
Devin Ryan

dryan@postschell.com
717-612-6052 Direct
717-731-1985 Direct Fax
File #: 172359

April 1, 2024

VIA ELECTRONIC FILING

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor North
P.O. Box 3265
Harrisburg, PA 17105-3265

**Re: Annual Electric System Reliability Report
3 Years Ending December 31, 2023 (Public)
Docket No. M-2023-3039027**

Dear Secretary Chiavetta:

UGI Utilities, Inc. - Electric Division (“UGI”) hereby files its Annual System Reliability Report. The enclosed is the **Public** version of the report. UGI separately filed the **CONFIDENTIAL** version of the report via the Pennsylvania Public Utility Commission’s SharePoint site for confidential filings.

This report contains SAIDI, SAIFI, and CAIDI results on a 3-year rolling basis for the period ending December 31, 2023, along with the raw data from the same period. Also included are the Inspection and Maintenance Goals, Operations and Maintenance Expense, and Capital Budget data.

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 the Non-Confidential version of this filing, as indicated on the enclosed Certificate of Service.

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

Rosemary Chiavetta, Secretary
April 1, 2024
Page 2

Respectfully submitted,

A handwritten signature in blue ink, appearing to be "Devin Ryan", written over a horizontal line.

Devin Ryan

DR/dmc
Enclosures

cc: Certificate of Service

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of this filing has been served upon the following persons, in the manner indicated, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant).

VIA EMAIL ONLY

Allison Kaster, Esquire
Bureau of Investigation and Enforcement
Commonwealth Keystone Building
400 North Street, 2nd Floor West
P.O. Box 3265
Harrisburg, PA 17105
akaster@pa.gov

Patrick M. Cicero, Esquire
Consumer Advocate
Office of Consumer Advocate
555 Walnut Street
5th Floor, Forum Place
Harrisburg, PA 17101-1923
ra-oca@paoca.org
pcicero@paoca.org

Steven C. Gray, Esquire
Office of Small Business Advocate
555 Walnut Street
1st Floor, Forum Place
Harrisburg, PA 17101-1923
sgray@pa.gov

Kelly Monaghan, Director
Bureau of Audits
Pennsylvania Public Utility Commission
Commonwealth Keystone Bldg.
3rd Floor, F East
Harrisburg, PA 17101
kmonaghan@pa.gov

Dan Searforce
John Van Zant
Harry Bidelspach
Bureau of Technical Utility Services
Commonwealth Keystone Building
3rd Floor
400 North Street
Harrisburg, PA 17120
dsearfoorc@pa.gov
jvanzant@pa.gov
hbidelspac@pa.gov

Date: April 1, 2024



Devin T. Ryan



UGI Utilities, Inc. – Electric Division Annual System Reliability Report 2023

PUBLIC

April 1, 2024

§ 57.195(b)(1) – An overall current assessment of the state of the system reliability in the [Electric Distribution Company’s] (“EDC’s”) service territory including a discussion of the EDC’s current programs and procedures for providing reliable electric service.

For the twelve- (12-) month period ending December 2023, UGI Utilities, Inc. – Electric Division’s (“UGI” or “Company”) The System Average Interruption Duration Index- (“SAIDI”) was 61 minutes. This is below its twelve- (12-) month benchmark of 140 minutes and below the standard of 256 minutes. UGI’s System Average Interruption Frequency Index (“SAIFI”) for the twelve- (12-) month period was 0.54, which is below its twelve- (12-) month benchmark of 0.83 and below the twelve- (12-) month standard of 1.12. UGI’s Customer Average Interruption Duration Index (“CAIDI”) was 112 minutes for this same twelve- (12-) month period. This is also below its twelve- (12-) month benchmark of 169 minutes and below the twelve- (12-) month standard of 228 minutes.

UGI’s objective is to provide its customers with safe and 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’s 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 operations 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 at the operations center from 7:00 a.m. to 7:00 p.m. weekdays and on Saturdays 7:00 a.m. to 3:30 p.m. In addition, a second shift trouble-truck position provides extended coverage until 11:00 p.m. on weekdays. Call-out rosters are in place to mobilize staff when service/line personnel are not on duty or when additional resources are required.

UGI utilizes an outage management system (“**OMS**”) to assist with identification and response to electric system outages. The OMS enables UGI to collect and store information on system interruptions including cause, frequency, and location. The information accumulated in the OMS serves as the basis for determining UGI’s reliability metrics and is analyzed to identify equipment failure trends and outage clusters. This same information is also used to identify system deficiencies and allocate resources for maintenance and/or system upgrades.

UGI continues to expand its Distribution SCADA (“**DSCADA**”), which provides additional system performance visibility and awareness. The DSCADA acquires and historizes distribution data and controls distribution devices from the operations center. Since the inception of the automation program in 2013, UGI has installed an average of 13 reclosers a year. At the time of this report UGI had 100 distribution reclosers with remote access. These devices have added an increased level of protection to its distribution system and have been utilized to prevent sustained interruptions and restore customers through remote switching.

Maintenance

UGI has inspection and maintenance (“**I&M**”) programs in place to monitor all equipment on its system and address any problems identified through these programs. UGI found no significant system equipment issues while implementing the 2023-2024 Biennial I&M Plan, approved by the Pennsylvania Public Utility Commission (“**PUC**” or “**Commission**”) on December 21, 2021.

§ 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.

52 Pa. Code §57.192 defines a major event:

- (i) Either of the following:
 - (A) An interruption of electric service resulting from conditions beyond the control of the EDC 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 EDC 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) The term 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

UGI experienced two (2) major events during the period of January 1, 2023 to December 31, 2023.

The first major event outage occurred on January 11, 2023, at 08:02 a.m. when wildlife (i.e., a squirrel) contacted the grounded bus support structure and the energized bus connections to a 66kV/13kV transformer (“#2 TFMR”). The animal contact initiated the current differential protection scheme on the #2 TFMR and a sensitive sudden pressure relay on the #1 TFMR. As a result, both distribution transformers were interrupted at the Swoyersville substation impacting six (6) distribution circuit breakers and interrupting service to 10,605 customers. All customers affected were restored by January 11, 2023 at 10:15 a.m. To avoid or minimize the impact of similar events in the future, UGI has installed extensive animal guarding in Swoyersville Substation, as well as several other substations. Also, the sudden pressure relay involved was replaced.

UGI was granted an exemption for this major event by a Secretarial Letter on February 7, 2023, at Docket No. M-2023-3037981. As such, the interruption data related to this major event has been excluded from the calculation of the metrics in this report.

The second major event occurred September 7, 2023, at 3:39 p.m. until September 11, 2023, at 2:00 p.m. It was caused by a stationary weather system over UGI's territory and resulted in service interruptions affecting 6,867 customers. The stationary front brought severe weather including precipitation, winds, lightning, and flooding that impacted the service area, causing damage to conductors, poles, and other equipment that resulted in a total of 2,767,551 Customer-Minutes-Interrupted over the entire period. To avoid or minimize the impact of similar events in the future UGI continues work to storm harden the system through infrastructure upgrades, vegetation management, and the addition of further sectionalizing and protective devices. Further, UGI continues to evaluate and improve the Company's emergency response and restoration processes.

UGI was granted an exemption for this major event by Opinion and Order of the Commission entered on January 18, 2024 at Docket No. M-2023-3043170. As such, the interruption data related to this major event has been excluded from the calculation of the metrics in this report.

§ 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 (3) years are as follows:

2021 – 2023 Reliability Statistics

	SAIDI	SAIFI	CAIDI
3-Year Avg. Standard	170	0.91	186
UGI 3-Year Rolling Average	108	0.78	138

	SAIDI	SAIFI	CAIDI
12-Month Standard	256	1.12	228
12-Month Benchmark	140	0.83	169
2021 UGI Results	127	0.95	134
2022 UGI Results	135	0.87	156
2023 UGI Results	61	0.54	112

The three- (3-) year rolling average for SAIFI, SAIDI and CAIDI are performing within the three- (3-) year average standard established by the 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.

Reliability Metrics Data

	Raw Data				Reported Indices		
	SI	TCI	TCB	TMCI	SAIDI	SAIFI	CAIDI
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
2021 TOTAL	650	58,992	62,349 *	7,927,522	127	0.94	134
Jan-2022	43	2,103	62,475	354,547	6	0.03	169
Feb-2022	54	4,473	62,451	577,419	9	0.07	129
Mar-2022	57	7,785	62,416	980,913	16	0.12	126
Apr-2022	44	3,339	62,619	1,839,206	29	0.05	551
May-2022	27	2,947	62,498	293,984	5	0.05	100
Jun-2022	54	7,697	62,561	662,471	11	0.12	86
Jul-2022	132	8,629	62,588	1,995,307	32	0.14	231
Aug-2022	55	3,836	62,512	229,286	4	0.06	60
Sep-2022	63	6,443	62,558	628,767	10	0.1	98
Oct-2022	40	1,059	62,434	257,124	4	0.02	243
Nov-2022	46	3,505	62,463	330,500	5	0.06	94
Dec-2022	55	2,259	62,499	288,226	5	0.04	128
2022 TOTAL	670	54,075	62,506 *	8,437,750	136	0.86	156
Jan-2023	31	5,470	62,428	507,155	8	0.09	93
Feb-2023	32	2,951	62,650	632,356	10	0.05	214
Mar-2023	45	1,829	62,598	284,612	5	0.03	156
Apr-2023	58	3,510	62,423	275,427	4	0.06	78
May-2023	34	3,250	62,435	363,679	6	0.05	112
Jun-2023	65	4,540	62,388	454,974	7	0.07	100
Jul-2023	63	2,251	62,371	353,739	6	0.04	157
Aug-2023	57	1,918	62,405	216,667	3	0.03	113
Sep-2023	30	2,940	62,470	341,292	5	0.05	116
Oct-2023	41	1,469	62,383	152,287	2	0.02	104
Nov-2023	23	1,088	62,374	56,421	1	0.02	52
Dec-2023	33	2,656	62,422	142,372	2	0.04	54
2023 TOTAL	512	33,872	62,446 *	3,780,981	59	0.55	112
3-YEAR AVERAGE	611	48,980	62,433	6,715,418	107	0.78	138

* annual arithmetic average

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

§ 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 2023 through December 2023**

OUTAGE CAUSE	% OF TOTAL INCIDENTS	NUMBER OF INTERRUPTIONS	CUSTOMERS INTERRUPTED	MINUTES INTERRUPTED
Animal	22.07%	113	2,110	120,644
Company Agent	2.34%	12	1,015	15,641
Construction Error	0.39%	2	11	1,097
Customer Problem	0.00%	0	0	0
Dig In	0.39%	2	80	11,525
Equipment Failure	13.67%	70	6,972	700,553
Lightning	1.76%	9	223	57,531
Motor Vehicle	3.52%	18	1,882	182,996
Other	2.15%	11	701	48,831
Public	1.56%	8	1,216	352,139
Structure Fire	0.39%	2	7	1,133
Trees	45.31%	232	18,611	2,194,107
Unknown	6.25%	32	1,043	94,466
Weather Related	0.00%	0	0	0
Weather/Snow	0.00%	0	0	0
Weather/Ice	0.00%	0	0	0
Weather/Wind	0.20%	1	1	318
TOTAL	100.00%	512	33,872	3,780,981

Proposed Solutions to Identified Problems:

The largest contributor to the number of outage incidents, customers interrupted, and customer minutes interrupted on UGI’s system, and primary target areas for UGI’s continued improvement and investment, are tree-related outages. Further analysis shows that customers served in some of the more rural and isolated areas of the UGI system have been impacted most significantly by multiple and extended outages. To address ongoing vegetation efforts including work to reduce trim cycle lengths, UGI has maintained an elevated level of vegetation management work and associated spend which includes danger

tree removal programs across the system. UGI also continue to focus on reliability prioritized line relocations and construction of remote tie-lines where appropriate. For example, in 2023 the Company began a major system improvement project that will be completed in 2024 involving the construction of a remote three- (3-) phase tie line to increase reliability to one of the poorly performing areas on its system. Over the last several years UGI has maintained an increased vegetation management budget which has provided for additional vegetation resources and more specialized equipment. The goal of the increased vegetation management budget is to supplement and/or reduce regular trim cycle intervals as currently outlined in the UGI maintenance plan and remove more dangerous trees across the UGI system.

Equipment failures have been identified as a leading contributor to UGI's reliability indices. To reduce outages caused by equipment failures, UGI continues an accelerated focus on infrastructure replacement, such as underground cable and wood pole replacements. UGI has also accelerated programs to reduce outages caused by components susceptible to failure on the distribution system. For example, the Company has strategized an approach to replace porcelain insulators and cut-outs by prioritizing those that would result in the greatest impact to customers in the event of a failure. These programs will address significant long-term reliability factors. As an example, UGI saw a roughly 30% decrease in equipment failure outages in 2023 when compared to 2022 and 2021. Considering these programs and others documented in the UGI Long Term Infrastructure Improvement Plan (“**LTIP**”), UGI expects to improve overall system reliability and, to some extent, smooth out historical weather-related variability.

It is also noted that 2023 saw an elevated level of animal caused outages. UGI has recently increased animal protection in several existing substation yards and has also re-evaluated its substation animal protection standards to include enhanced mitigation measures. The current distribution animal protection standards are in line with industry best practices but continue to be evaluated for opportunities to increase guarding against wildlife.

UGI has identified opportunities to reduce the duration and extent of outages originating from all outage causes using technology-based solutions and additional circuit sectionalizing. The Company continues to increase sectionalizing capabilities and prepare the distribution network to accommodate a future fault location, isolation, and service restoration (“**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 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 UGI system.

§ 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.

Outside Plant Inspection and Maintenance Goals - FY2023

CONFIDENTIAL

§ 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.

Operation and Maintenance Expense - FY2023

CONFIDENTIAL

§ 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.

Capital Expenditures – Fiscal Year (“FY”) 2023

CONFIDENTIAL

§ 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).

Outside Plant Inspection and Maintenance Goals - FY2024

CONFIDENTIAL

§ 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.

Operation and Maintenance Expense - FY2024

CONFIDENTIAL

§ 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.

Capital Expenditures - FY2024

CONFIDENTIAL

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

There were not any significant changes during 2023 to the transmission and distribution inspection and maintenance programs outlined in previous reports submitted to the Commission. Starting January 1, 2011 all UGI distribution system equipment is being inspected and maintained consistent with UGI’s Bi-Annual Inspection and Maintenance Plan as filed with the Commission.