Report to the Florida Public Service Commission Pursuant to Rule 25-6.0343, F.A.C. Calendar Year 2017

1) Introduction

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2) Number of meters served in calendar year 2017

32,296

3) Standards of Construction

a) National Electric Safety Code Compliance

Construction standards, policies, guidelines, practices, and procedures at Florida Keys Electric Cooperative Association, Inc., comply with the National Electrical Safety Code (ANSI C-2) [NESC]. For electrical facilities constructed on or after February 1, 2007, the 2007 NESC applies. Electrical facilities constructed prior to February 1, 2007, are governed by the edition of the NESC in effect at the time of the facilities initial construction.

b) Extreme Wind Loading Standards

Florida Keys Electric Association, Inc., facilities were not originally designed to the extreme loading standards on a system wide basis. However, Florida Keys Electric Cooperative Association, Inc. adopted the extreme wind loading standard on April 24, 2007 for:

a) New construction
b) Major planned work, including expansion, reconstruction or relocation of existing facilities

c) Flooding or Storm Surges

Florida Keys Electric Cooperative Association, Inc. continues to evaluate and modify our standards, policies, guidelines, practices and procedures that address the effects of flooding and storm surges on underground facilities and supporting overhead facilities. FKEC participated in the Public Utility Research Center's (PURC) study on the conversion of overhead electric facilities to underground and the effectiveness of undergrounding facilities in preventing storm damage and outages through the Florida Electric Cooperative Association.

d) Safe and Efficient Access of New and Replacement Distribution Poles

Electrical construction standards, policies, practices and procedures at Florida Keys Electric Cooperative Association, Inc., provide for placement of new and replacement distribution facilities so as to facilitate safe and efficient access for installation and maintenance. Wherever new facilities are placed, all facilities are installed so that FKEC facilities are accessible by its crews and vehicles to ensure proper maintenance/repair is performed as expeditiously and safely as possible. FKEC decides on a case-by-case basis whether existing facilities need to be relocated. If it is determined that facilities need to be relocated, they will be placed in the safest, most accessible area available.

e) Attachments by Others

Electrical construction standards, policies, guidelines, practices and procedures at Florida Keys Electric Cooperative Association, Inc., include written safety, pole reliability, pole loading capacity and engineering standards and procedures for attachments by others to the utility's electric transmission and distribution poles. FKEC included inspection of third party contacts in the formal distribution pole inspection which began in 2007 and was completed in 2010. Inspections resumed in 2015.

4. Facility Inspections

a) Describe the utility's policies, guidelines, practices, and procedures for inspecting transmission and distribution lines, poles, and structures including, but not limited to, pole inspection cycles and pole selection process.

Florida Keys Electric Cooperative Association Inc. conducts aerial inspections on all transmission structures annually. Distribution poles are inspected on a four-year cycle. FKEC began a formal distribution pole inspection and treatment program in 2007. The initial inspection cycle was completed in 2010.

All distribution wood poles (10698) in the system were tested and treated between 2007 and 2010. All rejects (1003) were replaced. The reject rate for the 2007-2010 cycle was 9%.

Inspections and treatment resumed in 2015. The current cycle has tested and treated 7,991 wood poles with a 4% reject rate. It will be completed in 2018.

b) Describe the number and percentage of transmission and distribution inspections planned and completed for 2017.

One hundred percent of FKEC's transmission poles were inspected by helicopter in 2017. The 32 structures located in the water alongside Long Key Bridge were inspected by Structural Technologies in 2016. The remaining 88 water structures on the original transmission line built in the mid 70's were inspected in 2017. These comprehensive inspection was conducted above and below the water line. This included core samples of the foundations and the use of drones to visually inspect the pole tops.

Approximately 25% (3,520) of the distribution poles were inspected/treated in 2017.

c) Describe the number and percentage of transmission poles and structures and distribution poles failing inspection in 2017 and the reason for the failure.

All transmission poles or structures are either steel or concrete. The 32 structures inspected in 2016 alongside Long Key Bridge were determined to be nearing the end of their useful life if steps were not taken to repair the foundations. This work will take place in 2017/2018 and is expected to extend the life of the structures by 25 years or more. The 88 water structures inspected in 2017 were also determined to be nearing the end of their life. Foundations repair on these structures will begin in late 2018 or 2019.

The distribution pole reject rate was 2.3% (84 poles).

d) Describe the number and percentage of transmission poles and structures and distribution poles, by pole type and class of structure, replaced or for which remediation was taken after inspection in 2017, including a description of the remediation taken.

No transmission poles were replaced in 2017.

There were 84 wood distribution reject poles identified in 2017. All 84 poles were replaced in 2017.

5. Vegetation Management

a) Describe the utility's policies, guidelines, practices, and procedures for vegetation management, including programs addressing appropriate planting, landscaping, and problem tree removal practices for vegetation management outside of road right-of-ways or easements, and an explanation as to why the utility believes its vegetation management practices are sufficient.

Florida Keys Electric Cooperative Association, Inc. inspects and trims, where necessary, the entire transmission system on an annual basis. Substations are inspected annually and trimmed when vegetation encroaches. The remainder of FKEC's distribution system is trimmed on a three-year cycle. A formal trade-a-tree program was implemented in 2007 to help with the removal of problem trees located within the right of way.

b) Describe the quantity, level, and scope of vegetation management planned and completed for transmission and distribution facilities in 2017.

Annual transmission line right-of-way clearing from mile marker 106 on County Road 905 to the Dade/Monroe County line was completed in the first quarter of 2017. The remainder of the transmission system was spot-trimmed as necessary.

Vegetation surrounding all substations was trimmed prior to April 1, 2017. Approximately 120 circuit miles of distribution lines were trimmed in 2017. Additional distribution spot-trimming was conducted as necessary.

Report on Collaborative Research for Hurricane Hardening

Provided by

The Public Utility Research Center
University of Florida

To the

Utility Sponsor Steering Committee

Final Report dated February 2018

I. Introduction

The Florida Public Service Commission (FPSC) issued Order No. PSC-06-00351-PAA-EI on April 25, 2006 (Order 06-0351) directing each investor-owned electric utility (IOU) to establish a plan that increases collaborative research to further the development of storm resilient electric utility infrastructure and technologies that reduce storm restoration costs and outages to customers. This order directed IOUs to solicit participation from municipal electric utilities and rural electric cooperatives in addition to available educational and research organizations. As a means of accomplishing this task, the IOUs joined with the municipal electric utilities and rural electric cooperatives in the state (collectively referred to as the Project Sponsors) to form a Steering Committee of representatives from each utility and entered into a Memorandum of Understanding (MOU) with the University of Florida's Public Utility Research Center (PURC). The third extension of this MOU was approved last year by the Research Collaboration Partners and now extends through December 31, 2018.

PURC manages the work flow and communications, develops work plans, serves as a subject matter expert, conducts research, facilitates the hiring of experts, coordinates with research vendors, advises the Project Sponsors, and provides reports for Project activities. The collaborative research has focused on undergrounding, vegetation management, hurricane-wind speeds at granular levels, and improved materials for distribution facilities.

This report provides an update on the activities of the Steering Committee since the previous report dated February 2017.

II. Steering Committee Workshop

On December 5, the Steering Committee organized a web-based workshop for over 40 participants from the Project Sponsors hosted by the University of Florida. The workshop was held to orient new members on the model of the costs and benefits of storm hardening strategies and to discuss the integration of data from recent storm activities.

The presenter for the workshop was Ted Kury. He first described the model and the overall flow of the simulation element. He then described the 115 different inputs to the model and demonstrated where to find them. Next, he demonstrated a test run of 50 hurricane years for the state and demonstrated how the model illustrates the shift in the probability distribution of the outcome variables. Finally, he demonstrated the model's ability to simulate single hurricanes, both historical and hypothetical.

Following the demonstration, the members discussed strategies for adding data from recent storm experiences to the model.

III. Undergrounding

The collaborative research on undergrounding has been focused on understanding the existing research on the economics and effects of hardening strategies, including undergrounding, so that informed decisions can be made about undergrounding policies and specific undergrounding projects.

The collaborative has refined the computer model developed by Quanta Technologies and there has been a collective effort to learn more about the function and functionality of the computer code. PURC and the Project Sponsors have worked to fill information gaps for model inputs and significant efforts have been invested in the area of forensics data collection.

In addition, PURC has worked with doctoral and master's candidates in the University of Florida Department of Civil and Coastal Engineering to assess some of the inter-relationships between wind speed and other environmental factors on utility equipment damage. PURC has also been contacted by engineering researchers at the University of Wisconsin and North Carolina State University with an interest in the model, though no additional relationships have been established. In addition to universities, PURC was again contacted by researchers at the Argonne National Laboratory who expressed interest in modeling the effects of storm damage. The researchers developed a deterministic model, rather than a probabilistic one, but did use many of the factors that the Collaborative have attempted to quantify. They are currently working to incorporate stochastic elements into their model and have consulted PURC for guidance. Every researcher that contacts PURC cites the model as the only non-proprietary model of its kind.

The research discussed in previous years' reports on the relationship between wind speed and rainfall is still under review by the engineering press. Further results of this and related research can likely be used to further refine the model.

IV. Wind Data Collection

The Project Sponsors entered into a wind monitoring agreement with WeatherFlow, Inc., in 2007. Under the agreement, Florida Sponsors agreed to provide WeatherFlow with access to their properties and to allow WeatherFlow to install, maintain and operate portions of their wind monitoring network facilities on utility-owned properties under certain conditions in exchange for access to wind monitoring data generated by WeatherFlow's wind monitoring network in Florida. WeatherFlow's Florida wind monitoring network includes 50 permanent wind monitoring stations around the coast of Florida, including one or more stations located on utility-owned property. The wind monitoring agreement expired in early 2012; however, it was renewed in April 2017 and will renew automatically annually on the effective date for an additional one year period, unless terminated by the parties to the agreement.

V. Public Outreach

In last year's report we discussed the impact of increasingly severe storms on greater interest in storm preparedness. PURC researchers continue to discuss the collaborative effort in Florida with the engineering departments of the state regulators in Connecticut, New York, and New Jersey, Pennsylvania, and regulators in Jamaica, Grenada, Curacao, Samoa, and the Philippines. While all of the regulators and policymakers showed great interest in the genesis of the collaborative effort, and the results of that effort, they have not, at this point, shown further interest in participating in the research effort. PURC researchers also engaged with the popular media in preparation for, and in the wake of, Hurricane Irma.

VI. Conclusion

In response to the FPSC's Order 06-0351, IOUs, municipal electric utilities, and rural electric cooperatives joined together and retained PURC to coordinate research on electric infrastructure hardening. The steering committee has taken steps to extend the research collaboration MOU so that the industry will be in a position to focus its research efforts on undergrounding research, granular wind research and vegetation management when significant storm activity affects the state.