Consolidated Edison Company of New York, Inc.
Report on 2012 Performance under
Electric Service Reliability Performance Mechanism

Distribution Engineering Department

Consolidated Edison Company of New York, Inc.

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I. Introduction

Consolidated Edison Company of New York, Inc.'s ("Con Edison" or "the Company") Rate Plan, set forth in the Joint Proposal, dated November 23, 2009, adopted by the Public Service Commission in Case 09-E-0428, contains a Reliability Performance Mechanism ("RPM").[1] The RPM consists of eight "performance metrics" that measure Company performance from January 1, through December 31 each year. The RPM provides for the Company to file an annual performance report with the Secretary to the Public Service Commission. Accordingly, Con Edison is reporting herein on its performance under the RPM during 2012.

The RPM contains eight performance metrics:

1. Threshold Standards consisting of measures of service outage frequency [System Average Interruption Frequency Index ("SAIFI")] and duration [Customer Average Interruption Duration Index ("CAIDI")] on Con Edison's non-network ("radial") distribution system, and measures of service outage frequency (number of outages per 1,000 customers and feeder open-automatics during summertime) and average outage duration (CAIDI) on Con Edison's network distribution system
2. Major Outage metric,
3. Program Standard for repairs to damaged poles,
4. Program Standard for the removal of shunts,
5. Program Standard for the repair of no current street lights and traffic signals,
6. Program Standard for the replacement of over-duty circuit breakers

[1] Case 09-E-0428, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service, *Order Establishing Three-Year Electric Rate Plan*, March 26, 2010("2010 Rate Order"). The RPM is set forth in Appendix G of the Joint Proposal, dated November 23, 2009, attached to the 2010 Rate Order.

7. Remote Monitoring System metric,
8. Restoration Performance metric.

As set forth in the RPM, this report on 2012 performance (a) states the Company's performance under the performance metrics, (b) identifies and provides support for applicable exclusions, and (c) states whether a revenue adjustment is applicable.[2]

II. Threshold Standards – Network and Radial Systems Performance and Exclusions

A. Threshold Standards Performance

The table below shows Con Edison's performance under the Threshold Standards metric for the network and radial systems during 2012. The first column shows the five performance areas that the metric measures. The second column states the RPM's "threshold standard" for each of the five performance areas. Performance that is greater than the threshold standard subjects Con Edison to a revenue adjustment. The third column shows Con Edison's annual 2012 performance in each area adjusted for performance exclusions permitted by the RPM, including network outages and radial customer interruptions that occurred during "major storms" as defined in Part 97 of the Commission's rules (16 NYCRR 97). Year-end 2012 performance is shown for all five measures except Summertime Feeder Open Automatics, which shows performance for the months of June, July, and August.

[2] RPM, p. 5.

	Threshold Standard	2012 Performance[3]
Network Number of outages per 1,000 customers.	2.50	1.94 (3.66)
Network Summertime Feeder Open Automatics[4]	510	270
Radial SAIFI	0.495	0.358
Network Average Outage Duration	4.90	4.75 (58.49)
Radial CAIDI	2.04	2.02

Con Edison's 2012 performance, adjusted for applicable performance exclusions, was lower than the Threshold Standard in each of the five performance areas, and, therefore, no revenue adjustment is applicable.

B. **Exclusions for Threshold Standards Performance**

The RPM permits exclusion from Threshold Standards operating performance as follows:

a) Any outages resulting from a major storm, as defined in 16 NYCRR Part 97 (i.e., at least 10% of the customers interrupted within an operating area or customers out of service for at least 24 hours), except as otherwise noted; this includes secondary network interruptions that occur in an operating area during winter snow/ice events that meet the 16 NYCRR part 97 definition (the "major storm" exclusion).

b) Heat-related outages are not a major storm. However, the Company may petition the Commission for an exemption for an outage if the Company can prove that such outage, whether heat-related or not, was beyond the Company's control, taking into account all facts and circumstances.

c) Any incident resulting from a strike or a catastrophic event

[3] Parenthetical numbers indicate performance without exclusion of Superstorm Sandy's affect on network customers.
[4] Measures the total number of network-area feeder open automatics during June, July and August.

beyond the control of the Company, including but not limited to plane crash, water main break, or natural disasters (e.g. hurricanes, floods, earthquakes) (the "catastrophic event" exclusion).

d) Any incident where problems beyond the Company's control involving generation or the bulk transmission system is the key factor in the outage, including, but not limited to, NYISO mandated load shedding. This criterion is not intended to exclude incidents that occur as a result of unsatisfactory performance by the Company ("generation/bulk transmission" exclusion). [5]

Based on these exclusions, the Company excluded operating performance on the network system and on the radial system associated with Superstorm Sandy and Nor'easter Athena during October 29 to November 12, 2012. The Company also excluded operating performance on the radial system associated with storms on July 18, 2012 and September 18, 2012. These performance exclusions are discussed below.

1. <u>Performance Exclusions – Network System Threshold Standards (Outages per 1,000 Customers and Average Outage Duration)</u>

a) Impact of Superstorm Sandy / Nor'easter Athena on the Network System

On October 29, 2012, Superstorm Sandy struck Con Edison's service area with severe impact on the Company's network distribution system. Super Storm Sandy was the largest storm ever observed in the Atlantic Ocean and was the most damaging storm to hit Con Edison in its 120 year history. Sandy's impact on Con Edison's service territory was two-fold: powerful wind gusts up to 90 miles per hour and an unprecedented 14 foot storm tide that breached flood protection measures and inundated electric facilities and underground

[5] RPM, p. 4.

equipment. Damage from Sandy interrupted electric service to 345,302 network system customers for an average duration of 74.58 hours.

On top of the damage caused by Sandy, Nor'easter Athena hit the Company's service area eight days into the recovery period (November 7) bringing more flooding, winds, and snow, causing additional customer outages, and further complicating the restoration efforts underway. Nor'easter Athena interrupted service to 4,180 network system customers for an average duration of 47.00 hours.

The Company's network system, particularly in lower Manhattan and in coastal areas, was severely impacted by Sandy. The East 13th Street and the East River transmission substations, which supply seven area substations in lower Manhattan, shut down due to flooding. As a result, ten networks in lower Manhattan lost power for approximately four days until the transmission stations could be brought on line to energize the area substations. Another network in lower Manhattan shutdown due to flooding at the Seaport area substation Two other networks in low-lying areas of lower Manhattan and one network on the Atlantic Ocean coast of Brooklyn were preemptively shut down to prevent flood damage to customer and Company equipment. Flooding of non-submersible equipment, salt-water induced cable insulation breakdown (secondary mains), and wind damage to network-supplied overhead equipment also caused customer outages.

In all, the Company experienced 4,214 network outage events related to Superstorm Sandy and Nor'easter Athena over the period of October 29 to

November 12, 2012. These outages events ranged from the shutdown of entire networks involving tens of thousands of customers to outages involving as few as one customer. While the reasons for the network outage events varied, all such outages were due to the storms.

The enormous impact of these storms on the network system is evident from a comparison of outage events and associated outage duration during the period from October 29 to November 12 in the years 2008, 2009, 2010, 2012, and 2013. The following table compares outage events, total outage duration for all outage events, and average outage duration per outage event from October 29 to November 12 over the last five years.

	2008	2009	2010	2011	2012
Outage Events	147	119	142	213	4,214
Total Duration (hrs)	551	381	433	1,508	502,395
Avg. Outage Duration	4	3	3	7	119

Sandy and Athena resulted in 4,214 outage events on the network system compared to the previous highest total of 213 from October 29 to November 12 in 2011. The 4,214 outage events had a total outage duration of 502,395 hours with an average outage event duration of 119 hours compared to 1,508 total hours with an average outage event duration of 7 hours for the 213 outage events in 2011. See also, Appendix" A-1" (Network Outage Events and Average Duration for the Period 10/29 – 11/12: 2008 - 2012).

The Company experienced a very high level of network outage events each day for the period of October 29 to November 12, 2013. As shown in

Appendix “A-2” (Network Outage Events by Day: 10/29 – 11/12: 2008 – 2012), the network system incurred over 100 outage events each day during that period, peaking at 763 and 725 outage events on the day Sandy struck and the following day and 415 and 393 outage events on the day Athena struck and the following day. In contrast, network outage events during the same October 29 to November 12 period in the prior four years were usually less than 10 per day and rarely exceeded 12 per day, except for the period following the October 29, 2011 snowstorm when outage events peaked at 47.

b) Applicability of Exclusions to Network Performance during Superstorm Sandy / Nor’easter Athena

Two exclusions – the “major storm” exclusion and the “catastrophic event” exclusion – are applicable to exclude operating performance (outage events) associated with Superstorm Sandy / Nor’easter Athena from network outages per 1,000 customers and average outage duration performance.

(i) Major Storm Exclusion for Superstorm Sandy /Nor’easter Athena

The “major storm” exclusion exempts “any outages resulting from a major storm, as defined in 16 NYCRR Part 97 (i.e., at least 10% of the customers interrupted within an operating area or customers out of service for at least 24 hours).” The outages on the network system during the period of October 29 to November 12 resulted from the tidal flooding and wind impacts of Superstorm Sandy / Nor’easter Athena that interrupted service to customers for at least 24 hours in each of the Company’s network operating areas, i.e., the Bronx,

Brooklyn, Manhattan, and Queens. As such the "major storm" exclusion permits exclusion of the operating performance associated with this event.

(ii) Catastrophic Event Exclusion for Superstorm Sandy /Nor'easter Athena

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 (e.g. hurricanes, floods, earthquakes)." The damage and outages on the network system resulted from wide-scale flooding of unprecedented levels and high winds caused by natural disasters beyond the Company's control, i.e., Superstorm Sandy and Nor'easter Athena. As such, the catastrophic event" exclusion permits the exclusion of operating performance associated with this event.[6]

c) Scope of Performance Exclusion for Impact of Superstorm Sandy /Nor'easter Athena on the Network System

For 2012 network system performance, the outage performance data (outage events) from October 29 through November 12, 2012 are excluded in determining 2012 Outages per 1,000 Customers and Average Outage Duration performance. This period represents the duration of trouble jobs, abnormal level

[6] 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, including, but not limited to, NYISO mandated load shedding." The East 13th Street transmission station and the East River transmission station are components of the bulk transmission system. The shutdown of the East 13th Street transmission station and the East River transmission station due to tidal flooding beyond the Company's control were the key factors in the loss of sub-transmission feeder supply to the seven lower Manhattan area substations and the de-energization of ten lower Manhattan networks. As such, the "generation/bulk transmission" exclusion permits the exclusion of the shutdown of ten networks in lower Manhattan for approximately four days. The exclusion of the outage event associated with the shutdown of these ten networks would improve performance in outages per 1,000 customers and average outage duration but not sufficiently to avoid revenue adjustments for 2012 performance.

of outage events, and extremely high outage durations in the aftermath of Superstorm Sandy and Nor'easter Athena. Throughout this period, a very high number of network outage events (see Appendix A-2) severely taxed the Company's resources and ability to respond to service outages in order to restore service quickly, despite the Company's efforts to utilize all qualified personnel and non-company personnel for restoration. Consequently, Network Outages per 1,000 Customers and Network Average Outage Duration performance from October 29 to November 12, 2012 were adversely affected for reasons directly related to the storms.

2. <u>Performance Exclusions – Radial System Threshold Standards (SAIFI and CAIDI)</u>

In 2012, the following major storm events interrupted electric service to at least 10% of the customers within a radial system operating area or resulted in customers being out-of-service for at least 24 hours.

- **July 18, 2012**: High winds affected a total of 3,366 radial system customers in Queens for an average duration of 3.38 hours.

- **September 18, 2012:** Strong winds and heavy rain affected a total of 25,457 radial system customers in Westchester for an average duration of 8.34 hours and a total of 1,822 radial system customers in the Bronx for an average duration of 6.94 hours.

- **October 29, 2012:** Superstorm Sandy affected 876,640 radial system customers for an average duration of 101.59 hours due to severe wind damage.

- **November 7, 2012:** Nor'easter Athena affected 29,282 radial system customers for an average duration of 37.85 hours due to heavy snow and wind damage

As permitted by the major storm exclusion, the outage performance data during the service restoration periods following each of these major storms are excluded in determining 2012 Radial SAIFI and Radial CAIDI performance.

III. Major Outage Metric

A Major Outage is an incident that interrupts service for three hours or more to 15 percent or more of the customers in any network ("network major outage") or to at least 70,000 customers in the radial (non-network) system ("radial major outage").

The RPM establishes several exclusions applicable to Major Outage operating performance under the RPM. When an exclusion is applicable, the operating performance related to the conditions giving rise to the exclusion is excluded in considering whether a revenue adjustment is applicable. The RPM's exclusions applicable to Major Outage operating performance are as follows:

a) Any outages resulting from a major storm, as defined in 16 NYCRR Part 97 (i.e., at least 10% of the customers interrupted within an operating area or customers out of service for at least 24 hours), except as otherwise noted; this includes secondary network interruptions that occur in an operating area during winter snow/ice events that meet the 16 NYCRR part 97 definition (the "major storm" exclusion).

b) Heat-related outages are not a major storm. However, the Company may petition the Commission for an exemption for an outage if the Company can prove that such outage, whether heat-related or not, was beyond the Company's control, taking into account all facts and circumstances.

c) Any incident resulting from a strike or a catastrophic event beyond the control of the Company, including but not limited to plane crash, water main break, or natural disasters (e.g.

hurricanes, floods, earthquakes) (the “catastrophic event” exclusion).

d) Any incident where problems beyond the Company’s control involving generation or the bulk transmission system is the key factor in the outage, including, but not limited to, NYISO mandated load shedding. This criterion is not intended to exclude incidents that occur as a result of unsatisfactory performance by the Company (“generation/bulk transmission” exclusion).

A. Overview of Major Outage Incidents Resulting from Superstorm Sandy

The Company incurred a variety of major outage incidents as a result of Superstorm Sandy. These Major Outages are grouped into the following categories:

- Preemptive shutdown of two networks in low-lying areas of lower Manhattan and one network in Brooklyn to prevent flood damage to customer and Company equipment (“preemptive network shutdowns”)
- Shutdown of eleven networks in Manhattan due to flooding impacts at the East 13th Street and the East River transmission substations and the Seaport area substation
- The loss of three area stations in Staten Island and associated load areas due to flooding and wind impacts at the Goethals and Fresh Kills transmission substations in Staten Island
- The widespread interruption of power to customers supplied from non-network, radial (overhead) load areas due to equipment damage caused by wind gusts up to 90 miles per hour.

None of these major outage incidents are subject to RPM revenue adjustment because exclusions established in the RPM are applicable to each incident. Each major outage incident and applicable exclusions are discussed below.

B. Preemptive Network Shutdowns

1. Description of Outage Incident

Con Edison's Corporate Coastal Storm Plan identifies low-lying network areas and electric equipment locations that are subject to tidal flooding during storms that produce tidal surges. In advance of the arrival of Superstorm Sandy, the Company installed sandbags at underground transformer vault locations in these flood zones. Immediately before the storm, the Company assigned observers to critical and strategic network areas to monitor flooding impacts of the storm.

Sandy's actual storm surge of 14.06 feet (above Mean Low Level Water ("MLLW")) at the Battery was substantially higher than the prior reported storm tides by at least three feet and exceeded the 11.7 forecast for the storm.[7] As the tides surged onto land in the afternoon and evening of October 29, 2012, the network-location observers reported that the water levels were rising above the protective barriers installed at transformer vaults. At that point, the Company preemptively shut down three networks to prevent extensive customer and network equipment damage from flood water and to reduce the time that might otherwise be required to replace or repair equipment necessary to restore power to the networks.[8] The shutdown and restoration of each network was as follows:

[7] The unofficial and unconfirmed storm tide record is 11.2 feet at the Battery reported in the historical accounts of a storm in 1821. The method of measurement for that 1821 tide level is not known. The storm tide at the Battery due to the December 11, 1992 Nor'easter was 9.55 feet (MLLW), which was 4.51 ft below the 14.06 ft MLLW measured at the Battery during Superstorm Sandy. The storm tide at the Battery from Hurricane Irene on August 28, 2011was about 9.5 feet (MLLW).

[8] Con Edison's Electric Tariff, Schedule for Electricity Service, P.S.C. No. 10 – Electricity, Leaf 117, states:

- The Bowling Green network in lower Manhattan was preemptively shut down on October 29, 2012 at 18:42 hours and restored to service on November 3, 2012 at 01:33 hours.
- The Fulton network in lower Manhattan was preemptively shut down on October 29, 2012 at 19:00 hours and restored to service on November 3, 2012 at 15:03 hours.
- The Brighton Beach network in Brooklyn was preemptively shut down on October 29, 2012 at 19:54 hours and restored to service on October 31, 2012 at 16:13 hours.

2. Applicability of RPM Exclusions

Two RPM exclusions – the "major storm" exclusion and the "catastrophic event" exclusion – are applicable to exclude operating performance associated with the three incidents of preemptive network shutdown. As such, a revenue adjustment is not applicable for the major outages in the Bowling Green, Fulton, and Brighton Beach networks.[9]

The "major storm" exclusion exempts "any outages resulting from a major storm, as defined in 16 NYCRR Part 97 (i.e., at least 10% of the customers interrupted within an operating area or customers out of service for at least 24 hours)." The three preemptive network shutdowns each resulted from the tidal flooding impacts of a major storm – Superstorm Sandy – that interrupted service to customers for at least 24 hours.

The ""catastrophic event" exclusion exempts "any incident resulting from ... a catastrophic event beyond the control of the Company, including but not

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> Notwithstanding any other provision of this tariff, the Company may withhold, suspend, curtail or disconnect service to a building, unit or piece of equipment, at any time, only when: a. an emergency may threaten the health or safety of a person, the surrounding area, or the Company's generation, transmission or distribution systems … .

[9] On October 29, 2012 at 21:05 hours, the Company shut down the supply to the high-tension services at the World Trade Center site, at the customer's request due to flooding of customer equipment. Power was restored on November 4, 2012 at 01:16 hours when the customer was ready to have the services energized.

limited to … natural disasters (e.g. hurricanes, floods, earthquakes)." The three preemptive network shutdowns each resulted from wide scale flooding of unprecedented levels caused by a natural disaster beyond the Company's control, i.e., Superstorm Sandy.[10]

C. Shutdown of Eleven Networks in Manhattan

1. Description of Outage Incident

Severe flooding at the East 13th Street transmission station and the East River transmission station, located adjacent to the East River in Manhattan, caused the shutdown of both stations and resulted in the loss of all load supplied from these stations.[11] These substations suffered a tremendous amount of tidal flooding that damaged critical equipment particularly the various components of the protective relaying and dielectric systems.

The East 13th Street transmission station supplies 21 sub-transmission transformers and/or feeders that energize five area substations in lower Manhattan – Avenue A, Cherry Street, East 29th Street, East 36th Street, and West 19th Street. The East River transmission station supplies seven sub-

[10] On October 30, 2012, President Obama issued a Disaster Declaration covering areas within the State of New York, including the five Boroughs of the New York City, see http://www.fema.gov/disaster/4085/notices.

[11] The top of the foundations at the East 13th Street transmission station is typically at elevation 10.6 feet (MLLW) and the lowest elevation of critical equipment in the station is at elevation 11.2 feet (MLLW). A Nor'easter on November 25, 1950 produced the highest water mark elevation of 10.1 feet (MLLW) observed at the East 13th Street station prior to Superstorm Sandy. Hurricane Irene produced an estimated high water mark elevation of 9.0 feet (MLLW) at the facility. The September 21, 1938 Hurricane produced a high water mark of elevation 7.3 feet (MLLW). The highest forecast of predicted water levels at the Battery for Superstorm Sandy was up to elevation 11.7 feet (MLLW) which would produce an estimated high water level of approximately 11.1 feet (MLLW) at the East 13th Street transmission station. The Company installed temporary measures to protect the critical equipment up to elevation 13.6 feet (MLLW) at the East 13th Street transmission station. The actual water level at the Battery was elevation 14.06 (MLLW). The flooding at the East 13th Street transmission station reached an elevation of 13.8 feet (MLLW) and exceeded the elevation of the temporary measures put in place.

transmission feeders that energize two area substations in lower Manhattan – Leonard Street 1 and Leonard Street 2. Each of the seven area substations energize one or two networks in lower Manhattan as follows:

Area Substation	Network
W19 St.	Chelsea
Avenue A	Cooper Square
Cherry Street	City Hall
East 29 St.	Madison Square
East 36 St.	Greeley Square and Kips Bay
Leonard St. No. 1	Greenwich and Sheridan Square
Leonard St. No. 2	Park Place and Canal

This loss of power to these ten networks occurred between 20:27 and 20:38 hours on October 29, 2012. Network restoration occurred on November 2 and November 3, 2012 as follows:

- At 16:51 hours, the Cooper Square network was restored to service.
- At 17:44 hours, the Chelsea network was restored to service.
- At 18:55 hours, the City Hall network was restored to service.
- At 19:03 hours, the Madison Square network was restored to service.
- At 00:55 hours, the Kips Bay network was restored to service.
- At 03:56 hours, the Greenwich network was restored to service.
- At 04:00 hours, the Park Place network was restored to service.
- At 04:23 hours, the Sheridan Square network was restored to service.
- At 04:40 hours, the Canal network was restored to service.
- At 05:03 hours, the Greeley Square network was restored to service.

One additional network – the Cortland network – was shutdown on October 29, 2012 at 20:46 hours as a result of tidal flooding. The Cortland network is energized by the Seaport No. 2 area substation, which is located within a city block of the East River. Flood-water intrusion in the relay cabinets

caused the substation circuit switchers to open and de-energize the network. The network was restored to service on October 31, 2012 at 13:53 hours.

2. Applicability of RPM Exclusions

Two RPM exclusions – the "major storm" exclusion and the "catastrophic event" exclusion – are applicable to exclude operating performance associated with the de-enegerization of these eleven networks. A third RPM exclusion – the "generation/bulk transmission" exclusion – is applicable to exclude operating performance associated with the de-enegerization of the ten networks supplied from the East 13th Street and the East River transmission stations. As such, a revenue adjustment is not applicable for the major outages in the eleven networks.

The "major storm" exclusion exempts "any outages resulting from a major storm, as defined in 16 NYCRR Part 97 (i.e., at least 10% of the customers interrupted within an operating area or customers out of service for at least 24 hours)." The eleven network shutdowns resulted from the tidal flooding impacts of a major storm – Superstorm Sandy – that caused the shutdown of transmission stations and area substations resulting in the interruption of service to customers for at least 24 hours and the interruption of service to more than 10 percent of customers in the Manhattan operating area.[12]

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 (e.g. hurricanes, floods, earthquakes)." The eleven

[12] The shutdown of the eleven networks in lower Manhattan interrupted service to approximately 223,113 of the 723,199 (30.8%) customers in the Manhattan operating area (numbers reflect customer counts as of December 31, 2011).

network shutdowns each resulted from wide scale flooding of unprecedented levels caused by a natural disaster beyond the Company's control, i.e., Superstorm Sandy.

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, including, but not limited to, NYISO mandated load shedding." The East 13th Street transmission station and the East River transmission station are components of the bulk transmission system.[13] The shutdown of the East 13th Street transmission station and the East River transmission station due to tidal flooding beyond the Company's control were the key factors in the loss of sub-transmission feeder supply to the seven lower Manhattan area substations and the de-energization of the ten lower Manhattan networks.

[13] The East 13th Street and East River transmission stations are connected to and fed from three 345 kV transmission stations. Eight 345 kV feeders from these three stations supply East 13th Street transmission station. At the East 13th Street transmission station, seven of these eight feeders connect to seven 345/138 kV transformers. These transformers, in turn, supply seven 138 kV feeders to the East 13th Street transmission station ring bus. The East 13th Street ring bus is comprised of 12 bus sections. These 12 bus sections feed 21 sub- transmission transformers and/or feeders to five area substations (Avenue A, Cherry Street, East 29th Street, East 36th Street, West 19th Street).
The 12 East 13th Street bus sections also feed five transmission feeders that supply the East River transmission station through a series of five 138/69 kV transformers and four phase angle regulators. The eighth 345 kV feeder at East 13th Street (which is fed from the external 345 kV stations) supplies another transformer that feeds a 345 kV/69 kV transformer and, in turn, a 69 KV feeder directly to East River transmission station. These combined six feeders into the East River transmission station supply nine bus sections in the East River ring bus. The nine bus sections and six feeders feed seven sub-transmission feeders to two area substations (Leonard Street No. 1 and Leonard Street No. 2).

D. Loss of Three Area Substations and Associated Load Areas in Staten Island

1. Description of Outage Incident

All of Staten Island is fed from three 138 kV transmission stations: Greenwood, Fox Hills, and Fresh Kills. Supplies into these three stations include six transmission feeders: four from transmission stations in other boroughs and two from a transmission station in Staten Island. Other supplies into these three 138 kV transmission stations include generation: Arthur Kill Unit 2 and Arthur Kill Unit 3 (Arthur Kill 3 was in a long term outage at the time of the storm), six barges of gas turbines and four other small generators. These three 138 kV transmission stations feed Staten Island load by stepping voltage down to 33 kV and supplying five 33 kV area substations: Fresh Kills, Fox Hills, Wainwright, Willowbrook, and Woodrow.

By the time the height of Superstorm Sandy had passed, flood and wind damage from the storm resulted in Fresh Kills 138 kV and 345 kV substations being out of service and de-energized. As a result, three area substations and the load areas these area substations supply were out of service – Fresh Kills 33 kV area station, Wainwright 33 kV area station and Woodrow 33 kV area station. Multiple automatic operations on the Fresh Kills 138 kV bus led to the interruption of customers supplied by Fresh Kills 33 kV area substation. The Woodrow and Wainwright 33 kV area substations were still connected to the Fresh Kills 138 kV bus and supplying some load when the Company de-energized the Goethals, Fresh Kills 345 and Fresh Kills 138 kV transmission stations by switching out the last in-service 345 kV feeder supplying those facilities. This was done to protect

the equipment from further damage due to high voltage, corrupted telemetry and switches that were operating by themselves. Additionally, most of the generation supplies in this load pocket were unavailable. Arthur Kill 2 had tripped offline; Arthur Kill 3 was in a long term outage; five of the six barges were unavailable due to equipment damage; the sixth barge was in a long term equipment outage, and two of the four small generators were unavailable.

The Woodrow, Wainwright, and Fresh Kills load areas were shut down on October 29, 2012 at 21:43 hours due to loss of transmission supply at Fresh Kills substation. These load areas were restored to service as follows:

- Woodrow was restored to service on October 30, 2012 at 05:59hrs
- Wainwright restored to service on October 30, 2012 at 13:00hrs
- Fresh Kills restored to service on October 30, 2012 at 11:20hrs.

2. Applicability of RPM Exclusion

Three RPM exclusions – the "major storm" exclusion, the "catastrophic event" exclusion, and the "generation/bulk transmission" exclusion – are applicable to exclude operating performance associated with the de-enegerization of the Woodrow, Wainwright, and Fresh Kills area stations and load areas. As such, a revenue adjustment is not applicable for the major outages in these load areas.

The "major storm" exclusion exempts "any outages resulting from a major storm, as defined in 16 NYCRR Part 97 (i.e., at least 10% of the customers interrupted within an operating area or customers out of service for at least 24 hours)." The three load area shutdowns resulted from the impacts of a major storm – Superstorm Sandy – that caused the shutdown of transmission stations

and area substations resulting in the interruption of service to more than 10 percent of customers in the Staten Island operating area.[14]

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 (e.g. hurricanes, floods, earthquakes)." The three load area shutdowns resulted from wide scale flooding of unprecedented levels and high winds caused by a natural disaster beyond the Company's control, i.e., Superstorm Sandy.

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, including, but not limited to, NYISO mandated load shedding." The Goethals, Fresh Kills 345 and Fresh Kills 138 KV transmission stations are components of the bulk transmission system. The shutdown of these transmission stations due to tidal flooding and damages caused by high winds beyond the Company's control were key factors in the loss of sub-transmission feeder supply to the Woodrow, Wainwright, and Fresh Kills area stations and the de-energization of the associated load areas.

E. Interruption of Power to Customers Supplied from the Radial (Non-Network) Load Areas

1. Description of Outage Incident

The Company's overhead system was devastated by wind and tree damage interrupting service to 604,603 (about 70%) of the 868,347 non-network

[14] The shutdown of the three load areas in Staten Island interrupted service to approximately 112,488 of the 174,397 (64.5%) customers in the Staten Island operating area (numbers reflect customer counts as of December 31, 2011).

customers in the Bronx, Brooklyn, Queens, Staten Island, and Westchester County operating areas.[15] The overhead system suffered a loss of nearly 1000 utility poles, more than 900 transformers, and approximately 140 miles of cable. In comparison to Hurricane Irene, ten times as many poles, five times as many transformers, and more than four times as many miles of cable were replaced.

B. **Applicability of RPM Exclusion**

The RPM's "major storm" exclusion is applicable to exclude operating performance associated with the radial major outage to the overhead system. As such, a revenue adjustment is not applicable for the radial major outage in the overhead system.

The "major storm" exclusion exempts "any outages resulting from a major storm, as defined in 16 NYCRR Part 97 (i.e., at least 10% of the customers interrupted within an operating area or customers out of service for at least 24 hours)." The outages in the overhead system resulted from the impacts of a major storm – Superstorm Sandy – that caused extensive damage to the overhead system infrastructure resulting in the interruption of service to customers for at least 24 hours in each of the Company's overhead operating areas and the interruption of service to more than 10 percent of customers in each operating area.

[15] Non-network customer interruptions by operating area were as follows:

- Bronx: 53,485 of 92,223 customers
- Brooklyn: 71,097 of 90,757 customers
- Queens: 129,986 of 193,801 customers
- Staten Island: 139,868 of 174,397 customers
- Westchester: 210,167 of 317,196 customers

IV. Pole Repair Metric

The pole repair metric provides that Con Edison will repair within 30 days 90% of "Damaged Poles" and "Double Damaged Poles" that come into existence during calendar year 2012.[16]

A total of 279 "Damaged Poles" and "Double Damaged Poles" came into existence during 2012. Con Edison repaired 258 (92.5%) of these poles within 30 days of learning of the damage. Accordingly, a revenue adjustment is not applicable for this metric.

Con Edison repaired 279 (100%) of these poles within 6 months of learning of the damage.

Appendix B (2012 Damaged Poles) contains a listing of the above damaged pole locations, the date Con Edison became aware of the problem at that location, and the date of the repair.

V. Shunt Removal Metric

The shunt removal metric provides that, for publicly accessible shunts that come into existence during calendar year 2012, Con Edison will make permanent repairs within 90 days for at least 90% of shunts installed during the winter months (January, February, March, April, November, and December) and within 60 days for at least 90% of shunts installed during the summer months (May through October).[17]

[16] RPM, pp. 11-13. The 30-day period is measured from the date the Company became aware of the "Damaged Pole" or "Double Damaged Pole."
[17] RPM, p. 13-15.

A total of 910 street, sidewalk, or overhead shunts were installed during winter months in 2012. The Company made permanent repairs and removed the shunts within 90 days for 855 (94.0%) of these shunts. Accordingly, a revenue adjustment is not applicable for this metric.

A total of 710 street, sidewalk, or overhead shunts were installed during summer months in 2012. The Company made permanent repairs and removed the shunts within 60 days for 620 (87.3%) of these shunts. As discussed below, special circumstances prevented the Company from repairing at least 90% of these summer period shunts, and for that reason a revenue adjustment is not applicable for this metric.

A total of 1,620 street, sidewalk, or overhead shunts came into existence during 2012. Con Edison made permanent repairs and removed 1,581 (97.6%) of these shunts within six months of the shunt installation date. The completion of repairs on 39 shunts exceeded six months.

The Company's 2012 shunt removal performance is detailed in Appendix C. Appendix C-1 (*Shunts Received Jan to Apr 2012 and Nov to Dec 2012) and* Appendix C-2 *(Shunts Received May to Oct 2012)* contains a listing of the above shunt locations, the date the shunt was installed, and the date of the permanent repair and shunt removal. The shunt locations that were not permanently repaired within the 60-day summer period (90 shunts) and the 90-day winter period (55 shunts) are identified in Appendix C-3 (*Winter Shunts Over 90 Days)* and Appendix C-4 *(Summer Shunts Over 60 Days*).

The 39 locations with shunts not removed within 6 months and the reasons are identified in Appendix C-5 (see PDF pages _____) (*2012 Shunts Over 180 Days*).

A. Extraordinary Circumstances Preventing Repair of Summer Period Shunts

The RPM permits the Company to exclude untimely repairs from its shunt removal performance when "extraordinary circumstances" have prevented a timely shunt repairs. The RPM states:

> *Extraordinary Circumstances Exception*
> Where the Company can demonstrate that extraordinary circumstances prevented a shunt repair within the 60-day, 90-day, or six month time frames, as appropriate, that non-repair will not be considered in measuring the Company's compliance with the above requirements. The determination of whether extraordinary circumstances exist will be made on a case-by-case basis and will be based on the particular facts and circumstances presented (e.g., documentation demonstrating delays of more than 30 days in receiving street-opening permits from NYCDOT).

The Company achieved a repair rate of 87.3%, having repaired and removed 620 of 721 summer period shunts within 60 days. Extraordinary circumstances resulting from the impact of Superstorm Sandy prevented the Company from completing a 90% shunt repair rate for 2012 summer shunts.

Following the failure of facilities supplying service to a customer, a shunt may be installed to temporarily restore service if the Company is unable to immediately repair or replace the failed equipment. For example, an obstructed service duct may prevent the removal and replacement of a failed service cable, and the Company will install a shunt to provide service until a crew can be deployed to clear the duct or if necessary excavate to remove and replace the

obstructed duct and install a new cable. The Company seeks to repair and remove shunts as quickly as possible and deploys crews to repair and remove shunts as resources are available and as conditions necessary for removal, such as permit issuance and completion of customer responsibilities are achieved.

When Superstorm Sandy struck the Company's service area on October 29, 2012, the Company suspended the deployment of crews to repair and remove shunts in order to maximize the resources available to address storm related damages on the network and non-network systems. From October 29 through November 27, 2012, all available Company resources worked initially to restore service to over one million customers who lost service following Sandy and Athena and then to return the network and non-network systems to design basis.

On November 28, 2012, the Company resumed the deployment of crews to repair and remove shunts. The work of these crews was prioritized to address the summer period shunts that had not yet been removed. By January 1, 2013, 60 days after the summer shunt period had ended (October 31, 2013), the Company had repaired and removed 620 (87.3%) of the 710 shunts installed during the summer period. Achievement of the 90% shunt removal target required the removal of 639 shunts within 60 days. Thus, the Company fell short of the target by 19 shunts.

The 19 shunt-removal shortfall can be directly attributed to shunts installed within 60 days before Hurricane Sandy landfall. During the period of September 5 through October 25, 2013, the Company installed 30 shunts that

were not repaired and removed within 60 days. These shunts were repaired and removed within periods ranging from 61 to 89 days, and the average time for a repair and removal was about 77 days. See Appendix C-6. Had the Company not suspended shunt repair and removal activity from October 29 through November 27 (30 days), the large majority, if not all, of these 30 shunts would have been repaired and removed within sixty days of installation, and the Company would not have had an 19 shunt shortfall in meeting the 60 day target.[18]

The damage to the network and non-network systems caused by Superstorm Sandy and Nor'easter Athena and the diversion of the Company's resources initially to restore customers to service and then to restore the electric system to design basis were extraordinary circumstances that prevented the Company from achieving the 90% target for removals of summer shunts within 60 days. The 19 shunt shortfall should not be considered in measuring the Company's performance.

VI. No-Current Streetlight Metric

The no-current streetlight metric provides that, for no-current streetlights that come into existence during calendar year 2012, Con Edison will make permanent repairs within 90 days for at least 90% of no-current streetlights installed during the winter months (January, February, March, April, November,

[18] By January 1, 2013, the Company had removed all but 13 of the summer shunts, and by January 24, 2013, 100% of the summer shunts had been removed. .

and December) and within 45 days for at least 80% of no-current streetlights installed during the summer months (May through October).[19]

A total of 4,003 no-current streetlights occurred during winter months in 2012. Con Edison made permanent repairs within 90 days for 3,839 (95.9%) of winter no-current streetlights. Accordingly, a revenue adjustment is not applicable for this metric.

A total of 2,424 no-current streetlights occurred during summer months in 2012. Con Edison made permanent repairs within 45 days for 2,043 (84.3%) summer no-current streetlights. Accordingly, a revenue adjustment is not applicable for this metric.

A total of 6,427 no-current streetlights occurred during 2012. Con Edison permanently repaired 5,901(91.8%) of these no-current streetlights within 6 months of the occurrence date – 526 jobs are currently still pending.

Appendix D (*No Current Jan 1 – April 30, 2012, No Current May 1 – October 31, 2012, and No Current Nov 1 – December 31, 2012*) contains a listing of the no-current streetlight locations where repairs were made within 45 days for summer period occurrences and 90 days for winter period occurrences, the date the Company became aware of the problem at each location, and the date of the permanent repair at each location. The summer period no-current streetlight locations that were repaired in more than 45 days are identified in Appendix D *(Over 45 Days Summer)*. The winter period no-current streetlight locations that were repaired in more than 90 days are identified in Appendix D (*Over 45 Days Winter 1* and *Over 45 Days Winter 2*). The 526 locations where repairs of 2012

[19] RPM, pp. 17-20.

period occurrences are not yet completed and the reason for the delays are identified in Appendix D *(2012 Jobs Still Pending)*.

There is one job from 2009 that is not yet repaired. This job and the reason for delay are identified on Appendix D (Pre '11 Jobs Pend). There are two jobs from 2010 that are not yet repaired. These jobs and the reasons for delay are also identified on Appendix D (Pre '11 Jobs Pend).

VII. Over-Duty Circuit Breakers Metric

The over-duty circuit-breaker metric provides that Con Edison will replace at least 60 over-duty circuit breakers during 2012 except upon the occurrence of extraordinary system conditions.[20] During 2012, Con Edison replaced 88 over-duty circuit breakers.[21] Accordingly, a revenue adjustment is not applicable for this metric. The over-duty circuit breakers replaced during 2012 are identified in Appendix E.

VIII. Remote Monitoring System Metric

The remote monitoring system ("RMS") metric provides that the Company will maintain a 90% RMS reporting rate in each second-contingency network measured at quarterly intervals.[22] The Company measures RMS reporting performance as the monthly percentage of the available RMS transmitters in a

[20] RPM, p. 17.
[21] At the beginning of calendar year 2012, Con Edison identified 1162 over-duty 13 kV and 27 kV circuit breakers on its distribution system. At the beginning of calendar year 2013, Con Edison identified 1159 over-duty 13 kV and 27 kV circuit breakers on its distribution system. During the year certain breakers were reclassified for not over-dutied to over-dutied.
[22] RPM, pp. 10.

network that report during the month, e.g., 96.8% of the available RMS transmitters in the Grand Central network reported in the month of June.[23] The network's monthly reporting percentage for the third month of each quarter, i.e., for March, June, September, and December, is used to measure quarterly performance under the remote monitoring system metric. The Company reports RMS performance to the Department of Public Service Staff following each quarter.

During 2012, each of Con Edison's 64 networks met or exceeded the 90% target in each quarter. Accordingly, a revenue adjustment is not applicable for this metric.

The 2012 quarterly performance for each network is provided in Appendices F-1 (First Quarter), F-2 (Second Quarter), F-3 (Third Quarter), and F-4 (Fourth Quarter).

For the First Quarter 2012:

- 53 networks were reporting at or above 95%,
- 11 networks were reporting between 90%-95%, and
- 0 networks reported below 90%.

For the Second Quarter 2012

- 54 networks were reporting at or above 95%,
- 10 networks were reporting between 90%-95%, and
- 0 networks reported below 90%.

For the Third Quarter 2012:

- 48 networks were reporting at or above 95%,
- 16 networks were reporting between 90%-95%, and
- 0 networks reported below 90%.

[23] An RMS transformer is unavailable if its associated transformer is not in service or is scheduled for a feeder contingency during the month.

For the Fourth Quarter 2012:

- 42 networks were reporting at or above 95%,
- 22 networks were reporting between 90%-95%, and
- 0 networks reported below 90%.

IX. Restoration Performance Metric

The Restoration Performance Metric establishes targets for time to restore service following outages affecting Con Edison's radial system.[24] The restoration targets are based on estimated restoration times for "upgraded," "serious," and "full scale" outage events as classified in the Company's emergency plan. The metric is in effect on a trial basis without Company revenues at risk. The Company is required to file with the Commission a report on its restoration performance within 30 days following an applicable storm.

In 2012, two storms met the emergency level classification of Con Edison's emergency plan. These storms occurred on September 18 and October 29 (Superstorm Sandy). The Company met the restoration target for each of these events. The Company's reports to the Commission on restoration following these storms are attached as Appendix "G."

X. Conclusion

During 2012, Con Edison met all the targets established in the Reliability Performance Mechanism and did not incur a revenue adjustment.

Dated: April 1, 2013

Distribution Engineering Department
Consolidated Edison Company of
New York, Inc.

[24] RPM, pp. 10-11.