



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

April 30, 2025

**VIA E-Filing**

Mr. Matthew Homsher, Secretary  
Pennsylvania Public Utility Commission  
Commonwealth Keystone Building  
400 North Street  
Harrisburg, PA 17120

**M-2023-3039027**

RE: **Annual Electric System Reliability Report (CONFIDENTIAL)**  
**3 Years Ending December 31, 2024**  
**Docket No. M-2016-2522508**

Dear Secretary Homsher,

UGI Utilities, Inc. - Electric Division (“UGI”) hereby files its Annual System Reliability Report. This report contains SAIDI, SAIFI, and CAIDI results on a three- (3-) year rolling basis for the period ending December 31, 2024, 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.

UGI is serving a copy of this filing to each of the Office of Consumer Advocate, the Office of Small Business Advocate, the Bureau of Audits, and the Bureau of Technical Utility Services.

A PUBLIC version of the Report is being E-filed. A CONFIDENTIAL version of the Report is being submitted via the Commission’s SharePoint site.

Questions related to the attached report can be directed to Kyle Stair at (570) 407-2641 or [kstair@ugi.com](mailto:kstair@ugi.com).

Sincerely,

/s/ Lindsay A. Berkstresser  
Lindsay A. Berkstresser  
Counsel – Energy & Regulatory

Attachments

## CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing 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 Federal-Express

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

PUBLIC VERSION



M-2023-3039027

UGI Utilities, Inc. – Electric Division  
Annual System Reliability Report  
2024

PUBLIC VERSION

April 28, 2025

**§ 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 2024, UGI Utilities, Inc. – Electric Division’s (“**UGI**” or “**Company**”) System Average Interruption Duration Index- (“**SAIDI**”) was 107 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 0.78, 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 138 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.

For the 2024 reporting period, UGI achieved satisfactory results for all benchmark metrics. The Company experienced three (3) major events occurred over the rolling 12-month period which is highest in a one-year period over UGI history (as detailed in § 57.195(b)(2) below. Two (2) events were severe weather-related and one (1) was due to equipment failure.

With that said, 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’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 7:30 p.m. weekdays and on Saturdays 7:00 a.m. to 3:00 p.m. In addition, a second shift trouble-truck position provides extended coverage until 11:30 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 110 three-phase distribution reclosers with remote access which accounts for 78% of three-phase reclosers on the system. 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.

Also of note, in addition to the vegetation management program outlined in the Biennial I&M Plan, the Company continues operating at an elevated resource level to increase hazard tree removals and reduce the current circuit trimming cycle.

**§ 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 three (3) major events during the period of January 1, 2024, to December 31, 2024.

The first major event occurred Friday, June 21, 2024, at approximately 1700 hours when storms began moving across the UGI service territory in Luzerne County. These storms became severe around 2000 hours. High winds, off-right-of-way vegetation, and lightning caused damage to conductors, poles, and other equipment. Of note, contact from an off-right-of-way tree with UGI’s Mountain to Huntsville 69kV transmission line caused a transient line fault and a corresponding disturbance to the 13kV distribution system at the Company’s Huntsville Substation that resulted in an interruption to 5,836 customers. The disturbance to the distribution system was a significant but momentary depression of A phase voltage due to the transmission line fault followed by elevated feeder in-rush and magnetizing currents on A phase supply

due to heavy loading. This inrush created unbalance between phases that triggered an operation of a 13kV bus protection scheme, isolating the 13kV bus and interrupting supply to customers. In all, storm damage resulted in 34 outage cases, 6,373 customer outages, and 1,097,330 customer minutes interrupted.

UGI was granted an exemption for this major event by Secretarial Letter dated October 15, 2024, at Docket No. M-2024-3050504. As such, the interruption data related to this major event is excluded from the calculation of the metrics in this quarterly update. To minimize the impact of similar issue in the future, changes have been made to the Fast-Bus protections scheme used in UGI substations that will make protection slightly less sensitive but more secure to prevent operating for similar system anomalies.

The next major event occurred on July 15, 2024, at 06:55 PM through July 18, 2024, at 01:18 PM, resulting in service interruptions affecting 8,302 customers. The weather system brought record high heat conditions during the July Storm period and resulted in ongoing severe weather conditions throughout the three-day period. High winds, off-right-of-way vegetation, and other storm-related damage caused damage to conductors, poles, and other equipment that resulted in a total of 3,352,472 Customer-Minutes-Interrupted over the entire period. UGI was granted an exemption for this major event by Secretarial Letter dated October 7, 2024, at Docket No. M-2024-3051257. As such, the interruption data related to this major event is excluded from the calculation of the metrics in this quarterly update.

Regarding minimization of future storm related major events, UGI continues rebuilding the system through Long-Term Infrastructure Improvement Plan (“**LTIIP**”) upgrades with storm hardened construction. This also includes improvements that add three-phase tie lines and sectionalizing devices. Device installations include automatic and manual type devices such as reclosers, air-breaks, switches and fuses placed in locations that can reduce 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. Furthermore, UGI has initiated plans to integrate Fault Locating, Isolation, and Service Restoration (“**FLISR**”) technology into the grid. This will change current operating procedures to allow for faster restoration through automated switching following fault isolation.

The final major event occurred on July 28, 2024, at 04:16 PM through July 28, 2024 at 4:58 PM when a 66kV potential transformer (“PT”) on UGI’s Hunlock-Koonsville transmission line catastrophically failed causing a fault that resulted in the clearing of the Hunlock 66kV Bus. The system operator and field personnel performed emergency switching to isolate the damaged equipment and restore all customers. Prior to the PT’s failure, UGI had performed all scheduled inspection and maintenance related work on the substation equipment involved and no issues were identified that would predict failure. Post-failure inspection by the PT manufacturer found the event resulted from insulation heating beyond 185°C, a point where the paper and hydrocarbon chains will form and convert to H<sub>2</sub> and C, the carbon being conductive will accelerate a short circuit generating more heat and causing a buildup of H<sub>2</sub> gas (as well as other gases), ultimately leading to catastrophic failure. Before failure, the most recent thermal inspection on the PT had been conducted on June 21, 2024, and no excessive heat issues were identified. Visual inspection that occurred on July 26, 2024, also revealed no signs of imminent failure. This event resulted in the interruption of service to 9,384 customers and 213,836 total customer minutes interrupted. UGI was granted an exemption for this major event by Secretarial Letter dated August 28, 2024, at Docket No. M-2024-3050881. As such, the interruption data related to this major event is excluded from the calculation of the metrics in this quarterly update.

**§ 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:

**2022 – 2024 Reliability Statistics**

	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
<b>3-Year Avg. Standard</b>	<b>170</b>	<b>0.91</b>	<b>186</b>
UGI 3-Year Rolling Average	101	0.73	135

	<b>SAIDI</b>	<b>SAIFI</b>	<b>CAIDI</b>
<b>12-Month Standard</b>	<b>256</b>	<b>1.12</b>	<b>228</b>
<b>12-Month Benchmark</b>	<b>140</b>	<b>0.83</b>	<b>169</b>
2022 UGI Results	135	0.87	156
2023 UGI Results	61	0.54	112
2024 UGI Results	107	0.78	138

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-22	43	2,103	62,475	354,547	6	0.03	169
Feb-22	54	4,473	62,451	577,419	9	0.07	129
Mar-22	57	7,785	62,416	980,913	16	0.12	126
Apr-22	44	3,339	62,619	1,839,206	29	0.05	551
May-22	27	2,947	62,498	293,984	5	0.05	100
Jun-22	54	7,697	62,561	662,471	11	0.12	86
Jul-22	132	8,629	62,588	1,995,307	32	0.14	231
Aug-22	55	3,836	62,512	229,286	4	0.06	60
Sep-22	63	6,443	62,558	628,767	10	0.10	98
Oct-22	40	1,059	62,434	257,124	4	0.02	243
Nov-22	46	3,505	62,463	330,500	5	0.06	94
Dec-22	55	2,259	62,499	288,226	5	0.04	128
<b>2022 TOTAL</b>	<b>670</b>	<b>54,075</b>	<b>62,506*</b>	<b>8,437,750</b>	<b>135</b>	<b>0.87</b>	<b>156</b>
Jan-23	31	5,470	62,428	507,155	8	0.09	93
Feb-23	32	2,951	62,650	632,356	10	0.05	214
Mar-23	45	1,829	62,598	284,612	5	0.03	156
Apr-23	58	3,510	62,423	275,427	4	0.06	78
May-23	34	3,250	62,435	363,679	6	0.05	112
Jun-23	65	4,540	62,388	454,974	7	0.07	100
Jul-23	63	2,251	62,371	353,739	6	0.04	157
Aug-23	57	1,918	62,405	216,667	3	0.03	113
Sep-23	30	2,940	62,470	341,292	5	0.05	116
Oct-23	41	1,469	62,383	152,287	2	0.02	104
Nov-23	23	1,088	62,374	56,421	1	0.02	52
Dec-23	33	2,656	62,422	142,372	2	0.04	54
<b>2023 TOTAL</b>	<b>512</b>	<b>33,872</b>	<b>62,446*</b>	<b>3,780,981</b>	<b>61</b>	<b>0.54</b>	<b>112</b>
Jan-24	84	3,184	62,232	457,166	7	0.05	144
Feb-24	32	941	62,681	108,675	2	0.02	115
Mar-24	46	3,673	62,723	424,850	7	0.06	116
Apr-24	39	3,051	62,627	291,633	5	0.05	96
May-24	37	4,422	62,589	301,464	5	0.07	68
Jun-24	143	9,505	62,626	2,359,094	38	0.15	248
Jul-24	37	478	62,722	65,792	1	0.01	138
Aug-24	53	4,460	62,659	584,352	9	0.07	131
Sep-24	32	3,172	62,609	435,007	7	0.05	137
Oct-24	29	730	62,659	90,079	1	0.01	123
Nov-24	90	6,851	62,740	960,514	15	0.11	140
Dec-24	37	8,173	62,743	634,933	10	0.13	78
<b>2024 TOTAL</b>	<b>659</b>	<b>48,640</b>	<b>62,634*</b>	<b>6,713,559</b>	<b>107</b>	<b>0.78</b>	<b>138</b>
<b>3-YEAR AVERAGE</b>	<b>614</b>	<b>45,529</b>	<b>62,529</b>	<b>6,310,763</b>	<b>101</b>	<b>0.73</b>	<b>135</b>

\* 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 2024 through December 2024**

OUTAGE CAUSE	% OF TOTAL INCIDENTS	NUMBER OF INTERRUPTIONS	CUSTOMERS INTERRUPTED	MINUTES INTERRUPTED
Animal	12.75%	84	601	39,704
Company Agent	1.21%	8	8	898
Construction Error	1.21%	8	360	50,880
Customer Problem	0.00%	0	0	0
Dig In	0.46%	3	628	48,603
Equipment Failure	13.66%	90	6,005	408,681
Lightning	0.46%	3	94	7,477
Motor Vehicle	3.79%	25	6,284	519,713
Other	1.21%	8	201	38,013
Public	0.76%	5	115	18,755
Structure Fire	0.76%	5	1,411	199,613
Trees	57.21%	377	31,957	5,258,914
Unknown	5.46%	36	963	110,500
Weather Related	1.06%	7	13	11,808
<b>TOTAL</b>	<b>100.00%</b>	<b>659</b>	<b>48,640</b>	<b>6,713,559</b>

**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. As seen in the table above, these account for 57% of incidents, 66% of customer interruptions (“CI”), and 78% of customer minutes interrupted (“CMI”). Weather has also been identified as a significant driver for vegetation related outages. Of total vegetation related outages in 2024, weather was identified as an initiating factor for 67% of incidents, 61% of CI, and 78% of CMI. 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 continues to focus on reliability prioritized line relocations and construction of remote tie-lines where appropriate. For example, a major system improvement project that was 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, is expected to provide long term improvement through avoided CI and CMI. 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 Biennial I&M plan and remove more dangerous trees across the UGI system.

Equipment failures have been identified as a leading contributor to UGI's reliability indices. The largest contributors to equipment failures in 2024 were distribution transformers, which account for 32% of total failures, and cut-outs, which account for 33% of total failures. Regarding distribution transformers, UGI continues inspecting units according to the UGI Biennial I&M plan and replacing them as deterioration or other issues are found. The Company also regularly analyzes loading on distribution transformers to identify and correct overloaded conditions before failures occur. To mitigate failures of distribution cut-out type components, UGI continues accelerated replacement of porcelain devices which has been found to be a common factor in most cut-out equipment failures. The Company has strategized an approach to replace porcelain devices by prioritizing those that would result in the greatest impact to customers in the event of a failure. Addressing other equipment failures, UGI continues an accelerated replacement of other aging infrastructure on the distribution system through the LTIIP, such as underground cable and wood poles replacements. These programs address significant long-term reliability factors, are expected to improve overall system reliability, and will smooth out historical weather-related variability to some extent.

Motor vehicle incidents made a notable impact and accounted for more CI and CMI than equipment failures. To reduce impact of motor vehicle issues, the Company emphasizes caution in the placement of new and replacement poles and continues to

increase sectionalizing on distribution circuits to allow faster restoration of undamaged circuit.

Animal caused outages remain a large contributor to outage instances although these instances account for a small percentage of CI and CMI. Animal caused outages declined from the previously reported values of 103 instances in 2022 and 113 instances in 2023. The number of instances in 2024 now also falls in-line with the 5-year average from 2019-2023 which is 84.2. To mitigate these types of outages, UGI has increased animal protection in substation yards and has also re-evaluated its substation animal protection standards to include enhanced mitigation measures. The distribution animal protection standards have also been reviewed and are in line with industry standards. New and additional animal protection equipment has been reviewed and is being implemented.

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 FLISR system that can self-heal by isolating faulted line sections and restoring the undamaged portions, leading to fewer customer interruptions. In the beginning of FY2024, the Company acquired a FLISR controller to begin integrating in three-phase reclosers and run a small-scale pilot to test the technology. 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 continues 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.**