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2015 ELECTRIC RELIABILITY PERFORMANCE REPORT

**Electric Distribution Systems
Office of Electric, Gas, and Water
June 2016**

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EXECUTIVE SUMMARY

The attached report presents the assessment by Department of Public Service Staff (Staff) of electric reliability performance in New York State for 2015. 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).¹ Frequency is influenced by factors such as system design, capital investment, maintenance, and weather.² 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. Several means have been established to assist Staff in monitoring the levels of service. First, utilities are required to submit detailed monthly interruption data to the Public Service Commission (Commission).³ Next, the Commission adopted Service Standards, which among other things, set minimum performance levels for both the frequency and duration of service interruptions for each major electric utility's operating divisions. Each utility performance is then compared with its Reliability Performance Mechanisms (RPMs) which is established in its rate order. The RPMs include company-wide targets for outage frequency and duration; some RPMs have additional measures to address specific concerns unique to an individual company. RPMs are designed such that companies are subject to negative revenue adjustments for failing to meet electric reliability targets. Unlike the other utilities,

¹ SAIFI is the average number of times that a customer is interrupted for five minutes or more during a year. CAIDI is the average interruption duration time in hours for those customers that experience an interruption during the year.

² For example, because the system of Consolidated Edison Company of New York, Inc. (Con Edison) includes many large, highly concentrated underground distribution networks that are generally less prone to interruptions than overhead systems, its interruption frequency is extremely low (better) as compared with other utilities.

³ The regulated electric utilities consist of Con Edison, Central Hudson Gas & Electric Corporation (Central Hudson), New York State Electric & Gas Corporation (NYSEG), Niagara Mohawk Power Corporation d/b/a National Grid (National Grid), Rochester Gas and Electric Corporation (RG&E), and Orange & Rockland Utilities, Inc. (Orange & Rockland). PSEG-LI provides interruption data that is used to calculate statewide performance in this report.

PSEG-LI does not have rate orders or RPMs set by the Commission, but has performance metrics associated with reliability set as part of an Operating Service Agreement.

In addition to Staff's review, the utilities are required to perform a reliability analysis. The utilities must submit a formal 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, analyses of worst-performing feeders, and corrective action plans where needed. Recent data is also compared with historic performances to identify positive or negative trends. In addition, staff reviews several other specific metrics that vary by utility to gauge electric reliability.

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. Staff is generally satisfied with the electric reliability performance across the State. Statewide, the three major causes for interruptions were equipment failures, tree contacts, and accidents or events not under the utility's control. Excluding major storms, the statewide interruption frequency for 2015 is slightly worse than the statewide five-year average (as shown in Figure 1 on page 6).⁴ All companies met their RPM targets with respect to frequency. NYSEG, Central Hudson, and PSEG-LI's frequency of outages were worse than their five-year averages. Con Edison, National Grid, RG&E, and Orange and Rockland's frequency performances are in line with their five year averages.

In 2015, the statewide duration performance, excluding major storms, was slightly worse than the statewide five-year average (as shown in Figure 2 on page 7). Most of the duration performances are in line with the five year averages. Central Hudson's average duration was significantly better than last year and its five year average. All utilities except Orange and Rockland met the RPM targets. Orange and

⁴ 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. 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.

Rockland had an average customer outage duration of 2.44 hours, missing its target of 1.85. As a result, the Orange and Rockland is subject to a negative revenue adjustment of \$1.2 million for not meeting the RPM target. It should be noted that a single failure in a transmission substation, as discussed in detail later in the report, had a significant negative impact on the Orange and Rockland's reliability statistics for 2015, otherwise the company had a favorable annual performance. This single event accounted for 20% of the customers interrupted in 2015 and 43% of the year's customer hours of interruption. Following the incident, Staff performed an investigation into the cause of the event and corrective actions have been taken to prevent a similar event in the future.

When reviewing the performances with major storms included, 2015 was better than last year. In fact, the statewide duration was one of the best in the past 10 years. The improved duration performances occurs both when Con Edison's data is included as well as when it is omitted.

INTRODUCTION

This report provides an overview of the electric reliability performance in New York State. Staff uses several means to monitor the levels of service reliability statewide and for each utility individually. First, 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.⁵ Next, the Commission 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. Then, company-wide performance expectations are set in RPMs established in the utilities' rate orders. The RPMs are designed such that companies are subjected to negative revenue adjustments for failing to meet electric reliability targets established for each utility in individual rate orders. There are no revenue adjustments for failure 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 interruption data provided to Staff enables Staff to calculate two primary performance metrics: SAIFI or frequency, and CAIDI or duration. The information is grouped into 10 categories that delineate the nature of the cause of interruption (cause code).⁶ 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,

⁵ 16 NYCRR Part 97, Notification of Interruption of Service, requires utilities to keep detailed back-up data for six years.

⁶ 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.

equipment failures, and accidents.⁷ Staff maintains interruption information in a database that dates back to 1989, which enables it to observe trends. The Commission regulated utilities must submit a formal reliability report by March 31 of each year that compares data against both the system-wide RPM targets and the operating division targets established in the Commission's Service Standards.

The RPMs include company-wide targets for outage frequency and duration. Some RPMs have additional measures to address specific concerns unique to an individual company. Orange and Rockland, while meeting its RPM target for frequency, had an average customer outage duration of 2.44 hours, above its target of 1.85. All other companies met their RPM targets related to companywide electric reliability performance for both frequency and duration.

2015 RELIABILITY PERFORMANCE

The following sections provide a summary discussion of the reliability performance statewide and for each of the major utilities. Individual company discussions identify issues or actions within each company that influenced performance levels for 2015 and indicate company-specific trends where applicable. Each year, Staff prepares an Interruption Report summarizing the monthly interruption data submitted by utilities. The 2015 Interruption Report contains detailed interruption data for each utility and statewide statistics for the past five years. The Interruption Report for 2015 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

⁷ 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.

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 a severe ice storm or a heavy wet snowstorm. Reliability performance data inclusive of major storms reflects the actual customer experience during a year.

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 0.62 in 2015, above the five-year average of 0.58. The frequency performance in 2015 for utilities other than Con Edison is 1.00, worse than last year and the five-year average of 0.93. NYSEG and PSEG LI contributed the most to the change in frequency performance, as discussed later in the report.

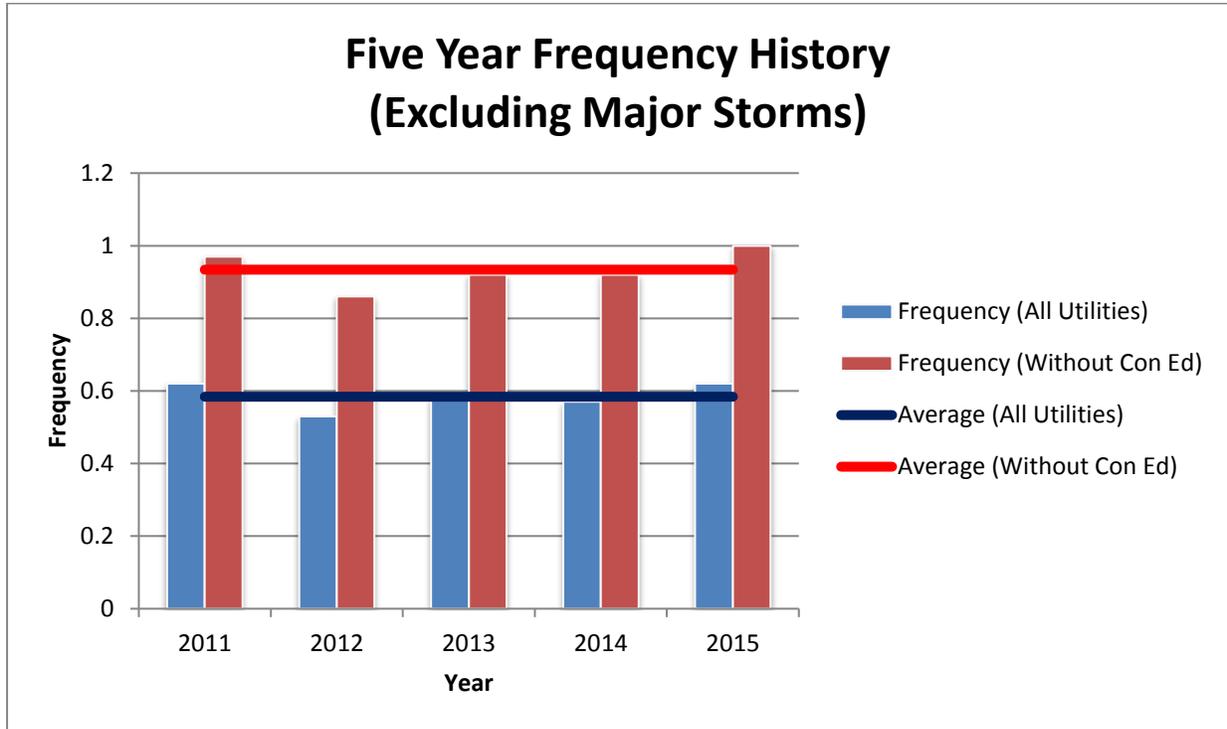


Figure 1: Five Year Statewide Frequency Performance

Figure 2 shows the historical statewide interruption duration index, excluding major storms. The 2015 overall statewide interruption duration index of 1.97 is slightly longer than last year and the five-year average of 1.92. The statewide interruption duration index, excluding Con Edison, was 1.88 hours in 2015, which is worse than the 2014 duration index of 1.83 and the five-year average of 1.84. Overall, the utilities, on a statewide basis, have been performing steadily with respect to duration performance.

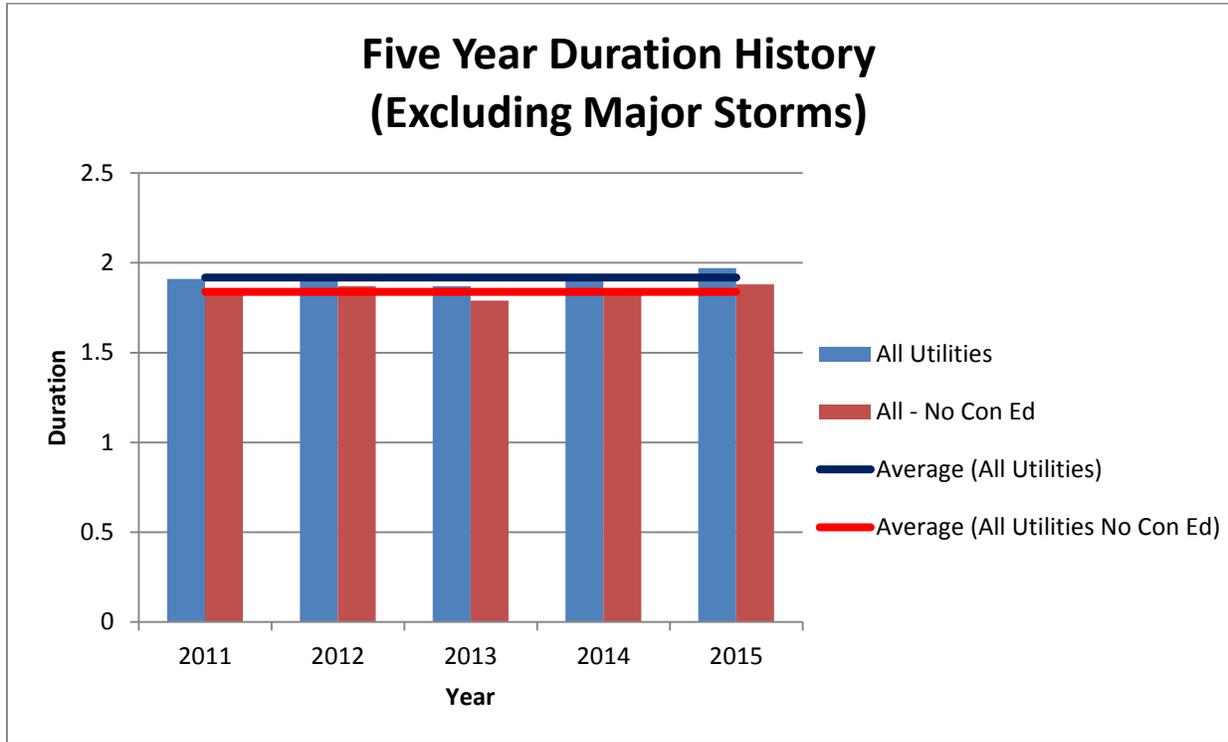


Figure 2: Five Year Statewide Duration Performance

Calendar year 2015 was relatively calm with regard to severe weather effects, as can be seen in Figure 3. No company was required to file a storm report or scorecard with the Commission for an outage lasting longer than three days.⁸ When including major storms, the 2015 statewide duration performance was 2.16. Excluding Con Edison, the statewide duration performances including major storms was 2.08. These are the best values since 2004. This indicates that in 2015, the overall length of interruptions including storms has been shorter. Major storms in 2015 accounted for 20% of customer-hours of interruptions and 10% of the overall number of customers affected.

⁸ 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>; see Case 13–E-0140, Proceeding on Motion of the Commission to Consider Utility Emergency Performance Metrics. Order Approving the Scorecard for Use by the Commission as a Guidance Document to Assess Electric Utility Response to Significant Outages (issued December 23, 2013).

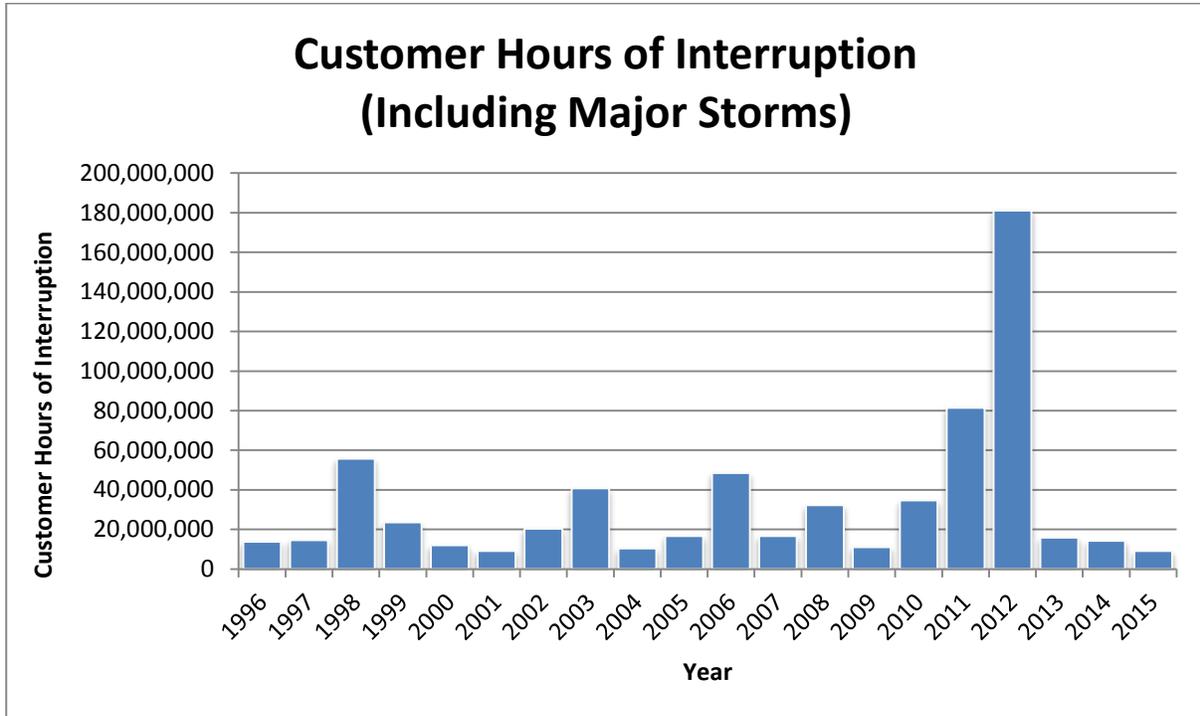


Figure 3: Customer Hours of Interruption (Including Major Storms)

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

Performance Metric	2011	2012	2013	2014	2015	Current RPM Target	5-Year Average
Network Systems ¹¹							
Frequency Customer Interruptions per 1,000 Customers	2.49	1.94	2.17	2.36	2.30	2.50	2.25
Duration Avg. Interruption Hours	4.58	4.75	4.20	4.92	4.58	4.70	4.60
Radial System							
Frequency (SAIFI)	0.48	0.36	0.40	0.33	0.35	0.495	0.38
Duration (CAIDI)	2.12	2.02	2.02	1.83	1.95	2.04	2.00

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

Con Edison serves approximately 3.4 million customers in New York City and Westchester County. Electricity is supplied to 2.5 million customers by network systems. The remaining 900,000 customers are supplied by radial systems. The network system is mostly underground wires housed in conduits, where the radial system is mostly above-ground poles supporting overhead wires. The two systems are subject to different reliability metrics specifically designed for its configuration. The number of interruptions per 1,000 customers served and average interruption duration is used to gauge network performances, while the radial system is measured in the same manner as other utilities.

Network Systems Performance

In 2015, Con Edison met its target for system wide network outage frequency and system-wide network outage duration. The company met its RPM target of 2.50 with a performance of 2.30 for its network outage frequency, and a RPM target of 4.70 with a performance of 4.58 for its network outage duration. Con Edison's network performance for both frequency and duration in 2015 was better than the previous year. The company took several measures to achieve its year-end goal which include relocation of crews in Brooklyn/Queens to the Cleveland Street yard to provide support for outage

restoration in the southeastern part of Brooklyn/Queens. Measures also included the creation of the metric dashboard to keep track of dispatch time and working time which allowed the company to take corrective actions and relocate resources to where they were needed most based on actual daily performance. Another corrective action was creation of a training document, which emphasizes the importance of making temporary repairs to restore customers expeditiously by the use of bridging and shunts as quick restoration methods. Finally, some administrative controls were established by the company to monitor the duration performance such as daily review of significant outages by the control centers, and weekly meetings with all the regions in distribution engineering. All of these mentioned initiatives contributed to the 10.5% reduction in network average outage duration. While these improvements have had a positive impact to 2015, the Company must remain diligent to maintain the focus it had when implementing these programs to continue to improve its performance.

Radial Performance

On its radial system, Con Edison met its system-wide RPM frequency target of 0.495 and its duration performance target of 2.04 with the performance of 0.35 for system-wide frequency and performance of 1.95 for system-wide duration. On the regional level, Queens's and Westchester's performance has improved by 21% and 11% respectively, since 2014. The frequency performance for Bronx, Brooklyn and Staten Island, however, was worse than 2014. Contributing factors to this increase were large outages including animal contacts and a heat event in Staten Island. The heat event, which led to a 37% increase in frequency for Staten Island, involved the loss of seven 33kV supply feeders during the period of July 19 to July 21, 2015. The feeders were impacted by different equipment and joint failures. Con Edison deployed two 2MW generators to support the substations in the area. The continued feeder losses ultimately resulted in approximately 18,400 customer outages

Con Edison's 2015 Radial Interruptions By Cause

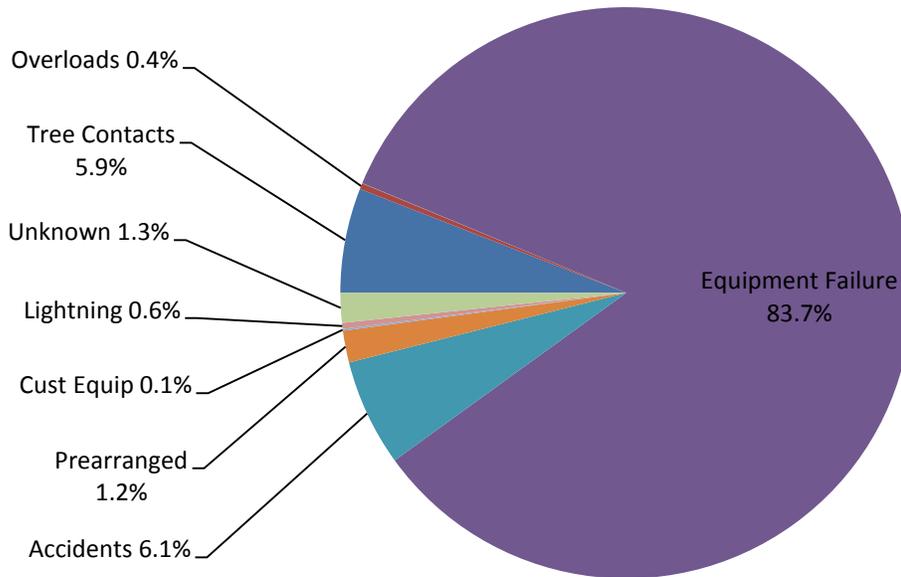


Figure 4: Con Edison’s 2015 Radial Interruptions by Cause (Excluding Major Storms)

With respect to duration, company’s region-wide performance has improved in Queens, Bronx, and Manhattan regions since 2014. There was a 13% improvement in CAIDI in Queens, 15% in the Bronx, and 17% in Manhattan. The improvement in radial duration performance is attributed to corrective action plan that the company established in collaboration with staff, and implemented in 2015, which focused on making temporary repairs that restore service to customers and relocation of the crews. Additional initiatives included the creation of an automatic notification system, which helped the company to relocate resources where needed, and the creation of a reliability dashboard, which allowed the company to track their frequency and duration performances on a daily basis.

In 2015, radial duration performance in Brooklyn and Westchester was slightly worse than last year, increasing by 0.6% and 3.4% respectively. Key drivers for the increases were outages due to animal contacts and traffic accidents. Furthermore, the performance in Staten Island was worse than 2014 with a 40% increase in duration due to the previously discussed July outages. The average

duration for that event was 5.53 hours.

Moving forward, Con Edison plans to continue these corrective actions while maintaining consistent staffing levels around the clock within all response groups and to supplement off-shift response crews with overhead construction crews during the peak summer months. The Company will continue its procedure to promptly make temporary repairs, and will continue to utilize its dashboards to track reliability performance metrics. The company plans on continuing monthly status meetings with control center and emergency personnel to review reliability performance.

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

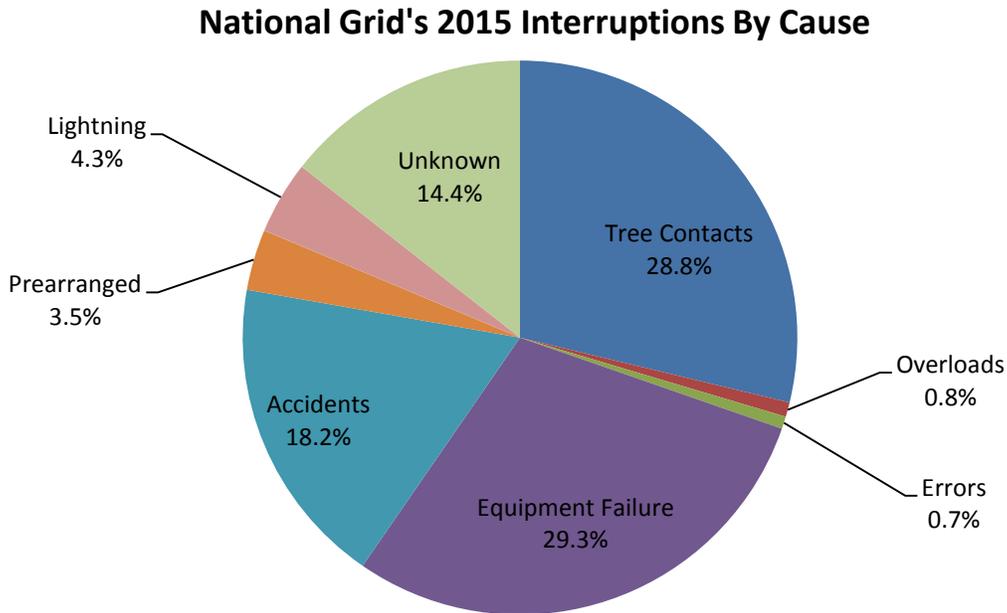
Performance Metric	2011	2012	2013	2014	2015	Current RPM Target	5-Year Average
Frequency (SAIFI)	0.98	0.90	0.99	0.96	1.02	1.13	0.97
Duration (CAIDI)	1.95	2.04	1.96	1.94	2.04	2.05	1.98

National Grid's territory in New York is composed of the following eight regions: Capital, Central, Frontier, Genesee, Mohawk Valley, Northeast, Northern, and Southwest. The company serves approximately 1.6 million customers across the aforementioned regions. For 2015, the Company met both of its RPM reliability targets. The 2015 frequency level of 1.02 is slightly worse than the five-year average, but is below the RPM target of 1.13 by approximately 11%. The 2015 duration performance of 2.04 hours is worse than the previous year and the five year average. National Grid barely met the RPM target of 2.05 hours for duration.

On a regional basis, the Frontier and Southwest Regions had frequency indices better than their goals. The Capital, Central, Frontier, Genesee, Mohawk Valley, and Northern Regions all had duration indices better than their goals. Only the Frontier Region performed satisfactorily with respect to both the frequency and duration goals, while the Northeast was the only region to miss both regional goals.

As shown in Figure 5, equipment failures, tree contacts, and accidents are the predominant causes of interruption throughout National Grid's service territory. The leading cause of interruptions in 2015 was due to equipment failure, accounting for 33% of all customers interrupted, which is comparable to 2014. Equipment failures also accounted for 38% of customer hours interrupted. National Grid addresses the worst performing feeders in each region. Each of these feeders is analyzed to determine the root cause of unsatisfactory performance and a corrective action plan is developed. These action plans are expected to increase feeder reliability and reduce the number of customers affected by future equipment failures. The customer benefits, including the

extent to which reliability is increased, and the cost associated with these programs are reviewed by Staff. The Company's also uses its Inspection and Maintenance Program to identify and correct equipment issues.



**Figure 5: National Grid's 2015 Interruptions by Cause
(Excluding Major Storms)**

Not including major storms, there was a 6% increase in the total number of customers affected by interruptions and a 10% increase in the duration of interruptions in 2015 when compared to 2014. The increase in total number of customers interrupted and duration of interruptions is correlated to a rise in accidents and tree contacts. When compared to 2014, the number of customers interrupted due to accidents rose by approximately 29% and tree contacts by 8%. The increase in total duration of interruptions for accidents and tree contact outages in 2015 were 52% and 12% respectively. While tree contacts were still a significant portion of interruptions this year, the overall progress continues to be favorable. National Grid will continue to address tree contact issues through its vegetation management program which includes the aggressive removal of hazardous trees. Vehicles incidents and animals were the largest contributors to the number of accident-related interruptions. National Grid investigates

all poles that are involved in vehicle accidents to identify hazardous locations and relocates poles if considered necessary. The Company also installs animal guards on transformers impacted by animals while performing maintenance work and all new transformers have animal guards preinstalled.

NEW YORK STATE ELECTRIC AND GAS**Table 3: NYSEG’s Historic Performance Excluding Major Storms**

Performance Metric	2011	2012	2013	2014	2015	Current RPM Target	5-Year Average
Frequency (SAIFI)	1.20	0.98	1.09	1.03	1.17	1.20	1.09
Duration (CAIDI)	2.07	2.00	1.93	1.97	1.97	2.08	1.99

NYSEG serves approximately 877,000 customers across upstate New York. The Company serves a primarily rural area that covers approximately 40% of New York. Operating divisions are located in Auburn, Binghamton, Brewster, Elmira, Geneva, Hornell, Ithaca, Lancaster, Liberty, Lockport, Mechanicville, Oneonta, and Plattsburgh. For reliability reporting purposes, the Lockport Division is combined with Lancaster.

NYSEG’s frequency performance of 1.17 is notably worse than last year’s atypically low 1.03, but still was below its RPM target of 1.20. Approximately one third of the decline in NYSEG’s frequency performance from 2014, however, can be attributed to an equipment failure in a transmission substation. The catastrophic equipment failure occurred on September 2, 2015, during switching operations as part of testing and troubleshooting other equipment in the station. The failure resulted in the loss of all incoming power sources to the substation, thereby causing almost 46,000 customer interruptions in its Liberty division. The substation was also impacted when a transmission line was struck by lightning on August 21, which contributed to the decision to perform additional equipment testing. As part of our investigation into the incidents at the station, Staff required the Company to provide a corrective action plan specific to the affected substation. The work identified by the plan has been completed. Overall, the NYSEG’s frequency performance without this event is in line with historical performances over the past 10 years (2012 and 2014 were two of the best years).

The 2015 duration performance of 1.97 hours matches last year’s performance and remains in line with its five-year average of 1.99 hours. The Company met its RPM reliability target of 2.08 for duration in 2015. On a divisional basis, the Binghamton, Brewster, Geneva, Ithaca, Oneonta, and Plattsburgh Operating Divisions all

had frequency and duration performances which were better than their established goals. The Auburn Division had a frequency index better than its goal but its duration performance was worse than the goal, while the Elmira, Liberty and Mechanicville Divisions had duration indices better than their goals but frequency performances were worse. The Hornell and Lancaster Divisions both had frequency and duration performances which were worse than their goals.

NYSEG's 2015 Interruptions By Cause

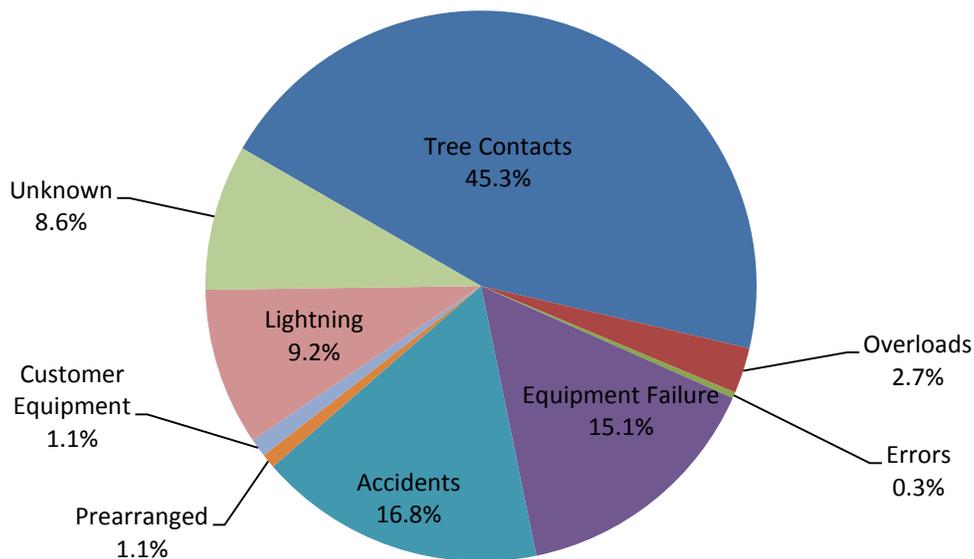


Figure 6: NYSEG’s 2015 Interruptions by Cause (Excluding Major Storms)

Tree contacts and accidents were the predominant causes of interruption throughout NYSEG’s twelve operating divisions in 2015. NYSEG historically has experienced a higher rate of tree-caused outages as compared to the other New York State utilities. In the past, NYSEG’s vegetation management practice was to only trim single phase distribution circuits on an as needed basis. On October 1, 2013, the Commission Ordered NYSEG to expand its vegetation management practices⁹. As a

⁹ Case 13-E-0117, New York State Electric & Gas Corporation - Petition for Authorization to Implement Full Cycle Distribution Vegetation Management, Order Denying Petition and Establishing Further Procedures (issued October 1, 2013).

result, the Company filed its 2014 Vegetation Management Plan, which addresses tree trimming on a company-wide basis in accordance with the Order. NYSEG continued to follow this plan in 2015. The Company has a focused effort in the Brewster and Liberty Divisions due to the tree density in these areas, and continues to trim trouble areas in the other Divisions. NYSEG's performance mechanisms remains in place for maintaining vegetation on an established minimum quantity of distribution circuit-miles per calendar year. The Company met and exceeded its target of performing 2,700 miles of distribution clearing in 2015, completing a total of 3,101 miles. In addition, the Company also met its targeted spending level of \$20 million for vegetation management in 2015. NYSEG will continue to focus on its distribution vegetation management efforts with the goal of long-term reductions in tree related interruptions.

ROCHESTER GAS AND ELECTRIC**Table 4: RG&E's Historic Performance Excluding Major Storms**

Performance Metric	2011	2012	2013	2014	2015	Current RPM Target	5-Year Average
Frequency (SAIFI)	0.87	0.74	0.73	0.76	0.75	0.90	0.77
Duration (CAIDI)	1.85	1.79	1.82	1.74	1.82	1.90	1.81

RG&E serves approximately 371,000 customers over its franchise area. The Company's territory 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.

For the past five years, RG&E has consistently maintained high levels of electric service reliability to its customers for both frequency and duration. In 2015, RG&E outperformed its corporate RPM targets of 0.90 for frequency and 1.90 for duration, which were established in its most recent rate order. While RG&E met its reliability targets at the corporate level in 2015, only one of its four divisions, Rochester, satisfied both the frequency and duration goals at the division level. The Canandaigua, Genesee, and Lakeshore Divisions all had satisfactory frequency indices with respect to their goals, but did not satisfy their duration indices.

Overall, the three major causes for interruptions throughout RG&E's service divisions were equipment failures, tree contacts, and accidents as shown in Figure 7. With regard to tree interruptions, RG&E will continue trimming distribution and transmission lines for hot spot and maintenance clearing. At the end of 2015, RG&E completed the last year of their first 5-year tree trimming cycle and the beginning of 2016 starts the first year of the next 5-year cycle. With regard to equipment failures, RG&E continues to thermographically inspect equipment on an as needed basis. If equipment failures continue to increase, RG&E may need to implement a yearly thermographic inspection cycle program. The Company continues to review accident incidents to

determine if changes or modifications to their systems can help mitigate accident-related outages.

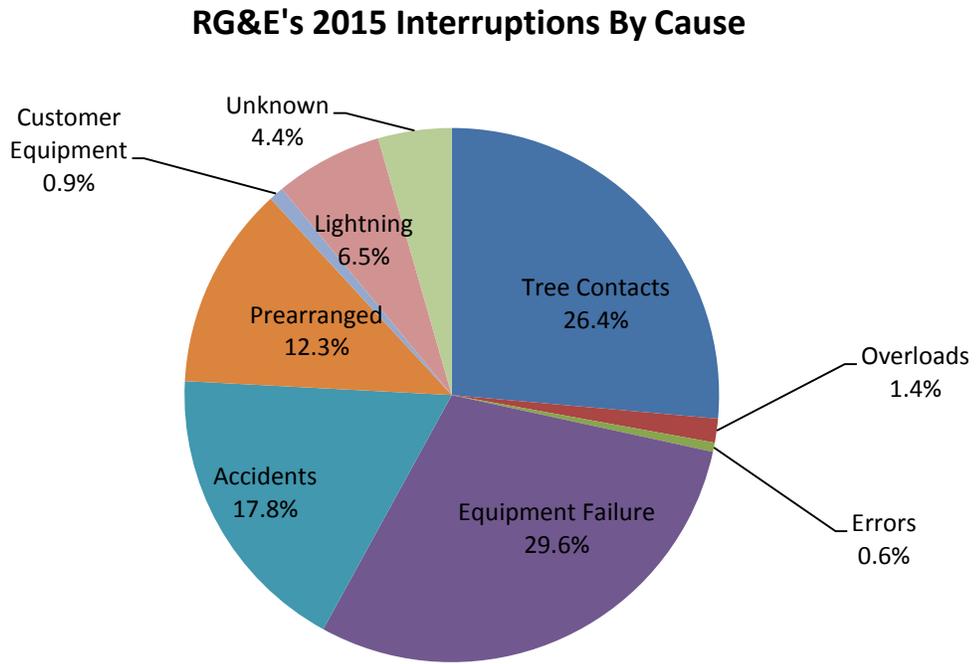


Figure 7: RG&E's 2015 Interruptions by Cause (Excluding Major Storms)

CENTRAL HUDSON GAS AND ELECTRIC**Table 5: Central Hudson's Historic Performance Excluding Major Storms**

Performance Metric	2011	2012	2013	2014	2015	Current RPM Target	5-Year Average
Frequency (SAIFI)	1.20	1.00	1.02	1.24	1.28	1.30	1.15
Duration (CAIDI)	2.26	2.38	2.30	2.27	2.07	2.50	2.25

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

In 2015, Central Hudson met its corporate RPM targets for both frequency and duration. Central Hudson's frequency performance of 1.28 in 2015 is in line with the 2014 performance, but worse than the five year average. Central Hudson's duration performance in 2015 was 2.07, which is better than 2014 and the five year average.

On a divisional level, the Fishkill and Newburgh Operating Divisions had frequency indices, which were better than their established goals. The Poughkeepsie Division slightly missed the frequency goal for the first time in the past five years. The major causes contributing to the increased frequency of outages are breaker lockouts attributed to tree contacts and minor storms. The Catskill and Kingston Operating Divisions had frequency indices over their goals. The Catskill Division was worse than its frequency goal in part because of one outage affecting approximately 8,900 customers. The Kingston Division missed its frequency goal mainly due to tree contacts. As part of its distribution line clearance program, 20 circuits that serve approximately 36% of the customers in the Kingston Division are scheduled for trimming in 2016. The scheduled trimming is expected to improve tree related SAIFI in the district.

The Catskill, Fishkill, and Newburgh Divisions met their duration targets in 2015. The remaining two districts, Poughkeepsie and Kingston, had duration performances that were worse than their established individual district targets. Tree

related outages were the main driver increasing duration hours in both districts. Central Hudson performed similarly in regards to duration performance in 2014.

Central Hudson's 2015 Interruptions By Cause:

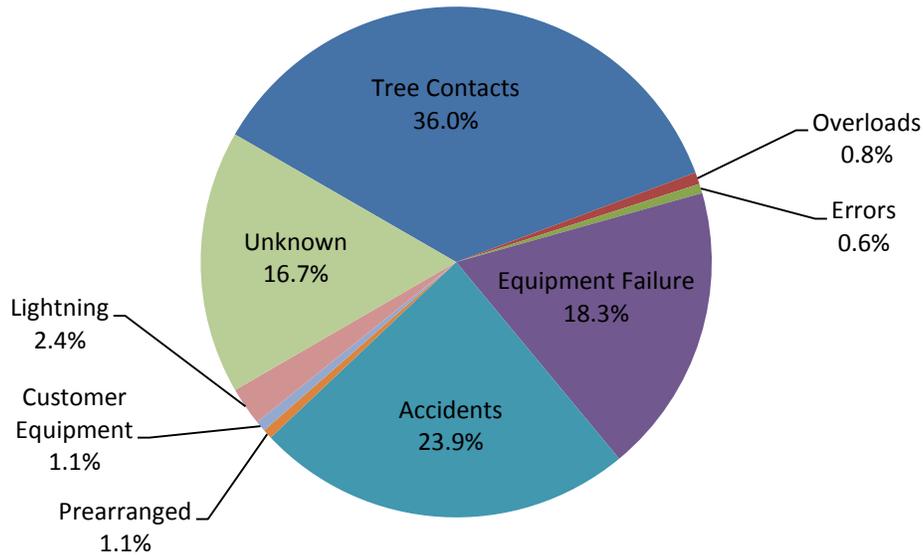


Figure 8: Central Hudson's 2015 Interruptions by Cause (Excluding Major Storms)

The pie chart shows that the majority of interruptions are caused by tree contacts, which has historically been the greatest driver of Central Hudson's electric service reliability. Tree contact interruptions had a negligible change when compared with 2014, but were more than the five year average. The largest contributors to tree contact interruptions were limbs and trees outside the clearance zone; diseases affecting trees; and weather conditions such as rain, wind, and/or lightning. Over the past five years, tree-related outages have been trending upwards in part due to the impact Dutch elm disease and invasive species such as emerald ash borer on the region. To mitigate the impacts of tree related outages, an assessment will be performed for each outage that causes a breaker lockout. Trends will be identified related to failure mode, condition, species, and location to develop a process for improved identification and removal of danger trees during routine trimming. Outages as a result of vehicle accidents increased by 14% whereas animal contacts decreased by 12% compared to 2014. Central Hudson

continues to install animal guards and electronic reclosers so fewer customers would be impacted as a result of interruptions caused by animal contacts. Equipment failures decreased by 27% when compared to 2014. Central Hudson has continued working on multiple programs and projects to increase its reliability performance. Among these projects are integration of remote communication for automatic load transfer switches, switched capacitors, breaker replacement, cable replacement, and distribution line infrared surveys of the three-phase mainline.

ORANGE & ROCKLAND**Table 6: O&R's Historic Performance Excluding Major Storms**

Performance Metric	2011	2012	2013	2014	2015	Current RPM Target	5-Year Average
Frequency (SAIFI)	0.97	0.94	0.89	1.08	1.01	1.20	0.98
Duration (CAIDI)	1.61	1.68	1.62	1.62	2.44	1.85	1.80

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

Orange & Rockland serves approximately 221,500 customers in three New York counties along the New Jersey and Pennsylvania border. In 2015, the Company's frequency performance was better than 2014 and in line with the five-year average. Orange and Rockland also met its frequency RPM target of 1.20. The Company's duration performance did not meet the RPM target in 2015 due to a transmission substation outage event that occurred in the Company's Western Division. The substation failure resulted in power outages to 45,387 customers and took approximately 6.5 hours to restore 80% of the customers impacted. This single event accounted for 20% of the customers interrupted in 2015 and 43% of the year's customer hours of interruption.

On December 5, 2015, a substation bus connecting cable fell down onto one of two bus sections below it, causing the circuit breakers to de-energize the entire substation. The loss of the station affected 13 distribution stations downstream that serve approximately 45,000 customers. The confined nature of the older substation impacted the restoration process. Additionally, because of concerns with the sudden heating equipment's draw on its low pressure gas system following electric restoration, certain areas proceeded on more of a piecemeal basis versus energizing the entire circuit at once. This action was consistent with O&R defined procedures and required more human interaction to switch and isolate sections of the distribution feeder. While appropriate actions were taken by the Company to maintain safety, the overall length of the restoration had a dramatic impact on its duration performance.

While only a single section of bus connecting cable failed, the substation had numerous similar overhead bus connection cables. The Company and Staff concurred that the remaining ones should be upgraded to prevent similar occurrences. The replacement work, as well as other improvements to facilitate the ability to work in the station, were performed over the past six months. Orange and Rockland also hired a consultant to determine the nature and cause of the failure, who concluded to be the result of high temperature creep rupture as a direct consequence of continuous extended period of exposure to locally elevated temperatures in the vicinity of the tap-off connectors and connecting bus cable clamp assembly. Overall, Staff has been working with the Company and is satisfied with its response to the event and the corrective actions taken.

O&R's 2015 Interruptions By Cause

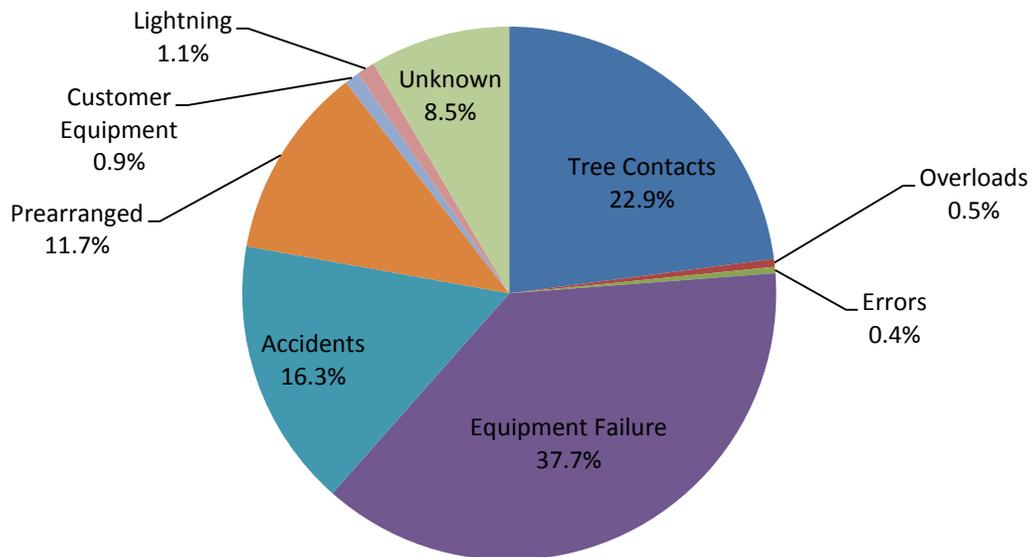


Figure 10: Orange & Rockland’s 2015 Interruptions by Cause (Excluding Major Storms)

As shown in Figure 10 equipment failures and tree contacts were the major causes of interruptions. Interruptions due to equipment failure has improved by approximately 12% since 2014. The Company addresses reliability issues resulting from equipment failures through capital improvement/resiliency programs, such as cable replacement, distribution pole replacement programs, and upgrading and installing new

substations. The goal of the Company's infrastructure improvement projects and service reliability programs is to decrease the frequency of interruptions by focusing on reducing and minimizing the large customer count interruptions. In addition to replacing aging equipment, any new or upgraded substation includes additional resiliency and reliability characteristics, such as staggered circuit configurations and the use of spacer cables at substation exits. These improvements come from lessons learned in the aftermath of storms such as Sandy and Irene.

The number of interruptions due to tree contact also improved over 2014. This follows the general downward trend of tree related interruptions over the past several years. The Company continues to have a comprehensive vegetation management/tree trimming program which is completed on a 4 year cycle. Enhanced vegetation management efforts are expected to continue to reduce the number of tree related interruptions and the impact on customers.

PSEG LI**Table 7: PSEG LI's Historic Performance Excluding Major Storms**

Performance Metric	2011	2012	2013	2014	2015	Current OSA Target	5-Year Average
Frequency (SAIFI)	0.75	0.67	0.71	0.72	0.84	0.91	0.74
Duration (CAIDI)	1.14	1.26	1.13	1.36	1.31	1.42	1.24

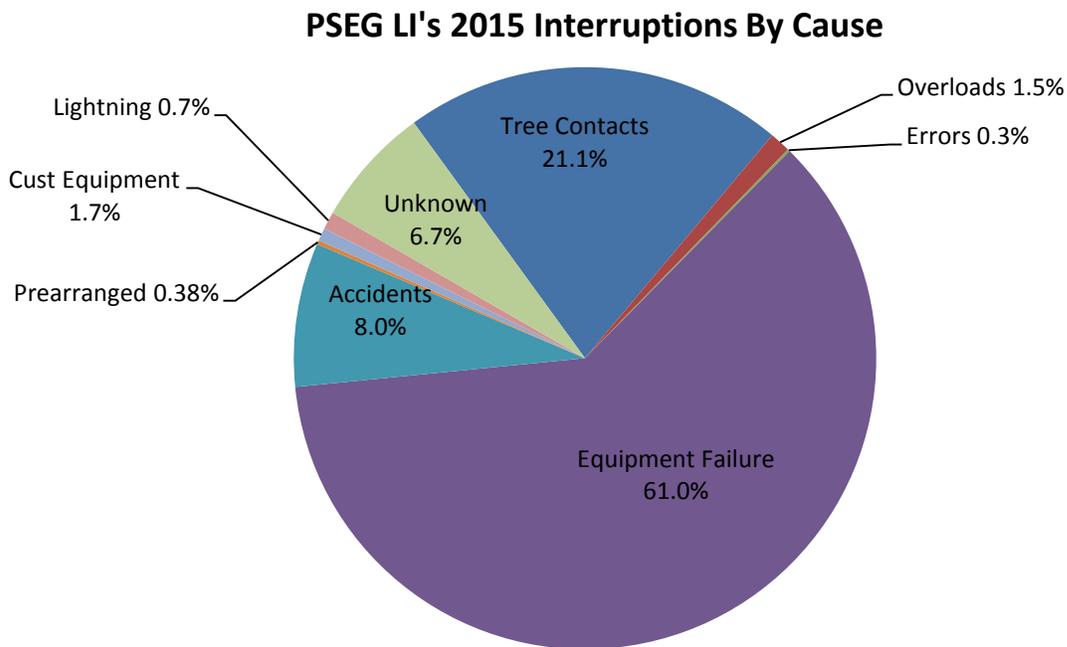
PSEG LI serves approximately 1,110,000 customers on Long Island. The utility's territory includes Nassau County, Suffolk County, and the Rockaway Peninsula. PSEG LI began operating and maintaining the electric system on Long Island on January 1, 2014; prior to PSEG LI, National Grid was operating the system. Unlike the other utilities, PSEG LI does not have rate orders or RPMs set by the Commission. Instead, performance metrics were set as part of PSEG LI's Amended Operating Service Agreement (OSA) with the Long Island Power Authority.¹⁰ The OSA performance targets for 2015 were minimally adjusted to account for the new outage management system that was installed the second half of 2014.

In 2015, the Company's frequency of interruptions was 0.84, which is worse than last year and the five-year average. The duration performance of PSEG-LI in 2015 was 1.31 hours, which is a slight improvement over the Company's performance in 2014. PSEG LI indicated that its frequency performance was negatively impacted with the adoption of a new safety program, the Non-Reclose Assurance (NRA) program, in addition to minor storm activity. The NRA program, which is used by other utilities in New York, is designed to protect employees working on energized circuits by disabling the reclosers ability to re-energize a circuit after sensing a fault. When circuits are in the NRA mode, events typically restored through a recloser operation, such as falling tree limb, may remain out of service over five minutes thus are considered an outage from a reliability analysis perspective. In 2015, PSEG LI has 23 of these types of incidents,

¹⁰ Amended and Restated Operations Services Agreement between Long Island Lighting Company d/b/a LIPA and PSEG Long Island LLC, Dated as of December 31, 2013. (<http://www.lipower.org/papers/agreements.html>)

negatively impacting its performance statistics. PSEG LI has been reworking the application of the program to minimize the times circuits are in the NRA mode while assuring worker safety is not compromised (for example, placing the reclosures in normal operating mode over a weekend when no scheduled work is to be performed). The Company is also undertaking a program to install remote controllability for equipment that would be switched in and out of NRA mode, which will further allow it to minimize the notable impact the NRA program may on system performance metrics.

PSEG LI hired PA Consulting to help evaluate how its new OMS system would impact the reliability metrics. The evaluation compared similar outage and response activities that occurred prior to and post the implementation of the new OMS system. The analysis, however, focused mostly on routine activities. Through its initial efforts, PSEG LI identified that data captured during minor storm events may have artificially increased its frequency performance. The Company is responding to correct these lessons learned to alleviate this concern. Staff believes a more rigorous QA/QC program would be beneficial to continue to examine and rectify data errors. Staff has asked for a corrective action plan.



**Figure 12: PSEG LI's 2015 Interruptions by Cause
(Excluding Major Storms)**

Equipment failures are the leading cause of interruptions, followed by tree contacts. PSEG LI, under a \$730 million FEMA grant, has begun a series of storm hardening and resiliency projects. The projects are intended to improve system resilience and mitigate the impact of future storms. Current project work includes installation of Automatic Sectionalizing Units and hardening distribution circuits. Under the grant, PSEG-LI completed hardening work on six circuits in 2015. The incremental work is projected to take place through 2019.

In 2014, PSEG LI began a new tree trimming program, focusing on improving distribution vegetation management and reducing tree related outages. Changes include trimming all distribution circuits on consistent cycle instead of the previous methodology of three, five, or seven year cycles based on circuit type and expanding the “trim box” or the clearance around the wires. The first round of the new trimming is expected to be completed by the end of 2018.

APPENDIX

The 2015 Interruption Report

Office of Electric, Gas, and Water

June 2016

ATTACHMENT
Definitions and Explanations of Terms Used in The
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.

Customer Served is the number of customers as of the last day of the current year. For example, for the calendar year of 2015, customers served is the number of customers as of December 31, 2015. 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.

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 year. Mathematically it is SAIFI multiplied by CAIDI.

Interruptions per 1,000 Customers Served is the number of interruptions divided by the number of customers served at the end of the previous year, 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 the geographical subdivision of each electric utilities franchise territory. These are also called regions, divisions, or districts.

Most of the data is presented in 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 under a 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. Much of the Con Edison distribution system consists of a secondary network. In a secondary network, a customer is fed multiple supplies, significantly reducing the probability of interruptions.

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

	2011	2012	2013	2014	2015	5 YR AVG
CHGE						
FREQUENCY	1.20	1.00	1.02	1.24	1.28	1.15
DURATION	2.26	2.38	2.30	2.27	2.07	2.25
CONED						
FREQUENCY	0.15	0.10	0.12	0.11	0.11	0.12
DURATION	2.71	2.39	2.67	3.02	3.11	2.78
PSEG LI						
FREQUENCY	0.75	0.67	0.71	0.72	0.84	0.74
DURATION	1.14	1.26	1.13	1.36	1.31	1.24
NAT GRID						
FREQUENCY	0.98	0.90	0.99	0.96	1.02	0.97
DURATION	1.95	2.04	1.96	1.94	2.04	1.98
NYSEG						
FREQUENCY	1.20	0.98	1.10	1.03	1.17	1.09
DURATION	2.07	2.00	1.93	1.97	1.97	1.99
O&R						
FREQUENCY	0.97	0.94	0.89	1.08	1.01	0.98
DURATION	1.61	1.68	1.62	1.62	2.44	1.80
RG&E						
FREQUENCY	0.87	0.74	0.73	0.76	0.75	0.77
DURATION	1.85	1.79	1.82	1.74	1.82	1.81
STATEWIDE (WITHOUT CONED)						
FREQUENCY	0.97	0.85	0.92	0.92	1.00	0.93
DURATION	1.82	1.87	1.79	1.83	1.88	1.84
STATEWIDE (WITH CONED)						
FREQUENCY	0.62	0.53	0.57	0.57	0.62	0.58
DURATION	1.91	1.91	1.87	1.93	1.97	1.92

** Customer Served is the number of customers as of the last day of the current year. For example, for the calendar year 2015, customers served is the number of customers as of December 31, 2015. For indices using customers served, the previous year is used.

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

	2011	2012	2013	2014	2015	5 YR AVG
CHGE						
FREQUENCY	2.71	1.80	1.06	1.62	1.38	1.71
DURATION	15.95	8.55	2.36	3.74	2.09	8.17
CONED						
FREQUENCY	0.26	0.38	0.13	0.11	0.11	0.20
DURATION	15.45	71.91	2.71	3.09	3.14	32.51
PSEG LI						
FREQUENCY	1.36	1.84	0.89	0.76	1.00	1.17
DURATION	9.69	22.55	1.65	1.42	1.95	10.11
NAT GRID						
FREQUENCY	1.48	1.13	1.39	1.17	1.06	1.24
DURATION	5.03	2.67	3.61	2.87	2.07	3.37
NYSEG						
FREQUENCY	2.44	1.85	1.41	1.34	1.28	1.66
DURATION	9.86	12.63	2.34	2.97	2.14	6.89
O&R						
FREQUENCY	2.12	1.86	1.02	1.19	1.01	1.43
DURATION	15.32	34.66	2.06	2.40	2.44	14.45
RG&E						
FREQUENCY	1.05	0.92	0.91	0.85	0.87	0.91
DURATION	1.99	3.01	2.75	2.32	2.14	2.43
STATEWIDE (WITHOUT CONED)						
FREQUENCY	1.72	1.51	1.19	1.10	1.09	1.32
DURATION	8.92	13.52	2.76	2.67	2.08	6.68
STATEWIDE (WITH CONED)						
FREQUENCY	1.10	1.03	0.73	0.68	0.67	0.84
DURATION	9.58	22.70	2.75	2.70	2.16	9.27

** Customer Served is the number of customers as of the last day of the current year. For example, for the calendar year 2015, customers served is the number of customers as of December 31, 2015. For indices using customers served, the previous year is used.

STATEWIDE (WITHOUT CON ED)

Excluding Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	53,557	49,827	52,863	53,723	53,551	52,704
Number of Customer-Hours	7,868,243	7,086,646	7,321,410	7,535,845	8,408,508	7,644,130
Number of Customers Affected	4,319,688	3,799,744	4,090,130	4,117,993	4,474,728	4,160,457
Number of Customers Served	4,452,075	4,468,023	4,466,568	4,480,215	4,494,878	4,472,352
Average Duration Per Customer Affected (CAIDI)	1.82	1.87	1.79	1.83	1.88	1.84
Average Duration Per Customers Served	1.77	1.59	1.64	1.69	1.88	1.71
Interruptions Per 1000 Customers Served	12.04	11.19	11.83	12.03	11.95	11.78
Number of Customers Affected Per Customer Served (SAIFI)	0.97	0.85	0.92	0.92	1.00	0.93

STATEWIDE (WITH CON ED)

Excluding Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	68,719	60,526	66,804	69,760	70,017	67,165
Number of Customer-Hours	9,195,777	7,914,336	8,380,014	8,624,342	9,582,882	8,739,470
Number of Customers Affected	4,809,183	4,145,730	4,487,270	4,478,047	4,852,363	4,554,519
Number of Customers Served	7,772,888	7,806,754	7,815,448	7,842,410	7,880,054	7,823,511
Average Duration Per Customer Affected (CAIDI)	1.91	1.91	1.87	1.93	1.97	1.92
Average Duration Per Customers Served	1.19	1.02	1.07	1.10	1.22	1.12
Interruptions Per 1000 Customers Served	8.88	7.79	8.56	8.93	8.93	8.59
Number of Customers Affected Per Customer Served (SAIFI)	0.62	0.53	0.57	0.57	0.62	0.58

** Customer Served is the number of customers as of the last day of the current year.

For example, for the calendar year of 2014, customers served is the number of customers as of December 31, 2014.

For indices using customers served, the previous year is used.

STATEWIDE (WITHOUT CON ED)

Including Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	97,586	88,800	63,885	62,009	56,723	73,801
Number of Customer-Hours	68,027,851	90,905,843	14,653,454	13,143,570	10,190,618	39,384,267
Number of Customers Affected	7,630,118	6,721,953	5,315,365	4,930,250	4,892,482	5,898,034
Number of Customers Served	4,452,075	4,468,023	4,466,568	4,480,215	4,494,878	4,472,352
Average Duration Per Customer Affected (CAIDI)	8.92	13.52	2.76	2.67	2.08	6.68
Average Duration Per Customers Served	15.30	20.42	3.28	2.94	2.27	8.81
Interruptions Per 1000 Customers Served	21.94	19.95	14.30	13.88	12.66	16.50
Number of Customers Affected Per Customer Served (SAIFI)	1.72	1.51	1.19	1.10	1.09	1.32

STATEWIDE (WITH CON ED)

Including Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	120,005	116,263	78,024	78,436	73,468	93,239
Number of Customer-Hours	81,434,150	181,026,043	15,785,339	14,300,946	11,381,657	60,785,627
Number of Customers Affected	8,498,092	7,975,227	5,732,710	5,304,278	5,271,638	6,556,389
Number of Customers Served	7,772,888	7,806,754	7,815,448	7,842,410	7,880,054	7,823,511
Average Duration Per Customer Affected (CAIDI)	9.58	22.70	2.75	2.70	2.16	9.27
Average Duration Per Customers Served	10.52	23.29	2.02	1.83	1.45	7.77
Interruptions Per 1000 Customers Served	15.51	14.96	9.99	10.04	9.37	11.92
Number of Customers Affected Per Customer Served (SAIFI)	1.10	1.03	0.73	0.68	0.67	0.84

** Customer Served is the number of customers as of the last day of the current year.
For example, for the calendar year of 2014, customers served is the number of customers as of December 31, 2014.
For indices using customers served, the previous year is used.

CENTRAL HUDSON

Excluding Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	6,293	5,566	5,497	6,608	6,387	6,070
Number of Customer-Hours	814,052	716,105	708,055	844,753	797,184	776,030
Number of Customers Affected	359,769	301,232	307,889	371,442	384,364	344,939
Number of Customers Served	299,971	300,537	299,591	300,225	300,647	300,194
Average Duration Per Customer Affected (CAIDI)	2.26	2.38	2.30	2.27	2.07	2.25
Average Duration Per Customers Served	2.72	2.39	2.36	2.82	2.66	2.59
Interruptions Per 1000 Customers Served	21.01	18.56	18.29	22.06	21.27	20.22
Number of Customers Affected Per Customer Served (SAIFI)	1.20	1.00	1.02	1.24	1.28	1.15

CENTRAL HUDSON

Including Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	12,076	8,603	5,665	8,160	6,587	8,218
Number of Customer-Hours	12,930,372	4,620,086	751,644	1,810,447	867,550	4,196,020
Number of Customers Affected	810,464	540,447	318,352	483,848	414,932	513,609
Number of Customers Served	299,971	300,537	299,591	300,225	300,647	300,194
Average Duration Per Customer Affected (CAIDI)	15.95	8.55	2.36	3.74	2.09	8.17
Average Duration Per Customers Served	43.16	15.40	2.50	6.04	2.89	13.98
Interruptions Per 1000 Customers Served	40.31	28.68	18.85	27.24	21.94	27.38
Number of Customers Affected Per Customer Served (SAIFI)	2.71	1.80	1.06	1.62	1.38	1.71

** Customer Served is the number of customers as of the last day of the current year.

For example, for the calendar year of 2014, customers served is the number of customers as of December 31, 2014.

For indices using customers served, the previous year is used.

CON ED (SYSTEM)

Excluding Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	15,162	10,699	13,941	16,037	16,466	14,461
Number of Customer-Hours	1,327,534	827,690	1,058,604	1,088,497	1,174,374	1,095,340
Number of Customers Affected	489,495	345,986	397,140	360,054	377,635	394,062
Number of Customers Served	3,320,813	3,338,731	3,348,880	3,362,195	3,385,176	3,351,159
Average Duration Per Customer Affected (CAIDI)	2.71	2.39	2.67	3.02	3.11	2.78
Average Duration Per Customers Served	0.40	0.25	0.32	0.33	0.35	0.33
Interruptions Per 1000 Customers Served	4.61	3.22	4.18	4.79	4.90	4.32
Number of Customers Affected Per Customer Served (SAIFI)	0.15	0.10	0.12	0.11	0.11	0.12

CON ED (SYSTEM)

Including Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	22,419	27,463	14,139	16,427	16,745	19,439
Number of Customer-Hours	13,406,299	90,120,200	1,131,885	1,157,376	1,191,039	21,401,360
Number of Customers Affected	867,974	1,253,274	417,345	374,028	379,156	658,355
Number of Customers Served	3,320,813	3,338,731	3,348,880	3,362,195	3,385,176	3,351,159
Average Duration Per Customer Affected (CAIDI)	15.45	71.91	2.71	3.09	3.14	32.51
Average Duration Per Customers Served	4.07	27.14	0.34	0.35	0.35	6.39
Interruptions Per 1000 Customers Served	6.81	8.27	4.23	4.91	4.98	5.80
Number of Customers Affected Per Customer Served (SAIFI)	0.26	0.38	0.13	0.11	0.11	0.20

CON ED (NETWORK)

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	8,151	4,758	7,574	10,080	10,523	8,217
Number of Customer-Hours	419,830	187,740	348,433	543,158	569,966	413,825
Number of Customers Affected	61,450	29,645	45,294	63,013	67,966	53,474
Number of Customers Served	2,439,565	2,454,427	2,461,468	2,473,101	2,497,705	2,465,253
Average Duration Per Customer Affected (CAIDI)	6.83	6.33	7.69	8.62	8.39	7.74
Average Duration Per Customers Served	0.17	0.08	0.14	0.22	0.23	0.17
Interruptions Per 1000 Customers Served	3.39	1.95	3.09	4.10	4.25	3.33
Number of Customers Affected Per Customer Served (SAIFI)	0.03	0.01	0.02	0.03	0.03	0.02

** Customer Served is the number of customers as of the last day of the current year.

For example, for the calendar year of 2014, customers served is the number of customers as of December 31, 2014.

For indices using customers served, the previous year is used.

CON ED (RADIAL)

Excluding Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	7,011	5,941	6,367	5,957	5,943	6,244
Number of Customer-Hours	907,704	639,950	710,171	545,339	604,408	681,514
Number of Customers Affected	428,045	316,341	351,846	297,041	309,669	340,588
Number of Customers Served	881,248	884,304	887,412	889,094	887,471	885,906
Average Duration Per Customer Affected (CAIDI)	2.12	2.02	2.02	1.84	1.95	2.00
Average Duration Per Customers Served	1.02	0.73	0.80	0.61	0.68	0.77
Interruptions Per 1000 Customers Served	7.90	6.74	7.20	6.71	6.68	7.05
Number of Customers Affected Per Customer Served (SAIFI)	0.48	0.36	0.40	0.33	0.35	0.38

CON ED (RADIAL)

Including Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	14,268	22,705	6,565	6,347	6,222	11,221
Number of Customer-Hours	12,986,469	89,932,460	783,452	614,218	621,073	20,987,534
Number of Customers Affected	806,524	1,223,629	372,051	311,015	311,190	604,882
Number of Customers Served	881,248	884,304	887,412	889,094	887,471	885,906
Average Duration Per Customer Affected (CAIDI)	16.10	73.50	2.11	1.97	2.00	34.70
Average Duration Per Customers Served	14.63	102.05	0.89	0.69	0.70	23.69
Interruptions Per 1000 Customers Served	16.07	25.76	7.42	7.15	7.00	12.67
Number of Customers Affected Per Customer Served (SAIFI)	0.91	1.39	0.42	0.35	0.35	0.68

** Customer Served is the number of customers as of the last day of the current year.

For example, for the calendar year of 2014, customers served is the number of customers as of December 31, 2014.

For indices using customers served, the previous year is used.

NATIONAL GRID

Excluding Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	14,442	13,506	14,160	13,271	13,385	13,753
Number of Customer-Hours	3,048,983	2,926,731	3,102,175	2,979,765	3,343,062	3,080,143
Number of Customers Affected	1,564,208	1,434,256	1,585,651	1,537,355	1,640,947	1,552,483
Number of Customers Served	1,601,552	1,603,982	1,607,502	1,608,164	1,609,787	1,606,197
Average Duration Per Customer Affected (CAIDI)	1.95	2.04	1.96	1.94	2.04	1.98
Average Duration Per Customers Served	1.91	1.83	1.93	1.85	2.08	1.92
Interruptions Per 1000 Customers Served	9.05	8.43	8.83	8.26	8.32	8.56
Number of Customers Affected Per Customer Served (SAIFI)	0.98	0.90	0.99	0.96	1.02	0.97

NATIONAL GRID

Including Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	20,881	16,440	19,069	16,377	13,789	17,311
Number of Customer-Hours	11,882,312	4,811,549	8,047,050	5,374,356	3,543,893	6,731,832
Number of Customers Affected	2,363,763	1,804,502	2,232,186	1,874,011	1,711,850	1,997,262
Number of Customers Served	1,601,552	1,603,982	1,607,502	1,608,164	1,609,787	1,606,197
Average Duration Per Customer Affected (CAIDI)	5.03	2.67	3.61	2.87	2.07	3.37
Average Duration Per Customers Served	7.45	3.00	5.02	3.34	2.20	4.19
Interruptions Per 1000 Customers Served	13.09	10.27	11.89	10.19	8.57	10.78
Number of Customers Affected Per Customer Served (SAIFI)	1.48	1.13	1.39	1.17	1.06	1.24

** Customer Served is the number of customers as of the last day of the current year.

For example, for the calendar year of 2014, customers served is the number of customers as of December 31, 2014.

For indices using customers served, the previous year is used.

NYSEG

Excluding Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	10,272	9,424	10,022	9,925	10,628	10,054
Number of Customer-Hours	2,127,891	1,675,701	1,814,646	1,738,911	1,992,932	1,870,016
Number of Customers Affected	1,028,868	839,427	940,750	884,683	1,012,506	941,247
Number of Customers Served	854,682	858,396	855,347	867,392	875,383	862,240
Average Duration Per Customer Affected (CAIDI)	2.07	2.00	1.93	1.97	1.97	1.99
Average Duration Per Customers Served	2.48	1.96	2.11	2.03	2.30	2.17
Interruptions Per 1000 Customers Served	11.99	11.03	11.68	11.60	12.25	11.66
Number of Customers Affected Per Customer Served (SAIFI)	1.20	0.98	1.10	1.03	1.17	1.09

NYSEG

Including Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	19,743	17,850	11,729	12,332	11,203	14,571
Number of Customer-Hours	20,636,612	19,975,449	2,830,224	3,391,684	2,381,242	9,843,042
Number of Customers Affected	2,093,127	1,581,500	1,210,993	1,143,341	1,110,385	1,427,869
Number of Customers Served	854,682	858,396	855,347	867,392	875,383	862,240
Average Duration Per Customer Affected (CAIDI)	9.86	12.63	2.34	2.97	2.14	6.89
Average Duration Per Customers Served	24.09	23.37	3.30	3.97	2.75	11.42
Interruptions Per 1000 Customers Served	23.05	20.88	13.66	14.42	12.92	16.90
Number of Customers Affected Per Customer Served (SAIFI)	2.44	1.85	1.41	1.34	1.28	1.66

** Customer Served is the number of customers as of the last day of the current year.
For example, for the calendar year of 2014, customers served is the number of customers as of December 31, 2014.
For indices using customers served, the previous year is used.

PSEG-LI

Excluding Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	16,767	15,625	17,672	17,721	17,214	17,000
Number of Customer-Hours	959,212	945,305	890,558	1,096,866	1,222,162	1,022,821
Number of Customers Affected	842,816	752,311	791,039	805,693	934,097	825,191
Number of Customers Served	1,115,815	1,118,610	1,115,781	1,113,474	1,116,191	1,115,974
Average Duration Per Customer Affected (CAIDI)	1.14	1.26	1.13	1.36	1.31	1.24
Average Duration Per Customers Served	0.86	0.85	0.80	0.98	1.10	0.92
Interruptions Per 1000 Customers Served	15.01	14.00	15.80	15.88	15.46	15.23
Number of Customers Affected Per Customer Served (SAIFI)	0.75	0.67	0.71	0.72	0.84	0.74

PSEG-LI

Including Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	37,368	39,026	21,401	18,586	19,061	27,088
Number of Customer-Hours	14,715,268	46,371,469	1,648,627	1,210,719	2,166,956	13,222,608
Number of Customers Affected	1,519,331	2,056,428	997,229	853,209	1,111,055	1,307,450
Number of Customers Served	1,115,815	1,118,610	1,115,781	1,113,474	1,116,191	1,115,974
Average Duration Per Customer Affected (CAIDI)	9.69	22.55	1.65	1.42	1.95	10.11
Average Duration Per Customers Served	13.17	41.56	1.47	1.09	1.95	11.85
Interruptions Per 1000 Customers Served	33.45	34.98	19.13	16.66	17.12	24.27
Number of Customers Affected Per Customer Served (SAIFI)	1.36	1.84	0.89	0.76	1.00	1.17

** Customer Served is the number of customers as of the last day of the current year.

For example, for the calendar year of 2014, customers served is the number of customers as of December 31, 2014.

For indices using customers served, the previous year is used.

O&R

Excluding Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	2,661	2,652	2,449	3,226	2,900	2,778
Number of Customer-Hours	338,760	347,689	316,486	387,054	545,813	387,160
Number of Customers Affected	211,048	206,798	195,880	238,230	224,054	215,202
Number of Customers Served	219,385	220,129	220,813	221,579	221,542	220,690
Average Duration Per Customer Affected (CAIDI)	1.61	1.68	1.62	1.62	2.44	1.80
Average Duration Per Customers Served	1.55	1.58	1.44	1.75	2.46	1.75
Interruptions Per 1000 Customers Served	12.18	12.09	11.13	14.61	13.09	12.59
Number of Customers Affected Per Customer Served (SAIFI)	0.97	0.94	0.89	1.08	1.01	0.98

O&R

Including Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	4,223	3,326	2,570	3,398	2,900	3,283
Number of Customer-Hours	7,106,724	14,130,288	460,209	633,345	545,813	4,575,276
Number of Customers Affected	463,940	407,678	223,754	263,634	224,054	316,612
Number of Customers Served	219,385	220,129	220,813	221,579	221,542	220,690
Average Duration Per Customer Affected (CAIDI)	15.32	34.66	2.06	2.40	2.44	14.45
Average Duration Per Customers Served	32.52	64.41	2.09	2.87	2.46	20.73
Interruptions Per 1000 Customers Served	19.32	15.16	11.67	15.39	13.09	14.88
Number of Customers Affected Per Customer Served (SAIFI)	2.12	1.86	1.02	1.19	1.01	1.43

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For indices using customers served, the previous year is used.

RG&E

Excluding Major Storms

	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	3,122	3,054	3,063	2,972	3,037	3,050
Number of Customer-Hours	579,346	475,116	489,490	488,496	507,355	507,961
Number of Customers Affected	312,979	265,720	268,921	280,590	278,760	281,394
Number of Customers Served	360,670	366,369	367,534	369,381	371,328	367,056
Average Duration Per Customer Affected (CAIDI)	1.85	1.79	1.82	1.74	1.82	1.81
Average Duration Per Customers Served	1.61	1.32	1.34	1.33	1.37	1.38
Interruptions Per 1000 Customers Served	8.67	8.47	8.36	8.09	8.22	8.31
Number of Customers Affected Per Customer Served (SAIFI)	0.87	0.74	0.73	0.76	0.75	0.77

RG&E

Including Major Storms

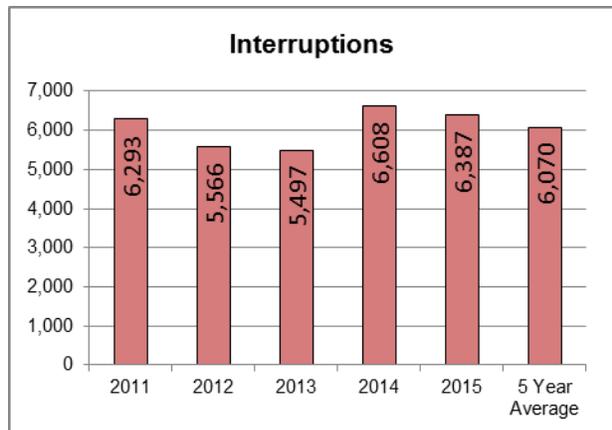
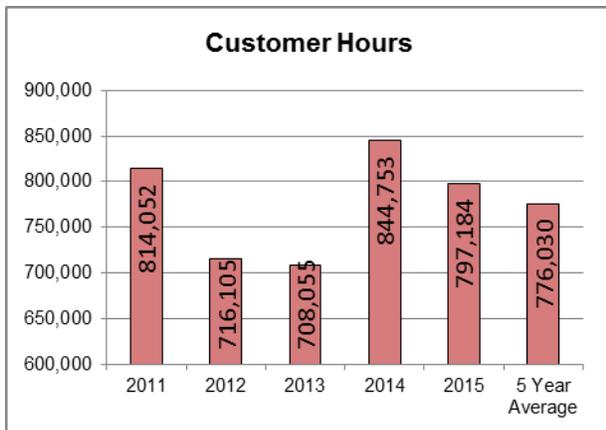
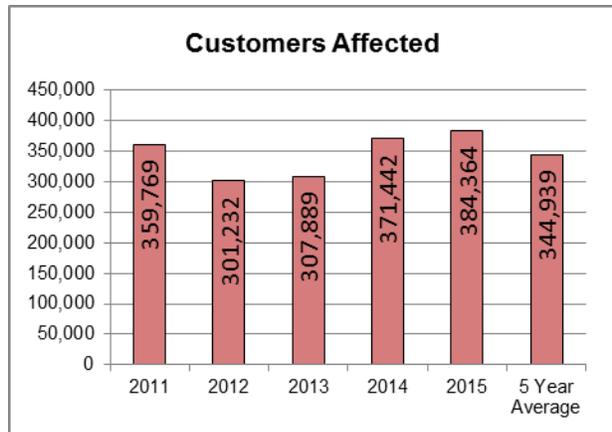
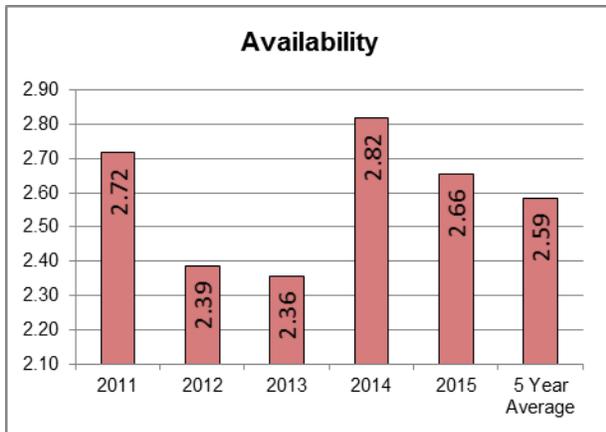
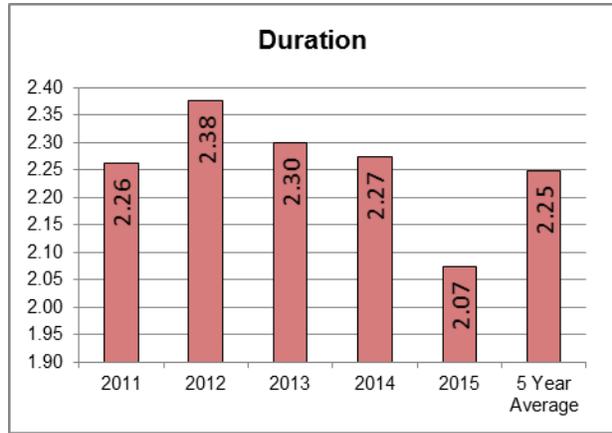
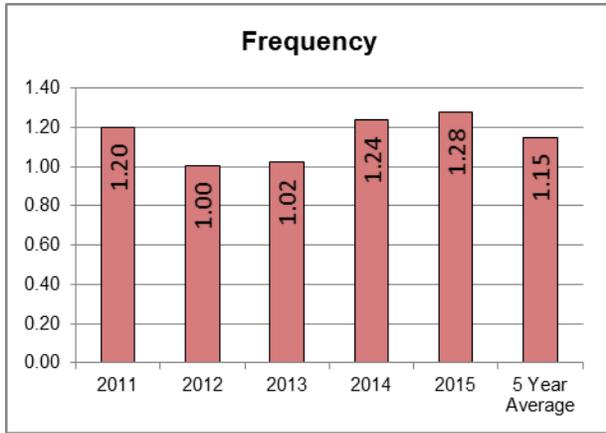
	2011	2012	2013	2014	2015	5 YR AVG
Number of Interruptions	3,295	3,555	3,451	3,156	3,183	3,328
Number of Customer-Hours	756,563	997,001	915,700	723,019	685,163	815,489
Number of Customers Affected	379,493	331,398	332,851	312,207	320,206	335,231
Number of Customers Served	360,670	366,369	367,534	369,381	371,328	367,056
Average Duration Per Customer Affected (CAIDI)	1.99	3.01	2.75	2.32	2.14	2.43
Average Duration Per Customers Served	2.10	2.76	2.50	1.97	1.85	2.22
Interruptions Per 1000 Customers Served	9.15	9.86	9.42	8.59	8.62	9.07
Number of Customers Affected Per Customer Served (SAIFI)	1.05	0.92	0.91	0.85	0.87	0.91

** Customer Served is the number of customers as of the last day of the current year.

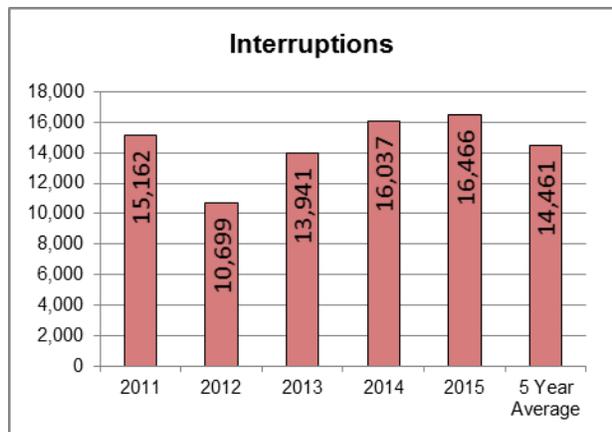
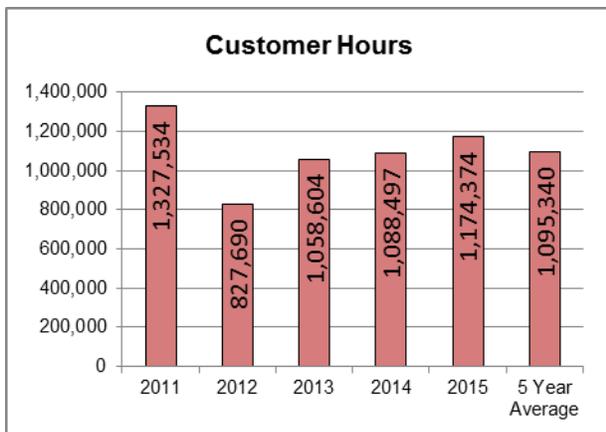
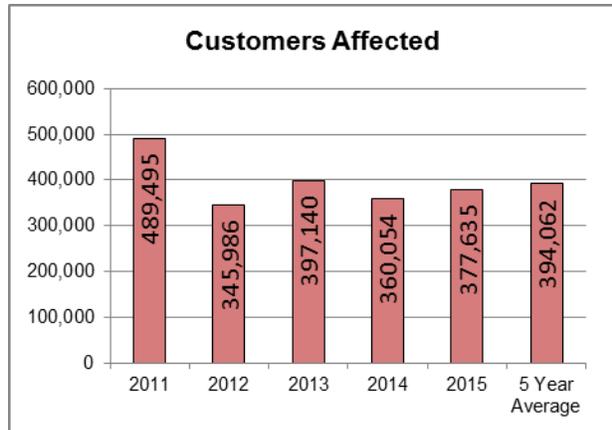
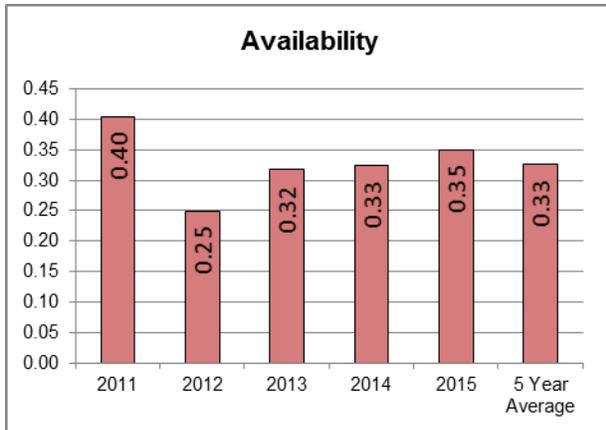
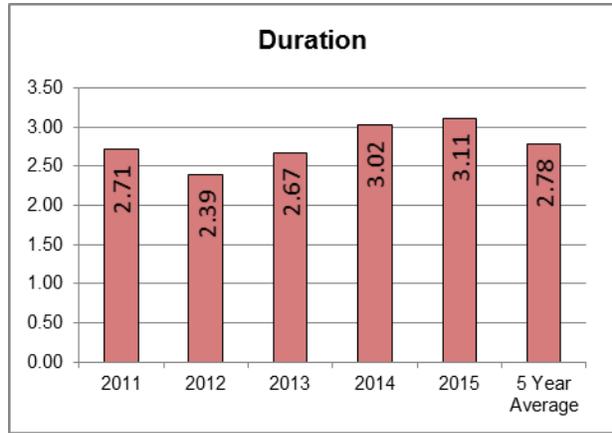
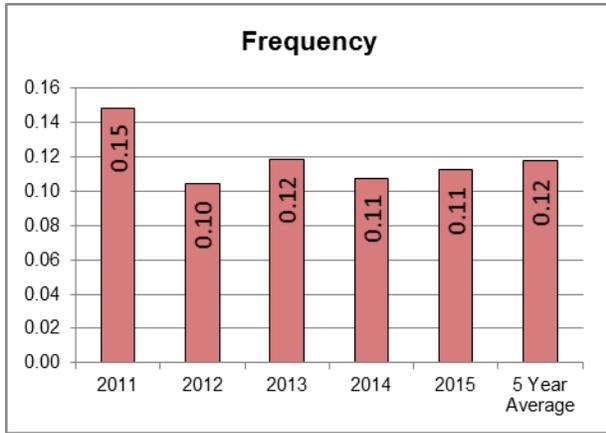
For example, for the calendar year of 2014, customers served is the number of customers as of December 31, 2014.

For indices using customers served, the previous year is used.

Central Hudson Gas and Electric (Excluding Major Storms)

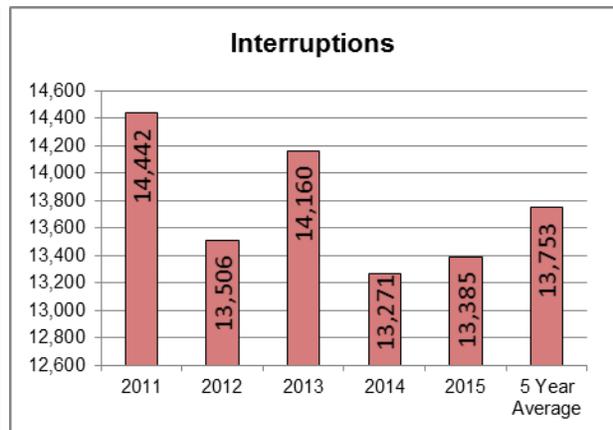
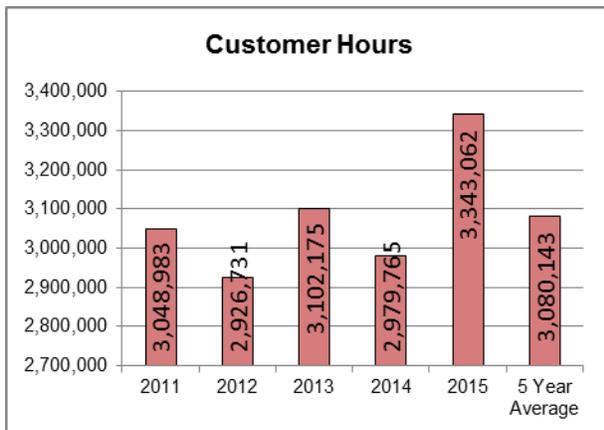
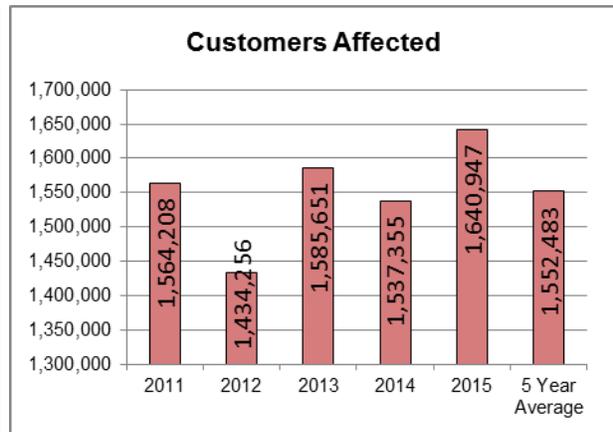
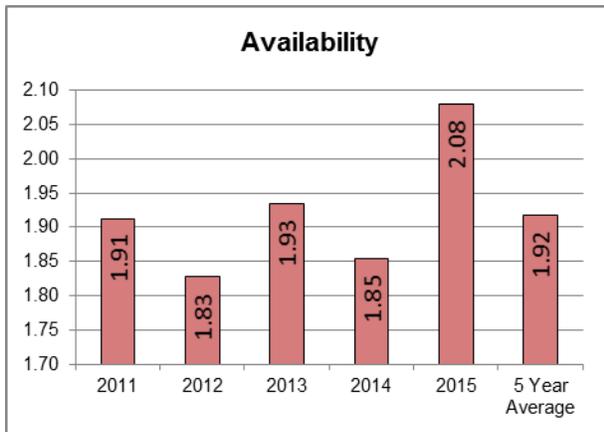
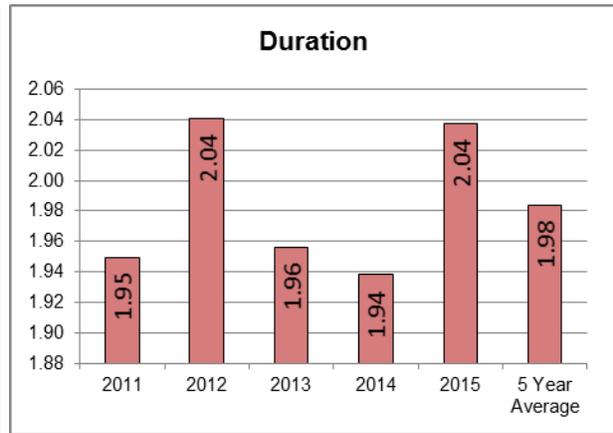
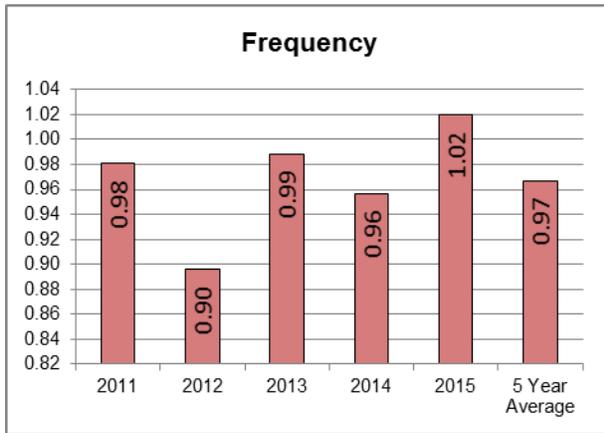


Con Edison – System (Excluding Major Storms)

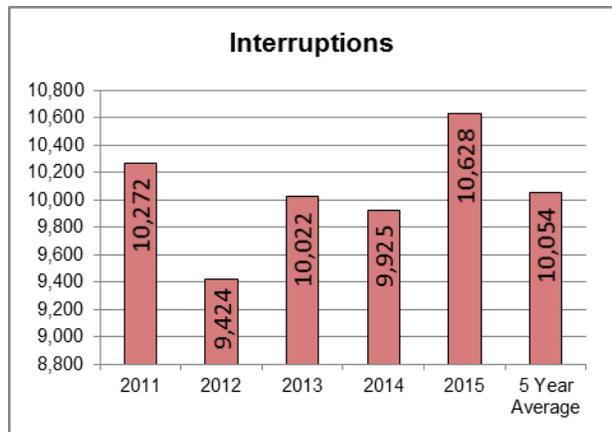
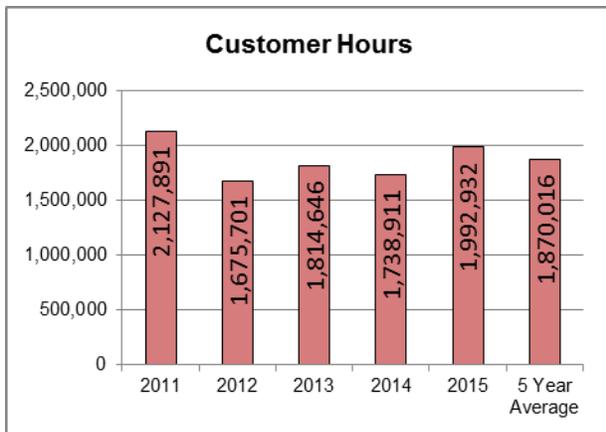
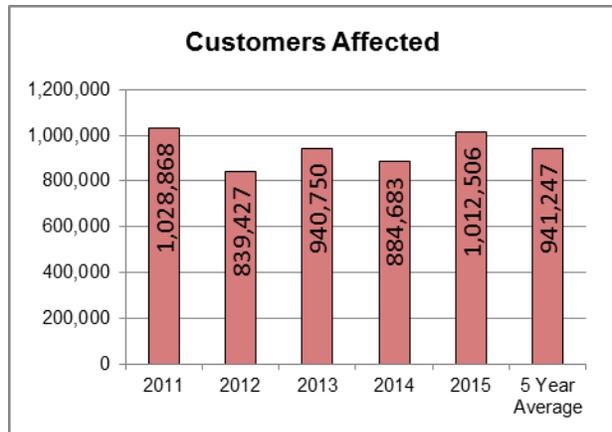
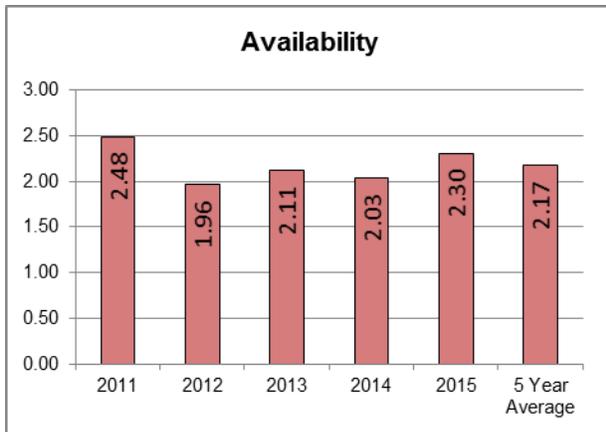
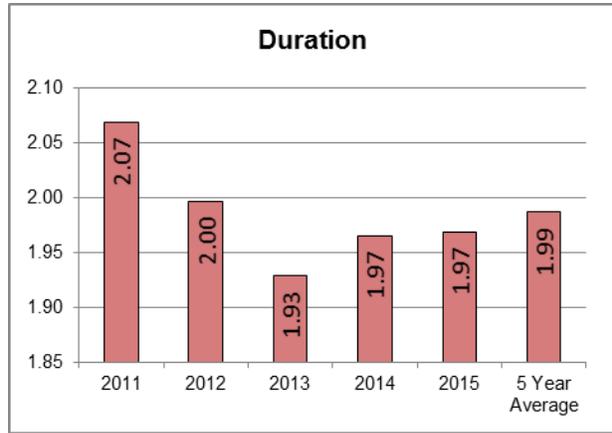
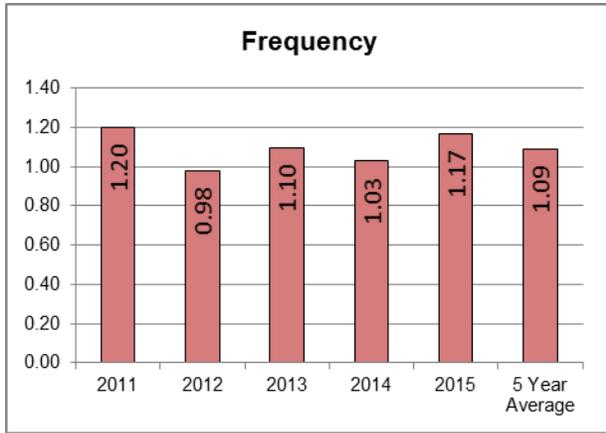


National Grid

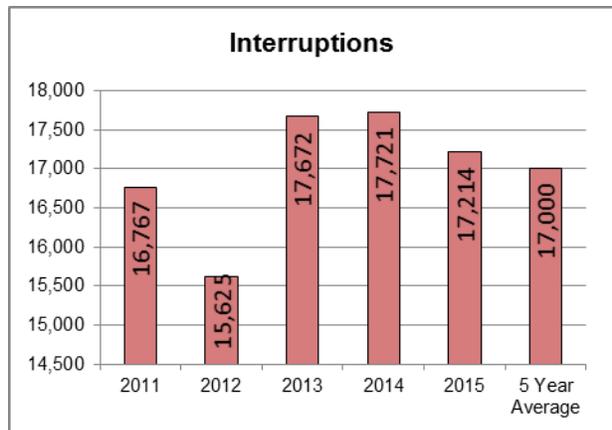
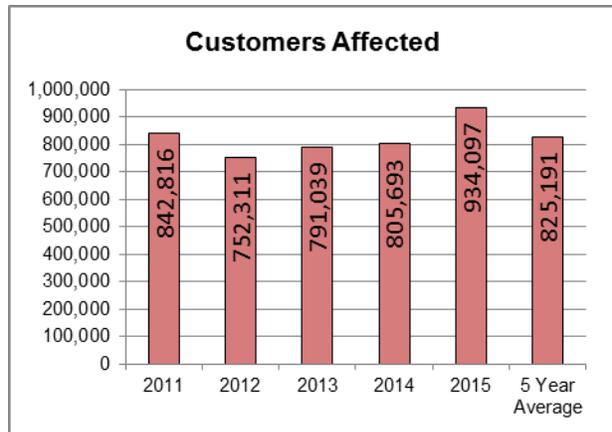
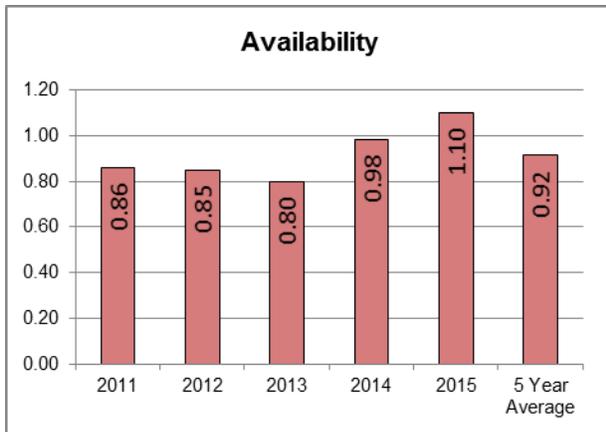
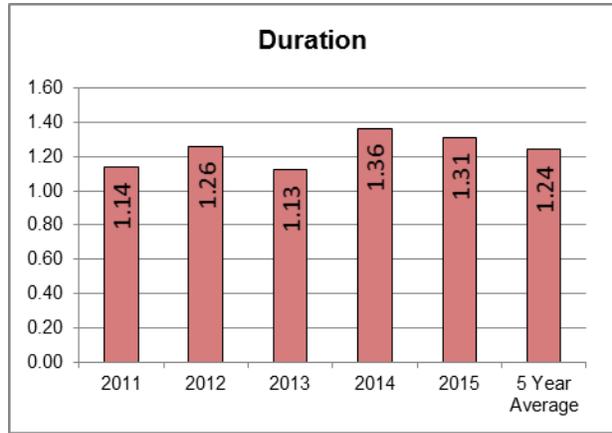
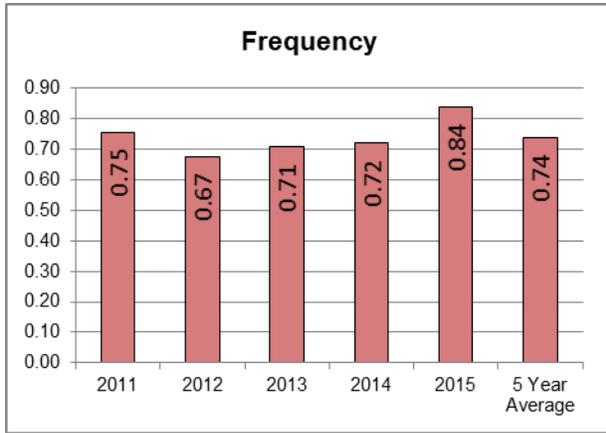
(Excluding Major Storms)



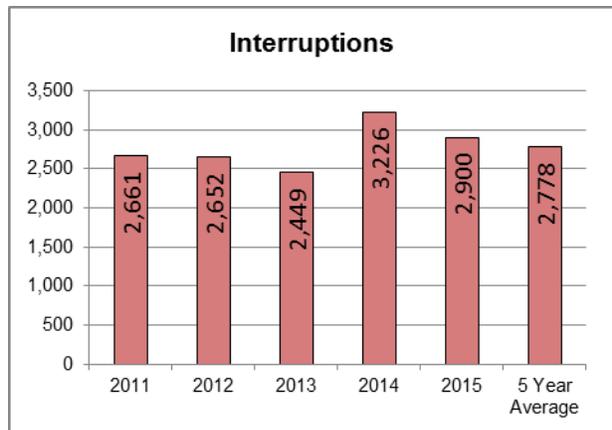
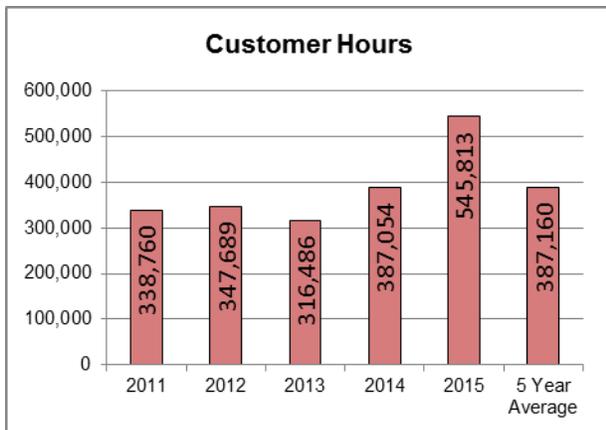
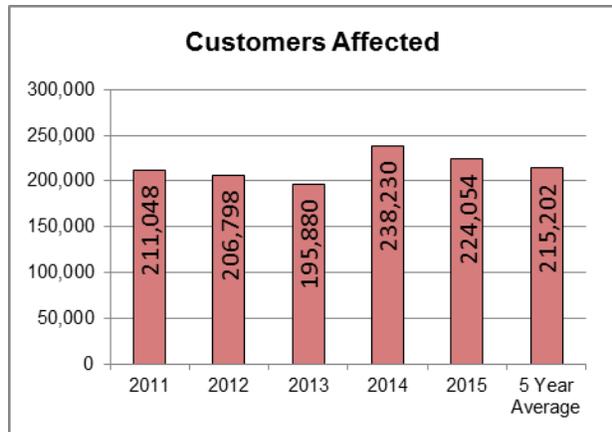
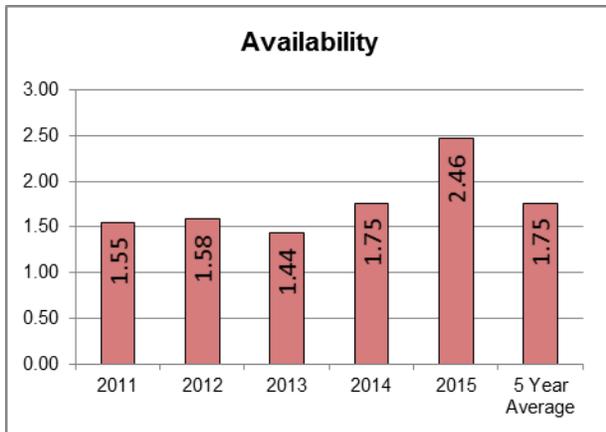
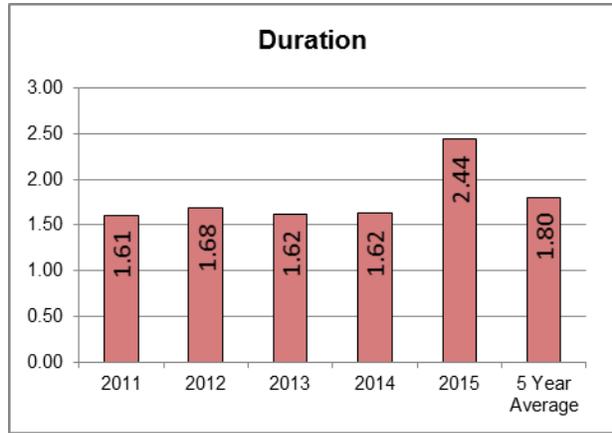
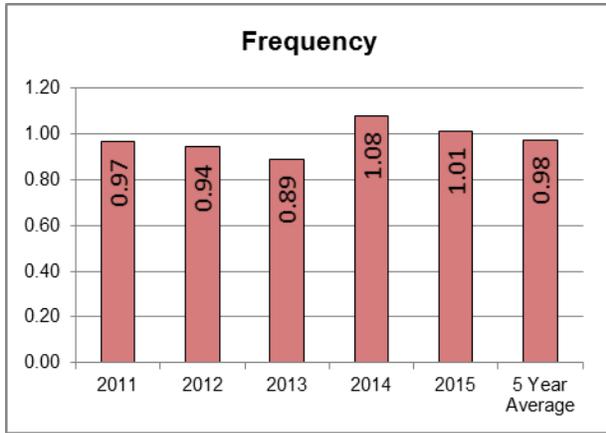
New York State Electric and Gas (Excluding Major Storms)



PSEG-LI (Excluding Major Storms)



Orange & Rockland Utilities (Excluding Major Storms)



Rochester Gas and Electric (Excluding Major Storms)

