monitoring system the company has put in place to eliminate flooding related damage to the company's substations. It is important to note that most if not all tree/debris related issues, that have the potential to damage the company's substations or impact each substation's reliability, are found and mitigated on a case by case basis during the routine substation inspections the company performs.

**43.** If applicable, has the securitization for the prior 2004 and 2005 storms ended? If yes, when; if not, when?

**A.** Not applicable, Tampa Electric has not sought Commission approval to securitize associated bond costs for funding large storm costs.

# AFFIDAVIT

**STATE OF FLORIDA** )
)
**COUNTY OF HILLSBOROUGH** )

Before me the undersigned authority personally appeared Mark Roche who deposed and said that he is Manager, Regulatory Rates Tampa Electric Company, and that the individuals listed in Tampa Electric Company's response to Citizen's First Set of Interrogatories, (Nos. 1-43) prepared or assisted with the responses to these interrogatories to the best of his information and belief.

Dated at Tampa, Florida this 12th day of January, 2018.

MARK R. Roche

Sworn to and subscribed before me this 12th day of January, 2018.

Notary Public State of Florida
Sana Boric
My Commission GG 020235
Expires 08/10/2020

My Commission expires _____