



Electric Service
Reliability in
Pennsylvania

2013



ELECTRIC SERVICE RELIABILITY IN PENNSYLVANIA 2013

August 2014

Published by:

Pennsylvania Public Utility Commission

PO Box 3265

Harrisburg, PA 17105-3265

www.puc.pa.gov

Technical Utility Services

Paul T. Diskin, Director

Prepared by:

David M. Washko, Reliability Engineer

Table of Contents

Executive Summary

Section 1 – Introduction

<i>Purpose</i>	1
<i>Background</i>	1

Section 2 – Reliability Performance Measures

<i>Reliability Performance Metrics</i>	2
<i>Major Events</i>	2
<i>Benchmarks and Standards</i>	3
<i>Inspection and Maintenance</i>	4

Section 3 – 2012 Outage Response Review

<i>Overview</i>	5
<i>Review of Multiple Long-Duration Outage Events</i>	5

Section 4 – Statistical Utility Performance Data

<i>Statewide Summary</i>	6
<i>Utility Specific Performance Data</i>	8
<i>Citizens’ Electric Company</i>	9
<i>Duquesne Light Company</i>	12
<i>Metropolitan Edison Company</i>	15
<i>PECO Energy Company</i>	18
<i>Pennsylvania Electric Company</i>	21
<i>Pennsylvania Power Company</i>	24
<i>Pike County Light & Power Company</i>	27
<i>PPL Electric Utilities Corporation</i>	30
<i>UGI Utilities Inc.</i>	33
<i>Wellsboro Electric Company</i>	36
<i>West Penn Power Company</i>	39

Section 5 – Conclusion

43

Appendix A – Electric Reliability Metrics

44

Appendix B – Modifications to Inspection and Maintenance Intervals

46

Executive Summary

The Electricity Generation Customer Choice and Competition Act mandated the Pennsylvania Public Utility Commission (PUC or Commission) to ensure levels of reliability that existed prior to the restructuring of the electric utility industry continue in the new competitive markets.¹ In response to this mandate, the Commission adopted reporting requirements designed to ensure the continued safety, adequacy and reliability of the generation, transmission and distribution of electricity in the Commonwealth.² The PUC also established reliability benchmarks and standards to measure the performance of each electric distribution company (EDC).³

The benchmarks and standards established by the Commission are based on four reliability performance metrics adopted by the Institute of Electrical and Electronic Engineers Inc. (IEEE). Those metrics are:

- SAIFI: System average interruption frequency index or frequency of outages.
- CAIDI: Customer average interruption duration index or duration of outages.
- SAIDI: System average interruption duration index or frequency of sustained outages.
- MAIFI: Momentary average interruption frequency index or occurrences of momentary customer interruptions.

Given the uncertainty of weather and other events that affect reliability performance, the Commission has stated EDCs shall set goals to achieve benchmark performance in order to prepare for times when unforeseen circumstances push the metrics above the benchmark.⁴ In recognition of these unforeseen circumstances, the PUC set the performance standard as the minimum level of EDC reliability performance. Reliability performance standards not in compliance may require an EDC to undergo additional scrutiny and may include a Corrective Action Plan or a credible analysis that would justify no corrective action was needed.

As mandated, EDCs report metrics⁵ using both a rolling 12-month average and a rolling three-year average. Table 1, below, provides a brief summary of the EDCs' performance for the rolling 12-month period ending December 31, 2013. More detailed analysis can be found in Section 4, *Statistical Utility Performance Data*.

In addition to monitoring EDCs' reliability performance, the Commission established inspection and maintenance standards for electric transmission and distribution systems.⁶ Biennial plans for the periodic inspection, maintenance, repair and replacement of facilities, designed to meet performance benchmarks and standards, were approved by the PUC's Bureau of Technical Utility Services (TUS).

¹ Act of Dec. 3, 1996, P.L. 802, No. 138, 66 Pa.C.S. §§ 2801 et.seq.

² Docket No. L-00970120; 52 Pa. Code §§ 57.191-57.197.

³ Docket No. M-00991220.

⁴ Id. at 25.

⁵ For an explanation of performance standards, see Section 2, page 4.

⁶ Docket No. L-00040167.

Table 1

2013 EDC Performance Scorecard											
Metrics achieved (GREEN)			Benchmark Metrics not achieved (YELLOW)				Standard Metrics not achieved (RED)				
EDC		¹ Metrics	Rolling 12-Month								
			Benchmark Score				Standard Score				
		² BM	Q1	Q2	Q3	Q4	³ STD	Q1	Q2	Q3	Q4
Large EDCs: STD = 20% above Benchmark											
Duquesne Light	CAIDI	108	116	120	122	121	130	116	120	122	121
	SAIDI	126	72	83	75	75	182	72	83	75	75
	SAIFI	1.17	0.62	0.69	0.61	0.62	1.40	0.62	0.69	0.61	0.62
Met-Ed (FE)	CAIDI	117	115	112	102	105	140	115	112	102	105
	SAIDI	135	157	150	111	115	194	157	150	111	115
	SAIFI	1.15	1.37	1.33	1.09	1.09	1.38	1.37	1.33	1.09	1.09
PECO	CAIDI	112	98	96	93	91	134	98	96	93	91
	SAIDI	138	75	76	62	63	198	75	76	62	63
	SAIFI	1.23	0.77	0.79	0.67	0.69	1.48	0.77	0.79	0.67	0.69
Penelec (FE)	CAIDI	117	137	121	115	116.9	141	137	121	115	116.9
	SAIDI	148	194	178	157	174	213	194	178	157	174
	SAIFI	1.26	1.42	1.47	1.36	1.48	1.52	1.42	1.47	1.36	1.48
Penn Power (FE)	CAIDI	101	113	174	143	140	121	113	174	143	140
	SAIDI	113	125	176	164	188	162	125	176	164	188
	SAIFI	1.12	1.10	1.01	1.15	1.35	1.34	1.10	1.01	1.15	1.35
PPL	CAIDI	145	152	151	115	108	174	152	151	115	108
	SAIDI	142	168	164	101	89	205	168	164	101	89
	SAIFI	0.98	1.11	1.09	0.87	0.82	1.18	1.11	1.09	0.87	0.82
West Penn (FE)	CAIDI	170	229	181	195	183	204	229	181	195	183
	SAIDI	179	249	194	217	222	257	249	194	217	222
	SAIFI	1.05	1.09	1.07	1.11	1.21	1.26	1.09	1.07	1.11	1.21
Small EDCs: STD = 35% above Benchmark											
Citizens'	CAIDI	105	112	132	80	81	141	112	132	80	81
	SAIDI	21	9	34	34	37	38	9	34	34	37
	SAIFI	0.2	0.08	0.26	0.42	0.46	0.27	0.08	0.26	0.42	0.46
Pike County	CAIDI	174	184	169	214	209	235	184	169	214	209
	SAIDI	106	109	122	244	253	194	109	122	244	253
	SAIFI	0.61	0.59	0.72	1.14	1.21	0.82	0.59	0.72	1.14	1.21
UGI	CAIDI	169	107	122	111	110	228	107	122	111	110
	SAIDI	140	59	66	87	85	256	59	66	87	85
	SAIFI	0.83	0.55	0.54	0.78	0.77	1.12	0.55	0.54	0.78	0.77
Wellsboro	CAIDI	124	73	77	65.63	70.04	167	73	77	65.63	70.04
	SAIDI	153	64	45	34.4	38.9	278	64	45	34.4	38.9
	SAIFI	1.23	0.87	0.58	0.52	0.56	1.66	0.87	0.58	0.52	0.56
¹ CAIDI	(Customer Average Interruption Duration Index). Measures average power restoration time (minutes) for every customer who lost power during this year.										
SAIDI	(System Average Interruption Duration Index). Measures average outage duration time (minutes) for every customer served during this year.										
SAIFI	(System Average Interruption Frequency Index). Measures average frequency of power interruptions for every customer served during this year.										
² BM	(Benchmark) - An EDC's attained performance baseline score prior to electric restructuring. Calculated by averaging the EDC's annual system-wide metrics over the five-year period directly prior to electric restructuring (1994 to 1998).										
³ STD	(Standard) - An EDC's upper limit performance value that must not be exceeded. Calculated by adding (20% for larger utilities or 35% for smaller utilities) of EDC's benchmark score to the EDC's baseline benchmark score.										

Section 1 – Introduction

Purpose

The report discusses the reliability performance of EDCs operating under the Commission’s jurisdiction, specifically focusing on the reliability of the electric distribution system.⁷

The data presented in this report comes from the quarterly and annual reliability reports submitted by EDCs pursuant to the Commission’s regulations. This data focuses on customer power restoration duration (CAIDI), average customer outage duration (SAIDI), and frequency of outages (SAIFI).⁸ From these measures, this report provides an overview of the Commonwealth’s electric distribution reliability as well as individual analyses of the EDCs operating within Pennsylvania.

Background

The Electricity Generation Customer Choice and Competition Act mandates that the Commission ensure the level of reliability that existed prior to the restructuring of the electric utility industry is maintained in the newly restructured markets. In response to this mandate, the Commission adopted reporting requirements designed to monitor continuing safety, adequacy, and reliability of generation, transmission, and distribution of electricity in the Commonwealth.

The Commission also established reliability benchmarks and standards to measure the performance of each EDC. Given the uncertainty of weather and other events that can affect reliability performance, the Commission has stated that EDCs should set goals to achieve benchmark performance in order to prepare for times when unforeseen circumstances push the metrics above the benchmark. As mandated, enforcement of the three-year rolling average standard began with the utilities’ filing of their 2006 annual reports. The three-year performance standard only allows a deviation of 10 percent from the reliability index benchmark, as compared with the 20 percent or 35 percent deviations allowed by the 12-month performance standard.

The Commission set the performance standard as the minimum level of EDC reliability performance. Reliability Performance Standards that are not in compliance require EDCs to provide an evaluation to the Commission that includes a Corrective Action Plan or a credible basis that would justify no corrective action is required. Performance Standards that are not achieved during an assessment period will be followed up by the Commission to ensure there is not a systemic breakdown.

⁷ The high-voltage transmission system, nominally > 100 kV, is regulated by the Federal Energy Regulatory Commission (FERC). The electric distribution system is under the purview of the PUC.

⁸ For more information on CAIDI and SAIFI, see Section 2.

Section 2 –Reliability Performance Measures

Reliability Performance Metrics

The Commission’s benchmarks and standards are based on four reliability performance metrics that have been adopted by the Institute of Electrical and Electronic Engineers Inc. (IEEE). The EDCs report metrics on a system-wide basis, rather than on a regional operating area basis. EDCs report the four reliability metrics on both a rolling 12-month average and a three-year calendar year average:

1. **CAIDI** (Customer Average Interruption Duration Index): Measures average power restoration time (by minutes) for every customer who lost power during reporting period.
2. **SAIDI** (System Average Interruption Duration Index): Measures average outage duration time (by minutes) for every customer served during reporting period.
3. **SAIFI** (System Average Interruption Frequency Index): Measures average frequency of power interruptions for every customer served during reporting period.
4. **MAIFI** (Momentary Average Interruption Frequency Index): Measures average frequency of momentary (less than 5 minutes) interruptions for every customer served during reporting period.

Note: EDCs are required to report MAIFI data provided the equipment capability is available to obtain relevant data.

Additional information and data is reported, including:

- Average number of customers served;
- Number of sustained customer interruption minutes;
- Number of customers affected by service interruptions;
- Breakdown and analysis of outage causes such as equipment failure, animal contact and contact with trees;⁹ and
- Reliability performance on a 5 percent of worst performing circuits and a corrective action plan to increase the reliability of these circuits.

Major Events

In order to analyze and set measurable goals for electric service reliability performance, outage data is separated into either normal or abnormal periods. Only outages during normal event periods are used in calculating the reliability metrics. The term “major event” is used to identify an abnormal event, such as a major storm, and is defined as either of the following:¹⁰

- An interruption of electric service resulting from conditions beyond the control of the EDC which affects at least 10 percent of the customers in the EDC’s service territory during the course of the event for a duration of five minutes or greater; or
- An unscheduled interruption of electric service resulting from an action taken by an EDC to maintain the adequacy and security of the electrical system.

⁹ This information is collected and trended by EDCs to reduce customer outages and improve system reliability.

¹⁰ See 52 Pa. Code § 57.192

Outage data relating to major events are to be excluded from the calculation of reliability metrics. Prior to excluding major event outage data, an EDC is required to formally request to exclude those service interruptions for reporting purposes. The request must be accompanied by data that demonstrates why the service interruption qualifies as a major event exclusion.

Benchmarks and Standards

The performance **benchmark** represents the statistical average of the EDC's annual, system-wide, reliability performance index values for the five years from 1994-98. The benchmark serves as a reference point to compare and gauge an EDC's sustainable reliability performance, which should continually improve.

The performance **standard** is a numerical value representing an EDC's performance control limit established for each reliability index. Performance standards are based on individual EDC historical performance benchmarks. Both long-term (rolling three-year) and short-term (rolling 12-month) performance standards have been established for each EDC.

The rolling **12-month standard** is 120 percent of the benchmark for the large EDCs and 135 percent for the small EDCs.¹¹ A greater degree of short-term latitude recognizes that small EDCs have fewer customers and fewer circuits than large EDCs, potentially allowing a single event to have a more significant impact on the reliability performance of the small EDCs' distribution systems.

The rolling **three-year standard** is 110 percent of the benchmark for all EDCs. This performance standard was set at 10 percent above the historical benchmark to ensure that the standard is no higher than the worst annual performance experienced during the years prior to the restructuring of the electric industry. The three-year average performance is measured against the standard at the end of each calendar year. The rolling three-year standard analysis contained in this report uses 2011, 2012 and 2013 calendar year data.

It is noted that a lower number for any index indicates better reliability performance; i.e., a lower frequency of outages or shorter outage duration. A higher number indicates worse performance.

Example: An EDC's CAIDI performance benchmark is 100 minutes and its rolling 12-month CAIDI standard is 120.

CAIDI of 110 evaluation: Performance is considered acceptable since CAIDI of 110 < rolling 12-month CAIDI standard of 120. However, the EDC should continue improving until historical benchmark is achieved.

CAIDI of 90 evaluation: Performance is considered excellent since CAIDI of 90 < rolling 12-month CAIDI standard of 120 and < benchmark of 100.

CAIDI of 140 evaluation: Performance is considered unacceptable since CAIDI of 140 > rolling 12-month CAIDI standard of 120 and > historical benchmark of 100. This would typically require EDC to submit a corrective action plan and may result in a Regulatory Non-Compliance Order being issued.

¹¹ Large EDCs currently include: Duquesne Light, Met-Ed, Penelec, Penn Power, PECO, PPL and West Penn. Small EDCs include: UGI, Citizens', Pike County and Wellsboro.

If any EDC's reliability performance does not meet Commission standards, the Commission may require a report discussing the reasons for not meeting the standard and the corrective measures the company is taking to improve performance.¹² In addition, Commission staff may initiate an investigation to determine whether an EDC is providing reliable service.¹³

Benchmarks and standards for EDC reliability performance and average reliability Metrics for 2013 are listed in Appendix A.

Inspection and Maintenance

EDCs are required to have a plan for periodic inspection and maintenance of poles, overhead conductors and cables, wires, transformers, switching devices, protective devices, regulators, capacitors, substations, and other facilities critical to maintaining an acceptable level of reliability.¹⁴ The regulation also sets forth minimum inspection and maintenance intervals for vegetation management, poles, overhead lines and substations.

Listed below are the most recently filed biennial inspection and maintenance (I&M) plans for the periodic inspection, maintenance, repair and replacement of facilities:

- Filed in October 2012 (effective January 2014 through December 2015) for Duquesne Light, PECO, PPL, Citizens', Pike County and Wellsboro.
- Filed in October 2013 (effective January 2015 through December 2016) for FirstEnergy (Met-Ed, Penelec, Penn Power and West Penn Power) and UGI.

The plans are subject to acceptance or rejection by the Commission. Most EDCs proposed modifications to the standards for some programs or parts of programs. Appendix B describes the exemptions that were requested by the EDCs and provides a summary of the explained justification for said exemptions.¹⁵

Table 2 Inspection and Maintenance Intervals

Program	Interval
Vegetation Management	4-6 years
Pole Inspections	10-12 years
Overhead Distribution Line Inspections	1-2 years
Overhead Transformer Inspections	1-2 years
Above-Ground Pad-Mounted Transformer Inspections	5 years
Below-Ground Transformer Inspections	8 years
Recloser Inspections	8 years
Substation Inspections	5 weeks

¹² See 52 Pa. Code § 57.195(g).

¹³ See 52 Pa. Code § 57.197(a).

¹⁴ See 52 Pa. Code § 57.198.

¹⁵ See 52 Pa. Code § 57.198(c).

Section 3 – 2013 Outage Response Review

Overview

With the exception of Citizens', Met-Ed, Pike County, and UGI; all Pennsylvania EDCs had at least one PUC reportable outage event in 2013.¹⁶ None of the outage events were of a long duration. Outage events included high winds and snowstorms in January, as well as severe thunderstorms in May, June, and July.

A major 105 MW load shed event occurred in the FirstEnergy (Penelec) Erie South substation area that caused disruptions to over 35,000 customers for over six hours the evening of September 10, 2013. The event was caused by high loads due to unseasonably hot temperatures and several transmission and generation contingencies on the bulk electric system in Pennsylvania and Ohio.¹⁷ The Federal Energy Regulatory Commission (FERC) and North American Reliability Corporation (NERC) are the regulatory and standards organizations, respectively, for the bulk electric system. FERC and NERC would determine if a further investigation of this transmission related event is required.

PJM Interconnection, LLC (PJM) the regional transmission operator, performed a technical analysis and lessons learned on this load shed event. PJM developed an action plan to upgrade internal controls and energy market rules to help further minimize the risk and impact of load shed events and increase electrical reliability¹⁸. As part of the action plan, PJM met with the PUC and reviewed and revised its emergency communications protocols.

Review of Long-Duration Outage Event(s)

No long-duration outages occurred in 2013.

¹⁶ Service outages reports are required under 52 Pa. Code §67.1. The reporting requirements are an initial phone call to the Commission when it is believed the threshold will be reached, followed by a written report 10 days after the last customer is restored. The reporting threshold is service outages to 5 percent of total customers or 2,500 customers, whichever is less, for six or more consecutive hours.

¹⁷ The PJM report may be downloaded here: <http://www.pjm.com/~media/documents/reports/20131223-technical-analysis-of-operational-events-and-market-impacts-during-the-september-2013-heat-wave.ashx>.

¹⁸ The most current status of the PJM action items can be found here: <http://www.pjm.com/~media/committees-groups/committees/oc/20140506/20140506-item-06-hot-weather-recommendations.ashx>.

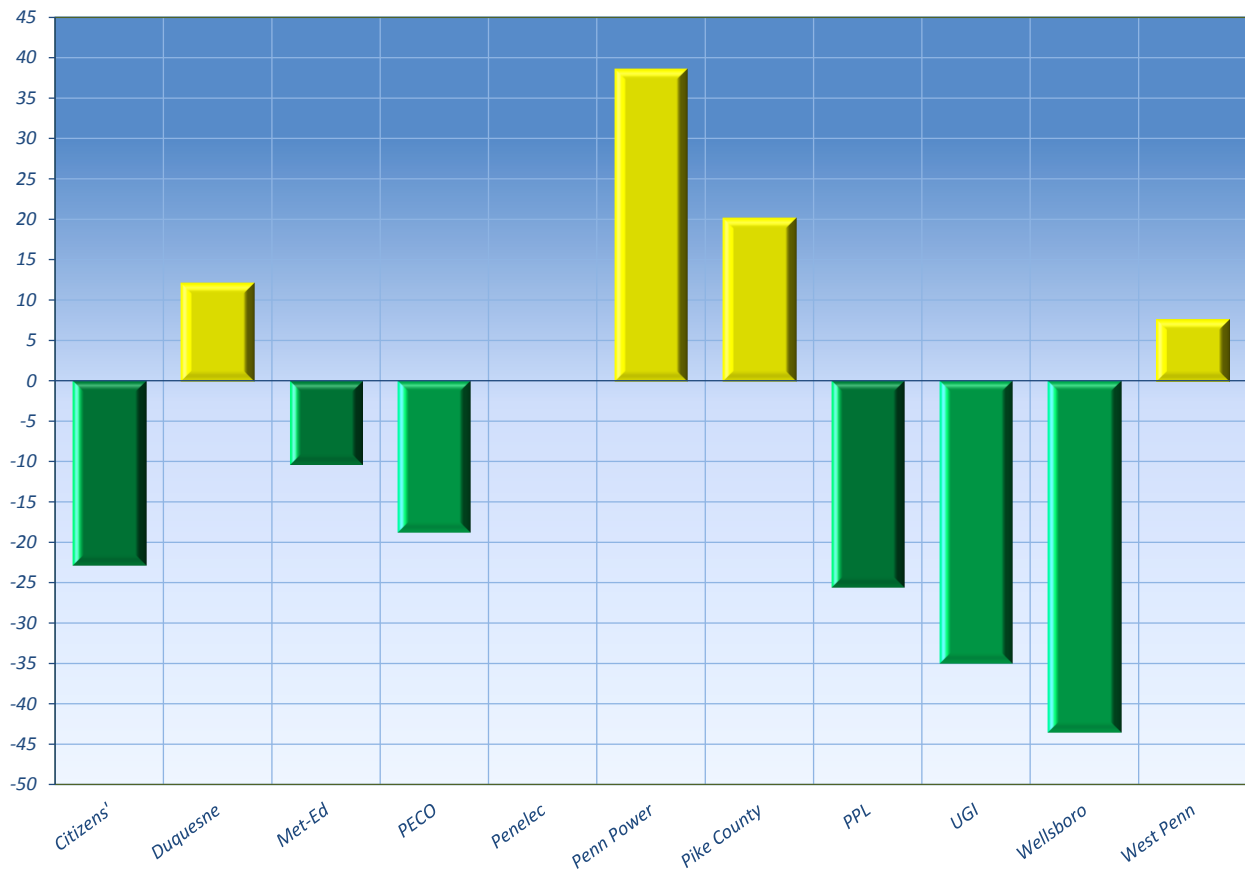
Section 4 –Statistical Utility Performance Data

Statewide Summary

The 2013 reliability data for the 12-month standard performance compliance submitted by the 11 EDCs indicates:

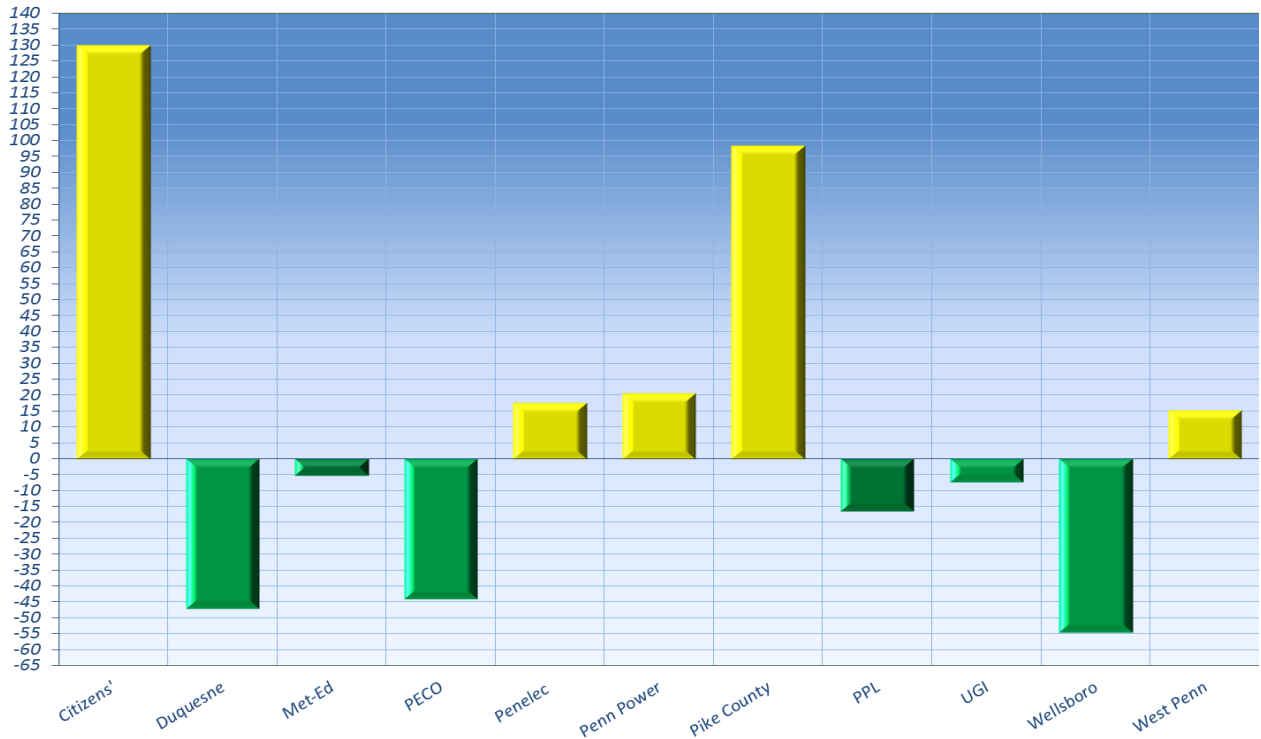
- Seven EDCs achieved the CAIDI benchmark, while four EDCs failed to achieve the CAIDI benchmark (Figure 1).
- Six EDCs achieved the SAIDI benchmark, while five EDCs failed to achieve the SAIDI benchmark (Figure 2).
- Six EDCs achieved the SAIFI benchmark, while five EDCs failed to achieve the SAIFI benchmark (Figure 3).

Figure 1 – 2013 CAIDI Comparison (percent above or below benchmark)



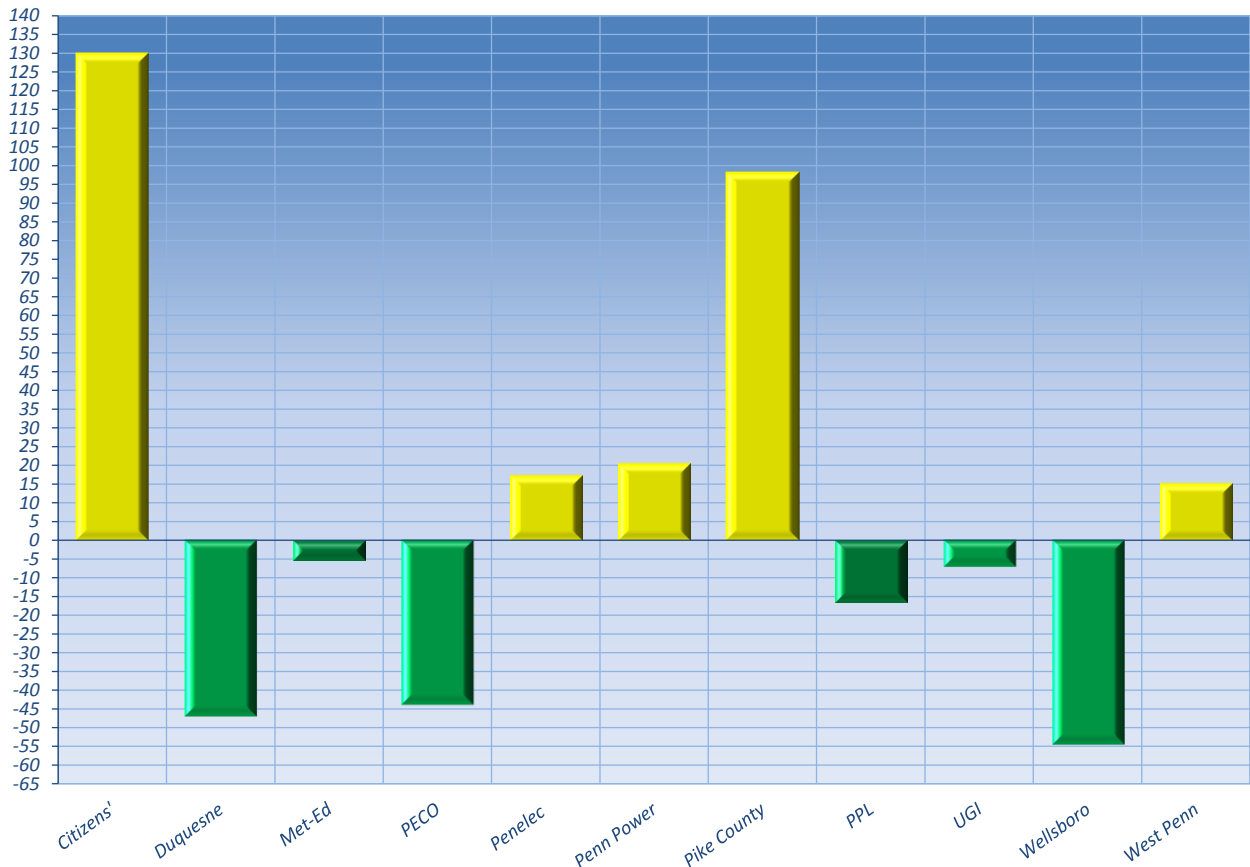
Note: The green bar shows the percentage successfully achieved below CAIDI benchmark performance metric. The yellow bar shows the percentage above the CAIDI benchmark that was not achieved.

FIGURE 2 – 2013 SAIDI Comparison (percent above or below benchmark)



Note: The green bar shows the percentage successfully achieved below SAIDI benchmark performance metric. The yellow bar shows the percentage above the SAIFI benchmark that was not achieved.

FIGURE 3 – 2013 SAIFI Comparison (percent above or below benchmark)



Note: The green bar shows the percentage successfully achieved below SAIFI benchmark performance metric. The yellow bar shows the percentage above the SAIFI benchmark that was not achieved.

Appendix A provides the actual 2013 12-month average and three-year average reliability performance metrics for individual EDCs.

Three EDCs (Penelec, Penn Power, and Pike County) failed to meet the rolling three-year CAIDI performance standard by 70 minutes total in 2013, compared to five EDCs (Citizens', Penelec, Penn Power, Pike County and West Penn) by 77 minutes total in 2012.

Four EDCs (Citizens', Penelec, Pike County and West Penn) failed to meet the rolling three-year SAIFI performance standard in 2013, compared to one EDC (Met-Ed) in 2012.

Five EDCs (Citizens', Penelec, Penn Power, Pike County and West Penn) failed to meet the rolling three-year SAIDI performance standard by 116 minutes total in 2013, compared to two EDCs (Penelec, and Pike County) by 33 minutes total in 2012.

The rolling three-year results for the 11 EDCs not achieving compliance are:

	Number of EDCs not achieving compliance	EDCs not achieving compliance
CAIDI Standard	3	Penelec, Penn Power, Pike County
CAIDI Benchmark	6	Citizens', Duquesne, Met-Ed, Penelec, Penn Power, Pike County, West Penn
SAIDI Standard	5	Citizens', Penelec, Penn Power, Pike County, Wellsboro
SAIDI Benchmark	6	Citizens', Met-Ed, Penelec, Penn Power, Pike County, Wellsboro
SAIFI Standard	4	Citizens', Penelec, Pike County, West Penn
SAIFI Benchmark	7	Citizens', Met-Ed, Penelec, Penn Power, Pike County, PPL, West Penn

In 2013, EDCs filed 13 requests for exclusion of major events. 12 requests were approved and one was denied. A major event exclusion request may be denied for a variety of reasons such as the event not meeting the 10 percent threshold of customers interrupted or the failure of equipment without supporting maintenance records. A brief description of each major event is provided in the individual EDC sections.

Utility-Specific Performance Data

The Commission compares reliability metrics on a quarterly basis, using data obtained for the preceding 12 months. This periodic assessment determines the current status of electric service reliability on an ongoing basis and is instrumental in identifying negative trends. The three-year average performance is measured at the end of each calendar year, using the average of the past three end-year metrics, as indicated in Appendix A. The following sections provide a detailed description of the 11 EDCs' individual reliability performance on a rolling 12-month and three-year average basis.

Citizens' Electric Company

Citizens' has a relatively small operating service area with an electric system consisting of one distribution substation and nine distribution feeder lines. In 2013, Citizens' experienced 3,153 customer interruptions for a duration of 256,087 minutes, which was a significant increase from 2012 when customers experienced 596 interruptions for a duration of 77,030 minutes.

The 2013 reliability metrics calculation excludes the following outage data relating to three major events, which were approved by the Commission:¹⁹

- May 19, 2013 – Recloser fault, affecting 1,304 customers.
- June 18, 2013 – Porcelain pole top insulator failed, affecting 1,222 customers.
- July 7, 2013 – Thunderstorm and high winds causing tree to fall on power lines, affecting 793 customers.

CAIDI/SAIDI/SAIFI Evaluation

CAIDI

Rolling 12-month: Decreased from 129 minutes in 2012 to 81 minutes in 2013; achieved benchmark by 23 percent.

Three-year average: Decreased from 118 minutes in 2012 to 112 minutes in 2013; achieved standard by 3 percent.

SAIDI

Rolling 12-month: Increased from 11 minutes in 2012 to 37 minutes in 2013; failed to achieve benchmark by 76 percent.

Three-year average: Increased from 24 minutes in 2012 to 31 minutes in 2013; failed to achieve standard by 23 percent.

SAIFI

Rolling 12-month: Increased from 0.09 outages in 2012 to 0.46 outages in 2013; failed to achieve benchmark by 130 percent.

Three-year average: Increased from 0.21 outages in 2012 to 0.30 outages in 2013; failed to achieve standard by 36 percent.

Note: Smaller SAIFI values are typical for companies with fewer customers. Smaller systems tend to experience more variability in service outage data, which is captured in the development of historical. This data can only be used with the historical performance of Citizens' to assess reliability performance and actual values are not valid for comparisons among other EDCs.

Historical 12-month CAIDI and SAIFI trends are shown in Figure 4 and Figure 5. The past-year trend shows that while it is taking less time to restore power, outages are occurring more frequently. Citizens' has experienced tree outages, experienced an isolated human performance failure, and two significant vehicle accidents. The PUC will continue to monitor Citizens' SAIFI and SAIDI trends to ensure performance improvement.

Figure 6 shows the distribution of outage causes that occurred during 2013 as a percentage of total outages. Figure 7 shows historical trend of the top three major outage causes. The most frequent outage causes were equipment, weather, and animals.

¹⁹ See Docket Nos. M-2013-2371424; M-2013-2366624; M-2013-2374113.

Equipment failures caused 27 percent of Citizens’ outages. In 2012, Citizens’ upgraded its advanced metering infrastructure (AMI) system software, which will help access customer outages faster and improve power restoration performance. This appears to have helped Citizens’ 2013 CAIDI performance to improve significantly, since restoration times have significantly decreased while experiencing more outages in 2013.

Citizens’ had been trending toward benchmark in their rolling 12-month SAIFI, but experienced an uptick in the last half of 2013. The PUC does not anticipate further review of Citizens’ performance at this time as Citizens’ has consistently been a benchmark performer in the past.

Figure 4 Citizens’ CAIDI (minutes)

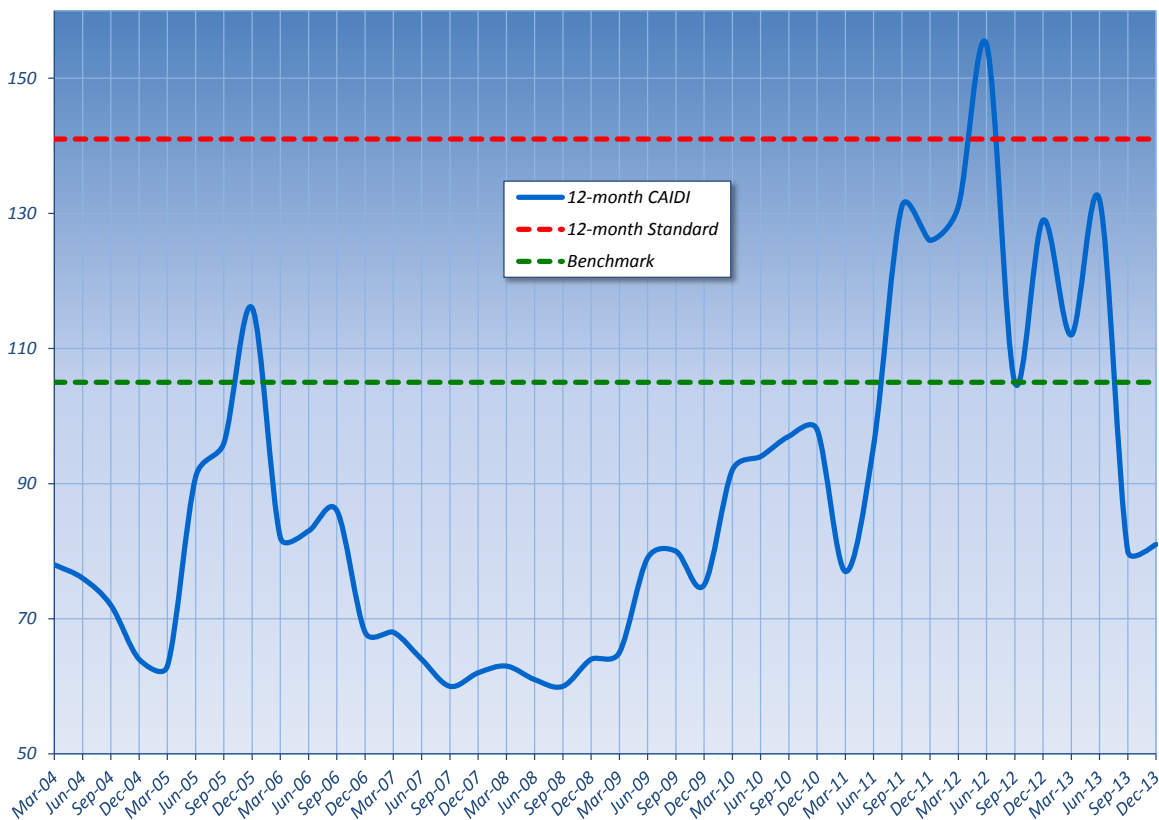


Figure 5 Citizens' SAIFI (interruptions per customer)

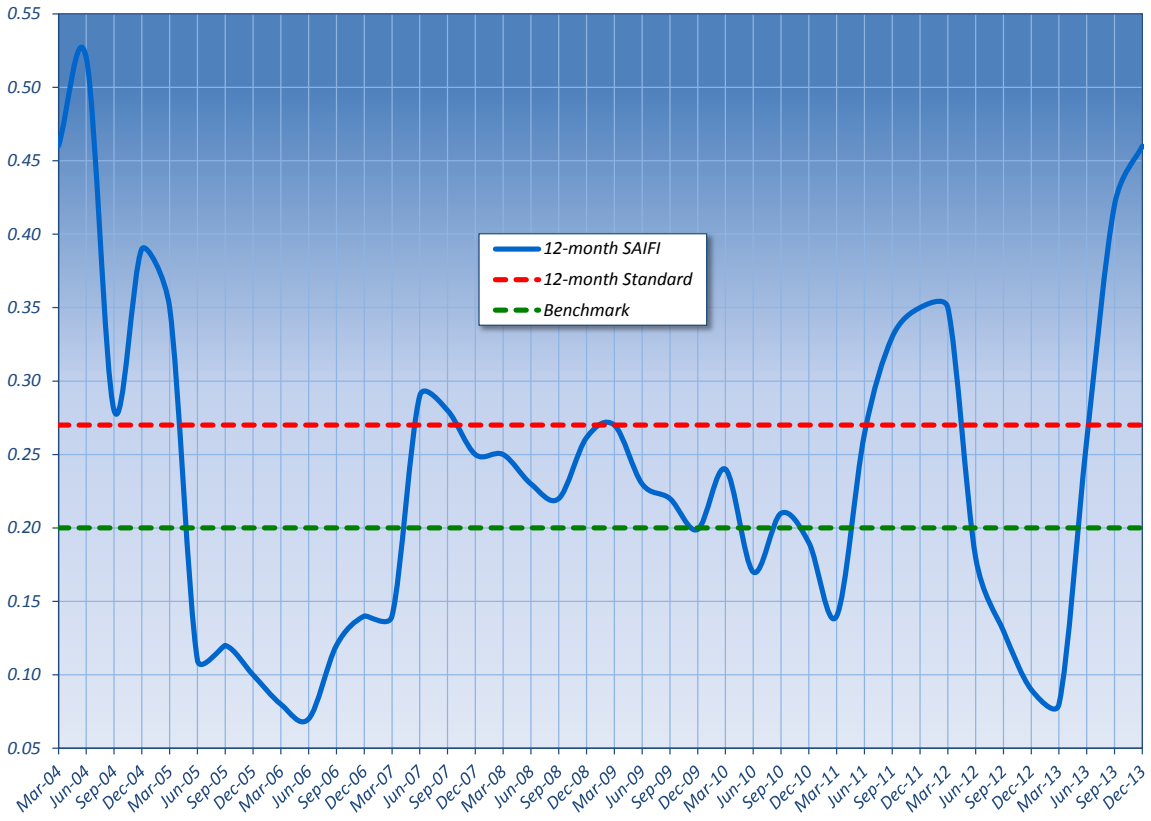


Figure 6 Citizens' Outage Causes (percent of total outages)

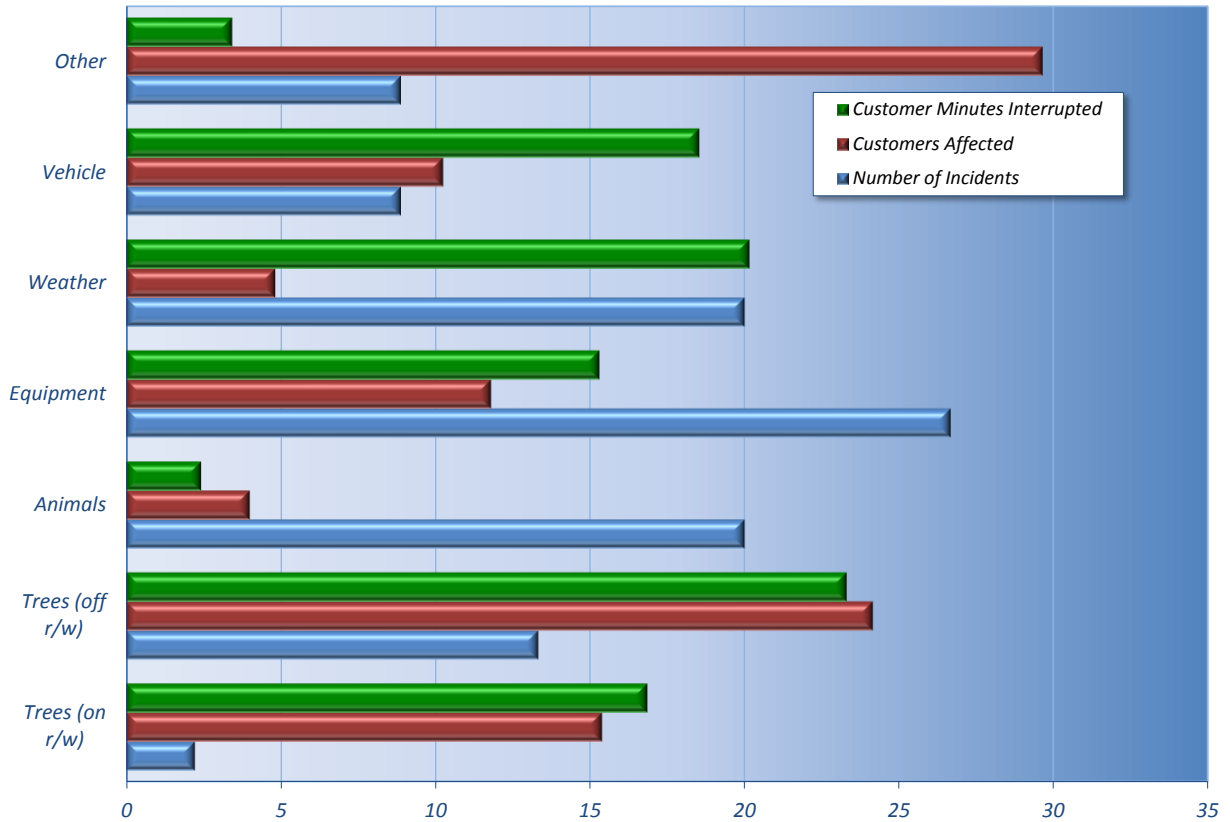
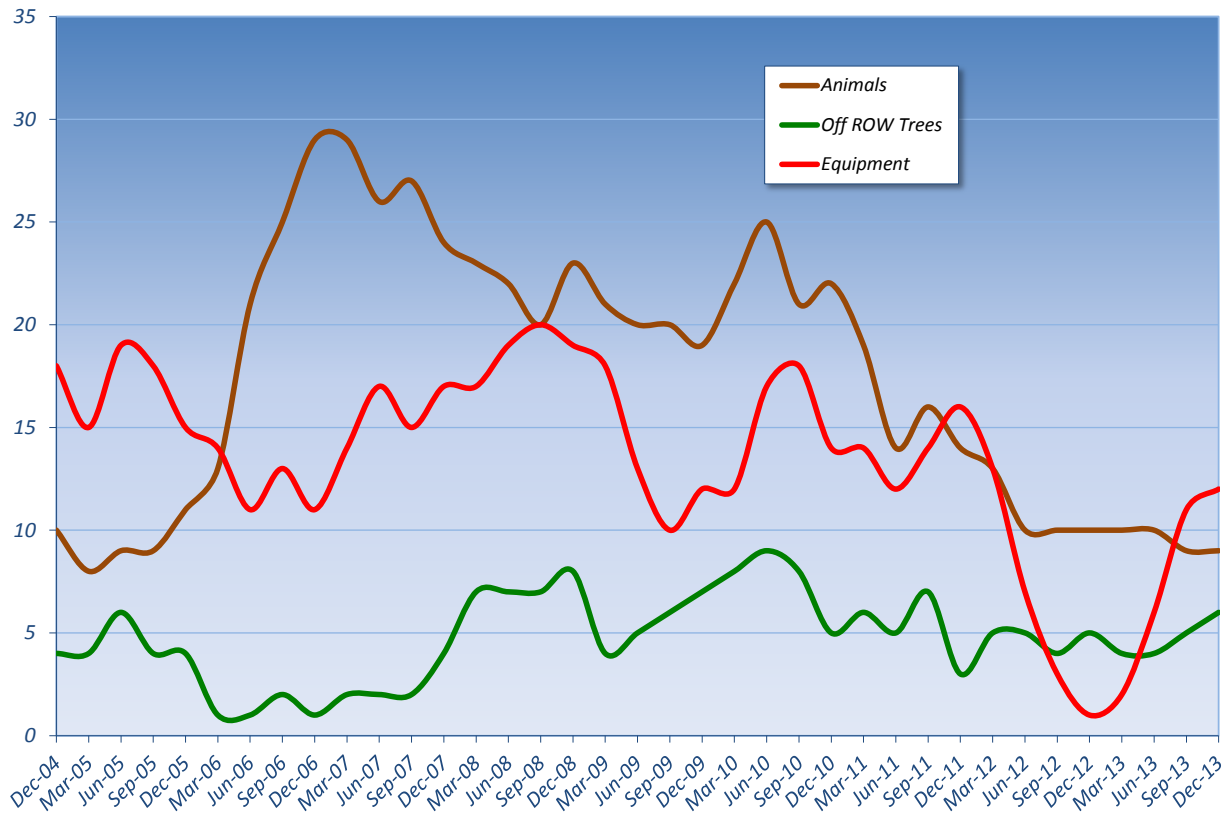


Figure 7 Citizens' Outage Tracking (number of incidents)



Duquesne Light Company

In 2013, Duquesne experienced interruptions totaling 4.4 million kilovolt-amps (kVA) for a duration of 536.3 million kVA-minutes, which was an improvement over 2012 where consumers experienced interruptions totaling 4.8 million kVA for a duration of 560.1 million kVA-minutes.

CAIDI/SAIDI/SAIFI Evaluation

CAIDI

Rolling 12-month: Increased from 117 minutes in 2012 to 121 minutes in 2013; failed to achieve benchmark by 12 percent.

Three-year average: Increased from 101 minutes in 2012 to 115 minutes in 2013; achieved standard by 3 percent.

SAIDI

Rolling 12-month: Decreased from 79 minutes in 2012 to 75 minutes in 2013; achieved benchmark by 41 percent.

Three-year average: Decreased from 88 minutes in 2012 to 84 minutes in 2013; achieved standard by 45 percent.

SAIFI

Rolling 12-month: Decreased from 0.67 outages in 2012 to 0.62 outages in 2013; achieved benchmark by 47 percent.

Three-year average: Decreased from 0.90 outages in 2012 to 0.74 outages in 2013; achieved standard by 43 percent.

Historical 12-month CAIDI and SAIFI trends are shown on Figure 8 and Figure 9. Average restoration time has slightly improved and may be beginning to trend back toward benchmark. Duquesne’s continues excellent performance at maintaining outage frequency well below benchmark. Duquesne’s CAIDI has consistently been under benchmark in the past, but has been trending upwards over the last three calendar years. The PUC will continue to monitor Duquesne’s CAIDI performance.

Figure 10 shows the distribution of outage causes that occurred during 2013 as a percentage of total outages. Figure 11 shows historical trend of the top three major outage causes. The most frequent outage causes were trees, equipment failures, and storms.

Figure 8 Duquesne CAIDI (minutes)

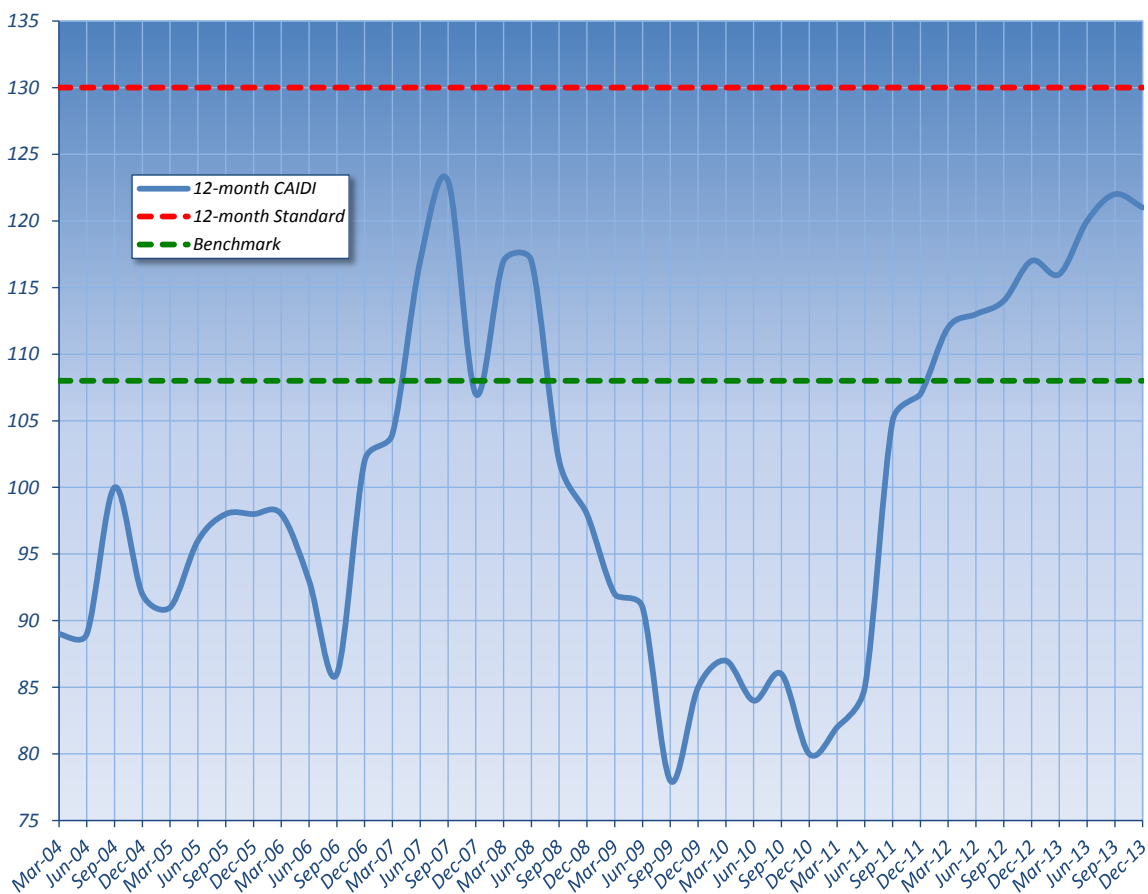


Figure 9 Duquesne SAIFI (interruptions per customer)

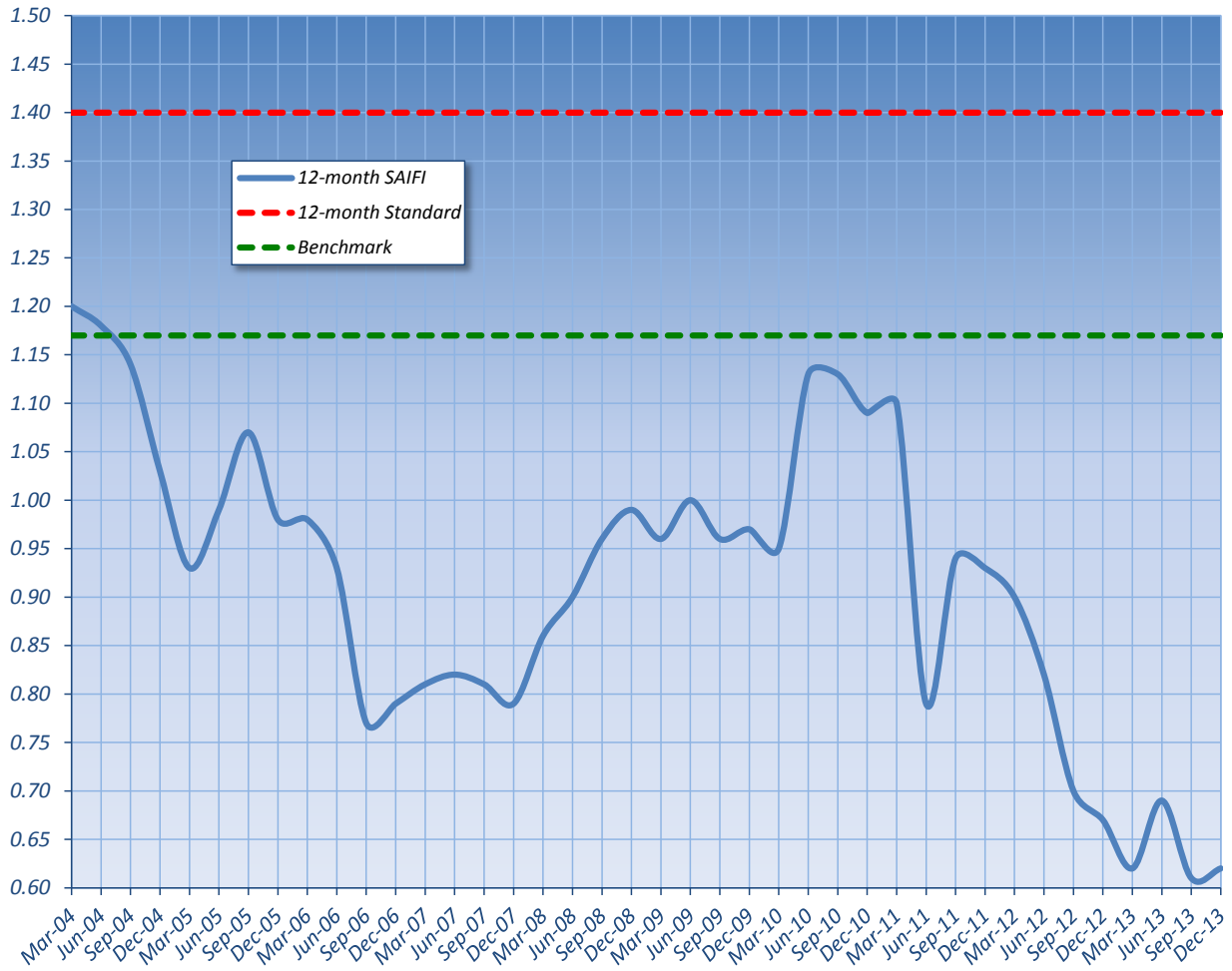


Figure 10 Duquesne Outage Causes (percent of total outages)

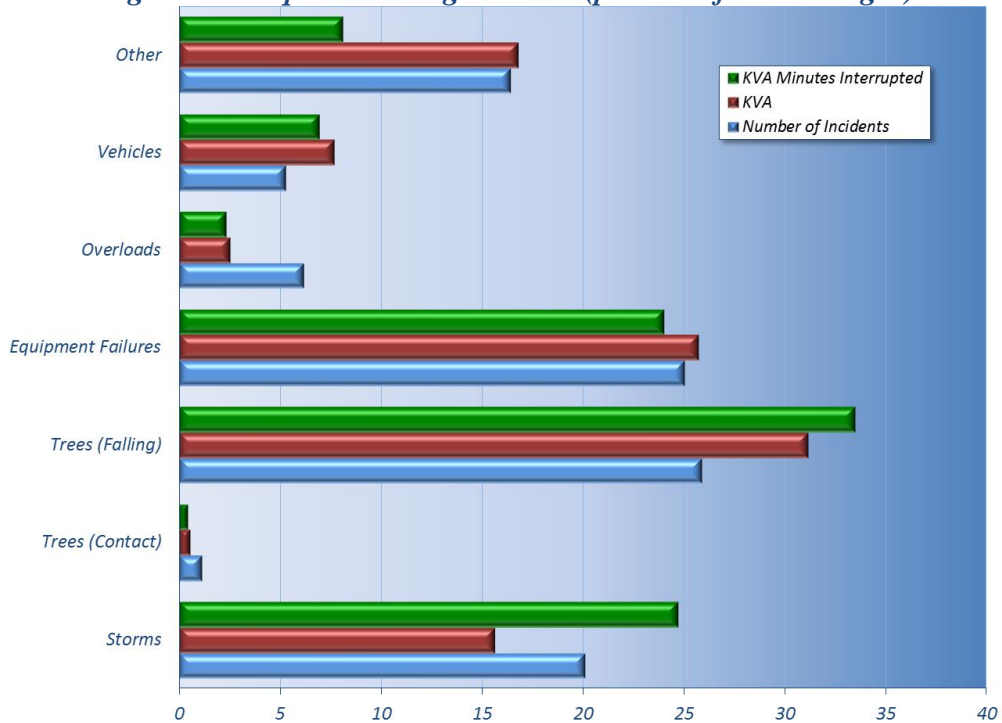
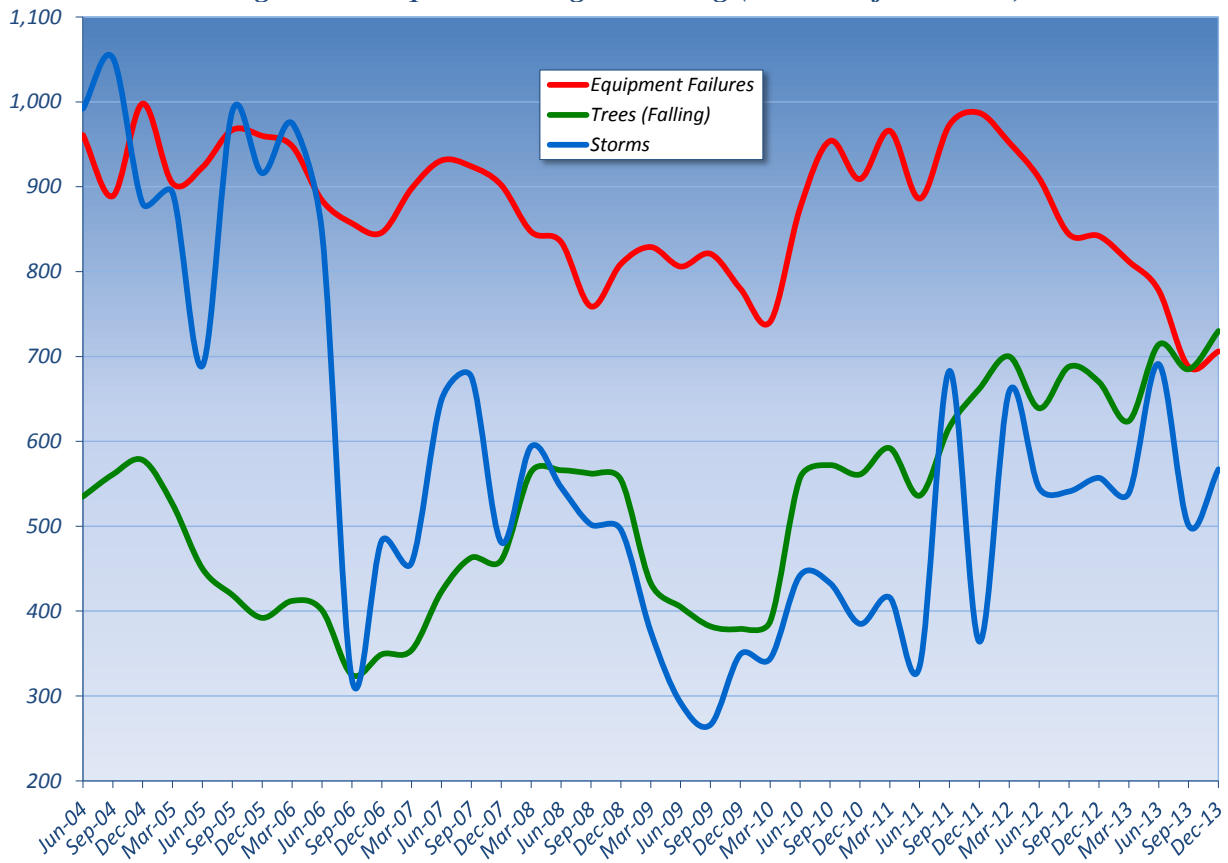


Figure 11 Duquesne Outage Tracking (number of incidents)



Metropolitan Edison Company

In 2013, Met-Ed experienced 598,111 customer interruptions, with a duration of 1.5 million minutes, which continues to improve from 2012 when consumers experienced 709,874 interruptions for a duration of 2.7 million minutes.

CAIDI/SAIDI/SAIFI Evaluation

CAIDI

Rolling 12-month: Decreased from 120 minutes in 2012 to 105 minutes in 2013; achieved benchmark by 10 percent.

Three-year average: Decreased slightly from 119 minutes in 2012 to 114 minutes in 2013; achieved standard by 12 percent.

SAIDI

Rolling 12-month: Decreased from 155 minutes in 2012 to 115 minutes in 2013; achieved benchmark by 15 percent.

Three-year average: Decreased from 159 minutes in 2012 to 137 minutes in 2013; achieved standard by 16 percent.

SAIFI

Rolling 12-month: Decreased from 1.29 outages in 2012 to 1.09 outages in 2013; achieved benchmark by 5 percent.

Three-year average: Decreased from 1.34 outages in 2012 to 1.20 outages in 2013; failed to achieve standard by 6 percent.

Historical 12-month CAIDI and SAIFI trends are shown on Figure 12 and Figure 13. The past-year trend shows it is taking less time to restore power and outages are less frequent. Figure 14 shows the distribution of causes of service outages that occurred during 2013 as a percentage of total outages. Figure 15 shows a historical trend of the top major outage causes, which shows that equipment failure is the most frequent cause of a power outage. Non-preventable outages due to trees decreased significantly. Met-Ed continued to implement a series of reliability improvement initiatives to stormproof and harden their three-phase distribution system backbone including aggressive tree trimming and circuit-condition assessments. Met-Ed continues to add equipment such as fuses and reclosers to its distribution system while incorporating those devices into their automation system.

During the past 12 months, Met-Ed’s average outage duration (CAIDI) decreased and frequencies (SAIFI) decreased. Met Ed’s rolling 12-month CAIDI and SAIFI were trending downward and below benchmark the last two quarters of 2013. The PUC expects the downward trend in CAIDI and SAIFI to continue in 2014.

Figure 12 Met-Ed CAIDI (minutes)

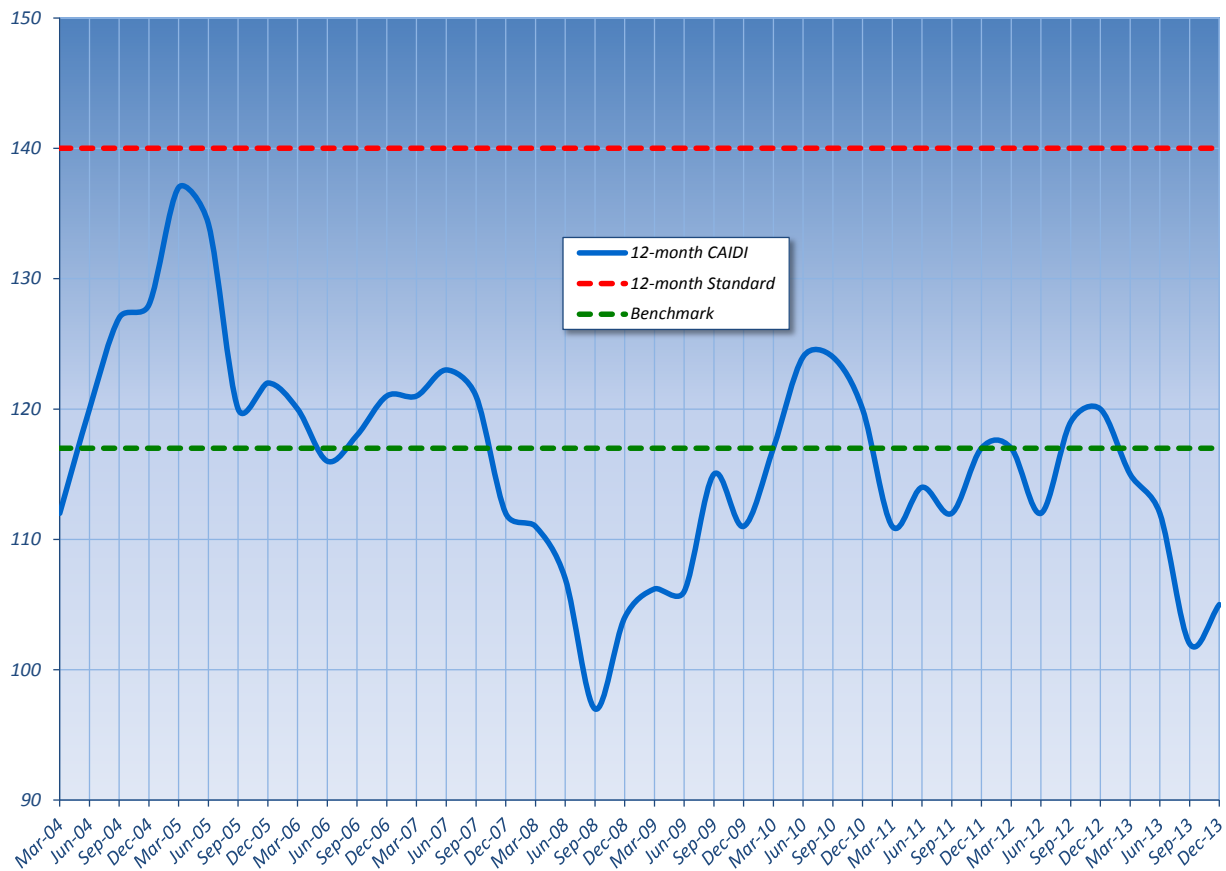


Figure 13 Met-Ed SAIFI (interruptions per customer)

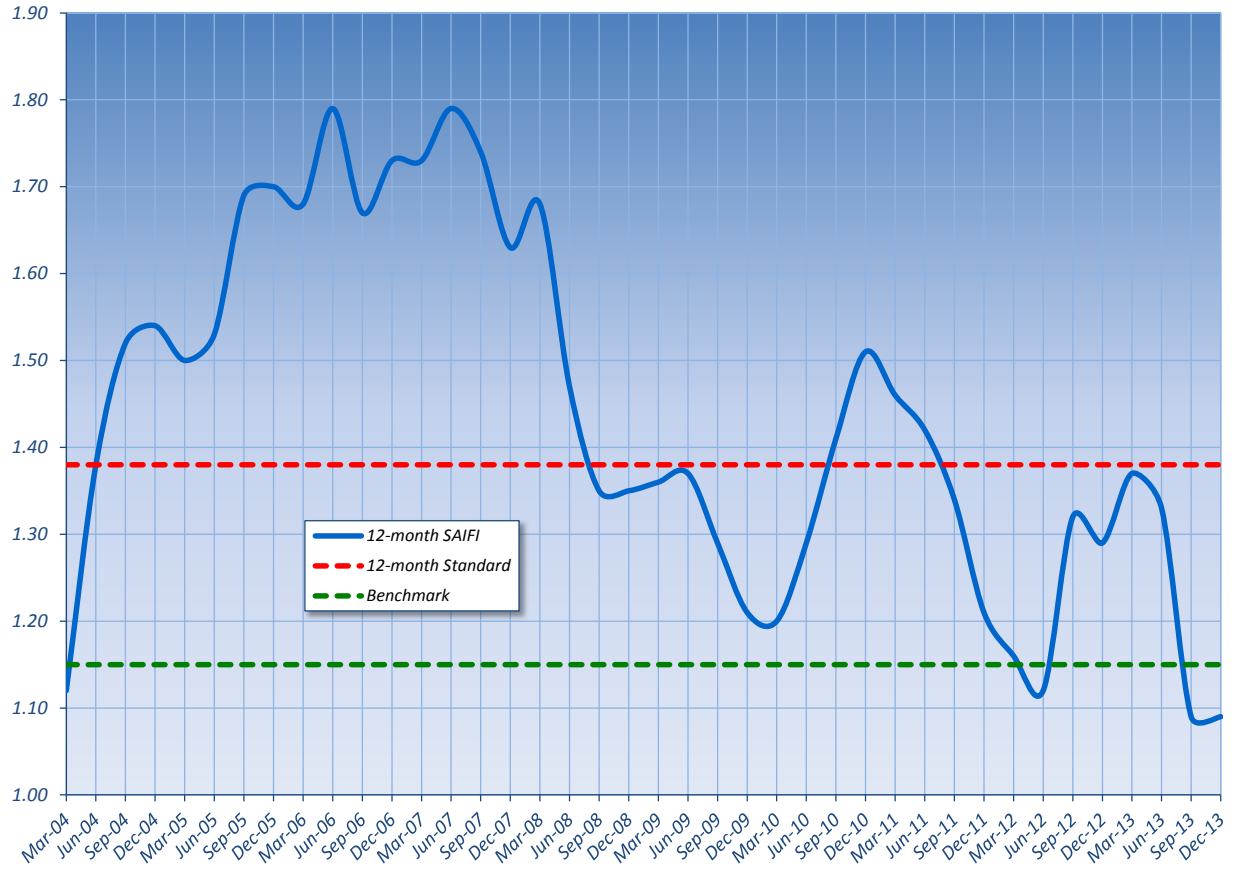


Figure 14 Met-Ed Outage Causes (percent of total outages)

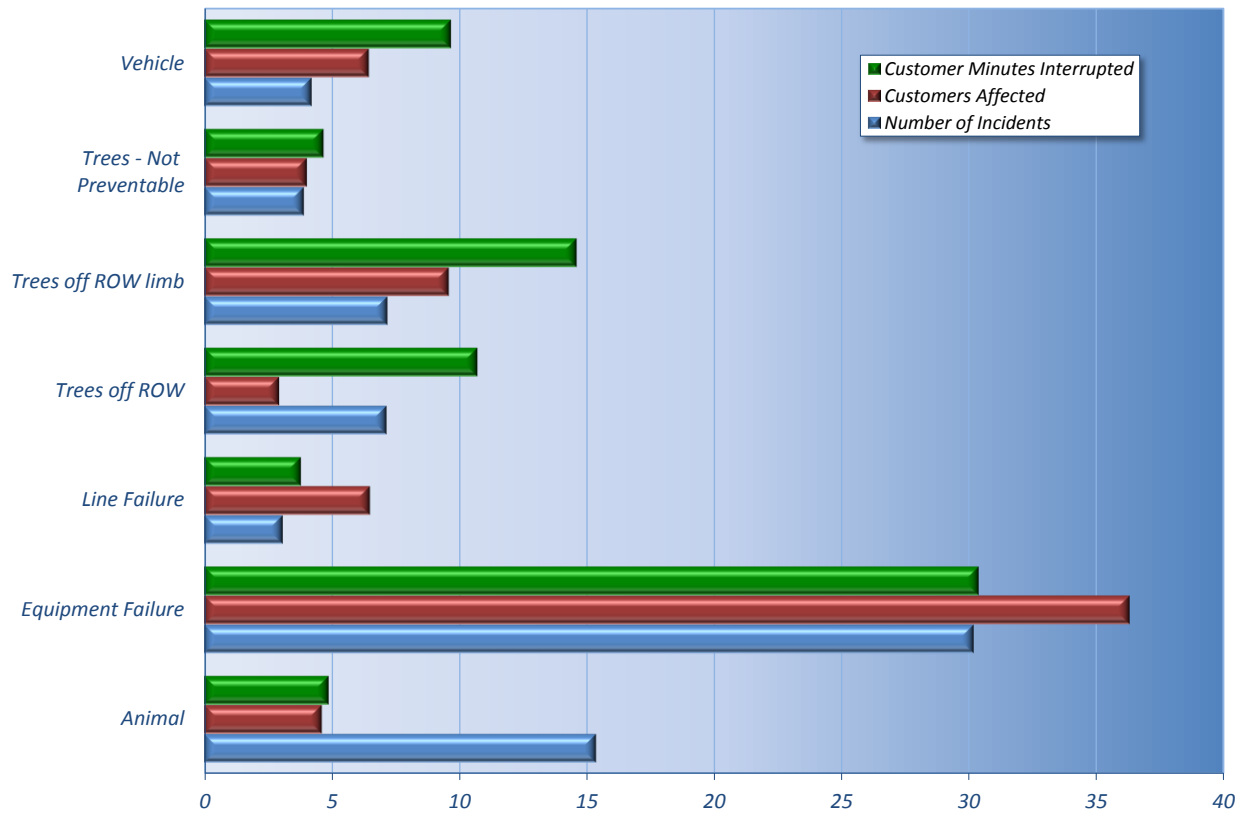
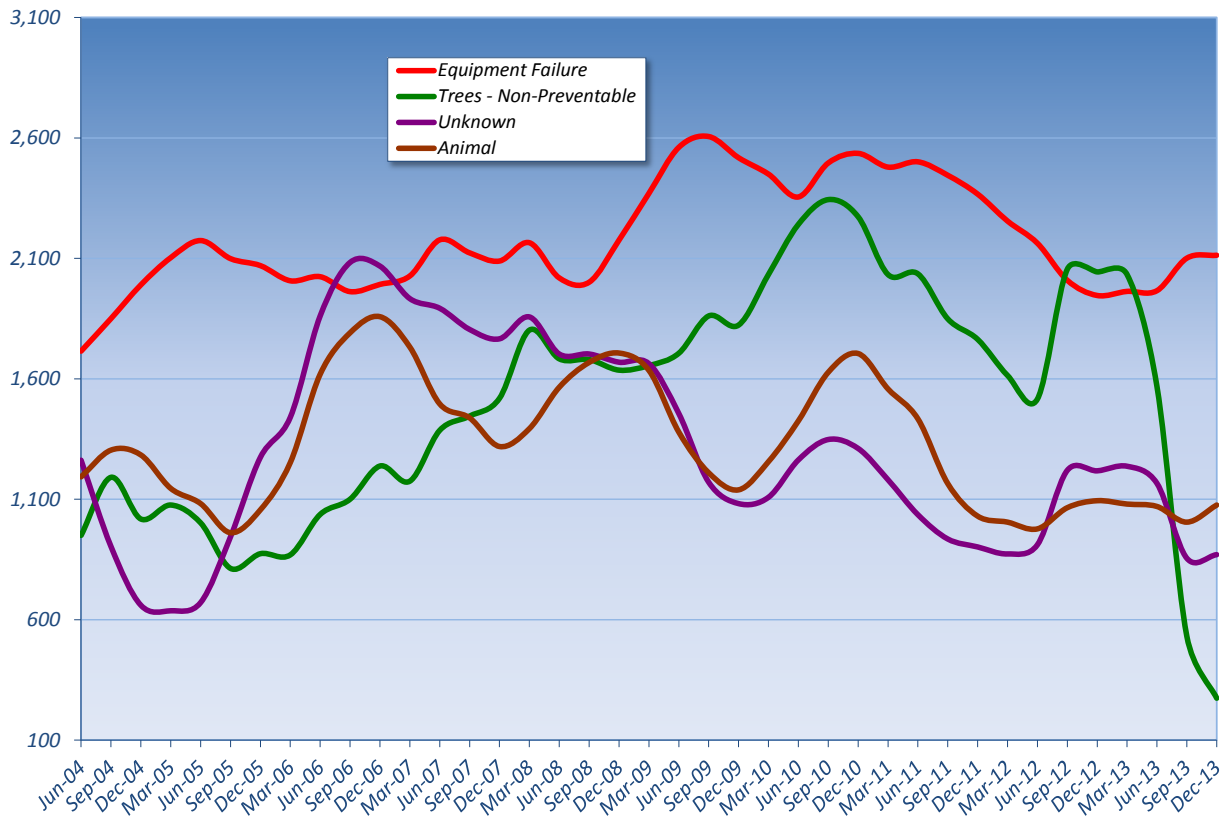


Figure 15 Met-Ed Outage Tracking (number of incidents)



PECO Energy Company

In 2013, PECO Energy experienced 1.2 million customer interruptions, with a duration of 108.2 million minutes, which continues to improve from 2012 when consumers experienced 1.3 million interruptions for a duration of 126.7 million minutes.

CAIDI/SAIDI/SAIFI Evaluation

CAIDI

Rolling 12-month: Decreased from 97 minutes in 2012 to 91 minutes in 2013; achieved benchmark by 19 percent.

Three-year average: Decreased from 119 minutes in 2012 to 108 minutes in 2013; achieved standard by 13 percent.

SAIDI

Rolling 12-month: Decreased from 75 minutes in 2012 to 63 minutes in 2013; achieved benchmark by 54 percent.

Three-year average: Decreased from 122 minutes in 2012 to 97 minutes in 2013; achieved standard by 42 percent.

SAIFI

Rolling 12-month: Decreased from 0.77 outages in 2012 to 0.69 outages in 2013; achieved benchmark by 44 percent.

Three-year average: Decreased from 1.00 outages in 2012 to 0.87 outages in 2013; achieved standard by 36 percent.

Historical 12-month CAIDI and SAIFI trends are shown on Figure 16 and Figure 17. The past-year trend shows it is taking less time to restore power and outages are occurring less frequently. Figure 18 shows the distribution of outage causes that occurred during 2013 as a percentage of total outages. Figure 19 shows the historical trend of the top three major outage causes. The most frequent outage cause is equipment failure, which continues to trend lower.

PECO continues with their supplemental vegetation management program to remove or prune trees between their normal scheduled vegetation management cycles. PECO's performance is excellent based on their performance trends, which are significantly below benchmark.

Figure 16 PECO CAIDI (minutes)

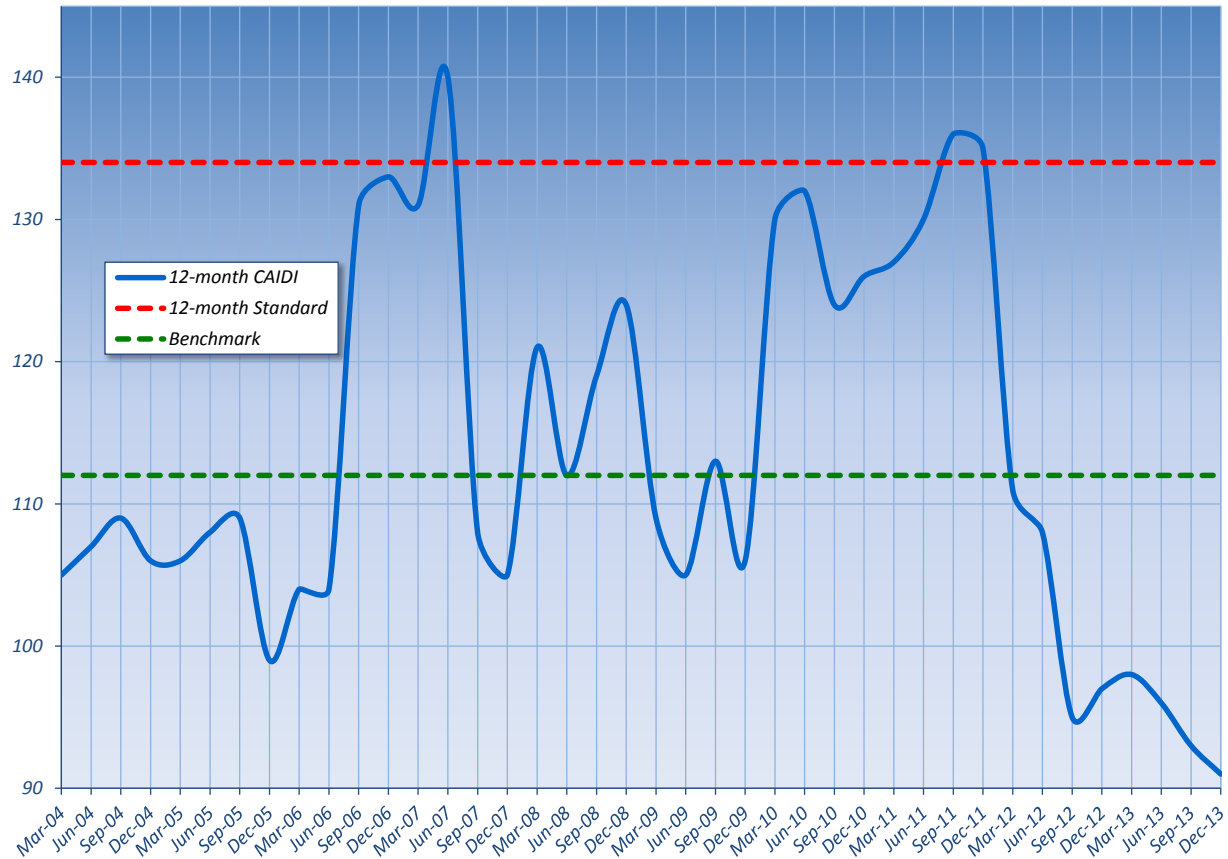


Figure 17 PECO SAIFI (interruptions per customer)

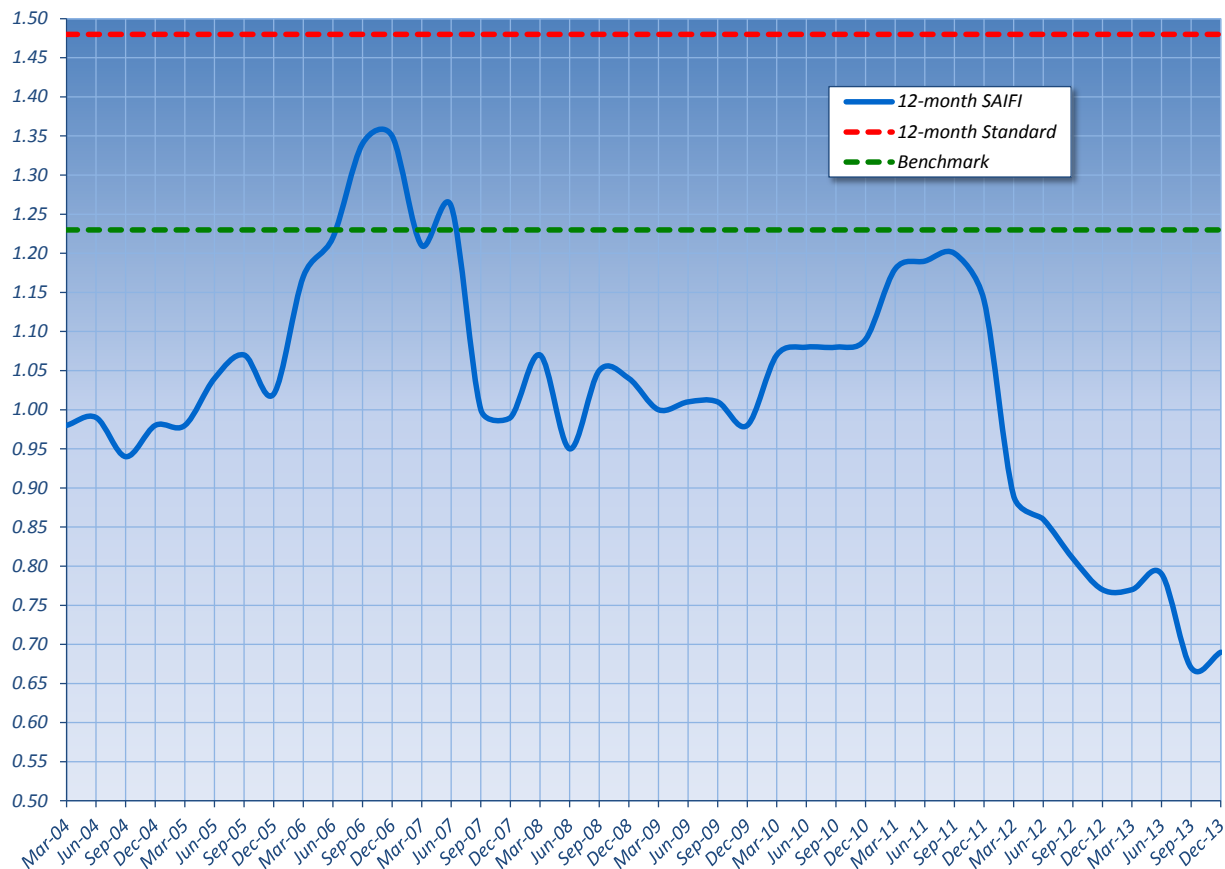


Figure 18 PECO Outage Causes (percent of total outages)

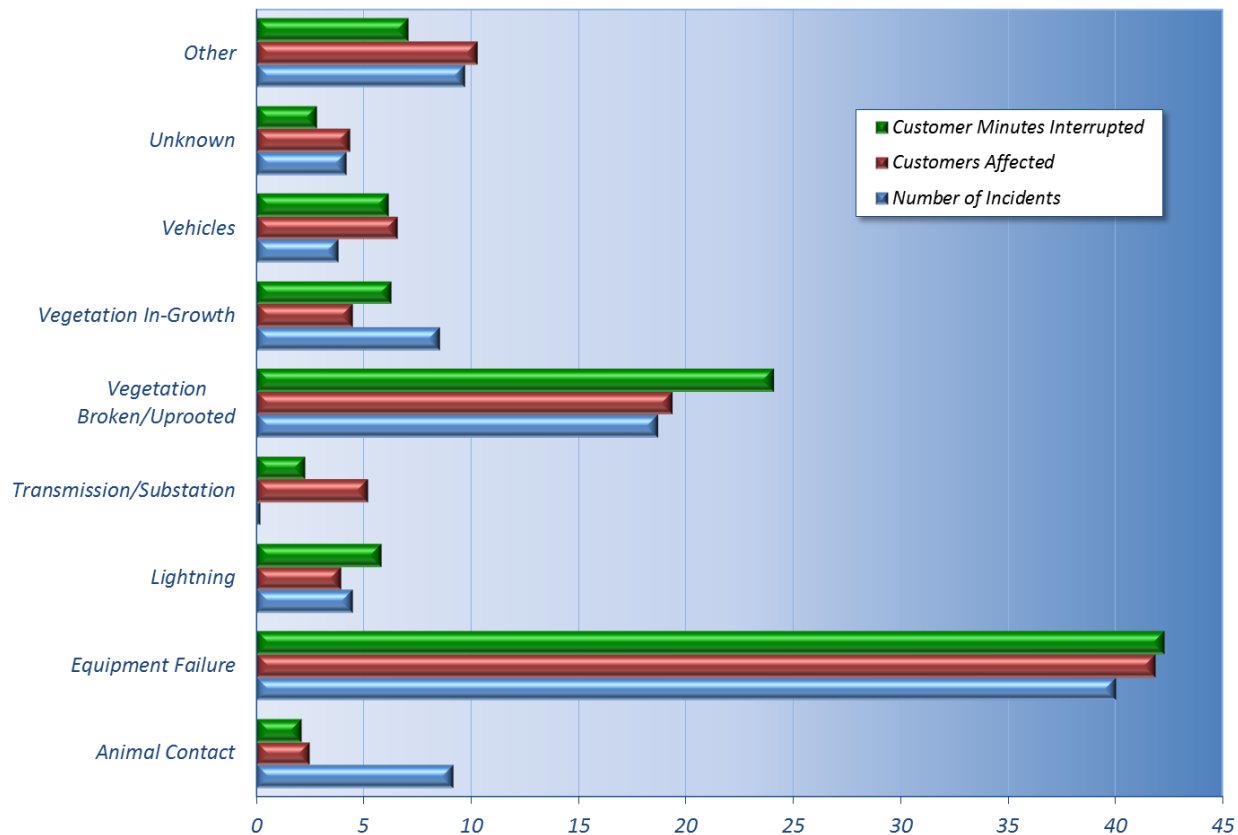
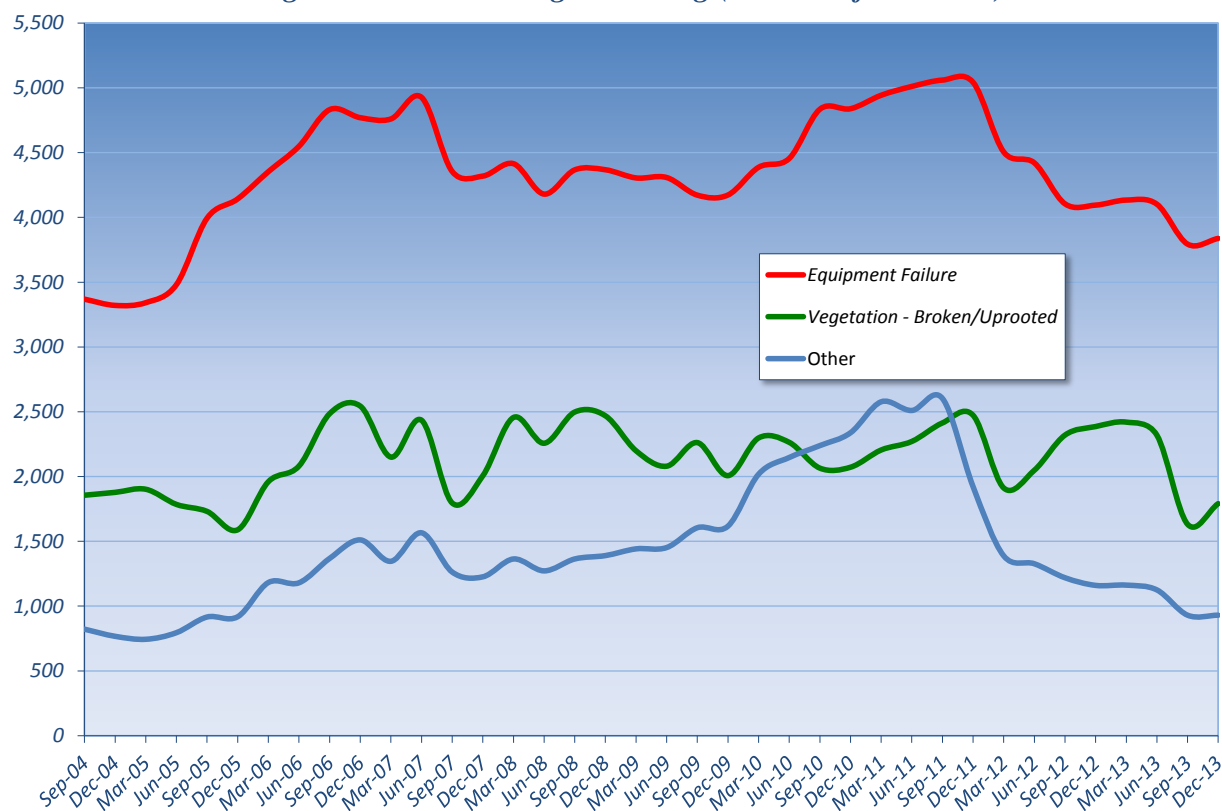


Figure 19 PECO Outage Tracking (number of incidents)



Pennsylvania Electric Company

In 2013, Penelec experienced 863,604 customer interruptions for a duration of 2.9 million minutes, which is more than in 2012 when consumers experienced 822,950 interruptions for a duration of 2.7 million minutes.

The 2013 reliability metrics calculation excludes the following outage data relating to two major events, which were approved by the Commission:²⁰

- May 14, 2013 – Transmission breaker switch found over heating during a scheduled inspection, affecting 21,161 customers.
- September 11, 2013 – Two FirstEnergy generating stations failed and a FirstEnergy transmission line failed causing Penelec, as directed by PJM, to take pre-contingency actions to shed 105 MW of load near Erie. This event resulted in sustained interruptions to 43,261 customers.

CAIDI/SAIDI/SAIFI Evaluation

CAIDI

Rolling 12-month: Decreased from 138 minutes in 2012 to 117 minutes in 2013; and exactly achieved benchmark of 117.

Three-year average: Decreased slightly from 143 minutes in 2012 to 141 minutes in 2013; failed to achieve standard by 9 percent.

²⁰ Docket Nos. M-2013-2387552, M-2013-2376703.

SAIDI

Rolling 12-month: Decreased from 194 minutes in 2012 to 174 minutes in 2013; failed to achieve benchmark by 18 percent

Three-year average: Increased from 196 minutes in 2012 to 200 minutes in 2013; failed to achieve standard by 12 percent.

SAIFI

Rolling 12-month: Increased from 1.4 outages in 2012 to 1.48 outages in 2013; failed to achieve benchmark by 18 percent.

Three-year average: Increased from 1.37 outages in 2012 to 1.43 outages in 2013; failed to achieve standard by 3 percent.

Historical 12-month CAIDI and SAIFI trends are shown on Figure 20 and Figure 21. Figure 22 shows the distribution of outage causes as a percentage of total outages. Figure 23 shows a historical trend of the top major outage causes, which is equipment failure. Penelec continues its full circuit-protection coordination program, which includes adding protective devices to circuits experiencing an abnormal number of outages. Penelec continues to inspect and replace damaged equipment as well as installing radio-controlled switches to enable more flexibility in restoring power more efficiently. Penelec is utilizing vegetation control efforts to reduce off corridor tree and overhanging tree issues.

Penelec's CAIDI has been trending downward the last two quarters and is now at benchmark, while SAIFI has been trending away from achieving benchmark. The PUC expects Penelec's CAIDI and SAIFI scores to improve as FirstEnergy continues to enhance equipment reliability throughout its service territory.

Figure 20 Penelec CAIDI (minutes)

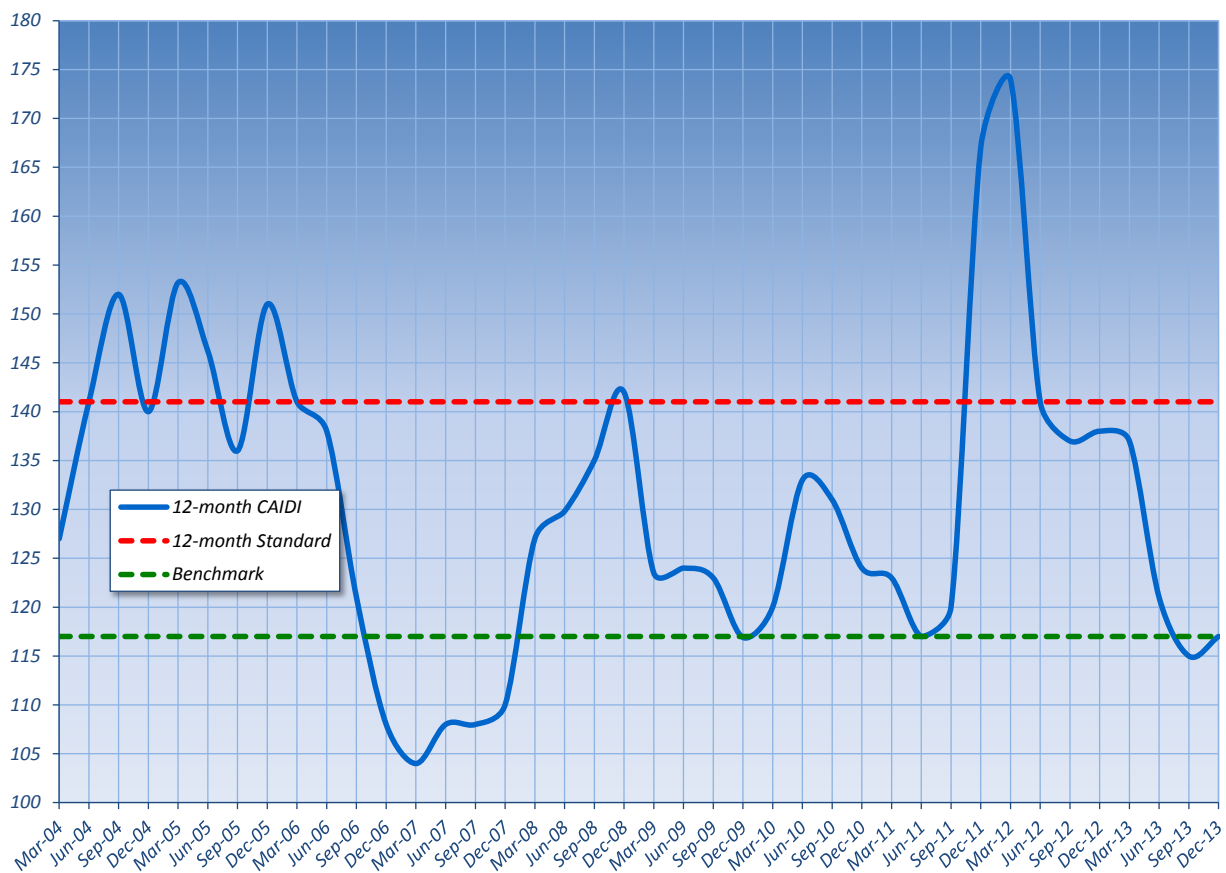


Figure 21 Penelec SAIFI (interruptions per customer)

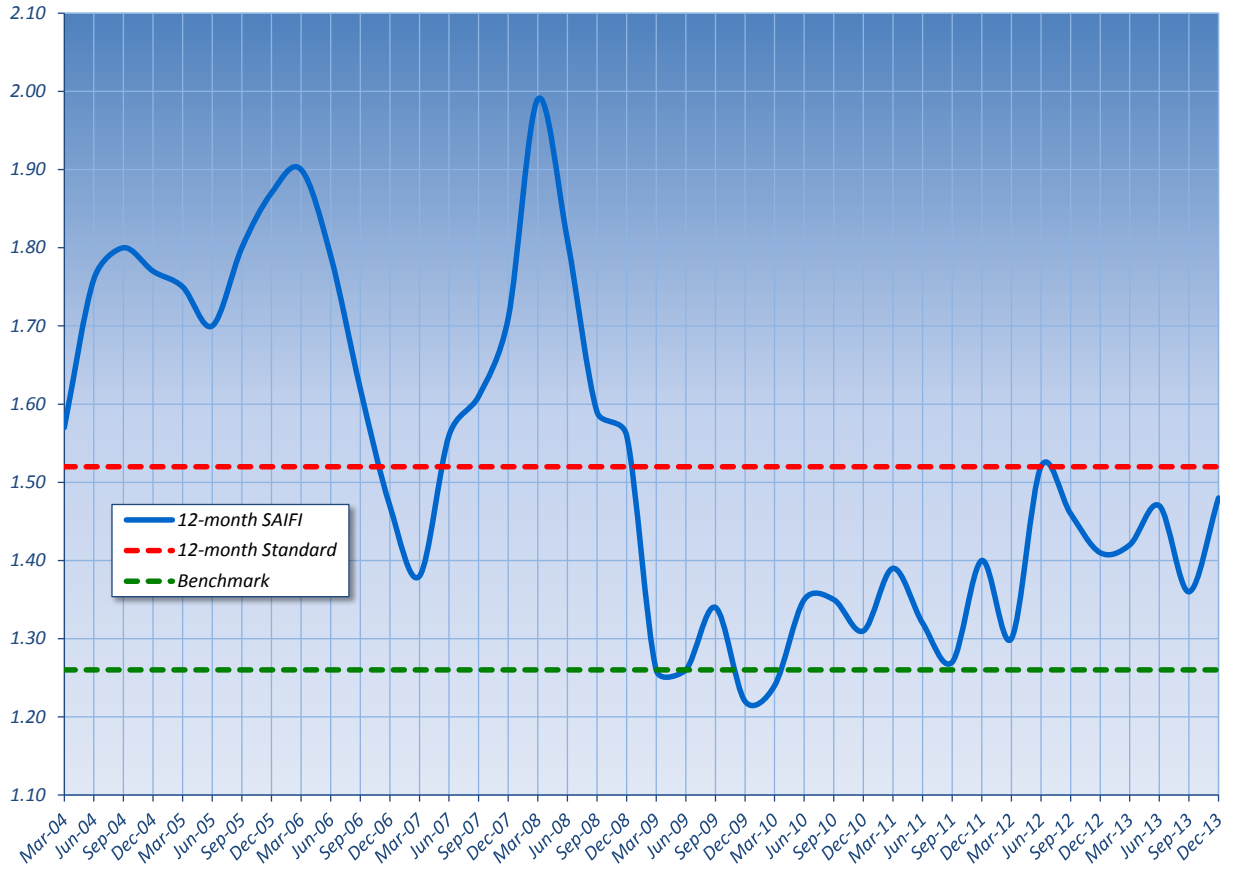


Figure 22 Penelec Outage Causes (percent of total outages)

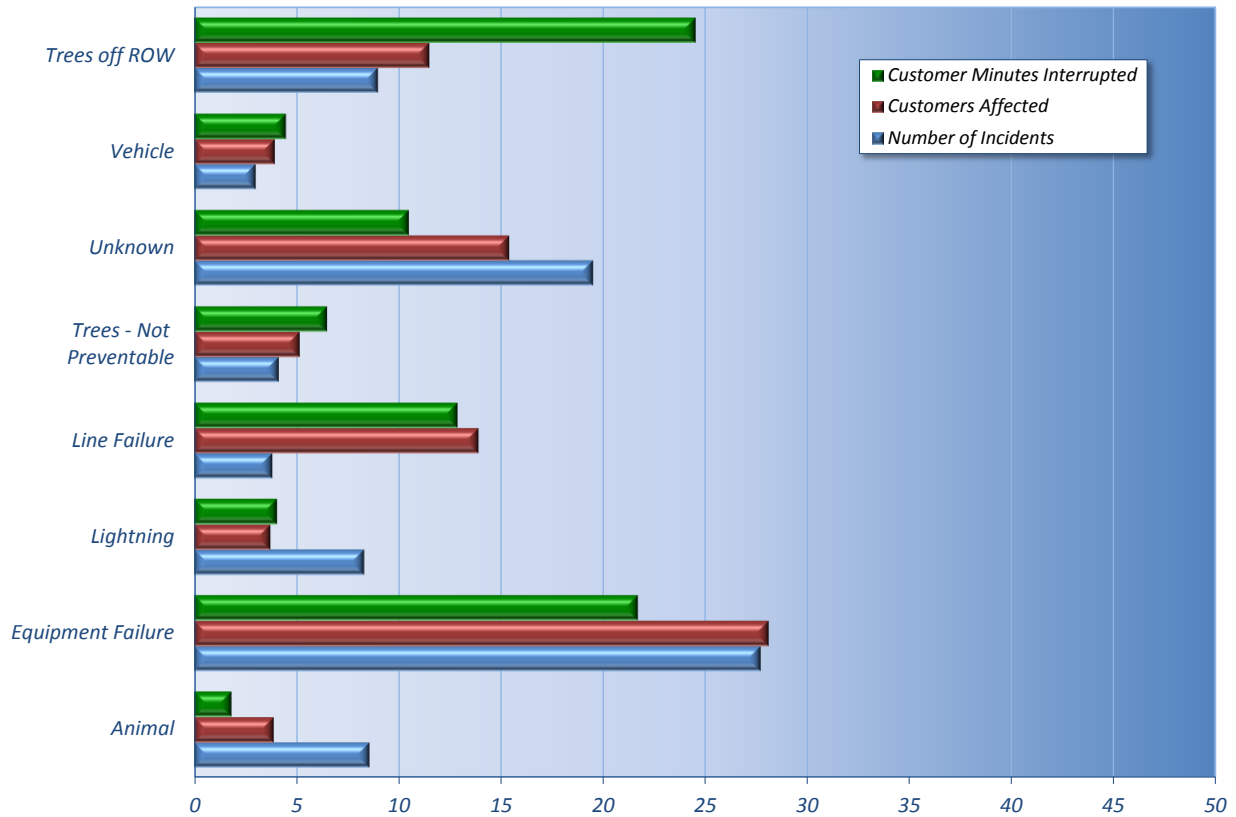
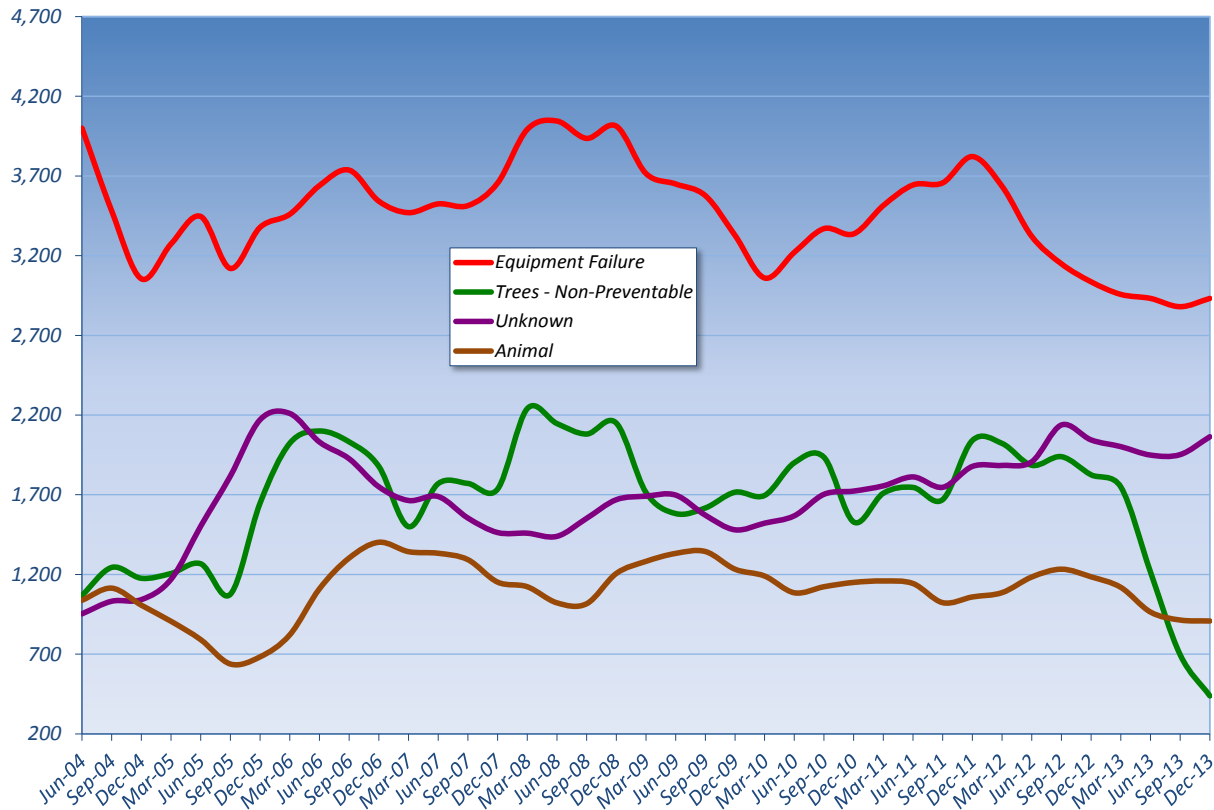


Figure 23 Penelec Outage Tracking (number of incidents)



Pennsylvania Power Company

In 2013, Penn Power experienced 214,133 customer interruptions for a duration of 1.2 million minutes, which was an increase from 2012 when consumers experienced 184,126 interruptions for a duration of 848,537 minutes.

CAIDI/SAIDI/SAIFI Evaluation

CAIDI

Rolling 12-month: Increased from 114 minutes in 2012 to 140 minutes in 2013; and failed to achieve benchmark by 39 percent.

Three-year average: Increased from 116 minutes in 2012 to 131 minutes in 2013; and failed to achieve standard by 18 percent.

SAIDI

Rolling 12-month: Increased from 133 minutes in 2012 to 188 minutes in 2013; and failed to achieve benchmark by 66 percent.

Three-year average: Increased from 124 minutes in 2012 to 155 minutes in 2013; and failed to achieve standard by 14 percent.

SAIFI

Rolling 12-month: Increased from 1.17 outages in 2012 to 1.35 outages in 2013; and failed to achieve benchmark by 21 percent.

Three-year average: Increased from 1.07 outages in 2012 to 1.18 outages in 2013; but achieved standard by 4 percent.

Historical 12-month CAIDI and SAIFI trends are shown on Figure 24 and Figure 25. Figure 26 shows the distribution of outage causes that occurred during 2013 as a percentage of total outages. Tree-related incidents and equipment failure account for a significant portion of customer outages. Figure 27 shows the historical trend of the top two major outage causes. The most frequent outage cause was lightning; however this is trending lower than last year. It appears Penn Power customer outages are taking longer to restore and occurring more frequently during this time period.

The PUC has met with Penn Power in June 2014 to assess low performance scores during this time period and a corrective action plan from Penn Power is due in July 2014 for PUC review.

Figure 24 Penn Power CAIDI (minutes)

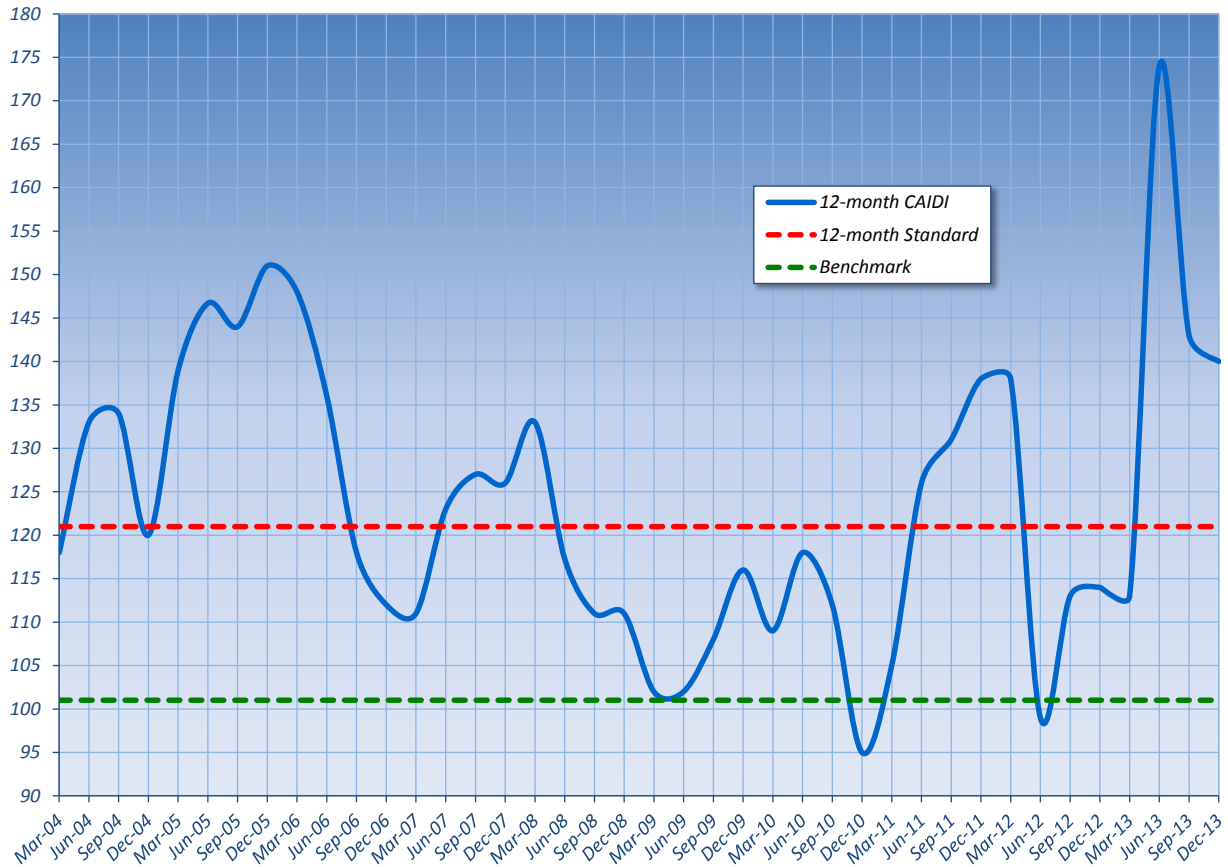


Figure 25 Penn Power SAIFI (interruptions per customer)

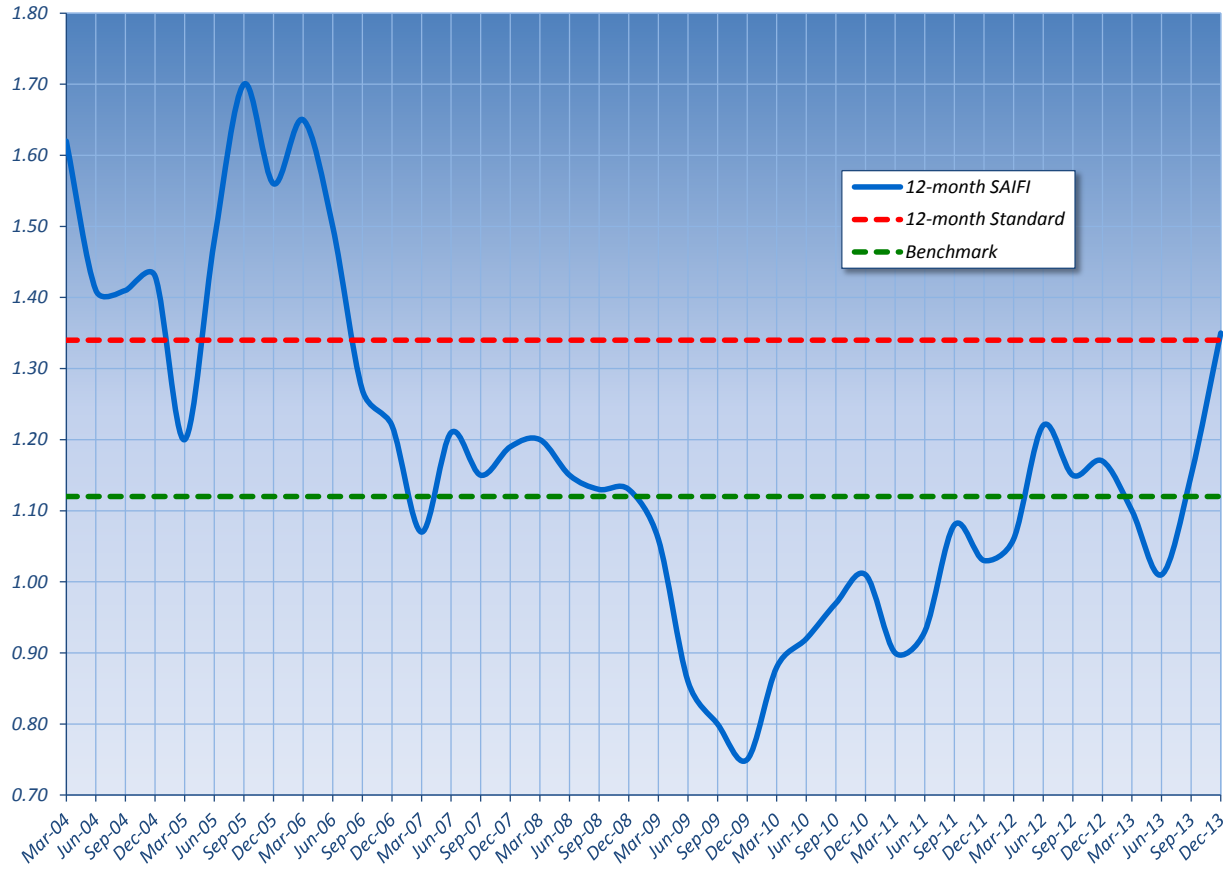


Figure 26 Penn Power Outage Causes (percent of total outages)

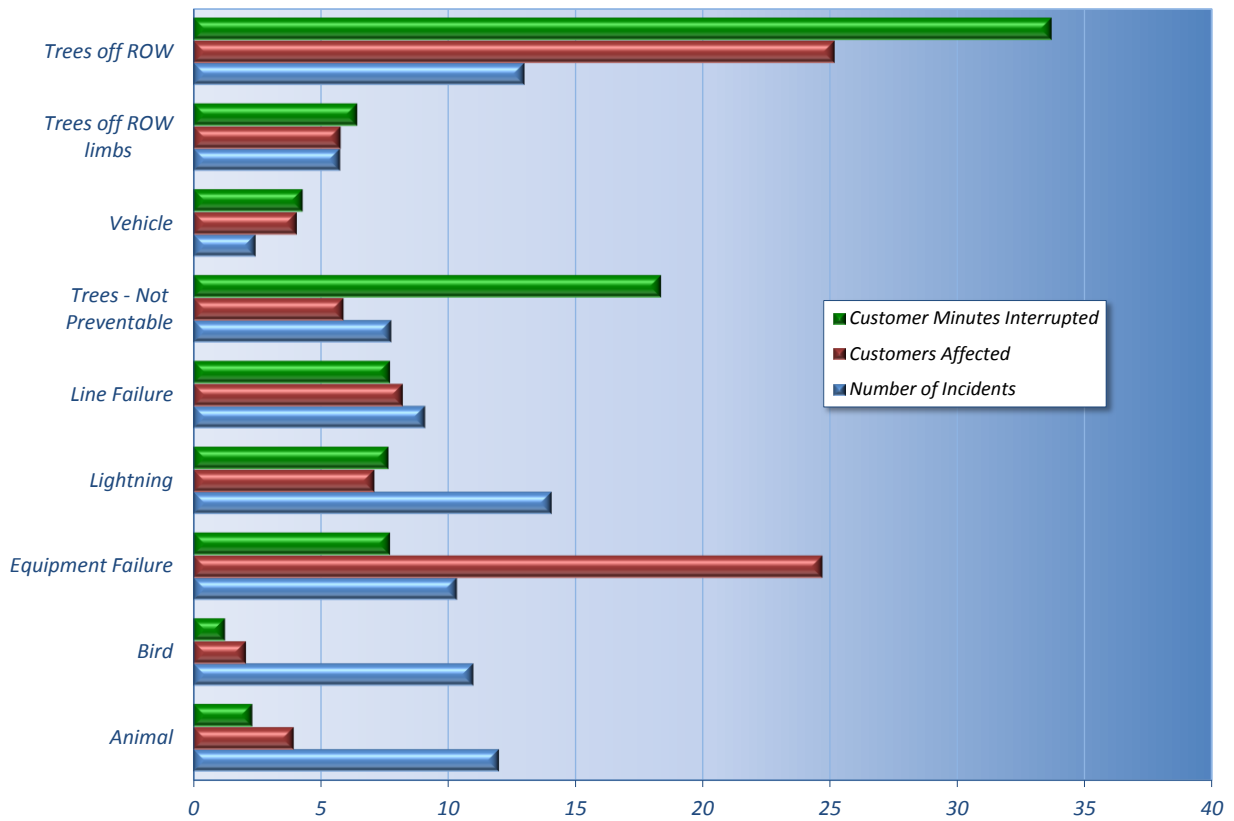
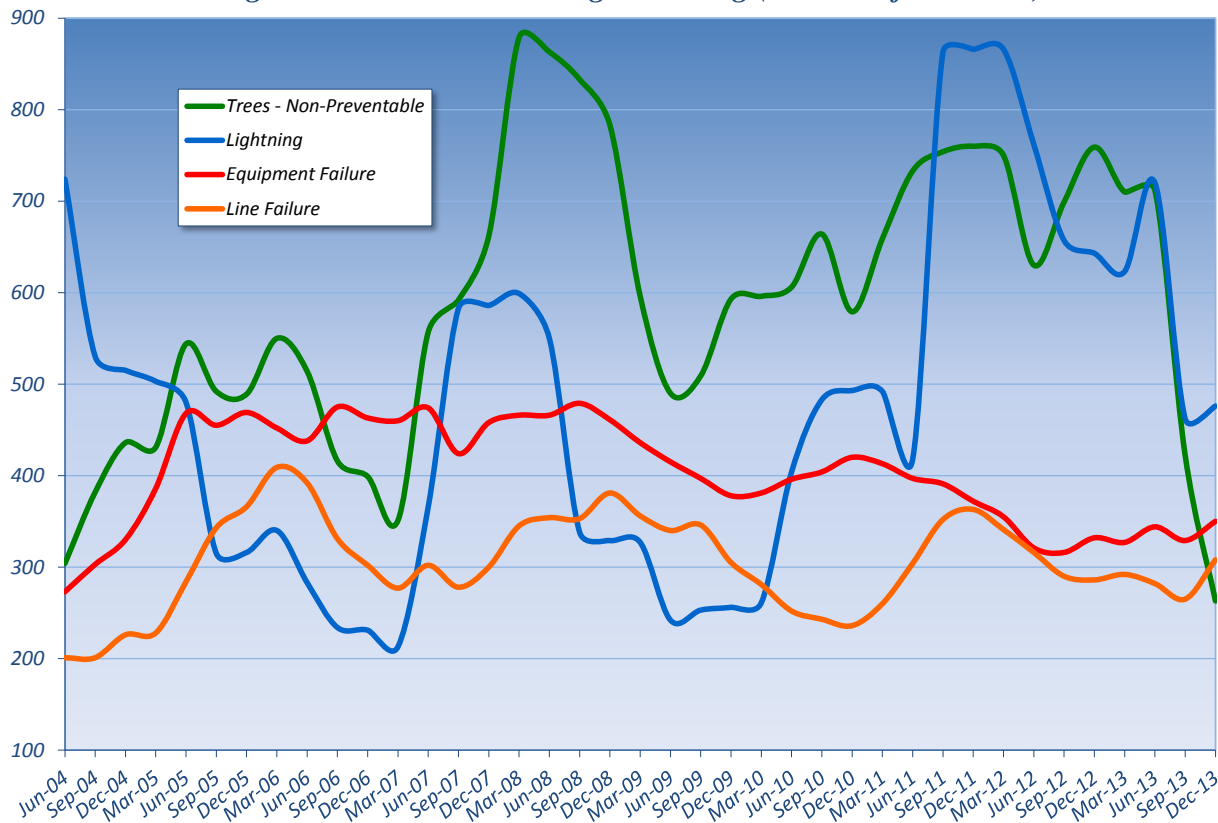


Figure 27 Penn Power Outage Tracking (number of incidents)



Pike County Light & Power Company

Pike County is primarily fed from two 34.5-kilovolt feeders supplied from New York substations. With that, sustained interruptions are usually few and affect small clusters of customers. However, it usually takes a longer time per customer to restore service. In 2013, Pike County experienced 5,449 customer interruptions for a duration of 1.1 million minutes, which was much higher than 2012 when consumers experienced 2,542 interruptions for duration of 468,931 minutes.

The calculation of the 2013 reliability metrics excludes outage data relating to one major event, a July 27, 2014, thunderstorm that affected 2,641 customers. This exclusion was approved by the Commission.²¹ A request to exclude a September 28, 2013, blue sky automatic splice connection failure that affected 2,278 customers was denied by the Commission because it was considered a preventable equipment failure under direct control of Pike County.

CAIDI/SAIDI/SAIFI Evaluation

CAIDI

Rolling 12-month: Increased from 184 minutes in 2012 to 209 minutes in 2013; failed to achieve benchmark by 20 percent.

Three-year average: Decreased from 245 minutes in 2012 to 230 minutes in 2013; failed to achieve standard by 20 percent.

²¹ See Docket No. M-2013-2376214.

SAIDI

Rolling 12-month: Increased from 105 minutes in 2012 to 188 minutes in 2013; failed to achieve benchmark by 66 percent.

Three-year average: Increased from 158 minutes in 2012 to 191 minutes in 2013; failed to achieve standard by 48 percent.

SAIFI

Rolling 12-month: Increased from 0.57 outages in 2012 to 1.21 outages in 2013; failed to achieve benchmark by 98 percent.

Three-year average: Increased from 0.63 outages in 2012 to 0.84 outages in 2013; failed to achieve standard by 25 percent.

Historical 12-month CAIDI and SAIFI trends are shown on Figure 28 and Figure 29. Figure 30 shows the distribution of outage causes that occurred during 2013 as a percentage of total outages. Figure 31 shows the historical trend of the top two major outage causes. The most frequent outage causes were trees and equipment failure. Outages due to trees have trended slightly higher 2013 while equipment failure trended slightly lower. The spike occurring in SAIFI causing Pike County to fail to achieve benchmark and standard will be further monitored by the PUC in 2014.

Figure 28 Pike County CAIDI (minutes)

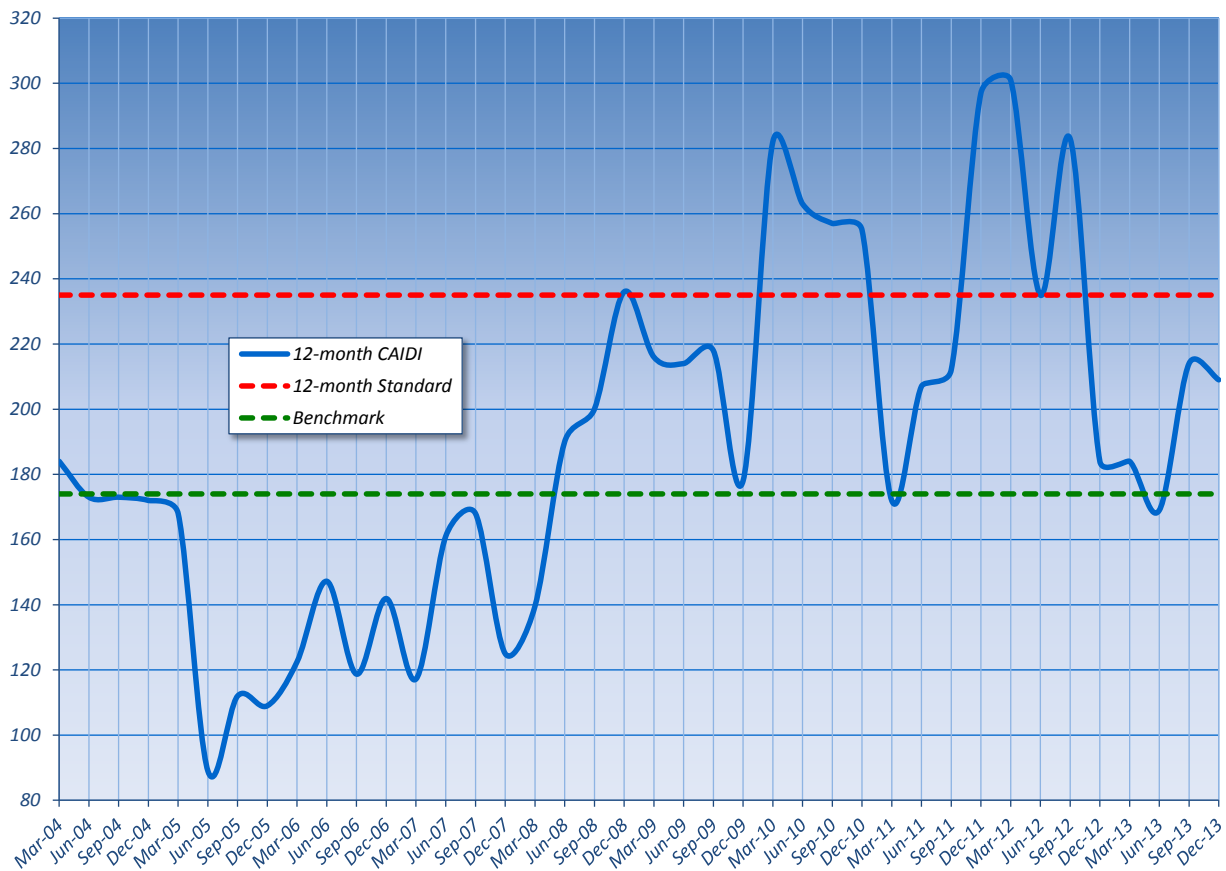


Figure 29 Pike County SAIFI (interruptions per customer)

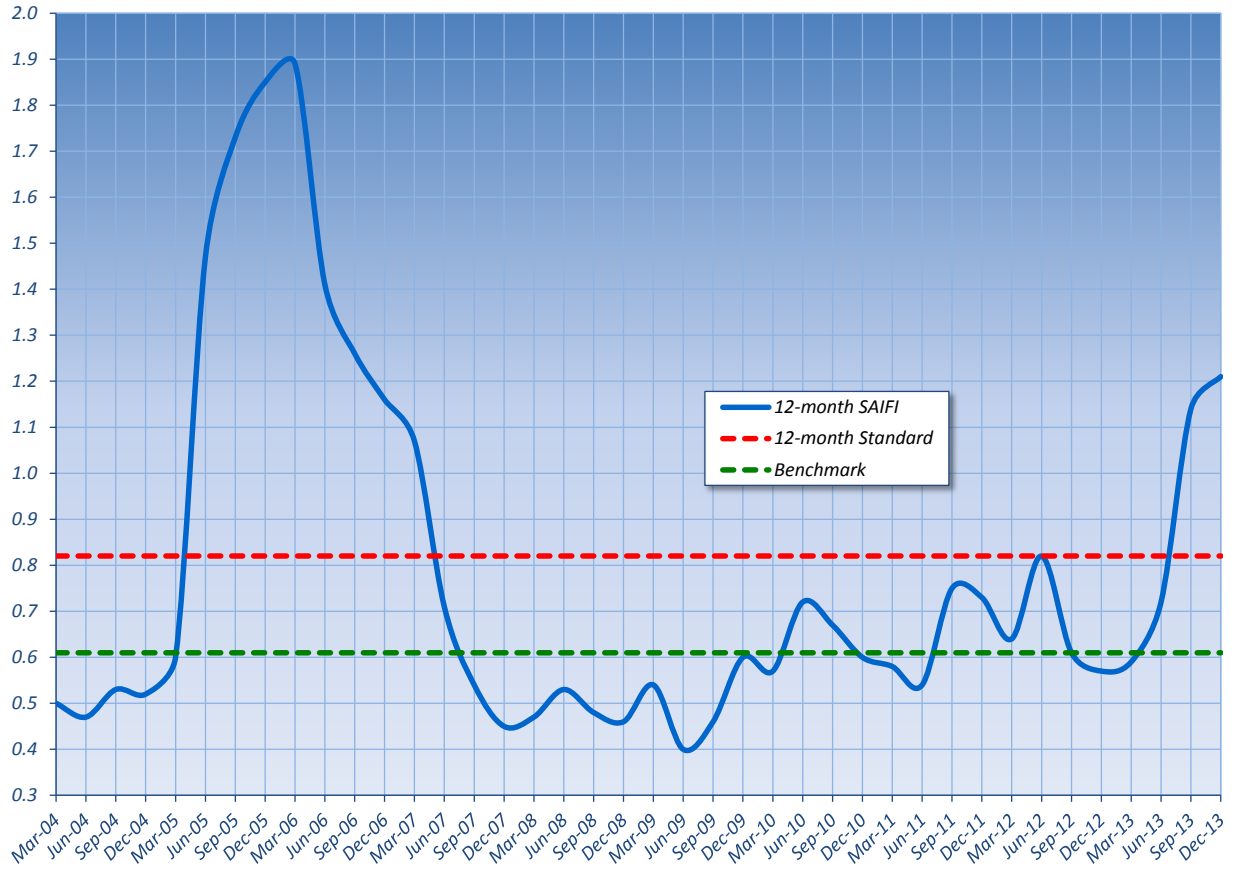


Figure 30 Pike County Outage Causes (percent of total outages)

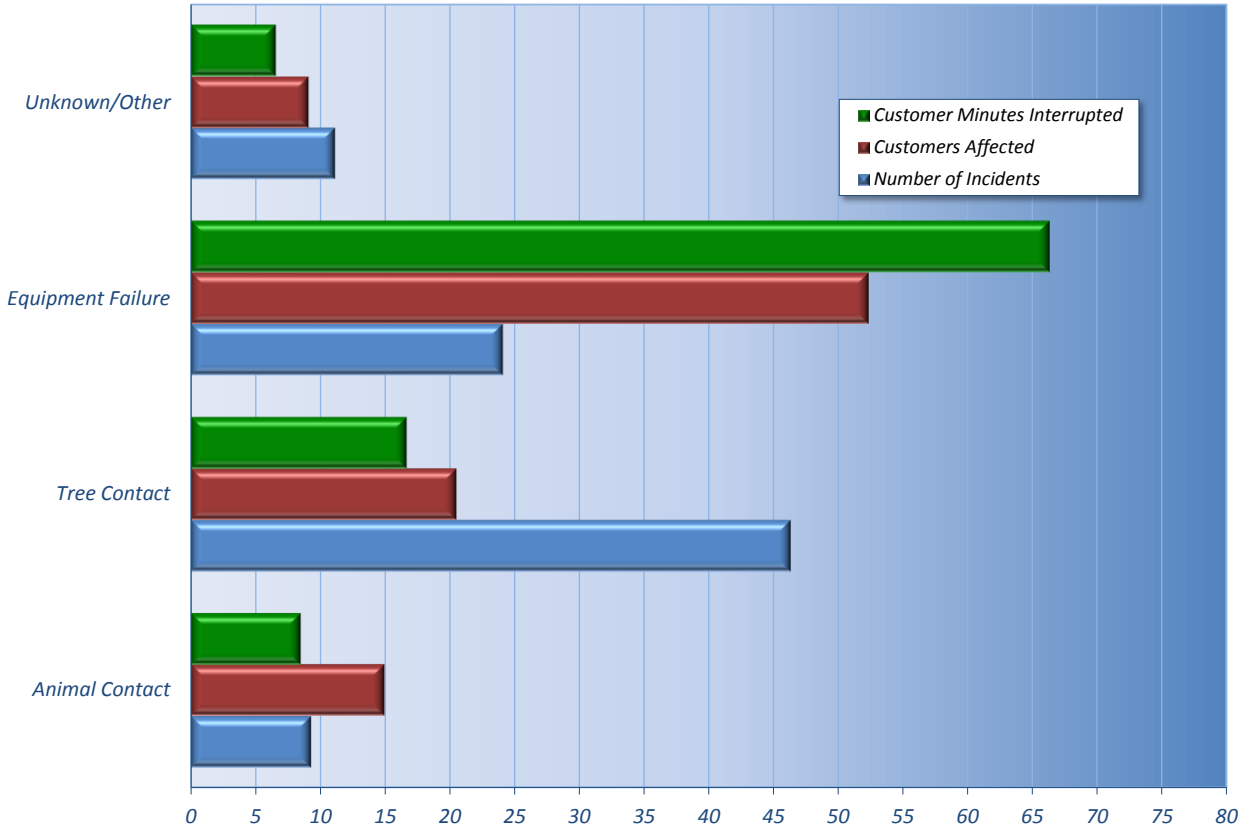
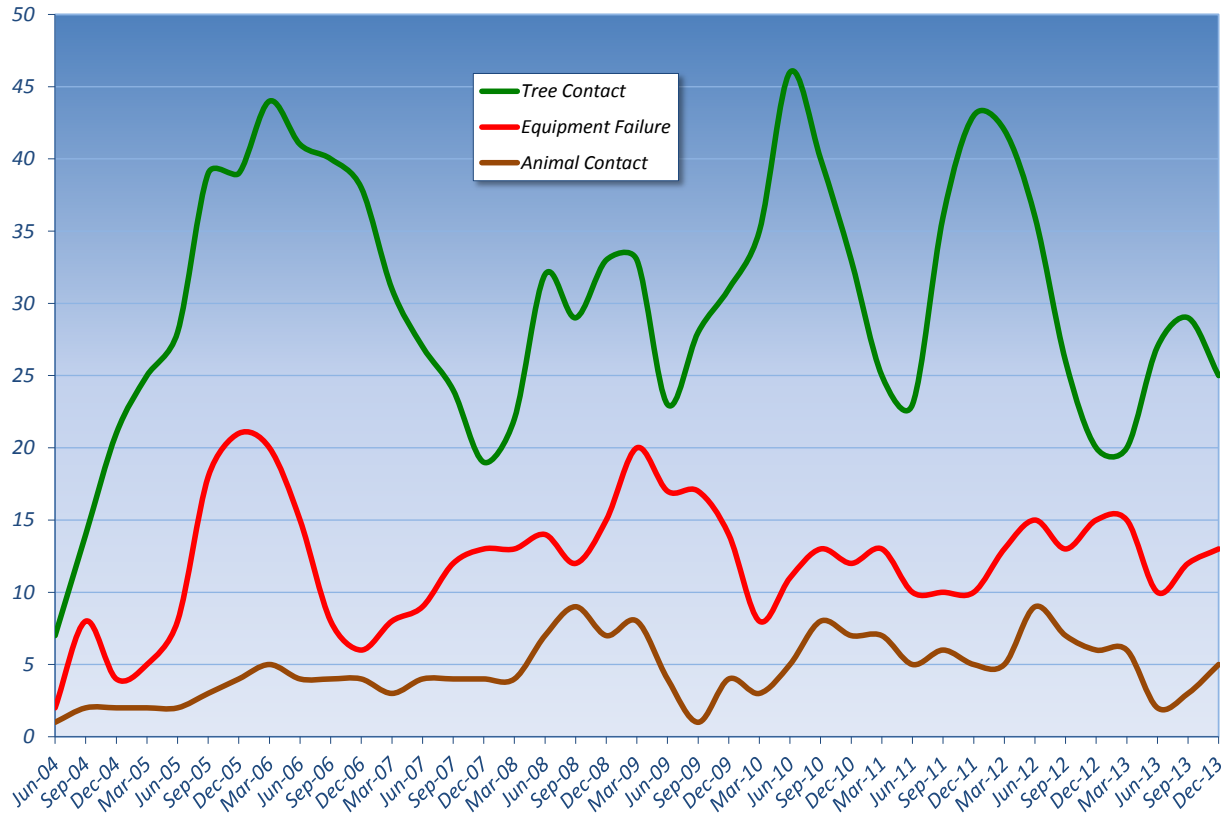


Figure 31 Pike County Outage Tracking (number of incidents)



PPL Electric Utilities Corporation

In 2013, PPL experienced 1.1 million customer interruptions for a duration of 123.6 million minutes, which was slightly better than 2012 when consumers experienced 1.5 million interruptions for a duration of 228.1 million minutes.

CAIDI/SAIDI/SAIFI Evaluation

CAIDI

- Rolling 12-month:** Decreased from 152 minutes in 2012 to 108 minutes in 2013; achieved benchmark by 26 percent.
- Three-year average:** Decreased from 146 minutes in 2012 to 137 minutes in 2013; achieved standard by 14 percent.

SAIDI

- Rolling 12-month:** Decreased from 164 minutes in 2012 to 89 minutes in 2013; achieved benchmark by 37 percent.
- Three-year average:** Decreased from 158 minutes in 2012 to 138 minutes in 2013; achieved standard by 20 percent.

SAIFI

- Rolling 12-month:** Decreased from 1.08 outages in 2012 to 0.82 outages in 2013; achieved benchmark by 16 percent.
- Three-year average:** Decreased from 1.08 outages in 2012 to 0.99 outages in 2013; achieved benchmark by 8 percent.

Historical 12-month CAIDI and SAIFI trends are shown on Figure 32 and Figure 33. The recent trend is that outages are less frequent and of less duration. Figure 34 shows the distribution of outage causes that occurred during 2013 as a percentage of total outages. Figure 35 shows a historical trend of the top two major outage causes. The most frequent outage causes were trees and equipment failure, which have been trending downward during this reporting period.

PPL's CAIDI, SAIDI and SAIFI are below standard and benchmark and are considered excellent.

Figure 33 PPL CAIDI (minutes)

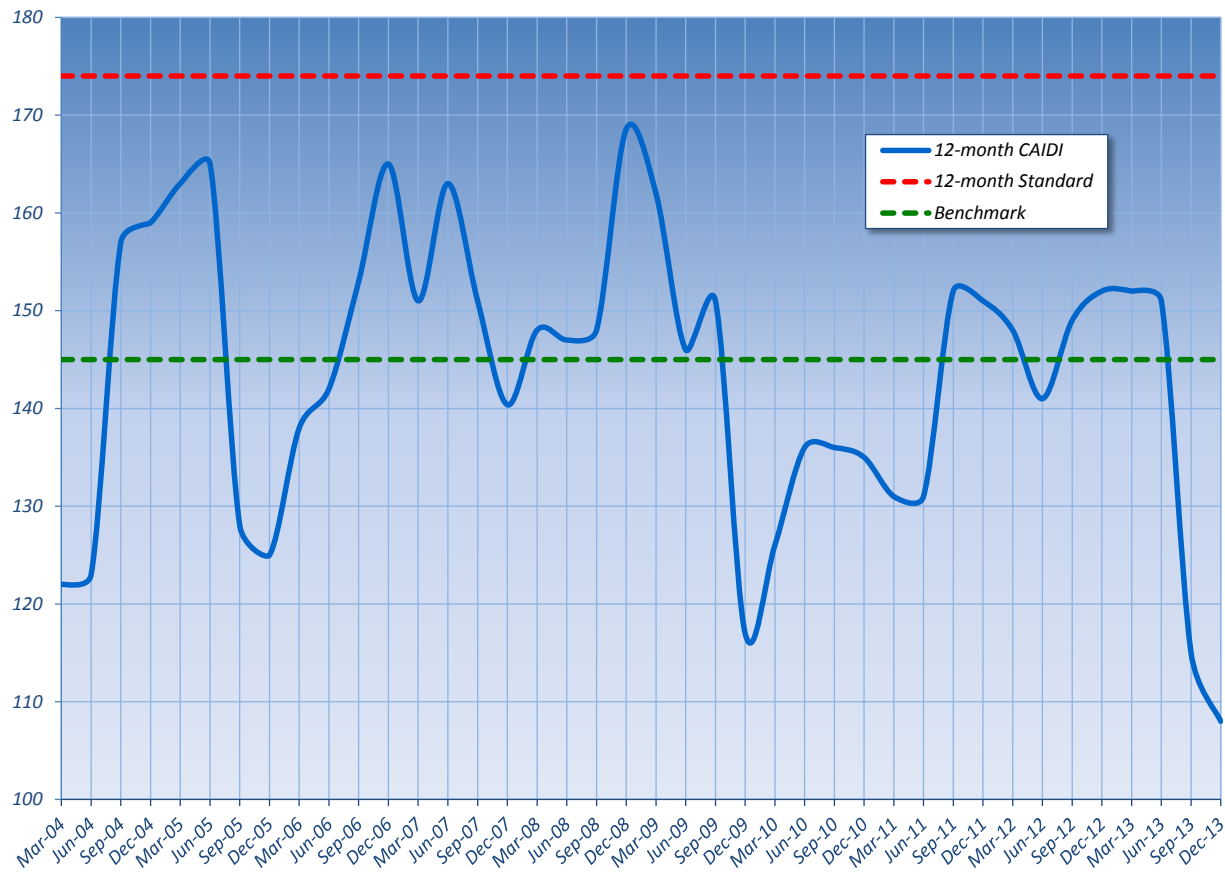


Figure 33 PPL SAIFI (interruptions per customer)

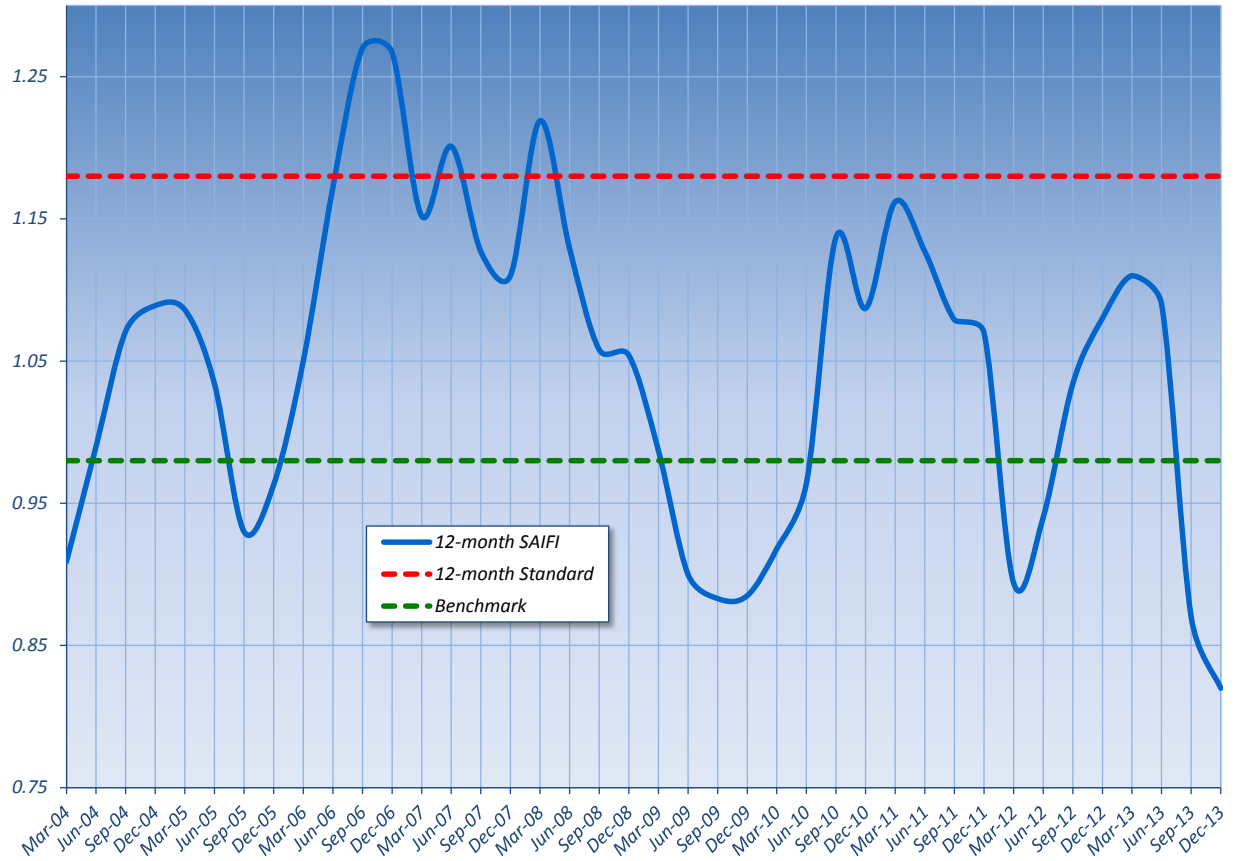


Figure 34 PPL Outage Causes (percent of total outages)

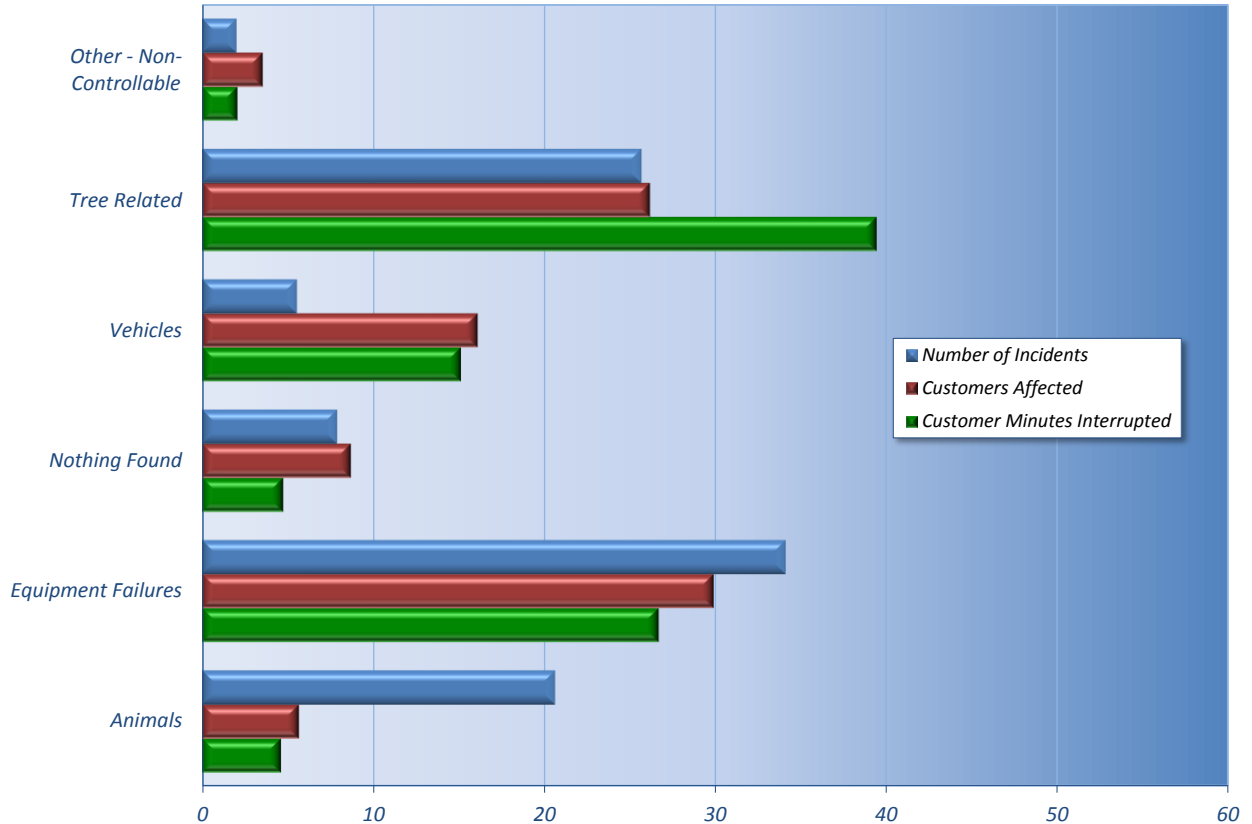
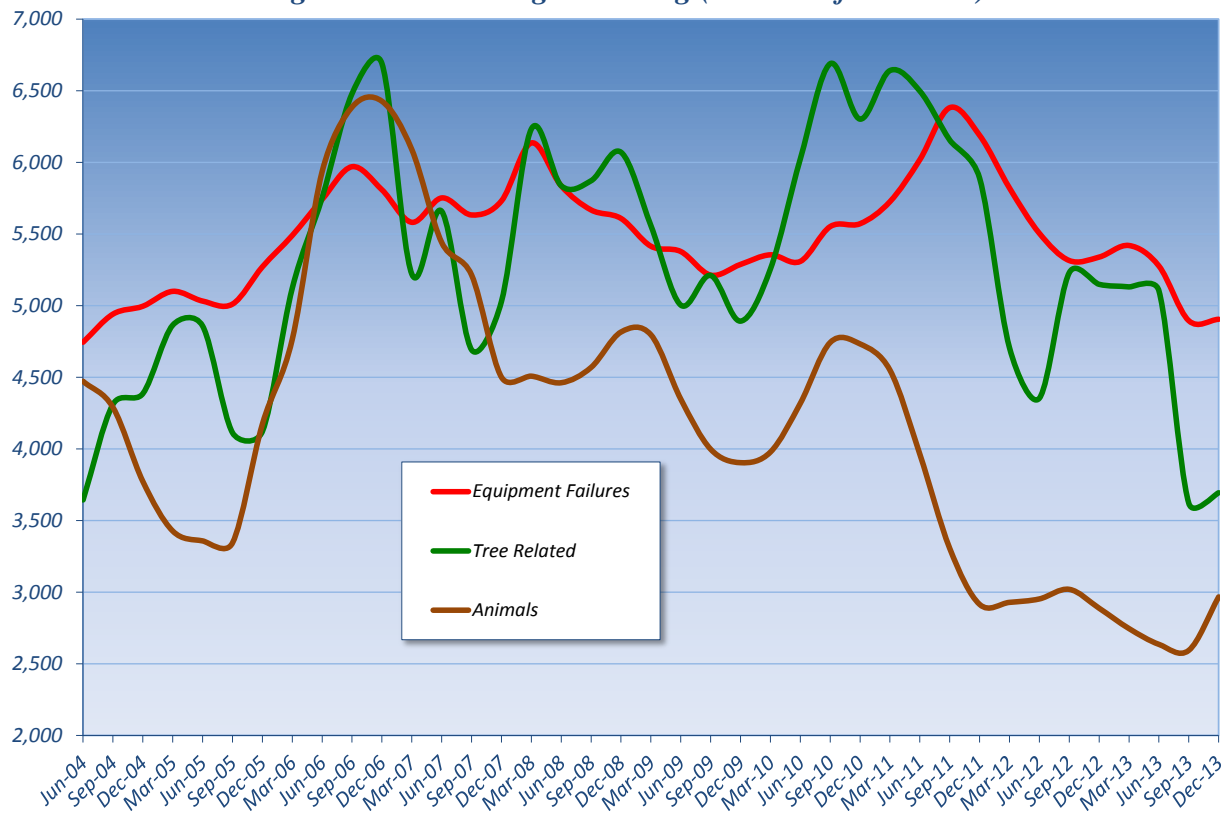


Figure 35 PPL Outage Tracking (number of incidents)



UGI Utilities Inc.

In 2013, UGI experienced 47,899 customer interruptions for a duration of 5.3 million minutes, which was significantly more than 2012 when consumers experienced 27,417 interruptions for a duration of 3.3 million minutes.

CAIDI/SAIDI/SAIFI Evaluation

CAIDI

Rolling 12-month: Decreased from 122 minutes in 2012 to 110 minutes in 2013; achieved benchmark by 35 percent.

Three-year average: Increased from 116 minutes in 2012 to 120 minutes in 2013; achieved standard by 36 percent.

SAIDI

Rolling 12-month: Increased from 58 minutes in 2012 to 85 minutes in 2013; achieved benchmark by 39 percent.

Three-year average: Increased from 74 minutes in 2012 to 87 minutes in 2013; achieved standard by 49 percent.

SAIFI

Rolling 12-month: Increased from 0.44 outages in 2012 to 0.77 outages in 2013; achieved benchmark by 7 percent.

Three-year average: Increased from 0.62 outages in 2012 to 0.72 outages in 2013; achieved standard by 21 percent.

Historical 12-month CAIDI and SAIFI trends are shown on Figure 36 and Figure 37. Figure 38 shows the distribution of outage causes that occurred during 2013 as a percentage of total outages. Figure 39 shows the historical trend of the top two major outage causes. The most frequent outage causes were trees and equipment failure, which are trending lower.

UGI's performance is excellent based on their performance trends, which are significantly below benchmark.

Figure 36 UGI CAIDI (minutes)

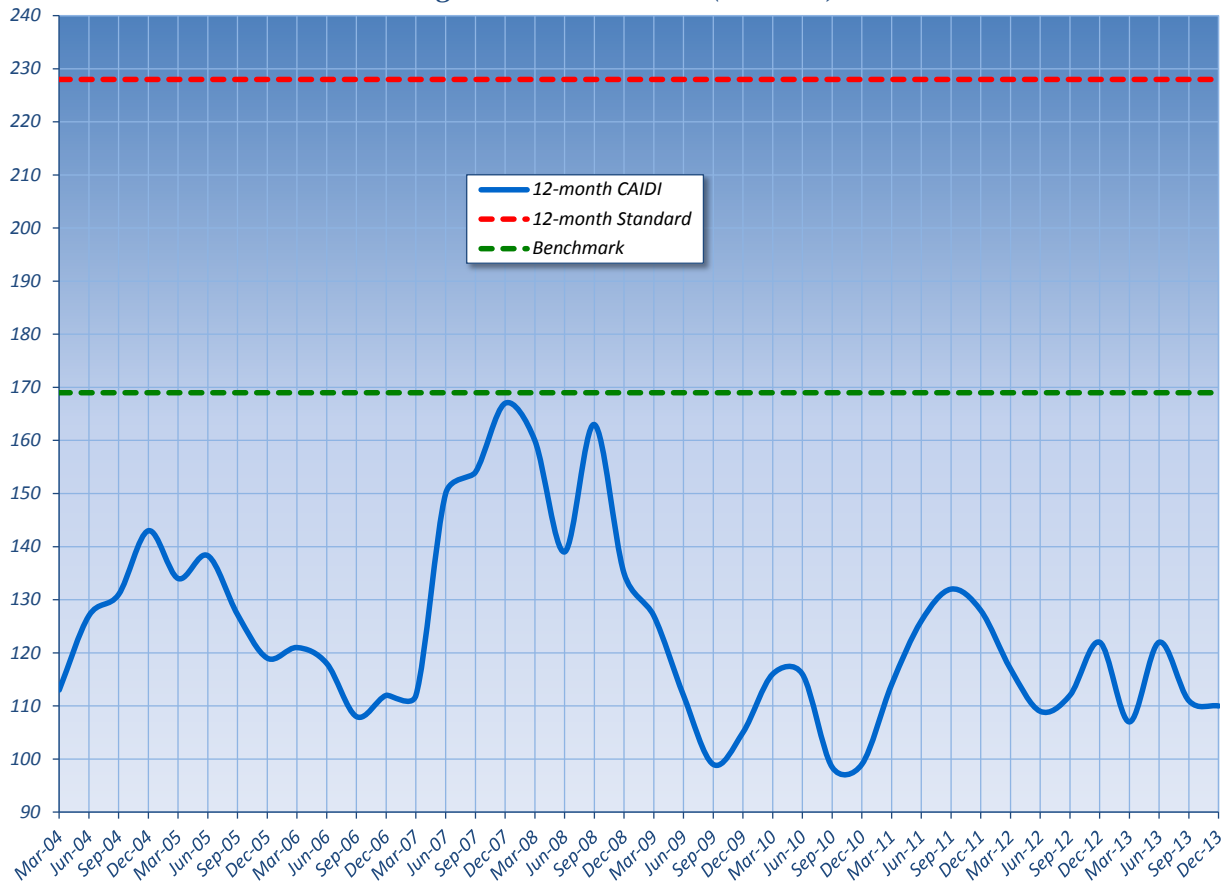


Figure 37 UGI SAIFI (interruptions per customer)

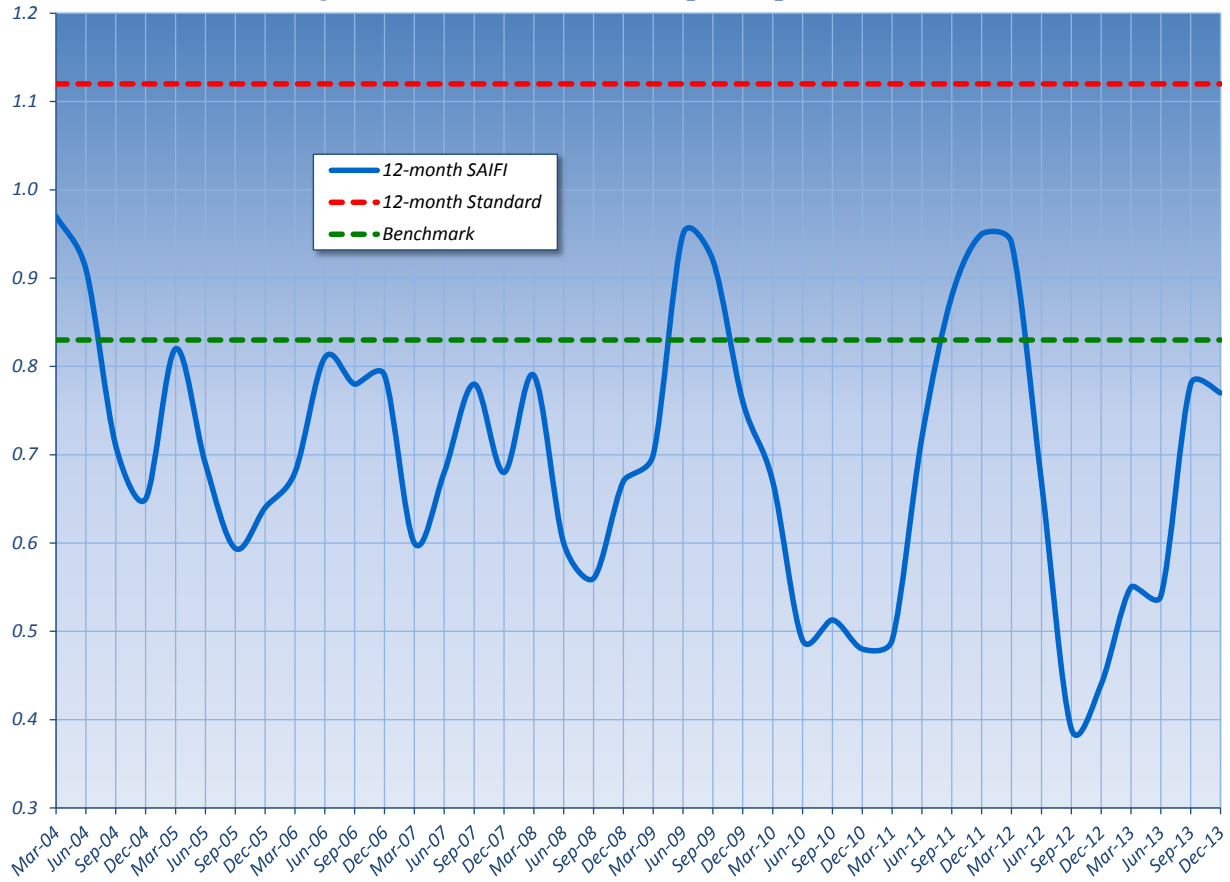


Figure 38 UGI Outage Causes (percent of total outages)

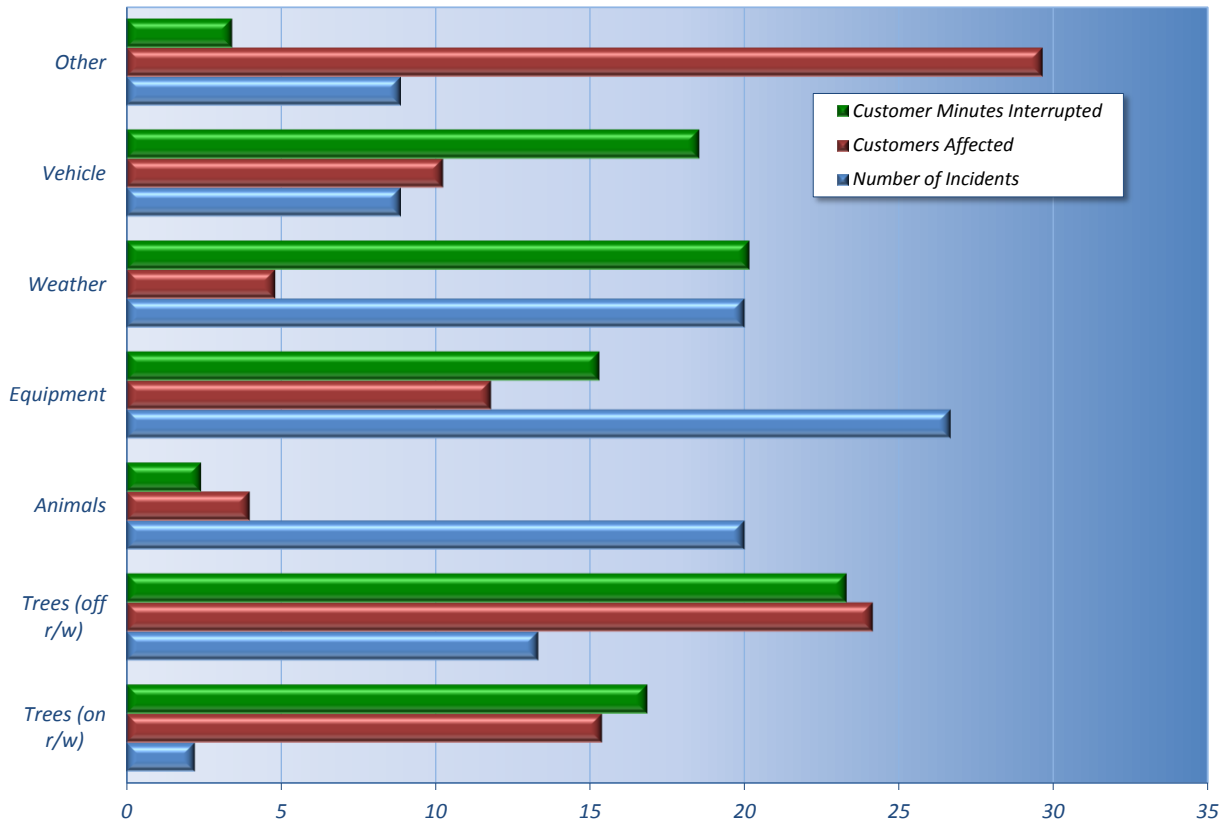
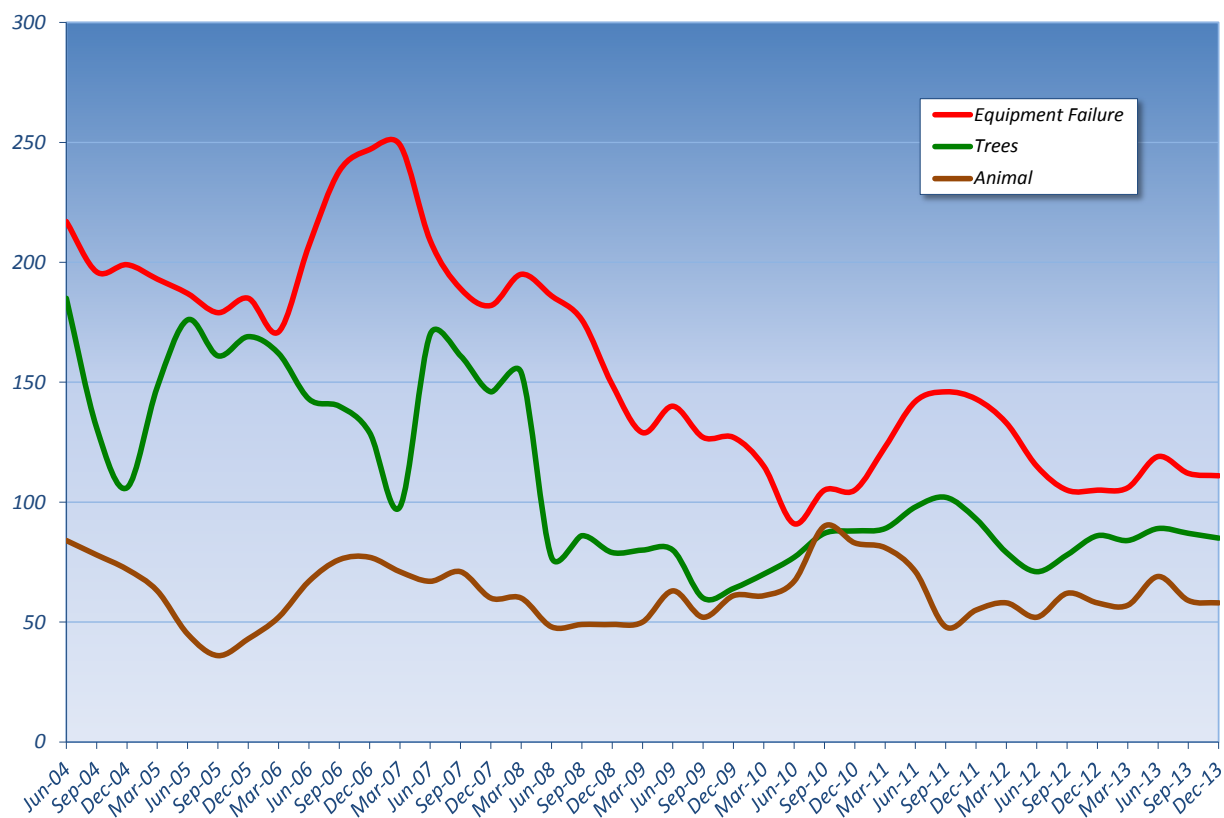


Figure 39 UGI Outage Tracking (number of incidents)



Wellsboro Electric Company

In 2013, Wellsboro experienced 3,461 customer interruptions for a duration of 242,422 minutes, which was substantially better than 2012 when consumers experienced 5,573 interruptions for a duration of 370,906 minutes.

The 2013 reliability metrics calculation excludes the following outage data relating to five major events, which were approved by the Commission:²²

- January 20, 2013 – High winds, affecting 2,686 customers.
- January 28, 2013 – Off right-of-way trees, affecting 2,006 customers.
- February 20, 2013 – Car accident, affecting 1,534 customers.
- May 8, 2013 – 115kV FirstEnergy transmission loss, affecting 6,206 customers.
- May 14, 2013 – 115kV FirstEnergy transmission loss, affecting 6,206 customers.

CAIDI/SAIDI/SAIFI Evaluation

CAIDI

Rolling 12-month: Increased from 65 minutes in 2012 to 70 minutes in 2013; achieved benchmark by 44 percent.

²² See Docket Nos. M-2013-2364743; M-2013-2364743; M-2013-2350004; M-2013-2349840; M-2013-2349843.

Three-year average: Decreased slightly from 71 minutes in 2012 to 69 minutes in 2013 and achieved standard by 49 percent.

SAIDI

Rolling 12-month: Decreased from 60 minutes in 2012 to 39 minutes in 2013; achieved benchmark by 75 percent.

Three-year average: Decreased from 84 minutes in 2012 to 73 minutes in 2013; achieved standard by 61 percent.

SAIFI

Rolling 12-month: Decreased from 0.94 outages in 2012 to 0.56 outages in 2013; achieved benchmark by 55 percent.

Three-year average: Decreased from 1.18 outages in 2012 to 1.04 outages in 2013 and achieved standard by 23 percent.

Historical 12-month CAIDI and SAIFI trends are shown on Figure 40 and Figure 41. Figure 42 shows the distribution of outage causes as a percentage of total outages. Figure 43 shows the historical trend of the top two major outage causes. The most frequent outage cause was related to equipment failure, but it continues to trend downward.

Wellsboro’s performance is excellent based on their performance trends, which are significantly below benchmark.

Figure 40 Wellsboro CAIDI (minutes)

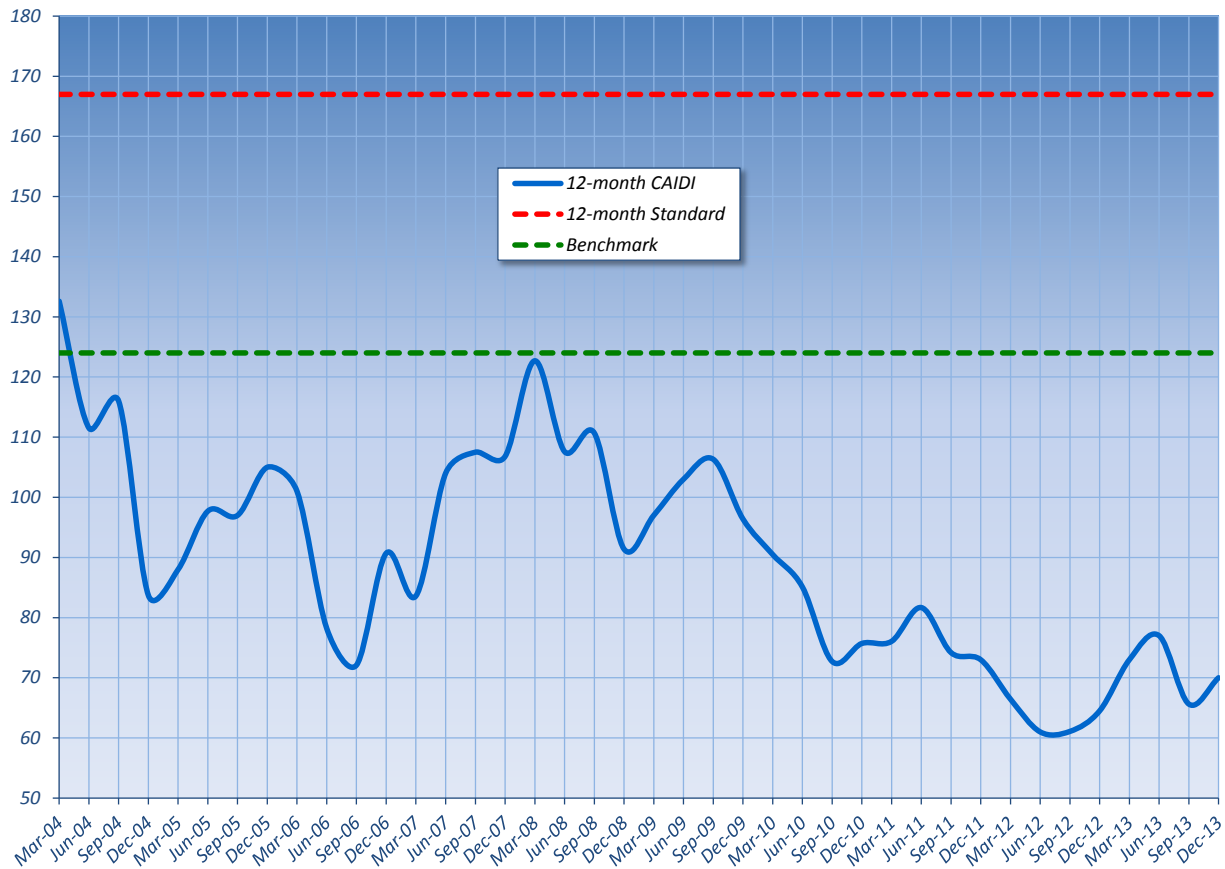


Figure 41 Wellsboro SAIFI (interruptions per customer)

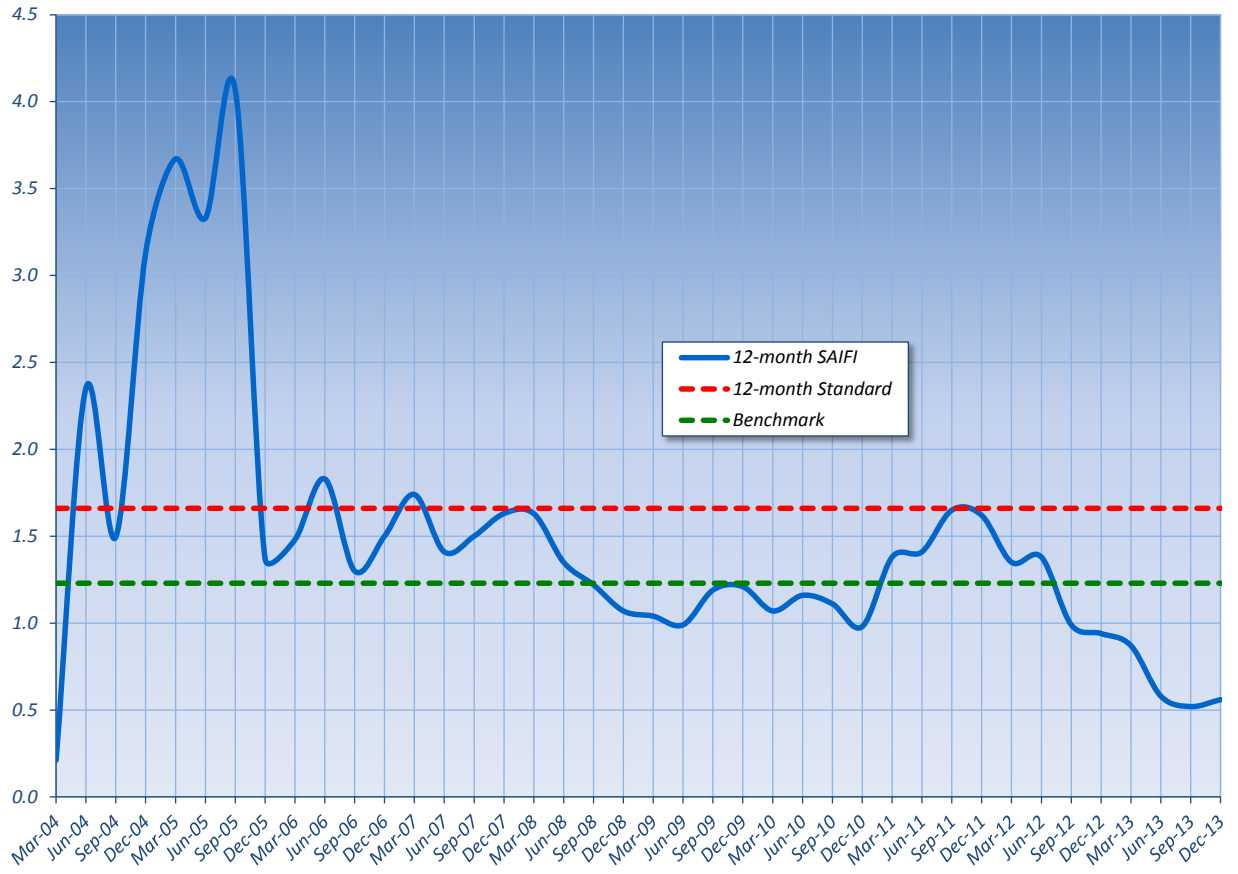


Figure 42 Wellsboro Outage Causes (percent of total outages)

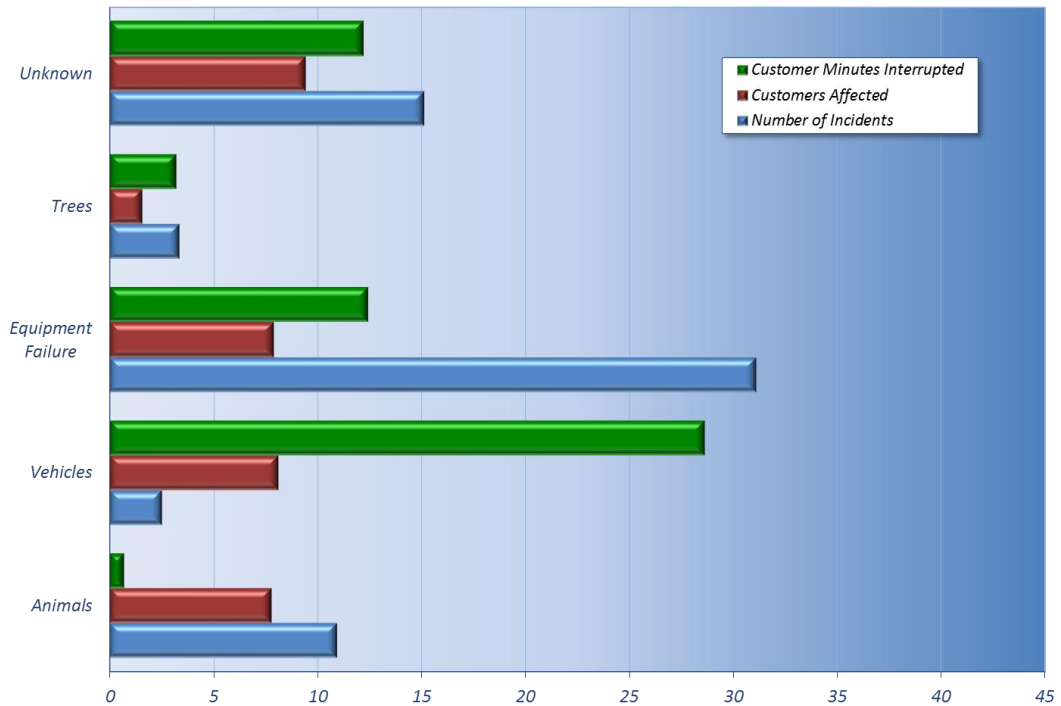
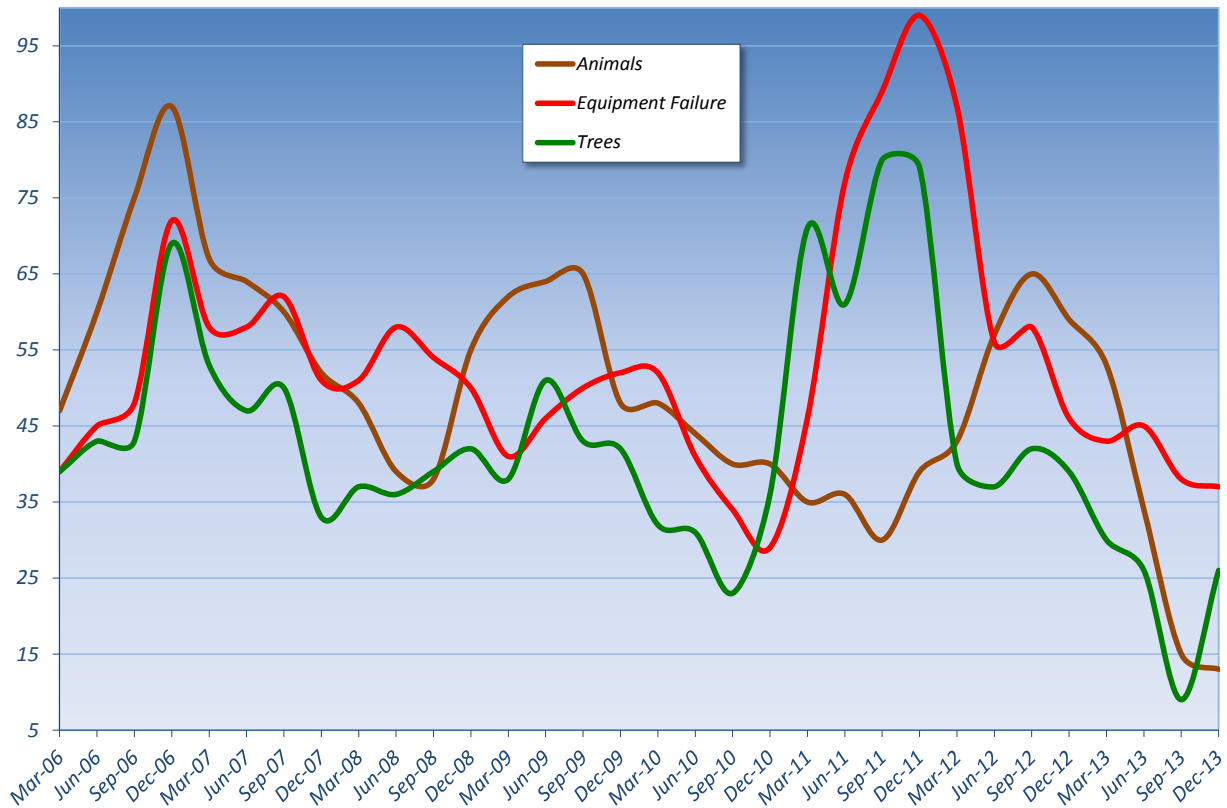


Figure 43 Wellsboro Outage Tracking (number of incidents)



West Penn Power Company

In 2013, West Penn experienced 863,104 customer interruptions for a duration of 157.8 million minutes, which was worse than 2012 when consumers experienced 753,301 interruptions for a duration of 170.5 million minutes.

The 2013 reliability metrics calculation excludes the following outage data relating to one major event, which was approved by the Commission:²³

- May 14, 2013 – Thermal hot spot found during routine inspection and emergency repair performed, affecting 2,823 customers.

CAIDI/SAIDI/SAIFI Evaluation

CAIDI

Rolling 12-month: Decreased from 226 minutes in 2012 to 183 minutes in 2013; failed to achieve benchmark by 8 percent.

Three-year average: Decreased from 189 minutes in 2012 to 187 minutes in 2013; achieved standard by 0.2 percent.

SAIDI

Rolling 12-month: Decreased from 241 minutes in 2012 to 222 minutes in 2013; failed to achieve benchmark by 24 percent.

Three-year average: Increased from 214 minutes in 2012 to 225 minutes in 2013; failed to achieve standard by 3.5 percent.

²³ See Docket No. M-2013-2376707.

SAIFI

Rolling 12-month: Increased from 1.07 outages in 2012 to 1.21 outages in 2013; failed to achieve benchmark by 15 percent.

Three-year average: Increased from 1.16 outages in 2012 to 1.23 outages in 2013; failed to achieve standard by 6 percent.

Historical 12-month CAIDI and SAIFI trends are shown on Figure 44 and Figure 45. The past-year trend shows it is taking less time to restore power; however, outages are occurring more frequently. Figure 46 shows the distribution of outage causes that occurred during 2013 as a percentage of total outages. Figure 47 shows the historical trend of the top three major outage causes, which were trees, equipment failure and weather. All three outage causes are continuing to trend downward.

West Penn's CAIDI, SAIDI, and SAIFI scores are currently below the 12-month standard. However, improvement is needed to drive performance goals below benchmark, especially in the number of interruptions experienced by customers.

Figure 44 West Penn CAIDI (minutes)

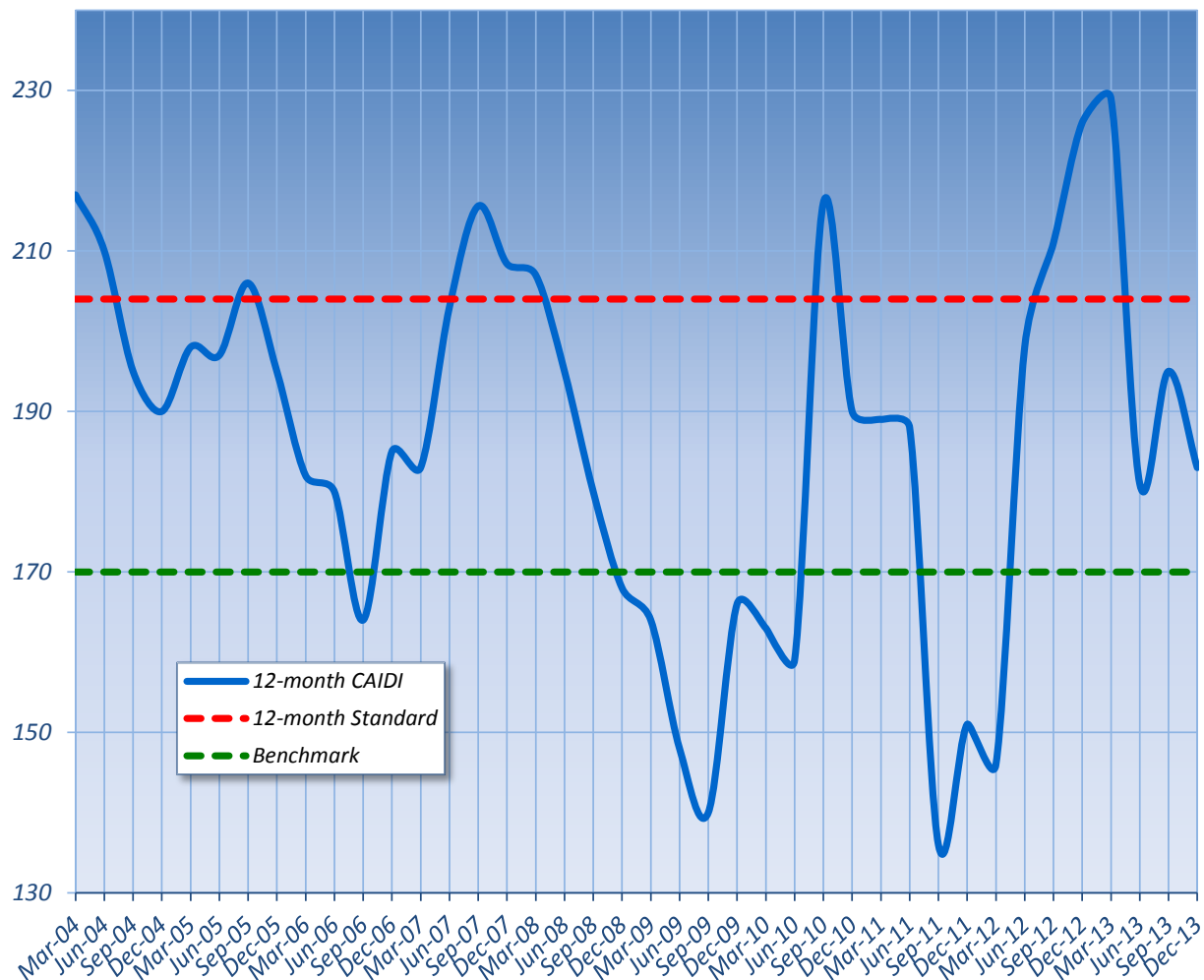


Figure 45 West Penn SAIFI (interruptions per customer)

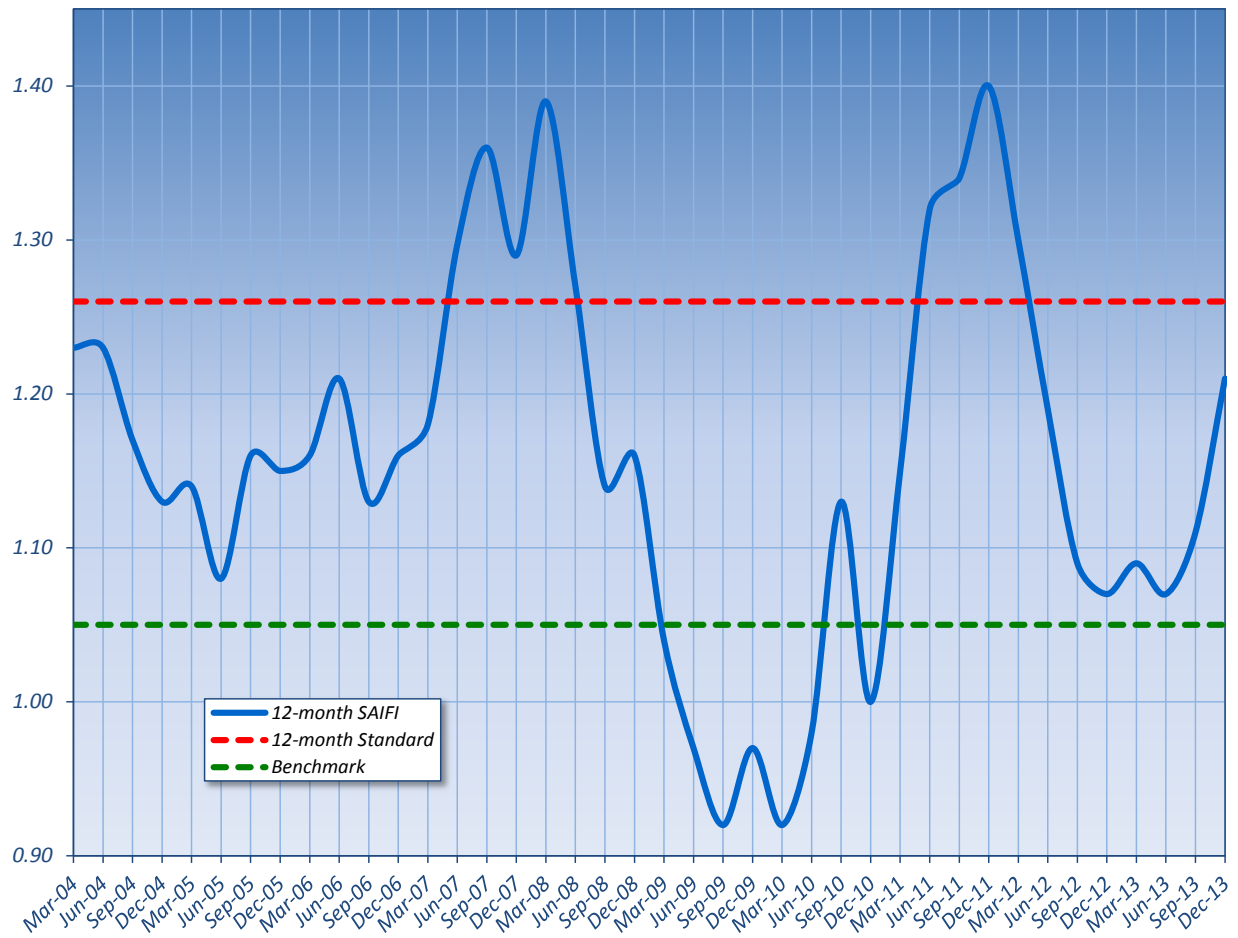


Figure 46 West Penn Outage Causes (percent of total outages)

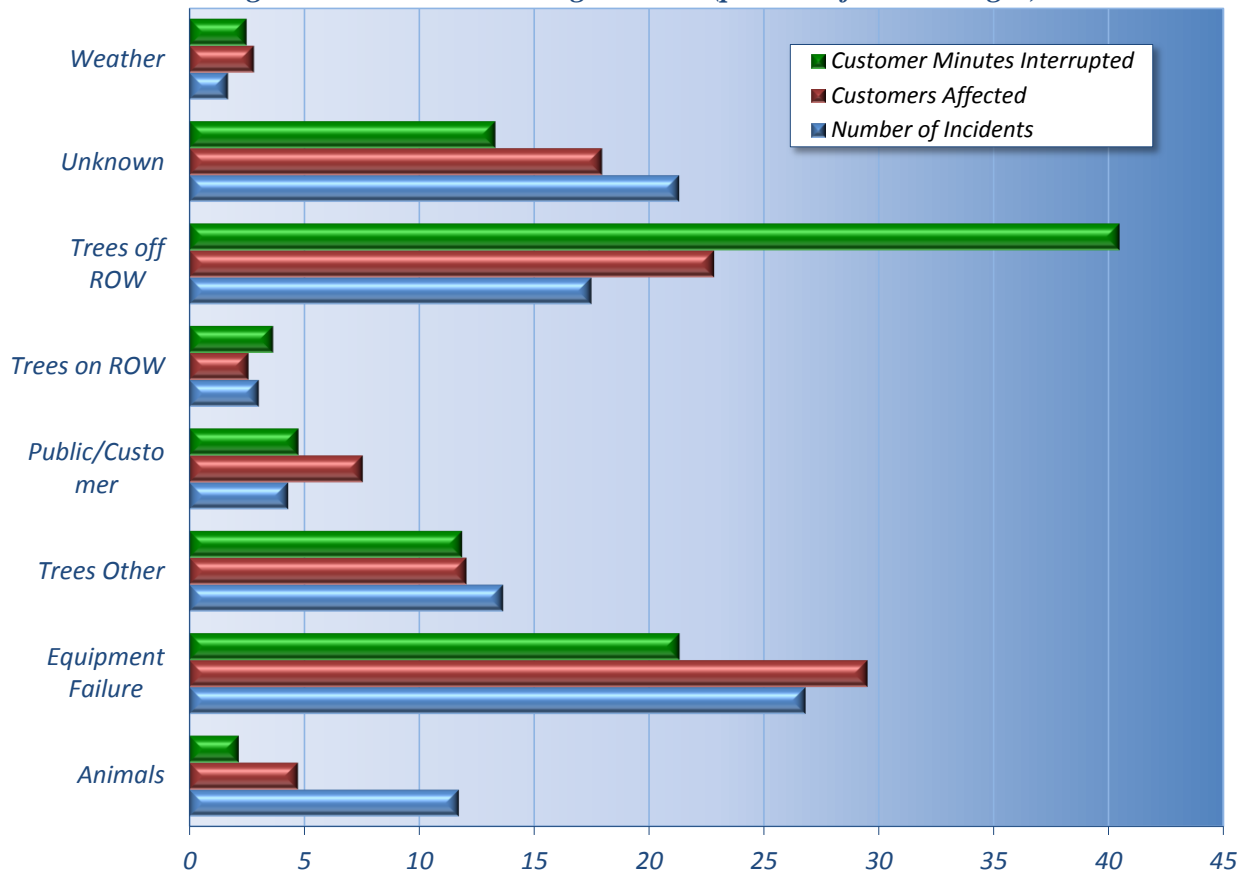
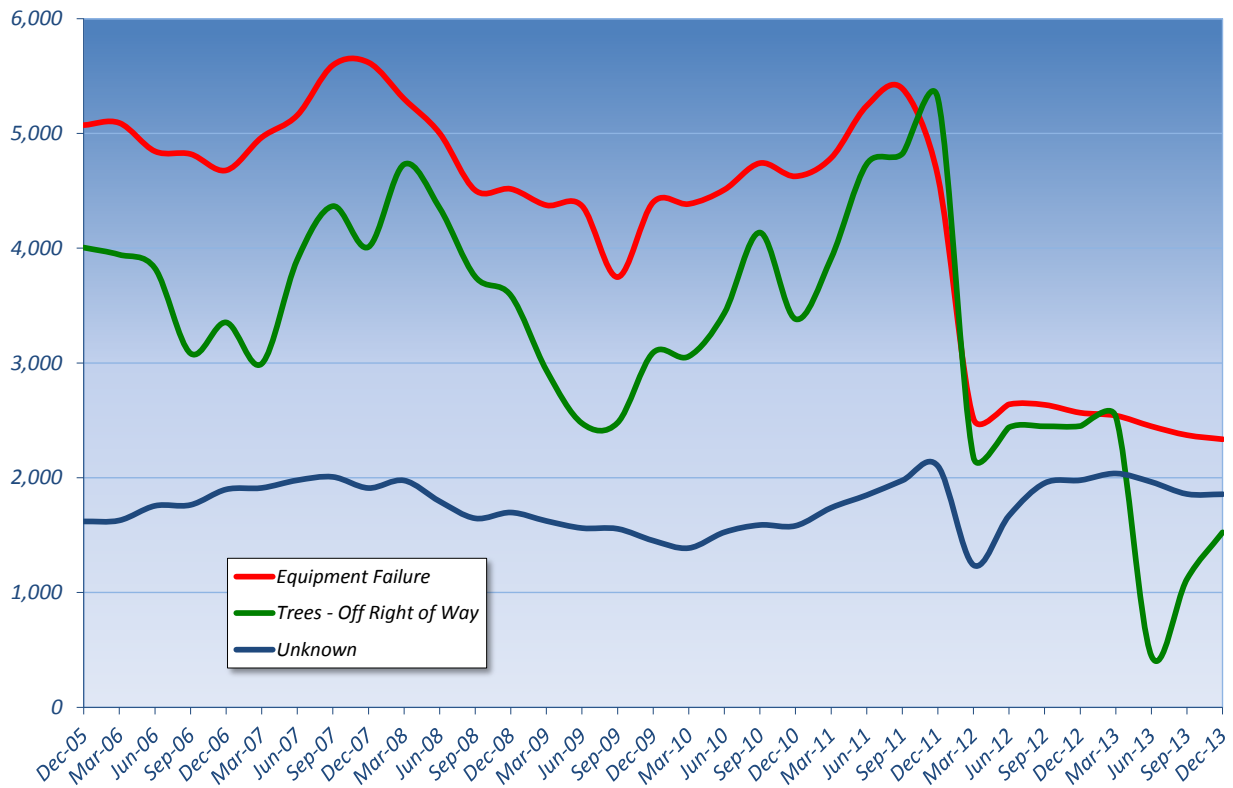


Figure 47 West Penn Outage Tracking (number of incidents)



Section 5– Conclusion

The Electricity Generation Customer Choice and Competition Act of 1996 mandates that the Commission ensure that levels of reliability that existed prior to the restructuring of the electric utility industry continue in the new competitive markets. In response, the PUC adopted reporting requirements designed to ensure the continuing safety, adequacy and reliability of the generation, transmission and distribution of electricity in the Commonwealth. The Commission also established reliability benchmarks and standards with which to measure the performance of each EDC, and standards for the inspection and maintenance of electric distribution facilities.

Given the uncertainty of weather and other events that can affect reliability performance, the PUC has stated that EDCs should set goals to achieve benchmark performance or better to allow for times when unforeseen circumstances push the metrics above the benchmark. In recognition of these unforeseen circumstances, the Commission set the performance standard as the minimum level of EDC reliability performance. The standard is the level of performance beyond which a company must either justify its poor performance or provide information on corrective measures. Performance that does not meet the standard for any reliability measure may be the threshold for triggering additional scrutiny and potential compliance enforcement actions.

In 2013, nine of 11 EDCs achieved compliance with the 12-month Customer Average Interruption Duration Index (CAIDI) Standard. Six EDCs performed better than the 12-month CAIDI benchmark.

Nine of 11 EDCs achieved compliance with the 12-month System Average Interruption Duration Index (SAIDI) Standard. Six EDCs performed better than the 12-month SAIDI benchmark.

Eight of 11 EDCs achieved compliance with the 12-month System Average Interruption Frequency Index (SAIFI) Standard. Six EDCs performed better than the 12-month SAIFI benchmark.

The Commission will continue to monitor the reliability of electric service in Pennsylvania through ongoing oversight of utility performance and enforcement of inspection and maintenance standards. Commission staff will continue with detailed reviews of each EDC's inspection and maintenance plan. Commission staff also is working with the EDCs to facilitate the exchange of best practices. For those EDCs not meeting their standards or their benchmarks, Commission staff will work with the EDCs to ensure future standard compliance and a drive towards benchmark performance.

Appendix A – Electric Reliability Metrics

12-Month Average Electric Reliability Indices for 2013

Customer Average Interruption Duration Index (CAIDI)- min/yr/cust				% Above (+) or Below (-) Benchmark	% Above (+) or Below (-) Standard
EDC	Dec-13	Benchmark	Standard		
Citizens'	81	105	141	-22.9	-42.6
Duquesne Light	121	108	130	12.0	-6.9
Met-Ed (FE)	105	117	140	-10.3	-25.0
PECO	91	112	134	-18.8	-32.1
Penelec (FE)	117	117	141	0.0	-17.0
Penn Power (FE)	140	101	121	38.6	15.7
Pike County	209	174	235	20.1	-11.1
PPL	108	145	174	-25.5	-37.9
UGI	110	169	228	-34.9	-51.8
Wellsboro	70	124	167	-43.5	-58.1
West Penn (FE)	183	170	204	7.6	-10.3
System Average Interruption Frequency Index (SAIFI)- outages/yr/cust				% Above (+) or Below (-) Benchmark	% Above (+) or Below (-) Standard
EDC	Dec-13	Benchmark	Standard		
Citizens'	0.46	0.20	0.27	130.0	70.4
Duquesne Light	0.62	1.17	1.40	-47.0	-55.7
Met-Ed (FE)	1.09	1.15	1.38	-5.2	-21.0
PECO	0.69	1.23	1.48	-43.9	-53.4
Penelec (FE)	1.48	1.26	1.52	17.5	-2.6
Penn Power (FE)	1.35	1.12	1.34	20.5	0.7
Pike County	1.21	0.61	0.82	98.4	47.6
PPL	0.82	0.98	1.18	-16.3	-30.5
UGI	0.77	0.83	1.12	-7.2	-31.3
Wellsboro	0.56	1.23	1.66	-54.5	-66.3
West Penn (FE)	1.21	1.05	1.26	15.2	-4.0
System Average Interruption Duration Index (SAIDI)- min/yr/cust				% Above (+) or Below (-) Benchmark	% Above (+) or Below (-) Standard
EDC	Dec-13	Benchmark	Standard		
Citizens'	37	21	38	76.2	-2.6
Duquesne Light	75	126	182	-40.5	-58.8
Met-Ed (FE)	115	135	194	-14.8	-40.7
PECO	63	138	198	-54.3	-68.2
Penelec (FE)	174	148	213	17.6	-18.3
Penn Power (FE)	188	113	162	66.4	16.0
Pike County	253	106	194	138.7	30.4
PPL	89	142	205	-37.3	-56.6
UGI	85	140	256	-39.3	-66.8
Wellsboro	39	153	278	-74.5	-86.0
West Penn (FE)	222	179	257	24.0	-13.6

Note: **GREEN** = better than benchmark; **RED** = worse than standard; **BLACK** = between benchmark and standard.

Performance Benchmark. An EDC's performance benchmark is calculated by averaging the EDC's annual, system-wide reliability performance indices over the five-year period directly prior to the implementation of electric restructuring (1994 to 1998). The benchmark is the level of performance that the EDC should strive to achieve and maintain.

Performance Standard. An EDC's performance standard is a numerical value that represents the minimal performance allowed for each reliability index for a given EDC. Performance standards are based on a percentage of each EDC's historical performance benchmarks.

Three-Year Average Electric Reliability Indices for 2011-2013

Customer Average Interruption Duration Index (CAIDI)-min/yr/cust				3-Year Average	3-Year Standard	% Above (+) or Below (-) Standard
EDC	2011	2012	2013			
Citizens'	126	129	81	112	115	-2.6
Duquesne Light	107	117	121	115	119	-3.4
Met-Ed (FE)	117	120	105	114	129	-11.6
PECO	135	97	91	108	123	-12.5
Penelec (FE)	167	138	117	141	129	9.0
Penn Power (FE)	138	114	140	131	111	17.7
Pike County	297	184	209	230	192	19.8
PPL	151	152	108	137	160	-14.4
UGI	128	122	110	120	186	-35.5
Wellsboro	73	65	70	69	136	-49.1
West Penn (FE)	151	226	183	187	187	-0.2

System Average Interruption Frequency Index (SAIFI)-outages/yr/cust				3-Year Average	3-Year Standard	% Above (+) or Below (-) Standard
EDC	2011	2012	2013			
Citizens'	0.35	0.09	0.46	0.30	0.22	36.4
Duquesne Light	0.93	0.67	0.62	0.74	1.29	-42.6
Met-Ed (FE)	1.21	1.29	1.09	1.20	1.27	-5.8
PECO	1.14	0.77	0.69	0.87	1.35	-35.8
Penelec (FE)	1.40	1.41	1.48	1.43	1.39	2.9
Penn Power (FE)	1.03	1.17	1.35	1.18	1.23	-3.8
Pike County	0.73	0.57	1.21	0.84	0.67	24.9
PPL	1.07	1.08	0.82	0.99	1.08	-8.3
UGI	0.95	0.44	0.77	0.72	0.91	-20.9
Wellsboro	1.62	0.94	0.56	1.04	1.35	-23.0
West Penn (FE)	1.40	1.07	1.21	1.23	1.16	5.7

System Average Interruption Duration Index (SAIDI)-min/yr/cust				3-Year Average	3-Year Standard	% Above (+) or Below (-) Standard
EDC	2011	2012	2013			
Citizens'	44	11	37	31	25	22.7
Duquesne Light	99	79	75	84	153	-44.9
Met-Ed (FE)	142	155	115	137	163	-15.7
PECO	154	75	63	97	167	-41.7
Penelec (FE)	233	194	174	200	179	11.9
Penn Power (FE)	143	133	188	155	136	13.7
Pike County	216	105	253	191	129	48.3
PPL	162	164	89	138	172	-19.6
UGI	121	54	85	87	170	-49.0
Wellsboro	119	60	39	73	185	-60.6
West Penn (FE)	211	241	222	225	217	3.5

Note: **GREEN** = better than standard; **RED** = worse than standard.

Appendix B – Modifications to Inspection and Maintenance Intervals

Modifications to Inspection and Maintenance (I&M) Intervals (Group 1) Submitted October 2013, effective January 1, 2015- December 31, 2016

Company	Exemption Requested	Justification
FirstEnergy including Penelec, Penn Power, Met-Ed and West Penn Power	Pole loading calculations	Approved previously in the January 1, 2013-December 31, 2014 I&M Plan.
FirstEnergy including Penelec, Penn Power, Met-Ed and West Penn Power	Distribution overhead line inspections – 5 year rather than 1 to 2-year cycle	Approved previously in the January 1, 2013-December 31, 2014 I&M Plan.
FirstEnergy including Penelec, Penn Power, Met-Ed and West Penn Power	Overhead transformer inspections – 5 year rather than 1 to 2-year cycle	Approved previously in the January 1, 2013-December 31, 2014 I&M Plan.
UGI	None	n/a

Modifications to Inspection and Maintenance Intervals (Group 2) Submitted October 2012, effective January 1, 2014- December 31, 2015

Company	Exemption Requested	Justification
Citizens'	Pole loading calculations	Approved previously in the January 1, 2012-December 31, 2013 I&M Plan.
Duquesne	Pole loading calculations	Approved previously in the January 1, 2012-December 31, 2013 I&M Plan
Duquesne	Overhead line inspections	Approved previously in the January 1, 2012-December 31, 2013 I&M Plan
Duquesne	Overhead transformer inspections	Approved previously in the January 1, 2012-December 31, 2013 I&M Plan
Duquesne	Above-ground pad-mounted transformers	Approved previously in the January 1, 2012-December 31, 2013 I&M Plan
PECO	Pole loading calculations	Approved previously in the January 1, 2012-December 31, 2013 I&M Plan
Pike County	Pole loading calculations	Approved previously in the January 1, 2012-December 31, 2013 I&M Plan
PPL	Pole loading calculations	Approved previously in the January 1, 2012-December 31, 2013 I&M Plan
PPL	Overhead line inspections	Approved previously in the January 1, 2012-December 31, 2013 I&M Plan
PPL	Transformer inspections	Approved previously in the January 1, 2012-December 31, 2013 I&M Plan
Wellsboro	Pole loading calculations	Approved previously in the January 1, 2012-December 31, 2013 I&M Plan

Pennsylvania Public Utility Commission
P.O. Box 3265
Harrisburg, PA 17105-3265
www.puc.state.pa.us