March 2, 2015

Mr. Thomas Ballinger
Director of Engineering
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Fla. 32399-0850

Re: PSC Storm Hardening Report for the City of Tallahassee Electric Utility pursuant to Rule 25-6.0343, F.A.C for Calendar Year 2014.

Dear Mr. Ballinger:

Attached is the PSC Storm Hardening Report for the City of Tallahassee Electric Utility pursuant to Rule 25-6.0343, F.A.C. for calendar year 2014.

If you have any questions regarding our submission, please feel free to contact me at (850) 891-5092 or e-mail me at garret.yount@talgov.com.

Sincerely,

Garret F. Yount, Supervisor-Electric T&D Ops.
2602 Jackson Bluff Road
Tallahassee, Fla. 32304
(850) 891-5092 (o)
(850) 694-8233 (c)
(850) 891-5058 (f)
Garret.Yount@talgov.com

Attachment

Cc: Rob McGarrah
Tony Guillen, Jr.
Brian Horton

City of Tallahassee Electric Utility
Report to the Florida Public Service Commission Pursuant to
Rule 25-6.0343, F.A.C.
Calendar Year 2014

1) Introduction

a) City of Tallahassee Electric Utility

b) 2602 Jackson Bluff Road, Tallahassee, Florida 32304-4408

c) Contact:

Rob McGarrah
General Manager - Electric Utility
Office Phone # (850) 891-5534
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Or

Tony Guillen Jr
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Or

Garret F. Yount
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Or

Brian Horton
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2) Number of meters served in calendar year 2014 – 116,554

3) Standards of Construction

a) National Electric Safety Code Compliance

The City of Tallahassee Electric Utility (City) has adopted the National Electric Safety Code as the standard for electric transmission and distribution system design and therefore designs electric transmission and distribution facilities to the latest edition of the National Electric Safety Code. During the calendar year 2014, the City designed new facilities according to the current version the NESC. All distribution engineering standards, guidelines, policies, practices and procedures are in accordance with this Code. The City uses custom software to check pole loading to determine if the NESC requirements are met. Examples of the pole loading calculations are shown below.

Wind Load Calculations

(FOR NESC LIGHT LOADING CONDITIONS)

Wood Pole Selection Criteria		Project Name:	COT Electric	Project #:	
Drop Down Lists		Project Location:	Example 1 Spec. Manual page21-103		
Select Pole Species	Southern Yellow Pine	Station Number:		Engineer:	Date: 2-21-14
Select Grade Const.	Grade C	Maximum Allowable Resisting Moment of Wood Pole(s) (Net At Groundline)	Calculated Fibre Stress Imposed On Pole (At Groundline)	Calculated Maximum Windspan That May Be Utilized With This Pole Class	Pass/Fail Evaluation For Pole As Specified
Select Pole Class	3				
Select Pole Length	50				
Select Burial Depth	7.0				
Input Back Span	210	84,438 (Ft-Lbs)	29743.6 (Ft-Lbs)	596.161 Feet	PASS
Input Forward Span	210				
Select # Poles In Structu	1				

Conductors & Cable					Conductor	Calculated	Calculated		Calculated
Description		Conductor Selection		Number Of Conductors	Height (Ft)	Wind Span (Ft)	Wind Pressure (Lbs)		Moment (Ft-Lbs)
Primary Conductor Runs		Select Conductor		Input Num.	Input Hgt.				
	1	4/0 AAAC BARE		3	42	210	557.7		23423.1
	2	4/0 AAAC BARE		1	34	210	185.9		6320.5
	3								
	4								
	5								
	6								
	7								
	8								
Secondary Conductor Ru		Select Conductor		Input Num.	Input Hgt.				
	1								
	2								
	3								
	4								
	5								
	6								
Telephone Cable Runs:		Select Conductor		Input Num.	Input Hgt.				
	1								
	2								
	3								
	4								
	5								
	6								
CATV Cable Runs:		Select Conductor		Input Num.	Input Hgt.				
	1								
	2								
	3								
	4								
	5								
	6								

TRANSFORMERS				Number Of Units	Midpoint Height (Ft)		Calculated Wind Pressure (Lbs)		
Description		Transformer Selection							
Transformers;									
	1								
	2								
	3								

LINE EQUIPMENT				Number Of Units	Midpoint Height (Ft)		Calculated Wind Pressure (Lbs)		
Description		Equipment Selection							
Line Equipment:									
	1								
	2								
	3								

RISERS AND SWITCHES				Number Of Units	Midpoint Height (Ft)		Calculated Wind Pressure (Lbs)		
Description		Riser/Switch Selection							
Risers/Switches									
Note: For risers, use top of riser termina-tions as "midpoint height".	1								
	2								
	3								
	4								
	5								
	6								
	7								

Wind Load Calculations

(FOR NESC LIGHT LOADING CONDITIONS)

Wood Pole Selection Criteria		Project Name:	COT Electric	Project #:	
Drop Down Lists		Project Location:	Example 2 Spec. Manual page21-103		
Select Pole Species	Southern Yellow Pine	Station Number:		Engineer:	Date: 2-21-14
Select Grade Const.	Grade C	Maximum Allowable Resisting Moment of Wood Pole(s) (Net At Groundline)	Calculated Fibre Stress Imposed On Pole (At Groundline)	Calculated Maximum Windspan That May Be Utilized With This Pole Class	Pass/Fail Evaluation For Pole As Specified
Select Pole Class	3				
Select Pole Length	45				
Select Burial Depth	6.5				
Input Back Span	250	76,896 (Ft-Lbs)	54315.5 (Ft-Lbs)	329.933 Feet	PASS
Input Forward Span	210				
Select # Poles In Structu	1				

Conductors & Cable

		Description	Conductor Selection	Number Of Conductors	Conductor Height (Ft)	Calculated Wind Span (Ft)	Calculated Wind Pressure (Lbs)	Calculated Moment (Ft-Lbs)
Primary Conductor Runs			Select Conductor	Input Num.	Input Hgt.			
	1		556 AAAC BARE	1	37.42	230	333.9	12493.6
	2		556 AAAC BARE	1	35	230	333.9	11685.6
	3		556 AAAC BARE	1	32	230	333.9	10684.0
	4		556 AAAC BARE	1	24.67	230	333.9	8236.7
	5							
	6							
	7							
	8							
Secondary Conductor Ru			Select Conductor	Input Num.	Input Hgt.			
	1		1/0 TPX	1	23.84	230	372.1	8870.9
	2							
	3							
	4							
	5							
	6							
Telephone Cable Runs:			Select Conductor	Input Num.	Input Hgt.			
	1							
	2							
	3							
	4							
	5							
	6							
CATV Cable Runs:			Select Conductor	Input Num.	Input Hgt.			
	1							
	2							
	3							
	4							
	5							
	6							

TRANSFORMERS

		Description	Transformer Selection	Number Of Units	Midpoint Height (Ft)		Calculated Wind Pressure (Lbs)	
Transformers;								
	1		TRANS: 50 KVA	1	28.17		83.2	2344.6
	2							
	3							

LINE EQUIPMENT

		Description	Equipment Selection	Number Of Units	Midpoint Height (Ft)		Calculated Wind Pressure (Lbs)	
Line Equipment:								
	1							
	2							
	3							

RISERS AND SWITCHES

		Description	Riser/Switch Selection	Number Of Units	Midpoint Height (Ft)		Calculated Wind Pressure (Lbs)	
Risers/Switches								
Note: For risers, use top of riser termina-tions as "midpoint height".	1							
	2							
	3							
	4							
	5							
	6							
	7							

b) Extreme Wind Loading Standards

For structures exceeding 60 ft. or more above ground, the City's construction standards, policies, guidelines, practices, and procedures are guided by the extreme wind loading standards as specified in Section 25 of the National Electric Safety Code for 1) new construction; 2) major planned work, including expansion, rebuild or relocation of existing facilities; and 3) targeted critical infrastructure facilities and major thoroughfares. For structures less than 60 ft. above ground, the City's construction standards, policies, guidelines, practices, and procedures are guided by the basic wind loading standards. There have not been any catastrophic events to date to indicate that stronger design considerations are necessary on the City's electric system.

c) Flooding and Storm Surges

As the City is not a coastal community subject to flooding and storm surges, these types of standards, practices, guidelines, and procedures do not apply to the City's service territory.

The City 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 Barry Moline, Executive Director, FMEA, 850-224-3314, ext.1, or bmoline@publicpower.com.

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

All newly designed distribution facilities are placed within either distribution easements or are within the right of way limits on a road. The City discontinued the practice of rear lot construction many years ago. No distribution easements are allowed away from easily accessed areas for new construction. To the extent that alternatives exist for replacing other distribution facilities in a safe and efficiently accessed area, the City would consider all possibilities before leaving existing situations in less than desirable locations.

e) Attachments by Others

The Joint-Use agreements between the City and third-party(s) address terms and conditions of pole attachments. Since July 2006, the City has not issued a permit for pole

attachment(s) without reviewing both the loading details and clearance details supplied by the joint user. Poles are replaced as the clearances and loading dictates. All loading is reviewed in compliance with the latest edition of the National Electric Safety Code.

4. Facility Inspections

a) The City's policies, guidelines, practices, and procedures for inspecting transmission and distribution lines, poles, and structures are as follows:

Pole Inspection Treatment Program – Eight Year cycle

- The City's pole/structure inspection and treatment program was initiated several years ago and has been refined through each inspection cycle. The City's program is defined so that every **eight years** a new pole inspection and treatment cycle is initiated to inspect all the distribution and transmission wood poles and structures on the city's system over a two to three-year period. Also during these inspections, visual inspections are made of the City's concrete and/or steel structures with any deficiencies needing attention reported. The inspection/treatment program includes all of the following; (i) visual inspection for wood poles less than 10 years old, (ii) sound and bore inspection for poles greater than 10 years old, (iii) internal treatment and fumigant treatment as required, (iv) reinforcement/replacement as required, (v) assessment and evaluation of poles to determine whether they meet the applicable N.E.S.C. strength standard and (vi) record keeping of data for the GIS database. The City has found that this inspection process, used typically throughout the industry, has resulted in high reliability and appropriate maintenance levels at reasonable cost.

Transmission Inspection Program – Five Year cycle.

- The City performs a climbing and physical inspection of every transmission structure on its system at least every five years. A plan is developed from these inspections to make all of the necessary repairs and/or refurbishments during periods of the year when load conditions permit the scheduling of line outages (typically fall and spring periods unless it is an emergency repair).

Infrared Inspections/Flying Inspections – Transmission and Distribution Facilities

- Infrared Inspections/Flying Inspections of Facilities - the Electric Utility and Tallahassee Police Department have jointly funded a Forward Looking Infrared Radar (FLIR) system that is utilized from the Leon County Sheriff's Office (LCSO) helicopters. In return for our funding the LCSO provides flight time for transmission and distribution inspections. The transmission system is routinely inspected twice per year. Other aerial inspections of different segments of the distribution and transmission system are performed as needed.

Technical Assessments

- Technical Assessments - after a significant electrical service interruption event has impacted the City of Tallahassee service territory and restoration of the City's customer has been completed, staff initiates technical and service related reviews:
    - Crews are assigned specific circuits and areas to patrol and inspect to make sure that the system facilities are in normal operating condition.
    - Rapid Response Project Management Team (RRPTM) personnel, engineering staff and restoration supervisory staff meet to assess, review and

evaluate system performance, strength and areas with problems and prioritize issues/items that need to be addressed and/or improved upon.

Documentation/Record Keeping

- The City's Outage Management System (OMS) tracks all transmission and distribution facilities outages and identifies the causes of these facility interruptions. The interfacing of the OMS and Geographic Information System (GIS) allows OMS to track outages allowing the determination and classification of the cause as overhead or underground.
- GIS contains information concerning the system construction and has the capability for connectivity that will trace from the source point to the end point of service to a specific customer. This aids in assessment of outage causes.
- A field inventory of the City's distribution facilities is in progress and will be completed by the end of 2015. The information obtained will be used to update GIS data and graphics.

Post Mortem Interruption Reviews

- After every major outage on the City's system, Engineering & Operations Staff conduct a "post mortem" meeting to analyze the cause of the outage, the response to the outage and evaluate any changes or improvements that can be made to the system or the response process. Forensic analysis is utilized on an as-needed basis. The City has been consistently proactive in maintaining and improving the reliability and integrity of its distribution and transmission systems. In addition to the eight-year cycle pole inspection, treatment and replacement program, Infrared Inspection Program, five-year transmission inspection program, we have other ongoing programs such as the following that we perform for reliability purposes:
    - Line Clearance and Vegetation Management Program
    - Distribution, Transmission, and Substation Engineering Designs
    - Distribution System Inspection/ Monitoring/Maintaining
    - Geographic Information System (GIS)/Outage Management System (OMS)
    - Training/Preparation
    - Emergency Operations & Disaster Recovery Planning

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

- **Transmission Poles:**
    - Number treated and inspected during FY2005 and FY2006 - 1,694 (56%)
    - Number treated and inspected during FY2007 – 1,312 (44%)
    - Wood poles/structures inspections during climbing/physical inspections during FY2008 – 450
    - Wood poles/structures inspections during climbing/physical inspections during FY2009 – 535

- Wood poles/structures inspections during climbing/physical inspections during FY2010-445 (14%)
- Wood poles/structures inspections during climbing/physical inspections during FY2011-370 (11.6%)
- Wood poles/structures inspections during climbing/physical inspections during FY2012-645 (18.8%)
- Transmission wood poles/structures inspections during climbing/physical inspections during FY2013- 220 (7.14%)
- Number transmission poles/structures treated and inspected by Osmose during FY2013 - 3079 (100%)
- **Transmission wood poles/structures inspections during climbing/physical inspections during FY2014- 1320 (41.56%)**

  - **Note: The current 8 year wood pole/structure treatment and inspection program cycle began in 2013 (February, 2013). Next contracted wood pole/structure treatment and inspection program cycle will begin in FY2020.**

- **Distribution Poles**:
  - Number treated and inspected during FY2005 and FY2006 - 43,280 (93%)
  - Number treated and inspected during FY2007 – 2,911 (7%)
  - Distribution wood poles treated & inspected by Osmose during FY2013 – 26476 – 55.8%
  - **Distribution wood poles treated & inspected by Osmose during FY2014 – 20,972 (44.2%)**

  - **Note: The current 8 year wood pole/structure treatment and inspection program cycle began in 2013 (February, 2013). Next contracted wood pole/structure treatment and inspection program cycle will begin in FY2020.**

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

- **Transmission Poles**:
  - Rejected poles replaced – 8 (0.27% of transmission poles inspected) in FY2007
    - A rejected pole is one found to be deteriorated below the required minimum circumference as defined in the standard industry table for inspection and treated poles specified by the City. Rejected poles typically have weakened due to wood decay, insect, or mechanical/structural damage and age.
    - These poles were replaced with spun concrete poles.

- The annual FY2008 climbing inspections identified seven pole/structures that were rejected due to wood decay or other deteriorating conditions such as Woodpecker holes. Those poles were replaced with spun concrete poles.
- The annual FY2009 climbing inspections identified eight pole/structures that were rejected due to wood decay or other deteriorating conditions such as Woodpecker holes. Those poles were replaced with spun concrete poles.
- The annual FY2010 climbing inspections identified six pole/structures that were rejected due to wood decay or other deteriorating conditions such as Woodpecker holes. Those poles were replaced with spun concrete poles.
- The annual FY2011 climbing inspections identified eleven pole/structures that were rejected due to wood decay or other deteriorating conditions such as Woodpecker holes. Three poles were replaced with steel poles and eight poles were replaced with wood poles.
- The annual FY2012 climbing inspections identified no poles/structures to be rejected due to wood decay or other deteriorating conditions such as Woodpecker holes.
- The annual FY2013 climbing inspections identified no poles/structures to be rejected due to wood decay or other deteriorating conditions such as Woodpecker holes.
- Number of transmission poles that failed inspection by Osmose during 2013 due to internal/external wood decay. (12 poles) (.389%). Restoration or replacement of these poles is scheduled for 2014.
- **The annual FY2014 climbing inspections identified 9 (.283%) poles/structures to be rejected due to wood decay or other deteriorating conditions such as Woodpecker holes. All nine transmission poles were wood poles and were replaced in kind. All 12 (.377%) transmission poles which failed inspection by Osmose during 2013 were also replaced in kind during 2014.**

- **<u>Distribution Poles</u>**:
  - Eighty percent of the 275 rejected poles were replaced in FY2005 and FY2006 and the remainder were replaced in FY2007.
  - During FY2008 -- ten distribution poles/structures were rejected and replaced due to physical inspections for wood decay and an assessment of each pole was made to ensure the appropriate class pole was used to meet the applicable construction standards
  - During FY2009 – fourteen distribution poles/structures were rejected and replaced due to physical inspections for wood decay and an assessment of each pole was made to ensure the appropriate class pole was used to meet the applicable construction standards
  - During FY2010 – sixty four distribution poles/structures were rejected and replaced due to physical inspections for wood decay and woodpecker damage and an assessment of each pole was made to ensure the

appropriate class pole was used to meet the applicable construction standards.

- During FY2011 – 145 distribution poles/structures were rejected and replaced due to physical inspections for wood decay, woodpecker and other damage and an assessment of each pole was made to ensure the appropriate class pole was used to meet the applicable construction standards.
- During FY2012 – 72 distribution poles/structures were rejected and replaced due to physical inspections for wood decay, woodpecker and other damage and an assessment of each pole was made to ensure the appropriate class pole was used to meet the applicable construction standards. 4 distribution poles/structures were rejected and replaced due to wind loading concerns and an assessment of each pole was made to ensure the appropriate class pole was used to meet the applicable construction standards.
- During FY2013 – 379 distribution poles/structures were rejected due to physical inspections for wood decay, woodpecker and other damage. 107 of these poles meet the restorable criteria of C-truss installation and will be restored by December 31, 2014. Replacement of the non-restorable poles began in January 2014 and is currently on-going.
- **During FY2014 – 484 (1.02%) distribution poles/structures were rejected due to physical inspections for wood decay, woodpecker and other damage. Of the 863 distribution poles/structures which were rejected during FY2013 and FY2014, 130 poles were restored via C-truss installation and the remaining 733 poles are to be replaced.**

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, including a description of the remediation taken.

Replaced poles –

- 283 poles (0.6% of all poles inspected) FY 2005 – FY2007

  - All 179 rejected poles sizes from 25’ class 7 through 35’ class 5 replaced with 35’ 5 poles – (63% of all the rejected poles). All the poles in need of replacement are evaluated and assessed to ensure the appropriate class pole used to meet the City’s applicable Construction Standards

  - Remaining 104 poles (37% of all the rejected poles):

Pole	Number	Percent of all pole inspected
40’-3	35	0.08 %
40’-4	27	0.06 %

40 –5	3	0.01 %
45’- 0	1	0.00 %
45’-2	1	0.00 %
45’-3	12	0.04 %
45’-4	3	0.01 %
50’-2	1	0.01 %
50’-3	8	0.02 %
55’-3	2	0.01 %
60’-1	1	0.00 %
60’-2	1	0.01 %
60’-3	1	0.00 %
70’-2	3	0.01 %
75’-2	3	0.01 %
80’-2	2	0.01 %

  - All poles were determined to be in need or replacement are evaluated and assessed to ensure the appropriate class pole is used to meet the City’s applicable Construction Standards

- During FY2008 -- forty transmission wood poles were replaced due to various construction projects. The wood poles were replaced with a combination of spun concrete and hybrid poles (ranging in size from 75’ to 120’) in an ongoing effort to continually harden the transmission system. Additionally 425 distribution poles (ranging in size from 40’3 to 65’2) were replaced due to construction projects and an additional 85 distribution poles (ranging in size from 40’3 to 60’2) added to serve new customer load. All these poles were evaluated and assessed to ensure the appropriate class poles were used to meet the City’s applicable Construction Standards
- During FY2009 – sixty-four transmission wood poles were replaced due to various construction projects. The wood poles were replaced with a combination of spun concrete and hybrid poles (ranging in size from 75’ to 120’) in an ongoing effort to continually harden the transmission system. Additionally 343 distribution poles (ranging in size from 40’3 to 65’2) were replaced due to construction projects and an additional 255 distribution poles (ranging in size from 40’3 to 60’2) added to serve new customer load. All these poles were evaluated and assessed to ensure the appropriate class poles were used to meet the City’s applicable Construction Standards.
- During FY2010 – thirty one transmission wood poles were replaced due to various construction projects. The wood poles were replaced with a combination of spun concrete and hybrid poles (ranging in size from 75’ to 120’). Additionally 300 distribution poles (ranging in size from 40’3 to 65’2) were replaced due to construction projects and an additional 120 distribution poles (ranging in size from 40’3 to 60’2) added to serve new customer load. All these poles were evaluated and assessed to ensure the

appropriate class poles were used to meet the City's applicable Construction Standards.

- During FY2011 – no transmission wood poles were replaced due to various construction projects. Additionally 90 distribution poles (ranging in size from 40'3 to 65'2) were replaced due to construction projects and an additional 53 distribution poles (ranging in size from 40'3 to 60'2) added to serve new customer load. All these poles were evaluated and assessed to ensure the appropriate class poles were used to meet the City's applicable Construction Standards.
- During FY2012 – no transmission wood poles were replaced due to various construction projects. Additionally, 154 distribution poles (ranging in size from 40'3 to 65'2) were replaced due to construction projects and an additional 91 distribution poles (ranging in size from 40'3 to 60'2) added to serve new customer load. All these poles were evaluated and assessed to ensure the appropriate class poles were used to meet the City's applicable Construction Standards.

- During FY2013 - 12 transmission wood poles were replaced due to various construction projects and replaced with concrete poles. Additionally, 143 distribution poles (.3%)(ranging in size from 40'3 to 60'2) were replaced due to construction projects and an additional 251 distribution poles (ranging in size from 40'3 to 60'2) added to serve new customer load. All these poles were evaluated and assessed to ensure the appropriate class poles were used to meet the City's applicable Construction Standards.

- The following is a brief summary of transmission poles replaced during 2013 as a result of LIDAR inspection & remediation for NERC:

- Two 80'-1 concrete poles 5' deeper-Line 3-originally Two 60' at regular depth-Class 2
- Two 75'-1 wood poles- was originally two 60'-2 wood poles
- Two 75'-1 wood poles- was originally two 60'-2 wood poles
- Line 2B-removed one 65'2 and one 80'-2. Relocated line has one 75' above ground height concrete pole and one 80' above ground height concrete pole. Both are self supporting.
- Line 14-removed one 70'-2 wood pole. Replaced with one 85' above ground height concrete pole-self supporting.
- Line 14-removed one 75'-2 wood pole. Replaced with one 75' above ground height concrete pole-self supporting.
  Line 11-removed three 90'-2 wood poles and one 100'-2 wood pole. Replaced with two 100' above ground height concrete pole- self supporting;one 85' above ground height pole concrete pole-self supporting and one 95'above ground height pole-self supporting

- **During 2014 – 21 (.66%) transmission poles were replaced due to wood decay or other deteriorating conditions such as Woodpecker holes. These were wood poles and were replaced in kind ranging in size from 65'1 to 85'1. Furthermore, LIDAR inspections and remediation for NERC were all completed during 2013.**
- **During 2014 - 244 (.51%) distribution poles/structures ranging in size from 35'4 to 65'2 were replaced due to physical inspections for wood decay, woodpecker and other damage. Additionally, 83 (.17%) distribution poles/structures ranging in size from 35'4 to 65'2 were replaced due to construction projects and 117 (.25%) distribution poles/structures ranging in size from 35'4 to 65'2 were added to serve new customer load and all were assessed to ensure the appropriate class poles were used to meet the City's applicable Construction Standards.**

Re-enforcement of Poles – 592 poles (1.2% of all poles inspected)

- During FY2005 – FY2007 --592 various size poles were re-enforced with a C-truss to extend their useful serviceability.
- During 2013 – No transmission or distribution poles were re-enforced with a C-truss to extend their useful serviceability.
- **During 2014 --130 various size poles were re-enforced with a C-truss to extend their useful serviceability.**

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.

The City's design standards exceed the National Electric Safety Code requirements for horizontal clearances to all transmission lines. This typically dictates easement widths that provide for larger clear zones from trees and other structures. The transmission system is managed on a three-year trim cycle with target clearance of twenty (20) feet. City Line Clearance and Vegetation Management Program maintains an eighteen-month trimming cycle of all overhead distribution lines targeting at least four to six feet of line clearance and the removal of hazard trees pursuant to the City Commission's established guidelines. City's vegetation management program also utilizes directional pruning, tree growth regulators and the selective removal of those trees that cannot be maintained in a professional manner. When it is necessary to remove a protected tree for any reason we replace it with a "utility compatible

tree". We also regularly remove those dead, diseased, and dying trees that represent the potential for an outage or endanger the public.

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

- Transmission – All 230 KV lines were visually inspected quarterly for dead, diseased and dying trees as well as any obvious structural problems. All transmission Rights of Way and/or easements were mowed during FY2013 and will be mowed annually for the foreseeable future. Those lines that pass through residential areas will be mowed 3-4 times during the growing season in order to reduce customer complaints regarding "overgrown ROWs". The vegetation along the side of the lines running through rural areas is pruned with the use of a Jaraff mechanical trimmer. We began pruning the transmission lines in June of 2011 and completed the work February 2013. The Jaraff crew skips over locations where the lines pass near or through residential areas because of the appearance of the trees after being mechanically pruned. Those locations are pruned with the use of aerial lifts so that proper pruning cuts can be made leaving a more aesthetically pleasing appearance. However, whether mechanical or by hand, target clearance is twenty feet from the conductors. A broad-spectrum herbicide is applied to the base of all poles, steel structures, guy wires, and cross fences to eliminate the growth of underbrush and vines around the facilities.

- Distribution – Vegetation around approximately 1,037 miles of overhead distribution lines was managed FY2013 and FY2014. This represents all overhead line miles on the system that have vegetation exposure. This is based on an eighteen-month trim cycle utilized since 1997 pursuant to City Policy. A target clearance of 4-6 feet based on ANSI A-300 standards is obtained each cycle. All line clearance maintenance work is performed by our contractor under a Firm Price contract, which requires that the entire overhead distribution system shall be completed within the 18 month trim cycle. We are currently working on the twelfth trim cycle since this program was initiated. This eleventh trim cycle was completed in June 2014. In addition to pruning, all appropriate trees that have the potential to grow into the established clear zone of the lines will be treated with a Tree Growth Regulator. The entire overhead distribution system has been treated five times since 1997 and the treatment continues.

The Public Utility Research Center has held two vegetation management workshops in 2007 and 2009. Through FMEA, the City of Tallahassee Electric Utility 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

The City of Tallahassee Electric Utility 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 Barry Moline, Executive Director, FMEA, 850-224-3314, ext.1, or bmoline@publicpower.com.