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of Service

April 29, 2022

Ms. Rosemary Chiavetta
Pennsylvania Public Utility Commission
PO Box 3265
Harrisburg, PA 17105-3265

RE: Docket No. M-2016-2522508 – Annual Reliability Report

Dear Secretary Chiavetta,

Enclosed please find the 2021 Annual Reliability Report for Citizens' Electric Company. Please contact me at 570-522-6143 or johnsonn@citizenselectric.com if I can answer any questions.

Best Regards,

A handwritten signature in black ink, appearing to read "Nathan Johnson", written over a light blue horizontal line.

Nathan Johnson, PE
Vice President of Engineering & Operations

cc: Dan Searfoorce (via email)
John Van Zant (via email)

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Serving the Wonderful Lewisburg-Buffalo Valley since 1911

Citizens' Electric Company
Annual Electric Service Reliability Report
2021

Prepared by Nathan Johnson, PE
Vice President of Engineering & Operations
570-522-6143
johnsonn@citizenselectric.com
4/29/2022

§ 57.195(b)(1) - An overall current assessment of the state of the system reliability in the EDC's service territory including a discussion of the EDC's current programs and procedures for providing reliable electric service.

Citizens' Electric customers enjoyed another year of reliable service in 2021. Year end indices—SAIFI, SAIDI and CAIDI—though up slightly from 2020, remain strong, with all reportable metrics within the PUC standard for the Company. Three-year running indices were also within the PUC standard.

While not reflected in reported indices, the Company experienced an above average number of major events. Seven events were reported, spread across the first three quarters of the year. The most severe of these was an event in June caused by severe thunderstorms which interrupted over 40% of Citizens' customers.

The Company continued its commitment to a responsible vegetation management program as evidenced by its 19th consecutive year to be recognized as a "Tree Line USA" utility by the National Arbor Day Foundation. This award recognizes utilities for their use of nationally approved trimming techniques and vegetation management procedures. Of particular value within the Company's 'Tree Line' effort is its annual educational session hosted in cooperation with the Penn State Extension. This event provides education not only for Company employees, but also the current vegetation management contractor, and local municipal road and public works crews. Topics covered include directional pruning techniques, 'Right Tree in the Right Place' planning, and updates on current and expected threats to Pennsylvania forests. By inviting local municipalities, we encourage cooperative relationships, as well as garner the mutual benefits of consistent vegetation management practices throughout the area.

The Company continues to evaluate, compare and improve its practices through participation in a variety of industry peer groups. Its unique connection to both the rural electric and investor-owned utility groups allow staff to tap a wide knowledge base, including the Pennsylvania Rural Electric Association, the Energy Association of Pennsylvania, the National Rural Electric Cooperative Association and the International Association of Arboriculture.

Citizens' Electric Company does not own or maintain any transmission facilities.

Current Maintenance Program		
Program	Description	Cycle
Infrared Inspection	All substation equipment biennially, and 1/3 of all overhead lines each year.	3 years
Vegetation Management	Each year, all primary lines are visually inspected. This comprehensive field inspection allows us to identify areas that require trimming. We maintain a 4-year trimming cycle, but all areas are inspected annually to help identify unexpected “hot spots.” All areas needing attention are trimmed by the end of the 3 rd quarter.	Annual
Visual Line Inspection	All distribution lines and pole hardware are visually inspected during preparation of tree trimming contract. Line sections receiving infrared inspection are also inspected visually during that process.	Annual
Padmount Equipment Inspection	Padmounted equipment is visually inspected to identify and correct any developing problems or safety concerns.	4 Years
3Ø Padmount Transformer Oil Test	Insulating oil is tested from every 3Ø padmounted transformer on our system, and all substation power transformers.	Annual
Line Equipment Inspection	All air switches, circuit tie switches, capacitors, regulators, and reclosers are visually inspected. Where applicable, proper operation of control equipment is verified and counter readings are recorded.	Annual
Pole Inspection and Treatment	Poles are inspected and treated at the ground line. External and/or internal decay inhibitors are applied where appropriate.	10 Years
Danger & Reject Pole Replacements	Replace condemned poles identified during pole inspection.	As needed, annually
Substation Equipment Inspection	Entire station is visually inspected. Equipment batteries are tested, communications equipment operation is verified, fans are tested, various gauge and counter readings are recorded. An infrared inspection is performed on all equipment twice a year.	Monthly
Recloser Maintenance	Change oil, check and adjust mechanism, check contacts, test operation.	5 Years

§ 57.195(b)(2) - A description of each major event that occurred during the year being reported on, including the time and duration of the event, the number of customers affected, the cause of the event and any modified procedures adopted to avoid or minimize the impact of similar events in the future.

Date	Time	Duration (Minutes)	Customers Affected	Cause
2/16/2021	17:33	272	875	At approximately 17:30hrs on 2/16/21, a pole top broke due to a failed insulator which had started a fire. The incident pole was on a section of 3-phase line supplied directly from the substation and resulted in the substation recloser tripping to lockout, interrupting all 875 customers on the circuit.
3/1/2021	19:47	115	760	At approximately 19:45hrs on 3/1/21, an anchor guy failed on a section of three-phase wire supplied directly by the substation. The resulting movement of the pole cause phase wires to entangle, tripping the circuit to lockout.
4/11/2021	06:32	68	1,460	At approximately 0630hrs on April 11, 2021, a vehicle struck an anchor adjacent to SR45, the guy wire broke and swung over the phase wires, causing a fault. The location is supplied directly by the substation and resulted in interruption to all 1,460 customers on the circuit.
4/30/2021	16:30	144	880	At approximately 1630hrs on April 30, 2021, during a period of strong winds, a fused tap was interrupted by windblown debris. As a crew responded, a portion of an off-right-of-way tree broke free and fell onto an overhead three-phase line supplied directly from the substation at approximately 17:30, tripping the remainder of the circuit to lockout.

<i>Continued</i>				
Date	Time	Duration (Minutes)	Customers Affected	Cause
6/30/2021	16:19	566	3,009	At approximately 1615hrs on June 30, 2021, a line of severe thunderstorms entered Citizens' service area. The storm line crossed over the service area over a period of approximately 25 minutes. Lightning, debris born by strong winds and fallen trees caused damage in multiple locations.
8/18/2021	16:41	432	1,038	At approximately 1840hrs on August 18, 2021, during a period of heavy rain, a tree fell from outside the right-of-way onto a section of three-phase line, interrupting 1,038 customers on the circuit.
8/20/2021	07:57	17	883	At approximately 0730hrs on 8/20/21, Citizens' was notified by Union County 911 of a tree on a line and burning on SR192. A crew was dispatched immediately. As the crew arrived and prepared to clear the tree, it sagged into the line again, tripping the circuit to lockout and interrupting all 833 customers at 0757.

§ 57.195(b)(3) - A table showing the actual values of each of the reliability indices (SAIFI, CAIDI, SAIDI, and if available, MAIFI) for the EDC's service territory for each of the preceding 3 calendar years. The report shall include the data used in calculating the indices, namely the average number of customers served, the number of sustained customer minutes interruptions, the number of customers affected and the minutes of interruption. If MAIFI values are provided, the number of customer momentary interruptions shall also be reported.

Prior 3 Years Reliability Indices							
Year	SAIFI	SAIDI	CAIDI	Avg # of Customers Served	# of Interruptions	# of Customers Interrupted	Customer Interruption Minutes
2021	0.27	25.6	94.1	7,075	61	1,926	181,274
2020	0.08	7	87	7,045	43	561	48,645
2019	0.28	22	78	7,060	59	1,982	154,257

§ 57.195(b)(4) - A breakdown and analysis of outage causes during the year being reported on, including the number and percentage of service outages, the number of customers interrupted, and customer interruption minutes categorized by outage cause such as equipment failure, animal contact, tree related, and so forth. Proposed solutions to identified service problems shall be reported.

Outage Analysis by Cause				
Outage Cause	Number of Interruptions	% of Interruptions	Number of Customers Affected	Customer Interruption Minutes
Off R/W Trees	34	56%	1,383	138,650
On R/W Trees	0	0%	0	0
Animal	8	13%	14	785
Weather	7	11%	16	1,523
Equipment	17	13%	78	8,388
Vehicle	2	3%	378	28,077
Other	2	3%	57	3,851
Total	61		1,926	181,274

Trees were again the most impactful cause of outages in 2021, accounting for 56% of total outages and 76% of customer minutes interrupted. All tree-related outages were attributed to off right-of-way trees. The company continues to emphasize hazard tree identification and removal with employees, tree contractors and customers. The impact of equipment failures relative to total outages was reduced from 2020 to 2021, but in absolute terms increased slightly, highlighting the need for continued emphasis on identification of potential failures during I&M inspections.

The Company continues to build its system to standards that typically exceed the NESC and to monitor industry best-practices regarding storm-hardening. New equipment, techniques and trends will be evaluated for their benefit to reliability.

§ 57.195(b)(6) - A comparison of established transmission and distribution inspection and maintenance goals/objectives versus actual results achieved during the year being reported on. Explanations of any variances shall be included.

Program	Goal	Completed	Comment
Infrared Inspection	Substation and 1/3 of all overhead lines	100%	Substation, all three-phase and 1/3 of single-phase line inspected.
Vegetation Management	Entire System (9 circuits), as needed	100%	9 circuits inspected, trimmed as needed.
Visual Line Inspection	Entire System (9 circuits)	100%	9 circuits inspected.
Padmount Equipment Inspection	248	100%	241 locations inspected. *
3Ø Padmount Transformer Oil Test	44	100%	45 transformers tested. *
Line Equipment Inspection	155	100%	154 locations inspected. <ul style="list-style-type: none"> • 22 Capacitors • 46 Reclosers • 12 Regulators • 74 Switches *
Pole Inspection and Treatment	704	100%	711 Poles Inspected. *
Danger and Reject Pole Replacement	“Danger” poles identified: 1 “Reject” poles identified: 15	100%	1 “danger” pole replaced. 11 “reject” poles replaced. <i>2 reject locations abandoned, remaining scheduled for replacement in 2022.</i>
Substation Equipment Inspection	12 Monthly Inspections	100%	12 inspections completed.
Recloser Maintenance	10 Reclosers	0%	Program discontinued. <i>Recloser replacement program commencing in 2022. Recloser maintenance program is a voluntary initiative managed in parallel with the Company’s approved I&M plan.</i>

* *Quantity revised to reflect equipment in service at time of inspection.*

§ 57.195(b)(7) - A comparison of budgeted versus actual transmission and distribution operation and maintenance expenses for the year being reported on in total and detailed by the EDC's own functional account code or FERC account code as available. Explanations of any variances 10% or greater shall be included.

Program	Budget \$	Actual \$	Comment
Infrared Inspection		14,504	Not budgeted individually. 100% completed.
Vegetation Management	198,400	187,815	100% of planned work completed.
Visual Line Inspection			Not budgeted individually, included in Vegetation Management accounting. 100% completed.
Padmount Equipment Inspection		6,180	Not budgeted individually. 100% completed.
3Ø Padmount Transformer Oil Test		3,978	Not budgeted individually. 100% Completed.
Line Equipment Inspection		27,865	Not budgeted individually. 100% completed.
Pole Inspection and Treatment	33,000	29,675	100% completed.
Substation Equipment Inspection		5,379	Not budgeted individually. 100% completed.
Total		275,396	

§ 57.195(b)(8) - A comparison of budgeted versus actual transmission and distribution capital expenditures for the year being reported on in total and detailed by the EDC's own functional account code or FERC account code as available. Explanations of any variances 10% or greater shall be included.

Project	Budget Amount \$	Actual Expenditures \$	Variance \$	Comment
General Construction	1,188,422	893,193	(295,229)	
Transformers	101,856	58,103	(43,753)	\$29,418 in outstanding transformer orders as of 12/31/21.
Meters	165,742	152,823	(12,919)	\$7,170 in outstanding meter orders as of 12/31/21.
Pheasant Ridge Reconductor	69,267	43,439	(25,828)	
Wolfland Road Relocation	26,682	32,023	5,341	Added pole location, return trip for inaccessible removals due to access issues.
Linntown UG Cable Replacement	113,433	116,514	3,081	
Total	1,665,403	1,296,096	(369,307)	

§ 57.195(b)(9) - Quantified transmission and distribution inspection and maintenance goals/objectives for the current calendar year detailed by system area (that is, transmission, substation and distribution).

Program	Goal
Infrared Inspection	Substation and 3 circuits
Vegetation Management	Entire System (9 circuits), as needed
Visual Line Inspection	Entire System (9 circuits)
Padmount Equipment Inspection	248 Locations
3Ø Padmount Transformer Oil Test	44 Transformers
Line Equipment Inspection	155 Locations
Pole Inspection and Treatment	704 Poles
Danger and Reject Poles	To be determined from pole inspections
Substation Equipment Inspection	12 Monthly Inspections
Recloser Maintenance	10 Reclosers

All goals are in the substation and distribution areas. The Company does not own or operate any transmission facilities.

§ 57.195(b)(10) - Budgeted transmission and distribution operation and maintenance expenses for the current year in total and detailed by the EDC's own functional account code or FERC account code as available.

(These items are not budgeted by FERC account.)

Program	Budget \$	Comment
Infrared Inspection	N/A	Not budgeted individually
Vegetation Management	198,400	
Visual Line Inspection	N/A	Not budgeted individually
Padmount Transformer Inspection	N/A	Not budgeted individually
3Ø Padmount Transformer Oil Test	N/A	Not budgeted individually
Line Equipment Inspection	N/A	Not budgeted individually
Pole Inspection and Treatment	33,000	
Danger and Reject Poles	N/A	Not budgeted individually
Substation Equipment Inspection	N/A	Not budgeted individually
Recloser Maintenance	N/A	Not budgeted individually
Total		

§ 57.195(b)(11) - Budgeted transmission and distribution capital expenditures for the current year in total and detailed by the EDC's own functional account code or FERC account code as available.

(These items are not budgeted by FERC account.)

Project	Budget Amount \$
General Construction	893,193
Transformers	58,103
Meters	152,823
Pheasant Ridge Reconductor	43,439
Wolfland Road Relocation	32,023
UG Cable Replacement	116,514
Total	1,296,096

§ 57.195(b)(12) - Significant changes, if any, to the transmission and distribution inspection and maintenance programs previously submitted to the Commission.

No significant changes.