



Clay Electric Cooperative, Inc.

February 11, 2022

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 2021.

Also enclosed is Clay Electric Cooperative, Inc.'s reliability data for the calendar year 2021. 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 MAIFI, therefore, this index is not furnished.

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

Sincerely,

Chris Bryan

Chris Bryan, P.E.
Director of Engineering
(352) 473-8000, Ext. 8428
cbryan@clayelectric.com

A Touchstone Energy® Cooperative 

**Clay Electric Cooperative, Inc.
Outage Data for 2021**

1. Table of Outage Events by Cause

Outage Data 2021	
Cause Code	Number
Bad R/W	2753
Unknown	1218
Defective Equipment	185
Lightning	725
Animal	637
Bad Transformer	333
Consumer Problem	285
Damaged by Man	278
Tree/Limb-Green	120
Bad Secondary	111
Tree/Limb-Dead	101
Car Hit Pole	64
Wire Down	45
Bad Primary URD	40
Consumer Caused	28
Tree/Limb Sec./Service	27
Overloaded Equipment	5
	6955

2. Table of Actual and Adjusted Outage Indices

The tables do not include the MAIFI index because Clay does not collect momentary data on its over 1,900 down line reclosers.

a. Adjusted Outage Indices

Category	2021 Adjusted
SAIDI (Minutes)	186.93
CAIDI (Minutes)	77.38
SAIFI (Events)	2.42
L_Bar (Minutes/Outage)	98
CEMI5 (Cust>5 Events)	19,992

b. Actual Outage Indices

Category	2021 Actual
SAIDI(Min)	228.43
CAIDI(Min)	71.94
SAIFI	3.18
L_Bar (Minutes)	111.41
CEMI5 (Cust>5 Events)	54,147

Clay Electric Cooperative, Inc.
Report to the Florida Public Service Commission
Pursuant to Rule 25-6.0343, F.A.C.
Calendar Year 2021

1. Introduction

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

Contact: Chris Bryan, Director of Engineering
Phone: (352) 473-8000 ext. 8428
Fax: (352) 473-1790
Email: cbryan@clayelectric.com

2. Number of meters served:

Approximately 188,575

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 follow 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.

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 attachment company, 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. The scheduled audit for 2021 was postponed due to the pandemic. As of 12/31/2021, fourteen (14) distinct utilities have over 111,000 attachments on Clay poles.

4. Facility Inspections:

Transmission

- a.) Clay currently owns and maintains (1855) transmission structures consisting of (2557) total poles broken down as follows: (1532) wood, (1011) 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 2020.

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 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 complete climbing inspection in 2020 and the next ground line inspection will be 2022.

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) Corona survey helicopter inspection in 2021. The inspection was performed in October. A total of 1,855 structures were inspected consisting of 2,557 poles and thirty-eight (38) substations. The inspection report is attached.
- e.) The 2021 inspections found twenty (13) poles of the 2,556 total system poles needed replacement of height-class as follows: (1) 55-1, (5) 60-1, (1) 65-1, (2) 70-1, (2) 75-1, (1) 85-1, and (1) other sized pole. Attached is a copy of the Maintenance Work Summary 2021.
- f.) The inspections identified seven (7) locations where trees endangered the lines. These have been corrected.

g.) New construction and rebuild transmission projects completed in 2021 resulted in the retirement of (84) wood poles/(61) structure and the construction of 61 new concrete poles/structures.

2021 Transmission Pole Inspection				
Summary of Maintenance Items by Type				
Transmission Pole Section	Description	Completed Quantity	% of Total Maintenance Items from Inspected Poles	Remediation
Poles				
Height	Class			
50-1	1	0	0.00%	Changeout
55-1	1	1	0.04%	Changeout
60-1	1	5	0.20%	Changeout
65-1	1	1	0.04%	Changeout
70-1	1	2	0.08%	Changeout
75-1	1	2	0.00%	Changeout
85-1	1	1	0.05%	Changeout
Other	1	1	0.04%	Changeout
Total		13	0.51%	

Arms	22'	2	0.08%	Replace
	26'	2	0.08%	Replace

Insulators	String	9	0.35%	Replace
	Horz. Poly	58	2.27%	Replace
	Susp. Poly	3	0.12%	Replace
	Vert.	0	0.00%	Replace

Transmission Structures	1855
Total Inspected Poles	2557
Total Transmission Poles	2557
Concrete	1011
Steel	14
Wood	1532
Total	2557

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 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 2021, the System Feeder Inspection and the Groundline Pole Inspections were performed. The total number of distribution poles inspected in 2021 was 42,515.
- c.) Clay inspected 42,515 distribution poles in 2021. 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 2021 may include carryover work from 2020 inspections.

2021 Pole Inspection				
Total Poles Inspected: 42515				
Summary of Reject Poles by Cause				
Description	Quantity	% of Total Poles Inspected	Remediation	Completed Quantity
Clearance	52	0.12%	Replacement	24
CrossArm	1	0.00%	Replacement	0
DANGER	22	0.05%	Replacement	3
Ground Rot	156	0.37%	Replacement	32
Holes High	137	0.32%	Replacement	56
Int Rot	142	0.33%	Replacement	39
Split	671	1.58%	Replacement	242
SplitTop	5	0.01%	Replacement	0
SysImprove	2	0.00%	Replacement	0
Top Decay	5700	13.41%	Replacement	1900
Totals:	6888	16.20%		2296

2021 Pole Inspection				
Total Poles Inspected: 42515				
Summary of Maintenance Items by Type				
Description	Quantity	% of Maint. vs. Total Poles Inspected	Remediation	Completed Quantity
2Way Feed	13	0.03%	Maint	7
Animal Guard	1805	4.25%	Maint	1063
Arrestor	250	0.59%	Maint	140
Bear Wrap	20	0.05%	Maint	7
Bent/Bow	81	0.19%	Maint	32
Bond Wire	46	0.11%	Maint	21
Bonding	795	1.87%	Maint	461
Bonding Repair	59	0.14%	Maint	25
Bonding Replace	23	0.05%	Maint	8
Bonding-Loose	61	0.14%	Maint	39
Bonding-Static	64	0.15%	Maint	50
Brace	56	0.13%	Maint	25
Broken Guy	43	0.10%	Maint	23
Clearance	55	0.13%	Maint	34
CrossArm	220	0.52%	Maint	112
Guy Guard	16	0.04%	Maint	8
Holes/High	830	1.95%	Maint	433

2021 Pole Inspection (continued)				
Total Poles Inspected: 42515				
Summary of Maintenance Items by Type				
Insulator	47	0.11%	Maint	16
Leaking Tx	1	0.00%	Maint	1
Leaning	576	1.35%	Maint	216
Line Down	13	0.03%	Maint	5
Line Low	356	0.84%	Maint	119
Loose Guy	547	1.29%	Maint	260
Loose Hrd	65	0.15%	Maint	30
No G On Pole	925	2.18%	Maint	598
Notified Customer	0	0.00%	Maint	0
Paint	0	0.00%	Maint	0
Pole Loading	0	0.00%	Maint	0
R/W	181	0.43%	Maint	64
Rusted Tx	39	0.09%	Maint	18
S/L Day Burner	28	0.07%	Maint	15
S/L Globe	74	0.17%	Maint	44
S/L Ground	4	0.01%	Maint	1
Service Covers	51	0.12%	Maint	34
Splintable	0	0.00%	Maint	0
Split Top	3991	9.39%	Maint	1769
Srvc Hrd	0	0.00%	Maint	0
Srvc Loop	1	0.00%	Maint	1
St Light	26	0.06%	Maint	5
Stub Pole	542	1.27%	Maint	329
Tank Rust	36	0.08%	Maint	9
Top Decay	3719	8.75%	Maint	1742
u-Guard	144	0.34%	Maint	101
UnAuth Attach	124	0.29%	Maint	61
Totals:	15927	37.46%		7926

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 2022. All maintenance items are expected to be completed by the end of the 2nd quarter of 2022. Summary groupings by height and class are as follows:

2021 Pole Inspection					
Total Poles Inspected: 42515					
Summary of Reject Poles by Height and Class					
Height	Class	Quantity	% of Quantity vs. Total Poles Inspected	Remediation	Completed Quantity
20	6	1	0.00%	Replacement	1
24	6	1	0.00%	Replacement	0
24	7	1	0.00%	Replacement	0
25	6	14	0.03%	Replacement	12
25	7	1	0.00%	Replacement	1
30	3	1	0.00%	Replacement	0
30	4	4	0.01%	Replacement	2
30	5	5	0.01%	Replacement	3
30	6	1213	2.85%	Replacement	310
30	7	20	0.05%	Replacement	1
35	2	1	0.00%	Replacement	0
35	3	6	0.01%	Replacement	1
35	4	148	0.35%	Replacement	35
35	5	27	0.06%	Replacement	8
35	6	2675	6.29%	Replacement	695
35	7	15	0.04%	Replacement	1
40	2	4	0.01%	Replacement	0
40	3	6	0.01%	Replacement	0
40	4	423	0.99%	Replacement	153
40	5	1365	3.21%	Replacement	756
40	6	544	1.28%	Replacement	110
45	2	14	0.03%	Replacement	4
45	3	18	0.04%	Replacement	4
45	4	273	0.64%	Replacement	140
45	5	6	0.01%	Replacement	2
50	1	9	0.02%	Replacement	5
50	2	1	0.00%	Replacement	0
50	3	69	0.16%	Replacement	44
50	4	3	0.01%	Replacement	1
55	1	7	0.02%	Replacement	5
55	3	4	0.01%	Replacement	1
60	1	3	0.01%	Replacement	1
60	2	3	0.01%	Replacement	0
65	1	3	0.01%	Replacement	0
Total		6888	16.20%		2296

2021 Pole Inspection

Total Poles Inspected: 42515

Summary of Poles by Height and Class with Maintenance Items

Height	Class	Quantity	% of Quantity vs. Total Poles Inspected	Remediation	Completed Quantity
24	6	10	0.02%	Maintenance	1
24	7	5	0.01%	Maintenance	1
25	5	2	0.00%	Maintenance	2
25	6	1	0.00%	Maintenance	1
30	1	1	0.00%	Maintenance	0
30	2	1	0.00%	Maintenance	1
30	3	2	0.00%	Maintenance	0
30	4	10	0.02%	Maintenance	8
30	5	26	0.06%	Maintenance	11
30	6	2508	5.90%	Maintenance	1252
30	7	26	0.06%	Maintenance	18
35	2	1	0.00%	Maintenance	1
35	3	5	0.01%	Maintenance	2
35	4	217	0.51%	Maintenance	102
35	5	69	0.16%	Maintenance	27
35	6	3620	8.51%	Maintenance	1660
35	7	16	0.04%	Maintenance	7
40	1	1	0.00%	Maintenance	1
40	2	16	0.04%	Maintenance	10
40	3	9	0.02%	Maintenance	8
40	4	1328	3.12%	Maintenance	695
40	5	2956	6.95%	Maintenance	1631
40	6	1379	3.24%	Maintenance	489
40	7	1	0.00%	Maintenance	0
45	1	2	0.00%	Maintenance	2
45	2	41	0.10%	Maintenance	32
45	3	111	0.26%	Maintenance	107
45	4	549	1.29%	Maintenance	265
45	5	12	0.03%	Maintenance	5
45	6	12	0.03%	Maintenance	7
50	1	34	0.08%	Maintenance	18
50	2	60	0.14%	Maintenance	57
50	3	219	0.52%	Maintenance	154
50	4	8	0.02%	Maintenance	4
50	5	2	0.00%	Maintenance	1
50	6	3	0.01%	Maintenance	2
50	H4	1	0.00%	Maintenance	0
55	1	13	0.03%	Maintenance	5
55	2	7	0.02%	Maintenance	0
55	3	6	0.01%	Maintenance	3
55	4	2	0.00%	Maintenance	2

2021 Pole Inspection (continued)

Total Poles Inspected: 42515

Summary of Poles by Height and Class with Maintenance Items

55	5	5	0.01%	Maintenance	0
55	6	15	0.04%	Maintenance	2
60	1	7	0.02%	Maintenance	4
60	2	2	0.00%	Maintenance	1
60	3	1	0.00%	Maintenance	0
60	4	1	0.00%	Maintenance	0
60	6	3	0.01%	Maintenance	0
60	H4	1	0.00%	Maintenance	0
65	1	2	0.00%	Maintenance	2
65	6	2	0.00%	Maintenance	0
100	2	1	0.00%	Maintenance	1
110	1	1	0.00%	Maintenance	1
115	1	1	0.00%	Maintenance	1
Total		13334	31.36%		6604

5. Vegetation Management

Transmission

- a.) Clay's vegetation management program for the transmission rights-of-way covers approximately 216 miles of transmission line and 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 2021, Clay met or exceeded its scheduled mowing and spraying on the transmission system. Clay exceeded its goal by mowing 56.66 of 50.91 miles of transmission right-of-way in 2021. Clay met its goal by spraying 53.08 miles of transmission right of way in 2021. In 2021, Clay recut 54.11 miles or 123% of transmission right-of-way. Attached are files of Clay's mowing, spraying, and recutting program for 2021.

One hundred fifty-five (155) vegetation management discrepancies, one hundred one (101) dead or danger trees, three (3) maintenance trims, and fifty-one (51) vines were found and corrected during two (2) annual vegetation management ground inspections in 2021.

Distribution

- a.) Clay owns and operates over 7,882 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 considering 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 4.59 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 2021, Clay exceeded its goal by mowing 2338.65 of 2277.56 miles of its distribution circuits. Clay's vegetation spraying program covered 2308.58 miles of its distribution circuits which met Clay's goal. Clay's systematic vegetation recut program met its goal of covering 2064.18 miles of its distribution circuits. There was no carryover from 2021 into 2022. Clay's systematic vegetation recut, mowing, and spraying programs for 2021 are recorded in detail on the attached pdf files.

6. Storm Hardening Research

“Report on Collaborative Research for Hurricane Hardening” now provided to Florida’s Public Service Commission (FPSC) by University of Florida’s Public Utility Research Center (PURC).