



Clay Electric Cooperative, Inc.

February 24, 2020

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

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 25-6.065 F.A.C. for the calendar year 2019.

Also enclosed is Clay Electric Cooperative, Inc.'s reliability data for the calendar year 2019. 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 MAIFle, therefore, this indices is not furnished.

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

Sincerely,

Frank R. Holmes, P.E.
Chief Operating Officer
(352) 473-8000, Ext. 8319
fholmes@clayelectric.com

FH/kc

Clay Electric Cooperative, Inc.
Outage Data for 2019

1. Table of Outage Events by Cause

Outage Data 2019	
Cause Code	Number
Tree/Limb-Green	2007
Tree/Limb-Dead	1092
Defective Equipment	802
Animal	477
Consumer Problem	452
Bad Transformer	378
Damaged By Man	212
Wire Down	61
Bad R/W	40
Bad Secondary	39
Consumer Caused	33
Bad Primary URD	31
Tree/Limb Sec./Service	18
Overloaded Equipment	3
	5645

2. Table of Actual and Adjusted Outage Indices

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

a. Adjusted Outage Indices

Category	2019 Adjusted
SAIDI (Minutes)	189.31
CAIDI (Minutes)	92.12
SAIFI (Events)	2.05
L_Bar (Minutes/Outage)	126.34
CEMI5 (Cust>5 Events)	16,023

b. Actual Outage Indices

Category	2019 Actual
SAIDI(Min)	312.26
CAIDI(Min)	89.15
SAIFI	3.5
L_Bar (Minutes)	115.03
CEMI5 (Cust>5 Events)	37,191

Clay Electric Cooperative, Inc.
Report to the Florida Public Service Commission
Pursuant to Rule 25-6.0343, F.A.C.
Calendar Year 2019

1. Introduction

Utility: Clay Electric Cooperative, Inc.
Post Office Box 308
Keystone Heights, Florida 32656

Contact: Frank Holmes, Chief Operating Officer
Phone: (352) 473-8000 ext. 8319
Fax: (352) 473-1319
Email: fholmes@clayelectric.com

2. Number of meters served:

Approximately 184,000

3. Standards of Construction:

a.) National Electrical 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, 2017 will be in compliance with the 2017 NESC. Electrical facilities constructed prior to February 1, 2017 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 2017 edition of the NESC. Any transmission lines rebuilt or relocated since adoption of 2017 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, 2016 and 2017 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). Clay attended the annual conference held in Gainesville in 2018. The PURC report dated February 2020 is

attached for reference purposes. 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 12/31/2019, fourteen (14) distinct utilities have over 116,000 attachments on Clay poles. An attachment inventory is scheduled to be performed in 2020.

4. Facility Inspections:

Transmission

- a.) Clay currently owns and maintains (1839) transmission structures consisting of (2541) total poles broken down as follows: (1536) wood, (991) concrete and (14) steel. Wood transmission poles that are deemed as needing to be replaced are evaluated and considered for upgrade to concrete.

Prior to 2007, Clay 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 2016, Clay reviewed the ground line transmission pole inspection program and decided to continue the ten (10) year inspection cycle in the future. A complete ground line inspection was completed in 2016.

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 last performed in 2016 with the next scheduled for 2020.

- b.) Clay performed a ground line transmission pole inspection in 2016. The next scheduled ground line pole inspection is 2026.
- c.) Clay performed a ground patrol inspection in 2018 and its next ground patrol inspection will be done in 2020.

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.

- d.) Clay performed one (1) complete helicopter inspection in 2019. The helicopter inspection was performed in December. A total of 1,839 structures were inspected consisting of 2,444 poles. Attached is a copy of the maintenance logs for the inspections.
- e.) The 2019 inspections found seven (7) poles of the 2,444 total system poles were in need of replacement of height-class as follows: (4) 55-1, (1) 60-1, and (2) 75-1. Attached is a copy of the Maintenance Work Summary 2019. All maintenance was completed in 2019.
- f.) The inspections identified seven (7) locations where trees endangered the lines. These have been corrected.

- g.) No new construction and rebuild transmission projects were done in 2019.

Distribution

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

Prior to 2007, Clay 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 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 2016, 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 2019, the System Feeder Inspection and the Groundline Pole Inspections were performed. The total number of distribution poles inspected in 2019 was 37,603.
- c.) Clay inspected 37,603 distribution poles in 2019. 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. Note that work completed in 2019 may include carryover work from 2018 inspections.

2019 Pole Inspection				
Total Poles Inspected: 37,603				
Summary of Reject Poles by Cause				
Description	Quantity of Rejects	% of Total Poles Inspected	Remediation	Completed Quantity
Clearance	5	0.01%	Replacement	22
Danger	1	0.00%	Replacement	12
Ground Rot	20	0.05%	Replacement	24
Holes High	39	0.10%	Replacement	249
Int Rot	43	0.11%	Replacement	110
NULL	13	0.03%	Replacement	298
Split	510	1.36%	Replacement	1893
Split Top	0	0.00%	Replacement	3
Storm Damage	0	0.00%	Replacement	1
SysImprove	0	0.00%	Replacement	3
Top Decay	1644	4.37%	Replacement	3886
Totals:	2275	6.05%		6501

2019 Pole Inspection				
Total Poles Inspected: 37,603				
Summary of Maintenance Items by Type				
Description	Quantity	% of Maint. vs. Total Poles Inspected	Remediation	Completed Quantity
2Way Feed	10	0.03%	Maintenance	41
Animal Guard	769	2.05%	Maintenance	1837
Arrestor	99	0.26%	Maintenance	318
Bear Wrap	21	0.06%	Maintenance	88
Bent/Bow	57	0.15%	Maintenance	179
Bond Wire	259	0.69%	Maintenance	530
Bonding	446	1.19%	Maintenance	984
Bonding-Loose	47	0.12%	Maintenance	32
Bonding-Static	80	0.21%	Maintenance	178
Bondwire Repair	61	0.16%	Maintenance	302
Bondwire Replace	18	0.05%	Maintenance	124
Brace	23	0.06%	Maintenance	85
Broken Guy	17	0.05%	Maintenance	74
Clearance	26	0.07%	Maintenance	196
CrossArm	100	0.27%	Maintenance	376
Frayed Neu	0	0.00%	Maintenance	1
Frayed Prim	0	0.00%	Maintenance	1
Guy Guard	28	0.07%	Maintenance	50
Holes/High	418	1.11%	Maintenance	2392
Insulator	18	0.05%	Maintenance	18
Leaking Tx	0	0.00%	Maintenance	12
Leaning	338	0.90%	Maintenance	1033
Line Down	4	0.01%	Maintenance	30
Line Low	128	0.34%	Maintenance	363
Loose Bond	0	0.00%	Maintenance	1
Loose Guy	356	0.95%	Maintenance	677
Loose Hrd	79	0.21%	Maintenance	212
No G On Pole	1115	2.97%	Maintenance	2189
Pole Loading	0	0.00%	Maintenance	0
R/W	222	0.59%	Maintenance	857
Rusted Tx	64	0.17%	Maintenance	371
S/L Day Burner	16	0.04%	Maintenance	41
S/L Globe	57	0.15%	Maintenance	220
S/L Ground	19	0.05%	Maintenance	178
Service Covers	20	0.05%	Maintenance	286
Split Top	1915	5.09%	Maintenance	5748
Srvc Hrd	0	0.00%	Maintenance	2

2019 Pole Inspection (Continued)				
Total Poles Inspected: 37,603				
Summary of Maintenance Items by Type				
Description	Quantity	% of Maint. vs. Total Poles Inspected	Remediation	Completed Quantity
Srvc Loop	0	0.00%	Maintenance	5
St Light	23	0.06%	Maintenance	117
Stub Pole	235	0.62%	Maintenance	625
Top Decay	1375	3.66%	Maintenance	4863
U-Guard	107	0.28%	Maintenance	380
UnAuth Attach	31	0.08%	Maintenance	170
Totals:	8601	22.87%		26186

d.) On the attached CD or email the complete inspection report for each rejection and maintenance items is included. All rejections are expected to be replaced by end of 2nd quarter of 2019. All maintenance items are expected to be completed by the end of the 2nd quarter of 2019. Summary groupings by height and class are as follows:

2019 Pole Inspection					
Total Poles Inspected: 37,603					
Summary of Reject Poles by Height and Class					
Height	Class	Quantity of Rejects	% of Total Poles Inspected	Remediation	Completed Quantity
20	6	3	0.01%	Replacement	6
20	7	0	0.00%	Replacement	0
25	5	0	0.00%	Replacement	0
25	6	11	0.03%	Replacement	78
25	7	1	0.00%	Replacement	11
30	3	0	0.00%	Replacement	1
30	4	1	0.00%	Replacement	8
30	5	0	0.00%	Replacement	15
30	6	540	1.44%	Replacement	1504
30	7	0	0.00%	Replacement	1
35	2	0	0.00%	Replacement	1
35	3	0	0.00%	Replacement	0
35	4	27	0.07%	Replacement	80
35	5	7	0.02%	Replacement	46
35	6	885	2.35%	Replacement	2603
35	7	3	0.01%	Replacement	1
40	2	1	0.00%	Replacement	4
40	3	4	0.01%	Replacement	4
40	4	129	0.34%	Replacement	384
40	5	307	0.82%	Replacement	796
40	6	235	0.62%	Replacement	780
45	2	1	0.00%	Replacement	7
45	3	10	0.03%	Replacement	8
45	4	83	0.22%	Replacement	122
45	5	2	0.01%	Replacement	5
45	6	3	0.01%	Replacement	3
50	1	0	0.00%	Replacement	1
50	2	1	0.00%	Replacement	1
50	3	17	0.05%	Replacement	22
50	4	0	0.00%	Replacement	6
55	1	1	0.00%	Replacement	1
55	3	1	0.00%	Replacement	1
60	1	1	0.00%	Replacement	0
60	2	0	0.00%	Replacement	1
65	1	1	0.00%	Replacement	0
Total		2275	6.05%		6501

2019 Pole Inspection					
Total Poles Inspected: 37,603					
Summary of Poles by Height and Class with Maintenance Items					
Height	Class	Quantity	% of Quantity vs.Total Poles Inspected	Remediation	Completed Quantity
20	5	0	0.00%	Maintenance	2
20	6	0	0.00%	Maintenance	11
20	7	0	0.00%	Maintenance	0
25	2	0	0.00%	Maintenance	1
25	5	0	0.00%	Maintenance	3
25	6	45	0.12%	Maintenance	310
25	7	0	0.00%	Maintenance	54
30	2	0	0.00%	Maintenance	1
30	3	1	0.00%	Maintenance	0
30	4	11	0.03%	Maintenance	12
30	5	3	0.01%	Maintenance	21
30	6	1371	3.65%	Maintenance	5060
30	7	3	0.01%	Maintenance	10
35	1	3	0.01%	Maintenance	3
35	2	0	0.00%	Maintenance	5
35	3	1	0.00%	Maintenance	4
35	4	140	0.37%	Maintenance	474
35	5	16	0.04%	Maintenance	89
35	6	1750	4.65%	Maintenance	6301
35	7	2	0.01%	Maintenance	0
40	1	5	0.01%	Maintenance	3
40	2	6	0.02%	Maintenance	36
40	3	23	0.06%	Maintenance	20
40	4	613	1.63%	Maintenance	2774
40	5	1505	4.00%	Maintenance	5971
40	6	565	1.50%	Maintenance	2261
45	1	7	0.02%	Maintenance	5
45	2	30	0.08%	Maintenance	61
45	3	104	0.28%	Maintenance	102
45	4	378	1.01%	Maintenance	1062
45	5	5	0.01%	Maintenance	37
45	6	1	0.00%	Maintenance	2
50	1	118	0.31%	Maintenance	132
50	2	17	0.05%	Maintenance	23
50	3	125	0.33%	Maintenance	308
50	4	9	0.02%	Maintenance	23
50	5	2	0.01%	Maintenance	0
55	1	19	0.05%	Maintenance	38
55	2	2	0.01%	Maintenance	3
55	3	7	0.02%	Maintenance	32

2019 Pole Inspection (Continued)					
Total Poles Inspected: 37,603					
Summary of Poles by Height and Class with Maintenance Items					
Height	Class	Quantity	% of Quantity vs.Total Poles Inspected	Remediation	Completed Quantity
55	4	1	0.00%	Maintenance	22
60	1	8	0.02%	Maintenance	12
65	1	6	0.02%	Maintenance	37
65	2	3	0.01%	Maintenance	4
65	3	0	0.00%	Maintenance	1
65	4	0	0.00%	Maintenance	2
65	6	0	0.00%	Maintenance	1
Total		6905	18.36%		25333

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, 2016 and 2017, 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.

- b.) In 2019, Clay met or exceeded its scheduled mowing and spraying on the transmission system. Clay mowed 57.31 miles of transmission right-of-way in 2019. Clay exceeded its goal by spraying 56.37 of 54.14 miles of transmission right of way in 2019. In 2019, Clay recut 42.4 of 44.22 miles or 96% of transmission right-of-way. Attached are files of Clay's mowing, spraying, and recutting program for 2019.

Two hundred forty-five (245) vegetation management discrepancies were found and corrected during two (2) annual vegetation management ground inspections in 2019.

Distribution

- a.) Clay owns and operates over 7,848 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 since 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' website 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 whenever 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 2019, Clay met its goal by mowing 2323.24 miles of its distribution circuits. Clay's vegetation spraying program covered 2334.83 miles of its distribution circuits which exceeded Clay's goal by 1%. Clay's systematic vegetation recut program met its goal of covering 2077.78 miles of its distribution circuits. There was no carryover from 2019 into 2020. Clay's systematic vegetation recut, mowing, and spraying programs for 2019 are 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 2020 updating activities on Storm Hardening Research.