REPORT
February 29, 2016

Clay Electric Cooperative, Inc.

February 25, 2016

Penny Buys
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850
pbuys@psc.state.fl.us

Re: Standards of Construction Report pursuant to Rule 25-6.0343,F.A.C.

Dear Ms. Buys :

Enclosed is Clay Electric Cooperative, Inc.'s report to the Florida Public Service Commission as required by Rule 25-6.0343 F.A.C. for the calendar year 2015.

Also enclosed is Clay Electric Cooperative, Inc.'s reliability data for the calendar year 2015. This is a voluntary filing Clay agreed to provide using readily available data. As Clay has stated before we do not have sufficient data to calculate MAIFIe therefore this indices is not furnished.

Should you have any questions about these filings please do not hesitate to contact me.

Sincerely,

Herman Dyal
Director of Engineering

HD/ra

Clay Electric Cooperative, Inc.
Outage Data for 2015

1. Table of Outage Events by Cause

Cause Code	Number
Unknown Cause	1877
Tree/Limb-Green	1475
Tree/Limb-Dead	632
Defective Equipment	610
Animal	476
Bad Transformer	460
Consumer Problem	427
Tree/Limb Sec./Service	308
Damaged By Man	185
Car Hit Pole	87
Overloaded Equipment	73
Wire Down	59
Bad Primary URD	44
Bad Secondary	38
Bad R/W	17
Consumer Caused	7

2. Tables of Actual and Adjusted Outage Indices

The tables do not include the MAIFIe indice because Clay does not collect momentary data on its over 1,900 down line reclosures.

a.) Adjusted Outage Indices

Category	2015 Adjusted
SAIDI (Minutes)	167.48
CAIDI (Minutes)	58.42
SAIFI (Events)	2.87
L_Bar (Minutes/Outage)	100.83
CEMI5 (Cust>5 Events)	17,022

b.) Actual Outage Indices

Category	2015 Actual
SAIDI(Min)	218.53
CAIDI(Min)	51.5
SAIFI	4.24
L_Bar (Minutes)	105.5
CEMI5 (Cust>5 Events)	47,298

Clay Electric Cooperative, Inc.
Report to the Florida Public Service Commission
Pursuant to Rule 25-6.0343, F.A.C.
Calendar Year 2015

1. Introduction

Utility: Clay Electric Cooperative, Inc.
PO Box 308
Keystone Heights, FL 32656

Contact: Herman Dyal, Director of Engineering
Phone: (352) 473-8000 ext. 8220
Fax: (352) 473-1407
Email: hdyal@clayelectric.com

2. Number of meters served:

Approximately 177,000

3. Standards of Construction:

a.) National Electric Safety Code Compliance

Clay's construction standards, policies, guidelines, practices, and procedures comply with the National Electrical Safety Code (ANSI C-2) [NESC]. Electrical facilities constructed on or after February 1, 2007 will be in compliance with the 2007 NESC. Electrical facilities constructed prior to February 1, 2007 are governed by the edition of the NESC in effect at the time of the facility's initial construction.

b.) Extreme Wind Loading Standards

Clay's construction standards, policies, guidelines, practices, and procedures for transmission facilities are guided by the extreme wind loading standards specified by Figure 250-2(d) of the 2007 edition of the NESC for transmission lines built after adoption of the 2007 NESC. Any transmission lines rebuilt or relocated since adoption of 2007 NESC has also been designed to the extreme wind loading standards.

Clay's construction standards, policies, guidelines, practices, and procedures for distribution facilities are not designed to be guided by the extreme wind loading standards specified by Figure 250-2(d) except as required by rule 250-C. Clay's experiences in the 2004 hurricanes did not indicate a need to go to the extreme wind loading standards. However, Clay is participating in the Public Utility Research Center's (PURC) granular wind research study through the Florida Electric Cooperative Association (FECA). The PURC report for 2015 is attached stating that resources are in place to monitor and

collect weather data to perform an analysis; however, there has not been a major impact from a hurricane to implement this process. Though Clay intends to continue to self-audit and evaluate our system to determine any immediate needs for system upgrades and hardening in isolated areas, Clay will consider the results of the PURC research before making any final commitments. At this time Clay does not have sufficient evidence or data to support the cost and effort required to increase our design standards to comply with the extreme wind loading.

c.) Flooding and Storm Surges

Clay is a non-coastal utility; therefore, storm surge is not an issue. Clay does experience minor localized flooding on underground and supporting overhead facilities. Clay continuously evaluates these flood prone areas for possible solutions. Clay is participating through the FECA in the PURC studies on the conversion of overhead electric facilities to underground and the effectiveness of underground facilities in preventing flood damage and outages. Clay will consider the results of this study before making final commitments on system hardening for flooding.

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

Clay's practice since the 1970's has been to construct our underground and overhead facilities in subdivisions along lot lines adjacent to public/private roadways to facilitate safe and efficient access for installation, operation, and maintenance. In other locations Clay's policies, guidelines, practices, and procedures provide for placement of new and replacement facilities along roadways or areas readily accessible by our crews and vehicles to ensure efficient and safe operation and maintenance.

e.) Attachments by Others:

The pole attachment agreements between Clay and third-party pole attachment companies include language which specifies that the attached, not the cooperative, has the burden of assessing pole strength and safety before they attach to the pole. Clay periodically performs follow-up audits of attachments to ensure the attachment is properly installed. In 2015 Clay performed a complete attachment inspection and count. This inspection and count did not assess pole strength and safety, only attachment quantities. As of 12/31/2015, twelve (12) distinct utilities have over 113,000 attachments on Clay poles.

4. Facility Inspections:

Transmission

a.) Clay currently owns and maintains (1860) transmission structures consisting of (2627) total poles broken down as follows: (1693) wood; (919) concrete; (14) steel and (1) composite type. Wood transmission poles that are deemed as needing to be replaced are evaluated and considered for upgrade to concrete.

Clay prior to 2007 was on a ten (10) year ground line pole inspection cycle for all wooden transmission poles. The inspection method used involves the sound and bore technique including excavation at the ground line per RUS guidelines. In 2015, Clay reviewed the ground line transmission pole inspection program and decided to continue the ten (10) year inspection cycle in the future.

In keeping with the 2007 internal review of its ground visual patrol, climbing inspection and helicopter inspections, Clay initiated a complete climbing inspection of every transmission structure in 2008. This climbing inspection will continue on a four (4) year cycle. Offset from the four (4) year climbing inspection cycle will be a two (2) year ground patrol visual inspection cycle. Should a complete ground patrol scheduled inspection coincide with a complete climbing inspection, the ground patrol inspection will be forgone in favor of the complete climbing inspection. A climbing inspection was performed in 2012 with the next climbing inspection scheduled for 2016. A ground patrol inspection was performed in 2015.

b.) Clay performed a complete ground patrol inspection in 2015 and its next ground patrol inspection will be done in 2018 since a complete climbing inspection will be performed in 2016.

During the 2013 review of its ground visual patrol, climbing inspection and helicopter inspections, Clay deemed it necessary to perform helicopter inspections of every structure one time a year. Helicopter inspections are typically performed in June.

c.) Clay performed one (1) complete helicopter inspection in 2015. The helicopter inspection was performed April. A total of 1,860 structures were inspected consisting of 2,627 poles. Attached is a copy of the maintenance logs for the inspections.

d.) The 2015 inspections found twenty (20) or 0.761% of the total poles inspected required some form of maintenance. Two (2) poles or 0.0761% of the 2627 total system poles were replaced of height-class as follows: (2) 65-1. Attached is a copy of the Maintenance Work Summary 2015. All maintenance was completed in 2015.

e.) The inspections identified twenty-one (21) locations where trees endangered the lines. These have been corrected.

Distribution

a.) Clay owns and maintains approximately 214,000 distribution poles on it system.

Clay prior to 2007 was on a ten year ground line inspection cycle for all wooden distribution poles. The inspection program consists of excavation and sound and bore at the ground line according to RUS guidelines as well as a visual inspection of the of the pole for other maintenance items. This inspection cycle covered all distribution poles regardless of treatment type.

In 2008 Clay revised the inspection cycle to eight (8) years. This revised cycle uses a phased-in approach that resulted in a few years with cycle times of ten (10) years until the transition to the eight (8) year inspection cycle was completed in 2013.

In 2015 Clay evaluated its overall pole inspection and maintenance program and revised it to consist of two separate pole inspection programs. The first inspection program will be the groundline inspection program as described in the first paragraph of section (a) above. The second inspection program, the System Feeder Inspection, is to consist of a total inspection of all distribution poles, excluding the groundline. The objective of this inspection is to address a variety of pole related issues such as pole and pole top maintenance, pole loading, NESC code and joint use violations and include service related issues such as arresters, transformers and other pole mounted equipment.

Each of the two pole inspection programs will be performed on a ten (10) year cycle with the one offsetting the other by five (5) years. The result is all distribution poles being inspected every five (5) years.

The overall program objective is to focus on system improvement and maintenance associated with the distribution feeders scheduled for the particular cycle year with the expectation that this will generate a balanced workload across the system.

b.) In 2015, the System Feeder Inspection and the Groundline Pole Inspections were performed. The total number of distribution poles inspected in 2015 was 34,722.

c.) Clay inspected 34,722 distribution poles in 2015. A summary of the rejects and reason for failure is listed below. In addition a summary of pole maintenance items by type has been included.

2015 Pole Inspection				
Summary of Rejects by Cause				
Description	Quantity of Rejects	% of Total Poles Inspected	Remediation	Completed Quantity
DANGER	13	0.04%	Replacement	7
Ground Rot	149	0.43%	Replacement	53
Holes High	88	0.25%	Replacement	91
Int Rot	46	0.13%	Replacement	56
Split	223	0.64%	Replacement	302
Top Decay	258	0.74%	Replacement	233
Mechanical Damage	1	0.00%	Replacement	0
Total	**778**	**2.24%**		**742**

2015 Pole Inspection			
Summary of Maintenance Items by Type			
Description	Quantity	% of Total Maintenance Items	Completed Quantity
2Way Feed	3	0.01%	0
Arrestor	74	0.21%	43
Bear Wrap	1	0.00%	0
Bent/Bow	63	0.18%	65
Bonding	980	2.82%	760
Bondwire Repair	519	1.49%	311
Bondwire Replace	180	0.52%	109
Brace	4	0.01%	3
Broken Guy	18	0.05%	6
Clearance	47	0.14%	46
Climb/Insp	1627	4.69%	526
CrossArm	46	0.13%	29
Guy Guard	174	0.50%	117
Frayed Neu	1	0.00%	0
Frayed Prim	1	0.00%	0
Holes/High	231	0.67%	52
Insulator	6	0.02%	9
Leaking Tx	2	0.01%	0
Leaning	241	0.69%	127
Line Down	7	0.02%	4
Line Low	53	0.15%	5
Loose Guy	141	0.41%	97

2015 Pole Inspection			
Summary of Maintenance Items by Type			
Continued from page 5			
Loose Hrd	143	0.41%	113
Pole Loading	1	0.00%	0
R/W	183	0.53%	96
Rusted Tx	65	0.19%	17
S/L Day Burner	3	0.01%	6
S/L Globe	19	0.05%	9
S/L Ground	84	0.24%	52
Split Top	300	0.86%	61
Srvc Hrd	442	1.27%	239
Srvc Loop	100	0.29%	122
St Light	22	0.06%	7
Stub Pole	141	0.41%	79
Top Decay	35	0.10%	10
U-Guard	42	0.12%	27
UnAuth Attach	191	0.55%	202
Totals:	**6190**	**17.83%**	**3349**

d.) On the attached CD or email the complete inspection report for each rejection and maintenance items is included. All rejections will be replaced by end of 2nd quarter of 2016. All maintenance items will be completed by the end of the 2nd quarter of 2016. Summary groupings by height and class are as follows:

2015 Pole Inspection					
Summary of Reject Poles by Height and Class					
Height	Class	Quantity of Rejects	% of Total Poles Inspected	Remediation	Completed Quantity
25	6	5	0.01%	Replacement	12
30	4	3	0.01%	Replacement	0
30	5	1	0.00%	Replacement	0
30	6	191	0.55%	Replacement	187
30	7	1	0.00%	Replacement	0
35	4	8	0.02%	Replacement	4
35	5	4	0.01%	Replacement	0
35	6	378	1.09%	Replacement	352
35	7	1	0.00%	Replacement	0
40	4	24	0.07%	Replacement	29
40	5	70	0.20%	Replacement	60
40	6	70	0.20%	Replacement	76
45	2	0	0.00%	Replacement	1
45	3	2	0.01%	Replacement	0
45	4	16	0.05%	Replacement	13
45	5	1	0.0%	Replacement	1
45	6	0	0.00%	Replacement	2
50	1	0	0.00%	Replacement	1
50	3	2	0.01%	Replacement	2

2015 Pole Inspection					
Summary of Reject Poles by Height and Class					
Continued from page 6					
55	3	1	0.00%	Replacement	2
	Total	**778**	**2.24%**		**742**

2015 Pole Inspection					
Summary of Poles by Height and Class with Maintenance Items					
Height	Class	Quantity	% of Total Poles Inspected	Remediation	Completed Quantity
20	6	3	0.01%	Maintenance	0
20	7	2	0.01%	Maintenance	0
25	6	27	0.08%	Maintenance	11
25	7	2	0.01%	Maintenance	1
30	4	2	0.01%	Maintenance	0
30	5	15	0.04%	Maintenance	3
30	6	1214	3.50%	Maintenance	695
30	7	8	0.02%	Maintenance	5
35	2	1	0.00%	Maintenance	0
35	3	2	0.01%	Maintenance	0
35	4	76	0.22%	Maintenance	42
35	5	38	0.11%	Maintenance	14
35	6	1512	4.35%	Maintenance	703
35	7	2	0.01%	Maintenance	1
40	1	1	0.00%	Maintenance	1
40	2	4	0.01%	Maintenance	1
40	4	395	1.14%	Maintenance	276
40	5	1120	3.23%	Maintenance	572
40	6	799	2.30%	Maintenance	458
45	2	12	0.03%	Maintenance	4
45	3	25	0.07%	Maintenance	0
45	4	172	0.50%	Maintenance	99
45	5	2	0.01%	Maintenance	3
45	6	1	0.00%	Maintenance	0
50	1	11	0.03%	Maintenance	4
50	2	9	0.03%	Maintenance	0
50	3	33	0.10%	Maintenance	15
50	4	4	0.01%	Maintenance	6
50	6	1	0.00%	Maintenance	1
55	1	8	0.02%	Maintenance	1
55	2	1	0.00%	Maintenance	0
55	3	5	0.01%	Maintenance	6
60	1	1	0.00%	Maintenance	2
	Total	**5508**	**15.86%**		**2924**

5. Vegetation Management

Transmission

a.) Clay's vegetation management program for the transmission rights-of-way consists of mowing, herbicide spraying, and systematic recutting. Clay performs all three methods on its entire transmission system. While Clay is doing systematic recutting on our transmission corridor, they attempt to remove any danger trees off right-of-way.

Clay's vegetation program has been very effective in keeping Clay's transmission system safe and reliable. During the hurricanes of 2004, Clay sustained no damage to its transmission system from vegetation.

Clay's systematic program for mowing and spraying is on a 3 year cycle while Clay's systematic recutting program is on a 3, 4, or 5 year cycle as needed.

A pdf file attachment of the complete transmission systematic mowing, spraying and recutting schedule is listed under "ROW 2015 Work Schedule."

b.) In 2015, Clay met or exceeded its scheduled mowing, spraying and systematic recutting on the transmission system. Clay met its goal by mowing 53.82 miles of transmission right-of-way in 2015. Clay sprayed 52.26 miles of transmission right of way in 2015. In 2015 Clay exceeded its goal by recutting 49.32 of 44.0 miles of transmission right-of-way. Attached are files of Clay's mowing, spraying, and recutting program for 2015.

Distribution

a.) Clay owns and operates over 7,800 miles of overhead primary distribution lines. All of our primary lines are under our vegetation management program.

Clay's vegetation management program has been developed taking into account the widely different service areas Clay serves. Presently Clay's vegetation management program consists of a three-year cycle (city), a four-year cycle (urban) and a five-year cycle (rural) for all its distribution primary circuits. The average time for the three cycles is 4.6 years. The reason for the difference in cycle times is simply the difference between re-growth speed and trimming clearance. In the city areas Clay often cannot get the full 10' – 12' clearance Clay desires, plus these areas often have more water and fertilizers due to residential sprinkling and fertilizing. At the other extreme in rural areas Clay can often get the full 10' – 12' clearance plus much of the trees in these areas get only rain and not fertilizer. Every distribution primary feeder Clay has is assigned to one of these cycles and a schedule is developed to ensure completion of the cycle. On the attached CD or email is the complete right-of-way systematic recut plan. Annually after a feeder is recut, Clay's arborist evaluates the clearance obtained and the expected re-growth speed to establish the cycle for the next recut. The

next recut could be 3, 4, or 5 years. Therefore, each year Clay's arborist evaluates a feeder's cycle and adjusts the cycle as needed to ensure safe and reliable operation of Clay's feeders.

Clay's Vegetation Management Program is a clear cut right-of-way maintenance program combined with mowing and spraying to provide a safe and reliable distribution system. Clay has approximately 1% of its feeder miles under a three-year cycle, 33% under a four-year cycle, and the remaining 66% is under a five-year cycle.

Clay has a Pre-Cycle Vegetation Maintenance Program consisting of annual inspections of all the distribution feeders for areas that may have the potential to cause an outage before the next cycle year. If Clay finds areas that need to be trimmed to carry the feeder to the next year, these areas will be trimmed on the Pre-Cycle Maintenance Program.
Clay's Dead/Danger Tree Removal Program is with annual inspections of the Pre-Cycle Maintenance Program. Clay also receives requests from members throughout the year for removal of dangerous trees. All of these are field inspected by Clay and action taken as required.

Before Clay begins recutting a feeder, Clay places a bill insert announcing the beginning of recutting in those accounts affected. A copy of the insert is attached.

Clay has a vegetation management webpage on its' web site at www.clayelectric.com that explains Clay's Vegetation management Program in detail for consumers.

Clay also has several publications it produces to educate the public on Clay's right-of-way clearing program. These consist of a Tree Maintenance Notification door hanger as well as a brochure titled "Keeping the Lines Clear". These are given to members when ever a member asks or when Clay needs to cut danger trees or vegetation that is not on an easement of Clay's. Both publications are available on the vegetation management web page. A copy of each is attached.

Clay also produces a guide titled "Landscape Planning" which describes ways to landscape within or near the right-of-way that would be compatible with the right-of-way but yet still provide a safe and beautiful landscape. A copy of the guide is attached.

Clay also has a systematic vegetation mowing and herbicide spraying program of three year cycles each.

Clay's Vegetation Management Program addresses all areas of vegetation from landscape planting to danger tree removal. Clay has been following this program diligently for many years now. While tree limbs are still one of Clay's largest outage causes, Clay is confident its vegetation management program is an effective way to provide for a safe and reliable distribution system. Clay strongly feels the 3, 4, or 5 year cycle they have developed and follow is a realistic

program to implement. Reducing the cycle times in Clay's opinion without regard to clearance and re-growth would not result in a significantly safer or reliable distribution system.

b.) In 2015 Clay's vegetation mowing program covered 2268.85 miles of its distribution circuits which was 98% of its goal of 2313.71 miles. The remaining 2% has now been completed. Clay's vegetation spraying program covered 2,391.21 miles of its distribution circuits which exceeded Clay's goal of 2,313.71 miles. Clay's systematic vegetation recut program covered 2,010.7 miles of its distribution circuits. This exceeded Clay's goal of 2009.36 miles. There was no carryover from 2015 into 2016. Clay's systematic vegetation recut, mowing, and spraying programs for 2015 is recorded in detail on the attached pdf files.

6.) **Storm Hardening Research**

Attached is the "Report on Collaborative Research for Hurricane Hardening" provided by the University of Florida's Public Utility Research Center (PURC) February 2016 updating activities on Storm Hardening Research.

W:/Engineering/OSERV/DOC/Report to Florida PSC 2015