

January 8, 2016

**VIA HAND DELIVERY & ELECTRONIC MAIL**

Luly E. Massaro, Commission Clerk  
Rhode Island Public Utilities Commission  
89 Jefferson Boulevard  
Warwick, RI 02888

**RE: Docket 3628 – National Grid’s Electric Service Quality Plan  
Settlement Agreement**

Dear Ms. Massaro:

Enclosed are ten (10) copies of a Settlement Agreement (Agreement) between National Grid<sup>1</sup> and the Division of Public Utilities and Carriers (Division) relating to the Company’s existing Service Quality Plan that the Rhode Island Public Utilities Commission (PUC) approved in Order No. 19020 on July 13, 2007 (2007 SQ Plan). Specifically, this Agreement proposes to modify the Customer Contact performance standard to (1) replace the survey in the 2007 SQ Plan with a different survey consisting of two (2) questions from National Grid’s existing internal contactor survey; and (2) to update the historical performance benchmark period and related satisfaction targets used to evaluate the survey results, beginning with calendar year 2016.

Under the existing 2007 SQ Plan, the Customer Contact performance standard is based on a mean satisfaction score of 79.1% and a standard deviation of 2.3%, using a calendar year historical average. As described in the Agreement, Customer Contact performance is assessed using the current survey, which consists of a telephone interview conducted by an independent survey vendor and is referred to herein as the “regulated survey”. A sample of approximately 800 customers who recently contacted the Company’s Call Center is interviewed during the year in order to determine their satisfaction with that contact based on the following question:

“Using a scale where 1 means “very dissatisfied” and 7 means “very satisfied”, how satisfied were you with the contact you had with National Grid regarding (call reason)?”<sup>2</sup>

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<sup>1</sup> Submitted on behalf of The Narragansett Electric Company d/b/a National Grid (National Grid or the Company).

<sup>2</sup> In the 2007 SQ Plan, there are eight (8) “call reasons” or types of transactions on which the satisfaction score is based: (1) power outage, (2) meter on, (3) meter off, (4) meter exchange, (5) collections, (6) payment plan, (7) meter read, and (8) meter test.

The final annual result that the Company reports to the PUC is determined by weighting the respective contact satisfaction score for each of the eight transactions by the number of these transactions that occurred over the course of the calendar year, as identified from the total sample files received from the Call Center. The final annual result is then compared with the performance standard in the 2007 SQ Plan. Under the current Customer Contact performance standard, the Company incurs a penalty if its satisfaction score is 76.7% or below. While the Company does not earn an incentive for performance that exceeds the benchmarks, positive performance in one category of service quality can be used to offset negative performance in another category. For Customer Contact, this offset applies to satisfaction scores of 81.5% or higher.

While survey data serves as a useful tool to elicit important customer feedback and to provide actionable and diagnostic insights, customer satisfaction measures are highly subjective and may be influenced by external factors outside the control of the Company (i.e. commodity price increases, major events/storms, opinions of family and friends, media coverage, etc.). Such factors may distort a customer's perception of National Grid and the quality of service received. For the past several years, National Grid has employed its internal contactor survey across its entire U.S. service footprint to gauge customer satisfaction with National Grid.<sup>3</sup> National Grid's internal contactor survey employs a larger and more representative sample than the regulated survey because it interviews a random set of customers (approximately 1,560) who contacted the Company without regard to the reason they called. National Grid's internal contactor survey questionnaire is also more detailed and allows for a better understanding of customer issues across a wider array of call types, making it a better diagnostic tool than the regulated survey because the current performance standard is based solely on the satisfaction question.<sup>4</sup>

As a result, the Company and the Division met on several occasions to review and discuss the Company's proposal to replace the regulated survey and the associated performance standard with a different survey and updated performance standard that achieves the following objectives: (1) to employ an actionable survey that is more inclusive and representative of the types of customer interactions occurring today, while gathering more context to the customer satisfaction metric; and (2) to implement a performance standard that appropriately reflects the current trends in survey data, while still encouraging the Company to maintain and improve its customer satisfaction performance. The Division has agreed with the Company to replace the regulated survey in the 2007 SQ Plan with a composite measure of two questions taken from National Grid's existing internal contactor survey, as further described in the Agreement. These questions include a high-level customer satisfaction metric by allowing respondents to consider any and all experiences, i.e. not just limited to one interaction or "call type", as well as a direct measure of customer satisfaction with a specific interaction with a telephone representative. In addition, the Company and the Division have agreed to update the historical benchmark period and the

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<sup>3</sup> Since 2009, the Company has conducted the internal contactor survey in parallel with the regulated survey.

<sup>4</sup> The regulated survey consists of two questions, one of which is the satisfaction question quoted above. The second question asks about the number of occasions the customer contacted National Grid. The current performance standard is based solely on the results from the satisfaction question.

Luly E. Massaro, Commission Clerk  
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January 8, 2016  
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satisfaction targets for the Customer Contact performance standard based on the average monthly results for the 24-month period of August 2013 through July 2015.

As proposed in the Agreement, the new SQ Plan would be effective January 1, 2016. Attachment 1 of the Agreement contains the Amended Service Quality Plan, as adopted by the Agreement. The Company respectfully requests that the PUC approve the Agreement effective January 1, 2016, and authorize the Company to report its performance results for calendar year 2016 in the annual report that it will file with the PUC on May 1, 2017 using the modified Customer Contact performance standard as set forth in the Amended Service Quality Plan. At the PUC's request, the Company is available to meet with the Commissioners and Staff to further discuss its proposal.

Thank you for your attention to this filing. If you have any questions concerning this report, please call me at 401-784-7288.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Jennifer Brooks Hutchinson".

Jennifer Brooks Hutchinson

Enclosures

cc: Docket 3628 Service List  
Leo Wold, Esq.  
Steve Scialabba, Division  
James Lanni, Division

Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate was electronically transmitted to the individuals listed below.

The paper copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities and Carriers.



\_\_\_\_\_  
Joanne M. Scanlon

January 8, 2016  
Date

**National Grid – Electric Service Quality Plan – Compliance - Docket 3628  
Service List Updated 3/25/15**

<b>Name</b>	<b>E-mail Distribution List</b>	<b>Phone</b>
Raquel Webster, Esq. National Grid 280 Melrose Street Providence, RI 02907-1438	<a href="mailto:Raquel.webster@nationalgrid.com">Raquel.webster@nationalgrid.com</a> ;	401-784-7667
	<a href="mailto:Celia.obrien@nationalgrid.com">Celia.obrien@nationalgrid.com</a> ;	
	<a href="mailto:Joanne.scanlon@nationalgrid.com">Joanne.scanlon@nationalgrid.com</a> ;	
Leo Wold, Esq. Dept. of Attorney General 150 South Main St. Providence, RI 02903	<a href="mailto:lwold@riag.ri.gov">lwold@riag.ri.gov</a> ;	401-222-2424 ext. 2299
	<a href="mailto:Steve.scialabba@dpuc.ri.gov">Steve.scialabba@dpuc.ri.gov</a> ;	
	<a href="mailto:Joseph.Shilling@dpuc.ri.gov">Joseph.Shilling@dpuc.ri.gov</a> ;	
	<a href="mailto:James.Lanni@dpuc.ri.gov">James.Lanni@dpuc.ri.gov</a> ;	
	<a href="mailto:Jmunoz@riag.ri.gov">Jmunoz@riag.ri.gov</a> ;	
	<a href="mailto:dmacrae@riag.ri.gov">dmacrae@riag.ri.gov</a> ;	
<b>Original &amp; 9 copies file w/:</b> Luly E. Massaro, Commission Clerk Public Utilities Commission 89 Jefferson Boulevard Warwick, RI 02888	<a href="mailto:Al.contente@dpuc.ri.gov">Al.contente@dpuc.ri.gov</a> ;	401-780-2107
	<a href="mailto:Luly.massaro@puc.ri.gov">Luly.massaro@puc.ri.gov</a> ;	
	<a href="mailto:Todd.bianco@puc.ri.gov">Todd.bianco@puc.ri.gov</a> ;	
	<a href="mailto:Amy.Dalessandro@puc.ri.gov">Amy.Dalessandro@puc.ri.gov</a> ;	
	<a href="mailto:Alan.nault@puc.ri.gov">Alan.nault@puc.ri.gov</a> ;	

**State of Rhode Island and Providence Plantations  
Public Utilities Commission**

_____	)	
The Narragansett Electric Company	)	RIPUC Docket No. 3628
d/b/a/ National Grid	)	
	)	
_____	)	

**Settlement Agreement**

WHEREAS, under National Grid's<sup>1</sup> existing service quality (SQ) plan that was approved by the Public Utilities Commission (PUC) in Order No. 19020 (July 13, 2007) (2007 SQ Plan), National Grid is required to interview a sample of customers who recently contacted the Company's Call Center during the year in order to determine their satisfaction with that contact (i.e. regulated survey). The quarterly results from the regulated survey report the percentage of customers rating their Call Center experience a 6 or 7 based on the following question: "Using a scale where 1 means "very dissatisfied" and 7 means "very satisfied", how satisfied were you with the contact you had with National Grid regarding (call reason)?"

WHEREAS, the regulated survey in the 2007 SQ Plan has been in place for approximately 10 years and consists of a telephone interview conducted by an independent survey vendor.

WHEREAS, the regulated survey limits the customer survey population to a sample of approximately 800 residential electric customers annually who had an experience relating to one of 8 "call reasons" or transaction types: (1) power outage, (2) meter on, (3) meter off, (4) meter exchange, (5) collections, (6) payment plan, (7) meter read, and (8) meter test. The final annual result that the Company reports to the PUC is determined by weighting the respective contact

<sup>1</sup> The Narragansett Electric Company d/b/a National Grid.

satisfaction score for each of the eight transactions by the number of these transactions that occurred over the course of the calendar year, as identified from the total sample files received from the Call Center. The final annual result is then compared with the performance standard set forth in the 2007 SQ Plan.

WHEREAS, National Grid's internal contactor survey is one of the primary tools used to gauge customer satisfaction at National Grid, and has been conducted since 2009 across National Grid's entire US service footprint. It also consists of a telephone interview conducted by an independent survey vendor among National Grid's customers who have had a recent interaction with the Company.

WHEREAS, National Grid's internal contactor survey has a customer survey population of approximately 1,560 residential electric customers annually, i.e., almost double the number of customers as the regulated survey.

WHEREAS, the Company and the Division of Public Utilities and Carriers (the "Division" and collectively, the "Parties") wish to enter into this Settlement Agreement (Agreement) to implement a change to the Customer Contact Survey performance standard under the Company's 2007 SQ Plan, effective January 1, 2016.

NOW THEREFORE, in consideration of the exchange of promises and covenants hereinafter contained, the Company and the Division agree as follows:

1. Customer Contact Performance Standard
  - (a) Survey

The Company and Division agree to replace the regulated survey in the 2007 SQ Plan with a new survey, consisting of the following two questions from National Grid's internal contactor survey:

- (Q28) Overall, on a scale of 1 to 10 where 1 means dissatisfied and 10 means satisfied, how satisfied are you with the services provided by National Grid?
- (Q16) Overall, on a scale of 1 to 10, where 1 means dissatisfied and 10 means satisfied, how satisfied are you with the quality of the service provided by the telephone representative?

(b) Proposed Composite Metric

The Company and the Division agree to utilize a composite measure of the two questions referenced in (a), above for purposes of calculating the satisfaction score. The composite score is a simple average of the score from Q28 and the score from Q16. The individual scores for each question are the percentage of respondents who provide a rating of “8”, “9”, or “10” on a 10-point scale. This metric is a commonly used method of interpreting survey responses and is similar to the current survey, which utilizes a 7-point scale and is based on the percentage of customers who provide a rating of “6” or “7”.

(c) Historical Performance Benchmarks

The Company and the Division agree that it is reasonable to update the historical performance benchmark period for purposes of setting the satisfaction targets for evaluating the survey results. Accordingly, the Parties agree to establish the Customer Contact Survey performance standard based on the monthly results for the 24-month period of August 2013 through July 2015. The Parties agree that this 24-month period is appropriate because it takes into account current changes in customer engagement, i.e. more customers are moving towards self-serve platforms, leaving the more difficult issues to be resolved by the call center. Additionally, the updated benchmark and satisfaction targets reflect the current trend in survey data, i.e. how external factors such as major weather events and commodity price increases can

impact customer satisfaction scores. At the same time, the proposed satisfaction targets are similar to the satisfaction targets under the 2007 SQ Plan and will continue to encourage the Company to maintain and improve its customer satisfaction performance. The Parties further agree to continue to utilize a Standard Deviation method across the above-referenced two-year period to set the penalty and offset targets around the composite score.

2. Reporting

The Company agrees to share the complete results of National Grid's internal contactor survey with the Division on an annual basis in conjunction with the Company's annual SQ report that it files with the PUC every May 1, commencing with the May 1, 2017 SQ report.

3. Amended Service Quality Plan

Attachment 1 hereto contains the detailed provisions of the Company's "Amended Service Quality Plan." Except as modified by this Agreement, the 2007 SQ Plan remains the same as currently in effect. Attachment 1 contains a full and complete copy of the "Amended Service Quality Plan," as adopted by this Agreement.

4. Other Provisions

(a) Unless expressly stated herein, the making of this Agreement establishes no principles and shall not be deemed to foreclose any Party from making any contention in any other proceeding or investigation.

(b) This Agreement is the product of settlement negotiations. The content of those negotiations is privileged and all offers of settlement shall be without prejudice to the position of any Party.

(c) This Agreement is submitted on the condition that it be approved in full by the Commission, and on the further condition that if the Commission does not approve the

Agreement in its entirety, the Agreement shall be deemed withdrawn and shall not constitute a part of the record in any proceeding or be used for any purpose, unless all Parties agree to Commission modifications.

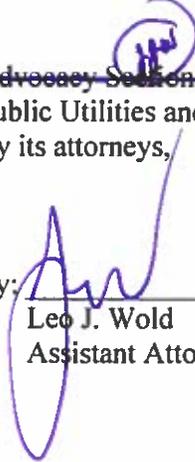
(d) Any number of counterparts of this Agreement may be executed, and each shall have the same force and effect as an original instrument, and as if all the parties to all the counterparts had signed the same instrument.

**[Remainder of page left intentionally blank. Signatures appear on the following page.]**

IN WITNESS WHEREOF, the Parties agree that this Settlement Agreement is reasonable, in the public interest and in accordance with law and regulatory policy, and have caused this Settlement Agreement to be executed by their respective representatives, each being authorized to do so.

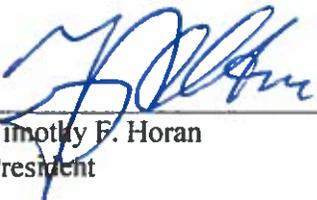
~~Advocacy Section of~~ The Division of  
Public Utilities and Carriers  
By its attorneys,

Dated: December 21, 2015

By:   
Leo J. Wold  
Assistant Attorney General

The Narragansett Electric Company,  
d/b/a National Grid

January 4, 2016  
Dated: ~~December~~ 4, 2015

By:   
Timothy F. Horan  
President

**Attachment 1**

**Amended Service Quality Plan  
For  
The Narragansett Electric Company  
d/b/a National Grid**

**NATIONAL GRID**  
**2015 AMENDED ELECTRIC SERVICE QUALITY PLAN**

The Narragansett Electric Company d/b/a National Grid (Company) shall establish the performance standards for reliability and customer service that are set forth in this document. The standards are designed as a penalty-only approach, under which the Company would be penalized if its performance did not meet the standards. The Company receives no reward for performance which exceeds the standards. However, positive performance in one category can be used to offset penalties in other categories within a given year. The Company shall file annually by May 1 a report of its performance during the prior calendar year under the performance standards in this plan. Any net penalty balance reflected in the Company's annual report shall be credited to customers in a manner determined by the Rhode Island Public Utilities Commission (PUC) at that time.

The maximum penalty authorized under the standards set forth below is \$2.2 million per year. The performance standards set forth below shall be in effect for the calendar year 2007 and continue through 2009 or until they are modified by the Commission.

**NOTE:** When interpreting the performance standards that follow, please note that pages 6 through 8 of this Exhibit contain definitions of terms used in the standards.

**NATIONAL GRID  
2015 AMENDED ELECTRIC SERVICE QUALITY PLAN**

**FREQUENCY OF INTERRUPTIONS PER CUSTOMER SERVED**

<u>Year</u>	<u>SAIFI*</u>
2004	0.91
2003	1.08
2002	0.97
2001	1.09
2000	0.97
1999	0.94
1998	0.89
1997	0.75
1996	0.90

	-2 Std Dev.	-1 Std Dev.	Mean	+1 Std Dev.	+2 Std Dev.
Log Average			-0.063		
Log Std. Dev.			0.112		
Log Normal	-0.288	-0.175	-0.063	0.050	0.162
SAIFI	0.75	0.84	0.94	1.05	1.18

**PERFORMANCE STANDARD – SAIFI (System Average Interruption Frequency Index):**

<u>SAIFI Company Target</u>	<u>(Penalty)/ Offset</u>
More than 1.18	(\$916,000)
1.06 – 1.18	linear interpolation
0.84 – 1.05	\$0
0.75 – 0.83	linear interpolation
Less than 0.75	\$229,000

\* The calculations are based on the IEEE Std. 1366-2003 2.5b methodology for the Company. Major Event Day results are removed from these calculations, but reported. The target bands are calculated considering the lognormal nature of the data. To do this, the lognormal mean and lognormal standard deviation are calculated and applied in lognormal space, which is done by applying the mean, 1 standard deviation, and 2 standard deviations and then converting back to normal space.

$$\text{SAIFI} = \frac{\text{Total Number of Customers Interrupted}}{\text{Total Number of Customers Served}}$$

**NATIONAL GRID  
2015 AMENDED ELECTRIC SERVICE QUALITY PLAN**

**DURATION OF INTERRUPTIONS PER CUSTOMER SERVED**

<u>Year</u>	<u>SAIDI*</u>
2004	66.1
2003	74.9
2002	71.0
2001	69.0
2000	60.2
1999	52.3
1998	42.2
1997	40.9
1996	51.9

	<u>Log Average</u>	<u>Log Std. Dev.</u>			
	4.051	0.224			
	<u>-2 Std Dev.</u>	<u>-1 Std Dev.</u>	<u>Mean</u>	<u>+1 Std Dev.</u>	<u>+2 Std Dev.</u>
Log Normal	3.604	3.827	4.051	4.275	4.498
SAIDI	36.7	45.9	57.5	71.9	89.9

<b>PERFORMANCE STANDARD – SAIDI (System Average Interruption Duration Index):</b>	
<u>SAIDI Company Target</u>	<u>(Penalty)/ Offset</u>
More than 89.9	(\$916,000)
72.0 – 89.9	linear interpolation
45.9 – 71.9	\$0
36.7 – 45.8	linear interpolation
Less than 36.7	\$229,000

\* The calculations are based on the IEEE Std. 1366-2003 2.5B methodology for the Company. Major Event Day results are removed from these calculations, but reported. The target bands are calculated considering the lognormal nature of the data. To do this, the lognormal mean and lognormal standard deviation are calculated and applied in lognormal space, which is done by applying the mean, 1 standard deviation, and 2 standard deviations and then converting back to normal space.

$$\text{SAIDI (minutes)} = \frac{\text{Total Customer Minutes Interrupted}}{\text{Total Number of Customers Served}}$$

NATIONAL GRID  
2015 AMENDED ELECTRIC SERVICE QUALITY PLAN

CUSTOMER CONTACT SURVEY

<u>Month</u>	<u>% Satisfied*</u>
August 2013	87.7%
September 2013	86.8%
October 2013	86.0%
November 2013	83.3%
December 2013	87.5%
January 2014	85.8%
February 2014	82.4%
March 2014	81.7%
April 2014	84.1%
May 2014	78.7%
June 2014	80.3%
July 2014	90.5%
August 2014	81.7%
September 2014	84.7%
October 2014	89.8%
November 2014	82.3%
December 2014	85.5%
January 2015	83.6%
February 2015	76.1%
March 2015	78.7%
April 2015	75.5%
May 2015	79.1%
June 2015	83.0%
July 2015	82.2%
Mean	83.2%
Standard Deviation	4.4%

PERFORMANCE STANDARD – Customer Contact:

<u>% Satisfied</u>	<u>(Penalty)/</u>
<u>Target</u>	<u>Offset</u>
Less than 74.4%	(\$184,000)
74.4% – 78.7%	linear interpolation
78.8% – 87.6%	\$0
87.7% – 92.0%	linear interpolation
More than 92.0%	\$46,000

**NATIONAL GRID  
2015 AMENDED ELECTRIC SERVICE QUALITY PLAN**

The calculations are based on responses from customers of the Company based on surveys performed by an independent third party consultant. A vendor surveys a random sample of the Company's customers who have contacted the call center recently in order to determine their level of satisfaction with their most recent contact with the Company regarding any call reason. Overall survey results are based on a composite measure of responses from customers to the following 2 questions taken from National Grid's contactor survey: (1) Overall, on a scale from 1 to 10, where 1 means "dissatisfied" and 10 means "satisfied", how satisfied are you with the services provided by National Grid? (2) Overall, on a scale from 1 to 10, where 1 means "dissatisfied" and 10 means "satisfied", how satisfied are you with the quality of the service provided by the telephone representative?

The individual satisfaction score for each question is the percentage of respondents who provide a rating of "8", "9", or "10" on a 10-point scale where 1 means "dissatisfied" and 10 means "satisfied". The "percent satisfied" composite score is a simple arithmetic average of the satisfaction score from each question.

**NATIONAL GRID  
2015 AMENDED ELECTRIC SERVICE QUALITY PLAN  
TELEPHONE CALLS ANSWERED WITHIN 20 SECONDS**

<u>Year</u>	<u>Percent of Calls Answered Within 20 Secs*</u>
2004	94.1%
2003	93.3%
2002	84.0%
2001	50.4%
2000	76.7%
1999	76.9%
1998	80.9%
1997	76.7%
1996	70.2%
Mean	78.1%
Standard Deviation	12.3%

**PERFORMANCE STANDARD – Telephone Calls Answered within 20 Seconds:**

<u>% Calls Answ Within 20 Seconds Target</u>	<u>(Penalty)/ Offset</u>
Less than 53.5%	(\$184,000)
53.5% – 65.7%	linear interpolation
65.8% – 90.4%	\$0
90.5% – 100.0%	linear interpolation

\* The percent of calls answered within 20 seconds is calculated by dividing the number of calls answered within 20 seconds by the total number of calls answered during the year. "Calls answered" include calls answered by a customer service representative ("CSR") and calls completed within the Voice Response Unit ("VRU"). The time to answer is measured once the customer makes a selection to either speak with a CSR or use the VRU. VRU calls are included beginning in the year 2000.

$$\text{Percent of Calls Answered Within 20 Seconds} = \frac{\text{Total Calls Answered Within 20 Seconds}}{\text{Total Calls Answered}}$$

**NATIONAL GRID  
2015 AMENDED ELECTRIC SERVICE QUALITY PLAN**

**DEFINITIONS OF  
PERFORMANCE STANDARD  
MEASUREMENTS**

The following reliability definitions used in conjunction with the performance standards are in accordance with the Institute of Electrical and Electronics Engineers, Inc. ("IEEE") Std. 1366-2003. It is assumed that additional reliability-related definitions found in this standard are also implicit in the reliability calculations.

**CUSTOMER COUNT**

The number of customers either served or interrupted depending on usage.

**TOTAL NUMBER OF CUSTOMERS SERVED**

The average number of customers served during the reporting period. If a different customer total is used, it must be clearly defined within the report.

**TOTAL NUMBER OF CUSTOMERS INTERRUPTED**

The sum of the customers losing electric service for any defined grouping of interruption events during the reporting period.

**TOTAL CUSTOMER MINUTES INTERRUPTED**

The product of the number of customers interrupted and the interruption duration for any interruption event. Also, the sum of those products for any defined grouping of interruption events.

**MAJOR EVENT**

Designates an event that exceeds reasonable design and or operational limits of the electric power system. A Major Event includes at least one Major Event Day.

**MAJOR EVENT DAY**

A day in which the daily system SAIDI exceeds a threshold value,  $T_{MED}$ . For the purposes of calculating daily system SAIDI, any interruption that spans multiple calendar days is accrued to the day on which the interruption began. Statistically, days having a daily system SAIDI greater than  $T_{MED}$  are days on which the energy delivery system experienced stresses beyond that normally expected (such as severe weather). Activities that occur on major event days should be separately analyzed and reported. The  $T_{MED}$  threshold value will be fixed at 5.34 for the years 2007 and 2008, at which time the Company's performance will be reviewed to determine if the threshold value should be re-calculated using the IEEE Std. 1366-2003 methodology.

**NATIONAL GRID  
2015 AMENDED ELECTRIC SERVICE QUALITY PLAN**

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

The system average interruption frequency index indicates how often the average customer experiences a sustained interruption over a predefined period of time. Mathematically, this equation is given in (1).

$$SAIFI = \frac{\sum \text{Total Number of Customers Interrupted}}{\text{Total Number of Customers Served}} \quad (1)$$

To calculate the index, use equation (2) below.

$$SAIFI = \frac{\sum N_i}{N_T} = \frac{CI}{N_T} \quad (2)$$

Where:

- i denotes an interruption event
- CI = Customers Interrupted
- N<sub>T</sub> = Total Number of Customers Served for the Area

**SAIDI (System Average Interruption Duration Index)**

This index indicates the total duration of interruption for the average customer during a predefined period of time. It is commonly measured in customer minutes or customer hours of interruption. Mathematically, this equation is given in (3).

$$SAIDI = \frac{\sum \text{Customer Interruption Durations}}{\text{Total Number of Customers Served}} \quad (3)$$

To calculate the index, use equation (4).

$$SAIDI = \frac{\sum r_i N_i}{N_T} = \frac{CMI}{N_T} \quad (4)$$

Where:

- i denotes an interruption event
- r<sub>i</sub> = Restoration Time for each Interruption Event
- CMI = Customer Minutes Interrupted
- N<sub>T</sub> = Total Number of Customers Served for the Area

**NATIONAL GRID  
2015 AMENDED ELECTRIC SERVICE QUALITY PLAN**

**CUSTOMER CONTACT SURVEY**

A vendor surveys a random sample of the Company's customers who have contacted the call center recently in order to determine their level of satisfaction with their most recent contact with the Company regarding any call reason. Overall survey results are based on a composite measure of responses from customers to the following 2 questions taken from National Grid's contactor survey: (1) Overall, on a scale from 1 to 10, where 1 means "dissatisfied" and 10 means "satisfied", how satisfied are you with the services provided by National Grid? (2) Overall, on a scale from 1 to 10, where 1 means "dissatisfied" and 10 means "satisfied", how satisfied are you with the quality of the service provided by the telephone representative?

The individual satisfaction score for each question is the percentage of respondents who provide a rating of "8", "9", or "10" on a 10-point scale where 1 means "dissatisfied" and 10 means "satisfied". The composite score is a simple arithmetic average of the satisfaction score from each question.

**TELEPHONE CALLS ANSWERED WITHIN 20 SECONDS**

The percent of calls answered within 20 seconds is calculated by dividing the number of calls answered within 20 seconds by the total number of calls answered during the year. "Calls answered" include calls answered by a customer service representative ("CSR") and calls completed within the voice response unit ("VRU"). Abandoned calls are not considered. The time to answer is measured once the customer makes a selection to either speak with a CSR or use the VRU. VRU calls are included beginning in the year 2000.

**LINEAR INTERPOLATION**

- (1) The actual performance or penalty each year will be calculated and the result will be scaled or interpolated linearly between the relevant two points of the results range and the relevant two points on the dollar range.
- (2) The method of determining the actual penalty, or offset, of each performance standard is determined by multiplying the value of the penalty, or offset, by the absolute value of the actual performance indicator minus the value of the first standard deviation from the mean of that indicator, divided by the value of the second standard deviation of the mean of that indicator minus the value of the first standard deviation from the mean of that indicator.

$$\text{\$ Penalty or Offset} = \text{Penalty or Offset \$ Value} \times \frac{\text{Actual} - 1^{\text{st}} \text{ standard deviation}}{2^{\text{nd}} \text{ standard deviation} - 1^{\text{st}} \text{ standard deviation}}$$

**NATIONAL GRID  
2015 AMENDED ELECTRIC SERVICE QUALITY PLAN**

**ADDITIONAL REPORTING CRITERIA**

1. Each quarter, the Company will file a report of 5% of all circuits designated as worst performing on the basis of customer frequency.  
  
Included in the report will be:
  1. The circuit id and location.
  2. The number of customers served.
  3. The towns served.
  4. The number of events.
  5. The average duration.
  6. The total customer minutes.
  7. A discussion of the cause or causes of events.
  8. A discussion of the action plan for improvements including timing.
  
2. The Company will track and report monthly the number of calls it receives in the category of Trouble, Non-Outage. This includes inquiries about dim lights, low voltage, half-power, flickering lights, reduced TV picture size, high voltage, frequently burned out bulbs, motor running problems, damaged appliances and equipment, computer operation problems and other non-Interruptions related inquiries.
  
3. The Company will report its annual meter reading performance as an average of monthly percentage of meters read.
  
4. For each event defined as a Major Event Day, the Company will prepare a report, which will be filed annually as part of the annual SQ filing, detailing the following information:
  1. Start date/Time of event.
  2. Number/Location of crews on duty (both internal and external crews).
  3. Number of crews assigned to restoration efforts.
  4. The first instance of mutual aid coordination.
  5. First contact with material suppliers.
  6. Inventory levels: pre-event/daily/post-event.
  7. Date/Time of request for external crews.
  8. Date/Time of external crew assignment.
  9. # of customers out of service by hour.
  10. Impacted area.
  11. Cause.
  12. Weather impact on restoration.
  13. Analysis of protective device operation.
  14. Summary of customers impacted.