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

1) Introduction

This report is filed in response to the above referenced rule for:

a) Kissimmee Utility Authority (KUA)

b) 1701 West Carroll Street
Kissimmee, Florida 34741

c) Contact information:
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2) Number of meters served in calendar year 2017

During calendar year 2017, KUA served an average of 75,174 customers

3) Standards of Construction

a) National Electric Safety Code Compliance

All construction standards, policies, guidelines, practices and procedures at KUA comply with the National Electrical Safety Code, ANSI C-2, (NESC). All electrical facilities constructed prior to February 1, 2007, were governed by the NESC edition in effect at the time of construction or later revisions of the code as determined by KUA. All facilities constructed on or after February 1, 2007, are constructed in compliance with the edition of the NESC in effect at the time of the construction.

b) Extreme Wind Loading Standards

As indicated above, all KUA facilities (i.e. transmission, distribution, etc.) are constructed in accordance with the NESC standard in effect at the time of construction.

KUA standards for distribution construction have been adopted and are guided by the extreme wind loading standards specified by Figure 250-2 (d) of the NESC for the following categories of construction initiated after December 10, 2006:

1. New construction
2. Major expansions, rebuilds or relocation projects
3. Individual pole replacements for certain targeted "critical" structure such as main three-phase underground riser poles, poles containing three-phase transformer banks with 75 KVA or larger transformers and poles within main three-phase feeders.

KUA standards for construction of new transmission facilities have met or exceeded NESC extreme wind loading standards since 1984. Extreme wind loading standards cover construction of transmission facilities for the following categories:

1. New construction
2. Rebuilds or relocation projects
3. All individual pole replacements

KUA continuously evaluates its system to determine any immediate needs for system upgrades and hardening. We take every opportunity to evaluate any situation that might afford us the ability to replace existing poles or facilities to increase their strength ratings. This includes evaluating increased pole strength rating when poles are replaced, lines are relocated due to road projects or lines are upgraded with new conductor sizes. KUA is also participating in the Public Utility Research Center's (PURC) granular wind research study through the Florida Municipal Electric Association. We will continue to monitor results of this research and determined the most appropriate response for system upgrades and hardening.

c) Flooding and Storm Surges

The KUA service territory is not in a coastal area, and therefore does not contain area subject to storm surges. The KUA service territory has not experienced any significant flooding, even as a result of major storms, and therefore has not adopted any specific standards or policies addressing the protection of the distribution system. Any low areas that may be more susceptible to flooding have been identified and are monitored when the flooding potential is present.

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

Construction standards, policies and practices at KUA provide for the placement of all facilities so as to provide for safe, unobstructed access. All new distribution facilities are constructed on front lot lines, within dedicated utility easements and adjacent to road rights-

of-ways. Developments are required to provide easements as specified by KUA, to ensure adequate access by KUA crews and equipment. KUA has not constructed any new facilities on rear lot lines since the early 1980's, therefore the KUA system has a minimal amount of existing rear lot construction. When feasible, any infrastructure currently constructed on rear-lot lines is converted to front lot lines during any major replacement or upgrade project. All existing rear lot construction areas are also monitored for reliability, maintenance and operational problems. Significant problems with any of these issues will result in a planned conversion to front lot construction. KUA allocates funding each fiscal year for these types of conversion projects.

e. Attachments by Others

KUA standards, policies and practices include consideration of pole loading capacity for both electrical infrastructure and for attachments to KUA poles by others. KUA has taken the opportunity to negotiate new pole attachment agreements with attaching entities as the existing agreements reach the end of their term. The new attachment agreements address this issue in detail and require the appropriate loading analysis on poles for which attachments are being requested. These agreements place the burden of assessing pole strength and safety on the attaching entity. KUA does spot check follow-up audits to review attachments made to KUA poles.

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.

KUA has a comprehensive inspection program for transmission and distribution lines, poles and structures. KUA outsources the pole inspection program to an experienced pole inspection company. Inspections utilize a sound and bore method for all wood poles. The base of the pole is exposed to 18 inches (where feasible) below ground line to inspect for indications of decay. All decay will be removed where possible, from 18 inches below ground line to 3 inches above ground line. If any voids of internal decay pockets are found, a preservative is applied. Internal pole treatment utilizing MITC-Fume fumigant is also applied where necessary. During the pole inspection, visual inspections are also performed to identify problem areas such as cracks, splitting, woodpecker damage, obvious decay, missing ground wire molding, ground wire repair and missing guy guards. Rejected poles are classified as "priority" and "non-priority" rejects. Priority rejects are replaced immediately. Non-priority rejects are scheduled to be replaced as soon as possible. All inspection/treatment and follow up remediation is documented and tracked in a facility inspection database and through the GIS system.

KUA's inspection guidelines, practices and procedures are summarized as follows:

Transmission System:

KUA's current guidelines, practices and procedures include inspection of all wood transmission poles every 3 years. The pole inspection process includes sound and bore and ground-line excavation and treatment.

During the pole inspection process, facilities are also visually inspected for any signs of broken grounds, broken or damaged guy wire, missing guy wire covers and other problems that can be seen via a visual inspection. Infrared scans are also conducted 3 times a year on all substation transmission facilities that are part of the Bulk Electric System (BES) as defined by NERC. Infrared scans are conducted 2 times a year on substation transmission facilities that are not part of the BES. Vegetation inspections of all transmission lines are conducted on an annual basis. During this process, visual inspections of transmission circuits are conducted for potential problem areas.

Distribution System:

KUA currently targets for the inspection of all wood distribution poles on an eight-year cycle. KUA currently outsources pole inspections to an experienced contractor. Pole inspections include sound and bore and ground-line excavation and treatment. During pole inspections, facilities are also inspected for problems such as missing grounds, broken guy wires, missing guy guards and other problems that can be spotted via visual inspection. Digital photos are also taken of each structure. These photos also enable KUA personnel to review the facility for problem areas.

Infrared scanning of all main distribution feeders is conducted on an annual basis. Scans of major feeder equipment (main riser poles, main bridging switches, select pad mount switching equipment) are conducted 2 times a year. Infrared technology assists in locating potential problem areas such as bad connectors, bad insulators and other potential faulty or failing equipment. The scanning process also provides for visual contact with all distribution feeders on an annual basis. KUA also currently targets a more thorough visual inspection of all distribution facilities on a five-year cycle. Outage data for all distribution feeders is also evaluated on a regular basis. Detailed component by component inspections are conducted on feeders experiencing higher than normal outage incidents.

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

Transmission

KUA conducts inspection of transmission poles every 3 years. In 2017, 109 poles were inspected, meeting the target goal for that year. Visual inspection of all transmission circuits are conducted semi-annually during transmission vegetation management inspections. All of KUA's transmission circuits were inspected through this process during 2017. These inspections look for problem areas such as clearance issues, broken or tracking insulators, broke grounds, woodpecker holes, etc.

Distribution

KUA targets inspection of distribution poles on an eight-year cycle. KUA is currently on target to meet its targeted eight-year cycle. A total of 2,488 distribution poles were actually inspected during calendar year 2017. During the pole inspection process, the pole is also inspected for obvious maintenance issues such as damaged grounds, missing guy guards, slack guys, vegetation issues, attachment issues, etc.

KUA has also typically done a more thorough visual inspection of the overhead distribution system on a five year cycle. This inspection program has been modified to also include the underground distribution facilities as well. The new system-wide inspection is performed on an eight-year cycle. KUA's distribution system currently consists of approximately 944 miles of distribution circuits. KUA's target for the system-wide inspection is to complete 12.5% per year or 118 circuit miles.

Activity	Qty. Planned	Percentage Planned	Qty. Completed	Percentage Completed
Pole Inspections	1,800	12.5%	2,488	17.3%

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

Transmission:

Transmission pole inspections were performed in 2017. Visual inspections did not identify any new failures.

Distribution:

Of the 2,488 distribution poles that were inspected, 4 were classified as rejects. Reasons for failure are given below. No rejected poles were classified as priority rejects requiring immediate action.

Reason for Failure	Number of Failures	Percentage of Inspected
Split Top	1	0.0%
Shell Rot	3	0.0%
TOTAL	4	0.0%

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.

General

KUA pole inspections are typically conducted during the last quarter of the calendar year. Any required remediation, except for priority rejects, is typically completed during the following calendar year or as dictated by system constraints.

Transmission:

Transmission poles were found to not require remediation during the 2017 inspection cycle.

Distribution:

The 2017 inspection resulted in 4 poles failing inspection. Three of the four poles have been replaced. The fourth is scheduled to be replaced in early 2018. A summary of the size, class, species and treatment for the replaced poles is shown below:

Distribution Pole Remediation

Lgth.	Class	Species	Treatment	Qty.	Remediation
30	4	South. Pine	CCA Type C	1	Replaced
30	6	South. Pine	Creosote	1	Replaced
35	4	South. Pine	Creosote	1	Replaced
40	3	South. Pine	Creosote	1	Replaced
Totals				4	

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.

All KUA construction is planned in order to ensure adequate right-of-way widths are obtained. KUA only constructs new distribution circuits on front lots and the majority of new distribution lines are constructed with dedicated utility easements. This helps to minimize the planting of vegetation near electric infrastructure. Thirdly, local ordinances dictate that all new distribution construction be constructed underground. While KUA believes our vegetation management program is sufficient, we also recognize that vegetation management is an ongoing process and improvements can be made with the ability to gather and analyze data. We continue to implement improvements in the electronic and graphical tracking of vegetation management in order to facilitate the oversight of the program.

Transmission

KUA has a written Transmission Vegetation Management Plan (TVMP) that details our policies, procedures and practices for transmission line vegetation management. KUA's TVMP has been found to be in full compliance with the applicable North American Electric Reliability Corporation (NERC) reliability standards.

KUA's TVMPP calls for an annual inspection of all transmission lines for potential vegetation problems. However, in practice an inspection is performed on a semi-annual basis. Any problem areas identified during this inspection are scheduled for remediation based on the severity of the problem. A vegetation work plan is prepared as a result of the inspection. The work plan identifies the location, type and scheduled date for any required remediation. Inspection and remediation is planned each year in order to complete any required work prior to the next hurricane season.

Distribution

KUA guidelines currently target a vegetation inspection/trim cycle on the overhead distribution system on a three-year cycle. This anticipates an average annual growth of 2.5 feet. Vegetation near distribution facilities are trimmed to maintain a minimum of 10 feet clearance for energized conductors. In addition, we utilize our outage analysis system to categorize outages, including those attributable to vegetation. Analysis of this data is also performed to target potential problem areas. We have recently converted the contract with our vegetation management contractor to a line-mile basis. This requires the contractor to inspect trim (if necessary) 33% of our distribution circuits annually.

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

Transmission

During calendar year 2017, vegetation inspections were performed on all transmission circuits. All required remediation identified during the inspection was also completed during 2017.

Distribution

During calendar year 2017, our goal of a three-year cycle for inspection/trimming of the distribution system was accomplished. We target 33% (104 miles) of circuits per year. During 2017 we inspected/trimmed 33.3% (104.1 miles) of distribution circuits.

The Public Utility Research Center has held two vegetation management workshops in 2007 and 2009. Through FMEA, KUA has a copy of their reports and will use the information to continually improve vegetation management practices. We will participate in future best-practice workshops if there is interest.

6. Storm Hardening Research

KUA is a member of the Florida Municipal Electric Association (FMEA), which is participating with all of Florida's electric utilities in storm hardening research through the Public Utility Research Center at the University of Florida. Under separate cover, FMEA is providing the FPSC with a report of research activities. For further information, contact Amy Zubaly, Executive Director, FMEA, 850-224-3314, ext.1, or azubaly@publicpower.com.