



UGI Utilities, Inc.
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Wilkes-Barre, PA 18711

April 30, 2021

VIA E-FILING

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

**RE: Annual Electric System Reliability Report
3 Years Ending December 31, 2020 ("Public")
Docket No. M-2016-2522508**

Dear Secretary Chiavetta:

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 31st, 2020 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 are each being served with copies of this filing.

Questions related to the attached report should be directed to Kyle Stair at (570) 407-2641 or email kstair@ugi.com.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Eric Sorber', is positioned above the typed name.

Eric Sorber
Vice President & General Manager - Electric Division

Attachment

cc: **VIA ELECTRONIC MAIL**

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UGI Utilities, Inc. – Electric Division
Annual System Reliability Report
2020

April 30, 2021

**UGI Utilities, Inc. – Electric Division
2020 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 2020, UGI Utilities, Inc. – Electric Division’s (“UGI” or “Company”) SAIDI was 66 minutes. This is below its 12-month benchmark of 140 minutes and below the standard of 256 minutes. UGI’s SAIFI for the 12-month period was 0.40, also below its 12-month benchmark of 0.83 and the 12-month standard of 1.12. UGI’s CAIDI was 163 minutes for this same 12-month period. This is also below 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 a primary 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, its components must be properly assembled 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. There is a first shift and second shift trouble-man scheduled during weekdays to provide quick response to service interruption calls and UGI is currently in the process of hiring a second shift trouble-man. 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 identify equipment failure trends and outage clusters. This information is also used to identify weaknesses in the system and decide how to allocate resources for maintenance and/or system upgrades. UGI is currently upgrading this system by September of 2022 to gain additional functionality and efficiency.

UGI continues to expand its Distribution SCADA (DSCADA) into operations to allow further visibility and awareness into the distribution system. Furthermore, the DSCADA acquires and historizes distribution data and allows 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. While implementing the 2019-2020 Biennial I&M Plan filed with the Commission (on October 2nd, 2017), UGI has found no significant system equipment issues during performance of the I&M Plan initiatives in 2020. 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) 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 2020.

A major event occurred on November 23rd, 2020 at 08:57 am affecting 10,665 customers for a duration of 9 minutes. The event occurred while utilizing a new 66/13kV mobile substation to carry customer load as part of a larger substation upgrade project. During the project, a protection scheme on the mobile substation operated causing the mobile substation to trip offline and interrupt service to customers. The onsite employees quickly identified the trip as a mis-operation and restored the customers. It was determined based on a subsequent investigation that the neutral current transformer on the mobile substation was wired incorrectly from the factory. This wiring issue caused a protection scheme to operate when the mobile substation transformer reached a loading threshold, opening circuit breakers to clear the transformer and interrupting service to customers. As a result of this occurrence, the modified practice moving forward (per manufacturer’s suggestion) will be to disable the neutral (REF) settings (when used) until proper neutral polarity and magnitude is confirmed.

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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:

2018 – 2020 Reliability Statistics

	SAIDI	SAIFI	CAIDI
3-Year Avg. Standard	170	0.91	186
UGI 3-Yr. Rolling Avg.	156	0.86	182

	SAIDI	SAIFI	CAIDI
12-Month Standard	256	1.12	228
12-Month Benchmark	140	0.83	169
2018 UGI Results	219	1.20	183
2019 UGI Results	182	0.96	188
2020 UGI Results	66	0.40	163

The 3-year rolling average for SAIFI, SAIDI and CAIDI are performing within the 3-year average standard 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-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-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-2020	26	827	62,115	70,758	1	0.01	86
Feb-2020	17	1,363	62,086	550,810	9	0.02	404
Mar-2020	15	500	62,052	136,123	2	0.01	272
Apr-2020	73	5,724	62,022	771,886	12	0.09	135
May-2020	33	685	62,037	72,785	1	0.01	106
Jun-2020	47	2,442	61,990	142,415	2	0.04	58
Jul-2020	59	1,777	62,008	232,425	4	0.03	131
Aug-2020	49	3,385	61,993	1,085,902	18	0.05	321
Sep-2020	35	679	62,009	82,773	1	0.01	122
Oct-2020	29	759	62,370	60,295	1	0.01	79
Nov-2020	91	6,458	62,341	831,071	13	0.1	129
Dec-2020	20	511	62,398	57,739	1	0.01	113
TOTAL	494	25,110	62,118 *	4,094,982	66	0.40	163
3-YEAR AVERAGE	529	53,487	62,414	9,727,090	156	0.86	182

* 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 2020 through December 2020

OUTAGE CAUSE	% OF TOTAL INCIDENTS	NUMBER OF INTERRUPTIONS	CUSTOMERS INTERRUPTED	MINUTES INTERRUPTED
Animal	19.43%	96	3,648	181,360
Company Agent	1.21%	6	112	3,788
Construction Error	0.00%	0	0	0
Customer Problem	0.00%	0	0	0
Dig In	0.20%	1	51	5,451
Equipment Failure	21.05%	104	2,685	397,012
Lightning	1.82%	9	1,122	207,439
Motor Vehicle	2.63%	13	1,020	186,312
Other	0.61%	3	11	804
Public	2.02%	10	1,563	19,318
Structure Fire	0.20%	1	18	1,710
Trees	46.15%	228	14,226	3,011,071
Unknown	4.05%	20	592	70,479
Weather Related*	0.00%	0	0	0
Weather/Snow*	0.20%	1	58	9,744
Weather/Ice*	0.00%	0	0	0
Weather/Wind*	0.40%	2	4	494
TOTAL	100.00%	494	25,110	4,094,982

*Note: Beginning CY2020 UGI changed philosophy on the use of these outage categories to align more closely with *IEEE 1782-2014 Guide for Collecting Outage Data*, which resulted in the low values for these categories and an increase in others. This change will aid in diagnosing root causes, guiding improvement projects, and benchmarking with other utilities.

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Proposed Solutions to Identified Problems:

The largest contributors to outage incidents on UGI’s system and primary target for improvement projects are tree-related outages and equipment failures. Further analysis 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 line relocations and construction of remote tie-lines where appropriate. This is the case for one of our biggest system improvement projects for 2020, which continues the construction of a remote tie-line to increase reliability to one of the poorly performing areas. Furthermore, UGI has increased the vegetation management budget and added tree-trimming resources to supplement regular trim cycles as outlined in our maintenance plan.

To reduce outages caused by equipment failures UGI has undertaken an accelerated focus on infrastructure replacement, such as underground cable and wood pole replacement. UGI has increased initiatives to reduce outages caused by components susceptible to failure on the distribution system, such as porcelain insulators and cut-outs which have been targeted for replacement. These programs will address significant long-term reliability factors. Considering these programs and others 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.

In addition to the physical infrastructure upgrades, UGI has identified opportunities to reduce the duration and impact of outages using technology-based solutions and additional circuit sectionalizing. UGI continues preparing the distribution network to accommodate a future FLISR system that can self-heal and will isolate faulted line sections and restore the undamaged portions. Remote control capability is being integrated into existing transmission Motor Operated Air-Breaks to allow expedited sectionalizing and recovery of the system following disturbances. Also, UGI has implemented a new distribution SCADA system to allow System Operators to monitor and control an expanding number of devices across the system. Finally, UGI will be implementing 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 2020 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.