

# Electric Service Reliability in Pennsylvania

2007



Pennsylvania Public Utility Commission



# ELECTRIC SERVICE RELIABILITY IN PENNSYLVANIA 2007

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*Disclaimer: Any comments or conclusions contained in this report do not necessarily reflect the views or opinions of the Commission or individual Commissioners.*

## EXECUTIVE SUMMARY

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The Electricity Generation Customer Choice and Competition Act mandates that the Pennsylvania Public Utility Commission (Commission) ensure that levels of reliability that existed prior to the restructuring of the electric utility industry continue in the new competitive markets. Act of December 3, 1996, P.L. 802, No. 138, 66 Pa.C.S. Sec. 2801 et. seq.

In response to this mandate, the Commission adopted reporting requirements designed to ensure the continuing safety, adequacy and reliability of the generation, transmission and distribution of electricity in the Commonwealth.<sup>1</sup> The Commission also established reliability benchmarks and standards to measure the performance of each electric distribution company (EDC).<sup>2</sup>

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 those times when unforeseen circumstances push the indices above the benchmark.<sup>3</sup> 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 the company must either justify its poor performance or provide information on the corrective measures it will take to improve performance. 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 2007, nine of the 11 EDCs achieved compliance with the 12-month Customer Average Interruption Duration Index (CAIDI) performance standard for duration of service outages, and all nine performed better than the 12-month CAIDI performance benchmark. Thus, when measured on a company-wide basis, these EDCs provided adequate restoration of service and actually provided restoration of service in a timelier manner than was experienced over the five years prior to the restructuring of the electric utility industry.

Eight of 11 EDCs achieved compliance with the 12-month System Average Interruption Frequency Index (SAIFI) performance standards for the average frequency of service outages per customer. Four EDCs performed better than the 12-month SAIFI performance benchmark. Therefore, the majority of the EDCs have maintained the number of customer outages at an acceptable level, with four EDCs reducing customer outage levels beyond the levels experienced over the five years prior to the restructuring of the electric utility industry.

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<sup>1</sup> Docket No. L-00970120; 52 Pa. Code §§ 57.191-57.197.

<sup>2</sup> Docket No. M-00991220.

<sup>3</sup> Docket No. M-00991220, Page 25.

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. This year, we have assessed the average reliability performance of EDCs over a three-year period, utilizing data from 2005, 2006 and 2007.

Nine of the 11 EDCs performed better than the three-year standard for average duration of service outages. For the average frequency of service outages per customer, only five of the 11 EDCs performed better than the three-year performance standard. Most of the EDCs that failed to perform better than the three-year standards were EDCs that had performance issues in prior years. Due in part to renewed Commission oversight, these EDCs have shown a trend toward improving performance, that, if it continues, should bring those EDCs into compliance with the three-year standards.

A variety of non-compliance enforcement actions were taken with EDCs that failed to meet any of the Commission's electric reliability performance standards. These enforcement actions ranged from meetings with the companies to discuss reliability improvement plans to formal reliability investigations.

In addition to monitoring the reliability performance of the EDCs, the Commission adopted a final rulemaking order on May 22, 2008, which describes the inspection and maintenance standards that are appropriate for electric transmission and distribution systems.<sup>4</sup>

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<sup>4</sup> Docket No. L-00040167.

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## Section 1 – Introduction

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### Purpose

This report discusses the reliability performance of EDCs operating under the Commission’s jurisdiction within the Commonwealth. Although the reliability of the bulk transmission system<sup>5</sup> is integral to the overall reliability of electric service, this report focuses on the reliability of the electric distribution system.

The data contained in this report was obtained from the quarterly and annual reliability reports submitted by the EDCs pursuant to the Commission’s regulations.<sup>6</sup> These annual reports provide an assessment of electric service reliability for each EDC’s service territory.

### Background

The Electricity Generation Customer Choice and Competition Act<sup>7</sup> (Act) became effective Jan. 1, 1997. The Act amended Title 66 of the Pennsylvania Consolidated Statutes (Code) by adding Chapter 28 to establish standards and procedures to create direct access by retail customers to the competitive market for the generation of electricity, while maintaining the safety and reliability of the electric distribution system. Specifically, the Commission was given a legislative mandate to ensure that levels of reliability that existed prior to the restructuring of the electric utility industry would continue in the new competitive markets.<sup>8</sup>

In response to this legislative mandate, the Commission adopted a Final Rulemaking Order on April 23, 1998, setting forth various reporting requirements designed to ensure the continued safety, adequacy and reliability of the generation, transmission and distribution of electricity in the Commonwealth.<sup>9</sup> The Final Rulemaking Order also suggested that the Commission could re-evaluate its monitoring efforts at a later time as deemed appropriate.

Then, on Dec. 16, 1999, the Commission entered a Final Order establishing reliability benchmarks and standards for the EDCs.<sup>10</sup> The purpose of these reliability indices is to measure the performance of EDCs’ transmission and distribution systems in terms of the frequency and duration of unplanned

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<sup>5</sup> The high-voltage transmission system, nominally >100 kV, is regulated by the Federal Energy Regulatory Commission. The electric distribution system is under the purview of the Pennsylvania Public Utility Commission.

<sup>6</sup> 52 Pa. Code § 57.195.

<sup>7</sup> Dec. 3, P.L. 802, No. 138 § 4.

<sup>8</sup> 66 Pa.C.S. §§ 2802(12), 2804(1) and 2807(d).

<sup>9</sup> Docket No. L-00970120; 52 Pa. Code §§ 57.191-57.197.

<sup>10</sup> Docket No. M-00991220.

electric service outages to ensure that the levels of reliability existing prior to retail competition do not deteriorate.

On May 7, 2004, the Commission adopted amendments to its existing regulations regarding electric reliability standards, which became effective on Sept. 18, 2004.<sup>11</sup> In conjunction with the adoption of the amended regulations, the Commission adopted an Order amending its benchmarks and standards.

Subsequently, five EDCs filed petitions requesting an adjustment to their amended benchmarks and standards. The Commission adopted Orders granting adjustments to the benchmarks and standards of the five EDCs as follows:

Met-Ed, Penelec and Penn Power on Feb. 17, 2006 at Docket No. P-00042115;

Allegheny Power on July 20, 2006, at Docket No.M-00991220F0003; and Pike County Light & Power Company on Aug. 17, 2006 at Docket No. M-00991220F0003.

In order to enhance reliability performance monitoring of the EDCs, the Commission initiated a rulemaking proceeding to determine the type and scope of inspection and maintenance standards that would be appropriate for electric transmission and distribution systems.<sup>12</sup> A Proposed Rulemaking Order was adopted by the Commission on April 20, 2006. All comments to the Proposed Rulemaking Order have been received. Staff is currently working on drafting a Final Rulemaking Order regarding Inspection, Maintenance and Repair Standards. It is expected that a Final Rulemaking Order will be entered sometimes during the early summer of 2008.

On Jan. 31, 2007, the LB&FC released a performance audit of the PUC. The report observed that the PUC has enhanced the monitoring of electric reliability and generally has the processes and procedures in place to adequately monitor electric reliability. The performance audit was directed by House Resolution 695 of 2006 and is available on the LB&FC's Web site at <http://lbfc.legis.state.pa.us>.

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<sup>11</sup> Docket No. L-00030161; 34 Pa.B. 5135.

<sup>12</sup> Docket No. L-00040167

## Section 2 – Reliability Performance Measures

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### Reliability Performance Indices

The benchmarks and standards established by the Commission are based on four reliability performance indices which have been adopted by the Institute of Electrical and Electronic Engineers Inc. (IEEE). These indices include: (1) Customer Average Interruption Duration Index (CAIDI); (2) System Average Interruption Frequency Index (SAIFI); (3) System Average Interruption Duration Index (SAIDI); and (4) Momentary Average Interruption Frequency index (MAIFI).

CAIDI is the average duration of sustained interruptions<sup>13</sup> for those customers who experience interruptions during the analysis period. CAIDI represents the average time required to restore service to the average customer per sustained interruption. It is determined by dividing the sum of all sustained customer interruption durations, in minutes, by the total number of interrupted customers;

SAIFI measures the average frequency of sustained interruptions per customer occurring during the analysis period. It is calculated by dividing the total number of sustained customer interruptions by the total number of customers served;

SAIDI is the average duration of sustained customer interruptions per customer occurring during the analysis period. It is the average time customers were without power. It is determined by dividing the sum of all sustained customer interruption durations, in minutes, by the total number of customers served. SAIDI is also the product of CAIDI and SAIFI; and

MAIFI measures the average frequency of momentary interruptions<sup>14</sup> per customer occurring during the analysis period. It is calculated by dividing the total number of momentary customer interruptions by the total number of customers served.

The actual values of these four reliability indices are submitted by the EDCs on both a quarterly (rolling 12-month average) and annual basis. Also included, is the data used in calculating the indices, namely the average number

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<sup>13</sup> The loss of electric service by one or more customers for the period defined as a sustained customer interruption by IEEE as it may change from time to time – currently five minutes or greater. The term does not include “major events” or the authorized termination of service to an individual customer.

<sup>14</sup> The loss of electric service by one or more customers for the period defined as a momentary customer interruption by the IEEE as it may change from time to time – currently less than five minutes. The term does not include “major events” or the authorized termination of service to an individual customer.

of customers served, the number of sustained customer interruption minutes and the number of customers affected by service interruptions.<sup>15</sup>

It is noted that some EDCs do not currently have the necessary equipment to collect data relating to momentary service interruptions (MAIFI). However, the Commission desires to assess, where possible, the affect of frequent momentary interruptions on EDCs' customers. Thus, the provision of this data is required, if available.

In addition to the outage data mentioned above, the Commission's regulations require EDCs to report a breakdown and analysis of outage causes, such as equipment failure, animal contact and contact with trees. This analysis is helpful in identifying the primary causes of service interruptions and determining which causes, if any, can be prevented in the future through proposed solutions.

The revised regulations require EDCs to report reliability performance on a system-wide basis, rather than on an operating area basis, and provide an analysis of the worst performing 5 percent of circuits and major remedial efforts to improve those circuits.

## **Major Events**

In order to analyze and set measurable goals for electric service reliability performance, outage data is separated into normal and abnormal periods so that only normal event periods are used for calculating reliability indices. The term "major event" is used to identify an abnormal event, such as a major storm, and is defined as either of the following:

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; and

An unscheduled interruption of electric service resulting from an action taken by an EDC to maintain the adequacy and security of the electrical system.

Outage data relating to major events are to be excluded from the calculation of reliability indices. In order to avoid the inappropriate exclusion of outage data, the Commission has implemented a process whereby an EDC must submit a formal request for exclusion of service interruptions for reporting

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<sup>15</sup> For some EDCs, MAIFI statistics are unavailable due to insufficient field equipment necessary to provide meaningful data.

purposes, accompanied by data which demonstrates that a service interruption qualifies as a major event.

During 2007, 15 requests for exclusion of major outage data relating to major events were filed by the EDCs, as compared to 12 requests in 2006. All 15 requests were approved. A major event exclusion request may be denied for a variety of reasons, including such things as the event not meeting the 10 percent of customers interrupted threshold or equipment failure without supporting maintenance records.

## Reliability Performance Benchmarks and Standards

As currently established, the performance **benchmark** represents the statistical average of the EDC's annual, system-wide, reliability performance index values for the five-year time period from 1994-98. The benchmark serves as an objective level of performance that each EDC should strive to achieve and maintain, and is a reference point for comparison of future reliability performance.

The current 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 each EDC's historical performance benchmarks. Both long-term (rolling three-year) and short-term (rolling 12-month) performance standards have been established for each EDC. The performance standard is the minimum level of EDC reliability performance permitted by the Commission and is a level of performance beyond which the company must either justify its poor performance or provide information on corrective measures it will take to improve performance. Performance that does not meet the standard for any reliability measure is the threshold for triggering additional scrutiny and potential compliance enforcement actions.

The rolling **12-month standard** is 120 percent of the benchmark for the major EDCs and 135 percent for the small EDCs.<sup>16</sup> 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 12-month standard became effective on November 1, 2004.

The rolling **three-year standard** is 110 percent of the benchmark for all EDCs. This new 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 restructuring. The

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<sup>16</sup> Large EDCs currently include: Allegheny Power, Duquesne Light, Met-Ed, Penelec, Penn Power, PECO and PPL. Small EDCs include: UGI, Citizens', Pike County and Wellsboro.

three-year average performance will be measured against the standard at the end of each calendar year. Enforcement of the rolling three-year standard began with the submission of the annual reports due on or before April 30, 2007. The second rolling three-year standard analysis, contained in this report, utilizes 2005, 2006 and 2007 calendar year data.

If any electric distribution company'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.<sup>17</sup> In addition, Commission staff may initiate an investigation to determine whether an electric distribution company is providing reliable service.<sup>18</sup>

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

Note: 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. For example, if an EDC has a CAIDI benchmark of 180 minutes, a rolling 12-month CAIDI standard of 216 minutes and an actual CAIDI for a particular year of 200 minutes, its performance is considered to be adequate. If CAIDI is 160 minutes, the performance is better than the historical average performance. A CAIDI of 240 minutes, on the other hand, indicates a failure to meet the performance standard.

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<sup>17</sup> 52 Pa. Code § 57.195(g).

<sup>18</sup> 52 Pa. Code § 57.197(a).

## Section 3 – Statistical Utility Performance Data

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### Statewide Summary

The 2007 reliability data submitted by the EDCs indicates nine of the 11 EDCs achieved compliance with the 12-month CAIDI performance standard for duration of service outages (Duquesne, Met-Ed, Penelec, PECO, PPL, UGI, Citizens', Pike and Wellsboro). Also, all nine performed better than the CAIDI benchmark.

Four EDCs (Duquesne, PECO, UGI and Pike) performed better than the 12-month SAIFI performance benchmark. Three of the 11 EDCs (Allegheny, Met-Ed and Penelec) failed to meet their rolling 12-month SAIFI performance standards for the average frequency of service outages per customer.

Table 1 provides the actual 2007 reliability performance for each EDC, and the benchmarks and standards for each reliability index.

We have assessed the average reliability performance of EDCs for a three-year period, utilizing data from 2005, 2006 and 2007. Two EDCs (Allegheny and Penn Power) failed to meet their rolling three-year CAIDI performance standard.

Six EDCs (Met-Ed, Penelec, Penn Power, PPL, Pike and Wellsboro) failed to meet their rolling three-year SAIFI performance standard.

Table 2 contains the actual 2005, 2006 and 2007 performance for each EDC and the results of the three-year performance analysis.

The remedial actions taken for EDCs not meeting performance standards are discussed in detail in the appropriate utility specific performance data sections within this report.

**Table 1: 12-Month Average Electric Reliability Indices for 2007**

<b>Customer Average Interruption Duration Index (CAIDI)</b>				% Above (+) or Below (-) Standard	% Above (+) or Below (-) Benchmark
EDC	2007	Benchmark	Standard		
Allegheny Power	<b>208</b>	170	204	<b>2.0%</b>	22.4%
Duquesne Light	<b>107</b>	108	130	-17.7%	<b>-0.9%</b>
Met-Ed (FE)	<b>112</b>	117	140	-20.0%	<b>-4.3%</b>
Penelec (FE)	<b>110</b>	117	141	-22.0%	<b>-6.0%</b>
Penn Power (FE)	<b>126</b>	101	121	<b>4.1%</b>	24.8%
PECO	<b>105</b>	112	134	-21.6%	<b>-6.3%</b>
PPL	<b>140</b>	145	174	-19.5%	<b>-3.4%</b>
UGI	<b>167</b>	169	228	-26.8%	<b>-1.2%</b>
Citizens	<b>62</b>	105	141	-56.0%	<b>-41.0%</b>
Pike County	<b>125</b>	174	235	-46.8%	<b>-28.2%</b>
Wellsboro	<b>107</b>	124	167	-35.9%	<b>-13.7%</b>
<b>System Average Interruption Frequency Index (SAIFI)</b>				% Above (+) or Below (-) Standard	% Above (+) or Below (-) Benchmark
EDC	2007	Benchmark	Standard		
Allegheny Power	<b>1.29</b>	1.05	1.26	<b>2.4%</b>	22.9%
Duquesne Light	<b>0.79</b>	1.17	1.40	-43.6%	<b>-32.5%</b>
Met-Ed (FE)	<b>1.63</b>	1.15	1.38	<b>18.1%</b>	41.7%
Penelec (FE)	<b>1.71</b>	1.26	1.52	<b>12.5%</b>	35.7%
Penn Power (FE)	1.19	1.12	1.34	-11.2%	6.2%
PECO	<b>0.99</b>	1.23	1.48	-33.1%	<b>-19.5%</b>
PPL	1.11	0.98	1.18	-5.9%	13.3%
UGI	<b>0.68</b>	0.83	1.12	-39.3%	<b>-18.1%</b>
Citizens	0.25	0.20	0.27	-7.4%	25.0%
Pike County	<b>0.45</b>	0.61	0.82	-45.1%	<b>-26.2%</b>
Wellsboro	1.63	1.23	1.66	-1.8%	32.5%
<b>System Average Interruption Duration Index (SAIDI)</b>				% Above (+) or Below (-) Standard	% Above (+) or Below (-) Benchmark
EDC	2007	Benchmark	Standard		
Allegheny Power	<b>268</b>	179	257	<b>4.3%</b>	49.7%
Duquesne Light	<b>84</b>	126	182	-53.8%	<b>-33.3%</b>
Met-Ed (FE)	182	135	194	-6.2%	34.8%
Penelec (FE)	188	148	213	-11.7%	27.0%
Penn Power (FE)	150	113	162	-7.4%	32.7%
PECO	<b>104</b>	138	198	-47.5%	<b>-24.6%</b>
PPL	156	142	205	-23.9%	9.9%
UGI	<b>114</b>	140	256	-55.5%	<b>-18.6%</b>
Citizens	<b>16</b>	21	38	-57.9%	<b>-23.8%</b>
Pike County	<b>57</b>	106	194	-70.6%	<b>-46.2%</b>
Wellsboro	169	153	278	-39.2%	10.5%

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

**Table 2: Three-Year Average Electric Reliability Indices for 2005-07**

<b>Customer Average Interruption Duration Index (CAIDI)</b>				3-Year	3-Year	% Above (+) or
EDC	2005	2006	2007	Average	Standard	Below (-) Standard
Allegheny Power	195	185	208	196	187	4.8%
Duquesne Light	98	102	107	102	119	-14.0%
Met-Ed (FE)	122	121	112	118	129	-8.3%
Penelec (FE)	151	108	110	123	129	-4.7%
Penn Power (FE)	151	112	126	130	111	16.8%
PECO	99	133	105	112	123	-8.7%
PPL	125	165	140	143	160	-10.4%
UGI	119	112	167	133	186	-28.7%
Citizens	116	68	62	82	115	-28.7%
Pike County	109	142	125	125	192	-34.7%
Wellsboro	105	91	107	101	136	-25.7%
<b>System Average Interruption Frequency Index (SAIFI)</b>				3-Year	3-Year	% Above (+) or
EDC	2005	2006	2007	Average	Standard	Below (-) Standard
Allegheny Power	1.15	1.16	1.29	1.15	1.16	-0.9%
Duquesne Light	0.98	0.79	0.79	0.85	1.29	-33.9%
Met-Ed (FE)	1.70	1.73	1.63	1.69	1.27	32.8%
Penelec (FE)	1.87	1.47	1.71	1.68	1.39	21.1%
Penn Power (FE)	1.56	1.22	1.19	1.32	1.23	7.6%
PECO	1.02	1.35	0.99	1.12	1.35	-17.0%
PPL	0.97	1.27	1.11	1.12	1.08	3.4%
UGI	0.64	0.79	0.68	0.70	0.91	-22.7%
Citizens	0.10	0.14	0.25	0.16	0.22	-25.8%
Pike County	1.85	1.16	0.45	1.15	0.67	72.1%
Wellsboro	1.37	1.50	1.63	1.50	1.35	11.1%
<b>System Average Interruption Duration Index (SAIDI)</b>				3-Year	3-Year	% Above (+) or
EDC	2005	2006	2007	Average	Standard	Below (-) Standard
Allegheny Power	224	215	268	236	217	8.6%
Duquesne Light	97	81	84	87	153	-42.9%
Met-Ed (FE)	209	210	182	200	163	22.9%
Penelec (FE)	284	158	188	210	179	17.3%
Penn Power (FE)	236	137	150	174	136	28.2%
PECO	100	179	104	128	167	-23.6%
PPL	121	209	156	162	172	-5.8%
UGI	76	88	114	93	170	-45.5%
Citizens	12	10	16	13	25	-49.3%
Pike County	202	165	57	141	129	9.6%
Wellsboro	144	139	169	151	185	-18.6%

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

## Utility Specific Performance Data

### Allegheny Power

On May 26, 2004, Allegheny Power filed a petition to amend its benchmarks, asserting that the recomputed benchmarks were unrealistic and artificially low.<sup>19</sup> On July 20, 2006, the Commission adopted an Order modifying the benchmarks and standards for Allegheny Power. Allegheny's CAIDI benchmark was decreased from 178 minutes to 170 minutes; the SAIFI benchmark was increased from 0.67 interruptions to 1.05 interruptions; and the SAIDI benchmark was increased from 119 minutes to 179 minutes.

Allegheny's overall reliability performance in 2007 was statistically worse than its performance during 2006. In 2006, Allegheny's SAIFI, CAIDI and SAIDI values were between the newly adjusted benchmarks and the standards. Allegheny's 2007 SAIFI, CAIDI and SAIDI values exceeded the standards by 2.4 percent, 2.0 percent and 4.3 percent, respectively. The CAIDI three-year average was 4.8 percent above the standard of 187 minutes, and SAIFI was 0.9 percent below the three-year standard of 1.16.

Although Allegheny's three-year CAIDI performance was slightly above the standard, the last three quarters show a positive trend. Allegheny's three-year SAIFI performance was slightly below the standard, but Allegheny's SAIFI has been trending upward since 2004.

Commission staff convened meetings with Allegheny in December 2007 and April 2008 to address concerns with the increases in all of Allegheny's reliability indices. In response, Allegheny submitted a system reliability improvement plan. Commission staff will monitor the implementation of this plan during the summer of 2008 in lieu of any immediate formal non-compliance action.

No major events occurred during 2007.

In 2007, Allegheny experienced 901,243 customer interruptions with a total duration of 187.8 million minutes, which was about 25.4 percent higher than that which was reported last year. Allegheny reports that, during 2007, its service territory, which is spread across four weather zones, experienced several large storms, which were not excludable.

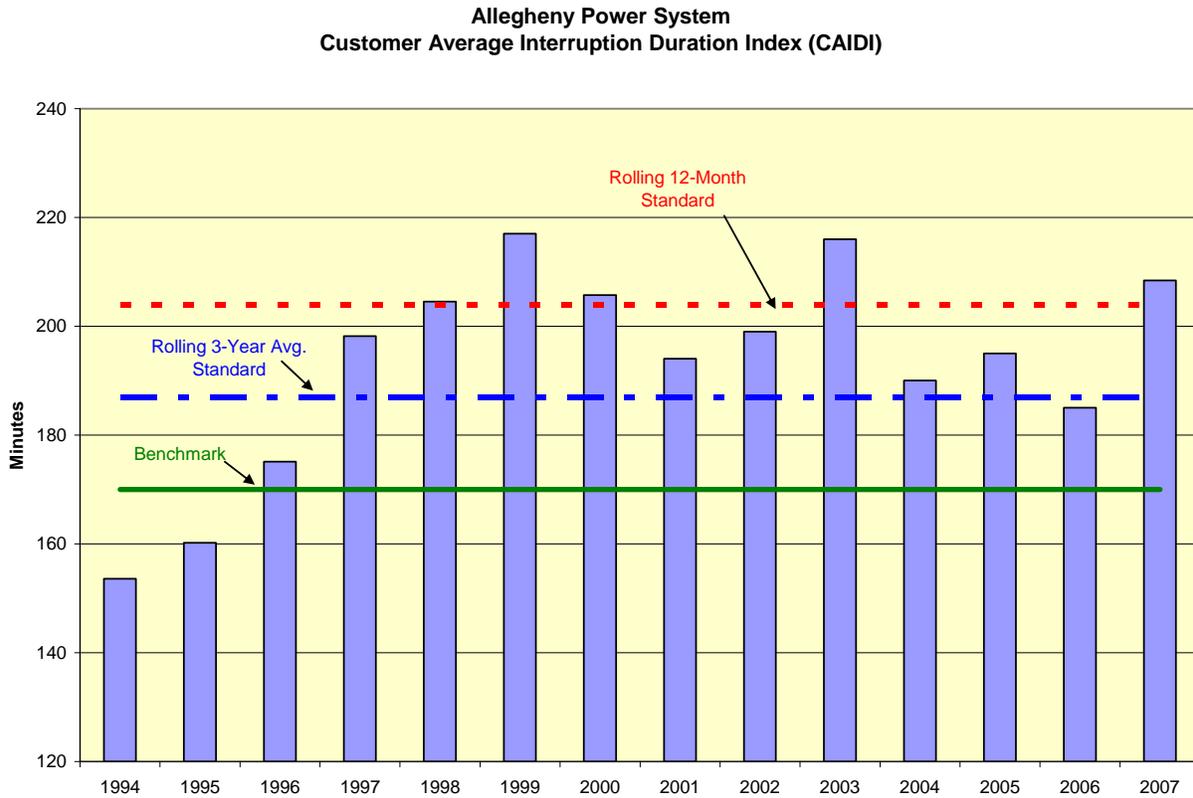
The following graphs depict trends in the duration of customer interruptions for the Allegheny system from 1994 to 2007, and for the four quarters of 2007

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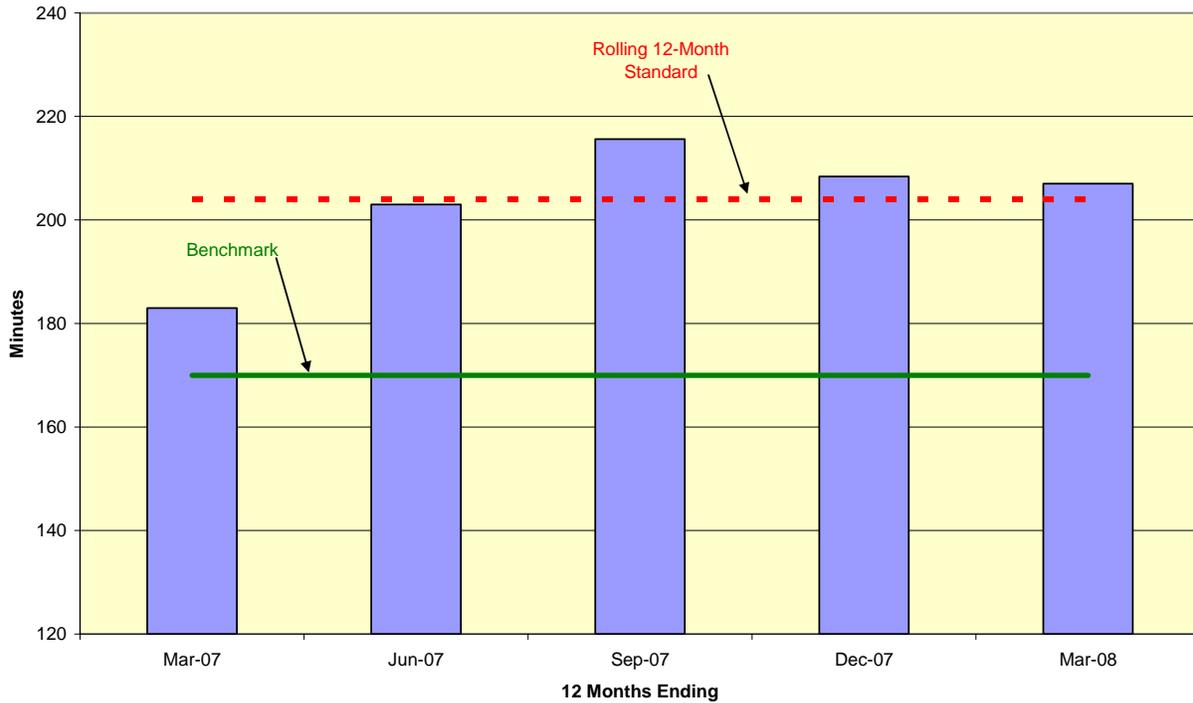
<sup>19</sup> Docket No. M-00991220 F0003.

and the first quarter of 2008, compared to the established benchmarks and standards.

Average CAIDI values increased from 185 minutes in 2006 to 208 minutes in 2007, which was a 12.4 percent increase in CAIDI minutes.

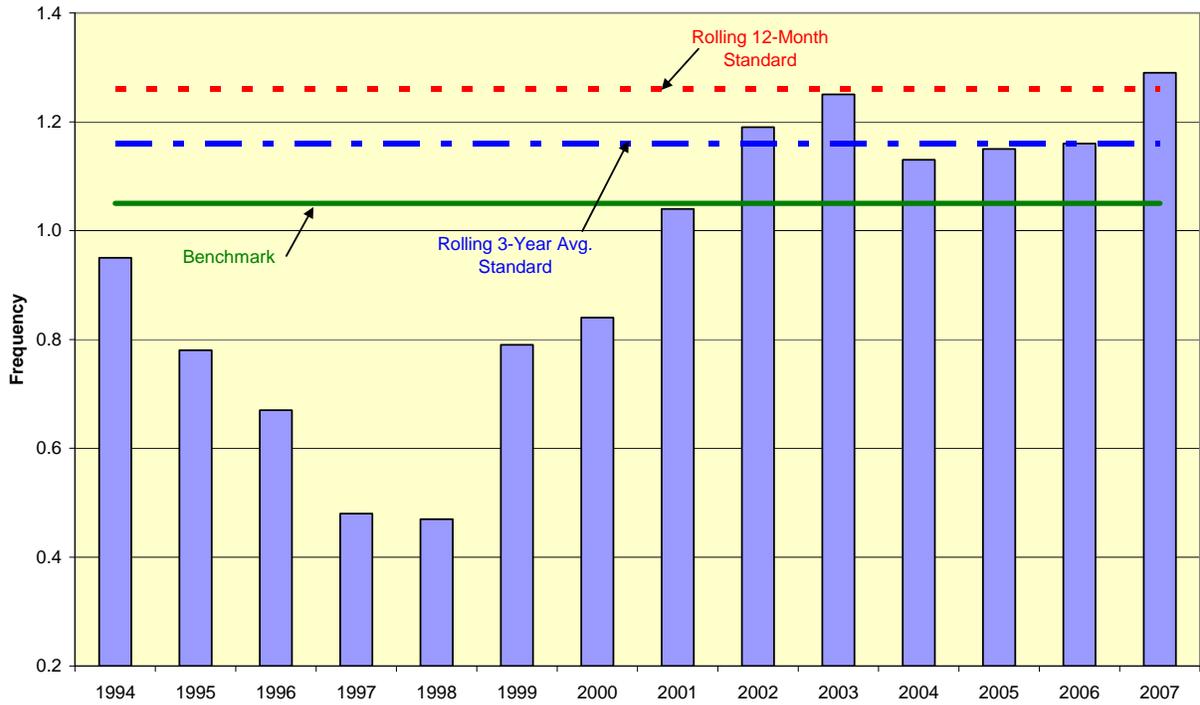


**Allegheny Power System  
Customer Average Interruption Duration Index (CAIDI)**

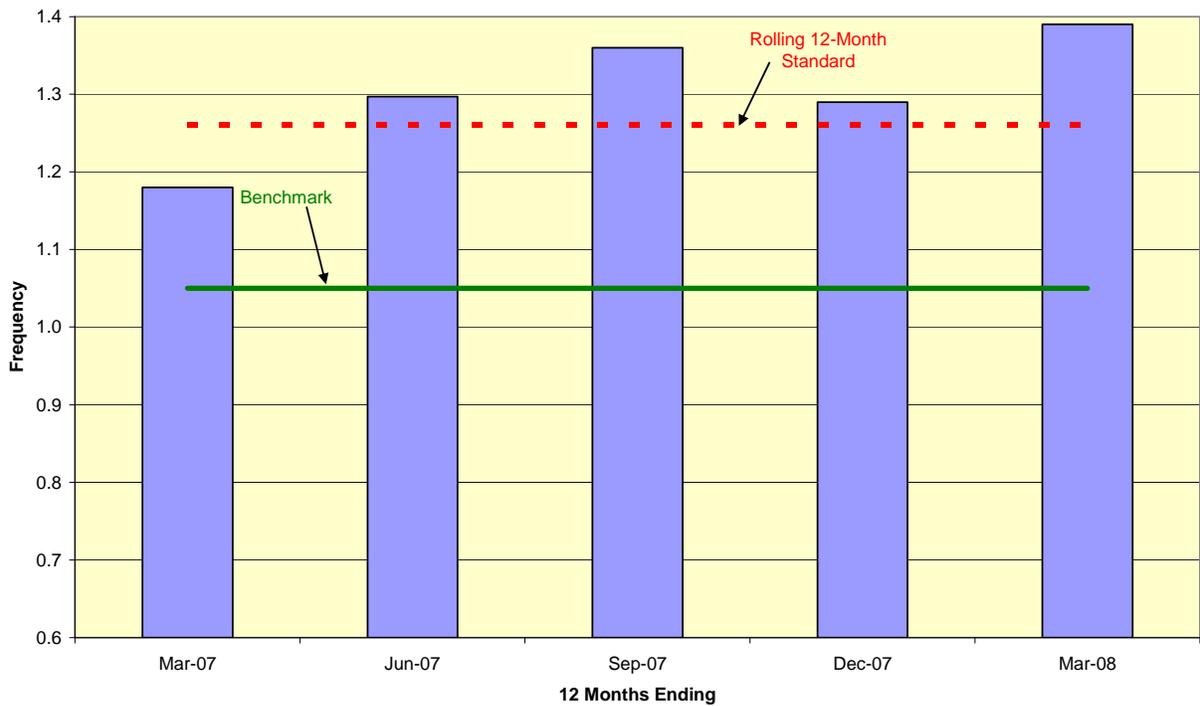


The next two graphs depict trends in the frequency of service interruptions for the Allegheny system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards for SAIFI. Average SAIFI values increased from 1.16 in 2006 to 1.29 in 2007, which was an 11.2 percent increase in outage frequency.

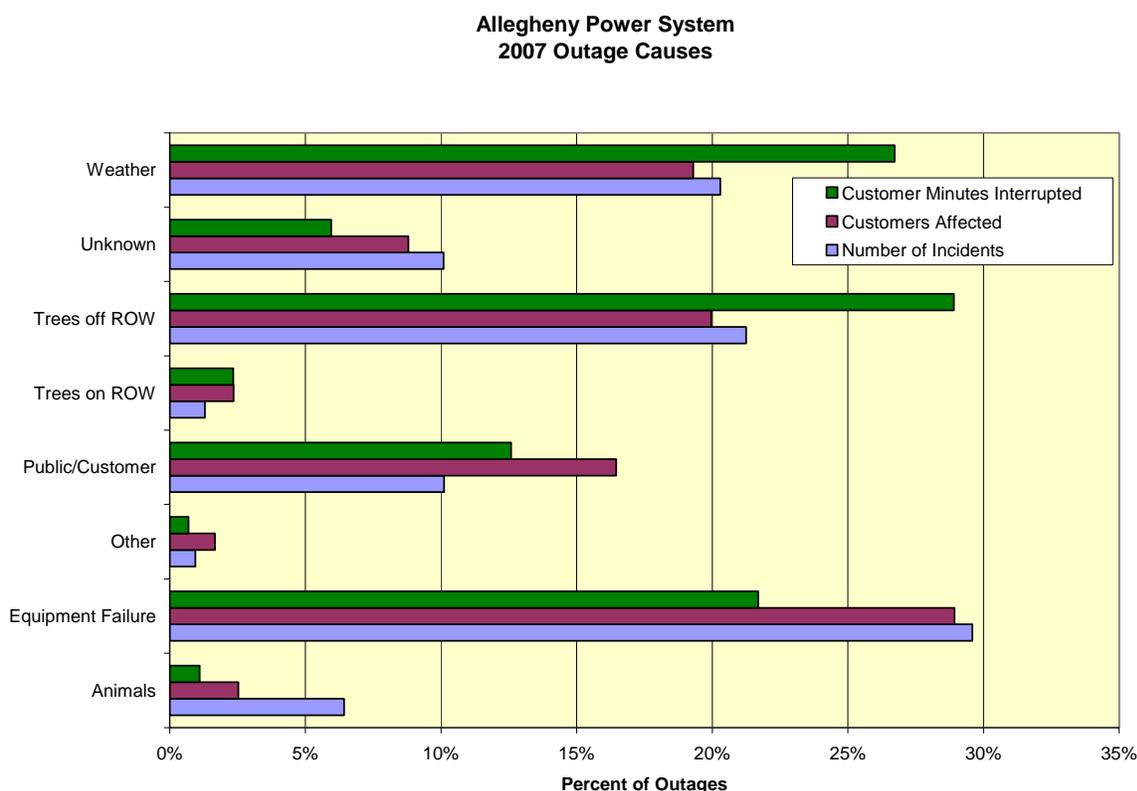
**Allegheny Power System  
System Average Interruption Frequency Index (SAIFI)**



**Allegheny Power System  
System Average Interruption Frequency Index (SAIFI)**



The next graph shows the distribution of causes of service outages occurring during 2007 as a percentage of total outages. Equipment failure was responsible for 29.6 percent of the outages, 28.9 percent of customers affected and 21.7 percent of customer minutes interrupted. Trees off the right-of-way were the second leading cause of service interruptions, with 21.3 percent of the outages, 20.0 percent of customers affected and 28.9 percent of interruption minutes. Weather accounted for 20.3 percent of total outages, 19.3 percent of customers affected and 26.7 percent of interruption minutes.



### Duquesne Light Company

Duquesne's overall performance continues to be better than the reliability standard. Duquesne's 2007 CAIDI of 107 minutes was one minute lower than the benchmark of 108 minutes. The 2007 SAIFI was an average of 0.79 outages per customer, compared to a benchmark of 1.17 outages.<sup>20</sup> For the three-year average performance, Duquesne achieved the standard for all three indices.

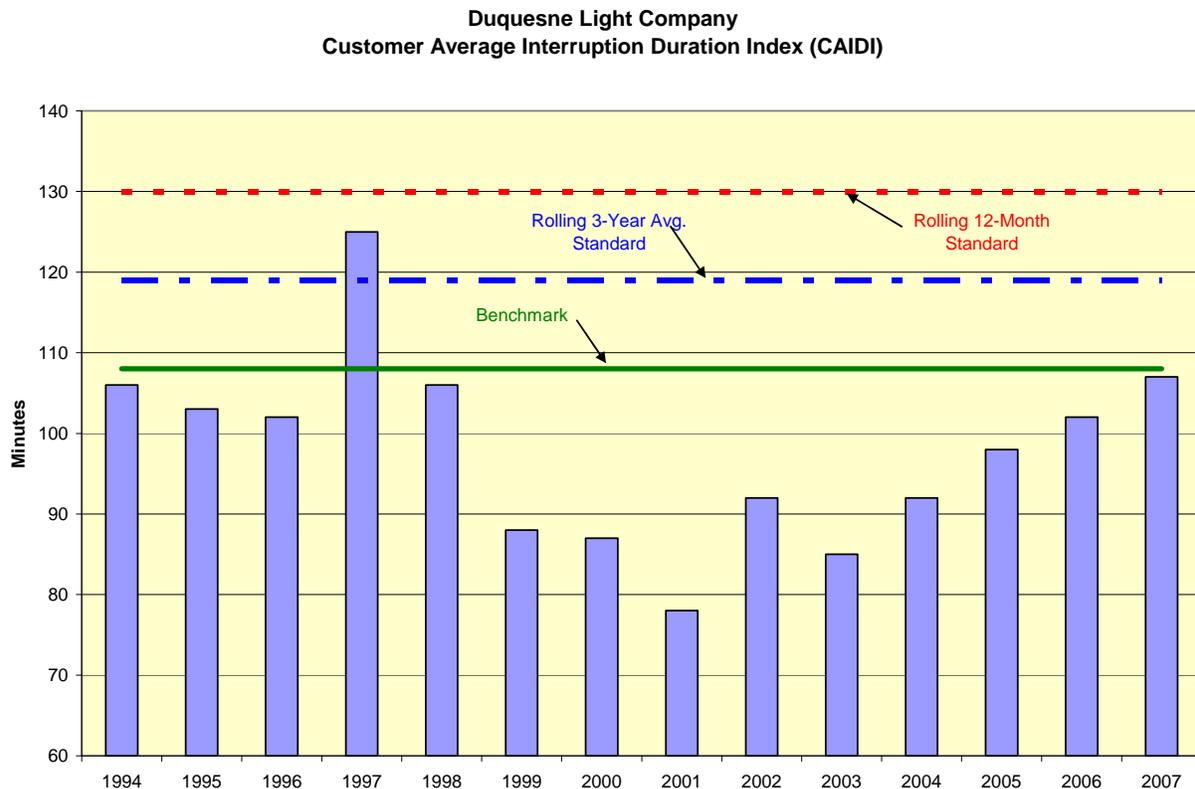
<sup>20</sup> Duquesne's system does not provide an actual count of customers interrupted. The data available is in regard to interrupted load. The unit used is KVA, or kilovoltampere, which is the basic unit of apparent power.

In 2007, Duquesne’s service area experienced one major event. The calculation of the reliability indices exclude data related to this event, which was approved by the Commission:

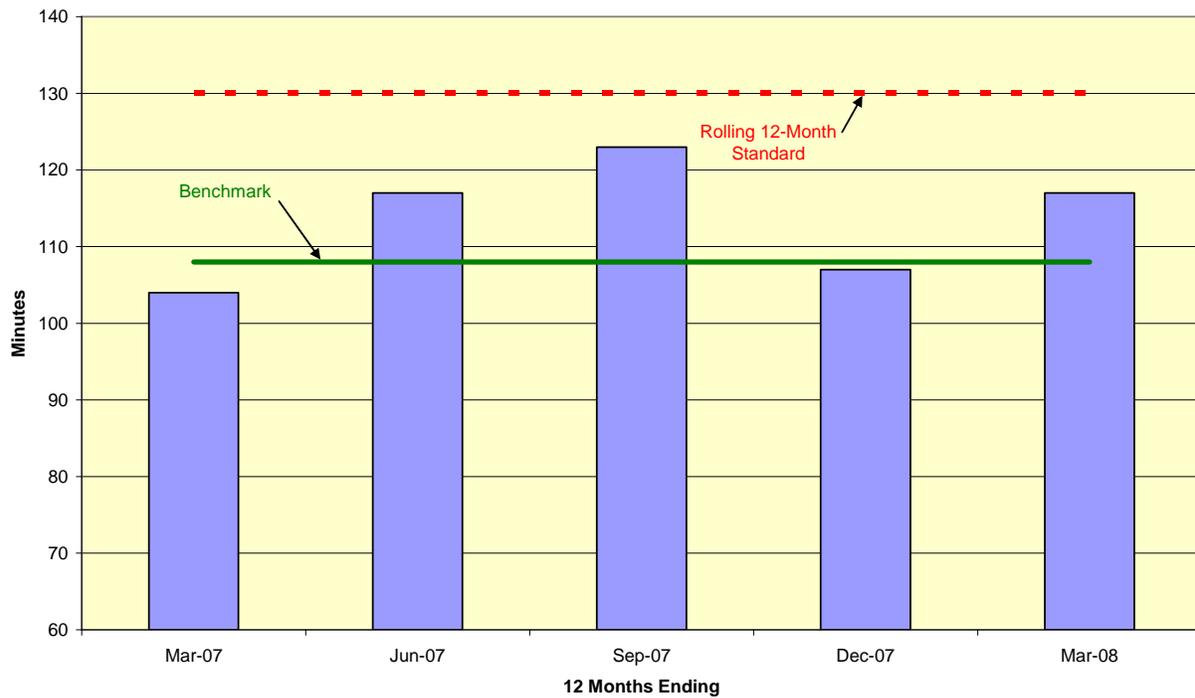
Aug. 9-13, 2007 – severe thunderstorm, winds gusting to 85 mph, large hail and torrential rains; 101,915 customers affected (18 percent of customer load); 719,087,392 KVA-minutes excluded.

In 2007, Duquesne experienced a total of 5.6 million kilovoltamperes (KVA) interrupted with a total duration of 594.1 million KVA-minutes, which was 5.3 percent higher than that which was reported last year.

The following graphs depict trends in the duration of service interruptions for the Duquesne system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards. Even though Duquesne’s CAIDI values remain below the benchmark, Commission staff is concerned with the general upward trend since a low point in 2001. Staff met with representation from both Duquesne’s management and Duquesne’s International Brotherhood of Electrical Workers (IBEW) union to discuss remedies to reverse this trend.



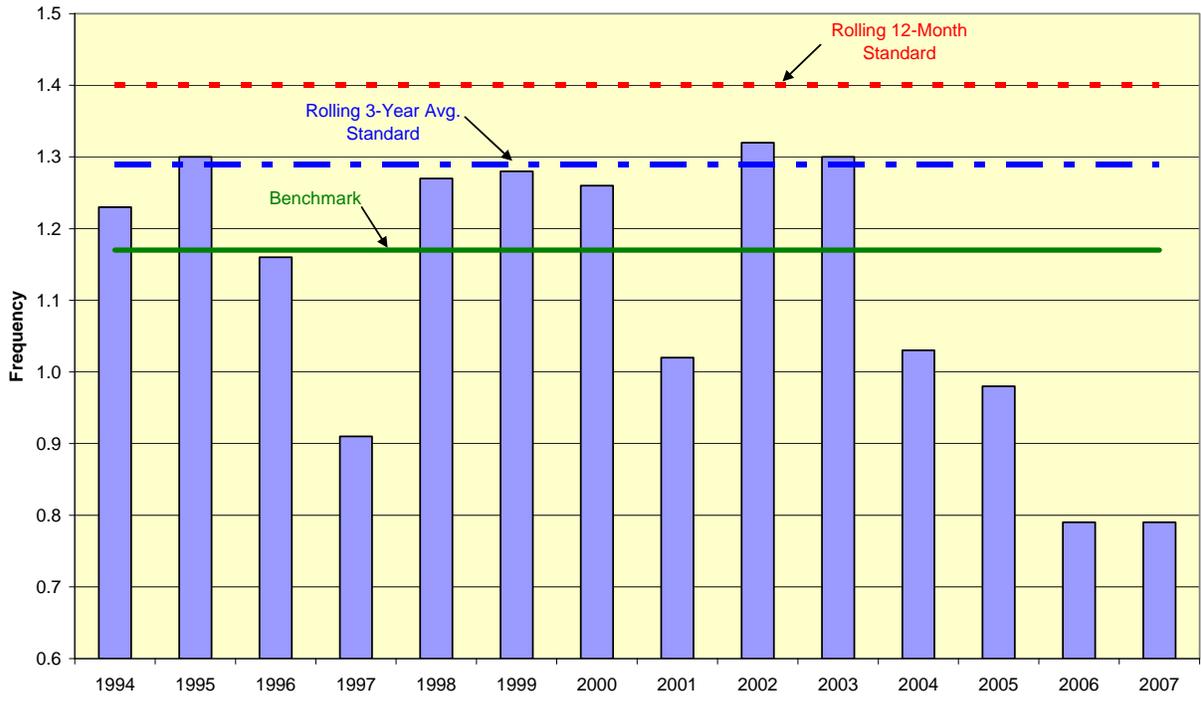
**Duquesne Light Company  
Customer Average Interruption Duration Index (CAIDI)**



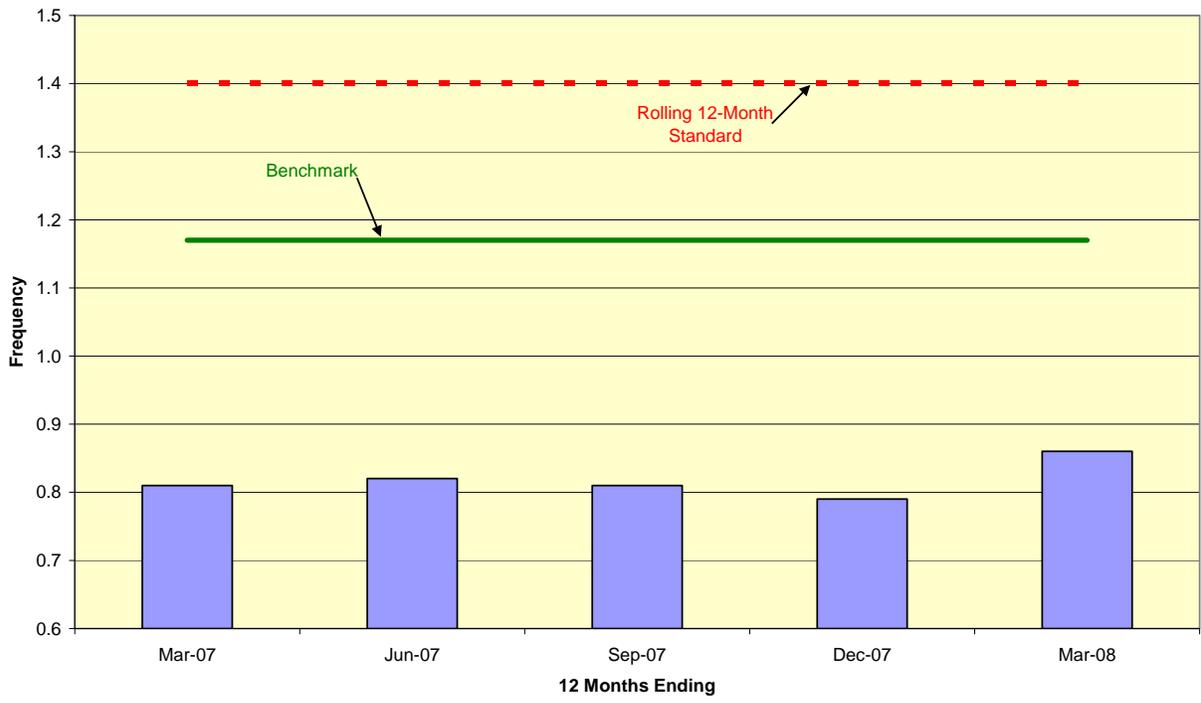
The next two graphs show trends in the frequency of service interruptions for the Duquesne service territory from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards for SAIFI.

As can be seen, Duquesne's SAIFI reliability performance falls well within the parameters of acceptability. Interruption frequency has remained well below the benchmark since 2004.

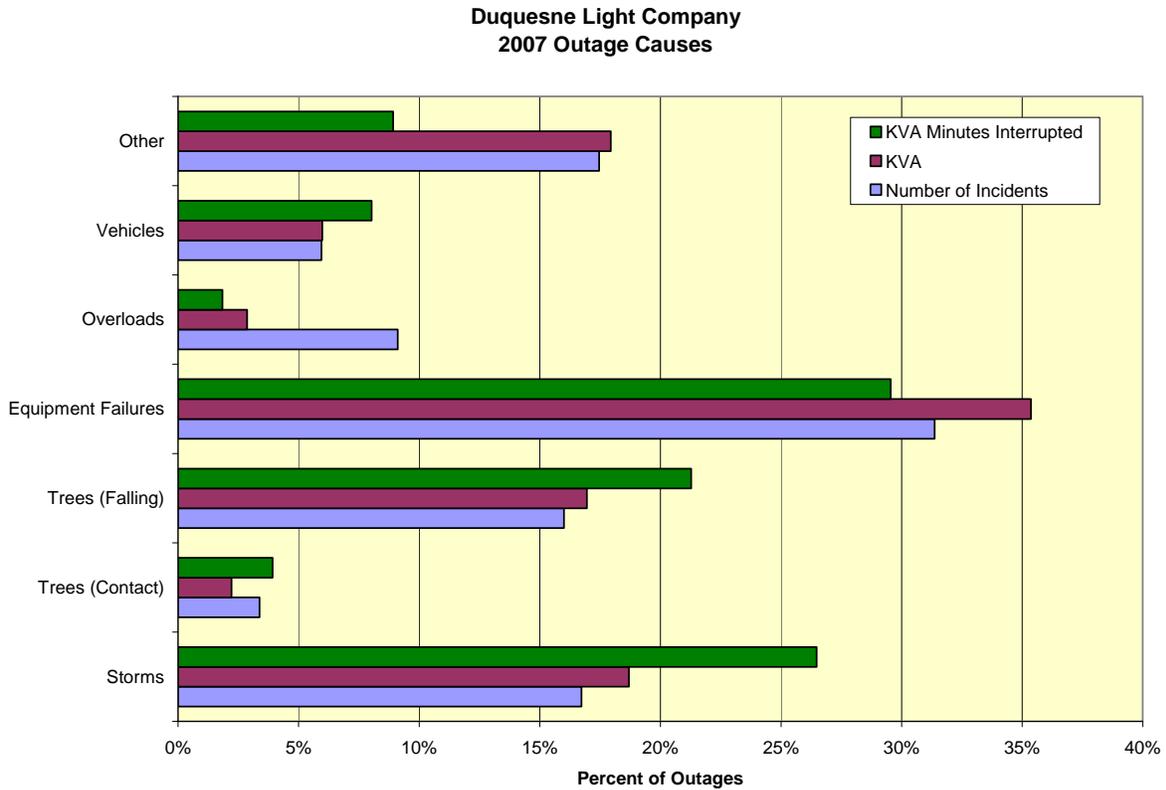
**Duquesne Light Company  
System Average Interruption Frequency Index (SAIFI)**



**Duquesne Light Company  
System Average Interruption Frequency Index (SAIFI)**



The graph below shows the distribution of causes of service outages occurring during 2007 as a percentage of total outages. Equipment failure was responsible for 31.4 percent of the outages, 35.4 percent of interrupted load and 29.6 percent of interruption minutes. Storms were identified as causing 16.7 percent of the outages, 18.7 percent of interrupted load and 26.5 percent of interruption minutes.



## Metropolitan Edison Company

Met-Ed's reliability performance summary was filed as a joint report submitted on behalf of the three Pennsylvania operating companies of FirstEnergy: Met-Ed, Penelec and Penn Power.

On May 26, 2004, FirstEnergy filed a Petition for the Amendment of Benchmarks.<sup>21</sup> On February 17, 2006, the Commission entered an Order modifying the benchmarks and standards for the three FirstEnergy companies. Met-Ed's CAIDI benchmark was decreased from 127 minutes to 117 minutes; the SAIFI benchmark was increased from 1.06 interruptions to 1.15 interruptions; and the SAIDI benchmark remained at 135 minutes.

A Joint Petition for Settlement in the investigation of FirstEnergy's reliability performance required Met-Ed to achieve an established reliability benchmark for SAIDI by the end of 2007.<sup>22</sup> The settlement required Met-Ed to achieve at least a 5 percent improvement over the 2003 achieved SAIDI for the 12 months ending December 31, 2007. In addition, the settlement required that Met-Ed achieve SAIDIs for the calendar years 2005 and 2006 that reflect values equal to or better than its achieved SAIDI for 2003. The resulting settlement SAIDI milestones were 140 for the calendar years 2005 and 2006 and 133 for the calendar year 2007. MetEd did not achieve any of these SAIDI milestones.

By letter dated June 22, 2006, the PUC Prosecutory Staff informed Met-Ed that it was in violation of the Settlement and requested that a specific remediation plan be implemented. In response to the letter, Met-Ed agreed to have an independent consultant perform a reliability audit of its operations. The final audit report was submitted by the consultant on July 18, 2007. MetEd is in the process of implementing the consultant's recommendations. Commission staff is closely monitoring the milestones of audit recommendation implementation through regularly scheduled progress meetings and site inspections of MetEd facilities.

Met-Ed's CAIDI for 2007 was 112 minutes, an improvement from 121 minutes in 2006, and five minutes lower than the benchmark. MetEd's CAIDI has demonstrated consistent improvement since 2004.

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<sup>21</sup> Docket No. P-00042115.

<sup>22</sup> On January 16, 2004, the Commission instituted an investigation of FirstEnergy's compliance with the Commission's regulations and orders relating to reliable electric service, and seeking recommendations for reliability improvements. On November 4, 2004, the Commission approved a Joint Petition for Settlement which, among other things, sets forth goals for improving reliability performance and achieving milestone levels of reliability by the end of 2005, 2006 and 2007 for Met-Ed, Penelec and Penn Power. Docket No. I-00040102.

SAIFI was 1.63 interruptions per customer, compared to last year's 1.73. While the SAIFI continues to be above the standard of 1.38, it has been trending steadily down since completion of the reliability audit.

Met-Ed's SAIDI for 2007 was 182. This was 28 minutes better than 2006 and 6.2 percent below the Commission-established standard.

For the three-year average performance, Met-Ed achieved the CAIDI standard, but was above the SAIFI three-year standard by 32.8 percent.

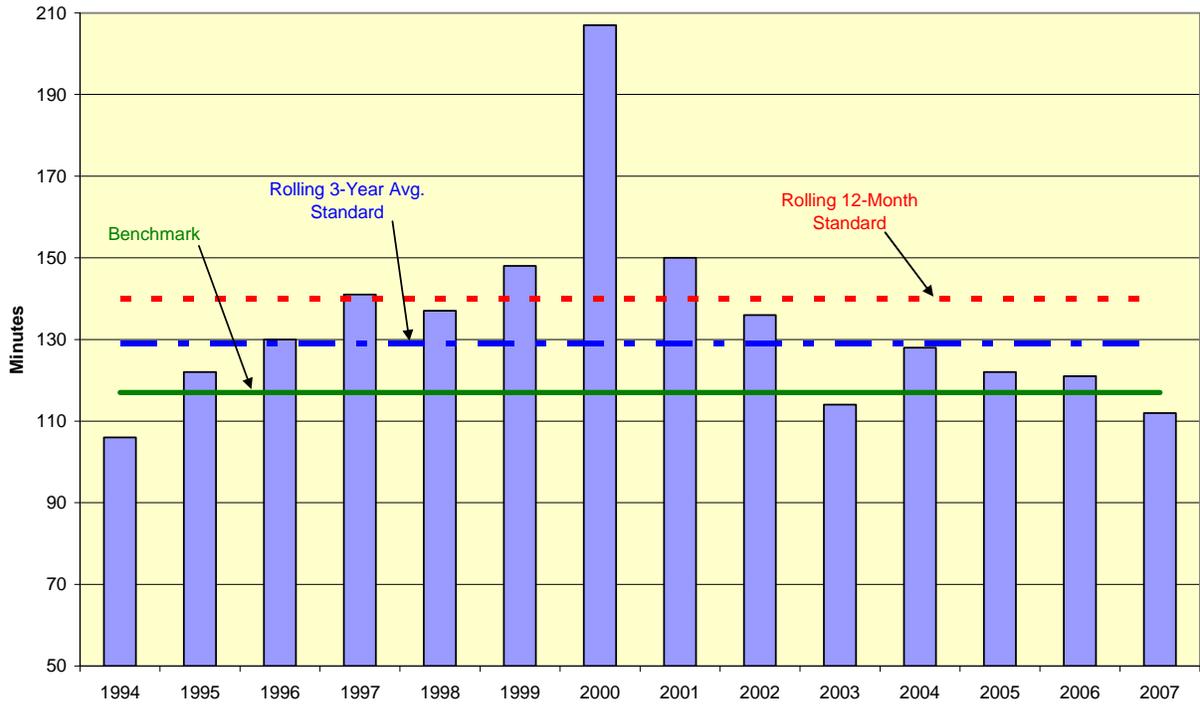
In 2007, Met-Ed's service area experienced one major event. The calculation of the reliability indices exclude outage data related to this event, which was approved by the Commission:

Dec. 16-21, 2007 – strong winds, freezing rain and ice accumulation; 159,368 customers affected; 125,094,178 minutes excluded.

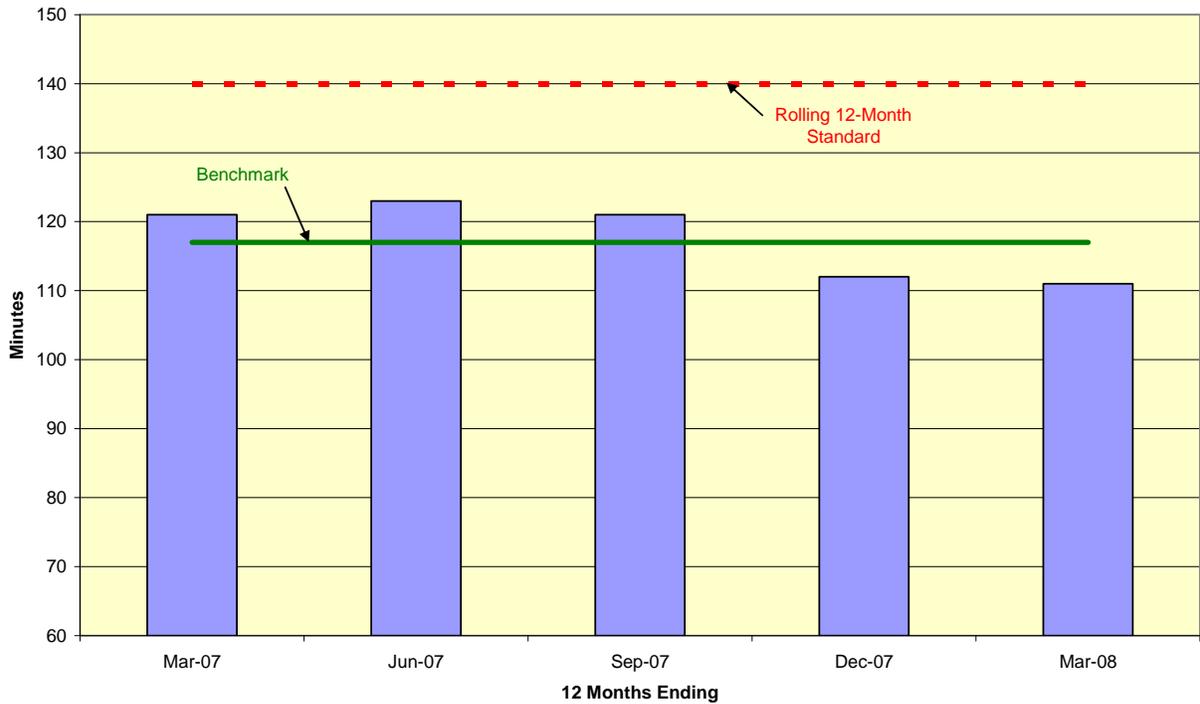
In 2007, Met-Ed experienced 878,925 customer interruptions with a total duration of 98.3 million customer minutes, or 12.3 percent lower than 2006.

The following graphs depict trends in the duration of service interruptions for the Met-Ed system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards.

**Metropolitan Edison Company  
Customer Average Interruption Duration Index (CAIDI)**

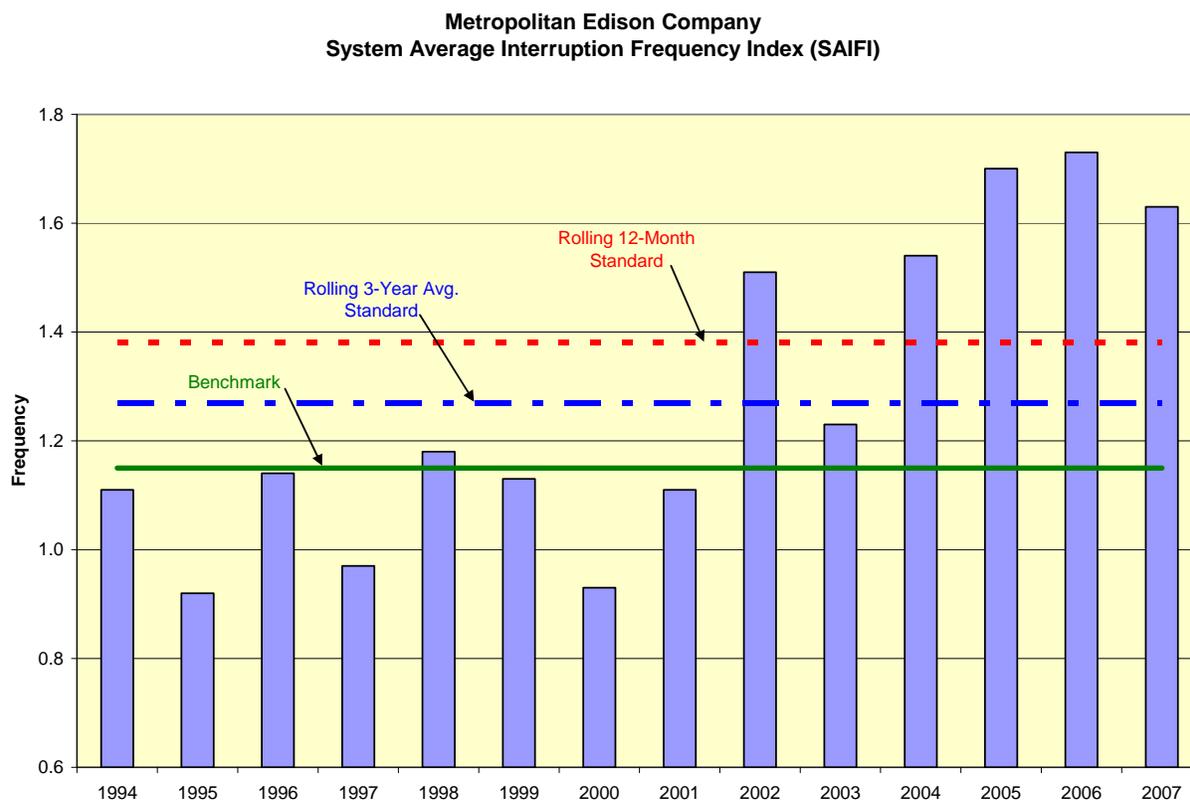


**Metropolitan Edison Company  
Customer Average Interruption Duration Index (CAIDI)**



CAIDI has remained relatively steady during 2007 at or near the benchmark.

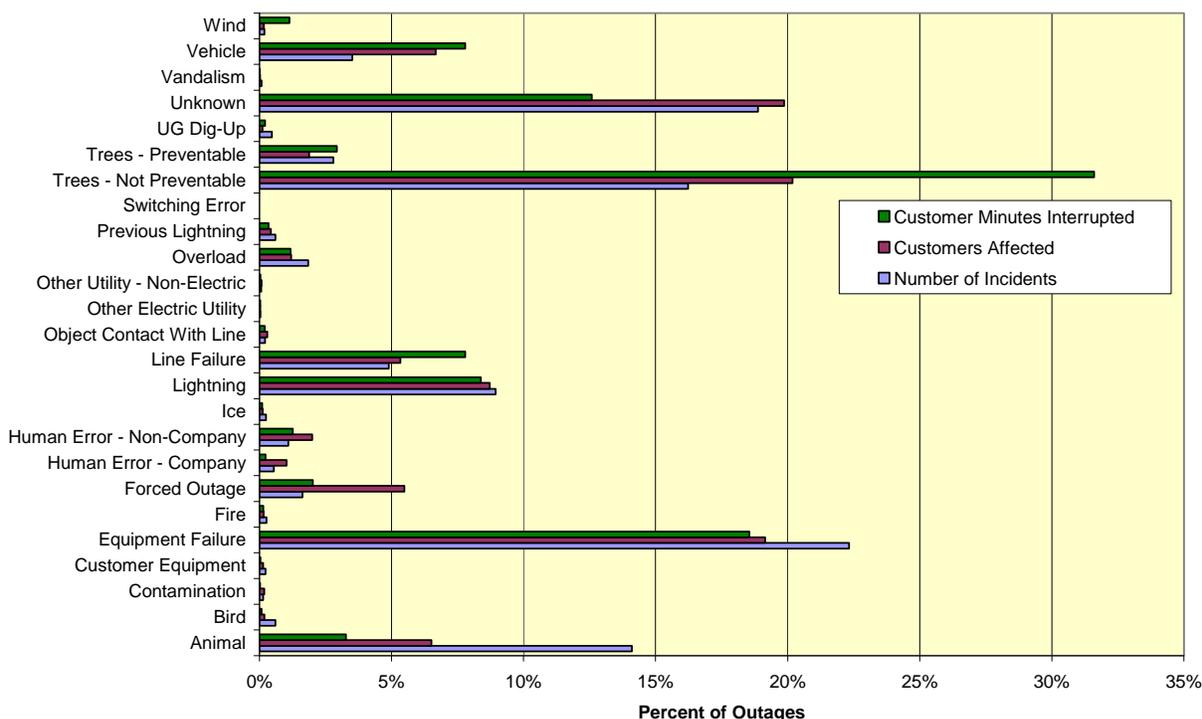
The next two graphs depict trends in the frequency of service interruptions from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards.



As discussed above, the frequency of service outages continues to exceed the Commission established rolling 12-month standard.

The following graph shows the distribution of causes of service outages occurring during 2007 as a percentage of total outages. Equipment failure was responsible for 22.3 percent of incidents, 19.1 percent of customers affected and 18.5 percent of interruption minutes. Non-preventable tree-related incidents caused 16.2 percent of the incidents, 20.2 percent of customers affected and 31.6 percent of interruption minutes. Of the incidents, 18.9 percent were assigned to MetEd’s “Unknown” category. This category ranks as the No. 2 cause for outages. Commission staff met with MedEd and addressed the need to reduce the amount of data attributed to this category.

**Metropolitan Edison Company  
2007 Outage Causes**



### Pennsylvania Electric Company

Penelec’s reliability performance summary was filed as a joint report submitted on behalf of the three Pennsylvania operating companies of FirstEnergy: Met-Ed, Penelec and Penn Power.

On May 26, 2004, FirstEnergy filed a Petition for the Amendment of Benchmarks.<sup>23</sup> On February 17, 2006, the Commission entered an Order modifying the benchmarks and standards for the three FirstEnergy companies. Penelec’s CAIDI benchmark was increased from 115 minutes to 117 minutes; the SAIFI benchmark was increased from 1.15 interruptions to 1.26 interruptions; and the SAIDI benchmark increased from 132 minutes to 148 minutes.

Penelec’s overall reliability indices in 2007 were higher than last year’s. CAIDI was 110 minutes, compared to 108 minutes in 2006. However the CAIDI was still 6.0 percent better than the benchmark. SAIFI was 1.71 service interruptions per customer, compared to last year’s 1.47. The 2007 SAIFI exceeded the rolling 12-month performance standard of 1.52. Penelec’s SAIDI for 2007 was 188.

<sup>23</sup> Docket No. P-00042115.

For Penelec's rolling three-year average performance, the company was 4.7 percent below the CAIDI three-year standard, but 21.1 percent above the SAIFI three-year standard.

The Joint Petition for Settlement in the investigation of FirstEnergy's reliability performance required Penelec to achieve an established reliability benchmark for SAIDI by the end of 2007.<sup>22</sup> The settlement required Penelec to achieve at least a 25 percent improvement over the 2003 SAIDI for the 12 months ending Dec. 31, 2007. In addition, the settlement required Penelec to achieve SAIDIs for the calendar years of 2005 and 2006 that reflect values equal to or better than its achieved SAIDI for 2003. The resulting settlement SAIDI milestones were 239 for the calendar years 2005 and 2006, and 179 for the calendar year 2007. Penelec met the settlement milestone SAIDI in 2006, but Penelec's 2007 SAIDI of 188 failed to meet the 2007 settlement milestone.

By letter dated June 22, 2006, the PUC Prosecutory Staff informed Penelec that its 2005 calendar year performance was in violation of the Settlement and requested that a specific remediation plan be implemented. Penelec did implement an accelerated system reliability improvement plan that brought the company into compliance with both the settlement and Commission issued 12-month reliability benchmarks and standards by the end of the 2006 calendar year.

Because Penelec failed to achieve the 2007 settlement SAIDI milestone and did not achieve the Commission established standard for SAIFI, Commission staff met with Penelec in April of 2008 to discuss its performance. During the meeting, Penelec provided Commission staff with additional system reliability improvement plans. In recognition of the performance improvement demonstrated by Penelec's 2006 reliability indices, Commission staff will monitor the implementation of these plans during the summer of 2008 in lieu of any immediate formal non-compliance action.

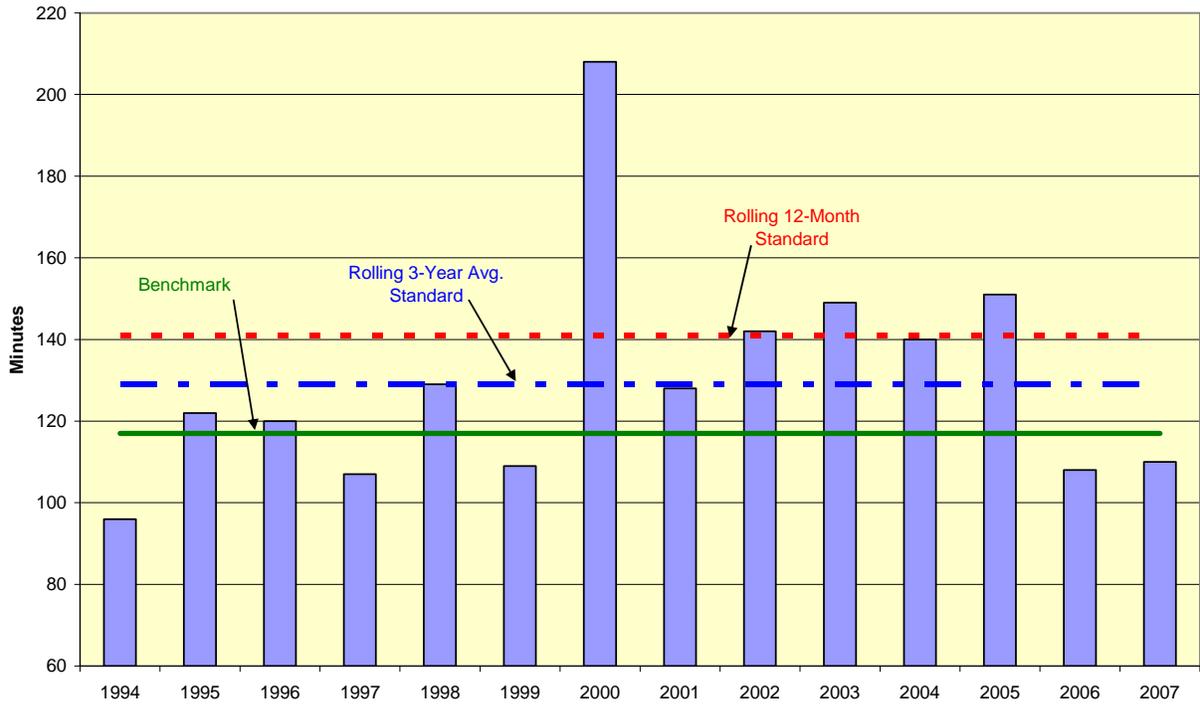
No major events occurred during 2007.

In 2007, Penelec experienced 991,865 customer interruptions with a total duration of 109.2 million customer minutes, or 16.3 percent higher than 2006.

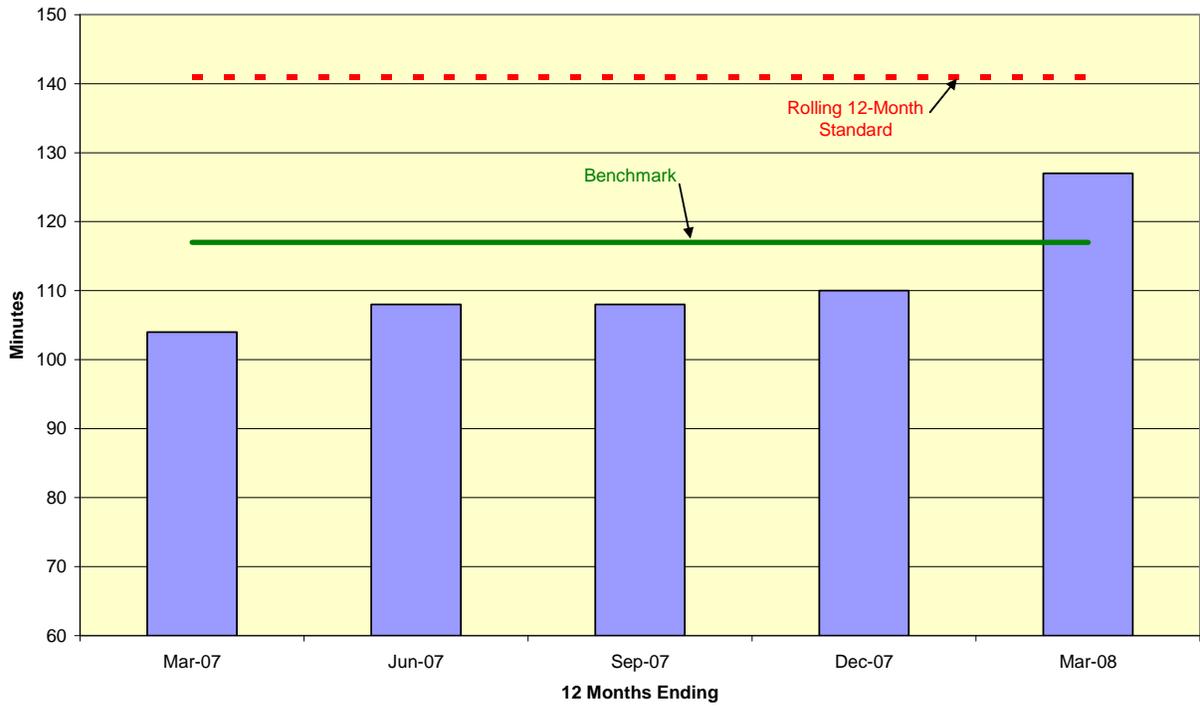
The following graphs depict trends in the duration of service interruptions for Penelec from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards.

The annual CAIDI values for 2007 were below the benchmark for the second time since 1999. The rolling 12-month averages for all four quarters of 2007 remained below the benchmark.

**Pennsylvania Electric Company  
Customer Average Interruption Duration Index (CAIDI)**

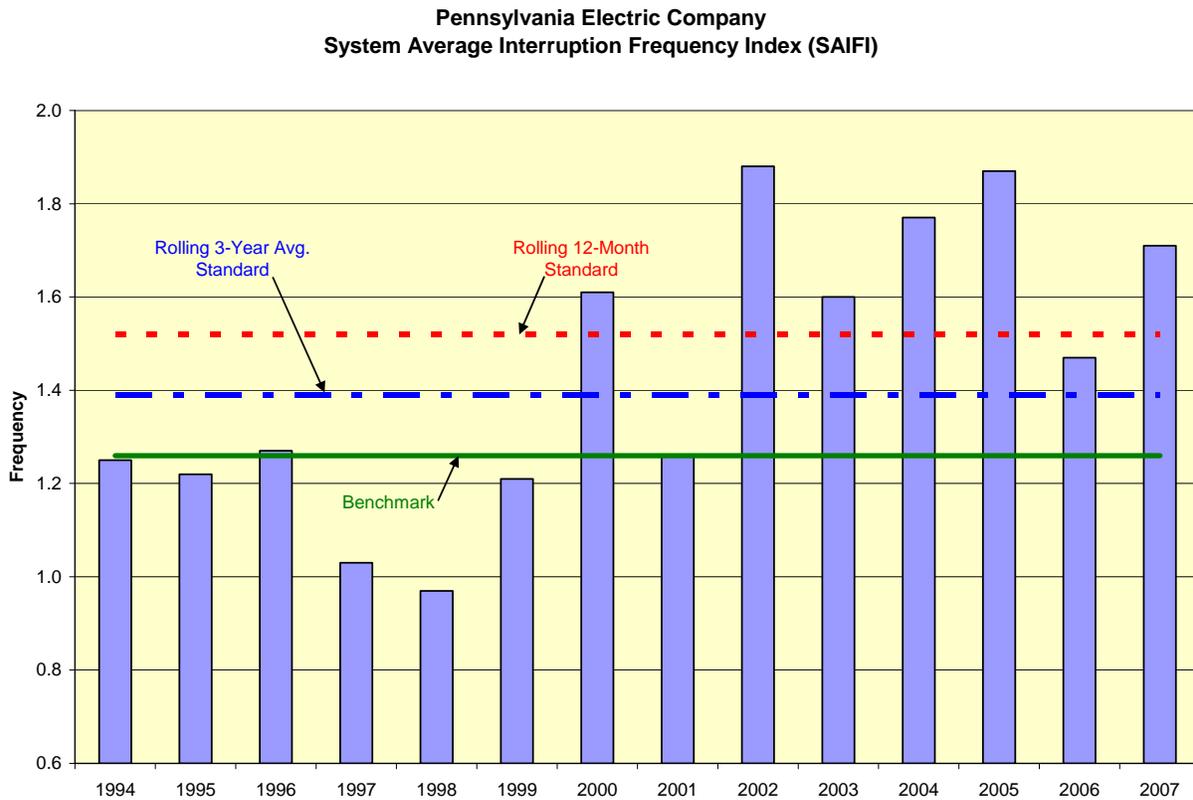


**Pennsylvania Electric Company  
Customer Average Interruption Duration Index (CAIDI)**

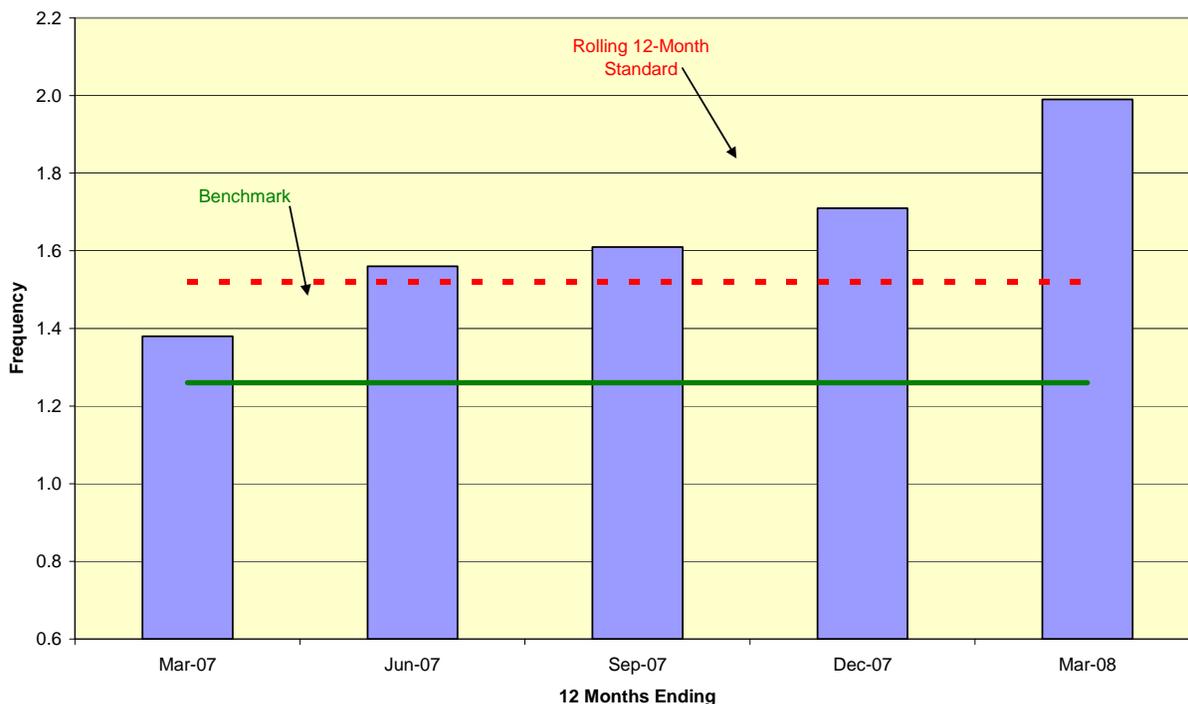


The next two graphs show trends in the frequency of service interruptions from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards.

The annual SAIFI value for 2007 did not achieve either the performance standard or the three-year average standard. The rolling 12-month averages for the last three quarters of 2007 exceeded the standard of 1.52 and have been trending upward. The SAIFI value for the 12 months ending March 2008 of 1.99 was 30.9 percent higher than the standard.

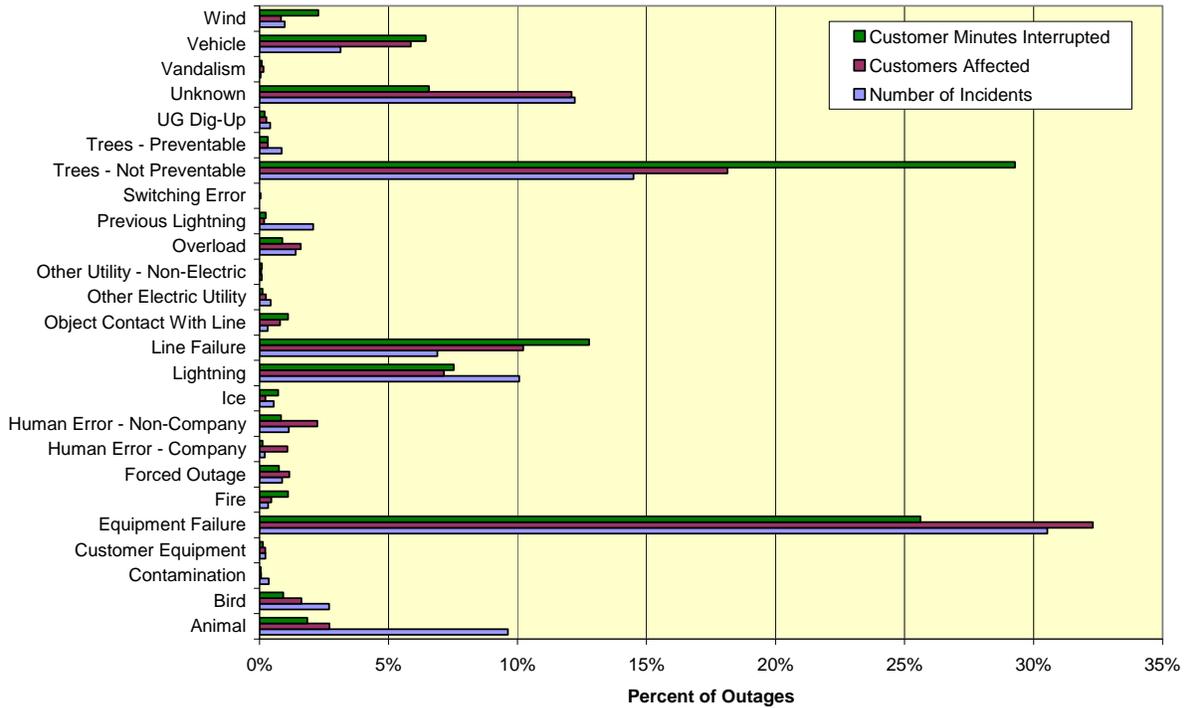


**Pennsylvania Electric Company  
System Average Interruption Frequency Index (SAIFI)**



The following graph shows the distribution of causes of service outages occurring during 2007 as a percentage of total outages. Equipment failure was responsible for 30.5 percent of incidents, 32.3 percent of customers affected and 25.6 percent of interruption minutes. Non-preventable tree-related incidents accounted for 14.5 percent of total incidents, 18.1 percent of customers affected and 29.3 percent of interruption minutes.

**Pennsylvania Electric Company  
2007 Outage Causes**



**Pennsylvania Power Company**

Penn Power’s reliability performance summary was filed as a joint report submitted on behalf of the three Pennsylvania operating companies of FirstEnergy: Met-Ed, Penelec and Penn Power.

On May 26, 2004, FirstEnergy filed a Petition for the Amendment of Benchmarks.<sup>24</sup> On February 17, 2006, the Commission entered an Order modifying the benchmarks and standards for the three FirstEnergy companies. Penn Power’s CAIDI benchmark was increased from 92 minutes to 101 minutes; the SAIFI benchmark was increased from 1.02 interruptions to 1.12 interruptions; and the SAIDI benchmark was increased from 94 minutes to 113 minutes.

Penn Power’s overall reliability performance indices in 2007 were slightly higher than last year’s. CAIDI was 126 minutes, compared to 112 minutes in 2006. The 2007 CAIDI was five minutes greater than the standard. SAIFI was 1.19 interruptions, compared to last year’s 1.22. The 2007 SAIFI was 11.2 percent below the standard. All of Penn Power’s three-year averages, however, exceeded the three-year performance standards.

<sup>24</sup> Docket No. P-00042115.

It should be noted that the Joint Petition for Settlement in the investigation of FirstEnergy's reliability performance required Penn Power to achieve an established reliability benchmark for SAIDI by the end of 2007.<sup>22</sup> The settlement required Penn Power to achieve at least a 30 percent improvement over the 2003 achieved SAIDI for the 12 months ending December 31, 2007. In addition, the settlement required Penn Power to achieve SAIDIs for the calendar years 2005 and 2006 that reflect values equal to or better than its achieved SAIDI for 2003. The resulting settlement SAIDI milestones were 192 for the calendar years 2005 and 2006 and 134 for the calendar year 2007. Penn Power met the settlement milestone SAIDI in 2006, but Penn Power's 2007 SAIDI of 150 failed to meet the 2007 settlement milestone.

In a letter dated June 22, 2006, the PUC Prosecutory Staff informed Penn Power that its 2005 calendar year performance was in violation of the Settlement and requested that a specific remediation plan be implemented. Penn Power did implement an accelerated system reliability improvement plan that brought the company into compliance with both the settlement and Commission issued 12-month reliability benchmarks and standards by the end of the 2006 calendar year. However, because Penn Power failed to achieve the 2007 settlement SAIDI milestone and did not achieve the Commission established standard for CAIDI, the parties to the Joint Petition for Settlement are currently in discussions with Penn Power concerning potential repercussions of missing the 2007 settlement milestone.

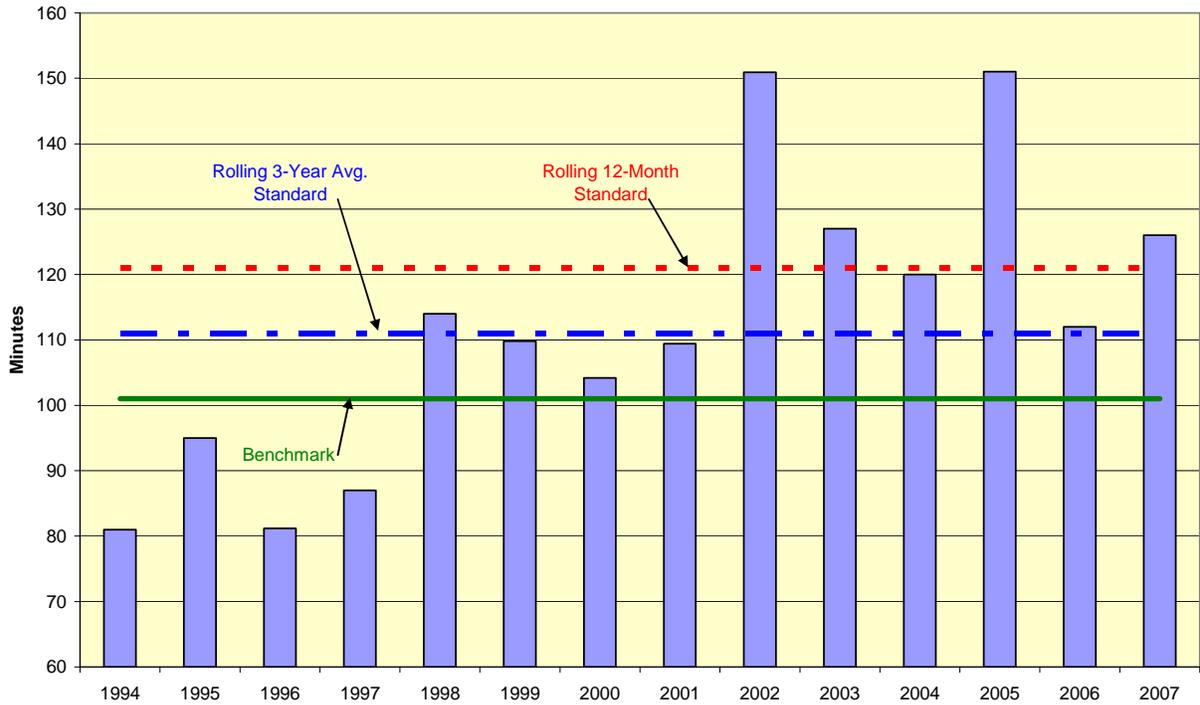
In 2007, Penn Power's customers experienced one major event. The outage data relating to this event has been excluded from the calculation of the reliability indices.

July 27-28, 2007; multiple lightning strikes, heavy rainfall, high winds and hail; 15,842 customers affected; 3,120,490 minutes excluded.

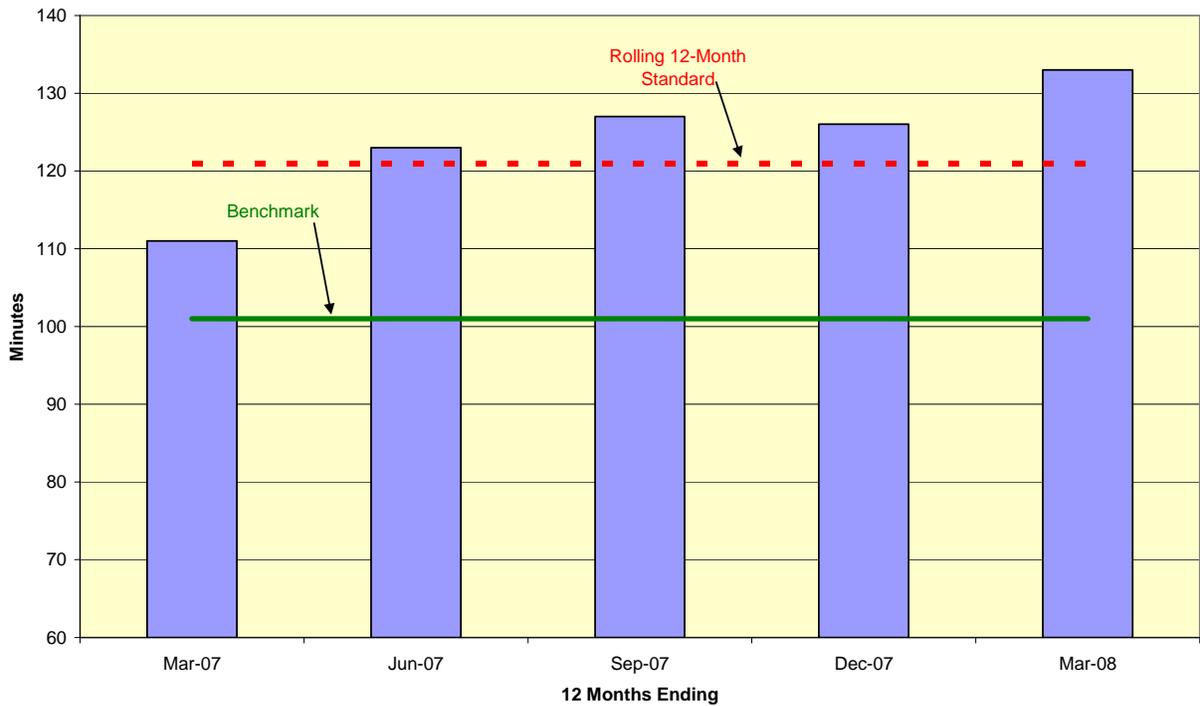
In 2007, Penn Power experienced 187,949 customer interruptions with a total duration of 23.7 million minutes, or 9.0 percent higher than 2006.

The following graphs depict trends in the duration of service interruptions for the Penn Power system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards.

**Pennsylvania Power Company  
Customer Average Interruption Duration Index (CAIDI)**

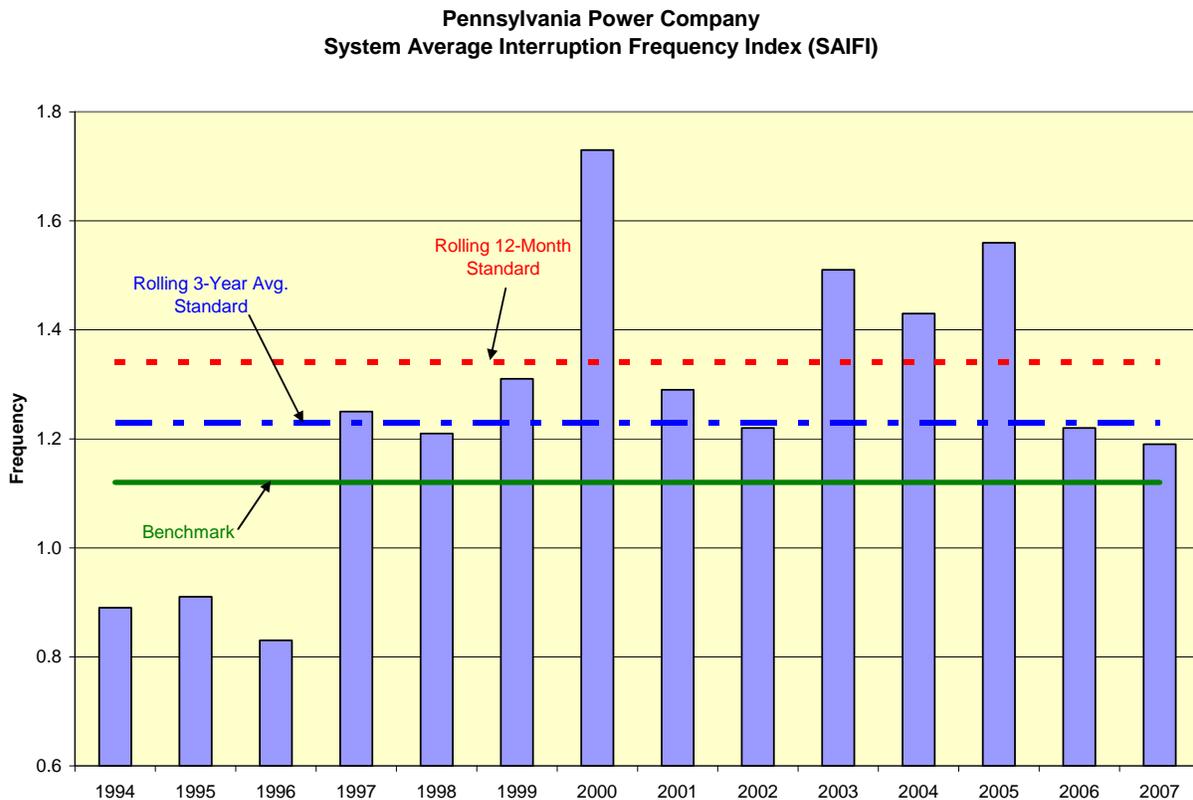


**Pennsylvania Power Company  
Customer Average Interruption Duration Index (CAIDI)**

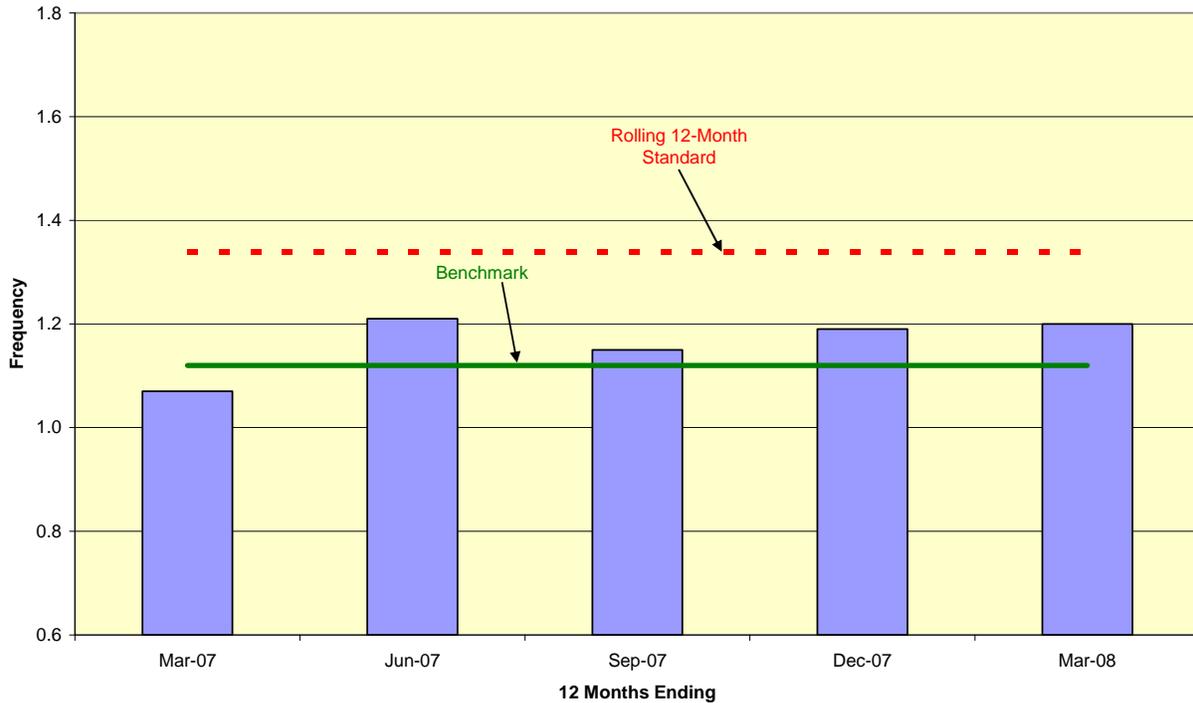


Since a dramatic decline in CAIDI during 2006, CAIDI has shown a steady rise throughout 2007 and the first quarter of 2008. The quarterly data shows average outage durations exceeding the standard for the past four quarters.

The next two graphs show trends in the frequency of service interruptions from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards.



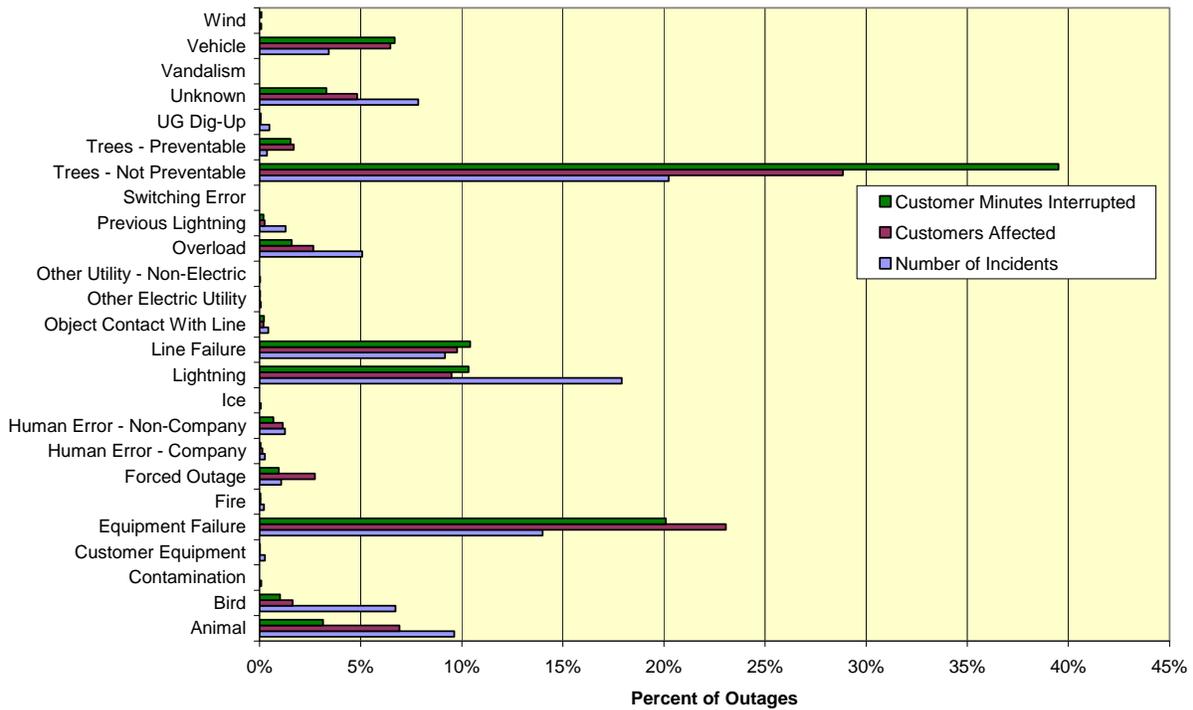
**Pennsylvania Power Company  
System Average Interruption Frequency Index (SAIFI)**



SAIFI showed an improvement in both 2006 and 2007, with the 2007 SAIFI at 1.19 compared to the performance standard of 1.34. For the 12 months ending March 2008, SAIFI was 11.2 percent lower than the standard.

The next graph shows the distribution of causes of service outages occurring during 2007 as a percentage of total outages. Non-preventable tree-related outages represented 20.2 percent of the incidents, 28.8 percent of customers affected and 39.5 percent of interruption minutes. Equipment failure accounted for 14.0 percent of the incidents, 23.1 percent of customers affected and 20.1 percent of interruption minutes.

**Pennsylvania Power Company  
2007 Outage Causes**



**PECO Energy Company**

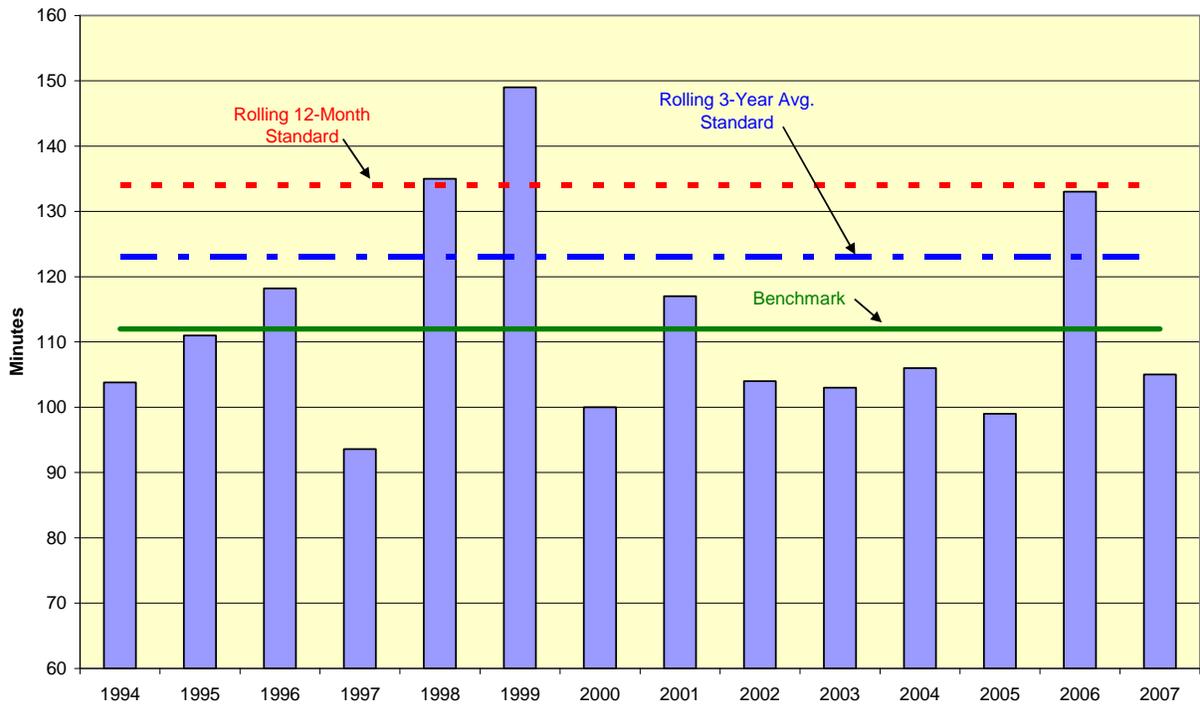
PECO’s overall reliability performance in 2007 was better than that of the past year, and better than the benchmark for all indices. The SAIFI value for 2007 of 0.99 interruptions was 19.5 percent below the performance benchmark of 1.48. The CAIDI value of 105 minutes was a decrease of 21.1 percent from the 2006 value and below the 12-month benchmark by 6.3 percent. The three-year average for all performance indices met the three-year performance standards.

No major events were experienced in 2007.

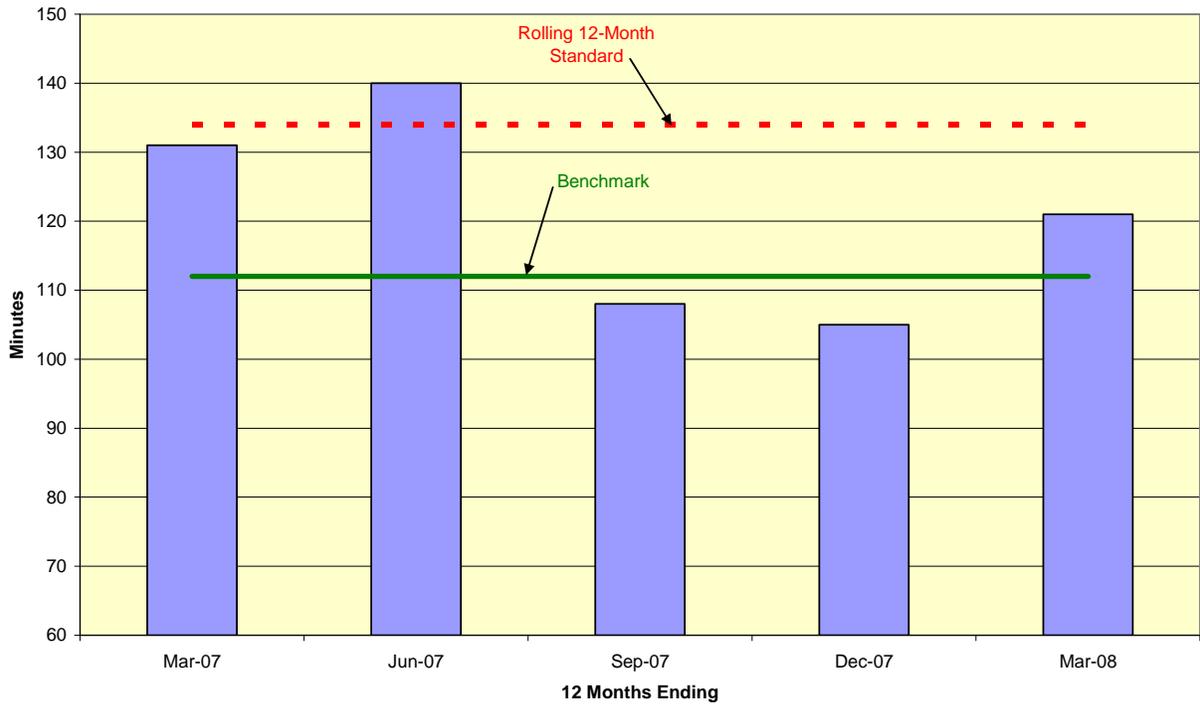
In 2007, PECO’s customers experienced 1,636,925 service interruptions with a total duration of 171.6 million minutes, which was 41.4 percent less than the 2006 outage minutes.

The following graphs depict trends in the duration of service interruptions for the PECO system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards.

**PECO Energy Company  
Customer Average Interruption Duration Index (CAIDI)**

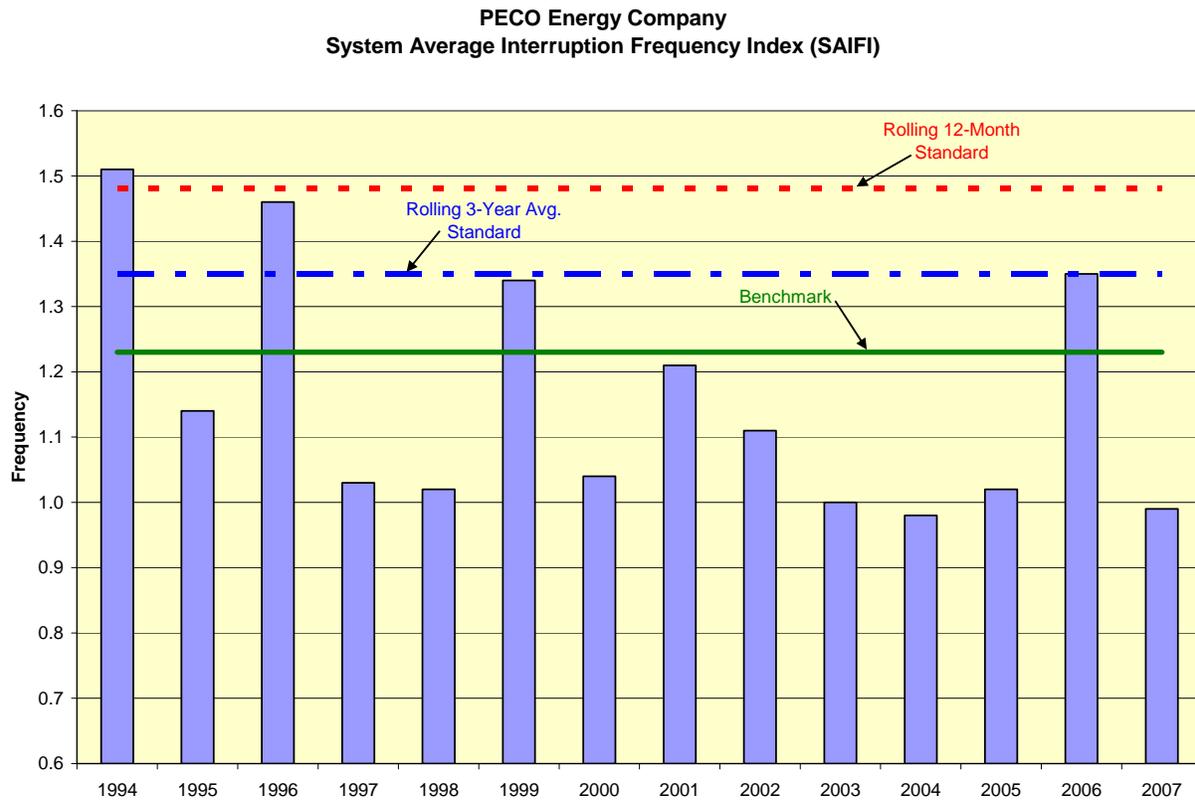


**PECO Energy Company  
Customer Average Interruption Duration Index (CAIDI)**

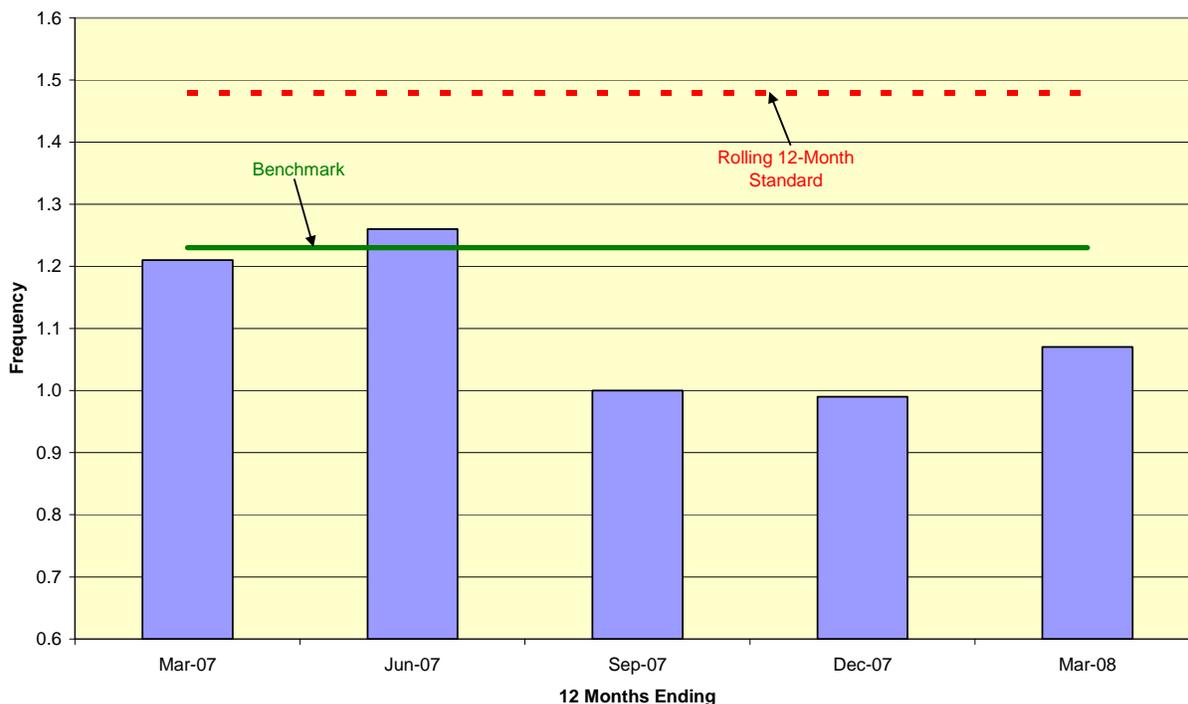


As seen here, although the 12-month rolling average for June 2007 exceeded the standard, the average for 2007 was better than the benchmark. The rolling 12-month CAIDI for the 12 months ending March 2008 was 121 minutes, compared to the standard of 134 minutes.

The next two graphs show trends in the frequency of service interruptions for the PECO system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards for SAIFI.



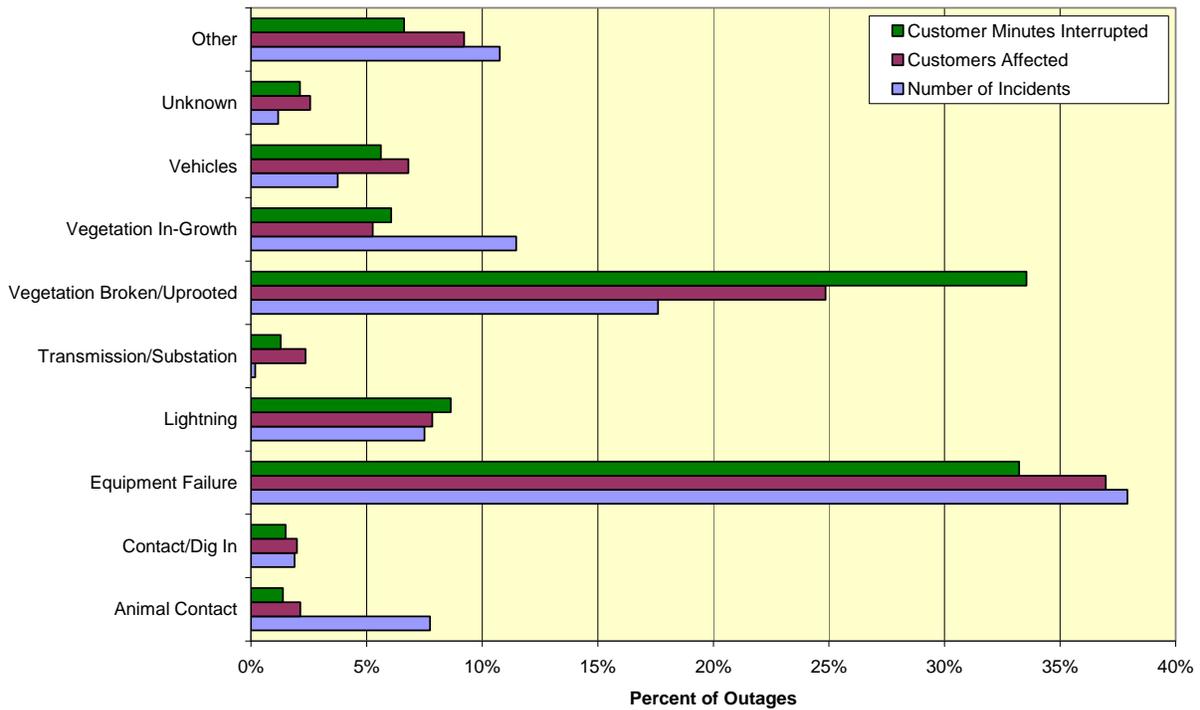
**PECO Energy Company  
System Average Interruption Frequency Index (SAIFI)**



The rolling 12-month averages for the four quarters of 2007 remained at or below the benchmark. For the 12-month period ending March 2008, SAIFI was 1.07 or 13.0 percent below the benchmark.

The graph below shows the distribution of causes of service outages occurring during 2007 as a percentage of total outages. Equipment failure was responsible for 37.9 percent of the incidents, 37.0 percent of customers affected and 33.2 percent of interruption minutes. Tree-related outages (29.1 percent of incidents) were caused by broken branches and trunks or uprooted trees and vegetation in-growth. Together, these outages resulted in 30.2 percent of the customers affected and 39.7 percent of interruption minutes.

**PECO Energy Company  
2007 Outage Causes**



**PPL Electric Utilities Corporation**

In 2007, PPL’s reported reliability performance indices improved over the reported 2006 reliability performance indices. All performance indices met the 12-month standards. PPL achieved the three-year CAIDI standard but did not meet the three-year SAIFI standard. The company exceeded the three-year SAIFI standard by 3.4 percent which, according to PPL, was attributable to extraordinary storm experience during 2006 and 2007.

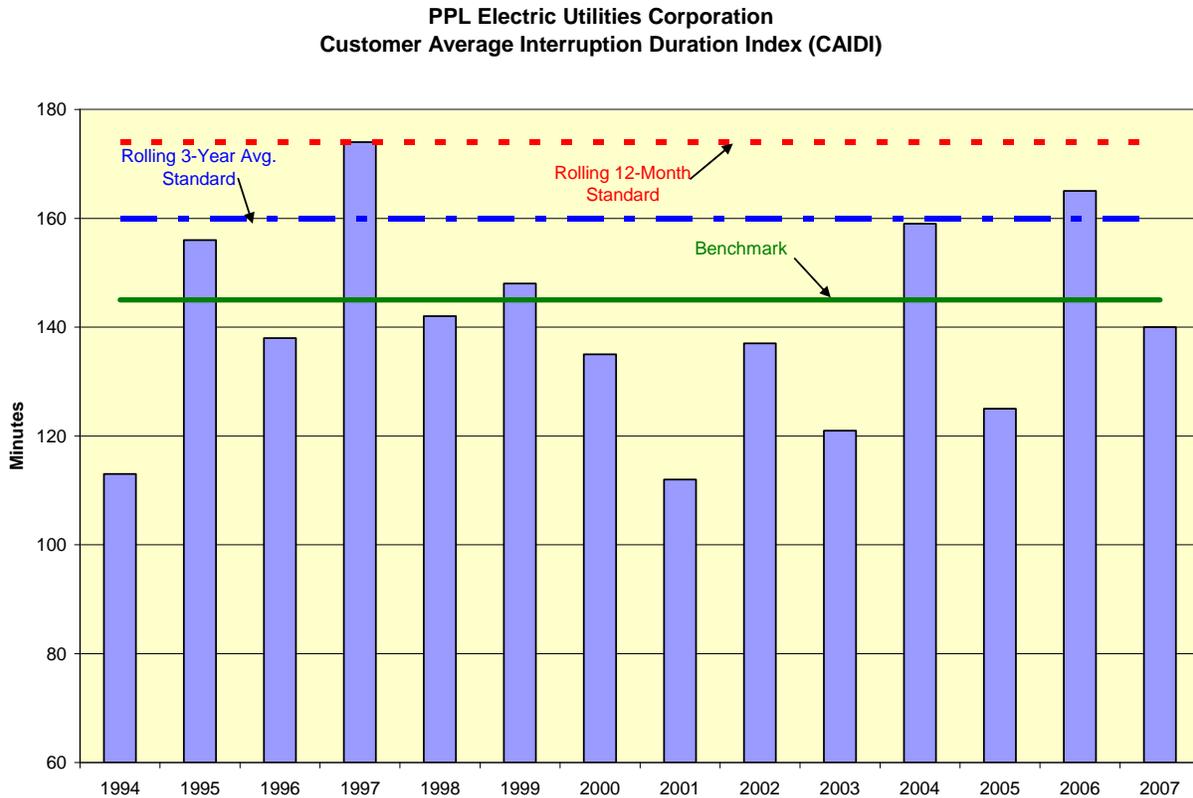
One major event occurred in PPL’s service territory during 2007. The calculation of the reliability indices exclude outage data related to this event, which was approved by the Commission:

December 16-19, 2007 – severe winter storm with freezing rain, sleet, snow and high winds; 179,744 customers affected.

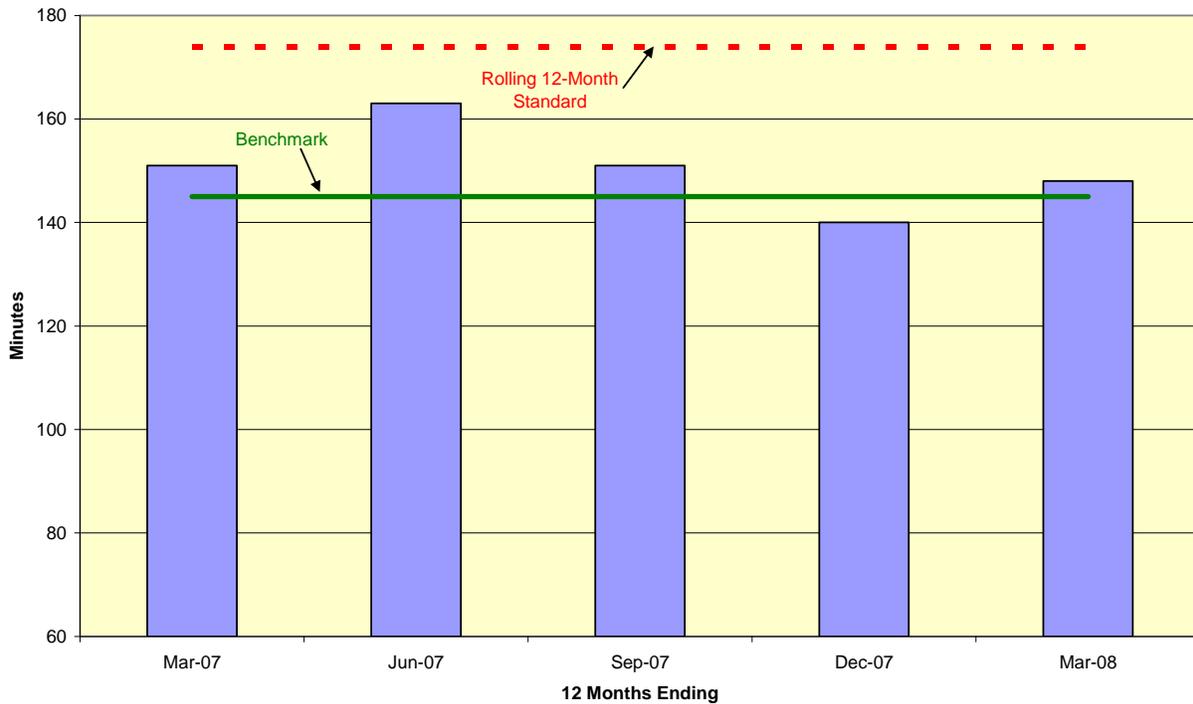
There were also five PUC-reportable storms and 21 storms that were not reportable, which contributed to PPL’s performance.

PPL's customers experienced 1,527,907 service interruptions in 2007 with a total duration of 214.2 million minutes, or 24.0 percent lower than last year's figure.

The following graphs depict trends in the duration of service interruptions for the PPL system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards.



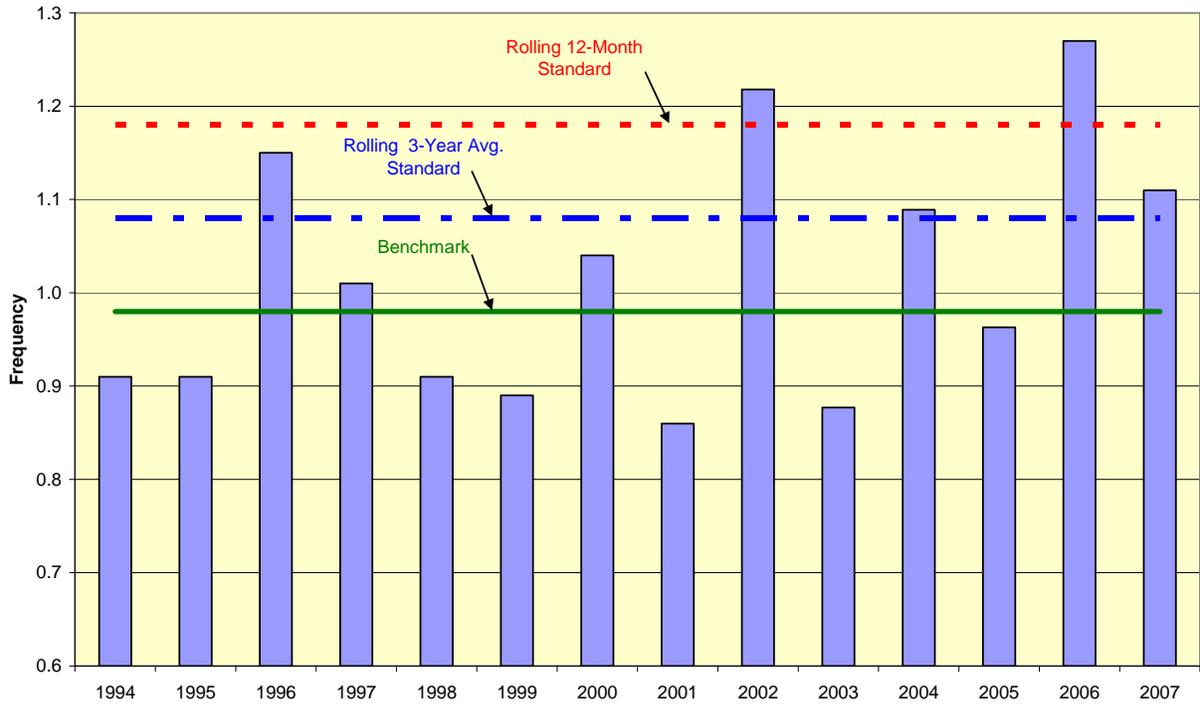
**PPL Electric Utilities Corporation  
Customer Average Interruption Duration Index (CAIDI)**



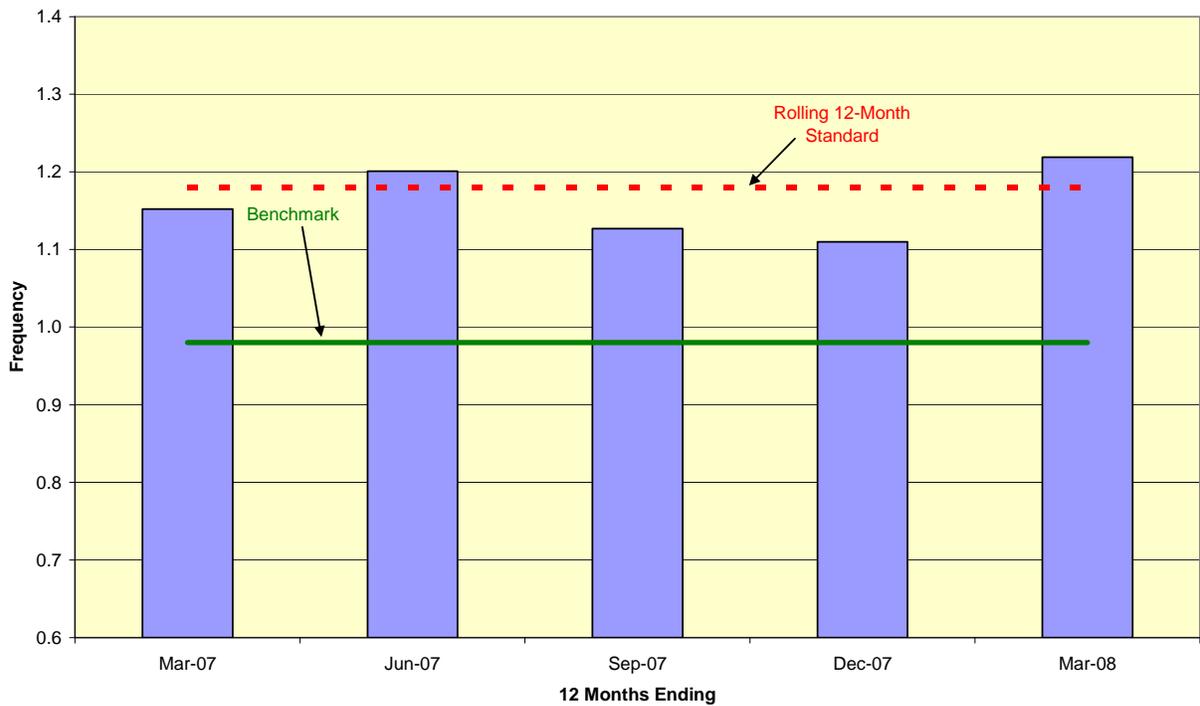
The next two graphs show trends in the frequency of service interruptions for the PPL system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards for SAIFI.

For the 12-month rolling average ending March 2008, SAIFI exceeded the standard by 3.4 percent.

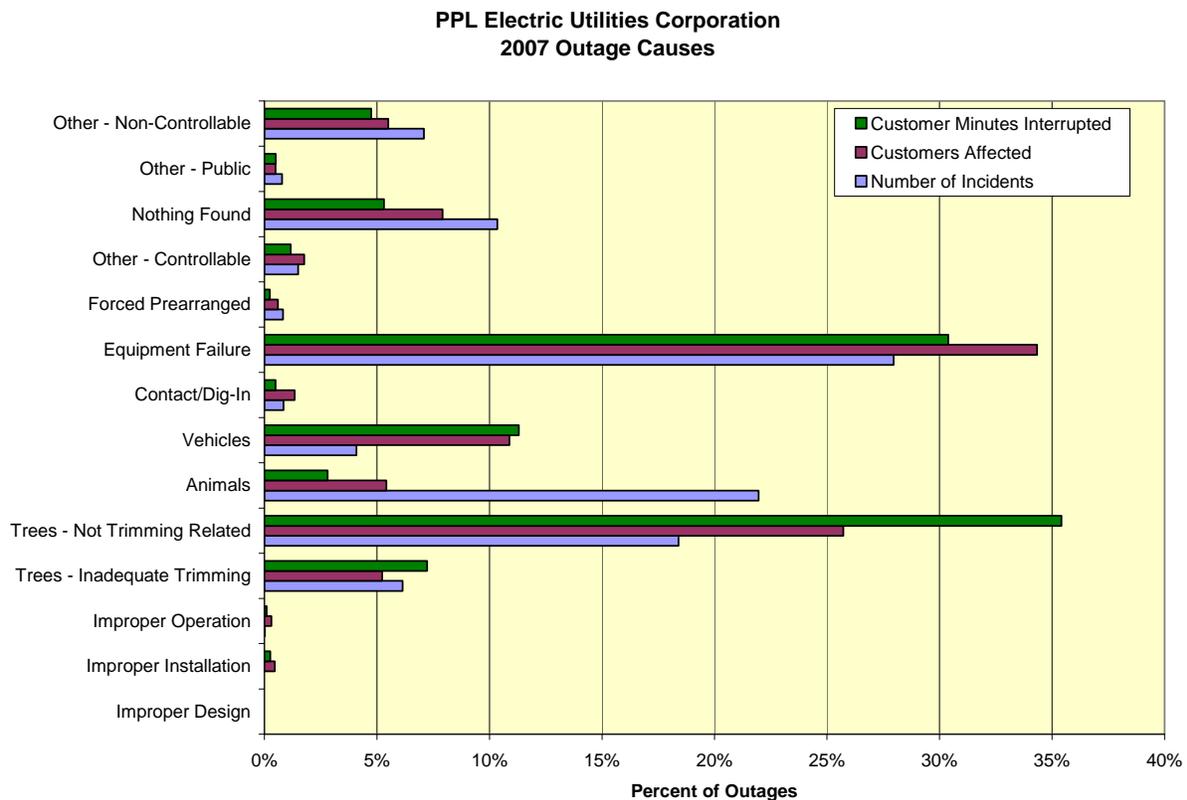
**PPL Electric Utilities Corporation  
System Average Interruption Frequency Index (SAIFI)**



**PPL Electric Utilities Corporation  
System Average Interruption Frequency Index (SAIFI)**



The graph below shows the distribution of causes of service outages occurring during 2007 as a percentage of total outages. Equipment failure represented 28.0 percent of the interruptions, 34.3 percent of customers affected and 30.4 percent of interruptions minutes. Non-trimming tree-related outages were the second-largest cause of customer outages (25.7 percent) and 35.4 percent of interruption minutes. Animal-related outages accounted for 22.0 percent of incidents, but affected only 5.4 percent of the customers with an outage duration of 2.8 percent of total minutes, since most of these trouble cases are associated with individual distribution transformers.



PPL reports that 28 percent of trouble cases, 34 percent of customer interruptions and 57 percent of interruption minutes attributed to equipment failure are weather related and are not considered to be indicators of equipment condition or performance.

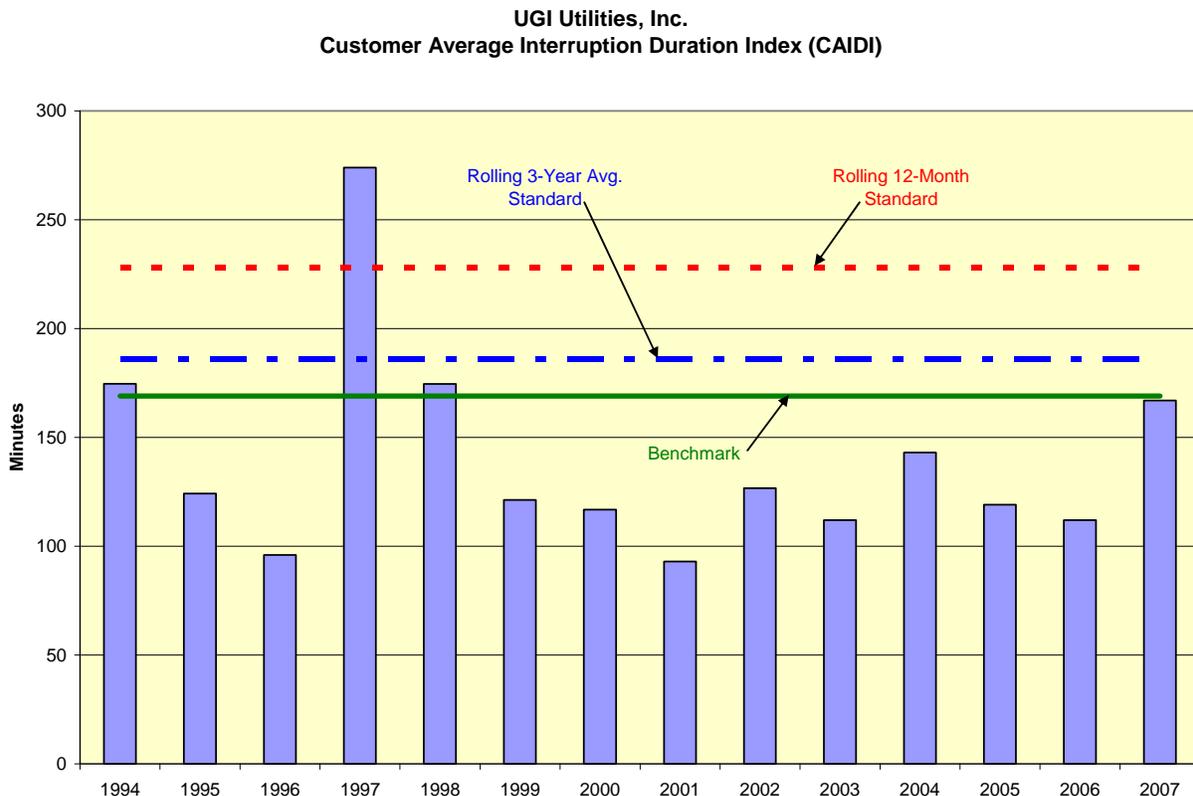
## UGI Utilities Inc.

UGI's overall reliability performance during 2007 was better than the established benchmarks. The 2007 CAIDI of 167 minutes was 55 minutes higher than the 2006 CAIDI, but 1.2 percent better than the benchmark of 169 minutes. The 2007 SAIFI of 0.68 interruptions was lower than last year's SAIFI and 18.1 percent lower than the benchmark. UGI's three-year averages were all well below the three-year standards for each index. The slight increase in the 2007 CAIDI and SAIDI results were due to a return to more normal weather and ongoing problems associated with A.B. Chance distribution fuse cutouts.

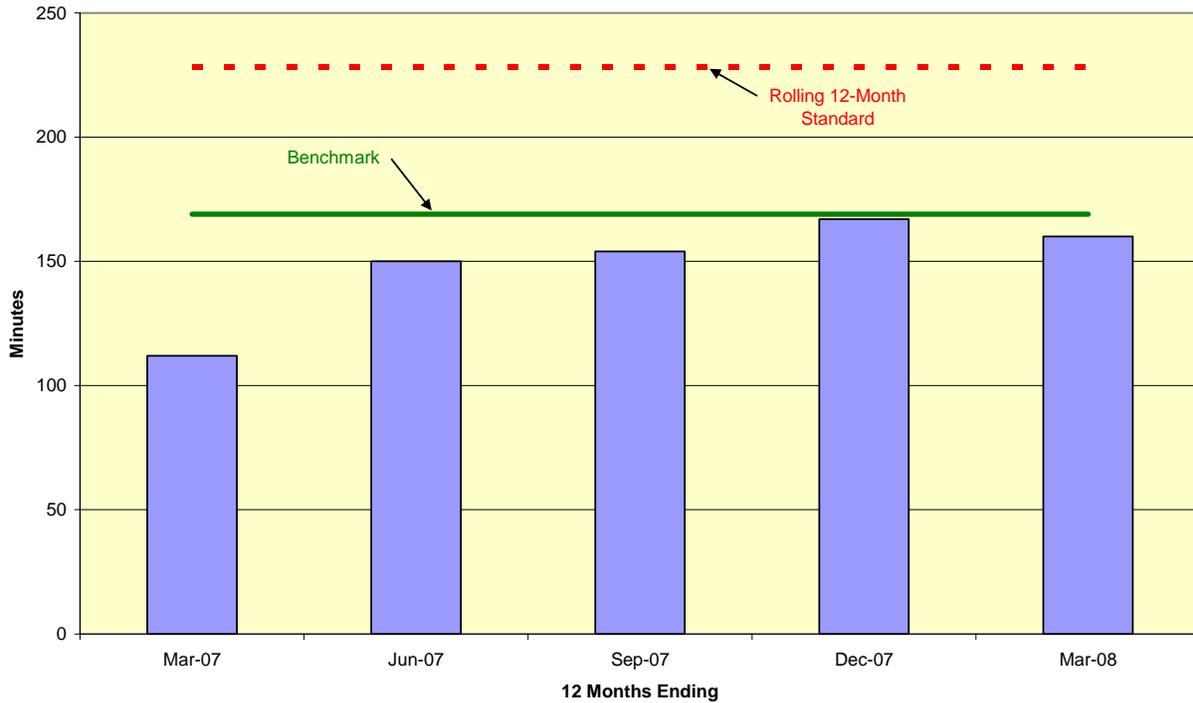
No major events have been reported for 2007.

In 2007, UGI's customers experienced 42,416 service interruptions with a total duration of 7.1 million minutes, which was about 29.2 percent higher than that which was reported last year.

The following graphs depict trends in the duration of service interruptions for the UGI system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards.



**UGI Utilities, Inc.  
Customer Average Interruption Duration Index (CAIDI)**

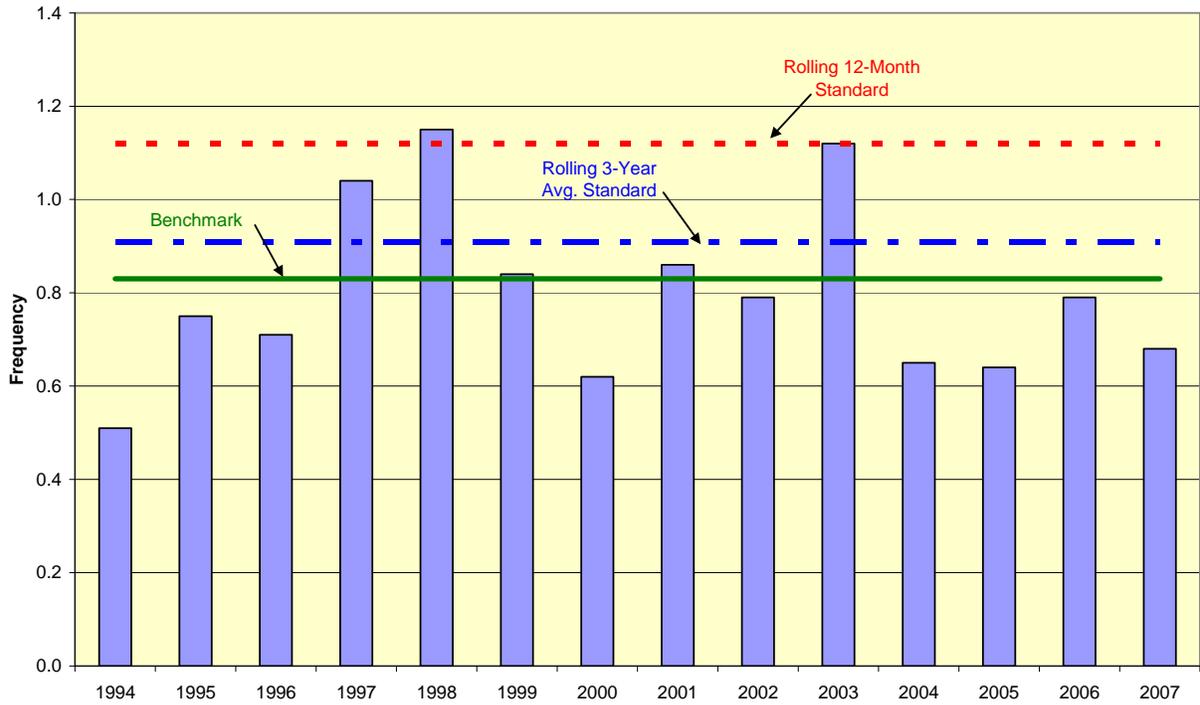


The next two graphs show trends in the frequency of service interruptions for the UGI system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards for SAIFI.

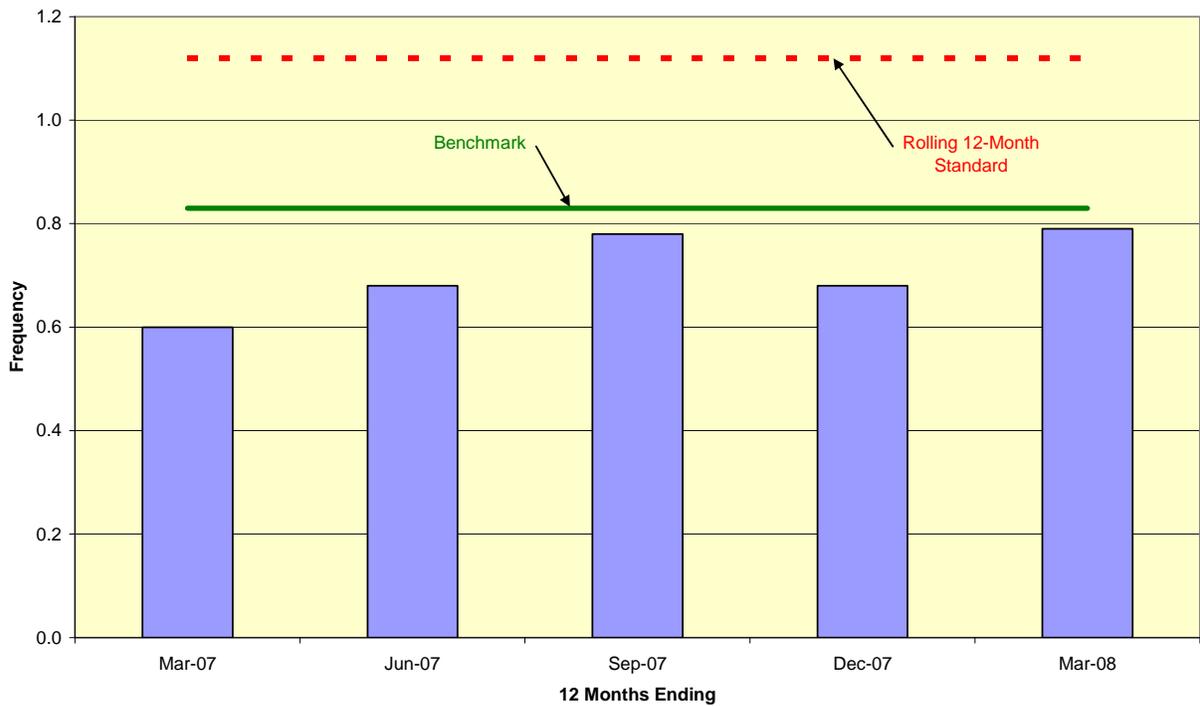
The final graph shows the distribution of causes of service outages occurring during 2007 as a percentage of total outages. Equipment failure caused 33.5 percent of the incidents, resulting in 40.0 percent of customers affected and 28.1 percent of interruption minutes. Tree-related outages represented 26.9 percent of incidents, 31.3 percent of customers affected and 45.6 percent of interruption minutes.

A large portion of equipment failures are attributed to a problem in a distribution-type fuse cutout, manufactured by A.B. Chance. UGI has implemented a replacement program to identify and replace these defective parts.

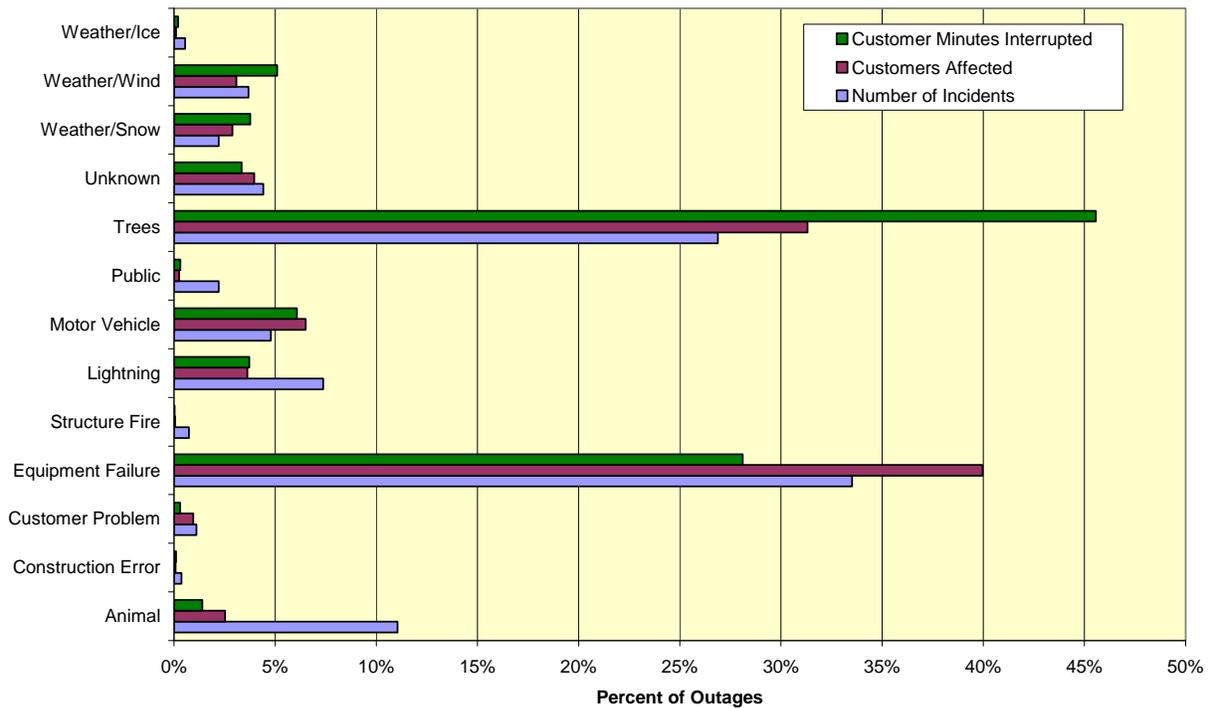
**UGI Utilities, Inc.  
System Average Interruption Frequency Index (SAIFI)**



**UGI Utilities, Inc.  
System Average Interruption Frequency Index (SAIFI)**



**UGI Utilities, Inc.  
2007 Outage Causes**



### Citizens' Electric Company

Citizens' has a relatively small operating area with an electric system consisting of one distribution substation and nine distribution feeder lines.

In 2007, Citizens' CAIDI of 62 minutes was 43 minutes below the benchmark of 105 minutes. The 2007 SAIFI was an average of 0.25 outages per customer, compared to the 12-month benchmark outage frequency 0.2. For the three-year average performance, Citizens' reported indices were lower than the standard for all three indices.

Citizens' completed its deployment of an Automatic Meter Reading system across its service territory in February 2006. In addition to the meter reading functionality, this system will enable Citizens' to verify service outages and perform quicker assessments of overall system conditions during a major event. This system will also help Citizens' to more accurately model its distribution system to ensure the best possible overcurrent protection design, minimizing the number of customers affected by an outage. Work continued in 2007 on the implementation of this system.

The calculations for the 2007 reliability indices exclude outage data relating to four major events, which were approved by the Commission:

March 19, 2007 - during a period of freezing rain, an off R/W tree fell onto a three-phase overhead primary line; 947 customers affected; 104 interruption minutes excluded.

May 10, 2007 - strong thunderstorm with frequent lightning; 882 customers affected; 247 interruption minutes excluded.

July 25, 2007 - pin insulator supporting a phase conductor failed; 1,266 customers affected; 196 interruption minutes excluded; and

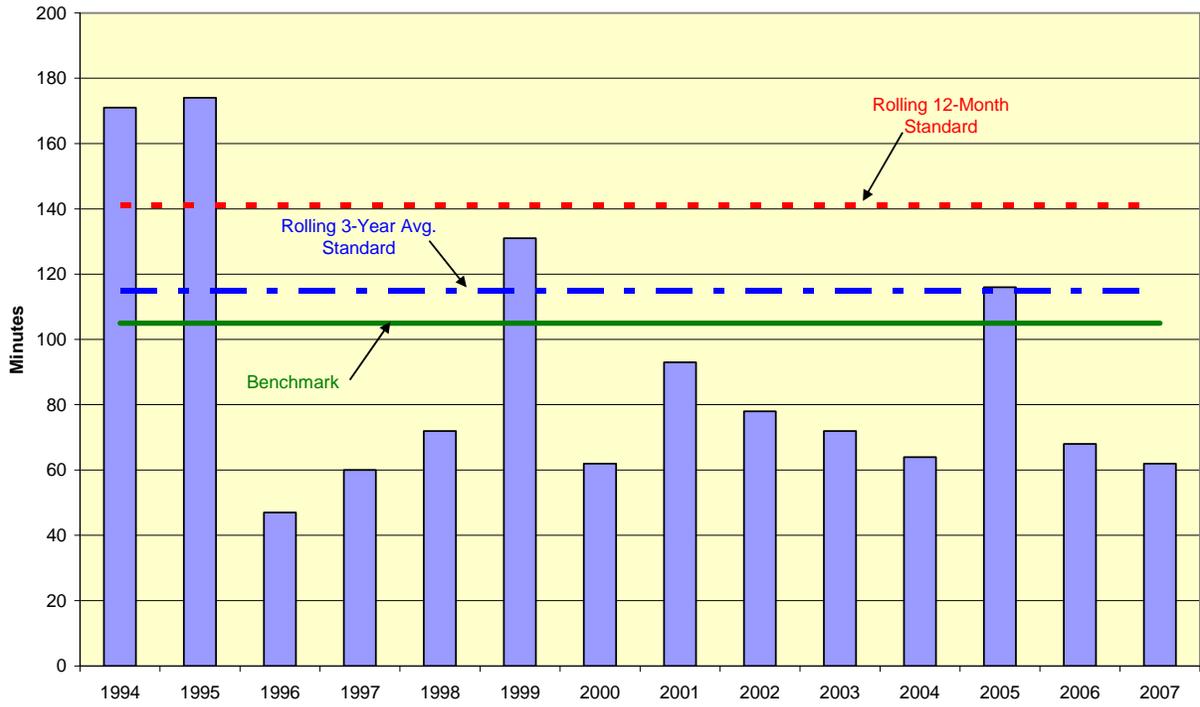
Nov. 18, 2007 – lightning arrester failed during heavy rain/snow mix; 688 customers affected; 119 interruption minutes excluded.

On August 11, 2005, Citizens' Petition for Appeal of Staff Determination Denying Request for Exclusion of Major Event was denied by the Commission, regarding the exclusion of a service outage occurring on April 25, 2004, and granted for the purpose of verifying the recalculation of Citizens' historic reliability benchmarks. Citizens' requested that, if it is the Commission's policy to deny major event exclusion status for distribution equipment failures, that it be permitted to recalculate its base year historic reliability benchmarks accordingly. Docket No. P-00042127. Citizens' has submitted additional information to determine the type of each event excluded from the recomputation. Upon Commission review of this information, a corrected level of historic reliability benchmarks will be established, if deemed appropriate.

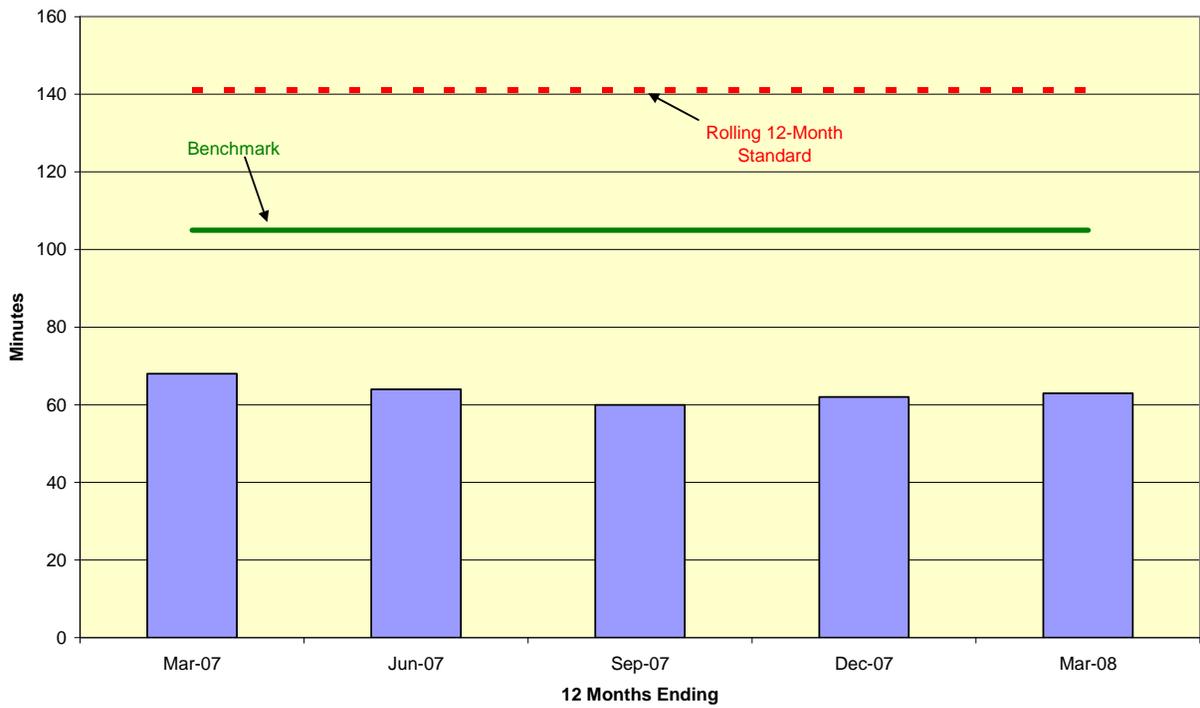
Citizens' experienced a total of 1,700 customer interruptions in 2007, with a total duration of 105,981 minutes, excluding major events, which was 61.9 percent higher than that which was reported last year.

The following graphs depict trends in the duration of service interruptions for the Citizens' system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards.

**Citizens' Electric Company  
Customer Average Interruption Duration Index (CAIDI)**

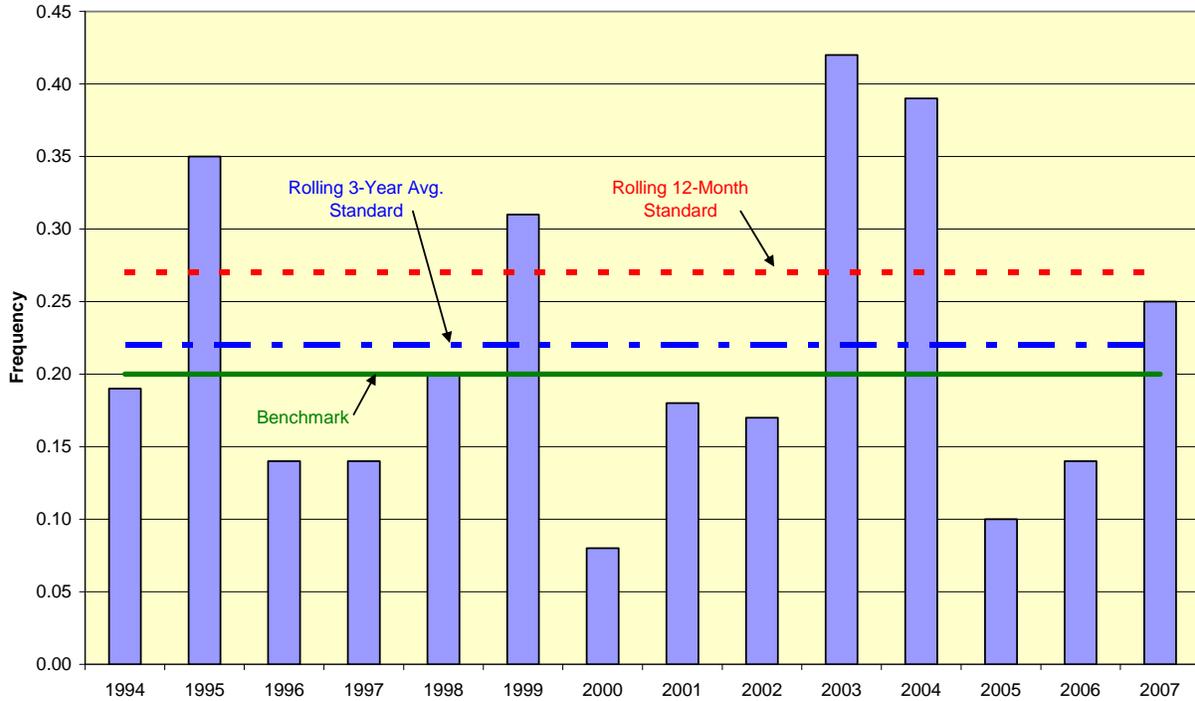


**Citizens' Electric Company  
Customer Average Interruption Duration Index (CAIDI)**

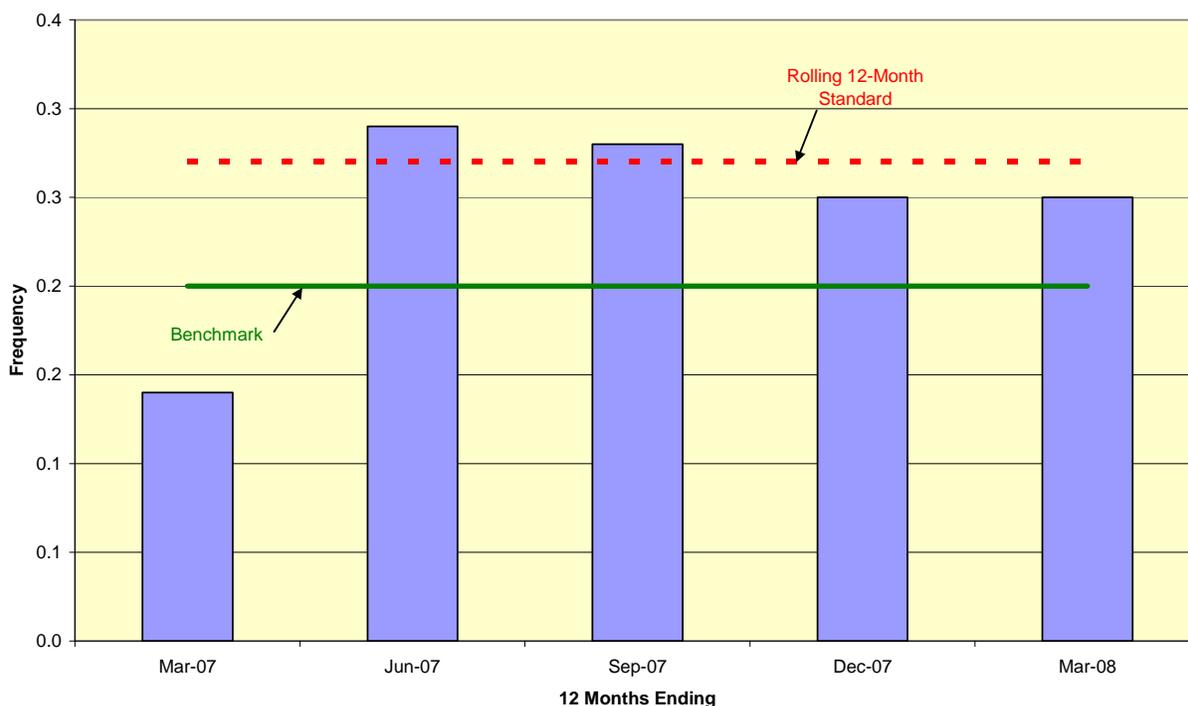


The next two graphs show trends in the frequency of service interruptions for the Citizens' service territory from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards for SAIFI.

**Citizens' Electric Company  
System Average Interruption Frequency Index (SAIFI)**



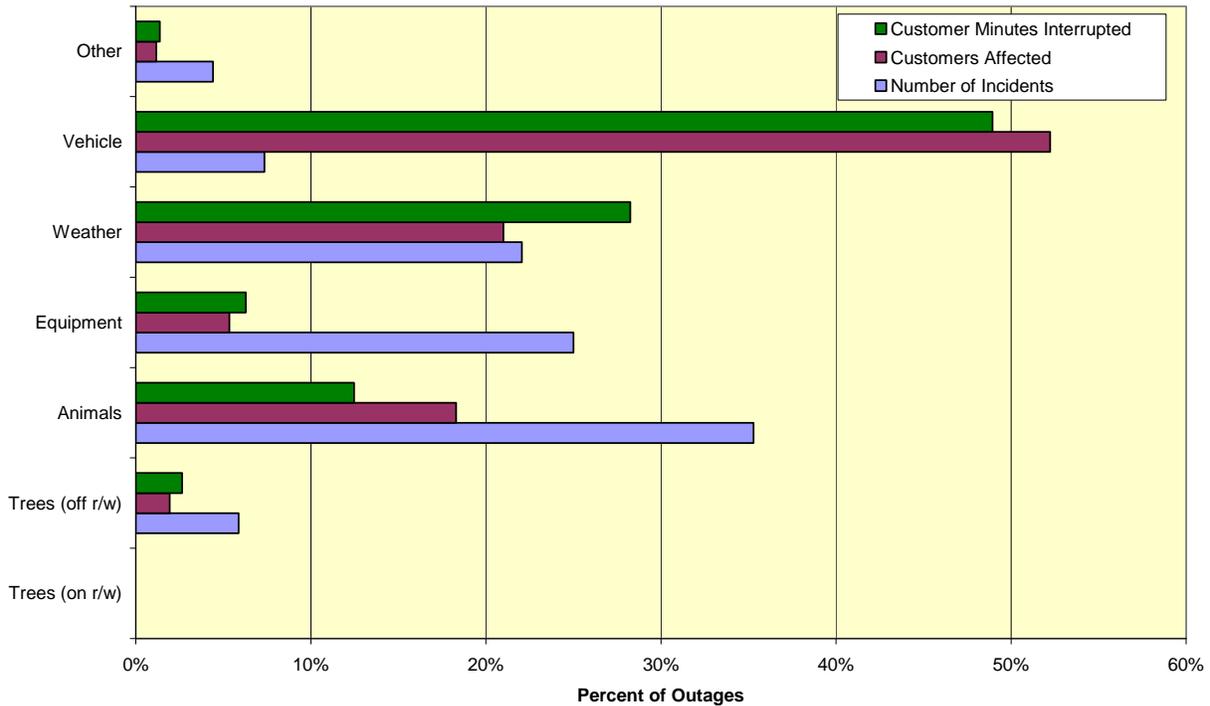
**Citizens' Electric Company  
System Average Interruption Frequency Index (SAIFI)**



Although the outage frequency values shown on these graphs are much smaller than the SAIFI values of larger companies, valid comparisons are not made with other companies' reliability performance, but with the historical performance of Citizens'. Smaller systems tend to experience more variability in service outage data, which is captured in the development of historical benchmarks.

The graph below shows the distribution of causes of service outages occurring during 2007 as a percentage of total outages. The most frequent outage cause was animal related, representing 35.3 percent of the outages and 12.5 percent of customer minutes interrupted. Weather-related incidents totaled 21.0 percent of customers affected, and 28.3 percent of customer minutes interrupted. Animals continued to be the largest cause of outages, with 35.3 percent of incidents affecting 18.3 percent of customers with 12.5 percent of the total customer minutes interrupted. Citizens' is continuing to install wildlife protection and to evaluate methods to reduce animal-related outages. Although vehicle-related outages represented only 7.4 percent of the incidents, they resulted in 48.9 percent of customer minutes interrupted.

**Citizens' Electric Company  
2007 Outage Causes**



**Pike County Light & Power Company**

Pike County is the westernmost portion of Orange & Rockland’s Northern Operating Division. This area is primarily fed from two 34.5 kV feeders that emanate from New York substations. Thus, sustained interruptions are usually smaller, affecting fewer customers, and will take a longer amount of time per customer to restore service.

On June 9, 2004, Pike County filed comments to the Commission’s Order<sup>25</sup> of May 11, 2004, which were treated as a petition to amend its benchmarks.<sup>26</sup> Pike County submitted that the five years of data used to establish reliability benchmark values disadvantages Pike County since such data fails to account adequately for the small size of its service area, the configuration of the system and the potential for volatility in reliability index performance. A Settlement Agreement was reached by all of the parties to the proceeding. The matter was subsequently remanded to the Commission’s Office of Administrative Law Judge for further development of the record regarding the recalculation of Pike County’s reliability benchmarks.

<sup>25</sup> Docket No. M-00991220.

<sup>26</sup> Docket No. M-00991220F0002.

A related matter involved a review of the exclusion of certain major events from the calculation of the historical benchmarks. On January 6, 2006, Pike County submitted additional information stating that seven non-storm incidents were improperly excluded in developing its historic reliability benchmarks.<sup>27</sup> Since it appeared that this additional information may have had an impact on the benchmark adjustment calculations contained in the Settlement, the Commission provided a copy of Pike County's response to the parties in the benchmark proceeding and allowed a comment period concerning any adjustment to the calculations or positions regarding the Settlement. None of the parties filed comments. On January 11, 2006, a Recommended Decision approving the Settlement was issued by the Commission. The Commission adopted this decision on August 17, 2006. The settlement increased Pike's SAIFI benchmark from 0.39 to 0.61 and decreased Pike County's CAIDI benchmark from 178 to 174. The SAIDI benchmark increased from 69 to 106.

The 2007 overall reported reliability indices of Pike County were lower than the 2006 reported indices. The SAIDI value decreased from 165 minutes in 2006 to 57 minutes in 2007. The outage frequency decreased from 1.16 in 2006 to 0.45 in 2007 or 26.2 percent below the SAIFI benchmark of 0.61. The CAIDI value of 125 minutes was 17 minutes lower than the previous year and 28.2 percent below the revised benchmark of 174 minutes.

The calculations for the 2007 reliability indices exclude outage data relating to three major events, which were approved by the Commission:

June 27, 2007 - storm; 2,204 customers affected; 220,400 interruption minutes excluded.

July 14, 2007 - storm; 601 customers affected; 21,108 interruption minutes excluded.

October 13, 2007 - storm; 415 customers affected; 7,055 interruption minutes excluded.

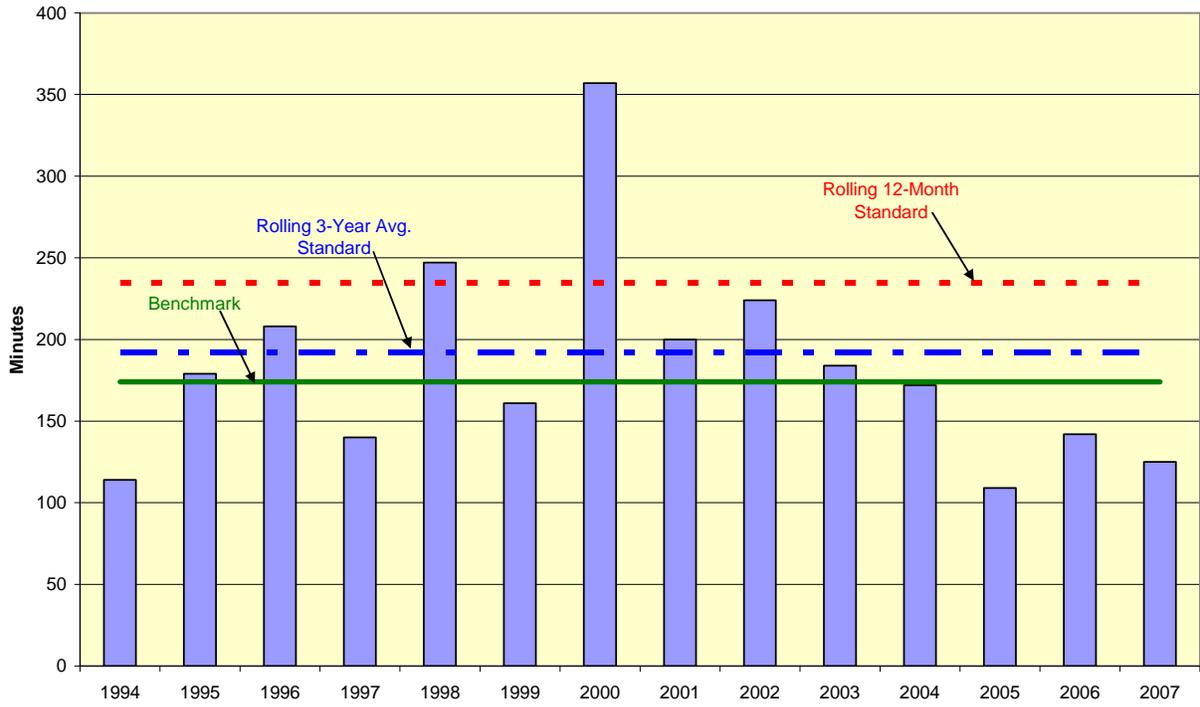
In 2007, Pike County experienced 2,004 customer interruptions with a total duration of 251,345 minutes, which was 59.6 percent lower than that which was reported last year.

The following graphs depict trends in the duration of service interruptions for the Pike County system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards.

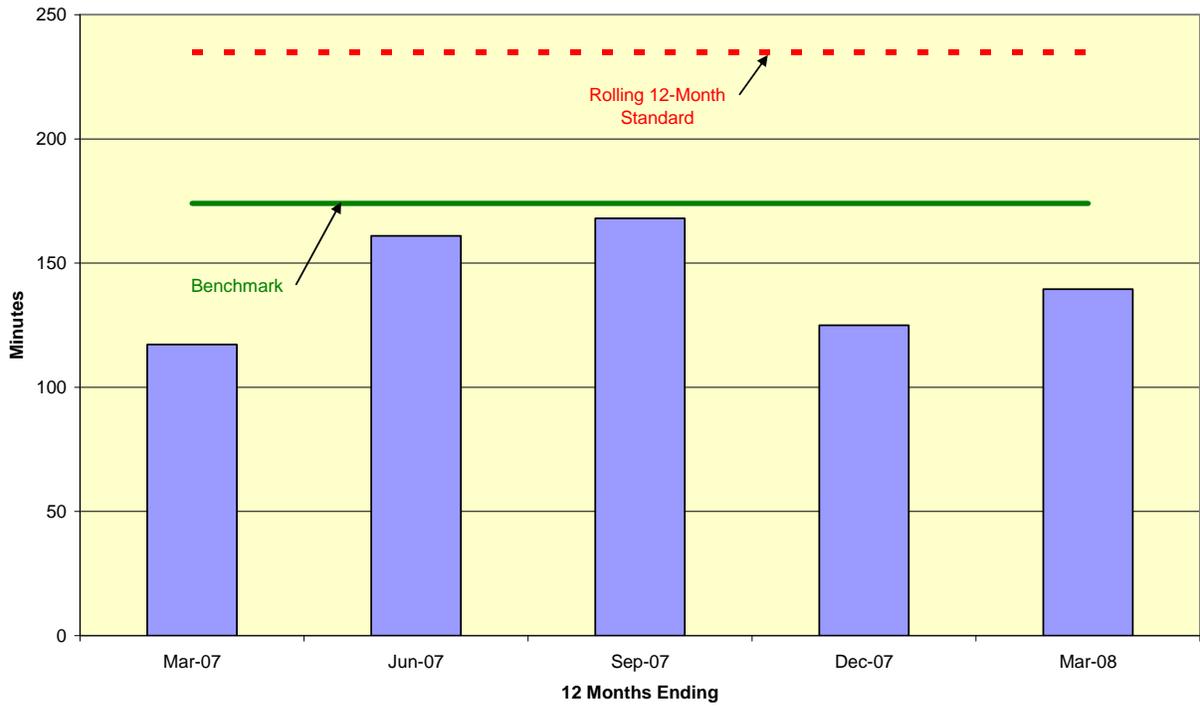
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<sup>27</sup> Docket Nos. M-00991220F2005 and P-00052174.

**Pike County Light & Power Company  
Customer Average Interruption Duration Index (CAIDI)**



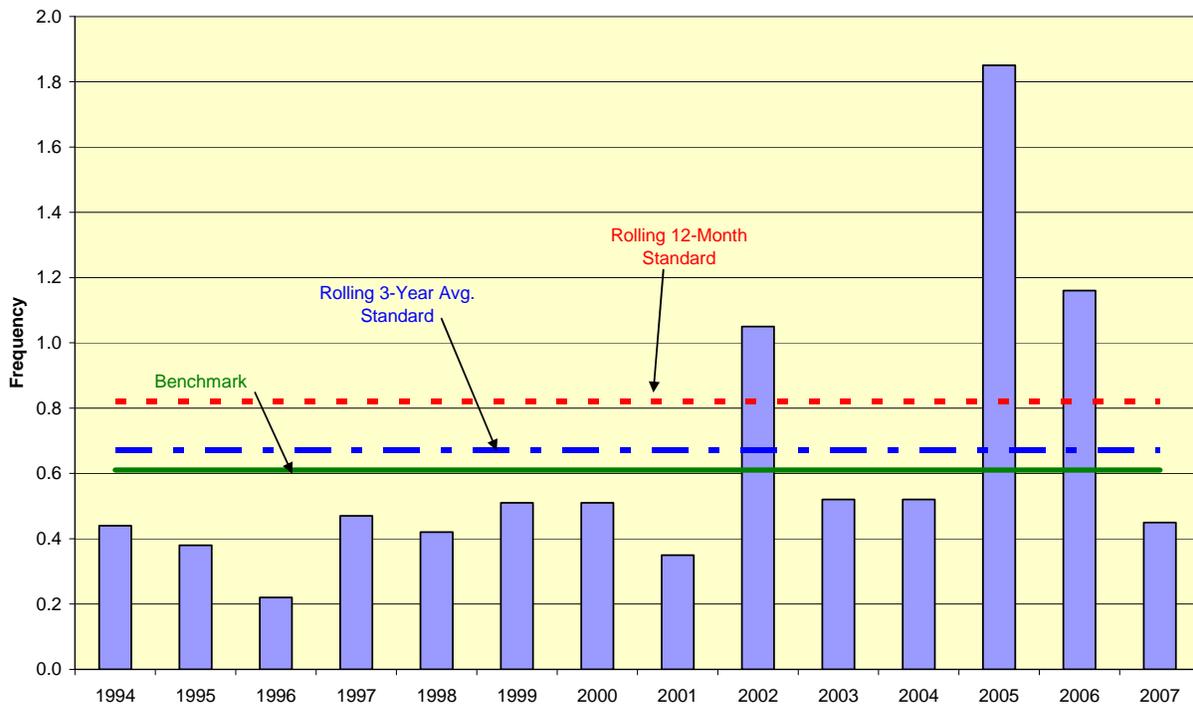
**Pike County Light & Power Company  
Customer Average Interruption Duration Index (CAIDI)**



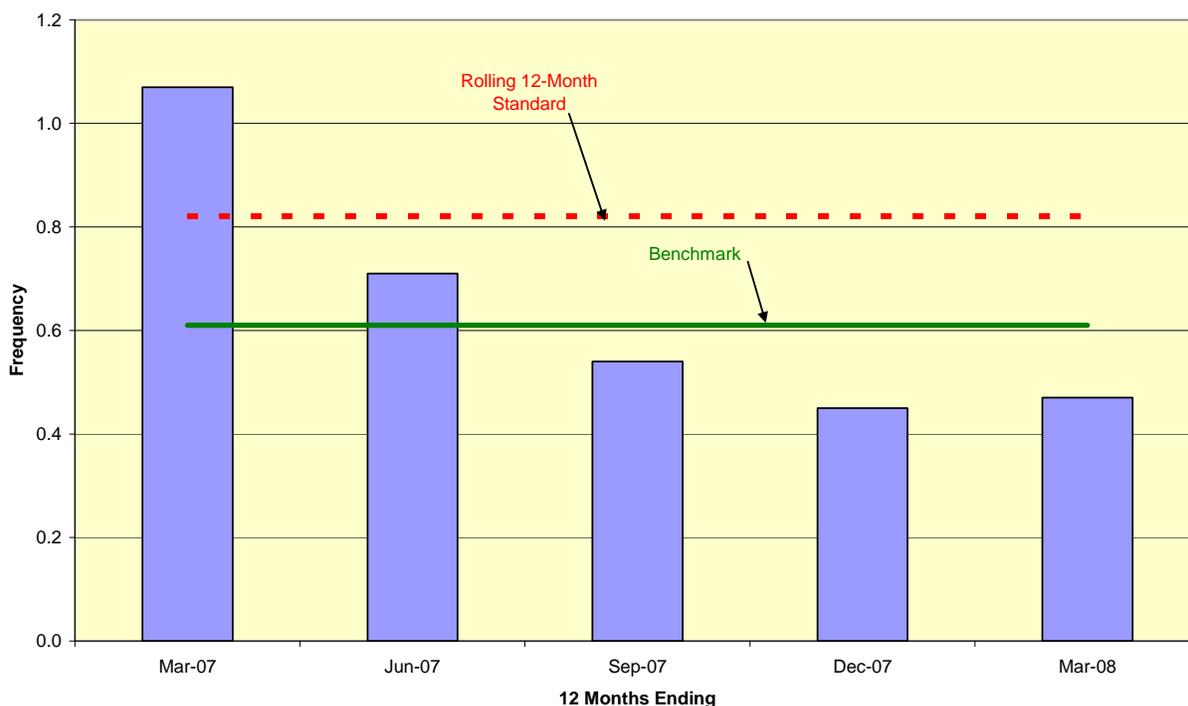
The annual CAIDI values have been below the benchmark for the past four years, and the three-year average was 34.7 percent better than the three-year average standard. Rolling 12-month averages for the four quarters of 2007 and the first quarter of 2008 were better than the benchmark.

The next two graphs depict trends in the frequency of service interruptions for the Pike County system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards for SAIFI.

**Pike County Light & Power Company  
System Average Interruption Frequency Index (SAIFI)**



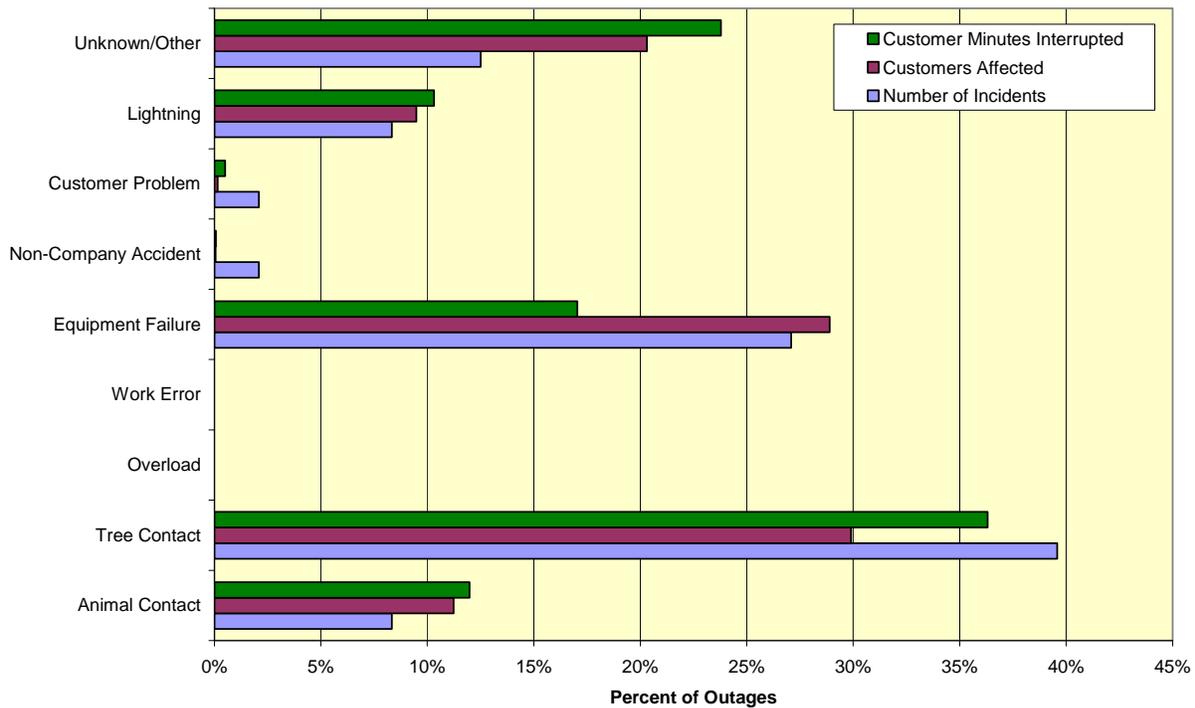
**Pike County Light & Power Company  
System Average Interruption Frequency Index (SAIFI)**



For most years, SAIFI has been below the revised benchmark of 0.61. The SAIFI value for 2007 of 0.45 was much better than 2006, and was significantly better than the revised performance standard. The SAIFIs for the four quarters of 2007 and the first quarter of 2008 show a positive trend.

The graph below shows the distribution of causes of service outages occurring during 2007 as a percentage of total outages. The major cause of service outages is tree contact with 19 interruptions (39.6 percent) affecting 599 customers (29.9 percent) for a total of 91,275 minutes (36.3 percent). Improvement efforts in this area include a three-year, cycle-based tree clearance program. Pike County has not identified which outages are related to trees on the right-of-way or off the right-of-way.

**Pike County Light & Power Company  
2007 Outage Causes**



### Wellsboro Electric Company

Wellsboro’s overall reliability performance in 2007 was fairly consistent with its performance in 2006. Wellsboro’s CAIDI of 107 minutes was higher than last year’s figure, but still 13.7 percent lower than the benchmark of 124 minutes. SAIFI increased to 1.63, but was still lower than the standard of 1.66. Wellsboro did not achieve the three-year SAIFI standard. Since 2004, Wellsboro’s SAIFI has consistently been between the 12-month SAIFI benchmark and standard.

In 2007, Wellsboro experienced four major events. The calculations for the reliability indices exclude outage data related to these events, which were approved by the Commission:

February 11, 2007 - loss of power supply; 5,780 customers affected; 104 interruption minutes excluded.

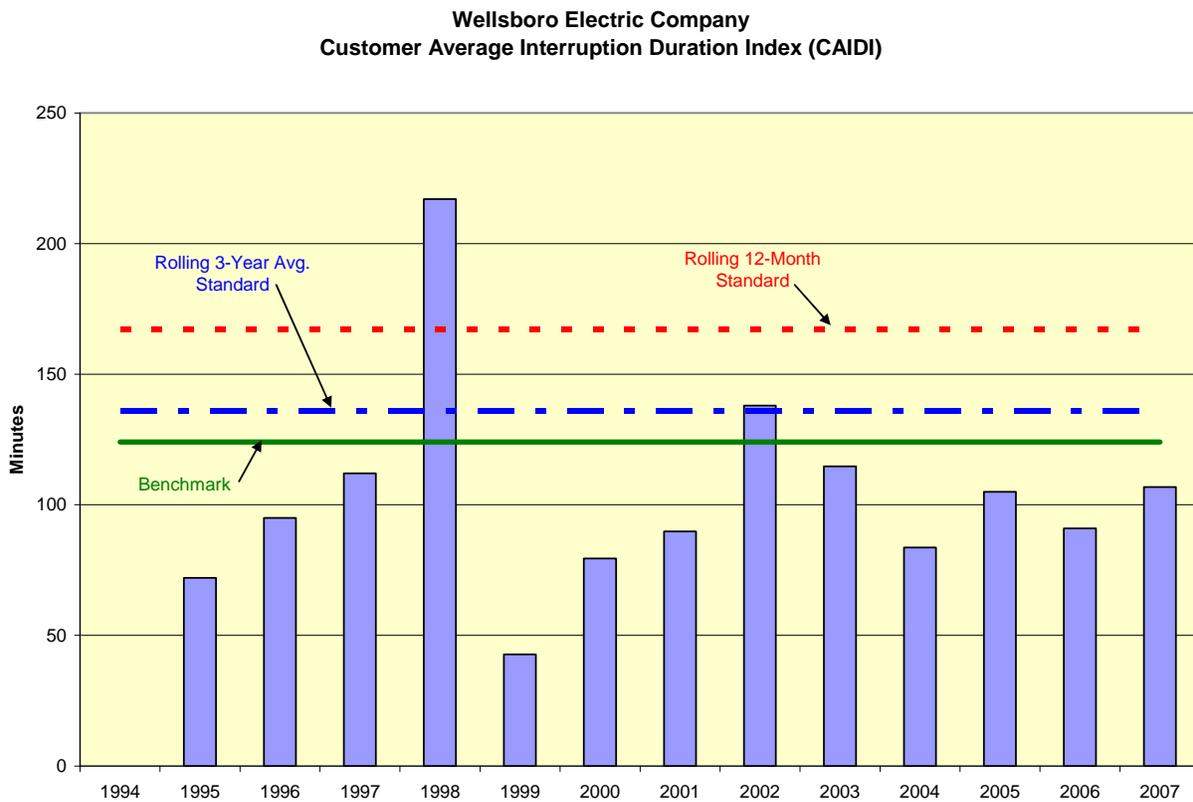
November 7, 2007 - light rain, snow and wind; 1,962 customers affected; 139 interruption minutes excluded.

November 13, 2007 - loss of power supply; 5,970 customers affected; 190 interruption minutes excluded.

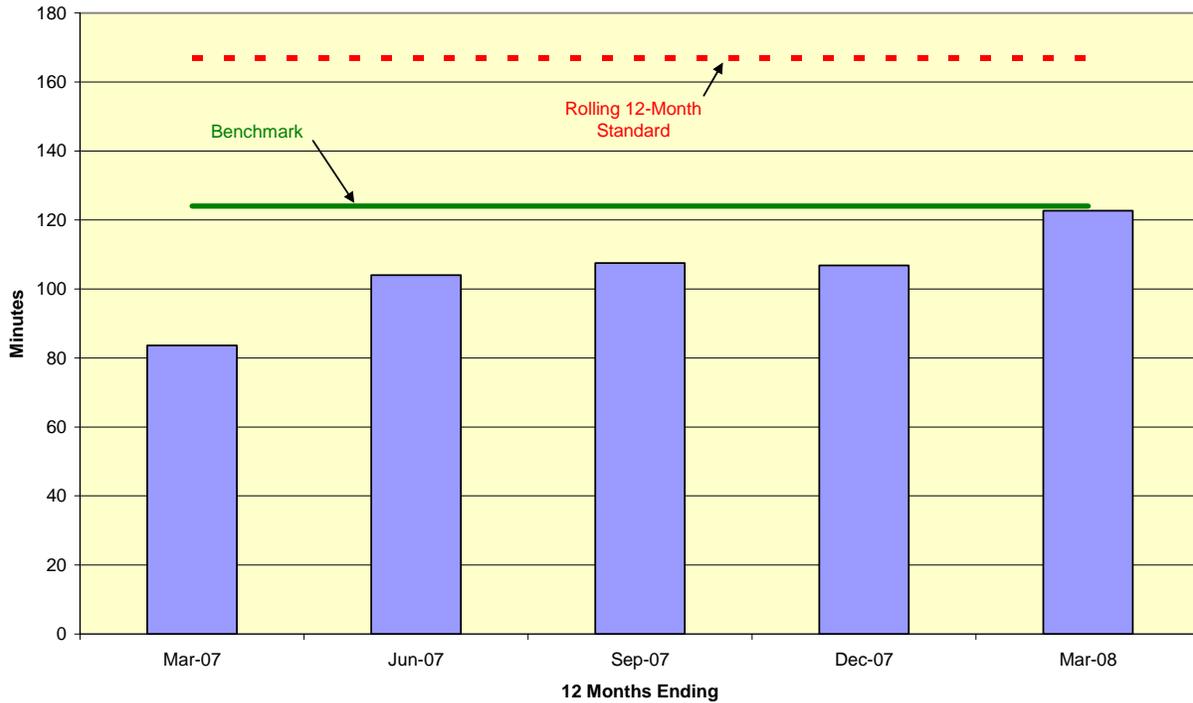
November 18, 2007 – heavy wet snow; 2,394 customers affected; 2,409 interruption minutes excluded.

In 2007, Wellsboro experienced 9,702 customer interruptions with a total duration of 951,149 customer minutes.

The following graphs depict trends in the duration of service interruptions for the Wellsboro system from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards.



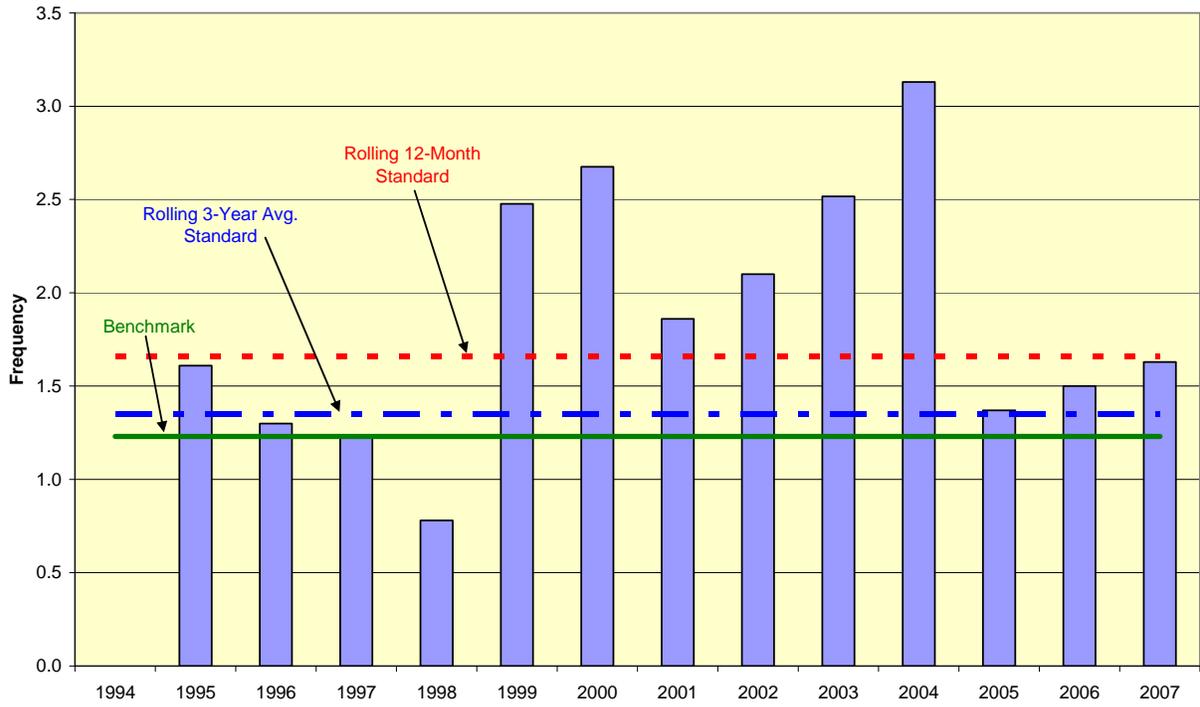
**Wellsboro Electric Company  
Customer Average Interruption Duration Index (CAIDI)**



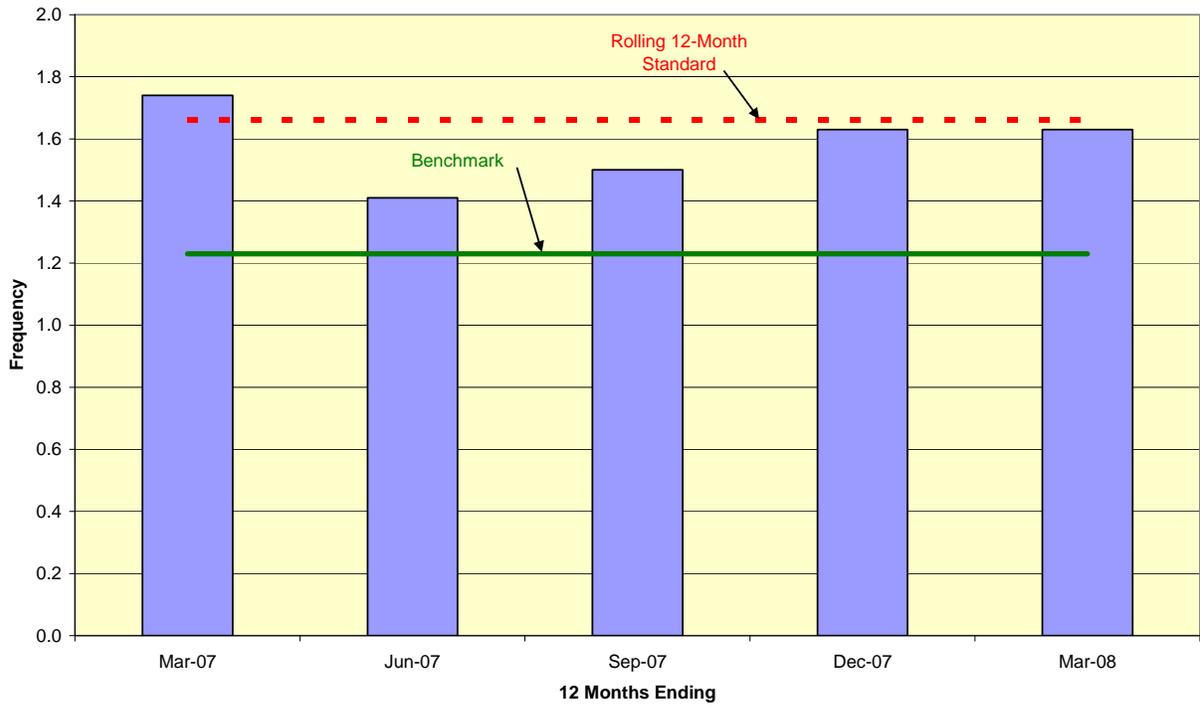
Wellsboro’s average interruption duration increased from 91 minutes in 2006 to 107 minutes in 2007, or 13.7 percent better than the benchmark. For the 12 months ending March 2008, CAIDI was 123 minutes. The CAIDI three-year average was 25.7 percent better than the standard of 136 minutes.

The next two graphs show trends in the frequency of service interruptions from 1994 to 2007, and for the four quarters of 2007 and the first quarter of 2008, compared to the established benchmarks and standards. SAIFI was 11.1 percent above the three-year standard of 1.35.

**Wellsboro Electric Company  
System Average Interruption Frequency Index (SAIFI)**

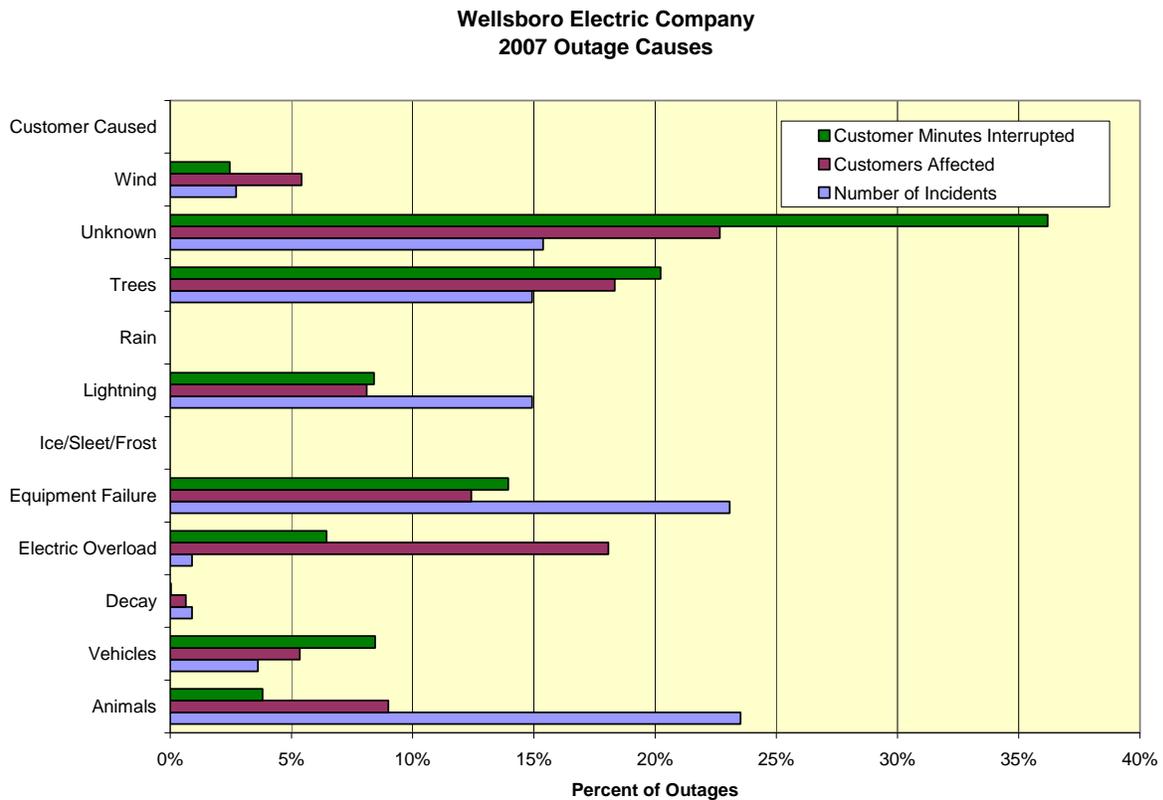


**Wellsboro Electric Company  
System Average Interruption Frequency Index (SAIFI)**



Wellsboro’s Outage Management System tracks causes of outages and is used to identify circuits or individual customers that are experiencing multiple outages due to animal contact, trees, etc. This data assists Wellsboro in preventing future outages from occurring.

The graph below shows the distribution of causes of service outages occurring during 2007 as a percentage of total outages. Trees caused 14.9 percent of the outages, representing 18.3 percent of customers affected and 20.2 percent of interruption minutes. Equipment failure was responsible for 23.1 percent of incidents, 12.4 percent of customers affected and 13.9 percent of interruption minutes. Animals were responsible for 23.5 percent of incidents, 9.0 percent of customers affected and 3.8 percent of interruption minutes. Outages with unknown causes represented 36.2 percent of interruption minutes.



## SECTION 4 – CONCLUSION

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Over the past few years, electric service reliability has been under increased scrutiny in Pennsylvania. The Electricity Generation Customer Choice and Competition Act 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 to this mandate, the Commission 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.

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 or better to allow for those times when unforeseen circumstances push the indices 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 the company must either justify its poor performance or provide information on the corrective measures it will take to improve performance. 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 2007, three of 11 EDCs failed to achieve compliance with the 12-month SAIFI performance standards for the average frequency of service outages per customer.

Two of the 11 EDCs failed to perform better than the three-year standard for average duration of service outages. For the average frequency of service outages per customer, six of the 11 EDCs failed to perform better than the three-year performance standard.

A variety of non-compliance enforcement actions were taken with EDCs that failed to meet any of the Commission's electric reliability performance standards. These enforcement actions ranged from meetings with the companies to discuss reliability improvement plans to formal reliability investigations.

## APPENDIX A – BENCHMARKS AND STANDARDS

EDC	Reliability Indices	Benchmark	Rolling 12-Month Standard	Rolling 3-Yr Avg. Standard
Allegheny Power *	SAIFI	1.05	1.26	1.16
	CAIDI	170	204	187
	SAIDI	179	257	217
Duquesne Light	SAIFI	1.17	1.40	1.29
	CAIDI	108	130	119
	SAIDI	126	182	153
Met-Ed **	SAIFI	1.15	1.38	1.27
	CAIDI	117	140	129
	SAIDI	135	194	163
Penelec **	SAIFI	1.26	1.52	1.39
	CAIDI	117	141	129
	SAIDI	148	213	179
Penn Power **	SAIFI	1.12	1.34	1.23
	CAIDI	101	121	111
	SAIDI	113	162	136
PECO	SAIFI	1.23	1.48	1.35
	CAIDI	112	134	123
	SAIDI	138	198	167
PPL	SAIFI	0.98	1.18	1.08
	CAIDI	145	174	160
	SAIDI	142	205	172
UGI	SAIFI	0.83	1.12	0.91
	CAIDI	169	228	186
	SAIDI	140	256	170
Citizens	SAIFI	0.20	0.27	0.22
	CAIDI	105	141	115
	SAIDI	21	38	25
Pike County ***	SAIFI	0.61	0.82	0.67
	CAIDI	174	235	192
	SAIDI	106	194	129
Wellsboro	SAIFI	1.23	1.66	1.35
	CAIDI	124	167	136
	SAIDI	153	278	185

\* Revised benchmarks and standards effective 7/20/06.

\*\* Revised benchmarks and standards effective 2/17/06.

\*\*\* Revised benchmarks and standards effective 8/17/06.