

STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

At a session of the Public Service  
Commission held in the City of  
Albany on July 28, 2004

COMMISSIONERS PRESENT:

William M. Flynn, Chairman  
Thomas J. Dunleavy  
Leonard A. Weiss  
Neal N. Galvin

CASE 02-E-1240 - Proceeding on Motion of the Commission to  
Examine Electric Service Standards and  
Methodologies.

Case 02-E-0701 - In the Matter of a Petition by Orange and  
Rockland Utilities, Inc. to Update the  
Company's Customer Average Interruption  
Duration Index (CAIDI) Target Levels for the  
Central and Western Operating Divisions.

ORDER ADOPTING CHANGES TO STANDARDS  
ON RELIABILITY OF ELECTRIC SERVICE

(Issued and Effective October 12, 2004)

BY THE COMMISSION:

BACKGROUND

In 1991, electric service standards were adopted for large New York electric utilities, as a means of ensuring that the utilities provided adequate levels of service.<sup>1</sup> Under these standards, objective and minimum reliability targets were established for each utility operating area, based on an assessment of five years of historic performance. The targets

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<sup>1</sup> Case 90-E-1119, Reliability and Quality of Electric Service Standards, Order Adopting Standards on Reliability and Quality of Electric Service (issued July 2, 1991)(1991 Order).

are set for measurements of SAIFI, the frequency of interruption,<sup>2</sup> and CAIDI, the duration of interruption.<sup>3</sup>

In 1995, after review of the service standards, some operating area targets were revised.<sup>4</sup> In 1997, filing requirements were streamlined, through reductions to filing requirements deemed no longer essential or unnecessarily burdensome.<sup>5</sup>

In a petition dated April 8, 2002, Orange and Rockland Utilities, Inc. (O&R) requested that the CAIDI target for two of its operating divisions be revised. The requested revisions raised questions concerning other utilities' targets, impelling an assessment of the targets beyond those at O&R. Accordingly, the Order Instituting Proceeding directed that proceedings be conducted to assess the methods used to develop electric service standards, to assess the electric service standards currently in place, and to explore other means of monitoring electric service

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<sup>2</sup> The System Average Interruption Frequency Index (SAIFI) measures the average number of times a typical customer's service is interrupted in a year, and is calculated by dividing the number of customers interrupted by the number of customers served.

<sup>3</sup> The Customer Average Interruption Duration Index (CAIDI) measures the average number of hours required to restore service to a customer after its interruption, and is calculated by dividing the total customer interruption duration by the number of customers interrupted.

<sup>4</sup> Case 95-E-0165, Changes to Standards on Reliability, Order Adopting Changes to Standards on Reliability of Electric Service (issued October 12, 1995)(1995 Order).

<sup>5</sup> Case 96-E-0979, Changes to Standards on Reliability, Order Adopting Changes to Standards on Reliability and Quality of Service (issued February 26, 1997)(1997 Order).

reliability and power quality.<sup>6</sup> The Order Instituting Proceeding also decided that a comprehensive review of the service standards was needed, and invited comments on the issues raised by such a review.

After Initial Comments were submitted in conformance with the Order Instituting Proceeding, Staff developed proposed revisions to the existing standards. These revised Service Reliability and Quality Standards (Staff Revised Standards) were promulgated for comment in a Notice Requesting Comments issued August 14, 2003 in these proceedings (August 2003 Notice). After receiving extensions of time, parties filed Responsive Comments on the issues arising under that Notice.

The Initial Comments, the Staff Revised Standards, and the Responsive Comments to those standards are summarized below. Moreover, a Notice of Proposed Rulemaking concerning this proceeding was published in the State Register on March 10, 2004, in conformance with the State Administrative Procedure Act (SAPA). No comments in response to the Notice were received by the applicable SAPA deadline of April 26, 2004.

#### POSITIONS OF THE PARTIES

##### Initial Comments

In the initial phase of these proceedings, parties evaluated all aspects of the existing electric service standards, including the selection of the indices used as the appropriate measures of acceptable service reliability. Parties were encouraged to suggest alternative approaches to ensuring service reliability and quality.

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<sup>6</sup> Case 02-E-1240, Electric Service Standards and Methodologies, Order Commencing Proceeding and Inviting Comments on Electric Service Standards(issued October 11, 2002)(Order Instituting Proceeding).

A. Attorney General

The Office of the Attorney General (Attorney General) endorsed the continued use of the current SAIFI frequency and CAIDI duration indices. The Attorney General requested that Staff inquire into the feasibility and cost efficiency of incorporating voltage requirements into the reliability standards, without recommending any particular approach to measuring voltage levels.

B. Central Hudson

Central Hudson Gas & Electric Corporation (Central Hudson) proposed the use of the System Average Interruption Duration Index (SAIDI) as the sole measure for establishing reliability targets.<sup>7</sup> The company, however, supported the continued submission of SAIFI and CAIDI data for informational purposes.

Central Hudson suggests that the target thresholds for the indices be updated annually rather than set at a level that remains fixed until modified. The company believes that the self-adjustment of the standards would eliminate the need for periodic review of the target thresholds in future proceedings. The company also recommends the elimination of the power quality section from the items that must be submitted in the annual report on reliability, as it believes the information is not useful because of the low number of power quality complaints received.

In place of the existing definition of "major storms," used to determine the data that should be excluded from

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<sup>7</sup> The System Average Interruption Duration Index (SAIDI) is a means to measure the average number of hours a typical customer was without service during a year. It is calculated by dividing the total customer interruption duration by the number of customers served. For mathematical purposes, it is equivalent to the product of SAIFI and CAIDI.

calculation of the reliability targets, Central Hudson would introduce an alternative denominated as the "Beta Method," which is a statistical-based approach developed by the Institute of Electrical and Electronic Engineers (IEEE) for identifying non-typical days that increase SAIDI values. Additionally, Central Hudson suggested that a weather normalization mechanism be developed based on parameters such as lightning strikes and wind speed.

C. Con Edison

Consolidated Edison Company of New York, Inc. (Con Edison) commented extensively on the need for more and broader exclusions of data from the calculation of the service standard indices. The company contended the exclusions should extend to data on interruptions arising out of excessive temperatures, heavy salt spreading, safety concerns (police or fire officials' directives), New York Independent System Operator (NYISO) orders, and transmission or generation failures not under the company's control. Con Edison also believes the worst-performing circuits should be identified based on a three-year average, which would better reveal performance trends. Finally, the company agrees with Central Hudson on the elimination of the power quality section from the annual report, arguing that the statistics reported there are of minimal significance.

D. CPB

The Consumer Protection Board (CPB) opposes utility proposals to substitute SAIDI for SAIFI and CAIDI, and to eliminate power quality information from annual reports on reliability. It also contends that any changes to utility rates or rate plan reliability performance incentive mechanisms should be addressed in rate cases instead of being considered here.

E. MI

Multiple Intervenors (MI) requests that steps be taken to strengthen power quality standards. MI believes that its constituents are exposed to power quality problems and that the current standards are not effective. Although declining to propose specific recommendations, MI seeks to establish target levels for power quality. MI also advocates the creation of a formal process for reporting power quality complaints to the Commission.

F. Niagara Mohawk

Niagara Mohawk Power Corporation (Niagara Mohawk) asserts that SAIDI should be added as a third service standard index. The company believes that this measure can be used to balance the existing indices, and that a positive SAIDI performance could be used to justify forgoing corrective action in an operating division where performance fell below minimum thresholds for other indices. Niagara Mohawk also proposed to periodically adjust the targets based on recent reliability performance.

G. NYSEG

New York State Electric & Gas Corporation (NYSEG) would replace the existing SAIFI frequency and CAIDI duration measures with SAIDI. In the alternative, it would replace the CAIDI measure with a mean duration of outage measure.<sup>8</sup> The company finds the mean duration of outage measure superior to CAIDI, because it is calculated solely on the basis of interruptions themselves; in comparison, CAIDI reflects the number of customers affected.

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<sup>8</sup> The mean duration of outage is a measure of the average length of an interruption during a year. It is calculated by dividing the total interruption duration hours by the number of interruptions.

NYSEG believes that reliability measures should be reviewed on a three-to-five-year rolling average basis to reduce variability due to weather. The company also proposes the elimination of the objective level targets, and the power quality section of the annual report. It claims that ending the reporting requirement would enhance the relevance of the remaining standards and reduce burdensome reporting requirements.

NYSEG would expand the major storm definition by excluding data from all utility operating areas if a storm affects 10% or more of the utility's entire body of customers. Finally, the company argues that changes to the standards should not be implemented unless a cost/benefit analysis justifies the change and that the costs required to meet more stringent standards are recovered by the company in rates.

H. O&R

Orange and Rockland Utilities, Inc. (O&R) also would eliminate the power quality section of the annual report. The company would substitute SAIDI in place of CAIDI as the measure of interruption duration. As in its original filing, O&R cites an inverse relationship between SAIFI and CAIDI as a reason for eliminating CAIDI from the standards. The company also continues to support the review and update its target thresholds regardless of the indices selected.

According to O&R, periods of excludable data should be determined through the IEEE Beta Method in addition to the current major storm definition. O&R also favors expanding the major storm definition to apply on a company-wide basis, not just by operating area, and the exclusion of NYISO-related events from outage data.

I. RG&E

Rochester Gas and Electric Corporation (RG&E) proposed to substitute SAIDI for the current SAIFI frequency and CAIDI duration indices. If use of the existing indices is continued, the company opposes tightening performance targets based on recent performance improvements. RG&E believes what it describes as "ratcheting up" would penalize companies for good performance, and, consequently, urges that its current target levels be left in place.

J. The Unions

The Utilities Workers Union of America and International Brotherhood of Electrical Workers (the Unions) stress the importance of equipment replacement programs and maintenance activities to ensuring safe and reliable electric service. The Unions cited recent downsizing and relaxed inspection schedules as practices which adversely affect reliability. The Unions desire stricter service standards that would not accommodate reductions in preventive maintenance or repair work or the elimination of employees that perform those tasks.

The Staff Proposal

Following the filing of Initial Comments, Staff met with the parties, individually and collectively, to evaluate the value of the existing indices for judging utility performance in maintaining reliability and power quality and evaluated other means for monitoring that performance. Staff then developed the Staff Revised Standards that it believes will promote the maintenance or improvement of current service levels, without imposing undue financial burdens on the utilities; those Standards were promulgated for comment in the August 2003 Notice.



A. Use of SAIDI

Many of the electric utilities believe SAIDI may be deployed as the primary service reliability measure, replacing the existing use of SAIFI and CAIDI. A few utilities propose that SAIDI targets be developed for use in conjunction with the existing SAIFI or CAIDI measures. The companies contend that there is an inverse relationship between SAIFI and CAIDI -- as SAIFI increases, CAIDI decreases -- and the mathematical relationship of SAIDI to SAIFI and CAIDI would offset that inverse relationship, thereby more accurately capturing actual reliability performance.

In its Revised Standards, Staff declined to accept the generalization that a reduction in interruptions, captured in SAIFI, leads to an increase in duration times, captured in CAIDI. According to Staff, historical performance does not always support the existence of the inverse relationship that the utilities posit.

The theory on the inverse relationship between SAIFI and CAIDI, Staff explains, holds only if a utility significantly reduces the number of interruptions of short duration length. While advances in technology have assisted utilities in reducing the number of those interruptions, Staff believes that technology is not the sole reason for increases in duration times that have been experienced. Other factors affecting the duration of outages, Staff contends, include the downsizing of workforces and whether an interruption occurs during non-working hours, when response times increase significantly.

Moreover, Staff points out that proposals to rely upon SAIDI as the sole measure of utility performance were rejected previously, because use of one measure to monitor reliability might potentially mask poor performance in frequency or

duration. As a result, Staff declined to reflect a SAIDI measure in its Revised Standards.

B. Exclusion of Data

Because the service standards were intended to monitor utility performance under typical working conditions, data from periods of adverse weather conditions, referred to as "major storms,"<sup>9</sup> were excluded from the reliability calculations. Under the existing standards, a utility must petition for an exemption before any other data, such as from a catastrophic event, is excluded. The utilities recommended that an additional exclusion be created, for interruptions that result from NYISO orders, because those interruptions are also atypical and do not measure normal working conditions.<sup>10</sup> Staff reflected the proposal to exclude NYISO event data in the Revised Standards.

Central Hudson suggested that a weather normalization mechanism be developed to adjust the reliability measures to accommodate factors such as lightning strikes and wind speed. Con Edison added that an adjustment to reflect delivery equipment temperature design limits would also be appropriate. Staff, however, points out that similar proposals have been rejected in the past. Staff believes that the major storm and NYISO exemptions are adequate, and that if other extraordinary circumstances arise, a utility may petition for a waiver excluding data from the reliability calculations. As a result,

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<sup>9</sup> A major storm is defined as a period of adverse weather during which service interruptions affect at least 10% of the customers in an operating area, or result in customers losing electric service for a duration of at least 24 hours.

<sup>10</sup> The reliability incentive mechanisms in some utility rate plans already provide for exemption of data related to NYISO events outside the control of the utility.

Staff did not reflect other utility proposals for the exclusion of data in its Revised Standards.

Central Hudson, Niagara Mohawk and O&R propose that the data be normalized, through the "Beta Method," to exclude certain days' data. Staff believes that method is flawed. According to Staff, the method does not reflect event causation, and would fail to recognize interruptions resulting from actions taken by the utility, or its failure to act, that should be included when calculating reliability indices. Interruptions within the utility's control, or otherwise its responsibility, should not be eliminated from the calculation.

Moreover, the Beta Method relies upon the SAIDI index as a means of determining those days that are defined as abnormal. Rejection of the SAIDI index, Staff notes, carries with it rejection of the Beta Method. As Staff believes that the Beta Method does not properly exclude only unusual events from the reliability measures, Staff declined to incorporate the Beta Method into the Revised Standards.

C. Power Quality

Disturbances that affect the characteristics of electricity that customers receive, but that do not result in a sustained interruption (i.e., loss of service for five minutes or more) fall within the category of power quality. Under the existing standards, utilities file power quality information in their annual reliability reports. There are, however, no power quality complaint procedures or guidelines that utilities must follow.

To strengthen the existing standards for monitoring power quality and related customer complaints, Staff proposes six categories for classification of power quality disturbances. In addition, Staff would require the utilities to identify the

cause of a disturbance as arising out of either utility-owned equipment or customer-owned equipment.

While Staff's proposed methodology would yield data on the volume, nature, and responsibility for power quality disturbances, Staff believes it would be premature to establish threshold targets for power quality. Staff believes consideration of thresholds should await development of an adequate data base.

Staff also proposed that utilities record the number of momentary interruptions experienced within each operating division. The data would be summarized by voltage class and presented in the annual report. Again, Staff would not at this time develop threshold targets for performance related to the momentary data, which would be used for informational purposes.

The AG, MI, and the Unions support the monitoring of voltage levels. Staff notes, however, that methods for accomplishing this task have not yet gained wide acceptance in the electric utility industry. In addition, the cost for installing the monitoring and measuring devices needed to capture the voltage data are not known. Although Staff believes it could establish a voltage measurement methodology, it claims the next step, setting appropriate performance standards, would not be easily achieved. As a result, Staff did not propose to set voltage performance standards at this time.

Staff, however, advocated adoption of the American National Standards Institute (ANSI) C84.1 for Electric Power Systems and Equipment - Voltage Ratings (60 hertz). That standard, recently revised by ANSI in 1995, sets forth recommended voltage ranges for typically-used system voltages and configurations. The Staff Revised Standards therefore incorporate the ANSI voltage Range A and B Classifications, for normal and emergency operational limits, respectively. For

delivery lines of sizes where voltage ranges were not identified in the ANSI Standards, Staff promulgated a default value of 5% above and below the nominal voltage. Staff's Revised Standards also reflects changes needed to accommodate Commission determinations on power quality.<sup>11</sup>

D. Reliability Targets

Under the existing reliability standards, minimum and objective performance threshold targets are established for each reliability measure, on an operating area basis. The minimum level targets define the lower level of performance that is adequate, while the objective level target is "fully" adequate performance.

For several years, Staff asserts, the objective thresholds have not been relied upon to monitor service quality. Reliability performance incentive mechanisms established under utility rate plans, Staff points out, have become the predominant approach for assessing a utility's reliability performance, and those mechanisms are generally premised on the minimum level targets. Moreover, Staff contends that comparing utility performance to the objective level targets has not improved utility performance. Therefore, Staff proposes to streamline the standards by eliminating the objective level targets.

According to Staff, ensuring that utilities maintain acceptable levels of electric reliability performance can be accomplished through use of minimum level threshold targets for the SAIFI and CAIDI service reliability measures. In its Revised Standards, Staff sets forth updated minimum level targets. It maintains that performance below these levels should be considered inadequate and unacceptable. Staff

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<sup>11</sup> These determinations include Case 28914, Conservation Voltage Reduction, Opinion No. 89-39 (issued December 17, 1989).

contends this baseline philosophy has worked well for monitoring service reliability in the rate plan reliability performance incentive mechanisms and for reporting on utility compliance with the existing electric service standards.

Staff considered several approaches to setting appropriate reliability targets. Central Hudson recommended recalculating the targets annually using five-year rolling average data. Staff declined to take the approach Central Hudson suggests, because it fails to adjust for trends where performance is degrading. Should a utility's performance decline, Staff points out, the five-year average would also weaken, resulting in a lower threshold for the utility to meet in future years. Rewarding poor performance, Staff contends, contravenes the policy, set forth in the Order Instituting Proceeding, that utilities should maintain or improve current service reliability.

Instead of establishing an automatic update mechanism, Staff would benchmark the threshold targets by comparing operating areas with similar characteristics to each other. While Staff agrees with the utilities that no single standard can accommodate the widely varying demographic and environmental circumstances affecting the different utility operating divisions, Staff believes that some operating areas nevertheless share similar characteristics regardless of the utility service territory where they are situated. To aid in monitoring service quality, Staff would establish performance levels for groups of operating areas that are similar in characteristics. Where similar performance characteristics exist among operating areas, benchmarking those areas against each other would promote equivalent service quality.

To form the appropriate groupings for benchmarking, Staff reviewed the historical performances of all the utilities

to determine preliminary SAIFI and CAIDI targets for each operating area. This approach, which simulates the approach used when the standards were originally developed, adjusts for atypical performance data. Additional factors, such as recent performance trends, were also evaluated in deciding the assignment of operating areas to a grouping.

Con Edison and O&R suggested that the target levels for the groupings in their service territories could be based on a statistical approach. The utilities, however, did not adjust for recent performance trends and did not adequately support the standard deviations relied upon to determine the proposed values. Although Staff did not accept the approach Con Edison and O&R proposed, Staff believed the minimum target levels arrived at under its approach and the utilities' approach would be similar, if adjustments were made to the utilities' numbers for recent trends and the placements of the operating areas into groupings.

#### The Responsive Comments

After the Staff Revised Standards were issued for comment in the August 2003 Notice, Responsive Comments were received. Those comments are summarized below.

##### A. Central Hudson

Central Hudson recommends that the term "undesirable" be substituted for "inadequate" when describing failure to meet a service standard target. The company also believes that the ANSI standard should not be modified to reflect Staff's 5% default margin. The company noted that its current operating limits allow for a 10% deviation below nominal voltage levels during normal contingencies.

Central Hudson requests that the proposed targets be adjusted, through application of a scaling factor, to reflect the impact of its newly installed Outage Management System

(OMS). The company submitted OMS data for its Fishkill operating area and recommends the same scaling factor it would apply to that OMS data be used for its other operating areas as well.

B. Con Edison and O&R

Although Con Edison and O&R filed comments separately, each company presented similar arguments. Both companies seek to expand the meaning of "major catastrophic event" by including a list of events. The companies would expand the definition of NYISO-related events to include events affecting generation or transmission facilities not owned by the utility that nevertheless experiences customer interruptions as a result. The utilities also recommend that the 45 day time period afforded for submitting a petition justifying exclusion data from an event be increased to 90 days.

Con Edison and O&R request that the term "worst-performing circuits" be changed to "lowest performance-ranked circuits." The companies believe the term "worst-performing circuits" can be misinterpreted, since the term suggests poor or inadequate performance. They stated that their terminology is neutral and does not connote a negative characterization. The utilities also seek to eliminate the characterization of service as "inadequate" when minimum level targets are not met.

With regard to power quality, Con Edison and O&R state that utilities should only be required to investigate complaints that recur. They believe that addressing complaints about one-time disturbances would be burdensome and divert resources. Con Edison and O&R would also eliminate the requirement to record momentary interruptions, stating the proposal would be financially burdensome and labor intensive.

Con Edison requests that an additional data exclusion be developed to address excessive interruptions related to



failures at manhole locations following major snowstorms. The company states that the use of road salt has a substantial impact on manhole-related customer outages. Con Edison would limit this exclusion to its network systems, since road salt only impacts underground systems. The company also suggests alternative SAIFI frequency and CAIDI duration targets for nearly all of its operating divisions.

O&R discusses further the use of SAIDI as a third index for measuring reliability. The company proposes to require that an operating division miss two of the three indices before corrective actions would be required. O&R also contends that the SAIFI frequency target for its Eastern division should be eased. To offset the impact of that proposal, O&R would make the Western Division target more stringent.

C. Multiple Intervenors

MI calls for enhanced power quality standards. MI states that the proposed service standards on that issue are not adequate since they do not establish targets for measuring power quality performance. MI also proposes that standards for voltage be established, albeit it did not describe a measurement methodology that should be used to set and monitor those standards. MI also requests that the operational limits for normal and emergency conditions (the ANSI Range A and B classifications, respectively), be specified for the voltage levels not in the ANSI standards. MI also proposes that voltage ranges tighter than Staff's proposed 5% margin be set for normal operational conditions.

In general, MI states, service reliability targets should have been set more stringently to ensure customer satisfaction. MI supports the continued use of a two-tiered system, of objective and minimum level targets, as a means to monitor service reliability, and objects to the elimination of

the objective level targets. MI argues that discarding the objective level weakens the standards because the utilities will no longer strive to perform at that level, eliminating an incentive to improve service. In addition, MI states that operating area-wide indices alone should not be the sole indicator of adequate service. MI believes that utilities should be directed to address problems with individual electric delivery lines even if the area-wide performance indices exceed the targets.

MI disagrees with Staff's decision to use the term "inadequate" where "unacceptable" was previously employed, and object to the substitution of "disturbance" for "problem" where power quality issues are addressed. In both instances, MI believes the original language was more forceful and the change weakens the standards.

D. Niagara Mohawk

Niagara Mohawk proposes to delete the term "inadequate," as describing a failure to meet a minimum level target, and would state instead that performance was worse than the operating area's target level. The company suggested changes to the targets for five of its operating areas, making two weaker and three more stringent. Niagara Mohawk also requests that the Commission recognize SAIDI, by adding it to the service standards as an additional measure.

Niagara Mohawk disagrees with the use of a 5% margin in conjunction with the ANSI standards for voltage. The company cites situations where use of the 5% margin deviates from its current practices and complains that the use of this standard would likely require transmission upgrades.

E. NYSEG and RG&E

NYSEG and RG&E filed joint comments in response to Staff's proposal. The companies objected to the collection of

momentary interruption data since they have not installed Supervisory Control and Data Acquisition (SCADA) systems on all circuits. They argue that if they install SCADA systems to obtain the required data, they should be allowed to recover the cost of the expenses in rates. RG&E also would revise the SAIFI frequency target for its Lakeshore operating area from 1.40 to 1.60.

#### DISCUSSION AND CONCLUSION

We adopt Staff's Revised Standards, with the modifications discussed below, for the reasons Staff propounds in support of those standards and for the reasons discussed below. Significant progress has been made in streamlining the electric service standards, while adding enhancements in recognition of today's operating environment. As modified, Staff's Revised Standards result in a reasonable methodology for the monitoring of service quality and reliability that ensures acceptable service standards are maintained.

As a result, the attached Reliability and Quality Standards Applicable to Class A Electric Corporations (Final Standards) are adopted. These Standards comport with our prior directive that current reliability performance be maintained or improved as a result of these proceedings.

#### Use of SAIDI

The frequency of interruptions and the duration of interruptions are two separate factors affecting service that must be measured separately. Given the existing SAIFI and CAIDI measures of those factors, the addition of SAIDI as a third measure is unnecessary. Regardless of SAIDI performance, inadequate SAIFI frequency or CAIDI duration performance must be addressed. While the utilities are free to supplement their

filings and reports with SAIDI data, submittal of that data is not required.

Exclusion of Data

The service standards are directed towards the monitoring of utility performance under normal operating conditions, including circumstances that are not necessarily within a utility's control, such as outages arising out of public safety directives and motor vehicle accidents. Listing more events, in addition to the "major storm" exclusion, where data will be disregarded in evaluating reliability performance, is unnecessary. Extraordinary circumstances can already be addressed through the provisions for requesting a waiver under the standards, and a more liberal listing of events that qualify as extraordinary would not improve upon implementation of the waiver process. A case-by-case approach to those waivers is more appropriate than a listing that might be overly-expansive or overly-constraining.

Moreover, the 45-day time limit for requesting a waiver after the occurrence of an extraordinary circumstance is of adequate length to allow utilities to prepare a waiver petition. A longer time period is not needed, and will not be adopted here.

Power Quality

Although the utilities oppose the collection and reporting of momentary interruption data, it is important to gather this information in order to properly evaluate power quality. While SCADA equipment and processes for collecting this information are not in place throughout the entire State, the equipment does exist, and the data is being collected on a regular basis, in much of the State.

Where electric circuits lack SCADA monitoring, however, we have modified the Staff Revised Standards to exempt

utilities, in the Final Standards, from the monitoring and collection of the momentary interruption data. Even with this exception, the reporting of momentary statistics where SCADA is already available will aid in monitoring service quality. Moreover, the monitoring and data collection effort will only improve in the future as companies deploy SCADA systems to additional circuits.

While all parties were in favor of adopting the ANSI standard voltage limits, that standard fails to establish voltage limits for electric lines of more than 34.5 kV. In the Staff Revised Standards, a 5% lower deviation limit was suggested for circumstances where voltage deviations were otherwise undefined by ANSI for periods during normal operating hours. Utilities generally opposed the 5% figure, arguing that it was either inconsistent with current design criteria implemented by a utility or that it was unnecessary, since large commercial and industrial customers subscribing to higher voltage service install voltage regulation equipment on-site that adjusts incoming service to meet their needs. Conversely, MI argued that the deviation margin should grow tighter the higher the voltage level.

The proposed 5% default deviation margin cannot be grafted onto the ANSI standard without causing undesirable problems. Lines of greater than 34.5 kV falling within the bulk transmission and subtransmission systems depend upon generating facilities, as directed by the NYISO, to regulate voltage. Bulk system reliability is also dependent on the free and unconstrained redistribution of power during a contingency. Imposing a default margin might constrain the ability of bulk system grid operators to react to generation entering or exiting service. Therefore, the 5% voltage deviation margin proposed in the Staff Revised Standards is deleted from the Final Standards.

Reliability Targets

Most of the proposed SAIFI frequency and CAIDI duration targets for the utility operating areas were set properly in the Staff Revised Standards. Some changes, however, are needed to the targets for Con Edison's network areas, notwithstanding that the most recent data trends show that targets more stringent than those Con Edison supports are reasonable. The new targets for Con Edison, which acceptably preserve reliability performance, are set forth in the Final Standards.

Con Edison's proposed exclusion for data related to road salt during winter storms, however, is rejected. More analysis is needed before such a proposal could be adopted.

As to Central Hudson's concerns regarding its OMS system, discrepancies between the data collected under that system and data collected under prior systems is of concern. Moreover, Central Hudson, in creating a factor to adjust for the discrepancy in one operating area, has not justified the conclusion that similarly large discrepancies exist in the company's other operating areas.

Problems with the OMS system are currently under review in another proceeding.<sup>12</sup> Accordingly, we will retain the targets for the Central Hudson operating areas from the Staff Revised Standards, subject to further review after the existing OMS proceeding is decided.

MI opposes deletion of the objective level targets from the service standards, and argues that the remaining minimum targets had been set too liberally. Many of the SAIFI frequency targets, however, have been made more stringent. This

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<sup>12</sup> Case 00-E-1273, Central Hudson Gas and Electric Corporation - Rates, Order Staying Reliability Targets and Rate Adjustments (issued September 29, 2003).

tightening of the targets responds to an overall decline in the average number of outages customers experience. MI has not shown that the elimination of the objective level targets will adversely affect service reliability. We will, however, closely monitor reliability to ensure that ending the objective level targets does not foster degradations in utility reliability performance.

#### Terminology

Several utilities requested that the term "inadequate" should not be used to describe performance in an operating area that failed to meet a minimum level target. Utilities ask that the term be eliminated, and some offered more neutral language as a substitute.

The service standards, however, are designed and intended to establish a baseline for acceptable performance, and are not meant to be neutral. Where a target is missed, performance is indeed inadequate, and the utility must take steps to address it. Where the terms "inadequate" or, in some cases, "unacceptable" are used in the service standards, they connote that improvements are needed. Contrary to MI's criticisms of the term "inadequate," however, use of that term does not indicate a weakening of the standards.

MI also objects to the substitution of the term "disturbance" for the term "problem" when describing deficiencies in power quality. The term "disturbance" was used throughout the Staff Revised Standards, and its use does not connote a weakening of the standard; it is instead a more accurate description of power quality deviations from the norm than the terminology MI supports.

Utilities criticize use of the phrase "worst-performing circuits." This phrase, however, was taken from the 1991 Order, where it was selected because it "conveys our intent

of highlighting troubles in circuits in clear language." That reasoning remains valid.

Finally, changes to utility rates related to the cost of reliability improvements, and changes to rate plan reliability incentive mechanisms, shall be addressed in rate proceedings, not here. Those criticisms of the Staff Revised Standards not addressed above lack merit and are rejected.

The Commission orders:

1. The modifications to the standards on reliability and quality of electric service set forth in the body of this Order and the attached Service Reliability and Quality Standards applicable to Class A Electric Corporations are adopted.

2. These proceedings are closed.

By the Commission,

(SIGNED)

JACYLYN A. BRILLING  
Secretary



SERVICE RELIABILITY AND QUALITY STANDARDS  
APPLICABLE TO CLASS A ELECTRIC CORPORATIONS<sup>1</sup>

SECTION 1. GENERAL PROVISIONS

- (a) The standards set forth herein have been developed to provide consumers, the Public Service Commission (PSC) and the electric utilities with a uniform method of ensuring that the reliability and quality of electric service that is being delivered in an electric utility's operating area is reasonable.
- (b) The standards described in subsequent sections adopt the definitions, requirements for data maintenance, retention of records, report filing and interruption information set forth in 16 NYCRR, Chapter II, Electric Utilities; Subchapter A, Service; Part 97, Notice of Interruption of Service, hereafter referred to as Part 97.
- (c) These standards establish the reliability of service on an annual basis under all operating conditions except:
- (1) Major Storms, as defined in Part 97, Section 97.1, Definitions, (2) major catastrophic events, such as plane crashes, and (3) events that result from orders by the New York State Independent System Operator that are not a result of inappropriate actions by the company.
- Interruptions attributed these events shall be omitted from the calculation of performance indices throughout this standard. Justification for omission of an event, excluding Major Storms, shall be submitted to the Director of the Office of Electricity and Environment within 45 days of the event and is subject to review by the Commission.
- (d) The utility shall, as a general practice, provide adequate resources to meet the service levels set forth herein. Reaching the levels of service that are established herein is not the sole indicator of whether the utility has provided adequate service to a particular customer or group of customers.

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<sup>1</sup> The Pennsylvania Electric Company qualifies as a Class A electric utility, but it is exempted from these standards.

SECTION 2. DEFINITIONS

For the purpose of this Section, the following definitions shall supplement those set forth in Part 97, Section 97.1, Definitions.

- (a) *Reliability* - The degree to which electric service is supplied without interruption.
- (b) *Power Quality* - The characteristics of electric power received by the customer, with the exception of interruptions. Power quality disturbances shall include, but not be limited to, momentary interruptions, waveform irregularities and voltage variations - either prolonged or transient.
- (c) *Momentary Interruption* - A loss of electric service for less than five minutes, for one or more customers.
- (d) *Operating Area* - A geographical sub-division of each electric utility's franchise territory that functions under the direction of a company office as used for interruption reporting under Part 97. These areas may also be referred to as regions, divisions, or districts.
- (e) *System Average Interruption Frequency Index (SAIFI)* - A measure of the average number of times that a customer is interrupted during a year. It is determined by dividing the total annual number of customers interrupted by the average number of customers served during the year. A customer interrupted is considered to be one interruption to one customer. This is the same as one customer affected.

$$SAIFI = \frac{\text{total number of customer interruptions}}{\text{total number of customers served}} \times \frac{\text{total number of customers affected}}{\text{total number of customers served}}$$

- (f) *Customer Average Interruption Duration Index (CAIDI)* - A measure of the average interruption duration time for customers that experience an interruption during the year. It approximates the average length of time required to complete service restoration. It is determined by dividing the annual sum of all customer interruption durations by the sum of customers experiencing an interruption over a one-year period.

$$\text{CAIDI} = \frac{\text{sum of customer interruption durations}}{\text{total number of customers interrupted}} \times \frac{\text{sum of customers affected hours}}{\text{total number of customers affected}}$$

SECTION 3. SERVICE RELIABILITY OBJECTIVES

- (a) Each utility shall maintain procedures to meet the service levels established herein. The program shall be designed to improve reliability where it can be improved cost-effectively and to sustain that reliability over time.
- (b) Each company shall develop and maintain a program for analyzing its worst-performing circuits during the course of each year. The program shall reflect momentary interruption data where practical and feasible. The companies shall analyze a minimum of five percent of its circuits as part of its circuit review program each year.
- (c) In the event that service must be interrupted for purposes of working on the lines or equipment, the utility's work scheduling procedures shall provide that an attempt be made to do the work at a time which will cause minimal inconvenience to customers and, where reasonable and practicable, to provide notice to customers in advance of the interruption. The utilities shall keep a record, available for staff inspection, of those instances in which the utility concludes that it is not reasonable or practicable to provide advance notice.
- (d) The System Average Interruption Frequency Index and Customer Average Interruption Duration Index shall be calculated on a calendar year basis for each operating area.<sup>2</sup> Performance shall be considered inadequate when either of the indices for an operating area is worse than the associated values established in Attachment 1.

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<sup>2</sup> The number of customers served that is used in computing these indices shall be the same as reported under Part 97.

## SECTION 4. POWER QUALITY OBJECTIVES

- (a) Each utility shall consider power quality in the design of its distribution power-delivery system components. It shall strive to avoid and to mitigate, to the extent feasible and cost-effective, power quality disturbances under its control that adversely affect customers' properly designed equipment.
- (b) Each utility shall maintain procedures to meet allowable voltage levels. The program shall be designed to satisfy the service and utilization voltage ranges as specified by the American National Standards Institute's C84.1-1995 or later unless otherwise directed by the Commission (Case 28914, Conservation Voltage Reduction).
- (c) Each utility shall, as a minimum, maintain a power quality program that includes its performance objectives and procedures. The program shall be designed to respond promptly to customer complaints of power quality disturbances.
- (d) Each utility shall record the number of power quality complaints received, the number of investigations conducted during the year, and the results of the investigations. The results of the investigations shall indicate if the origin of the disturbance was the responsibility of the utility or customer and be categorized as follows: momentary interruptions, over voltage condition, under voltage conditions, voltage sags and swells, transients, harmonics and noise, or unknown.
- (e) Each company shall develop and maintain a program for recording the number of momentary interruptions per circuit. The data shall be arranged by voltage class and compiled on a company-wide and operating division basis. An exemption may be requested from the Director of the Office of Electricity and Environment for circuits not included in Supervisory Control and Data Acquisition (SCADA) systems or other extenuating circumstances.

## SECTION 5. ANNUAL REPORT

Each utility shall file a report with the Department by March 31 of every year that includes the following information:

- (a) An overall assessment of the reliability performance on a corporate-wide basis and for each of the company's operating areas in relation to the levels for interruption frequency and duration established in Attachment 1. The report shall identify major capital investments and specific projects undertaken during the year to maintain or enhance reliability.
- (b) If an operating area performs worse than the levels for interruption frequency and/or duration established in Attachment 1, the utility shall include an analysis of the interruption patterns and trends, as well as the operating and maintenance history of the affected operating area. This section shall describe the problems that resulted in inadequate performance, and the actions the utility is taking to resolve them, including target dates for completion of the corrective action. The utility may determine that actions on its part are unwarranted. In those instances, its report shall provide adequate justification for such a conclusion.
- (c) A description of the company's current reliability programs as discussed in Section 3, noting changes that were made from the previous year.
- (d) A description of the company's power quality programs, including data on the number of power quality complaints received during the year and the number of momentary interruptions recorded on a company-wide and operating division basis. The report shall also identify the number of power quality investigations conducted during the year and findings as discussed in Section 4.
- (e) A listing of circuit performance, by operating area, based on SAIFI and CAIDI performance for the calendar year. Copies of monthly, quarterly, or annual circuit analysis reports used by the company can be used to fulfill this requirement.

ELECTRIC SERVICE STANDARDS LEVELS

Duration Hours Company	Operating Division	Interruption Frequency	Interruption
		(SAIFI)	(CAIDI)
CHGE	Catskill	1.00	2.00
	Fishkill	1.20	2.00
	Kingston	1.00	2.25
	Newburgh	1.20	2.00
	Poughkeepsie	1.20	2.25
NMPC	Capital	0.90	2.00
	Central	1.00	2.00
	Frontier	0.60	1.75
	Genesee	1.00	2.00
	Mohawk	1.20	2.50
	Northeast	1.20	2.50
	Northern	1.00	2.25
	Southwest	1.00	1.75
NYSEG	Auburn	1.00	1.75
	Berkshire	1.40	2.00
	Binghamton	1.00	2.00
	Brewster	1.70	2.25
	Elmira	1.00	2.50
	Geneva	1.20	2.00
	Hornell	1.00	2.00
	Ithaca	1.20	2.25
	Lancaster	1.20	1.75
	Liberty	1.70	2.50
	Oneonta	1.00	2.50
	Plattsburgh	1.70	1.75
	ORU	Central	1.40
Eastern		1.20	1.50
Western		1.70	2.00
RGE	Canandaigua	1.40	1.50
	Genesee/Pavilion	1.40	1.75
	Lakeshore	1.40	1.50
	Rochester	0.80	2.00
CONED (Radial)	Queens	0.35	1.50
	Brooklyn	0.45	1.50
	Bronx	0.45	1.50
	Staten Island	0.55	1.50
	Westchester	0.55	2.00

CONED	Manhattan	0.015	3.75
(Network)	Brooklyn	0.015	3.25
	Bronx	0.015	3.25
	Queens	0.008	3.25
	Westchester	0.008	3.25