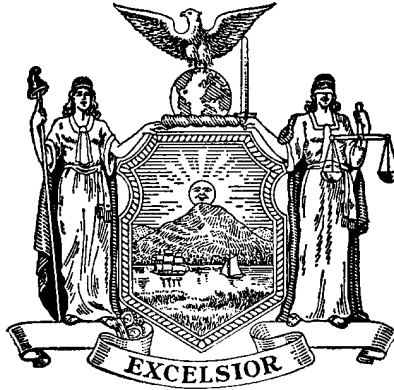


**STATE OF NEW YORK**  
**DEPARTMENT OF PUBLIC SERVICE**



**2012 ELECTRIC RELIABILITY PERFORMANCE REPORT**

**Electric Distribution Systems**  
**Office of Electric, Gas, and Water**  
**June 2013**

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## EXECUTIVE SUMMARY

The attached report presents Department of Public Service Staff's (Staff) assessment of electric reliability performance in New York State for 2012. Staff primarily relies on two metrics commonly used in the industry to measure reliability performance: the System Average Interruption Frequency Index (SAIFI or frequency) and the Customer Average Interruption Duration Index (CAIDI or duration).<sup>1</sup> Frequency is influenced by factors such as system design, capital investment, maintenance, and weather.<sup>2</sup> Decisions made by utilities today on capital expenditures and maintenance policies, however, can take several years before being fully reflected in the frequency measure. Duration, on the other hand, is affected by work force levels, management of the workforce, and geography. As a means of monitoring the levels of service, utilities are required to submit detailed monthly interruption data to the Public Service Commission (Commission). By compiling the interruption data provided by the individual utilities, the average frequency and duration of interruptions can be reviewed to assess the overall reliability of electric service in New York State. Recent data is also compared with historic performances to identify positive or negative trends. Staff also reviews several other specific metrics that vary by utility to gauge electric reliability.

The statewide interruption frequency for 2012, excluding major storms, was better than statewide performance in 2011 and better than the statewide five-year average. Every investor-owned electric company improved with respect to frequency when compared with 2011 and also out-performed their respective five-year averages in nearly every case. The one exception was National Grid, which, although demonstrating improvement over last year, was slightly worse than its five-year average.

Statewide duration performance in 2012, excluding major storms, was equal to 2011 and generally consistent with the history of the past four years. Consolidated Edison Company of New York, Inc. (Con Edison), New York State Electric

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<sup>1</sup> SAIFI is the average number of times that a customer is interrupted during a year. CAIDI is the average interruption duration time for those customers that experience an interruption during the year.

<sup>2</sup> To help achieve a balance between service interruptions under a utility's control, such as equipment failures, and those which a utility's control is more limited, such as an ice storm, we review reliability data both including and excluding severe weather events.

and Gas (NYSEG), and Rochester Gas & Electric Corporation's (RG&E) performances improved slightly as compared with 2011. While the reliability performances with respect to duration of the remaining three of the major electric companies were slightly below 2011 levels, they generally performed satisfactorily. Regarding the duration index of the major electric companies' respective five-year averages, Con Edison performed similar to its own best results from the past five years, while the other companies were approximately the same as their five-year averages.

Calendar year 2012 was by far the worst year ever for storm effects in the 24 years of Staff recordkeeping, taking that distinction from last year. Super Storm Sandy caused the overwhelming majority of the storm related outages during 2012. Of the more than 726 million hours of customer interruptions that have occurred since 1989, over 23% (168 million hours) can be attributed to Hurricane Sandy during October and November 2012. Sandy's effects were focused on the downstate region including the Hudson Valley, New York City, and Long Island. Nearly all of Long Island experienced a loss of electric service and an unprecedented eleven networks in New York City were shut down due to flooding. In total, over two million customers were affected by this event. In addition to Hurricane Sandy, several other storms affected New Yorkers in 2012, including snowy wind events in January and severe thunderstorms in July, August, and September. While all of these storms were excluded from the reliability performance calculations because they are circumstances over which the utilities have limited control, some spillover effect in the periods following the storms may have impacted the overall performances.

With respect to individual utility performance in 2012, all companies met their Reliability Performance Mechanism (RPM) targets with the exception of Con Edison, which failed to meet several metrics. The Company attributes its failure to achieve its duration performance to underground cable and primary feeder failures as well as increased network interruptions and additional response times during Super Storm Sandy. Outages caused by major storms are not excluded from network system performance measures under Con Edison's RPM. The Company is seeking exclusion of these storm related outages from its network performance measures.

Con Edison also failed Major Outage RPMs related to the shutdown of eleven networks during Super Storm Sandy. The Company is seeking exclusion for these events based on the “major storm” exclusion, the “catastrophic event” exclusion, and the “generation/bulk transmission” exclusion. The major storm exclusion exempts any outages resulting from a major storm, as defined in 16 NYCRR Part 97. The catastrophic event exclusion exempts any incident resulting from a catastrophic event beyond the control of the Company, including but not limited to natural disasters. The generation/bulk transmission exclusion exempts any incident where problems beyond the Company’s control involving generation or the bulk transmission system is the key factor in the outage.

Con Edison continues to implement various relief and reliability programs to improve its network system performance. Thus far, Staff has noted a corresponding reduction in outages caused by equipment failures by 19% reflecting these investments.

NYSEG’s 2012 frequency performance was the best out of the last five years and it performed better than its five-year average in duration performance. The last rate case settlement agreement approved by the Commission included an increased number of vegetation clearing miles to be completed each year by the Company, which the Company exceeded in 2012. The Company is working towards a full-cycle distribution vegetation management plan, which it expects will provide reductions in interruption due to tree contacts and improvements in restoration. NYSEG should continue to focus on improving its distribution vegetation management program and reducing tree related outages. The Company also continues its focus on proactive replacement of aging infrastructure, which it expects to yield continued improvement.

In 2012, RG&E performed consistent with their five year averages in both frequency and duration. To maintain consistent levels of reliability, the Company will continue its vegetation management efforts along both distribution and transmission infrastructure. The Company continues to focus on underground cable replacement and other reliability projects, such as pole replacement, for 2013. RG&E is also proposing a more aggressive vegetation management strategy along its distribution infrastructure.

National Grid performed slightly worse than their five year averages in both frequency and duration, although their performance is still within acceptable tolerances. National Grid continues to address issues concerning reliability through various infrastructure improvement programs, which include adding distribution automation infrastructure, and its existing inspection and maintenance program. National Grid's vegetation management program continues to show overall progress, due in part to its Enhanced Hazard Tree Maintenance Program, which identifies trees for removal outside of the standard tree trimming envelope.

Central Hudson, in 2012, had its best frequency performance of the last five years. Its duration performance was approximately the same as the five year average, meeting the RPM target. Although tree contacts continue to be the leading cause of interruptions, the Company continues to improve as a result of its more aggressive vegetation management programs. Central Hudson is also experiencing fewer equipment failures, which is credited to infrastructure replacement programs.

Orange and Rockland also experienced its best frequency performance of the last five years in 2012 and its duration performance was better than the five-year average. Tree contacts and equipment failures are the leading causes of outages in Orange and Rockland's service territory. The Company continues to address these through infrastructure improvement programs such as installing reclosers and sectionalizing switches as part of its enhanced Distribution Automation program, the construction of new substations, enhanced tree trimming, and selective undergrounding of critical overhead lines.

Staff is generally pleased with the electric reliability performance excluding major storms across the State. There are, however, individual concerns that are being addressed through Staff's efforts including the encouragement of more vigorous vegetation management efforts and expanded storm hardening programs. Super Storm Sandy made it evident that the utilities must do more to harden their infrastructure against potential damage from future historic storms. This 2012 Electric Reliability Performance Report will be transmitted to an executive level operating officer of each electric utility with a letter from the Director of the Office of Electric, Gas, and Water.

## INTRODUCTION

This report provides an overview of the electric reliability performance in New York State. As a means of monitoring the levels of service reliability, the Commission's Rules and Regulations require utilities delivering electricity in New York State to collect and submit information to the Commission regarding electric service interruptions on a monthly basis.<sup>3</sup> The utilities provide interruption data that enables Staff to calculate two primary performance metrics: the System Average Interruption Frequency Index (SAIFI or frequency) and the Customer Average Interruption Duration Index (CAIDI or duration). The information is grouped into 10 categories that delineate the nature of the cause of interruption (cause code).<sup>4</sup> Analysis of the cause code data enables the utilities and Staff to identify areas where increased capital investment or maintenance is needed. As an example, if a circuit were shown to be prone to lightning-caused interruptions, arrestors could be installed on that circuit to try to minimize the effect of future lightning strikes. In general, most of a utility's interruptions are a result of major storms, tree contacts, equipment failures, and accidents.<sup>5</sup> Staff maintains interruption information in a database that dates back to 1989, which enables it to observe trends.

The Commission also adopted electric service standards addressing the reliability of electric service. The standards contain minimum acceptable performance levels for both the frequency and duration of service interruptions for each major electric utility's operating divisions. The utilities are required to submit a formal reliability report by March 31 of each year containing detailed assessments of performance, including outage trends in a utility's various geographic regions, reliability improvement projects, and analyses of worst-performing feeders. There are no revenue adjustments for failure

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<sup>3</sup> 16 NYCRR Part 97, Notification of Interruption of Service requires utilities to keep detailed back-up data for six years.

<sup>4</sup> 16 NYCRR Part 97, Notification of Interruption of Service specifies and defines the following ten cause codes that reflect the nature of the interruptions: major storms, tree contacts, overloads, operating errors, equipment failures, accidents, prearranged interruptions, customers equipment, lightning, and unknown. There are an additional seven cause codes used exclusively for Con Edison's underground network system.

<sup>5</sup> The accident cause code covers events not entirely within in the utilities' control including vehicular accidents, sabotage, and animal contacts. Lightning is reported under a separate cause code.

to meet a minimum level under the service standards; utilities are, however, required to include a corrective action plan as part of the annual report. The service standards were last revised by the Commission in 2004.

In addition, utility performance is compared with utilities' RPMs established in the utilities' rate orders. RPMs are designed such that companies are subjected to negative revenue adjustments for failing to meet electric reliability targets. The RPMs typically include company-wide targets for outage frequency and duration; some RPMs have additional measures to address specific concerns unique to an individual company.



## **2012 RELIABILITY PERFORMANCE**

The following sections provide a summary discussion of the reliability performance statewide and for each of the major utilities.<sup>6</sup> Individual company discussions identify issues or actions within each company that influenced performance levels for 2012 and indicate company-specific trends where applicable. Each year, Staff prepares an Interruption Report summarizing the monthly interruption data submitted by utilities. The 2012 Interruption Report contains detailed interruption data for each utility and statewide statistics for the past five years. The Interruption Report for 2012 is attached as an Appendix.

Interruption data is presented in two ways in this report – with major storms excluded and with major storms included. A major storm is defined by the Commission's regulations as any storm which causes service interruptions of at least 10 percent of customers in an operating area, and/or interruptions with duration of 24 hours or more. Major storm interruptions are excluded from the data used in calculating performance levels for service standards and reliability performance mechanisms. The purpose of this policy is to achieve a balance between service interruptions under a utility's control, such as equipment failures and line maintenance, and those over which a utility's control is more limited, such as severe ice storm or a heavy wet snowstorm. Reliability performance data inclusive of major storms reflects the actual customer experience during a year.

Revenue adjustments for inadequate reliability performance, as well as deficiencies in related areas, are implemented through individual RPMs which have been established in the utilities' rate orders. All companies met their Reliability Performance Mechanism targets with the exception of Con Edison, which failed to achieve two RPM targets regarding network performance as well as several major outage RPMs; the Company has filed a petition with the Commission citing Hurricane Sandy and other

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<sup>6</sup> Although LIPA is not regulated by the Commission, it supplies interruption data that is used to calculate statewide performance in this report.

factors as a basis to exclude data contributing to its failure to achieve these RPM targets. If the petition is granted in full, the Company asserts it would meet all RPM targets.<sup>7</sup>

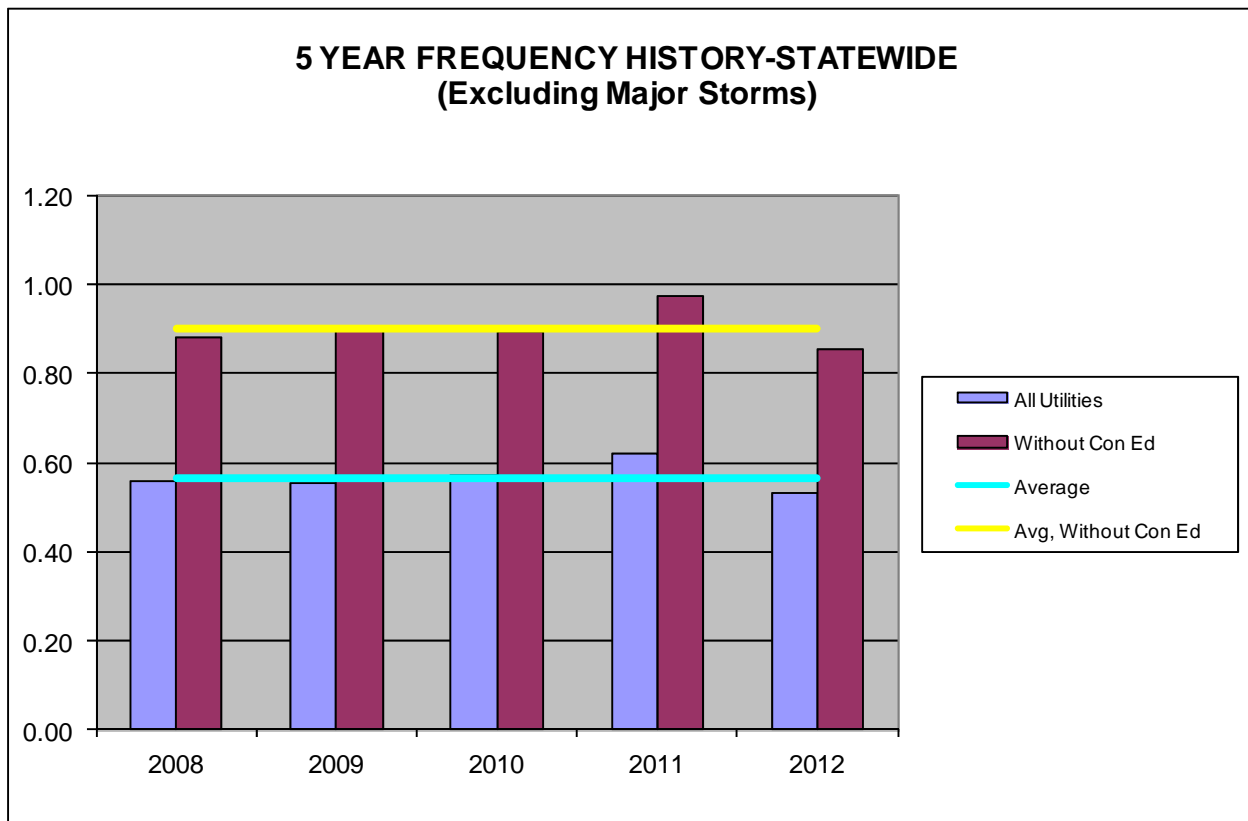
## STATEWIDE

For many years, Staff has been combining individual utility performance statistics into overall statewide statistics. By doing so Staff is able to evaluate the level of reliability provided statewide and identify statewide trends. Because Con Edison's system includes many large, highly concentrated distribution networks that are generally less prone to interruptions than overhead systems, its interruption frequency is extremely low ( better) as compared with other utilities. This, combined with the fact that it serves the largest number of customers in the state, typically results in a skewing of the performance measures. As a result, Staff examines and presents aggregated data both including and excluding Con Edison's data.

Statewide, as shown in Figure 1, the frequency of interruptions excluding major storms was 0.53 in 2012; this is the best performance of the last five years. All Companies had fewer customers affected by power outages in 2012 than in 2011 when major storms are excluded. The frequency performance in 2012, for utilities other than Con Edison, is 0.85, which is also the best performance of the last five years.

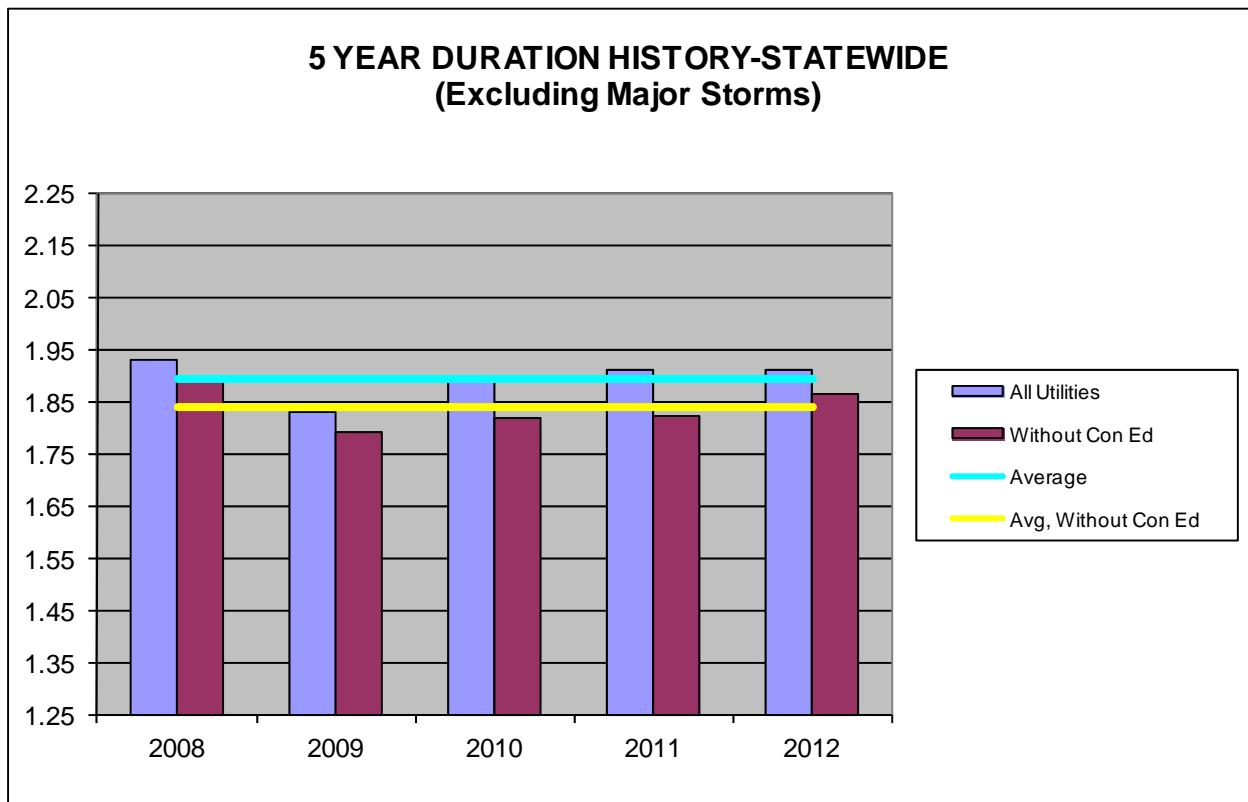
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<sup>7</sup> Con Edison filed a request for exemption on April 1, 2013 which has yet to be presented to the Commission for final action.



**Figure 1: Statewide Frequency Performance**

Figure 2 shows the historical statewide interruption duration index, excluding major storms. The 2012 overall statewide interruption duration index of 1.91 is unchanged from 2011, and is also generally consistent with the history of the past five years. The statewide interruption duration index, excluding Con Edison, was 1.87 hours in 2012, which is very close to 2011's duration index of 1.82, and is generally consistent with the history of the past five years. This is an increase of 2.5 minutes in the average duration of a customer interruption.



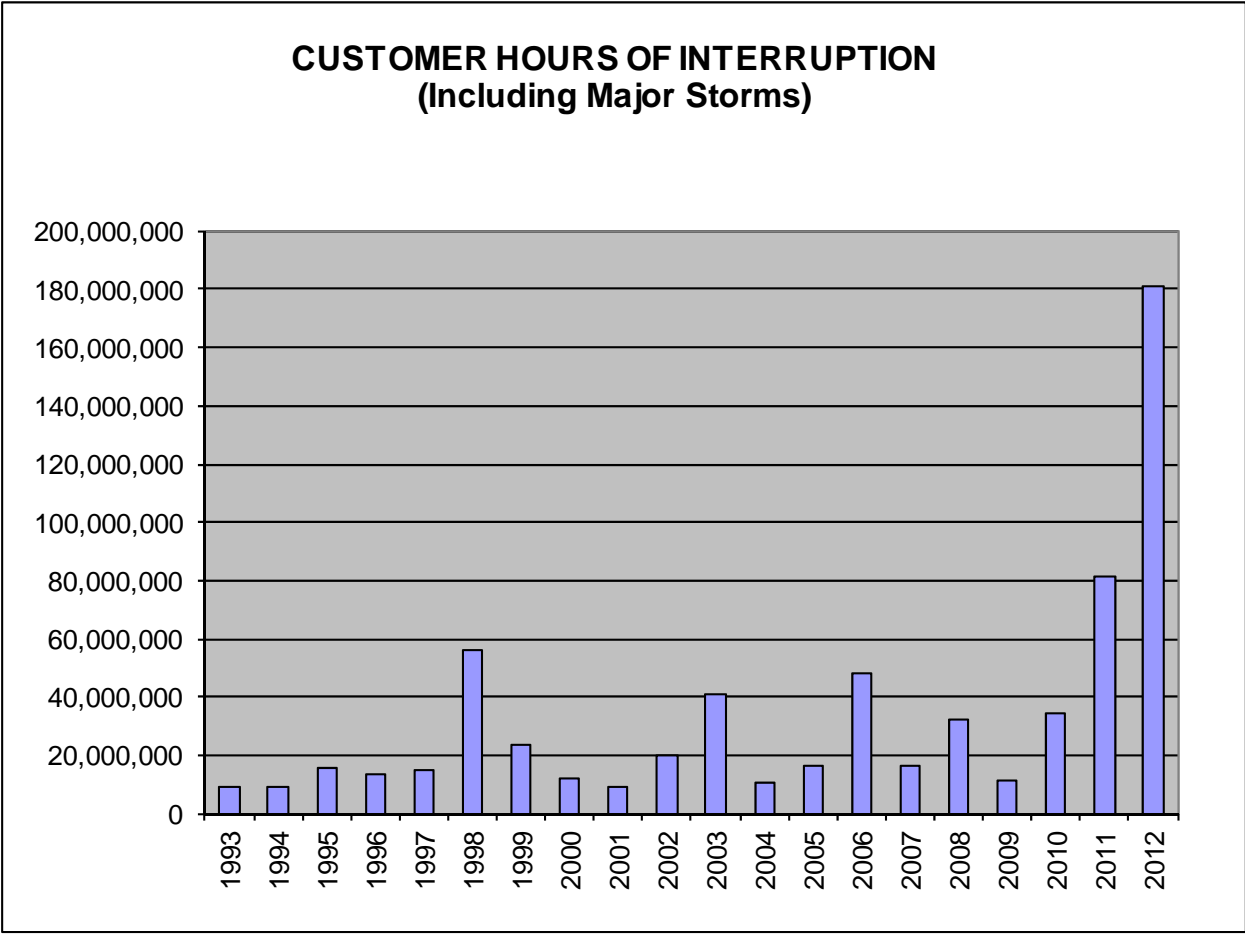
**Figure 2: Statewide Duration Performance**

Two storms affected New York State in 2012 adding up to the most hours of customer electric service interruption in the past twenty years (Figures 3 and 4, below), a distinction previously held by 2011. The storms that caused the most disruption were Hurricane Sandy and, to a much lesser extent, thunderstorms on July 26. Because of the extended restoration times associated with these storms, the Commission requires the companies to file reports detailing storm-specific restoration activities.<sup>8</sup>

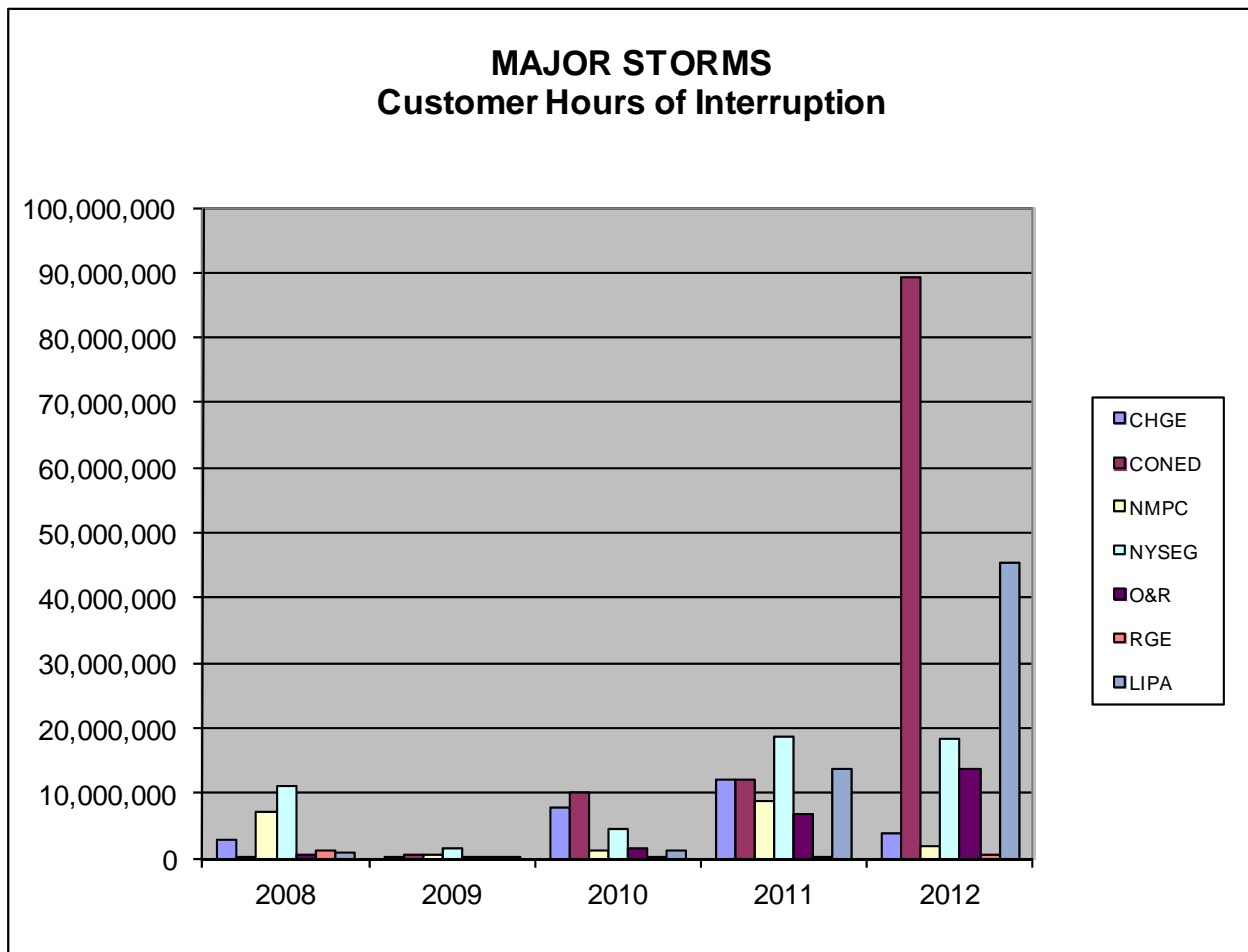
- On July 26<sup>th</sup> thunderstorms affected approximately 180,000 of Central Hudson, Orange & Rockland and NYSEG's customers. Restoration took as long as 5 days.
- On October 29<sup>th</sup>, Superstorm Sandy affected over 2 million customers from all investor owned utilities and LIPA. The majority of restoration was completed within two weeks; however, several customers were unable to be

<sup>8</sup> 16 NYCRR Part 97, Part 105.4, requires utilities to file storm reports for outages lasting longer than three days. These reports, as well as Staff's when they are completed, may be found on the Department's website: <http://www.dps.ny.gov>.

reconnected to the grid for a much longer duration of time due to severe damage and safety concerns relating to flooding.



**Figure 3: Customer Hours of Interruption (Including Major Storms)**



**Figure 4: Major Storm Customer Hours**

## CON EDISON

**Table 1: Con Edison's Historic Performance Excluding Major Storms**

Metric	2008	2009	2010	2011	2012 <sup>13</sup>	5-Year Average
Network Systems <sup>9</sup>						
Frequency (Int/1000 CS)		2.43	2.38	2.49 <sup>10</sup>	3.66	----
Duration (Hours/Int)		3.94	4.47 <sup>11</sup>	4.58 <sup>12</sup>	58.49	----
Radial System						
Frequency (SAIFI)	0.42	0.32	0.42	0.49	0.36	0.40
Duration (CAIDI)	1.83	1.74	1.95	2.12	2.02	1.93

Note: Data presented in red represents a failure to meet the RPM target for a given year.

Con Edison serves approximately 3.3 million customers in New York City and Westchester County. Electricity is supplied to 2.4 million customers using network systems. The remaining 900,000 customers are supplied by radial systems.

Due to Con Edison's underground network system and its unique system configuration and operation, there are concerns regarding the accuracy of the number of customers affected by an interruption in a network. Therefore, Staff has been measuring network performance using two measures: the number of interruptions per 1000 customers served and the average interruption duration. By using measures that are not

<sup>9</sup> The SAIFI and CAIDI metrics used to measure network performance were replaced for 2009 with Network Outages per 1000 customers and Network Outage Duration, respectively. Network Outages per 1000 customers is the total number of customer interruptions in a year per 1,000 customers. The threshold standard for this metric is set at 2.50. Network Outage Duration is the average interruption duration in a year. The threshold standard for this metric is set at 4.90.

<sup>10</sup> Con Edison 2011 Network Outages per 1000 Customers performance was 2.55 which is higher than the threshold standard of 2.50. The Commission determined that Con Edison should not incur a revenue adjustment in 2011 for failure to meet its Network Outage per 1000 Customers due to severe weather. Outages related to the severe weather were excluded from its performance values and therefore reduced its Network Outage per 1000 Customers performance to 2.49.

<sup>11</sup> Con Edison 2010 Network Outage Duration performance was 5.72 which is higher than the threshold standard of 4.90. The Commission determined that due to severe weather Con Edison should not incur a revenue adjustment in 2010 for failure to meet its Network Outage Duration. Outages related to the severe weather were excluded from its performance values and therefore reduced its Network Outage Duration performance to 4.47.

<sup>12</sup> Con Edison 2011 Network Outage Duration performance was 5.19 which is higher than the threshold standard of 4.90. The Commission determined that due to severe weather Con Edison should not incur a revenue adjustment in 2011 for failure to meet its Network Outage Duration. Outages related to the severe weather were excluded from its performance values and therefore reduced its Network Outage Duration performance to 4.58.

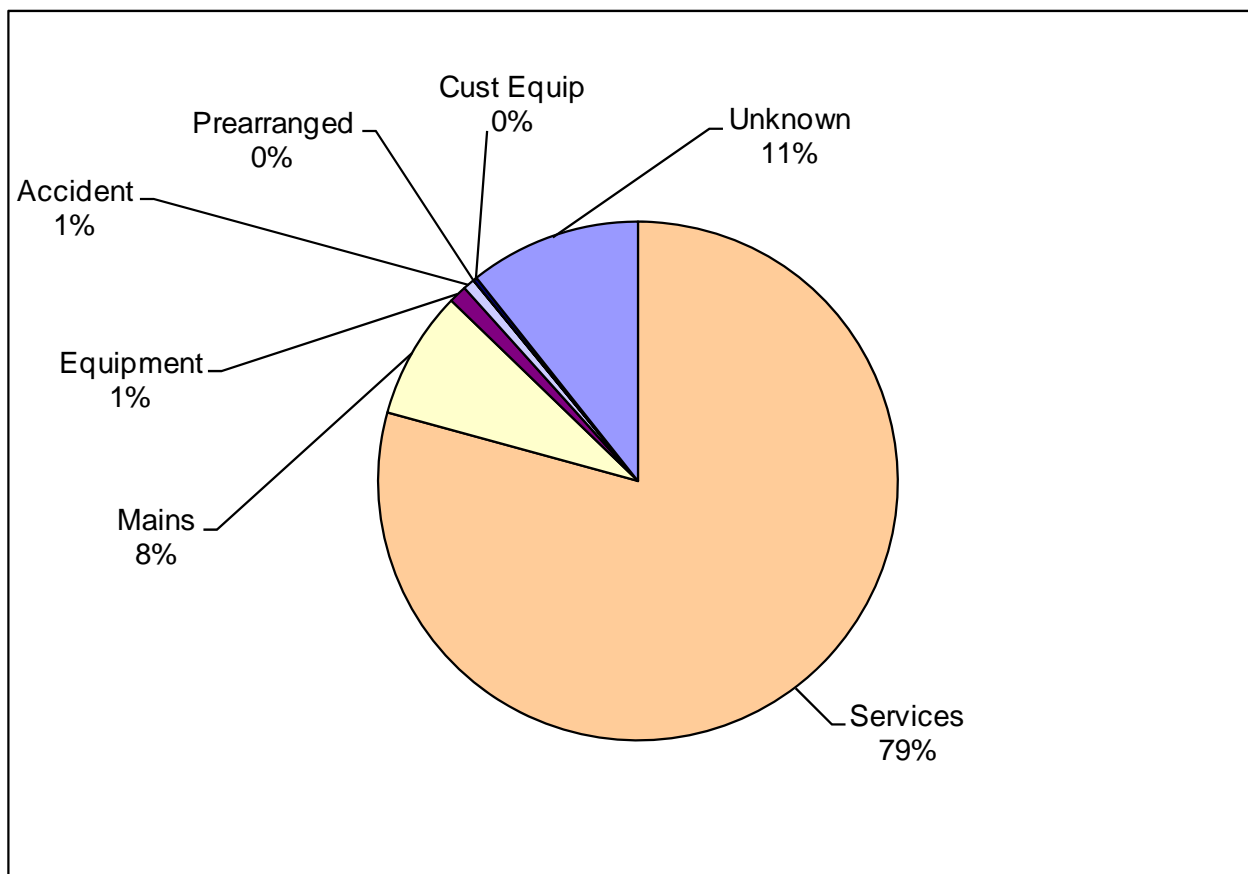
based on the number of individual customers affected, instead using interruptions per 1000 customers served, we are able to monitor and trend network reliability performances without questioning the validity of the measures. In 2012, Con Edison's network interruptions duration performance was worse than its 2011 performance. The Company did not achieve its RPM target for both of these metrics in 2012. The Company attributes its failure to achieve its duration performance to underground cable and primary feeder failures, as well as an increased number of outages and additional response times during Super Storm Sandy. Outages caused by major storms are not excluded from network system performance measures under Con Edison's RPM. According to Con Edison, some network customers are fed by overhead system, with electricity supplied from a network system. The Company is seeking exclusion of these storm related outages from its network performance measures. The RPM threshold number of outages per 1,000 customers served is 2.50, and the Company asserts that with this exclusion its 3.66 performance in 2012 would be reduced to 1.94. Similarly, Con Edison projects that the RPM threshold network duration of 4.90 would be met with a resulting performance measure of 4.75 if the Company's 2012 performance measure of 58.49 was reduced as a result of the waiver. Therefore, if these exclusions are granted in full, the Company will not incur any negative revenue adjustment.<sup>13</sup>

Street Mains are the leading contributor to interruptions (52%) in Con Edison's network system. To minimize the frequency of customer outages, Con Edison's networks are designed with redundant supply paths. Individual service lines to customer premises, however, lack this redundancy. Given these design characteristics and underground settings, outages associated with Service Connections represent 79% of the total outages as shown in Figure 5. Apparatus or Equipment Failures, unknown or unclassified, and accidents or events not under the utility's control represent 1%, 11% and 1%, respectively. In 2012, there were fewer network interruptions than the previous year. Con Edison continues to implement different relief and reliability programs to improve its network system performance.

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<sup>13</sup> Con Edison filed a request for exclusion on April 1, 2013 which has yet to be presented to the Commission for final action.



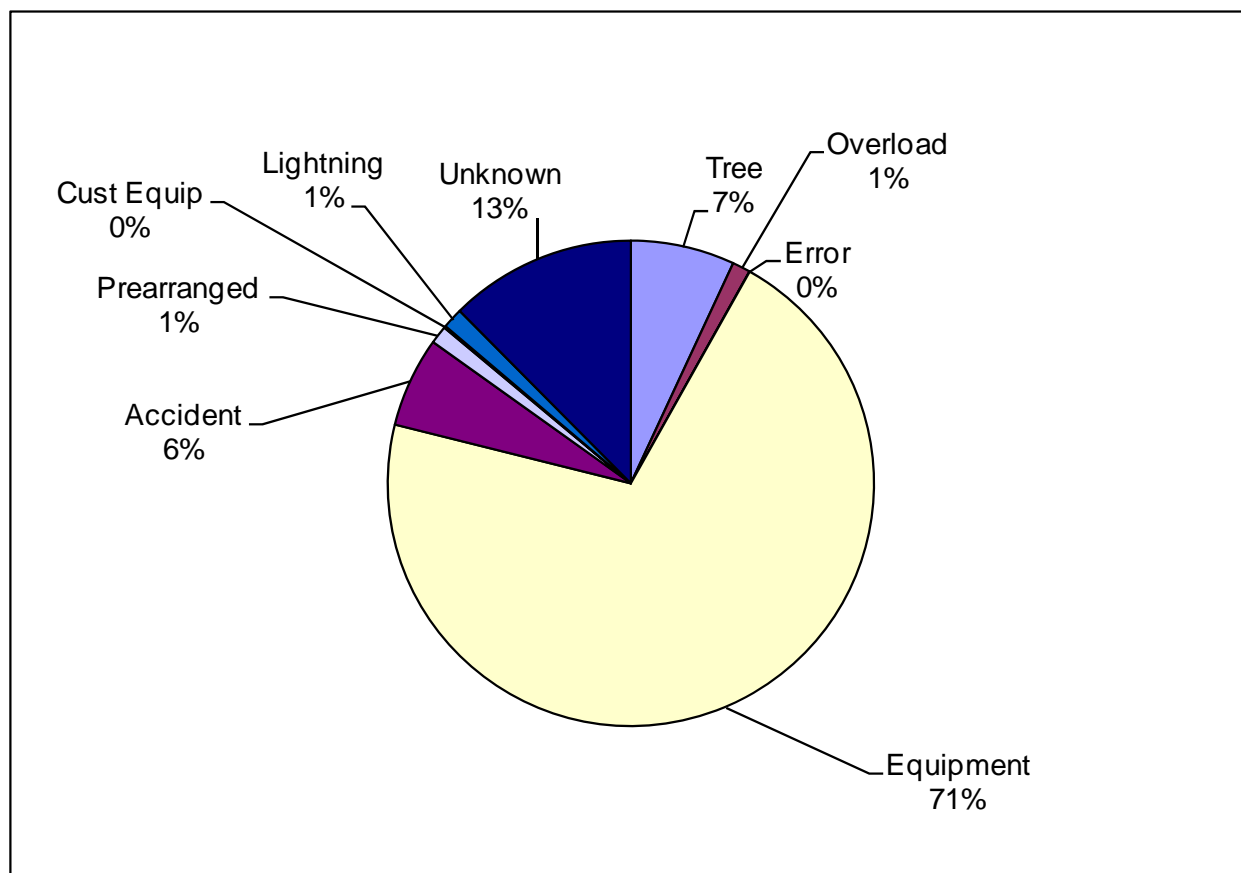


**Figure 5: Con Edison's 2012 Network Interruptions by Cause**

On its radial system, Con Edison's frequency performance of 0.36 in 2012 was better than its 2011 performance and better than its five year average. The Company met its RPM frequency target of 0.495 for 2012. Major storms are responsible for 74% of the interruptions on the radial system, followed by Apparatus or Equipment Failure at 16 %, accidents or events not under the utilities control and Tree Contact at 3% each, as shown in Figure 6.

Con Edison has invested in multiple reliability and load relief programs to address its radial system performance, and has noted a corresponding reduction in outages caused by equipment failures by 24%. The Company continues to maintain the reliability of its system by replacing aging and poor performing cables, switches, and wires. Con Edison is performing storm hardening measures, such as tree trimming and periodic visual inspections of overhead and underground facilities through the Safety

Standards program to reduce system failures due to storms. Staff will continue to monitor and report on the effectiveness of these programs in future reports.



**Figure 6: Con Edison's 2012 Radial Interruptions by Cause**

With respect to duration, Con Edison's radial performance in 2012 was better than the previous year. The Company met its RPM target of 2.04 with a performance of 2.02. Staff and the Company are closely monitoring duration performance. Con Edison developed and implemented duration improvement strategies for both its radial and network system in 2009. Changes were made to improve crewing efficiency and to reduce outage duration by augmenting the Company's use of first responder staffing, improving the mobile ability to dispatch work to crews, and developing better training resources. In 2010, in a response to a self assessment recommendation by Staff, Con Edison stated that enhancements had been made to the process of flagging large outage jobs utilized in its outage management system, and that it employed an automatic call out process for additional crews. Staff is concerned about the Company's future

performance with respect to its duration metric even with all the changes implemented by the Company in previous years. In addition, despite the Company's achievement of its radial duration metric in 2012 Con Edison's radial duration performance is close to a level that would fail to achieve the RPM threshold of 2.04 hours. Staff will continue to closely monitor and report on the effectiveness of these programs in future reports.

As a result of Super Storm Sandy (Sandy), Con Edison has increased its storm hardening efforts to protect the transmission, substation, and distribution system. Transmission projects are underway to upgrade the steel lattice towers, reinforce feeder runs to substations, and replace line and dead end splices on transmission feeders. These three projects would strengthen the transmission facilities making them less prone to failure during high wind events. Sandy flood levels rose to record high numbers that inundated the Company's substation with sea water. Equipment submerged in water was damaged and rendered inoperable. Several immediate storm hardening projects have been implemented for substations that are designated in flood zones. These projects include sealing of troughs, conduits, panels, and cabinets, as well as any other critical station water penetrations. In addition, the installation of removable flood doors, barriers, and moats would further protect station equipment from water intrusion. Longer term projects are in the planning stages to relocate control rooms and building perimeter walls around the substations. Finally, the Company has increased its efforts to address the underground and overhead distribution system. These projects include installation of submersible transformers and network protectors, reconfiguring of networks utilizing isolation switches, reduce overhead circuit size, increase the auto-loop system, and replacing secondary wires with stronger and more resilient cables. These projects will reduce equipment damage, decrease restoration time, allow fewer customer outages, and increase system reliability.

## NATIONAL GRID

**Table 2: National Grid's Historic Performance Excluding Major Storms**

<b>Metric</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011<sup>14</sup></b>	<b>2012</b>	<b>5-Year Average</b>
Frequency (SAIFI)	0.75	0.88	0.80	0.98	0.90	0.86
Duration (CAIDI)	1.96	1.91	1.98	1.95	2.04	1.97

Note: 2008 thru 2010 is SIR data, 2011 & 2012 is IDS data.

National Grid serves approximately 1.60 million customers across upstate New York. The Company's territories include metropolitan areas, such as Albany, Buffalo, and Syracuse, as well as many rural areas in northern New York and the Adirondacks.

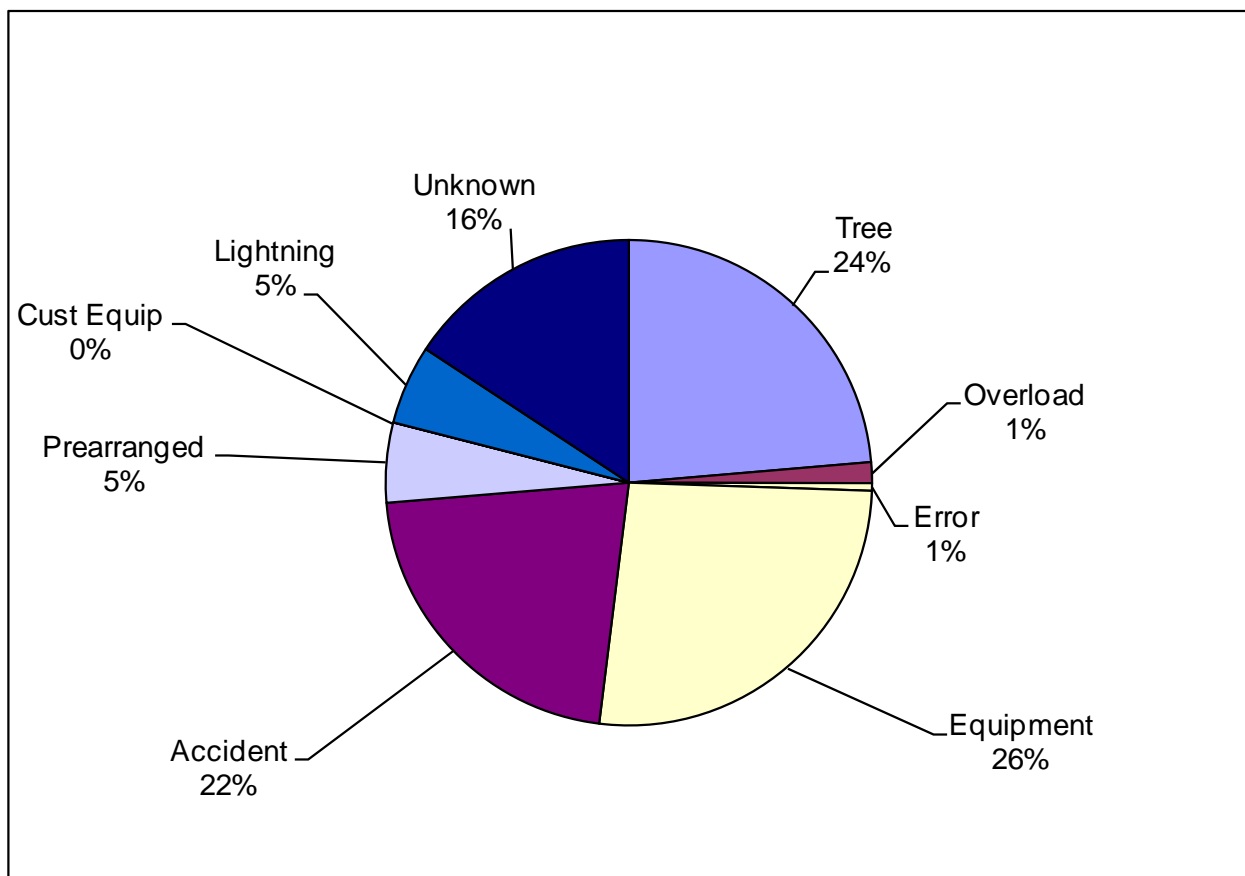
For 2012, the Company achieved both of its reliability targets, comprising five consecutive years of positive performance. The frequency level of 0.90 in 2012 is 3.07% above the five year average and 20% below the target of 1.13 set in 2011. The target is based on the Company's conversion to the Interruption and Disturbance System (IDS) and National Grid attributes the 2011 and 2012 frequency increase to better interruption reporting data provided by the new system. While the duration performance for 2012 is 0.5% below the target of 2.05 hours, it is 4% above the 5 year average. On a Regional basis, National Grid provided consistent service in all regions except for the Genesee Region which experienced a 25.3% increase in outage frequency and 29.1% increase in outage duration when compared to the five-year average. The company attributes this increase to three large storm events that did not result in Major Storm Exclusions in 2012, 12 transmission events and one substation event. In light of this increase in transmission outage events the Company is in the process of adding Distribution Automation to four sub-transmission lines. Distribution Automation of sub-transmission lines has proven effective in reducing the number of customers interrupted for faulted lines. In addition, National Grid plans to address loading concerns and equipment condition issues in three substations. National Grid continues to address issues concerning reliability through its

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<sup>14</sup> In 2011, National Grid migrated from its paper based Service Interruption Reporting System (SIR) to its automated Interruption Disturbance System (IDS). The performance targets were adjusted to compensate for the increase in capturing outage data by the IDS.

Reliability Programs (Engineering Reliability Reviews, Distribution Line Reclosers, Sub-Transmission Automation, Overhead Fusing, and Vegetation Management) and Inspection and Maintenance Program. The customer benefit, extent to which reliability increased and cost associated with these programs are reviewed quarterly by Staff.

The overall number of interruptions for 2012 including major storms was down 21% when compared to 2011. This decrease can be attributed to the decrease in major storms interruptions in 2012 when compared to 2011. In 2012, equipment failure decreased 18% when compared to 2011 but continues to be the leading cause code for interruptions. Tree contact interruptions were down 7% from 2011 and exceeded the 5 year average. National Grid's vegetation management program continues to show overall progress in part due to the aggressive removal of hazardous trees through the Enhanced Hazard Tree Maintenance Program. In the equipment failure category, National Grid's Inspection and Maintenance Program continues to provide increased reliability by addressing equipment issues found during inspections along with other programs (recloser additions, increased side tap fusing and Distribution Automation) that reduce the number of customers affected by equipment failures.



**Figure 7: National Grid's 2012 Interruptions by Cause**

National Grid continues to address the worst performing feeders in each region. In 2012 the Company reported on a total of 86 worst performing feeders for all regions. These feeders were individually analyzed to determine the main causes of unsatisfactory performance and develop a course of action to be taken. Some of the actions taken (recloser installations, increased side tap fusing, vegetation management, and Sub-Transmission Automation) were completed during 2012 while other actions are planned for its next fiscal year. These projects are expected to increase the feeders' reliability.

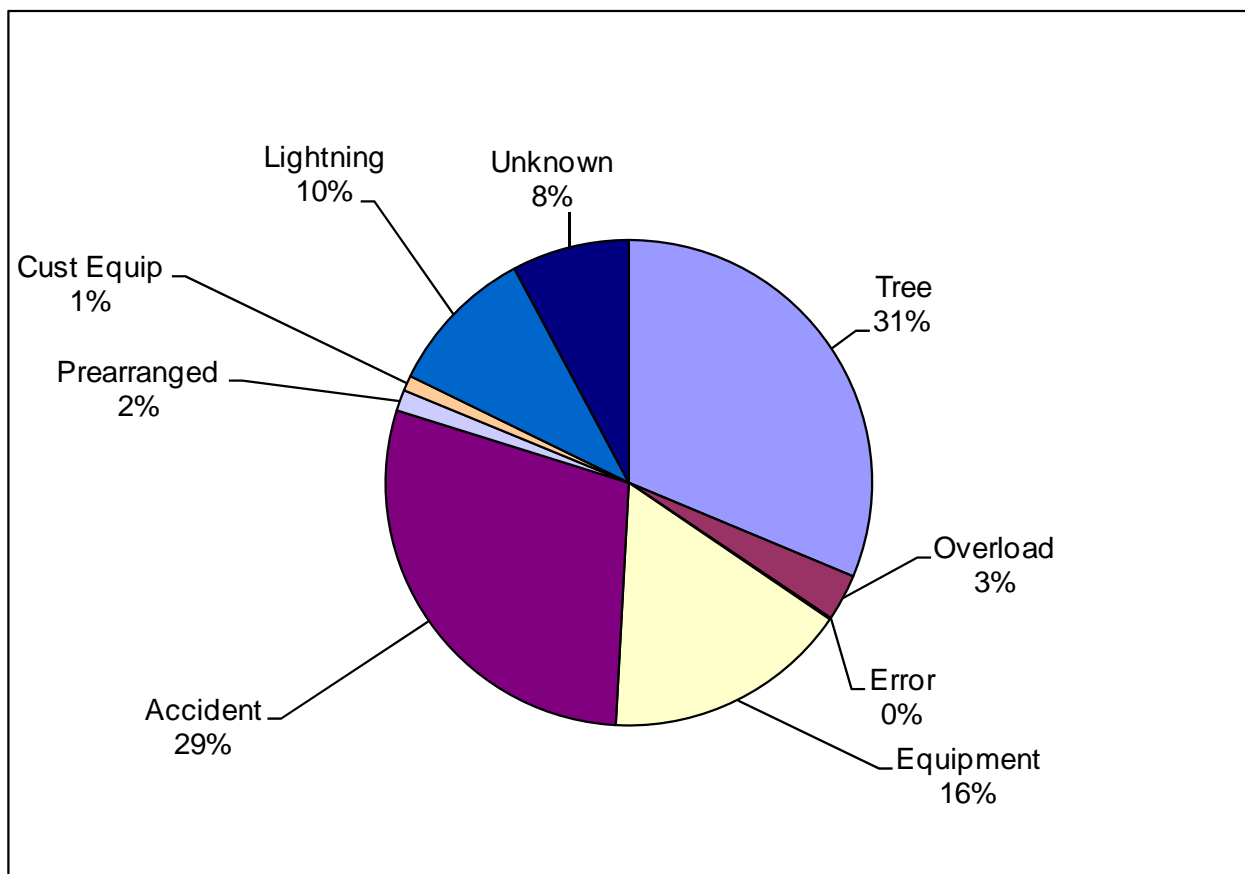
## NEW YORK STATE ELECTRIC AND GAS

**Table 4: NYSEG's Historic Performance Excluding Major Storms**

<b>Metric</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>5-Year Average</b>
Frequency (SAIFI)	1.11	1.08	1.14	1.20	0.98	1.10
Duration (CAIDI)	2.08	2.00	1.98	2.07	2.00	2.03

Approximately 858,615 customers are served by NYSEG. The Company is primarily located in the Binghamton and the Finger Lakes regions, but has localized service regions, including areas near Plattsburgh, Brewster, Mechanicville, and Lancaster.

NYSEG's frequency performance of 0.98 was its best performance in the five year period examined in this report and well below the five year average of 1.10. The 2012 duration performance of 2.00 was slightly below its five year average of 2.03. The Company met its RPM reliability targets of 1.20 for frequency and 2.08 for duration in 2012. The Company should be cognizant of the fact that duration performance is just below the threshold level, the Company should therefore pay special attention to this area. Staff will closely monitor these areas and continue to highlight them to the utilities during future discussions. To improve reliability, the Company has increased capital and maintenance expenditures to help address these areas as further discussed below.



**Figure 8: NYSEG's 2012 Interruptions by Cause**

As shown in Figure 8, tree contacts (31%), equipment failures (16%), and accidents (29%) remain the predominant causes of interruption throughout NYSEG's twelve operating divisions in 2012, although reductions were realized in both the tree contact and equipment failure categories. NYSEG historically has a high tree-caused frequency rate when compared to the other New York State utilities. As a result, NYSEG should continue to focus on improving its distribution vegetation management program and reducing tree related outages. To facilitate progress and performance in vegetation management, the last Commission approved rate case agreements included a minimum number of vegetation clearing miles to be completed each year by the Company. If the Company did not achieve these clearing criteria, it would be subject to significant negative revenue adjustments, along with expenditure true-ups that would return to customers any underspending associated with the vegetation management program. To that end the Company exceeded its target of performing 2,700 miles of distribution



clearing in 2012, achieving an actual level of 2,782 miles. In addition, the Company also exceeded its targeted spending level of \$18.7 million with actual expenditures of \$19.1 million.

To further improve performance in this area, in March 2013 the Company filed a petition with the Commission for authorization to implement a full cycle distribution vegetation management plan. The plan would be rolled out in two distinct phases, a reclamation and post-reclamation period. The reclamation period would involve an initial five year cycle trimming phase or ramp up period starting in 2014 and then transition into the full long term maintenance cycle. This reclamation cycle, however, includes significant cost increases because many areas in NYSEG's service territory have not been trimmed in 30+ years and the trimming costs per mile for this initial phase are much higher than areas previously trimmed. The reclamation cycle has an average annual cost of \$61.2 million for the first five years and then reduces to an estimated \$38 million annually once transitioned into the full long term maintenance cycle. The Company is confident that the program will provide immediate reductions in interruption due to tree contacts and longer term improvements in restoration and cost with respect to storm response. At this time, Staff is in the process of reviewing the proposed plan and associated cost implications and expects to have a recommendation to the Commission in the next couple months.

With respect to equipment failures, NYSEG continues its focus on proactive replacement of aging infrastructure through the Transmission and Distribution Infrastructure Reliability Program. Encompassing the period from 2008-2012 the Company has expended almost \$80 million on the program, nearly doubling the budgeted amount of \$42 million. Maintaining the program at this level is expected to yield continued improvement in the equipment failure levels into the future.

## ROCHESTER GAS AND ELECTRIC

**Table 5: RG&E's Historic Performance Excluding Major Storms**

<b>Metric</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>5-Year Average</b>
Frequency (SAIFI)	0.78	0.59	0.69	0.87	0.74	0.73
Duration (CAIDI)	1.85	1.80	1.71	1.85	1.79	1.80

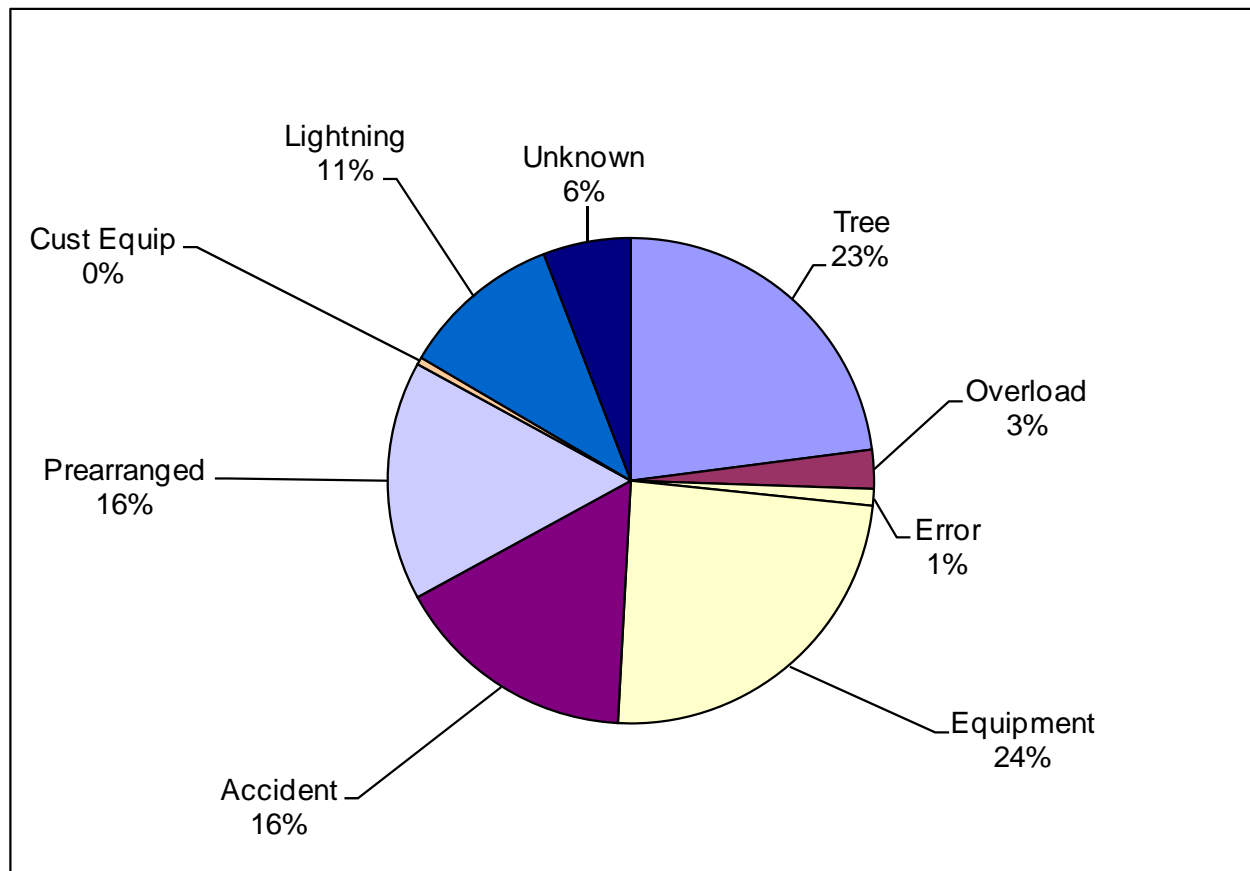
RG&E serves approximately 364,617 customers over its franchise area. The Company is comprised of four service divisions: Canandaigua, Genesee Valley, Lakeshore and Rochester, with the Rochester division accounting for approximately 80% of its customer base. Consequently, RG&E's system wide reliability statistics generally reflect those of the Rochester division.

In 2012, RG&E outperformed its corporate RPM targets of 0.90 for frequency and 1.90 for duration, as established in its most recent rate order. For the past five years, RG&E has consistently maintained high levels of electric service reliability to its customers for both frequency and duration, as seen in Table 5.

While RG&E met its reliability targets at the corporate level in 2012, only one of its four divisions satisfied both targets at the division level. The Rochester division achieved performances of 0.63 for frequency and 1.88 for duration, helping the Company meet its corporate targets. To maintain high levels of reliability, the Rochester division will continue its tree trimming efforts along distribution and transmission lines. Other reliability projects for 2013 include underground cable replacement and upgrade projects, along with the completion of the Company's pole replacement program for aged and/or deteriorated poles. Further, the Rochester division plans to review its sectionalizing points to determine where sectionalizers and reclosers can be most effective.

Two of the remaining three service divisions, Canandaigua and Lakeshore, exceeded the duration targets with tree contacts accounting for 28% and 56% of the customer hours of interruption respectively; however, both divisions successfully met the frequency targets in 2012. The remaining division, Genesee Valley, met the duration target but exceeded the frequency target in 2012. The leading cause of interruptions was tree contacts, accounting for 36% of the customer hours of interruption.

Overall, the two major causes for interruptions throughout RG&E's service divisions were equipment failures (24%) and tree contacts (23%), as shown in Figure 9 . In an effort to remedy these problems and improve its 2013 reliability, RG&E proposes a more aggressive vegetation management strategy along its 4kV, 12kV and 34kV circuits, as well as in other problem areas throughout each service division.



**Figure 9: RG&E's 2012 Interruptions by Cause**

Additionally, RG&E has scheduled several reliability projects that will refurbish and strengthen existing distribution circuits through cable, pole, insulator, or transformer replacements or upgrades. RG&E also plans to more effectively inspect, evaluate and repair problems along its worst performing feeders. Finally, RG&E is developing strategies to reduce outage times by more efficiently disseminating repair crews and contractors as needs arise throughout 2013. Staff believes that the amount of time, effort and associated expenditures RG&E has dedicated toward these infrastructure

and other improvements will continue to reduce outages and improve the system reliability going forward.

## CENTRAL HUDSON GAS AND ELECTRIC

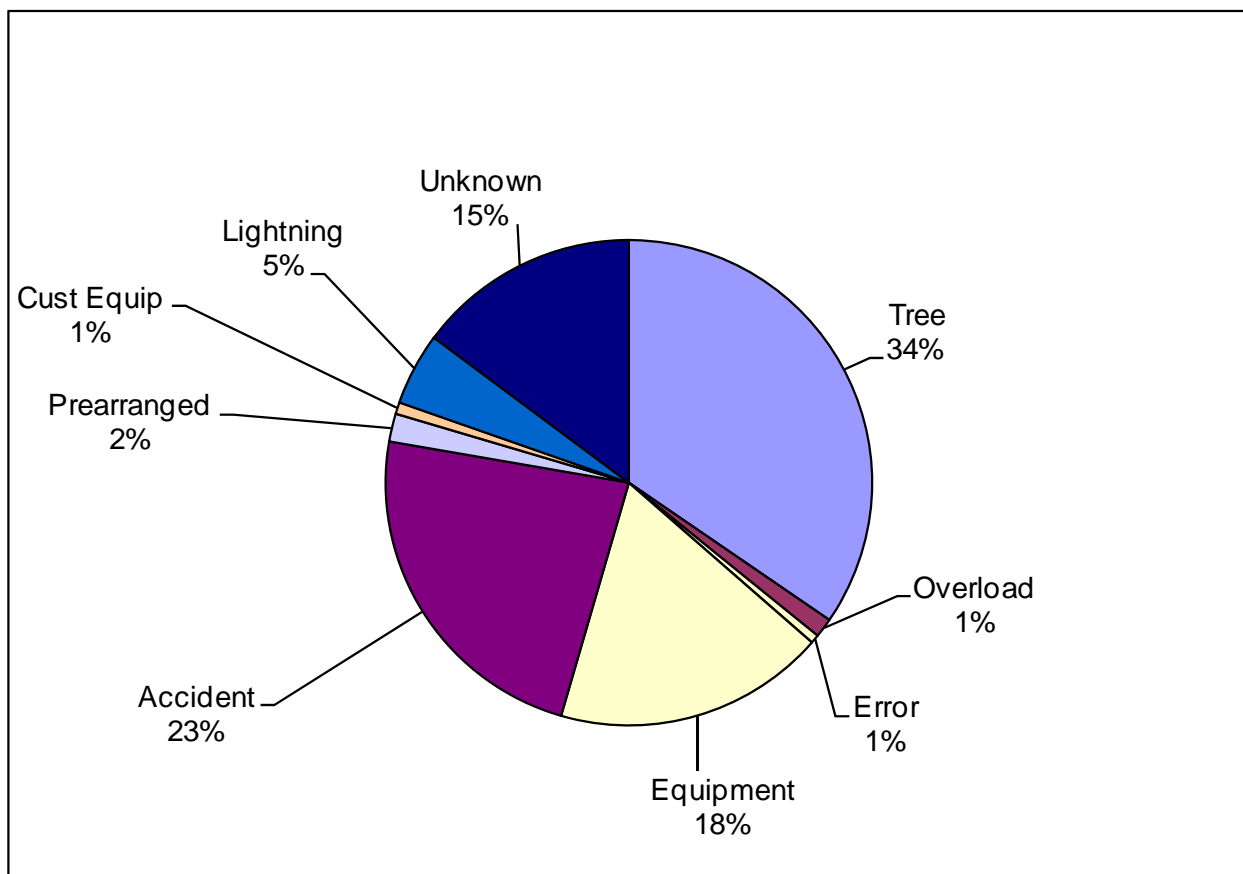
**Table 5: Central Hudson's Historic Performance Excluding Major Storms**

<b>Metric</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>5-Year Average</b>
Frequency (SAIFI)	1.28	1.38	1.27	1.20	1.00	1.22
Duration (CAIDI)	2.47	2.22	2.42	2.26	2.38	2.35

Central Hudson serves approximately 300,000 customers in parts of the Hudson Valley region. The main operating divisions of Central Hudson are Catskill, Fishkill, Kingston, Newburgh and Poughkeepsie. About 70% of Central Hudson's territory is accounted for within Kingston, Newburgh and Poughkeepsie.

Central Hudson's frequency performance of 1.00 in 2012 is better than its performance in 2011 and its best performance over the past five years. The duration performance of Central Hudson in 2012 is 2.38, which is 5% higher than it was in 2011, primarily due to relatively high customer hours for tree contacts and lightning outages. The major causes contributing to the increase in CAIDI for Central Hudson's overall system are lightning strikes and overloaded transformers and line fuses. Despite an overall increase in CAIDI between 2011 and 2012, CAIDI during normal working hours improved over last year by 5%. Central Hudson met both RPM targets for frequency and duration of 1.45 and 2.50, respectively.

The chart below shows that the majority of interruptions are caused by tree contacts (34%), apparatus or equipment failures (18%) and accidents or events not under the Company's control (23%).



**Figure 10: Central Hudson's 2012 Interruptions by Cause**

The Fishkill, Poughkeepsie, and Newburgh operating divisions reported tree contacts as their major reason for interruptions. Since 2007, the number of customers interrupted due to tree contacts has decreased by 16% due to improved vegetation management programs.

From 2011, equipment failures decreased by 6% in 2012. Central Hudson anticipates that this trend will continue as it replaces older style cutouts with newer, more resilient polymer cutouts. The number of cutout failures has steadily decreased every year since 2008 with an overall reduction since 2008 of 42%. As a result of this program, there is a 108% improvement in the cutout SAIFI as compared to 2007.

There are multiple programs and projects that Central Hudson has been working on to increase its reliability performance. Among these projects are integration of remote communication for automatic load transfer switches, switched capacitors, and electronic reclosers. Breaker replacement, 14.4kV cable replacement, and distribution

line infrared surveys of the three-phase mainline are other programs that Central Hudson is working on to increase reliability.

Quanta Technology performed a distribution audit for the Company, focusing on overcurrent protection and practices to improve reliability. Findings include changing fuse sizes and installing electronic reclosers to minimize interruptions.

Central Hudson is in the process of presenting a model based Distribution Management System, which can adapt as technology advances and priorities change. The system will be able to provide visualization tools for evaluating, planning, and operations management.

Central Hudson believes these improvements will increase its system reliability. The communications devices installed in reclosers and automatic load transfer switches will contribute to shorter interruption times. The continuous replacement and repair of aging infrastructure will improve system performance during storms and other major interruptions. Overall, Central Hudson has reached its goals and shows continuous improvement of its system reliability.

## ORANGE AND ROCKLAND

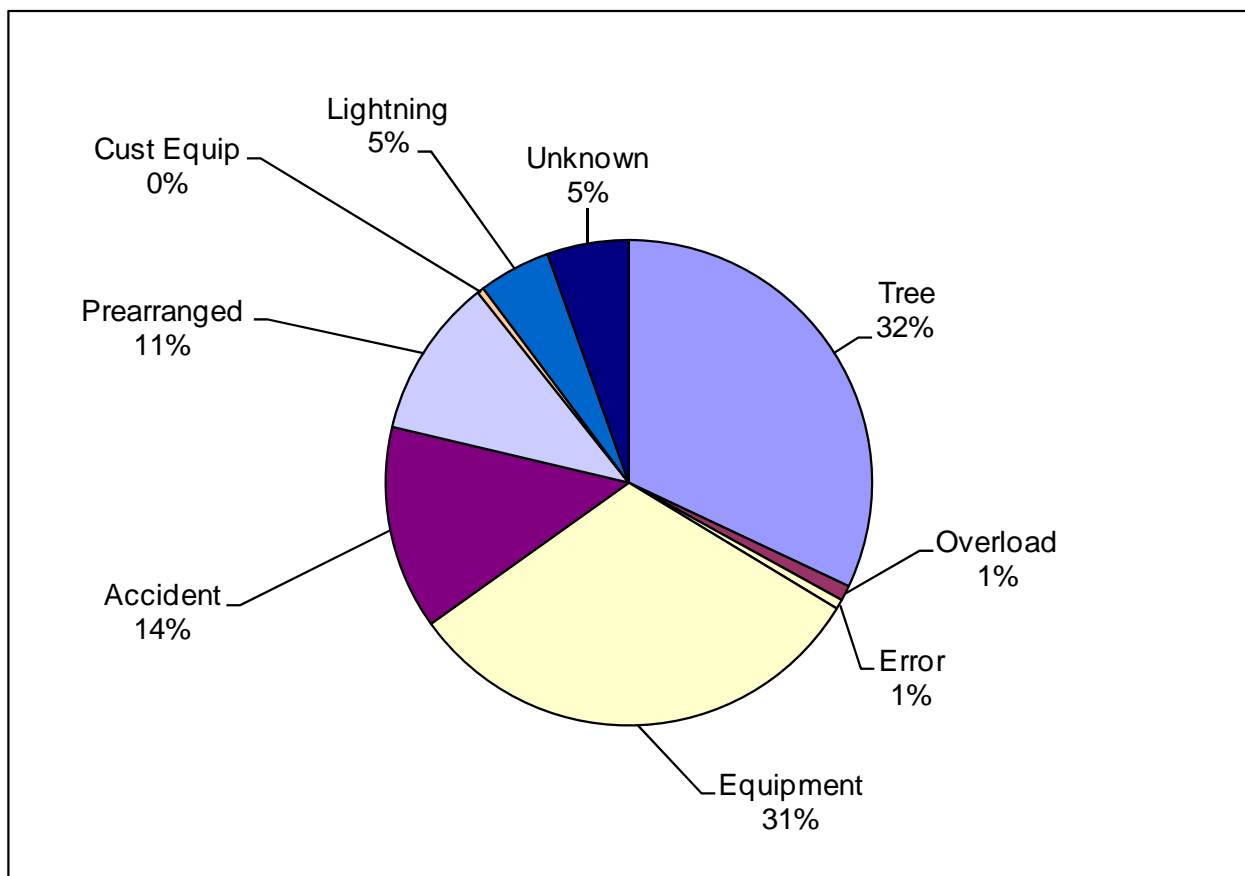
**Table 7: O&R's Historic Performance Excluding Major Storms**

<b>Metric</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>5-Year Average</b>
Frequency (SAIFI)	1.19	1.03	1.21	0.97	0.94	1.07
Duration (CAIDI)	<b>1.83</b>	1.67	<b>1.79</b>	1.61	1.68	1.72

Note: Data presented in red represents a failure to meet the RPM target for a given year.

Orange and Rockland serves approximately 219,671 customers in three New York counties along the New Jersey and Pennsylvania border. With regard to service reliability in 2012, O&R performed better than its reliability targets of 1.20 for frequency and 1.85 for duration. In 2012 the Company met both of these reliability performance mechanism targets, SAIFI improved slightly at .94 which is the best in the Company's history, well below the five year average and 21.6 percent better than the standard of 1.20. The Company's CAIDI increased slightly from 2011, but still remains considerably below the standard of 1.85 and is below the five year average. On a divisional basis, the Central and Eastern divisions exceeded their CAIDI targets by a small margin. SAIFI for all three divisions were significantly better than the standards.





**Figure 11: Orange and Rockland's 2012 Interruptions by Cause**

As shown in Figure 11, equipment failures (31%) and tree contacts (32%) continue to be the cause of a majority of the interruptions in 2012. In 2012 there was a slight increase from 2011 of approximately 60 tree contact incidences, totaling near 850, which is more than 500 fewer than the five year average. Even when the slight increase is taken into account, overall this is still a large improvement as compared with previous years in which tree contact outages approached 1000 in number. The Company's performance in 2012 was impressive in that it achieved generally equivalent or improved performance numbers as compared to prior years despite the occurrence in 2012 of Super Storm Sandy, the most severe storm in the Company's history, and two other large storms. Though such storms are excluded from the reporting statistics, latent damage and subsequent outages occur at a higher than normal rate particularly due to damaged and weakened trees as result of storms. The Company experienced these conditions and

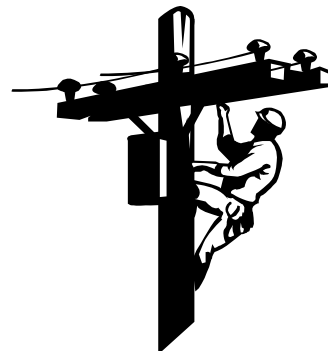
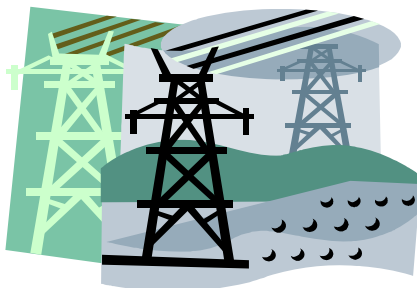
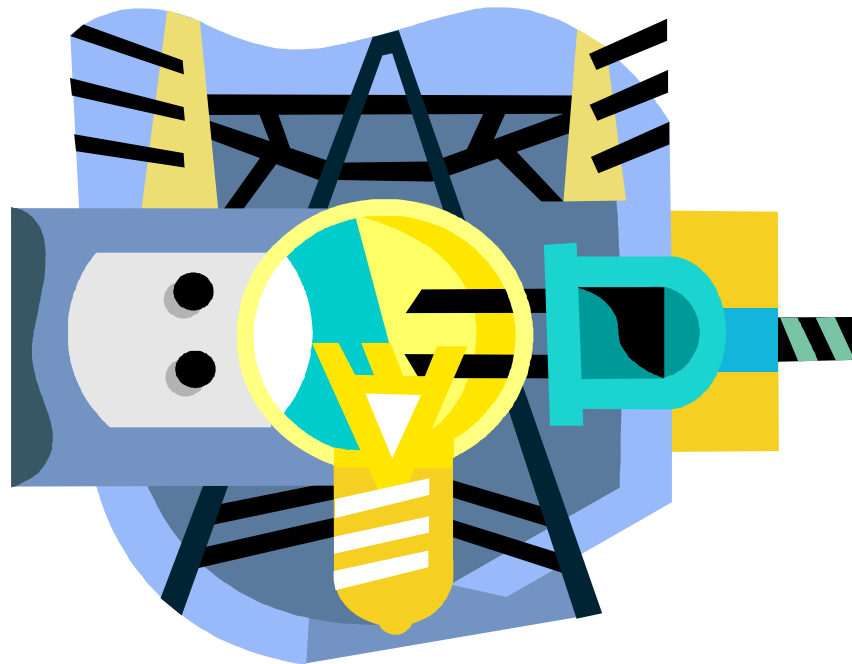
additional tree outage activity after Sandy, which further highlights the Company's good system reliability performance in 2012.

Orange and Rockland continues to address reliability issues resulting from equipment failures through capital improvement programs. The Company's infrastructure improvement projects and service reliability programs, with primary contribution from its enhanced Distribution Automation (DA) program most significantly decrease the frequency of interruptions by focusing on reducing and minimizing the large customer count interruptions. Additionally, several new substations have been constructed and are planned to be constructed in the next several years which the Company expects to continue to reduce the number of equipment failures. Outages due to equipment failures decreased significantly in 2012 after a slight decrease in 2011. In the aftermath of Superstorm Sandy, the Company will be increasing storm hardening efforts and expenditures on its electrical system, efforts such as enhanced tree trimming and selective undergrounding of critical overhead lines, which are also expected to improve overall reliability on the electric system. Staff will continue to monitor and verify these efforts as progress is made going forward.

## **APPENDIX**

### **2012 INTERRUPTON REPORT**

# **The 2012 Interruption Report**



**Office of Electricity, Gas, and Water  
June 2013**

**ATTACHMENT**  
**Definitions and Explanations of Terms Used in the 2012**  
**Statewide Electric Service Interruption Report**

**Interruption** is the loss of service for five minutes or more.

**Customer hours** is the time a customer is without electric service.

**Customers affected** is the number of customers without electric service.

**Customers served** is the number of customers as of the last day of the **current year**. For example, for the calendar year of **2012**, customers served is the number of customers as of 12/31/2011. For indices using customers served, the **previous** year is used.

**Frequency (SAIFI)** measures the average number of interruptions experienced by customers served by the utility. It is the customers affected divided by the customers served at the end of the **previous** year, i.e., 12/31/2011.

**Duration (CAIDI)** measures the average time that an affected customer is out of electric service. It is the customer hours divided by the customers affected.

**Availability (SAIDI)** is the average amount of time a customer is out-of-service during a year. It is the customer hours divided by the number of customers served at the end of the **previous** year, i.e., 12/31/2011. Mathematically, it also is **SAIFI** multiplied by **CAIDI**.

**Interruptions Per 1000 Customers Served** is the number of interruptions divided by the number of customers served at the end of the **previous** year, i.e., 12/31/2011, divided by 1,000.

**Major Storm** is defined as any storm which causes service interruptions of at least ten percent of customers in an operating area, or if the interruptions last for 24 hours or more.

**Operating Area** is a geographical subdivision of each electric utility's franchise territory. These areas are also called regions, divisions, or districts.

Most of the data is presented two ways, with major storms included and major storms excluded. Major storms tend to distort a utility's performance trend. Tables and graphs that exclude major storms illustrate interruptions that are more under the utility's control. It portrays a utility's system facilities under normal conditions, although this can be misleading because interruptions during "normal" bad weather are included and it is difficult to analyze from year to year.

The first two tables show frequency and duration indices for the last five years for each utility and Statewide with and without Con Edison data. Con Edison has by far the lowest frequency numbers and tends to distort the Statewide data. Much of Con Edison's distribution system consists of a secondary network. In a secondary network, a customer is fed from multiple supplies, making the probability of an interruption relatively rare.

**COMPARISON OF SERVICE RELIABILITY INDICES  
(EXCLUDING MAJOR STORMS)**

	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>5 YR AVG</b>
<b>CHGE</b>						
FREQUENCY	1.28	1.38	1.27	1.20	1.00	1.22
DURATION	2.47	2.22	2.42	2.26	2.38	2.35
<b>CONED</b>						
FREQUENCY	0.13	0.10	0.13	0.15	0.10	0.12
DURATION	2.27	2.27	2.57	2.71	2.39	2.44
<b>LIPA *</b>						
FREQUENCY	0.77	0.74	0.73	0.75	0.67	0.73
DURATION	1.36	1.17	1.11	1.14	1.26	1.21
<b>NAT GRID</b>						
FREQUENCY	0.75	0.88	0.80	0.98	0.90	0.86
DURATION	1.96	1.91	1.98	1.95	2.04	1.97
<b>NYSEG</b>						
FREQUENCY	1.11	1.08	1.14	1.20	0.98	1.10
DURATION	2.08	2.00	1.98	2.07	2.00	2.03
<b>O&amp;R</b>						
FREQUENCY	1.19	1.03	1.21	0.97	0.94	1.07
DURATION	1.83	1.67	1.79	1.61	1.68	1.72
<b>RG&amp;E</b>						
FREQUENCY	0.78	0.59	0.69	0.87	0.74	0.73
DURATION	1.85	1.80	1.71	1.85	1.79	1.80
<b>STATEWIDE (WITHOUT CONED)</b>						
FREQUENCY	0.88	0.90	0.89	0.97	0.85	0.90
DURATION	1.89	1.79	1.82	1.82	1.87	1.84
<b>STATEWIDE (WITH CONED)</b>						
FREQUENCY	0.56	0.56	0.57	0.62	0.53	0.57
DURATION	1.93	1.83	1.89	1.91	1.91	1.89

\* LIPA is not regulated by the NYS PSC.

\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.

**COMPARISON OF SERVICE RELIABILITY INDICES  
(INCLUDING MAJOR STORMS)**

	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>5 YR AVG</b>
<b>CHGE</b>						
FREQUENCY	2.18	1.64	2.61	2.71	1.80	2.19
DURATION	5.76	2.48	10.94	15.95	8.55	8.74
<b>CONED</b>						
FREQUENCY	0.14	0.11	0.23	0.26	0.38	0.22
DURATION	2.71	3.06	15.05	15.45	71.91	21.64
<b>LIPA *</b>						
FREQUENCY	1.09	0.81	1.04	1.36	1.84	1.23
DURATION	1.65	1.25	1.84	9.69	22.55	7.40
<b>NAT GRID</b>						
FREQUENCY	1.37	1.01	0.98	1.48	1.13	1.19
DURATION	4.32	2.01	2.46	5.03	2.67	3.30
<b>NYSEG</b>						
FREQUENCY	2.12	1.46	1.83	2.44	1.85	1.94
DURATION	7.07	2.68	4.09	9.86	12.63	7.27
<b>O&amp;R</b>						
FREQUENCY	1.64	1.15	1.79	2.12	1.86	1.71
DURATION	2.94	1.89	4.76	15.32	34.66	11.92
<b>RG&amp;E</b>						
FREQUENCY	1.36	0.73	0.77	1.05	0.92	0.97
DURATION	3.77	2.03	2.18	1.99	3.01	2.60
<b>STATEWIDE (WITHOUT CONED)</b>						
FREQUENCY	1.51	1.07	1.29	1.72	1.51	1.42
DURATION	4.62	2.09	4.09	8.92	13.52	6.65
<b>STATEWIDE (WITH CONED)</b>						
FREQUENCY	0.94	0.67	0.84	1.10	1.03	0.91
DURATION	4.50	2.16	5.35	9.58	22.70	8.86

\* LIPA is not regulated by the NYS PSC.

\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.

**STATEWIDE (WITHOUT CON ED)**

Excluding Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	53,758	55,995	54,310	53,557	49,827	53,489
Number of Customer-Hours	7,399,179	7,116,848	7,197,156	7,868,243	7,086,647	7,333,615
Number of Customers Affected	3,910,426	3,976,492	3,962,829	4,319,688	3,799,744	3,993,836
Number of Customers Served	4,432,989	4,449,043	4,447,050	4,452,075	4,468,023	4,449,836
Average Duration Per Customer Affected (CAIDI)	1.89	1.79	1.82	1.82	1.87	1.84
Average Duration Per Customers Served	1.67	1.61	1.62	1.77	1.59	1.65
Interruptions Per 1000 Customers Served	12.12	12.63	12.21	12.04	11.19	12.04
Number of Customers Affected Per Customer Served (SAIFI)	0.88	0.90	0.89	0.97	0.85	0.90

**STATEWIDE (WITH CON ED)**

Excluding Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	65,403	70,930	68,221	68,719	60,526	66,760
Number of Customer-Hours	8,326,562	7,891,155	8,284,481	9,195,778	7,914,335	8,322,462
Number of Customers Affected	4,319,550	4,316,932	4,385,672	4,809,183	4,145,730	4,395,413
Number of Customers Served	7,677,786	7,720,769	7,738,793	7,772,888	7,806,754	7,743,398
Average Duration Per Customer Affected (CAIDI)	1.93	1.83	1.89	1.91	1.91	1.89
Average Duration Per Customers Served	1.09	1.03	1.07	1.19	1.02	1.08
Interruptions Per 1000 Customers Served	8.54	9.24	8.84	8.88	7.79	8.66
Number of Customers Affected Per Customer Served (SAIFI)	0.56	0.56	0.57	0.62	0.53	0.57

\* LIPA is not regulated by the NYS PSC.

\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.



**STATEWIDE (WITHOUT CON ED)**

Including Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	73,150	61,841	72,135	97,586	88,800	78,702
Number of Customer-Hours	30,962,269	9,923,722	23,466,391	68,027,851	90,905,843	44,657,215
Number of Customers Affected	6,705,414	4,752,148	5,741,806	7,630,118	6,721,953	6,310,288
Number of Customers Served	4,432,989	4,449,043	4,447,050	4,452,075	4,468,023	4,449,836
Average Duration Per Customer Affected (CAIDI)	4.62	2.09	4.09	8.92	13.52	6.65
Average Duration Per Customers Served	6.98	2.24	5.27	15.30	20.42	10.04
Interruptions Per 1000 Customers Served	16.49	13.95	16.21	21.94	19.95	17.71
Number of Customers Affected Per Customer Served (SAIFI)	1.51	1.07	1.29	1.72	1.51	1.42

**STATEWIDE (WITH CON ED)**

Including Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	85,548	77,181	91,471	120,005	116,263	98,094
Number of Customer-Hours	32,188,186	11,046,399	34,693,862	81,434,151	181,026,042	68,077,728
Number of Customers Affected	7,158,329	5,118,841	6,487,588	8,498,092	7,975,227	7,047,615
Number of Customers Served	7,677,786	7,720,769	7,738,793	7,772,888	7,806,754	7,743,398
Average Duration Per Customer Affected (CAIDI)	4.50	2.16	5.35	9.58	22.70	8.86
Average Duration Per Customers Served	4.20	1.44	4.49	10.52	23.29	8.79
Interruptions Per 1000 Customers Served	11.17	10.05	11.85	15.51	14.96	12.71
Number of Customers Affected Per Customer Served (SAIFI)	0.94	0.67	0.84	1.10	1.03	0.91

\* LIPA is not regulated by the NYS PSC.

\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.

**CENTRAL HUDSON**

Excluding Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	6,857	6,705	7,762	6,293	5,566	6,637
Number of Customer-Hours	933,993	910,250	922,392	814,052	716,105	859,358
Number of Customers Affected	377,564	410,516	380,489	359,769	301,232	365,914
Number of Customers Served	298,386	300,621	299,557	299,971	300,537	299,814
Average Duration Per Customer Affected (CAIDI)	2.47	2.22	2.42	2.26	2.38	2.35
Average Duration Per Customers Served	3.16	3.05	3.07	2.72	2.39	2.88
Interruptions Per 1000 Customers Served	23.22	22.47	25.82	21.01	18.56	22.21
Number of Customers Affected Per Customer Served (SAIFI)	1.28	1.38	1.27	1.20	1.00	1.22

**CENTRAL HUDSON**

Including Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	9,887	7,609	11,994	12,076	8,603	10,034
Number of Customer-Hours	3,705,277	1,211,827	8,597,567	12,930,372	4,620,086	6,213,026
Number of Customers Affected	642,949	488,732	785,806	810,464	540,447	653,680
Number of Customers Served	298,386	300,621	299,557	299,971	300,537	299,814
Average Duration Per Customer Affected (CAIDI)	5.76	2.48	10.94	15.95	8.55	8.74
Average Duration Per Customers Served	12.54	4.06	28.60	43.16	15.40	20.75
Interruptions Per 1000 Customers Served	33.47	25.50	39.90	40.31	28.68	33.57
Number of Customers Affected Per Customer Served (SAIFI)	2.18	1.64	2.61	2.71	1.80	2.19

\* Customers Served is the number of customers served at the end of the current year.

\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.

**CON ED (SYSTEM)**

Excluding Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	11,645	14,935	13,911	15,162	10,699	13,270
Number of Customer-Hours	927,383	774,307	1,087,325	1,327,534	827,689	988,848
Number of Customers Affected	409,124	340,440	422,843	489,495	345,986	401,578
Number of Customers Served	3,244,797	3,271,726	3,291,743	3,320,813	3,338,731	3,293,562
Average Duration Per Customer Affected (CAIDI)	2.27	2.27	2.57	2.71	2.39	2.44
Average Duration Per Customers Served	0.29	0.24	0.33	0.40	0.25	0.30
Interruptions Per 1000 Customers Served	3.62	4.60	4.25	4.61	3.22	4.06
Number of Customers Affected Per Customer Served (SAIFI)	0.13	0.10	0.13	0.15	0.10	0.12

**CON ED (SYSTEM)**

Including Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	12,398	15,340	19,336	22,419	27,463	19,391
Number of Customer-Hours	1,225,918	1,122,676	11,227,471	13,406,299	90,120,199	23,420,513
Number of Customers Affected	452,915	366,693	745,782	867,974	1,253,274	737,328
Number of Customers Served	3,244,797	3,271,726	3,291,743	3,320,813	3,338,731	3,293,562
Average Duration Per Customer Affected (CAIDI)	2.71	3.06	15.05	15.45	71.91	21.64
Average Duration Per Customers Served	0.38	0.35	3.43	4.07	27.14	7.07
Interruptions Per 1000 Customers Served	3.85	4.73	5.91	6.81	8.27	5.91
Number of Customers Affected Per Customer Served (SAIFI)	0.14	0.11	0.23	0.26	0.38	0.22

\* Customers Served is the number of customers served at the end of the current year.

\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.

**CON ED (NETWORK)**

	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>5 YR AVG</b>
Number of Interruptions	5,485	8,650	7,434	8,151	4,758	6,896
Number of Customer-Hours	252,964	273,705	370,405	419,830	187,740	300,929
Number of Customers Affected	40,301	52,994	54,555	61,450	29,645	47,789
Number of Customers Served	2,361,145	2,385,760	2,403,818	2,439,565	2,454,427	2,408,943
Average Duration Per Customer Affected (CAIDI)	6.28	5.16	6.79	6.83	6.33	6.28
Average Duration Per Customers Served	0.11	0.12	0.16	0.17	0.08	0.13
Interruptions Per 1000 Customers Served	2.32	3.66	3.12	3.39	1.95	2.89
Number of Customers Affected Per Customer Served (SAIFI)	0.017	0.022	0.023	0.026	0.012	0.020

\* Customers Served is the number of customers served at the end of the current year.

\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.

**CON ED (RADIAL)**

Excluding Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	6,160	6,285	6,477	7,011	5,941	6,375
Number of Customer-Hours	674,419	500,602	716,920	907,704	639,949	687,919
Number of Customers Affected	368,823	287,446	368,288	428,045	316,341	353,789
Number of Customers Served	883,652	885,966	887,925	881,248	884,304	884,619
Average Duration Per Customer Affected (CAIDI)	1.83	1.74	1.95	2.12	2.02	1.93
Average Duration Per Customers Served	0.79	0.57	0.81	1.02	0.73	0.78
Interruptions Per 1000 Customers Served	7.21	7.11	7.31	7.90	6.74	7.25
Number of Customers Affected Per Customer Served (SAIFI)	0.43	0.33	0.42	0.48	0.36	0.40

**CON ED (RADIAL)**

Including Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	6,913	6,690	11,902	14,268	22,705	12,496
Number of Customer-Hours	972,954	848,971	10,857,066	12,986,469	89,932,459	23,119,584
Number of Customers Affected	412,614	313,699	691,227	806,524	1,223,629	689,539
Number of Customers Served	883,652	885,966	887,925	881,248	884,304	884,619
Average Duration Per Customer Affected (CAIDI)	2.36	2.71	15.71	16.10	73.50	22.07
Average Duration Per Customers Served	1.14	0.96	12.25	14.63	102.05	26.21
Interruptions Per 1000 Customers Served	8.09	7.57	13.43	16.07	25.76	14.19
Number of Customers Affected Per Customer Served (SAIFI)	0.48	0.36	0.78	0.91	1.39	0.78

\* Customers Served is the number of customers served at the end of the current year.

\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.

**LIPA**

Excluding Major Storms

	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>5 YR AVG</b>
Number of Interruptions	18,135	17,795	17,180	16,767	15,625	17,100
Number of Customer-Hours	1,166,613	958,679	905,031	959,212	945,305	986,968
Number of Customers Affected	856,405	821,723	811,969	842,816	752,311	817,045
Number of Customers Served	1,110,853	1,114,716	1,117,281	1,115,815	1,118,610	1,115,455
Average Duration Per Customer Affected (CAIDI)	1.36	1.17	1.11	1.14	1.26	1.21
Average Duration Per Customers Served	1.05	0.86	0.81	0.86	0.85	0.89
Interruptions Per 1000 Customers Served	16.36	16.02	15.41	15.01	14.00	15.36
Number of Customers Affected Per Customer Served (SAIFI)	0.77	0.74	0.73	0.75	0.67	0.73

**LIPA**

Including Major Storms

	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>5 YR AVG</b>
Number of Interruptions	20,471	19,003	22,867	37,368	39,026	27,747
Number of Customer-Hours	1,998,270	1,121,723	2,125,507	14,715,268	46,371,469	13,266,447
Number of Customers Affected	1,208,292	894,595	1,153,884	1,519,331	2,056,428	1,366,506
Number of Customers Served	1,110,853	1,114,716	1,117,281	1,115,815	1,118,610	1,115,455
Average Duration Per Customer Affected (CAIDI)	1.65	1.25	1.84	9.69	22.55	7.40
Average Duration Per Customers Served	1.80	1.01	1.91	13.17	41.56	11.89
Interruptions Per 1000 Customers Served	18.47	17.11	20.51	33.45	34.98	24.90
Number of Customers Affected Per Customer Served (SAIFI)	1.09	0.81	1.04	1.36	1.84	1.23

\* LIPA is not regulated by the NYS PSC.

\* Customers Served is the number of customers served at the end of the current year.

\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.

**NATIONAL GRID**

Excluding Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	12,939	15,915	13,822	14,442	13,506	14,125
Number of Customer-Hours	2,334,754	2,645,775	2,529,126	3,048,983	2,926,731	2,697,074
Number of Customers Affected	1,188,585	1,387,131	1,277,727	1,564,208	1,434,256	1,370,381
Number of Customers Served	1,583,311	1,589,810	1,595,037	1,601,552	1,603,982	1,594,738
Average Duration Per Customer Affected (CAIDI)	1.96	1.91	1.98	1.95	2.04	1.97
Average Duration Per Customers Served	1.46	1.67	1.59	1.91	1.83	1.69
Interruptions Per 1000 Customers Served	8.11	10.05	8.69	9.05	8.43	8.87
Number of Customers Affected Per Customer Served (SAIFI)	0.75	0.88	0.80	0.98	0.90	0.86

**NATIONAL GRID**

Including Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	18,301	17,060	15,571	20,881	16,440	17,651
Number of Customer-Hours	9,410,833	3,214,148	3,824,438	11,882,312	4,811,549	6,628,656
Number of Customers Affected	2,177,786	1,599,090	1,553,727	2,363,763	1,804,502	1,899,774
Number of Customers Served	1,583,311	1,589,810	1,595,037	1,601,552	1,603,982	1,594,738
Average Duration Per Customer Affected (CAIDI)	4.32	2.01	2.46	5.03	2.67	3.30
Average Duration Per Customers Served	5.90	2.03	2.41	7.45	3.00	4.16
Interruptions Per 1000 Customers Served	11.47	10.77	9.79	13.09	10.27	11.08
Number of Customers Affected Per Customer Served (SAIFI)	1.37	1.01	0.98	1.48	1.13	1.19

\* Customers Served is the number of customers served at the end of the current year.

\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.

**NYSEG**

Excluding Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	10,027	9,643	9,777	10,272	9,424	9,829
Number of Customer-Hours	1,980,213	1,848,599	1,934,747	2,127,891	1,675,701	1,913,430
Number of Customers Affected	953,105	922,448	975,375	1,028,868	839,427	943,845
Number of Customers Served	863,177	860,236	856,474	854,682	858,396	858,593
Average Duration Per Customer Affected (CAIDI)	2.08	2.00	1.98	2.07	2.00	2.03
Average Duration Per Customers Served	2.29	2.14	2.25	2.48	1.96	2.23
Interruptions Per 1000 Customers Served	11.60	11.17	11.37	11.99	11.03	11.43
Number of Customers Affected Per Customer Served (SAIFI)	1.11	1.08	1.14	1.20	0.98	1.10

**NYSEG**

Including Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	17,008	11,948	14,976	19,743	17,850	16,305
Number of Customer-Hours	12,974,501	3,369,824	6,445,599	20,636,612	19,975,449	12,680,397
Number of Customers Affected	1,836,251	1,257,464	1,576,105	2,093,127	1,581,500	1,668,889
Number of Customers Served	863,177	860,236	856,474	854,682	858,396	858,593
Average Duration Per Customer Affected (CAIDI)	7.07	2.68	4.09	9.86	12.63	7.27
Average Duration Per Customers Served	15.01	3.90	7.49	24.09	23.37	14.77
Interruptions Per 1000 Customers Served	19.68	13.84	17.41	23.05	20.88	18.97
Number of Customers Affected Per Customer Served (SAIFI)	2.12	1.46	1.83	2.44	1.85	1.94

\* Customers Served is the number of customers served at the end of the current year.

\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.



**O&R**

Excluding Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	2,993	2,987	2,897	2,661	2,652	2,838
Number of Customer-Hours	470,431	375,064	472,939	338,760	347,689	400,976
Number of Customers Affected	256,943	223,976	263,752	211,048	206,798	232,503
Number of Customers Served	217,407	218,035	218,545	219,385	220,129	218,700
Average Duration Per Customer Affected (CAIDI)	1.83	1.67	1.79	1.61	1.68	1.72
Average Duration Per Customers Served	2.18	1.73	2.17	1.55	1.58	1.84
Interruptions Per 1000 Customers Served	13.87	13.74	13.29	12.18	12.09	13.03
Number of Customers Affected Per Customer Served (SAIFI)	1.19	1.03	1.21	0.97	0.94	1.07

**O&R**

Including Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	3,655	3,111	3,646	4,223	3,326	3,592
Number of Customer-Hours	1,043,235	471,941	1,857,491	7,106,724	14,130,288	4,921,936
Number of Customers Affected	354,315	249,064	389,937	463,940	407,678	372,987
Number of Customers Served	217,407	218,035	218,545	219,385	220,129	218,700
Average Duration Per Customer Affected (CAIDI)	2.94	1.89	4.76	15.32	34.66	11.92
Average Duration Per Customers Served	4.84	2.17	8.52	32.52	64.41	22.49
Interruptions Per 1000 Customers Served	16.94	14.31	16.72	19.32	15.16	16.49
Number of Customers Affected Per Customer Served (SAIFI)	1.64	1.15	1.79	2.12	1.86	1.71

\* Customers Served is the number of customers served at the end of the current year.

\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.

**RG&E**

Excluding Major Storms

	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	2,807	2,950	2,872	3,122	3,054	2,961
Number of Customer-Hours	513,175	378,481	432,921	579,346	475,116	475,808
Number of Customers Affected	277,824	210,698	253,517	312,979	265,720	264,148
Number of Customers Served	359,855	365,625	360,156	360,670	366,369	362,535
Average Duration Per Customer Affected (CAIDI)	1.85	1.80	1.71	1.85	1.79	1.80
Average Duration Per Customers Served	1.43	1.05	1.18	1.61	1.32	1.32
Interruptions Per 1000 Customers Served	7.85	8.20	7.86	8.67	8.47	8.21
Number of Customers Affected Per Customer Served (SAIFI)	0.78	0.59	0.69	0.87	0.74	0.73

**RG&E**

Including Major Storms

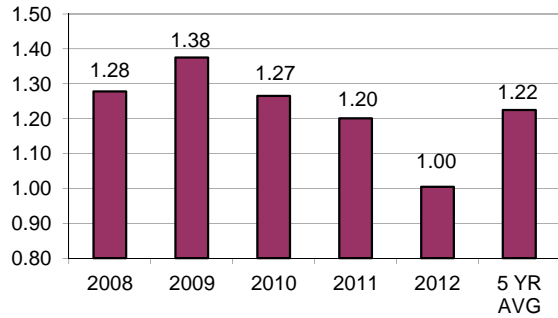
	2008	2009	2010	2011	2012	5 YR AVG
Number of Interruptions	3,828	3,110	3,081	3,295	3,555	3,374
Number of Customer-Hours	1,830,153	534,259	615,789	756,563	997,001	946,753
Number of Customers Affected	485,821	263,203	282,347	379,493	331,398	348,452
Number of Customers Served	359,855	365,625	360,156	360,670	366,369	362,535
Average Duration Per Customer Affected (CAIDI)	3.77	2.03	2.18	1.99	3.01	2.60
Average Duration Per Customers Served	5.12	1.48	1.68	2.10	2.76	2.63
Interruptions Per 1000 Customers Served	10.70	8.64	8.43	9.15	9.86	9.36
Number of Customers Affected Per Customer Served (SAIFI)	1.36	0.73	0.77	1.05	0.92	0.97

\* Customers Served is the number of customers served at the end of the current year.

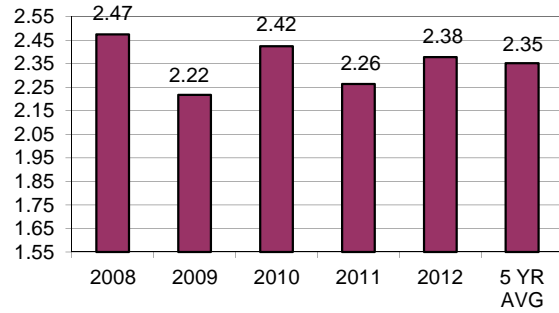
\*\* For those indices that use Customers Served, Customers Served is the December value from the previous year.

## Central Hudson Gas and Electric (Excluding Major Storms)

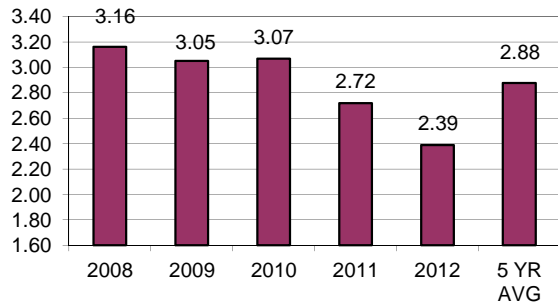
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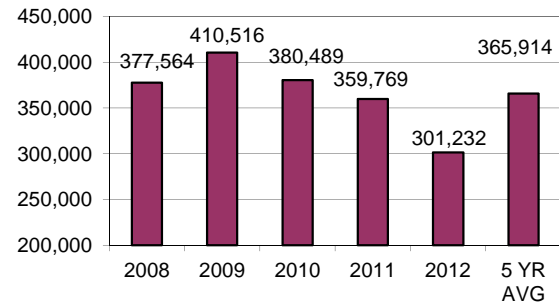
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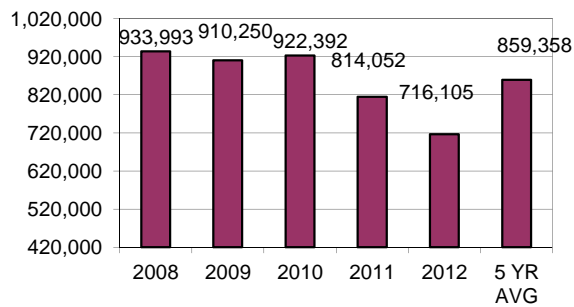
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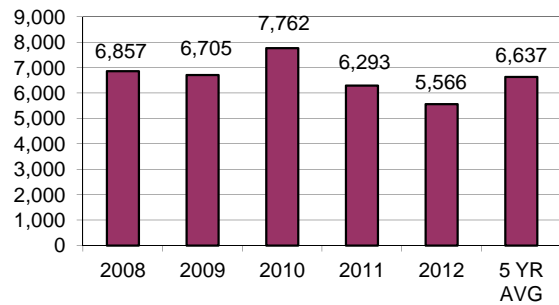
**Customers Affected**



**Customer-Hours**

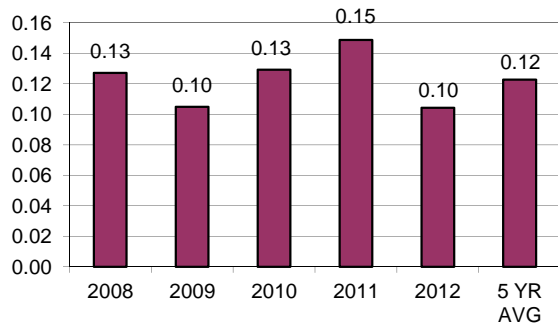


**Interruptions**

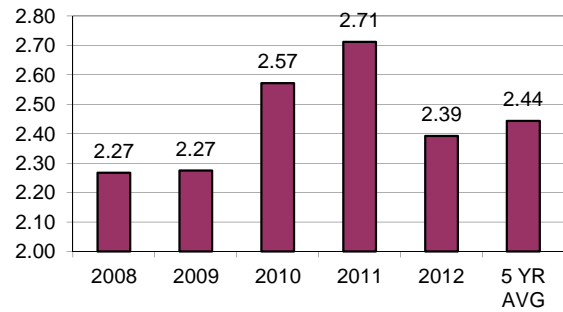


## Consolidated Edison - System (Excluding Major Storms)

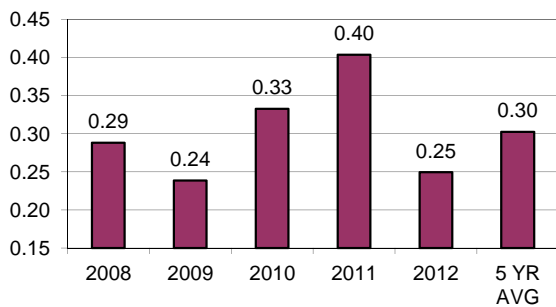
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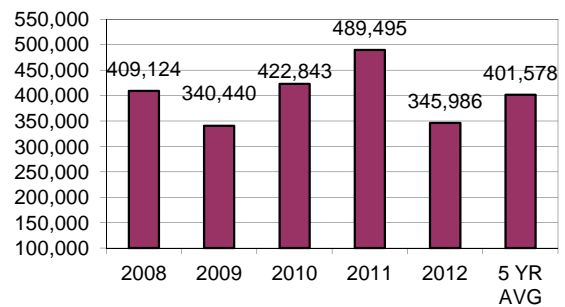
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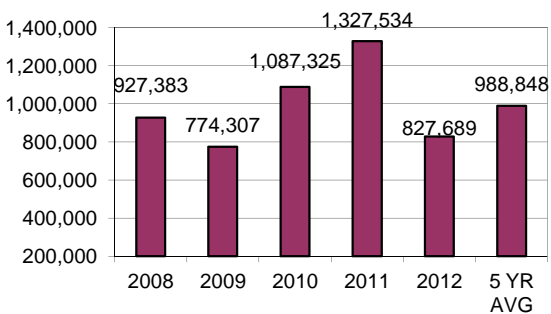
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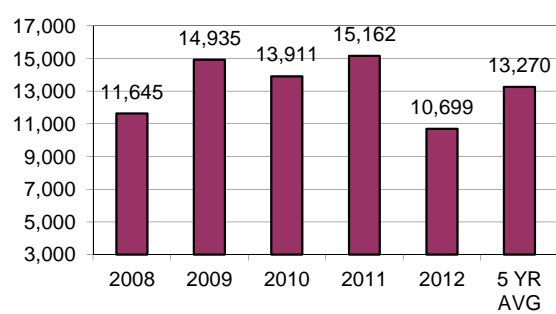
**Customers Affected**



**Customer-Hours**

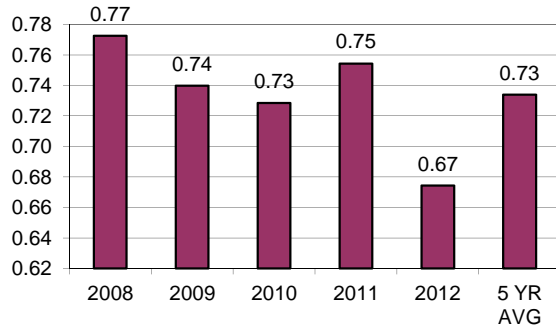


**Interruptions**

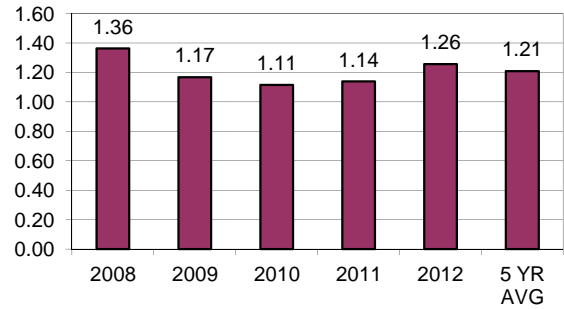


## Long Island Power Authority (Excluding Major Storms)

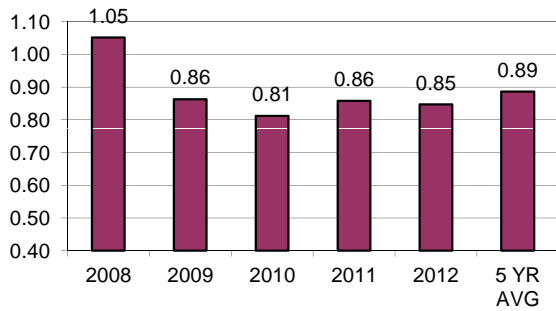
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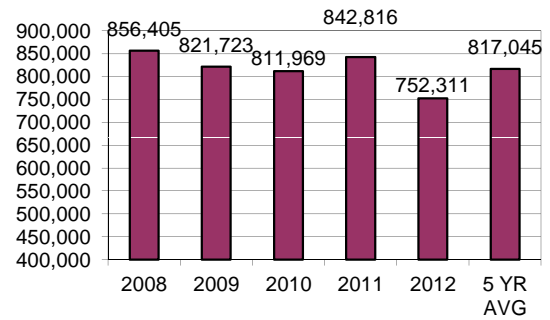
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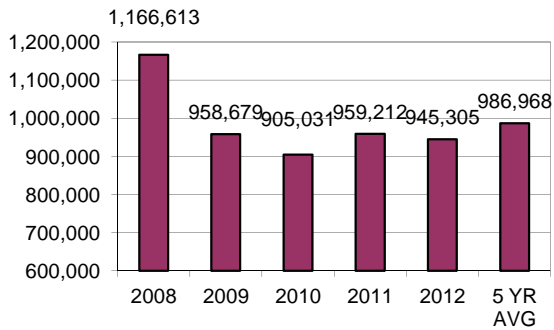
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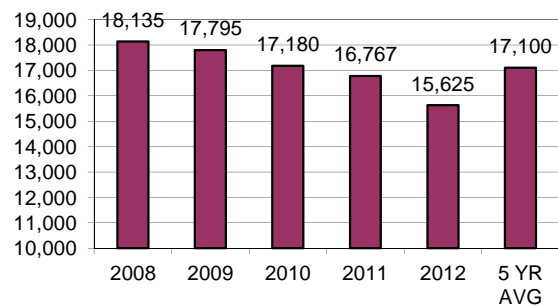
**Customers Affected**



**Customer-Hours**



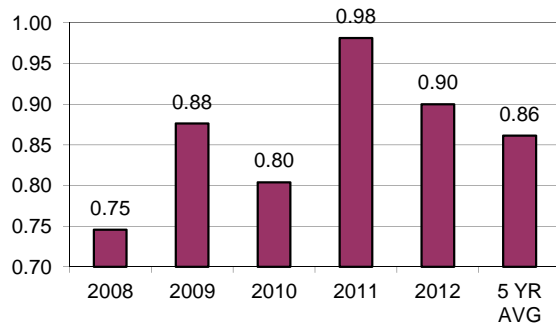
**Interruptions**



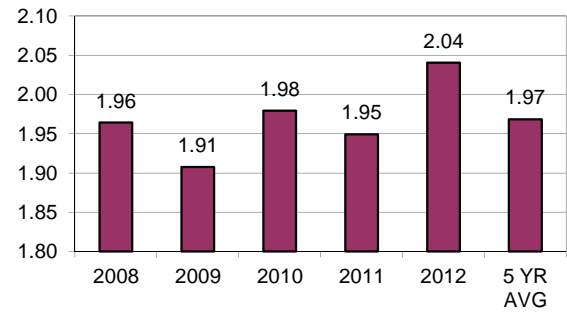
\* LIPA is not regulated by the NYS PSC.

## National Grid (Excluding Major Storms)

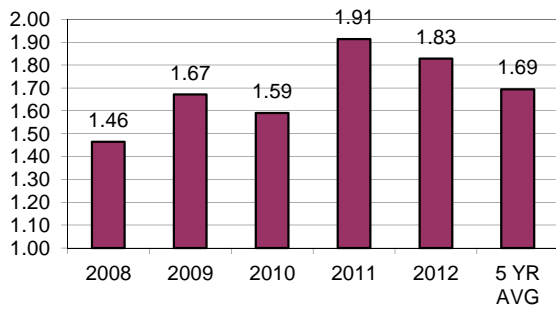
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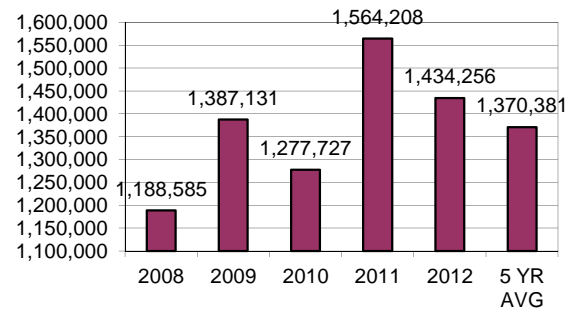
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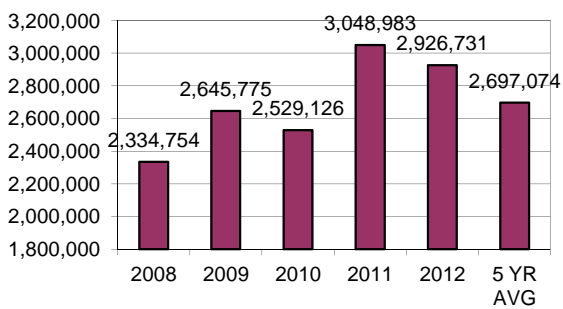
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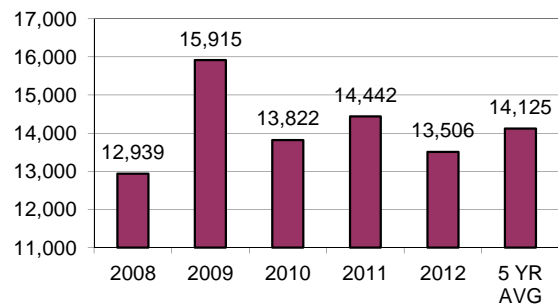
**Customers Affected**



**Customer-Hours**

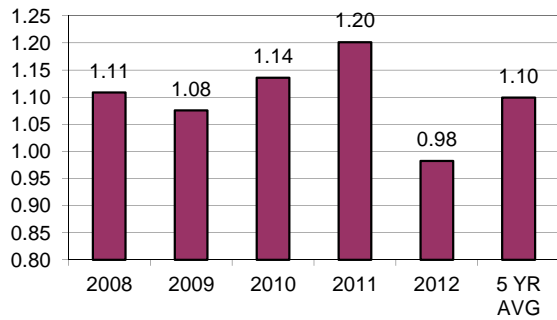


**Interruptions**

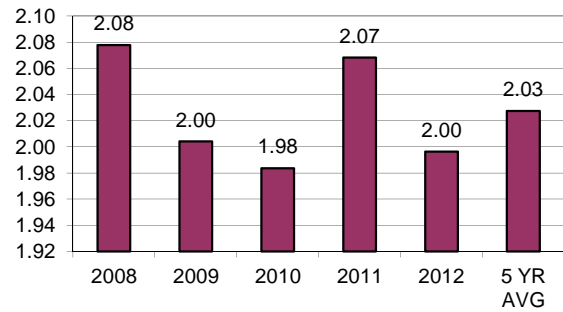


## New York State Electric and Gas (Excluding Major Storms)

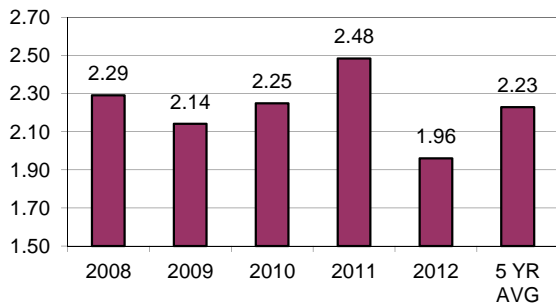
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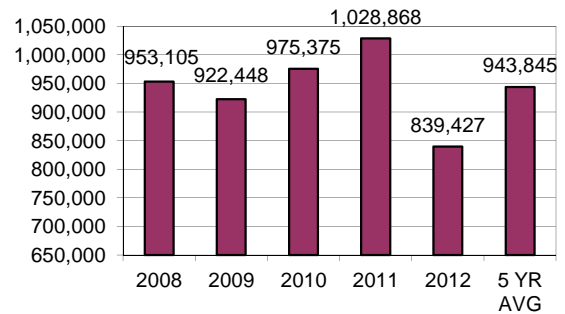
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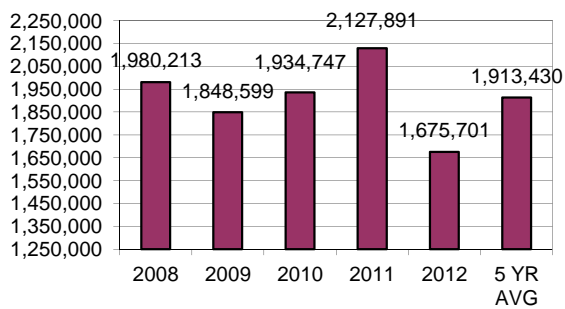
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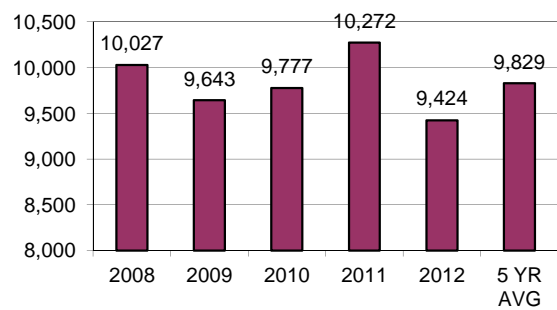
**Customers Affected**



**Customer-Hours**

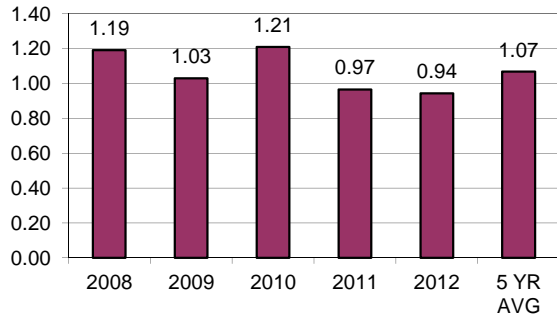


**Interruptions**

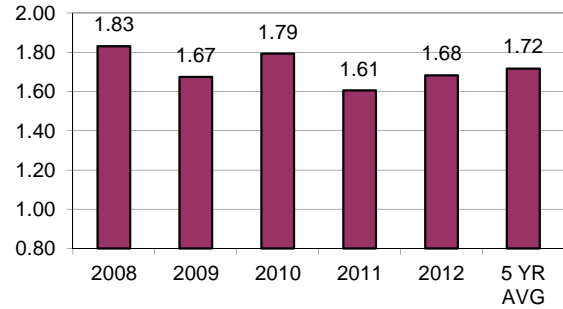


## Orange and Rockland Utilities (Excluding Major Storms)

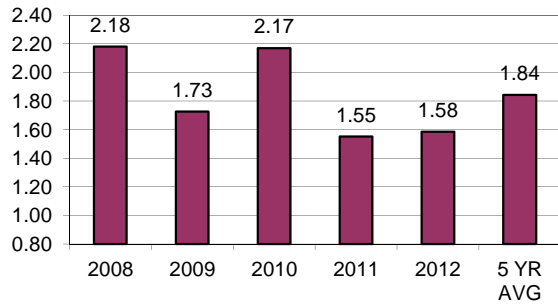
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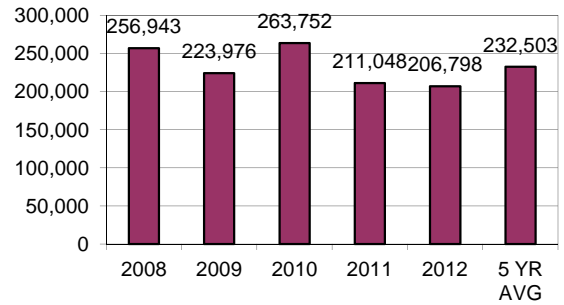
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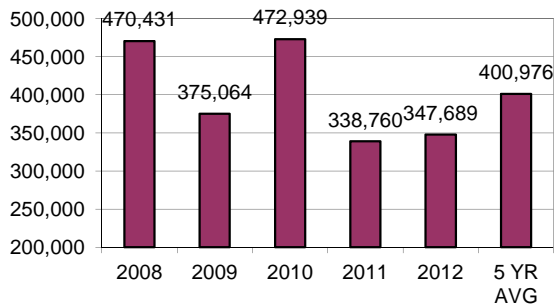
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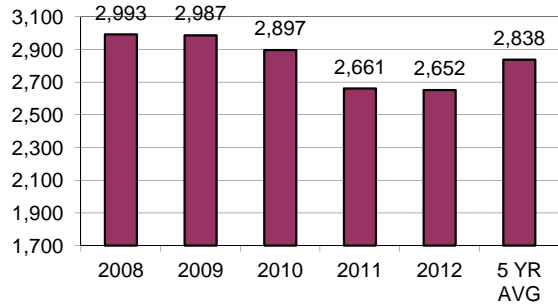
**Customers Affected**



**Customer-Hours**



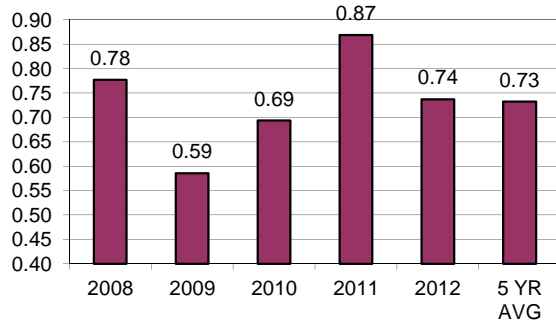
**Interruptions**



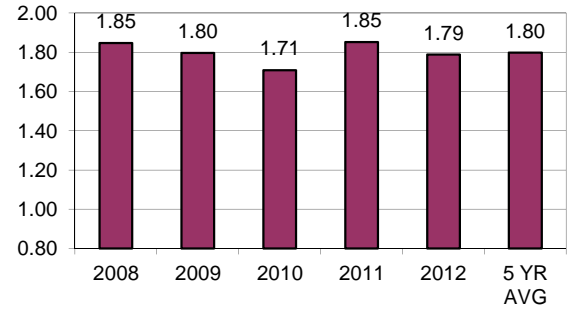


## Rochester Gas and Electric (Excluding Major Storms)

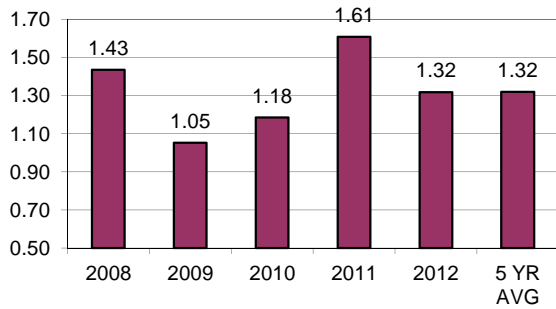
**Frequency**



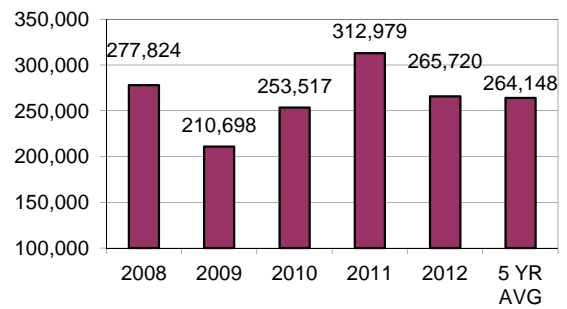
**Duration**



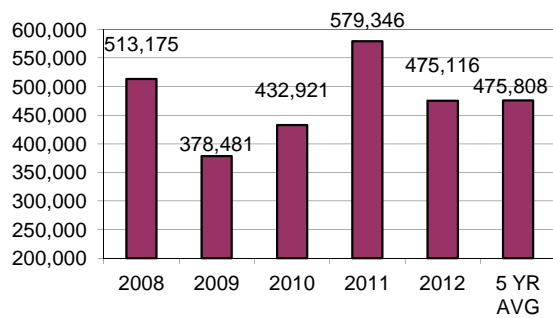
**Availability**



**Customers Affected**



**Customer-Hours**



**Interruptions**

