



UGI Utilities, Inc.
1 UGI Drive
Denver, PA 17517

April 29, 2022

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, 2021 ("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, 2021 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 written over a light blue horizontal line.

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
2021

April 29, 2022

**UGI Utilities, Inc. – Electric Division
2021 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 2021, UGI Utilities, Inc. – Electric Division’s (“UGI” or “Company”) SAIDI was 127 minutes. This is below its 12-month benchmark of 140 minutes and below the standard of 256 minutes. UGI’s SAIIFI for the 12-month period was 0.95, which is above its 12-month benchmark of 0.83 and below the 12-month standard of 1.12. UGI’s CAIDI was 134 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, includes 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 from 7am to 7pm weekdays and on Saturdays 7am to 3:30pm. UGI has created a second shift trouble-man position which will provide extended coverage until 11pm on weekdays. The Company is currently in the process of hiring this position. 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 (OMS) 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 system deficiencies and allocate resources for maintenance and/or system upgrades. UGI is currently upgrading its OMS to gain additional management functionality and efficiency. The projected in-service date for the OMS upgrade is September 2022.

UGI continues to expand its Distribution SCADA (DSCADA), which provides additional system performance visibility and awareness. The DSCADA also acquires and historizes distribution data and controls distribution devices from the operations center.

Maintenance

UGI has inspection and maintenance (I&M) programs in place to monitor all equipment on its system and to address any problems identified through these programs. While implementing the 2021-2022 Biennial I&M Plan, filed with the Commission on September 30, 2019, UGI found no significant system equipment issues.

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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 on August 12, 2021. It began at approximately 1400 hours and affected 10,182 customers. The outages were caused by severe weather on August 12, 2021. While the August 12, 2021 forecast only predicted a slight risk of thunderstorms, the hot and humid conditions combined with a heat index of over 100 and formed severe thunderstorms. The first wave of severe thunderstorms started at approximately 1400 hours and knocked out power to over 5,800 UGI customers. With restoration efforts underway a second severe thunderstorm occurred at 2200 hours and added over 3,200 additional customer outages. The storms impacted Luzerne and Wyoming Counties, causing damage to conductors, poles, and other equipment.

UGI was granted an exemption for this major event by Secretarial Letter dated September 15, 2021 at Docket No. M-2021-3028449. As such, the interruption data related to this major event is excluded from the calculation of the metrics in this annual report.

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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:

2019 – 2021 Reliability Statistics

	SAIDI	SAIFI	CAIDI
3-Year Avg. Standard	170	0.91	186
UGI 3-Yr. Rolling Avg.	125	0.77	162

	SAIDI	SAIFI	CAIDI
12-Month Standard	256	1.12	228
12-Month Benchmark	140	0.83	169
2019 UGI Results	182	0.96	188
2020 UGI Results	66	0.40	163
2021 UGI Results	127	0.95	134

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.

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Reliability Metrics Data

	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	0.10	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	0.10	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
Jan-2021	21	1,074	62,378	114,691	2	0.02	107
Feb-2021	16	3,210	62,376	117,691	2	0.05	37
Mar-2021	140	7,622	62,267	1,985,209	32	0.12	260
Apr-2021	36	1,427	62,354	336,618	5	0.02	236
May-2021	42	2,734	62,418	407,821	7	0.04	149
Jun-2021	52	14,530	62,335	1,170,473	19	0.23	81
Jul-2021	121	12,318	62,329	1,504,939	24	0.20	122
Aug-2021	32	4,573	62,329	890,796	14	0.07	195
Sep-2021	79	4,560	62,269	434,968	7	0.07	95
Oct-2021	29	2,294	62,349	306,713	5	0.04	134
Nov-2021	29	3,035	62,384	277,390	4	0.05	91
Dec-2021	53	1,615	62,396	380,213	6	0.03	235
TOTAL	650	58,992	62,349 *	7,927,522	127	0.95	134
3-YEAR AVERAGE	558	48,019	62,202	7,772,988	125	0.77	162

* 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 2021 through December 2021

OUTAGE CAUSE	% OF TOTAL INCIDENTS	NUMBER OF INTERRUPTIONS	CUSTOMERS INTERRUPTED	MINUTES INTERRUPTED
Animal	7.39%	48	2,507	208,358
Company Agent	1.23%	8	8,101	632,943
Construction Error	0.15%	1	10	10,820
Customer Problem	0.15%	1	6	1,692
Dig In	0.31%	2	20	1,679
Equipment Failure	15.69%	102	11,010	457,833
Lightning	3.69%	24	3,492	684,877
Motor Vehicle	2.92%	19	2,011	472,666
Other	2.00%	13	194	47,695
Public	1.54%	10	822	48,788
Structure Fire	0.31%	2	39	10,550
Trees	59.39%	386	28,836	4,874,240
Unknown	4.00%	26	760	236,646
*Weather Related	0.77%	5	1,176	226,606
*Weather/Snow	0.00%	0	0	0
*Weather/Ice	0.00%	0	0	0
*Weather/Wind	0.46%	3	8	12,129
TOTAL	100.00%	650	58,992	7,927,522

*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 areas for continued improvement and investment are tree-related outages and equipment failures. Further analysis shows that customers served in some of the more rural and isolated areas of our system have been impacted most significantly by multiple and extended outages. To address these areas UGI has increased vegetation management and tree removal across the system and focused on reliability prioritized line relocations and construction of remote tie-lines where appropriate. This is the case for one of our major system improvement projects for 2021, 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 replacements. UGI has also 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 (LTIIP), UGI fully expects to improve overall system reliability and, to some extent, smooth out historical weather-related variability.

UGI has identified opportunities to reduce the duration and extent of outages using technology-based solutions and additional circuit sectionalizing. There are several instances in 2021 where many customers were interrupted by a single short duration outage incident, which led to an increase in SAIFI for the year. In the effort to prevent such cases in the future, UGI continues preparing the distribution network to accommodate a future FLISR system that can self-heal by isolating faulted line sections and restoring the undamaged portions, leading to fewer customer interruptions. Furthermore, remote control capability continues being integrated into existing transmission Motor Operated Air-Breaks to allow expedited sectionalizing and recovery of the transmission system following disturbances. UGI also has continued to expand the number of devices available in the distribution SCADA system which allows 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 2021 to the transmission and distribution inspection and maintenance programs outlined in previous reports submitted to the Commission. Starting January 1, 2011 all of UGI’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.

There are a few changes to note relative to the program metrics provided in this annual report. This will also help with our internal tracking and benchmarking to ensure each program is managed effectively. Changes include:

- Breaking the substation “Devices Maintained” category into three separate programs: relay, breaker and transformer. This allows for more discrete tracking of the substation maintenance programs.
- Breaking the “Reclosers/Sectionalizers” category into separate three phase and single phase recloser inspection metrics for consistency with maintenance programs.