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PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

Ms. Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120

M-2016-2522508

RE: **Annual Electric System Reliability Report
3 Years Ending December 31, 2019 ("PUBLIC")
Docket Nos. L-00030161 and M-00991220**

Dear Secretary Chiavetta:

Pursuant to the Commission's May 7, 2004 Final Rulemaking Order amending Electric Service Reliability Regulations (52 Pa. Code §§57.191 - 57.197) at Docket Nos. L-00030161 and M-00991220, UGI Utilities, Inc. - Electric Division ("UGI") hereby files its Annual System Reliability Report. This report contains SAIDI, SAIFI, and CAIDI results on a 3-year rolling basis for the period ending December 31, 2019 along with the raw data from the same period.

The Office of Consumer Advocate, the Office of Small Business Advocate, the Bureau of Audits, and the Bureau of Technical Utility Services have each been served with copies of this filing.

Questions related to the attached report should be directed to Mr. Vince DeGiusto, Jr. at (570) 830-1289 or email vdegiustojr@ugi.com.

Sincerely,

Eric Sorber
VP & GM UGI Utilities Inc. - Electric Division

Attachment

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UGI Utilities, Inc. – Electric Division Annual System Reliability Report 2019

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**UGI Utilities, Inc. – Electric Division
2019 Electric Service Reliability Annual Report**

§ 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.

For the twelve-month period ending December 2019, UGI Utilities, Inc. – Electric Division’s (“UGI” or “Company”) SAIDI was 182 minutes. This is above its 12-month benchmark of 140 minutes but below the standard of 256 minutes. UGI’s SAIFI for the 12-month period was 0.96, also above its 12-month benchmark of 0.83 but below the 12-month standard of 1.12. UGI’s CAIDI was 188 minutes for this same 12-month period. This is also above its 12-month benchmark of 169 minutes and below the 12-month standard of 228 minutes.

UGI’s objective is to provide its customers with safe, reliable electric service. Providing reliable service is not a program unto itself, but rather it is an inherent part of every element of the service delivery process. Each segment of service delivery, including system design, construction, and operation and maintenance, has service reliability as its main objective.

System Design

System design is fundamental to providing reliable electric service. To that end, UGI has incorporated service reliability into all aspects of its system design. Planning standards, construction standards, component selection, engineering, engineering training, engineering instructions and Supervisory Control and Data Acquisition (“SCADA”) integration programs all have service reliability as a fundamental consideration.

Construction

No matter how well an electrical system is designed, the components making it up must be properly assembled in order for it to function as intended. UGI construction personnel possess the knowledge and skills necessary to effectively perform their duties. Post construction inspection programs assure that additions and improvements to the system are completed properly.

Operation

A continuously staffed operations center is in place to assure quick response to interruptions on the delivery system. The center is staffed by system operators who diagnose system problems and mount a rapid and appropriate response to trouble on the system.

There are service/line personnel on duty eight hours a day during weekdays and on Saturdays. An afternoon shift trouble-man is scheduled during weekdays to provide quick response to service interruption calls. Call-out rosters are in place to mobilize staff when service/line personnel are not on duty or when additional resources are required.

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UGI has an outage management system in place, which allows it to gather information on system interruptions. The information accumulated in this system is analyzed to spot equipment failure trends and outage clusters. This information is also used to spot weaknesses in the system and to make decisions on allocation of resources for maintenance and/or system upgrades.

UGI is currently undergoing a Distribution SCADA project to integrate distribution automation devices and select substation devices under one (1) system. This project will acquire and historize distribution data not currently available and allow the control of distribution devices from the operations center.

Maintenance

UGI has inspection and maintenance programs in place to monitor all equipment on its system and to address any problems identified through these programs. UGI implemented the 2019-2020 Biennial I&M Plan filed with the Commission and has found no significant system equipment issues during performance of the I&M Plan initiatives in 2019. UGI has identified an increase in the number of potential danger trees via the annual vegetation inspections performed under the Biennial I&M Plan. The increase is primarily due to the infestation of the Emerald Ash Borer, which is devastating the Pennsylvania ash tree population. UGI has added additional vegetation resources to target additional danger tree removals going forward.

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§ 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.

- (i) Under Title 52, Pa. Code §57.192, a major event is defined as either:
 - a) An interruption of electric service resulting from conditions beyond the control of the electric distribution company which affects at least 10% of the customers in the EDC's service territory during the course of the event for a duration of 5 minutes each or greater. The event begins when notification of the first interruption is received and ends when service to all customers affected by the event is restored.
 - b) An unscheduled interruption of electric service resulting from an action taken by an electric distribution company to maintain the adequacy and security of the electrical system, including emergency load control, emergency switching and energy conservation procedures, as described in §57.52 (relating to emergency load control and energy conservation by electric utilities), which affects at least one customer.
- (ii) A major event does not include scheduled outages in the normal course of business or an electric distribution company's actions to interrupt customers served under interruptible rate tariffs.

Major Events

There was one (1) major event that occurred in 2019.

On August 14th, 2019, UGI Utilities, Inc. – Electric Division (UGI) filed a request for exclusion of major outage for reliability reporting purposes in accordance with the requirements of the Commission's Order entered May 11, 2004, at M-00991220. Pursuant to the Commission's approval of that request on September 4th, 2019, all indices contained in this annual System Reliability Report, and the raw data used to calculate them, exclude the numbers related to this major event.

This event occurred on April 15th, 2019 at 01:17 until April 17th, 2019 at 16:50. The cause of the event was a severe thunderstorm that impacted UGI Electric Division service territory with frequent lightning and strong winds. This resulted in the loss of one (1) 66kV transmission line, one (1) 66kV/13.8kV substation and affected twenty-one (21) distribution feeders. This event caused service interruptions to 11,703 customers of UGI's approximate 62,139 customers total. These sustained interruptions were the result of 118 Total Outage cases in Luzerne and Wyoming County.

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Modified Procedures

UGI continues its long-term plan to add distribution sectionalizing and field automation. This includes automatic and manual type devices such as reclosers, air-breaks, switches and fuses. These facilities will increase reliability by reducing the number of customers exposed to an outage or by providing automatic and manual sectionalizing points which will isolate customers from damage and allow partial restoration of circuit sections. It is also important to note as part of our current LTIIP (Long-Term Infrastructure Improvement Plan) initiatives, UGI added 7 new sectionalizing devices mainly targeted at our worst performing feeders. Also, in 2019 a total of 11 reclosers were added/upgraded to allow for remote communication. Furthermore, UGI has initiated plans to integrate FLISR (Fault Locating, Isolation, and Service Restoration) technology into the grid. This will change current operating procedures to allow for faster restoration through automated switching following fault isolation.

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§ 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.

The reliability results for UGI’s service area over the last three years are as follows:

2017 – 2019 Reliability Statistics

	SAIDI	SAIFI	CAIDI
3-Year Avg. Standard	170	0.91	186
UGI 3-Yr. Rolling Avg.	155	0.88	167

	SAIDI	SAIFI	CAIDI
12-Month Standard	256	1.12	228
12-Month Benchmark	140	0.83	169
2019 UGI Results	182	0.96	188
2018 UGI Results	219	1.20	183
2017 UGI Results	64	0.49	131

The 3-year rolling averages for SAIFI, SAIDI and CAIDI are performing within the standards established by Commission Order at Docket No. M-00991220 on May 7, 2004.

Data necessary to calculate a Momentary Average Interruption Frequency Index (MAIFI) is not available for UGI’s service area. As previously discussed with the Commission, UGI currently has no plan to install the equipment required to track momentary interruptions on the hundreds of operating distribution devices located throughout its territory. The basis for this decision is the high cost associated with the purchase and installation of these devices with little commensurate benefit.

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	Raw Data				Reported Indices		
	SI	TCI	TCB	TMCI	SAIDI	SAIFI	CAIDI
Jan-2019	19	1,018	62,472	100,178	2	0.02	98
Feb-2019	40	6,750	62,462	436,307	7	0.1	65
Mar-2019	23	922	62,459	53,936	1	0.01	58
Apr-2019	31	123	62,389	30,120	0	0	245
May-2019	86	6,911	62,389	3,081,391	49	0.11	446
Jun-2019	39	8,504	62,109	566,506	9	0.14	67
Jul-2019	89	8,894	62,000	1,141,711	18	0.14	128
Aug-2019	66	8,457	61,977	3,686,128	59	0.14	436
Sep-2019	27	5,743	61,707	351,805	6	0.09	61
Oct-2019	32	5,183	61,535	719,218	12	0.08	139
Nov-2019	54	1,579	62,090	488,208	8	0.03	309
Dec-2019	25	5,862	62,078	640,951	10	0.09	109
TOTAL	531	59,946	62,139 *	11,296,459	182	0.96	188
Jan-2018	35	3,397	63,491	676,409	11	0.05	199
Feb-2018	12	116	63,352	16,175	0	0.0	139
Mar-2018	91	3,991	63,311	2,916,858	46	0.06	731
Apr-2018	52	4,494	63,226	1,050,570	17	0.07	234
May-2018	90	10,269	63,098	2,430,214	39	0.16	237
Jun-2018	47	7,643	63,023	560,989	9	0.12	73
Jul-2018	79	26,392	62,999	2,726,606	43	0.42	103
Aug-2018	32	6,696	62,864	754,177	12	0.11	113
Sep-2018	39	7,043	62,771	2,103,322	34	0.11	299
Oct-2018	36	1,017	62,587	158,744	3	0.02	156
Nov-2018	28	3,083	62,585	221,274	4	0.05	72
Dec-2018	22	1,264	62,520	174,493	3	0.02	138
TOTAL	563	75,405	62,986 *	13,789,831	219	1.20	183
Jan-2017	24	1,171	63,729	137,902	2	0.02	118
Feb-2017	21	685	63,748	156,560	2	0.0	229
Mar-2017	41	3,588	63,792	461,297	7	0.06	129
Apr-2017	23	3,708	63,773	352,494	6	0.06	95
May-2017	40	2,975	63,719	560,540	9	0.05	188
Jun-2017	38	4,273	63,734	543,442	9	0.07	127
Jul-2017	41	2,153	63,673	351,089	6	0.03	163
Aug-2017	32	2,643	63,687	556,026	9	0.04	210
Sep-2017	13	3,861	63,708	269,491	4	0.06	70
Oct-2017	36	4,568	63,634	312,749	5	0.07	68
Nov-2017	25	1,186	63,549	323,967	5	0.02	273
Dec-2017	17	584	63,528	80,312	1	0.01	138
TOTAL	351	31,395	63,690 *	4,105,869	64	0.49	131
3-YEAR AVERAGE	482	30,699	62,938	9,730,720	155	0.88	167

* annual arithmetic average

SI: System Interruptions
TCI: Total Customers Interrupted
TCB: Total Customer Base
TMCI: Total Minutes Customer Interrupted

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§ 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 by Cause - January 2019 through December 2019

OUTAGE CAUSE	% OF TOTAL INCIDENTS	NUMBER OF INTERRUPTIONS	CUSTOMERS INTERRUPTED	MINUTES INTERRUPTED
Animal	11.49%	61	3,806	107,513
Company Agent	0.19%	1	1	323
Construction Error	0.00%	0	0	0
Customer Problem	0.38%	2	3	4,606
Dig In	0.19%	1	1	1,081
Equipment Failure	21.85%	116	20,614	1,966,368
Lightning	5.27%	28	4,912	1,139,757
Motor Vehicle	3.58%	19	2,935	313,335
Other	1.32%	7	1,748	45,280
Public	1.69%	9	592	25,204
Structure Fire	0.19%	1	1	189
Trees	33.15%	176	13,570	2,859,724
Unknown	3.95%	21	963	151,434
Weather Related	13.18%	70	7,214	3,930,163
Weather/Snow	0.19%	1	3	678
Weather/Ice	2.07%	11	1,822	156,692
Weather/Wind	1.32%	7	1,761	594,112
TOTAL	100.00%	531	59,946	11,296,459

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Proposed Solutions to Identified Problems:

As a small system, UGI is subject to a high level of variability in system damage due to weather. In order to combat future storm related disruptions, UGI has undertaken an accelerated focus on infrastructure replacement and implemented several infrastructure and technology-based reliability programs including accelerated underground cable and wood pole replacement, Distribution Automation (DA), enhanced feeder sectionalizing and primary substation tie-line additions. UGI has increased initiatives to reduce outages caused by failing components of the distribution system, such as porcelain insulators and cut-outs. These have been targeted for replacement due to high failure rates observed. Analysis of reliability across UGI's feeders shows that customers served in some of the more remote and isolated areas of our system have been impacted most significantly by multiple and extended outages. To address these areas UGI is targeting increased vegetation management and tree removal as well as the construction of remote tie-lines where appropriate. This is the case for one of our biggest system improvement projects for 2019, which continues the construction of a remote tie-line to increase reliability to one of the poorly performing areas. These programs have been developed to address significant long-term reliability factors. Considering these programs and the additional programs documented in the UGI Long Term Infrastructure Improvement Plan (LTIIIP), UGI fully expects to improve overall system reliability and, to some extent, smooth out historical weather-related variability. Furthermore, as a result of the number of tree outages, UGI is currently investigating additional tree-trimming contracts to supplement regular trim cycles as outlined in our maintenance plan.

In addition to our physical infrastructure, UGI has initiated several initiatives that will leverage current technology to improve the reliability of our system. As previously stated in the report, UGI has initiated plans to acquire and implement a FLISR system to allow self-healing capability of our distribution system that will isolate faulted line and restore undamaged sections. Remote capability is being integrated into existing transmission Motor Operated Air-Breaks to allow expedited sectionalizing and recover of the system following disturbances. Furthermore, UGI has acquired a new distribution SCADA system to allow System Operators to access and control an expanding number of field devices across the system. Finally, UGI is in the process of purchasing a new Outage Management System which will be accompanied by a mobile field component. This new technology will provide for the efficient flow of information from field employees and improve work tracking capabilities.

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

There have not been any significant changes during 2019 to the transmission and distribution inspection and maintenance programs outlined in previous reports submitted to the Commission. Starting January 1, 2011 all of the Electric Division's distribution system equipment is being inspected and maintained consistent with its Bi-Annual Inspection and Maintenance Plan as filed with the Commission. The Plan's requirements do not significantly alter UGI's prior inspection and maintenance programs.



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