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March 7, 2005

VIA HAND DELIVERY

The Honorable Magalie Roman Salas
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: **Informational Filing** of the New York State Reliability Council of Revised Reliability Rules

Dear Secretary Salas:

This filing is for informational purposes only. No Commission action is required.

By this informational filing, the NYSRC submits Version 11 of the Reliability Rules, dated March 4, 2005. An original and six copies of Version 11 of the Reliability Rules are enclosed.

The NYSRC was approved by the Commission in an order issued on June 30, 1998[1] as part of the comprehensive restructuring of the electricity market in New York State. The NYSRC Reliability Rules are based on reliability standards and criteria established by the North American Electric Reliability Council ("NERC"), the Northeast Power Coordinating Council ("NPCC") and state and federal regulatory agencies with jurisdiction over the reliability of the New York State Power System. The NYSRC Reliability Rules are generally more specific or stringent than NERC and NPCC standards in order to address the specific reliability needs of the New York Control Area. Section 5.01 of the NYSRC Agreement provides that copies of the

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1 Central Hudson Gas & Electric Corp., *et al.*, 83 FERC ¶ 61,352 (1998).

NYSRC's Reliability Rules and any updates will be made available to the Commission. Copies of the revised Reliability Rules also will be provided to the New York Public Service Commission and will be published on the NYSRC web site ("nysrc.org") and the New York Independent System Operator ("NYISO") web site ("nyiso.com").

If you have any questions concerning this informational filing, please contact the undersigned.

Respectfully submitted,

Paul L. Gioia

Paul L. Gioia
Counsel
New York State Reliability Council

Enclosures

cc: Joseph H. McClelland
New York Public Service Commission
North American Electric Reliability Council
Northeast Power Coordinating Council

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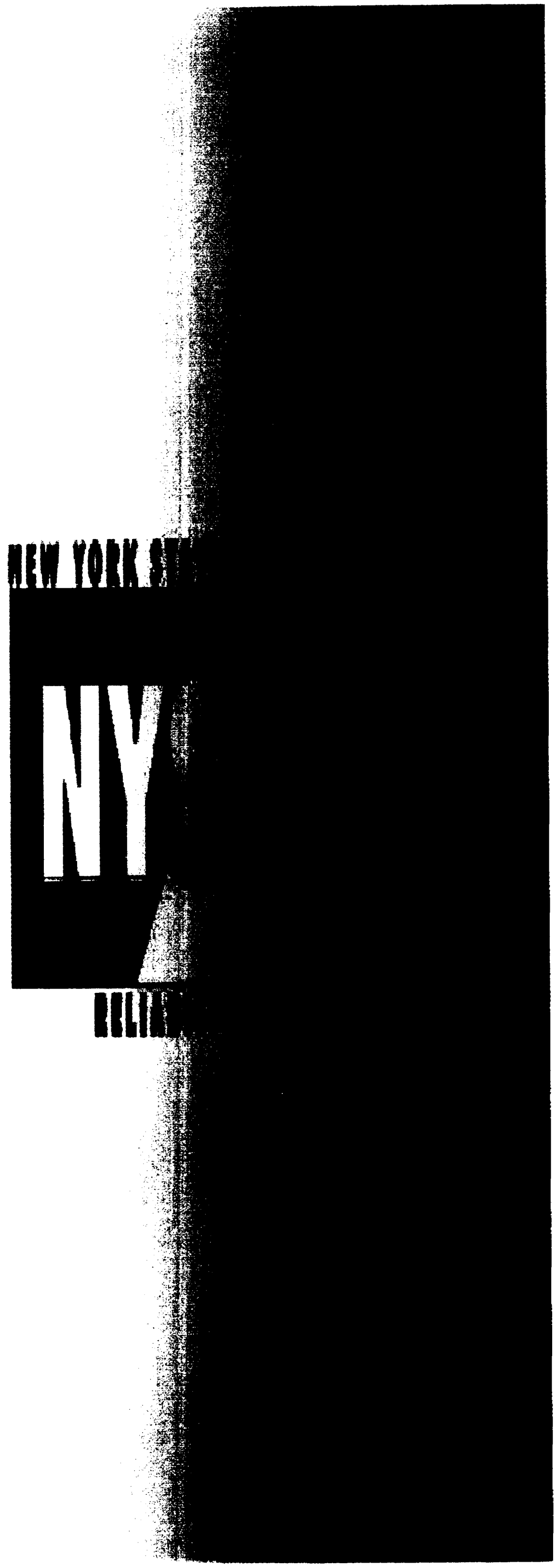
NYSRC RELIABILITY RULES

For Planning And Operating the New York State Power System



Version 11
March 4, 2005

NYSRC RELIABILITY RULES
For Planning and Operating the New York State Power System

Version 11
March 4, 2005

New York State Reliability Council, L.L.C.

Initially Adopted : September 10, 1999
Revision 1 - February 8, 2001
Revision 2 - February 1, 2002

NYSRC RELIABILITY RULES REV 2

Table of Contents

TABLES:

I. INTRODUCTION

1. Foreword

This document contains the *New York State Reliability Council, L.L.C.* * ("*NYSRC*") Reliability Rules for Planning and Operating the *New York State Power System* ("Reliability Rules"), and defines in terms of measurements, the required actions or system performance necessary to comply with the Reliability Rules. The *New York Independent System Operator ("NYISO")* and all *Market Participants* shall comply with the Reliability Rules.

2. Background

The mission of the *NYSRC* is to promote and preserve the *reliability* of the *New York State Power System ("NYS Power System")* in the *New York Control Area ("NYCA")*. This mission includes developing, maintaining, and from time-to-time, updating the Reliability Rules which shall be complied with by the *NYISO* and *Market Participants*. The *NYSRC* fulfills this mission through its focus on maintaining the *reliability* of the *New York State Bulk Power System ("NYS Bulk Power System")*.

The *NYSRC* carries out its mission in accordance with the NYSRC and NYISO/NYSRC Agreements. These *agreements* also cover the responsibilities, duties, and the obligations of the *NYSRC*.

The *NYSRC's* mission also includes monitoring compliance with the Reliability Rules by working in consultation with the *NYISO* and to assure compliance, including when necessary, seeking compliance through the dispute resolution procedure contained in the NYISO/NYSRC Agreement,

* All terms in *italics* within this document are defined in the Glossary in Part IV.

and taking such other actions which may be necessary to carry out the purpose of the NYSRC Agreement.

The *NYSRC* carries out this mission with no intent to advantage or disadvantage any *Market Participant's* commercial interest.

The *NYSRC* Executive Committee directs all *NYSRC* activities. The *NYSRC* Executive Committee is composed of thirteen (13) members, currently consisting of one representative from each of the six *Transmission Owners*, one representative of the Wholesale Sellers, one representative of the Industrial and Large Commercial Consumers, one representative of the Municipal Electric Systems and Cooperatives, and four members with no affiliation with any *Market Participant*. Three subcommittees report to the *NYSRC* Executive Committee: The Reliability Rules Subcommittee develops and updates the Reliability Rules. The Reliability Compliance Monitoring Subcommittee monitors compliance with the Reliability Rules. The Installed Capacity Subcommittee oversees the development and analysis of studies related to the *NYSRC's* adoption of the annual statewide *installed capacity requirement ("ICR")* for the *NYCA*.

The Reliability Rules, the NYSRC Agreement, the NYISO/NYSRC Agreement, and other *NYSRC* documents may be downloaded from the *NYSRC* web site, http://www.nysrc.org.

3. Reliability Rules Development

It is critical that all *Market Participants* be advised of proposed changes to the Reliability Rules and that they be permitted to participate in the revisions to the Reliability Rules. For this purpose, the *NYSRC* has established an open process through which comments and proposed Reliability Rule revisions from all *Market Participants* and the *NYISO* will be considered. This open process is described in NYSRC Policy No. 1, "Procedure for Reviewing, Developing, Modifying, and Disseminating NYSRC Reliability Rules." This procedure gives the *NYSRC* the authority to develop or modify Reliability Rules on an emergency or expedited basis when conditions require such action.

The Reliability Rules define the *reliability* of the *NYS Power System* using the following two terms:

- *Adequacy* – The ability of the electric systems to supply the aggregate electrical *demand* and energy requirements of their customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system *elements*.

- *Security* – The ability of the electric systems to withstand sudden *disturbances* such as electric short circuits or unanticipated loss of system *elements*.

4. What the Reliability Rules Include

The Reliability Rules, in accordance with the NYSRC and NYISO/NYSRC Agreements, incorporate the following:

a. North American Electric Reliability Council ("NERC") Planning Standards and Operating Policies.

b. Northeast Power Coordinating Council ("NPCC") Criteria, Guidelines and Procedures.

NPCC criteria may be more specific or stringent than NERC Standards and Policies, recognizing regional characteristics or *reliability* needs.

c. **New York-Specific Reliability Rules.**

New York-Specific Reliability Rules may be more specific or stringent than NERC Standards and Policies and NPCC Criteria, recognizing *NYCA* system characteristics or *reliability* needs.

d. **Local Reliability Rules.**

Local reliability rules are more stringent than the general New York-Specific Reliability Rules and apply to certain *NYCA zones*, recognizing unique local area characteristics or *reliability* needs.

This document contains only the New York–Specific Reliability Rules and *local reliability rules*. NERC Standards and Policies and NPCC Criteria can be found at http://www.nerc.com and http://www.npcc.org, respectively.

Part III is a cross-reference of New York–Specific Reliability Rules with corresponding NPCC criteria and NERC Standards and Policies.

5. Application of the Reliability Rules to the NYS Bulk Power System

The Reliability Rules in this document focus on that portion of the *NYS Power System* which constitutes the *NYS Bulk Power System*. Maintaining the *reliability* of the *NYS Bulk Power System* ensures that the entire *NYCA* system is protected from widespread and cascading outages. Therefore, the *reliability* of the *NYS Power System* is governed by maintaining *NYS Bulk Power System reliability* through the Reliability Rules.

NPCC defines the bulk power system as "the interconnected electrical systems within northeastern North America comprising *generation* and transmission facilities on which *faults* or *disturbances* can have a *significant adverse impact* outside of the local area". The *NYS Bulk Power System* is "the portion of the bulk power system within the *NYCA*, generally comprising generating units 300 MW and larger, and generally comprising transmission facilities 230 kV and above. However, smaller generating units and lower voltage transmission facilities on which *faults* and *disturbances* can have a *significant adverse impact* outside of the local area are also part of the *NYS Bulk Power System*".

The application of the *NYS Bulk Power System* definition in the *NYCA* is consistent with similar NPCC and NERC bulk power system definitions. The *NYISO* shall develop, maintain, and keep current a list of *NYS Bulk Power System* facilities in its annual NYISO "Load and Capacity Data Report".

6. NYS Bulk Power System States

An objective of the Reliability Rules is to provide for the operation of the *NYS Bulk Power System* within the normal state. It is recognized, however, that certain system conditions may cause the system to depart from the normal state to four other operating states: Warning, Alert, *Major Emergency*, and Restoration. These five operating states are defined in Part V.

Examples of system conditions that could cause departure from the normal state are: *capacity* deficiencies, energy deficiencies, loss of *generation* or transmission facilities, transmission facility overloads and high or low voltages, abnormal power system frequency, and environmental episodes. When the system enters an operating state other than the normal state, the primary objective of the *NYISO* shall be to return the system to the normal state as soon as possible by achieving the criteria shown in Part V.

7. Format of Reliability Rule Sections

Part II contains eleven Reliability Rule groups or sections. The presentation of each Reliability Rule section is based on the following general format:

- **Introduction** – Background and general need for the Reliability Rules that are included in the Reliability Rule section.

- **Reliability Rules** – Statements of the specifics requiring compliance. Reliability Rules are shown in **bold**. There are currently two to eight Rules in each Reliability Rule Section.

- **Measurements** – Specific actions or system performance that must be met to ensure compliance with the Reliability Rules.

- **Guidelines** – *NYISO* guidelines or procedures that must be followed to comply with the Reliability Rules.

- **References** - Associated NPCC and NERC criteria for which the *NYISO* and *Market Participants* must also comply.

Part VII is a log of initial adoption and revision dates for the Reliability Rules and measurements.

8. Compliance and Applications of the Reliability Rules

The *NYS Bulk Power System* involves multiple participants. Since all electric systems in the *NYCA* network are electrically connected, whatever one entity does can affect the *reliability* of other aspects of the *NYCA*. Therefore, to maintain the *reliability* of the entire *NYS Bulk Power System*, the *NYISO* and all *Market Participants* must comply with the Reliability Rules. NYSRC Policy No. 4, "Procedure for Monitoring Compliance with the NYSRC Reliability Rules", addresses how the *NYSRC* monitors *NYISO* and *Market Participant* compliance with the Reliability Rules.

The Reliability Rules are applicable to the *NYISO* and all *Market Participants*. The *NYISO* shall implement policies, procedures, and guidelines that assure that the Reliability Rules are adhered to by all

Market Participants. All *NYISO* policies, procedures, guidelines, and manuals must comply with the Reliability Rules. The *NYISO* must immediately notify the *NYSRC* if it finds that the *NYISO* or its *Market Participants* are not in compliance with the Reliability Rules.

The *NYISO* is responsible for enforcement of the Reliability Rules. Certain *Applications of the Reliability Rules*, implemented by the *transmission owners* prior to 2000, will continue to require close coordination between the *transmission owners* and *NYISO* in order to ensure the *reliability* of the *NYS Power System*. The *transmission owners* need to:

a. Implement the Reliability Rules for those portions of the *New York State Transmission System ("NYS Transmission System")* not included in the *NYISO secured transmission system*; and

b. Coordinate with the *NYISO* the implementation of certain *Applications of the Reliability Rules* where the *NYISO* lacks the necessary analysis and/or monitoring capabilities.

The *Applications of the Reliability Rules* were generally assembled before *NYISO* startup from existing *operating procedures/local reliability rules*. They consist of procedures that apply to very specific system locations or conditions. The *Applications of the Reliability Rules* shall be included in the NYISO Manual, "Transmission and Dispatching Operations."

9. Exceptions to the Reliability Rules

Requests to obtain exceptions to the Reliability Rules must be submitted to and approved by the *NYSRC*. The *NYISO* or any member of the Executive Committee may submit a request for an exception to the *NYSRC* Executive Committee in accordance with NYSRC Policy No. 1. A list of specific exceptions to the Reliability Rules is included in Part VI.

II.

NYSRC RELIABILITY RULES

NYSRC Reliability Rules

A. RESOURCE ADEQUACY

Introduction

The *NYSRC* is responsible for establishing the annual statewide *ICR* in order to ensure adequate *resource capacity*. Among the factors to be considered in the calculation of the *ICR* are the characteristics of the *loads*, uncertainty in the *load* forecast, outages and deratings of generating units, the effects of interconnections to other *control areas*, and *transfer capabilities* within the *NYCA*. The annual statewide *ICR* is established by implementing Reliability Rules for providing the corresponding statewide *installed reserve margin ("IRM")* requirement. The *IRM* requirement relates to *ICR* through the following equation:

ICR = (1+ IRM Requirement) x Forecasted NYCA Peak Load

In order to meet the annual statewide *ICR* established by the *NYSRC*, the *NYISO* establishes *installed capacity ("ICAP")* requirements for the *load serving entities ("LSEs")*, including *locational ICAP requirements*, recognizing internal and external transmission constraints.

Reliability Rules

A-R1. NYCA Installed Reserve Margin Requirement

The *NYSRC* shall establish the *IRM* requirement for the *NYCA* such that the probability (or risk) of disconnecting any *firm load* due to *resource* deficiencies shall be, on average, not more than once in ten years. Compliance with this criterion shall be evaluated probabilistically, such that the loss of *load* expectation (LOLE) of disconnecting *firm load* due to *resource* deficiencies

shall be, on average, no more than 0.1 day per year. This evaluation shall make due allowance for demand uncertainty, scheduled outages and deratings, forced outages and deratings, assistance over interconnections with neighboring *control areas*, *NYS Transmission System transfer capability*, and *capacity* and/or *load relief* from available *operating procedures*.

A-R2. Load Serving Entity Installed Capacity Requirements

***LSEs* shall be required to procure sufficient *resource capacity* for the entire *NYISO* defined *obligation procurement period* so as to meet the statewide *IRM* requirement determined from A-R1. Further, this *LSE capacity* obligation shall be distributed so as to meet *locational ICAP requirements*, considering the *availability* and capability of the *NYS Transmission System* to maintain A-R1 *reliability* requirements.**

A-R3. External Installed Capacity

***ICAP* from *resources* external to the *NYCA* for satisfying a portion of *LSE ICAP* requirements must be demonstrated to be available and deliverable to the *NYCA* borders. *ICAP* from *resources* external to the *NYCA* shall be permitted to the extent A-R1 *reliability* requirements are satisfied.**

Measurements

A-M1. The *NYSRC* shall periodically perform *resource adequacy* studies to update the required statewide *IRM*. A report shall be prepared providing the assumptions, procedures, and results of the study. (A-R1)

A-M2. The *NYISO* shall prepare a report for the next *capability period* showing (1) *LSE IRM* and *ICAP* requirements so as to meet the statewide *IRM* requirement, (2) *LSE locational ICAP requirements* for applicable *NYCA zones*, such as New York City and Long Island, and (3) the allowable amount of *LSE ICAP* requirements that may be located externally to the *NYCA*. The report shall include the procedures, factors, and assumptions utilized by the *NYISO* to determine these *LSE ICAP* requirements. The NYISO Installed Capacity Manual shall include procedures to establish *LSE ICAP* requirements. (A-R2, A-R3)

A-M3. Each *LSE* shall certify and maintain its *ICAP* obligation for the next *capability period*, including any *locational* and *external ICAP*, in accordance with *LSE ICAP* requirements established by the NYISO Tariff and the NYISO Installed Capacity Manual. (A-R2, A-R3)

A-M4. The *NYISO* shall notify those *LSEs* that are determined to be deficient in meeting their *ICAP* requirements including *locational ICAP requirements*, for the next *capability period*. This notification shall specify appropriate deficiency charges. The *NYSRC* shall be immediately notified of such *capacity* deficiencies, including any measures that may be planned to minimize *reliability* impacts. (A-R2)

References

NPCC Document A-2.

Reliability Rules A-R1, A-R2, and A-R3 are more specific or more stringent than the above NPCC Standard.

B. TRANSMISSION CAPABILITY - PLANNING

Introduction

The *NYS Bulk Power System* must be planned with sufficient transmission capability to withstand the loss of specified, representative and reasonably foreseeable design criteria contingencies at projected customer *demand* and anticipated transfer levels. Application of these design criteria contingencies should not result in any criteria violations, or the loss of a major portion of the system, or unintentional separation of a major portion of the system. These design criteria contingencies are listed in Table A. Analysis of these contingencies should include thermal, voltage, and *stability* assessments as defined by the Reliability Rules. The Reliability Rules apply after any critical generator, transmission circuit, transformer, series or shunt compensating device, or high voltage direct current ("HVDC") pole has already been lost, and after *generation* and power flows have been adjusted between outages by the use of *ten (10) minute operating reserve* and, where available, phase angle regulator control and HVDC control.

Loss of small portions of the *NYS Power System* (such as radial portions) may be tolerated provided they do not jeopardize the *reliability* of the overall *NYS Bulk Power System*.

Assessment of extreme contingencies recognizes that the *NYS Bulk Power System* may be subjected to events which exceed in severity the representative contingencies in Table A. These assessments measure the robustness of the transmission system, and should be evaluated for risks and consequences. One of the objectives of extreme *contingency* assessment is to determine, through planning studies, the effects of extreme contingencies on system performance. Extreme *contingency* assessments provide an indication of system strength, or to determine the extent of a widespread system *disturbance*, even though extreme contingencies do have low probabilities of occurrence. Extreme *contingency* assessments examine several specific contingencies which are listed in Table B. They are intended to serve as a means of identifying some of those particular situations that may result in a widespread *NYS Bulk Power System* shutdown.

Transmission owners may take actions to reduce the frequency of occurrence of extreme contingencies, or to mitigate the consequences that are indicated as the result of testing for such contingencies.

The ability of the *NYS Bulk Power System* to withstand representative and extreme contingencies must be determined by simulation testing of the system as prescribed by the Reliability Rules and all applicable *NYISO* policies, procedures and guidelines.

Section B also sets forth a Reliability Rule requiring *fault* duty levels to be within appropriate equipment ratings.

A *Special Protection System (SPS)* may be employed to provide protection for infrequent contingencies or for temporary conditions that may exist such as project delays, unusual combinations of system *demand* and equipment outages or unavailability, or specific equipment maintenance outages. An *SPS* may be applied to preserve system integrity in the event of severe facility outages and extreme contingencies. The decision to employ an *SPS* should take into account the complexity of the scheme and the consequence of correct or incorrect operation as well as benefits. An *SPS* should be used judiciously and when employed, should be installed consistent with good system design and operating policy.

Table A Design Criteria Contingencies
a. A permanent three-phase *fault* on any generator, transmission circuit, transformer or bus section, with *normal fault clearing*.
b. Simultaneous permanent phase-to-ground *faults* on different phases of each of two adjacent transmission circuits on a multiple circuit tower, with *normal fault clearing*. If multiple circuit towers are used only for station entrance and exit purposes, and if they do not exceed five towers at each station, then this condition is not applicable.
c. A permanent phase-to-ground *fault* on any generator, transmission circuit, transformer or bus section, with *delayed fault clearing*.
d. Loss of any *element* without a *fault*.
e. A permanent phase-to-ground *fault* on a circuit breaker, with *normal fault clearing*. (*Normal fault clearing* time for this condition may not always be high speed.)
f. Simultaneous permanent loss of both poles of a direct current bipolar HVDC facility without an ac *fault*.
g. The failure of a circuit breaker to operate when initiated by a *special protection system ("SPS")* following: loss of any *element* without a *fault*; or a permanent phase-to-ground *fault*, with *normal fault clearing*, on any transmission circuit, transformer or bus section.

Table B Extreme Contingencies
a. Loss of the entire capability of a generating station.
b. Loss of all transmission circuits emanating from a generation station, switching station, d-c terminal, or substation.
c. Loss of all transmission circuits on a common right-of-way.
d. Permanent three-phase *fault* on any generator, transmission circuit, transformer, or bus section, with *delayed fault clearing* and *with due regard to reclosing*.
e. The sudden loss of a large *load* or major *load* center.
f. The effect of severe power swings arising from *disturbances* outside the *NYS Bulk Power System*.
g. Failure of a *SPS* to operate when required following the normal contingencies listed in Table A.
h. The operation or partial operation of a *SPS* for an event or condition for which it was not intended to operate.
i. Sudden loss of fuel delivery system to multiple plants (i.e. gas pipeline contingencies).

Reliability Rules

B-R1. Thermal Assessment

a. Pre-Contingency Thermal Criteria

1. **For normal transfers, no transmission facility shall be loaded beyond its *normal rating*.**

2. **For *emergency* transfers, no transmission facility shall be loaded beyond its *normal rating*. However, a facility may be loaded to the *long-term emergency ("LTE") rating* pre-contingency, if the *short-term emergency ("STE") rating* is reduced accordingly.**

b. Post-Contingency Thermal Criteria

1. **For normal transfers, no facility shall be loaded beyond its *LTE rating* following the most severe of design criteria contingencies "a" through "g" specified in Table A.**

 An underground cable circuit may be loaded to its *STE rating* following:
 Loss of Generation - provided *ten (10) minute operating reserve* and/or phase angle regulation is available to reduce the loading to its *LTE rating* within fifteen (15) minutes and not cause any other facility to be loaded beyond its *LTE rating*.

 Loss of Transmission Facilities - provided phase angle regulation is available to reduce the loading to its *LTE*

rating **within fifteen (15) minutes and not cause any other facility to be loaded beyond its** ***LTE rating*****.**

For design criteria contingencies "b", "c", "e", "f", and "g" in Table A that are not confined to the loss of a single ***element*****,** ***transmission owners*** **may request permission from the** ***NYISO*** **to design the system so that post-contingency flows up to the** ***STE ratings*** **on the remaining facilities can occur. This is permissible provided operating measures are available to reduce the loading to its** ***LTE rating*** **within fifteen (15) minutes and not cause any other facility to be loaded beyond its** ***LTE rating*****.**

Design exceptions should be well documented, including ***NYISO*** **comments, and must be approved by the** ***NYSRC*****.**

2. **For** ***emergency*** **transfers, no facility shall be loaded beyond its** ***STE rating*** **following the more severe of design criteria contingencies "a" or "d" listed in Table A. The** ***STE rating*** **is based on an assumed pre-loading equal to the** ***normal rating*****. Therefore, if the limiting facility is loaded above its** ***normal rating*** **pre-contingency, the** ***STE rating*** **must be reduced accordingly.**

B-R2. Voltage Assessment

Reactive power shall be maintained within the ***NYS Bulk Power System*** **in order to maintain voltages within applicable**

pre-disturbance and post-disturbance limits for both normal and emergency transfers, consistent with the Reliability Rules and all applicable guidelines and procedures.

a. Pre-Contingency Voltage Criteria

For both normal and *emergency* transfers, no bus voltage shall be below its pre-contingency low *voltage limit* nor be above its pre-contingency high *voltage limit.*

b. Post-Contingency Voltage Criteria

No bus voltage shall fall below its post-contingency low *voltage limit* nor rise above its post-contingency high *voltage limit.* For normal transfers, design criteria contingencies "a" through "g" specified in Table A are applicable. For *emergency* transfers, design criteria contingencies "a" and "d" specified in Table A are applicable.

B-R3. Stability Assessment

Stability* of the *NYS Bulk Power System* shall be maintained during and following the most severe of the design criteria contingencies "a" through "g" specified in Table A, with due regard to reclosing. For each of those design criteria contingencies that involves a *fault, stability* shall be maintained when the simulation is based on *fault clearing* initiated by the "system A" *protection group* and also shall be maintained when the simulation is based on *fault clearing* by the "system B" *protection group.

a. System Stability

1. **For normal transfers, *stability* of the *NYS Bulk Power System* shall be maintained during and after the most**

severe of design criteria contingencies "a" through "g" specified in Table A. The *NYS Bulk Power System* must be stable if the faulted *element* is re-energized by *delayed reclosing* before any manual system adjustment, unless specific alternate procedures are documented.

2. **For *emergency* transfers, *stability* of the *NYS Bulk Power System* shall be maintained during and after the more severe of design criteria contingencies "a" or "d" specified in Table A. The *NYS Bulk Power System* must also be stable if the faulted *element* is re-energized by *delayed reclosing* before any manual system adjustment. *Emergency* transfer levels may require *generation* adjustment before manually reclosing faulted *elements* not equipped with automatic reclosing or whose automatic reclosing capability has been rendered inoperative.**

b. Generator Unit Stability

With all transmission facilities in service, generator unit *stability* shall be maintained on those facilities not directly involved in clearing the *fault* for:

1. **A permanent phase-to-ground *fault* on any generator, transmission circuit, transformer or bus section, with *normal fault clearing* and *with due regard to reclosing*.**

2. **A permanent three-phase *fault* on any generator, transmission circuit, transformer or bus section, with *normal fault clearing* and *with due regard to reclosing*.**

B-R4. Extreme Contingency Assessment

Assessment of the extreme contingencies listed in Table B shall examine post-contingency *steady state* conditions as well as overload cascading and voltage collapse. Pre-contingency *load* flows chosen for analysis should reflect reasonable power transfer conditions. The testing shall be conducted at megawatt ("MW") transfers at the expected average transfer level. This may be at or near the *normal transfer limit* for some *interfaces*. Analytical studies shall be performed to determine the effect of the extreme contingencies in Table B.

After due assessment of extreme contingencies, measures will be utilized where appropriate, to reduce the frequency of occurrence of such contingencies, or to mitigate the consequences that are indicated as a result of testing for such contingencies.

B-R5. Restoration

System expansion or reconfiguration plans shall consider ease of restoration and/or re-synchronization of lost facilities. Consideration shall be given to system and substation configuration, and the distribution of shunt capacitors and shunt reactors that may facilitate the prompt re-energization and/or re-synchronization of isolated facilities to the energized interconnected *NYS Bulk Power System*.

B-R6. List of NYS Bulk Power System Facilities

The *NYISO* shall develop, maintain, and keep current a list of *NYS Bulk Power System* facilities.

B-R7. Fault Current Assessment

***Fault duty* levels shall be within appropriate equipment ratings.**

Measurements

B-M1. The *NYISO* shall ensure that the thermal, voltage, short-circuit, and *stability* performance of the *NYS Bulk Power System*, as planned, is in accordance with *NYSRC* thermal, voltage, fault duty, and *stability* assessment criteria. (B-R1 through B-R3 and B-R7)

B-M2. The *NYISO* shall assess the risks and system performance resulting from the extreme contingencies in Table B, and shall utilize measures, where appropriate, to reduce the frequency of occurrence of such contingencies, or to mitigate the consequences that are indicated as a result of testing for such contingencies. (B-R4)

B-M3. The *NYISO* shall demonstrate that the system is planned considering ease of system restoration. (B-R5)

B-M4. The *NYISO* shall establish and maintain a procedure for developing a list of *NYS Bulk Power System* facilities. On request, the *NYISO* shall submit this procedure and list of *NYS Bulk Power System* facilities to the *NYSRC* for review. The *NYS Bulk Power System* facilities list shall be published in the annual *NYISO* "Load and Capacity Data Report" or other publication approved by the *NYSRC*. (B-R6)

Guidelines

NYISO Voltage Limit Guideline – Refer to Appendix E of the NYISO "Transmission Expansion and Interconnection Manual". This guideline should be used in transmission studies in accordance with Reliability Rule B-R2.

NYISO Stability Limit Guideline – Refer to Appendix F of the NYISO "Transmission Expansion and Interconnection Manual". This guideline should be used in transmission studies in accordance with Reliability Rule B-R3.

NYPP Tie Line Ratings Task Force Report – Refer to the Planning Reference Documents on the NYISO web site. This guideline should be used in transmission studies accordance with Reliability Rule B-R1.

NYISO Fault Current Assessment Guideline – Refer to the Planning Reference Documents on the NYISO web site. This guideline should be used in transmission studies in accordance with Reliability Rule B-R7.

The NYISO documents referenced above can be found on the NYISO web site, www.nyiso.com/services.

Thermal and voltage *ratings* for facilities to be included in transmission planning assessments are to be determined by the *transmission owner*, or operator pursuant to contractual arrangement, consistent with applicable *NYISO* guidelines. These *ratings* and limits will be used for all studies conducted by the *NYISO* and *transmission owners* and in the operation of the *NYS Bulk Power System*.

References

NPCC Document A-2; NERC Planning Standard IA.

Reliability Rules B-R1 through B-R5 are more specific or more stringent than the above NPCC and NERC Standards.

C. RESOURCE, SYSTEM & DEMAND DATA REQUIREMENTS

Introduction

System modeling is the first step toward planning and operating a reliable *NYS Bulk Power System*. The development of system modeling data to realistically simulate the operation of *resource* and transmission facilities is essential for planning and operating studies used to assess electric system *reliability*. To achieve this purpose, the Reliability Rules establish requirements for the development and submission of complete, accurate, and timely data necessary for *NYSRC* studies for establishing statewide *IRM* requirements and various *NYISO resource* and transmission analyses and assessments required by the Reliability Rules.

System modeling data required under this section includes *resource capacity* verification testing and *availability*, system data, and *load* forecasting.

Reliability Rules

C-R1. Verification Testing of Resource Capacity

Equipment used for providing *resource capacity* shall be tested to verify capacity data. The data to be verified and provided shall include *resource net dependable capacity* and reactive power capacity. This *resource capacity* data shall be provided to the *NYISO* by the *resource* providers. The *NYISO* shall forward this data to the operating function of the *Transmission Owner* for each *resource* provider that connects to the *Transmission Owner's* local transmission system.

C-R2. Resource Availability Requirements

***Resource availability* data required for the analysis of the *reliability* of the *NYCA* shall be collected and maintained. Data shall include forced, partial, and maintenance outage and *load* response statistics for *resources* located in/or serving the *NYCA*, covering an appropriate historical period.**

C-R3. Load Forecasting

Actual and forecast *demands* and net energy for *load* data required for the analysis of the *reliability* of the *NYCA* shall be developed, provided, and maintained on an aggregated statewide, *transmission district*, and *zone* basis.

C-R4. System Data Requirements

***Load* flow, short-circuit, and *stability* data bases required for planning and operating studies of the *NYS Bulk Power System* shall be developed and maintained. The data bases shall include appropriate detail from adjacent *control areas*.**

Measurements

C-M1. The *NYISO* shall establish and maintain procedures for *resource* capacity data verification testing or demonstration for all equipment utilized for providing *resource net dependable capacity* and reactive power capacity for the *NYCA*. These procedures shall address testing and demonstration scheduling. *NYISO* procedures shall also include provision of verified *resource net dependable capacity* and reactive power capacity to the operating function of the *Transmission Owner* to whose local transmission system such *resource* providers are connected. The *resource capacity* data shall include the actual test date(s) for each generator. The *NYISO* shall provide this *resource capacity data* as soon as possible following the completion of the *installed capacity* auction process. Documentation of the *NYISO* procedures and verification results shall be provided to the *NYSRC* upon request. (C-R1)

C-M2. Owners of *resources* responsible for providing *ICAP* shall verify the *net dependable capacity* of their equipment and report these results to the *NYISO* in accordance with *NYISO* procedures and schedules. (C-R1)

C-M3. *Generation* equipment owners shall annually perform tests to verify the *reactive power capacity* of those units providing reactive *capacity* for the *NYCA*, and report test results to the *NYISO* in accordance with *NYISO* procedures. (C-R1)

C-M4. The *NYISO* shall establish and maintain procedures and schedules for reporting of outage and *load* response data to the *NYISO* for those *ICAP resources*, as well as *energy-only resources*, serving the *NYCA*. (C-R2)

C-M5. Owners of *resources* located in or serving the *NYCA* shall provide to the *NYISO* appropriate *resource* outage and *load* response data for their units in accordance with *NYISO* procedures and schedules. (C-R2)

C-M6. The *NYISO* shall annually prepare, from outage and *load* response data received under C-M5, a document depicting outage and *load* response data applicable to *reliability* analysis, recognizing applicable confidentiality requirements. The report shall include statewide *resource* class statistics, averaged for an appropriate historical period. (C-R2)

C-M7. The *NYISO* shall have documentation identifying the scope and details of the actual and forecast (a) demand data and (b) net energy for *load* data to be reported for system modeling and *reliability* analyses. The documentation of the scope and details of the data reporting requirements shall be available to the *NYSRC* on request. (C-R3)

C-M8. The following information shall be provided annually to the *NYSRC* as specified by *NYISO* procedures required under C-M7:

a. Annual peak hour actual *demands* in MW and net energy for *load* in gigawatthours ("GWh") for the prior year, on an aggregated statewide and *transmission district* basis.

b. Annual peak hour forecast *demands* in MW (summer and winter) in MW and annual net energy in GWh for at least five years and to ten years into the future, on an aggregated statewide and *transmission owner* basis. In addition, annual peak hour forecast *demands* for the *NYCA zones*, for a specified future period, will be provided to the *NYSRC* on request. (C-R3)

C-M9. The *NYISO* shall establish and maintain a procedure for the development and maintenance of *load* flow, short-circuit, and stability data bases. (C-R4)

C-M10. *Load* flow, short-circuit, and *stability* data bases shall be updated by the *NYISO* on an annual basis or whenever system changes warrant an update, as specified by *NYISO* procedures required under Measurement C-M9. These data bases shall be made available per *NYISO* procedures. (C-R4)

C-M11. *Transmission Owners* and other designated *Market Participants* shall provide to the *NYISO* load flow, short-circuit, and *stability* data in the time frame and format as specified by *NYISO* procedures required under Measurement C-M9. This data will be used to maintain up-to-date *NYISO* data bases required under Measurement C-M10. (C-R4)

References

NPCC Document B-9, C7; NERC Planning Standard IIB.

Reliability Rules C-R1 through C-R3 are more specific or more stringent than the above NPCC and NERC Standards.

NYSRC Reliability Rules

D. OPERATING RESERVES

Introduction

The Reliability Rules in this Section establish the minimum level of *operating reserves* to be provided in the *NYCA*. Generating *capacity* in excess of projected *load* requirements is necessary to assure an acceptable degree of service continuity.

The factors considered in establishing the minimum desired magnitude of *operating reserve* include unexpected *resource* and transmission contingencies, regulation of frequency and tie line flow, and *load* forecast error. The nature and characteristics of the various types of synchronized and non-synchronized *resource capacity* which comprise the *operating reserve* have been considered in the formulation of *NYCA's operating reserve* requirements.

Reliability Rules

D-R1. Operating Resource Adequacy

Scheduled outages and deratings of *resources* shall be coordinated in such a manner that the available *resources*, with due allowance for forced outages and deratings, will be adequate to meet *NYCA's* forecasted *load* and *operating reserve* requirements. Procedures shall be developed consistent with the Reliability Rules that: maintain a minimum *operating reserve* level for each type of *reserve*, in both computer directed and non-computer directed dispatch; define how anticipated future shortages of *reserve* will be handled; and defines coordination with other *Market Participants* in NPCC and PJM to share *reserves*. The procedure must include

forecasts for weekly, daily, and hourly *reserves*, and reflect the impact of capability, *loads*, response rates, transactions, transmission limitations, and unit commitment. These forecasts must also support unit commitment.

D-R2. Minimum Operating Reserve Requirement

The minimum *operating reserve* requirement of the *NYISO* shall be the sum of:

a. Sufficient *ten (10) minute operating reserve* to replace the operating capacity loss caused by the most severe *contingency* observed under *normal transfer criteria.*

b. Sufficient *thirty (30) minute operating reserve* equal to one-half of the *ten (10) minute operating reserve* necessary to replace the operating capacity loss caused by the most severe *contingency* observed under *normal transfer criteria.*

At all times sufficient *ten (10) minute operating reserve* shall be maintained to cover the energy loss due to the most severe *normal transfer criteria contingency* within the *NYCA* or the energy loss caused by the cancellation of an interruptible energy purchase from another system, whichever is greater.

D-R3. Availability and Category

a. The *ten (10) minute operating reserve* portion of the *NYISO's* minimum *operating reserve* requirement shall be fully available within ten (10) minutes and shall be in the following categories:

1. ***Synchronized Operating Reserve*** **- At least one-half of the *ten (10) minute operating reserve* will consist of unused generating *capacity* which is synchronized and ready to pick up *load*, or generating *capacity* which can be made available by curtailing pumping hydro units, or canceling energy sales to other systems.**

2. ***Non-Synchronized Ten Minute (10) Operating Reserve*** **- The remainder of the *ten (10) minute operating reserve* may be composed of non-synchronized *capacity* such as hydro, pumped storage hydro, and quick start combustion *generation*, which can be synchronized and loaded to claimed *capacity* in ten (10) minutes or less, and *interruptible load* that can be activated in ten (10) minutes or less.**

b. **The *thirty (30) minute operating reserve* portion of the *NYISO's operating reserve* requirement is that portion of unused generating *capacity* or *interruptible load* which can and will be made fully available as promptly as possible, but in no more than thirty (30) minutes.**

c. **Generating *capacity* associated with the delivery of interruptible sales to adjacent *control areas* may be included as *operating reserve* in the category agreed upon by the purchaser.**

D-R4. Restoration of Ten (10) Minute Reserves

Following a *contingency*, the *ten (10) minute operating reserve* shall be restored within thirty (30) minutes of the time that the *contingency* occurred, or sooner if possible.

Measurements

D-M1. The *NYISO* shall maintain statistics regarding daily forecasted and actual *reserves*, and shall report these statistics to the *NYSRC* on a monthly basis. The statistics shall include *10 minute synchronized, 10 minute non-synchronized, and 30 minute* *operating reserves*. The report shall distinguish between any locational *operating reserves*. (D-R1 through D-R3)

D-M2. The *NYISO* shall maintain procedures and systems that ensure the *adequacy* of *operating reserves*, and shall provide documentation of these procedures and systems. The *NYISO* must notify the *NYSRC* of any changes to these procedures and systems. (D-R1 through D-R4)

D-M3. The *NYISO* shall monthly report to the *NYSRC* the response of the system to restore *ten (10) minute operating reserve* after the loss of a major unit (>300MW). For each incident this report shall identify the MW *capacity* lost; the *10 minute and 30 minute operating reserves* prior to the incident; and the area control error ("ACE"), *10 minute, and 30 minute operating reserves* at a period of time 10 minutes and 30 minutes after the incident. (D-R4)

References

NPCC Document A-2, A-6, A-8, C-9, C-19; NERC Operating Policy 1A.

Reliability Rules D-R1 through D-R4 are more specific or more stringent than the above NPCC and NERC Standards.

E. TRANSMISSION CAPABILITY - OPERATING

Introduction

This Section sets forth Reliability Rules for establishing operating transmission capabilities. *NYSRC* operating Reliability Rules provide the basis for application of the planning Reliability Rules to inter-*control area* and *NYS Bulk Power System* operation. They represent the minimum level of *security* that shall apply to the operation of the *NYS Bulk Power System*. Where *NYS Bulk Power System* or inter-*control area security* is affected, *operating limits* are established so that the contingencies stated in Table A can be withstood without adversely affecting the *reliability* of the *NYS Bulk Power System* or neighboring systems.

When adequate facilities are available to supply *firm load*, pre-contingency voltages, line loadings, and equipment loadings shall be within applicable normal *voltage limits* and thermal *ratings*. Unless specific instructions describing alternate action are in effect, normal transfers shall be such that manual reclosing of a faulted *element* can be carried out before any manual system adjustment, without affecting the *stability* of the *NYS Bulk Power System*.

When necessary to ensure that adequate facilities continue to be available to supply *firm load* in the *NYCA* or a portion of the *NYCA*, transfers may be increased to the point where pre-contingency voltages, line loadings, and equipment loadings are within applicable *emergency voltage limits* and thermal *ratings*. *Emergency* transfer levels may require *generation* adjustment before manually reclosing faulted *elements*.

When adequate *NYS Bulk Power System* facilities are not available, *SPSs* may be employed to maintain system *security*. The requirements of *SPSs* should be defined by the *NYISO*.

E. TRANSMISSION CAPABILITY - OPERATING (CONT'D.)

Two categories of transmission *transfer capabilities*, normal and *emergency*, are applicable. Normal *transfer capabilities* are to be observed unless *emergency transfer criteria* are invoked by the *NYISO*.

Local conditions may require criteria which are more stringent than those set out herein. Any constraints imposed by these more stringent criteria will be observed in daily operations. The criteria will not necessarily apply to portions of a *transmission owner's* system where instability or overloads will not jeopardize the *reliability* of the *NYS Bulk Power System*, unless otherwise incorporated as *local reliability rules*.

Local conditions requiring criteria which are more stringent than those set out herein shall be formulated as *local reliability rules*. Any constraints imposed by such *local reliability rules* shall be observed in daily operations.

Subsequent to the determination of the day-ahead commitment of generating units by the *NYISO*, *transmission owners* will have the opportunity to review the unit commitment. To the extent that operating circumstances may adversely impact short-term *reliability* of the *transmission owner's* local system and such operating circumstances have not been addressed in any Reliability Rules, inclusive of *local reliability rules*, the *transmission owner* will have the flexibility to request additional generating units to be committed for service. The final commitment decision will rest with the *NYISO* and will be posted on the NYISO's Open Access Same-Time Information System ("OASIS").

Reliability Rules

E-R1. Thermal Assessment

a. Pre-Contingency Thermal Criteria

1. **For normal transfers, no transmission facility shall be loaded beyond its *normal rating*.**

2. **For *emergency* transfers, no transmission facility shall be loaded beyond its *normal rating*. However, a facility may be loaded up to the *LTE rating* pre-contingency if the *STE rating* is reduced accordingly.**

b. Post-Contingency Thermal Criteria

1. **For normal transfers, no facility shall be loaded beyond its *LTE rating* following the most severe of contingencies "a" through "g" specified in Table A in Reliability Rule Section B.**

   An underground cable circuit may be loaded to its *STE rating* following:

   Loss of *Generation* - provided *ten (10) minute operating reserve* and/or phase angle regulation is available to reduce the loading to its *LTE rating* within fifteen (15) minutes and not cause any other facility to be loaded beyond its *LTE rating*.

   Loss of Transmission Facilities - provided phase angle regulation is available to reduce the loading to its *LTE*

rating **within fifteen (15) minutes and not cause any other facility to be loaded beyond its *LTE rating*.**

For contingencies "b", "c", "e", "f", and "g" in Table A that are not confined to the loss of a single *element*, *transmission owners* may request the *NYISO* for an exception to allow the post-contingency flow on a facility up to its *STE rating*. This is permissible provided operating measures are available to reduce the flow below the *LTE rating* within fifteen (15) minutes and not cause any other facility to be loaded beyond its *LTE rating*.

Operating exceptions shall be well documented, including *NYISO* comments, and must be approved by the *NYSRC*.

2. **For *emergency* transfers, no facility shall be loaded beyond its *STE rating* following the more severe of contingencies "a" or "d" listed in Table A. The *STE rating* is based on an assumed pre-loading equal to the *normal rating*. A limiting facility may be loaded up to the *LTE rating*, pre-contingency, if the *STE rating* is reduced accordingly.**

E-R2. Voltage Assessment

Reactive power **shall be maintained within the *NYS Bulk Power System* in order to maintain voltages within applicable pre-disturbance and post-disturbance limits, for both normal and *emergency* transfers, as specified below.**

a. Pre-Contingency Voltage Criteria

For both normal and *emergency* transfers, no bus voltage will be below its pre-contingency low *voltage limit* nor be above its pre-contingency high *voltage limit*. The pre-contingency voltage on a bus is permitted to operate below its pre-contingency low *voltage limit* or above its pre-contingency high *voltage limit* if all corrective actions short of *load shedding* have been taken and conditions are not indicative of system problems, or sufficient time and *resources* exist to take corrective action to prevent voltage collapse should a *contingency* occur.

b. Post-Contingency Voltage Criteria

No bus voltage will fall below its post-contingency low *voltage limit* nor rise above its post-contingency high *voltage limit*. For normal transfers, contingencies "a" through "g" specified in Table A are applicable. For *emergency* transfers, contingencies "a" and "d" specified in Table A are applicable.

E-R3. Stability Assessment

System *stability* transfer limits shall be consistent with the Reliability Rules and all applicable guidelines and procedures in the NYISO Guideline #3-0, "Guideline for Stability Analysis and Determination of Stability-Based Transfer Limits".

a. For normal transfers, *stability* of the *NYS Bulk Power System* shall be maintained during and after the most severe of contingencies "a" through "g" specified in Table A. The *NYS Bulk Power System* must also be stable if the faulted *element* as

described in Table A is re-energized by *delayed reclosing* before any manual system adjustment, unless specific alternate procedures are documented.

b. For *emergency* transfers, *stability* of the *NYS Bulk Power System* shall be maintained during and after the more severe of contingencies "a" or "d" specified in Table A. The *NYS bulk power system* must also be stable if the faulted *element* as described in Table A is re-energized by *delayed reclosing* before any manual system adjustment.

E-R4. Post-Contingency Operation

Immediately after the occurrence of a *contingency*, the status of the *NYS Bulk Power System* shall be assessed and transfer levels shall be adjusted, if necessary, to prepare for the next *contingency*. If the readjustment of *generation*, including the use of *operating reserve*, phase angle regulator control, and HVDC control is not adequate to restore the system to a secure state, then other measures such as *voltage reduction* and shedding of *firm load* may be required. System adjustments shall be completed as quickly as possible, but in all cases within thirty (30) minutes after the occurrence of the *contingency*.

***Voltage reduction* need not be initiated and *firm load* need not be shed to observe a post-contingency loading requirement until the *contingency* occurs, provided that adequate response time for this action is available after the *contingency* occurs and other measures shall maintain post-contingency loadings within applicable *emergency ratings*. *Emergency* measures, including the**

pre-shedding of *firm load*, if necessary, must be effected to limit transfers to within the requirements of E-R1.a.2, E-R1.b.2, E-R2.b, and E-R3.b.

E-R5. Outage Coordination

Scheduled outages of facilities that affect the *reliability* of the *NYS Bulk Power System* shall be coordinated sufficiently in advance of the outage to permit the affected systems to maintain *reliability*. The adjacent systems shall be notified of scheduled or forced outages of any facility that may impact another system(s) *reliability* and of any other abnormal transmission configuration which may impact the *reliability* of the *NYS Bulk Power System*. A list of facilities that must be secured by the *NYISO* and require coordination shall be maintained including any other abnormal transmission configuration which may impact the *reliability* of the *NYS Bulk Power System*. Work on facilities which impact the *reliability* of the *NYS Bulk Power System* shall be expedited.

Appropriate adjustments shall be made to *NYCA* operations to accommodate the impact of *protection group* outages. For typical periods of forced or maintenance outage of a *protection group*, it can be assumed, unless there are indications to the contrary, that the remaining *protection* will function as designed. If the *protection group* will be out of service for an extended period of time (as defined in NPCC criteria), additional adjustments to operations may be appropriate considering other system conditions and the consequences of possible failure of a remaining *protection group*.

E-R6. Operation During Impending Severe Weather

During periods when severe weather (such as, but not limited to, tornadoes or hurricanes) exists or is forecast to occur, it may be necessary to take steps in addition to those procedures normally followed to maintain system *security*. When a situation exists in which the effects of impending severe weather could severely jeopardize the *security* of the *NYS Bulk Power System*, corrective actions which would be necessary to protect for one transmission *contingency* greater than the normal criteria within the affected area shall be carried out.

***Generation* may be ordered to full operating *capacity* and transmission facilities out of service for maintenance may be ordered restored to service.**

The *NYISO* shall enter this mode of operation for those portions of the *NYS Bulk Power System* affected by actual or impending severe weather when requested to do so by the affected *transmission owners*, or at any other times when it deems necessary to preserve the *security* and *reliability* of the *NYS Bulk Power System*.

E-R7. Operation During a Severe Solar Magnetic Disturbance

During periods when a severe solar magnetic disturbance ("SMD") exists or is forecast to occur, it may be necessary for the *NYISO* and *transmission owners* to take steps in addition to those procedures normally followed to maintain system *security*. Such steps may include, but are not limited to, restoration of transmission facilities that are out of service, cancellation of

scheduled outages, and adjustment of *reactive power* dispatch.

The *NYISO* shall enter this mode of operation for those portions of the *NYS Bulk Power System* affected by an SMD when requested to do so by the affected *transmission owners*, or at any other times when it deems necessary to preserve the *security* and *reliability* of the *NYS Bulk Power System*.

E-R8. Fault Current Assessment

***Fault* duty levels shall be within appropriate equipment ratings.**

Measurements

E-M1. The *NYISO* shall maintain procedures and systems that ensure that appropriate actions are taken when *thermal*, *voltage*, and/or *stability limits* are violated. The *NYISO* must notify the *NYSRC* of any changes to these procedures and systems. (E-R1 through E-R3)

E-M2. Every month the *NYISO* shall report to the *NYSRC* on the performance of the transmission system (E-R1 through E-R4), with respect to the number of transmission facilities and amount of time that each of those facilities exceeded operating constraints, including pre-contingency *thermal* and *voltage limits*, post-contingency *thermal* and *voltage limits*, and *stability limits*.

E-M3. The *NYISO* shall maintain procedures and systems which ensure that outages of transmission facilities are coordinated in such a manner to ensure *reliability*. The *NYISO* must notify the *NYSRC* of any changes to these procedures and systems. (E-R5)

E-M4. The *NYISO* shall maintain procedures and systems which allow for more stringent operating restrictions prior to, and during, severe weather conditions, and severe solar magnetic *disturbances*. The *NYISO* must notify the *NYSRC* of any changes to these procedures and systems. (E-R6, R7)

E-M5. The *NYISO* shall report to the *NYSRC* when more stringent operating restrictions were imposed due to severe weather conditions and severe solar magnetic *disturbances*, and summarize the actions taken. (E-R6, R7)

E-M6.

a. The *NYISO* shall perform pre-seasonal assessments, and additional re-evaluations if required by system changes, to evaluate *fault* duty at each *NYS Bulk Power System* station. The *NYISO* shall notify the applicable equipment owner and other potentially affected *Market Participants* of any location expected to exceed equipment ratings.
b. After the equipment owner has reported its findings on the *NYISO's* assessment (as required by Measurement E-M7), the *NYISO*, in consultation with the equipment owner and the other potentially affected *Market Participants*, shall develop, if necessary, an appropriate mitigation plan. (C-R4)

E-M7. After evaluating and considering the *NYISO* assessment concerning a location for which *fault* duty levels may exceed appropriate equipment *ratings* (as required by Measurement E-M6a), the applicable equipment owner shall assess the condition and report its findings to the *NYSIO*. (C-R4)

Guidelines

NYISO Transmission Operating Guideline for Voltage Analysis and Determination of Voltage-Based Transfer Limits. This guideline should be used in operating studies in accordance with Reliability Rule E-R2.

NYISO Stability Limit Guideline – Refer to Appendix F of the NYISO "Transmission Expansion and Interconnection Manual". This guideline should be used in operating studies in accordance with Reliability Rule E-R3.

NYPP Tie Line Ratings Task Force Report – Refer to the Planning Reference Documents on the NYISO web site. This guideline should be used in accordance with operating studies in accordance with Reliability Rule E-R1.

NYISO OP1 Voltage Limits – Refer to Exhibit A-3 of the NYISO document, "System Operation Procedures". This guideline should be used in operating studies in accordance with Reliability Rule E-R2.

NYISO Fault Current Assessment Guideline – Refer to the Planning Reference Documents on the NYISO web site. This guideline should be used in operating studies in accordance with Reliability Rule E-R8.

The NYISO documents referenced above can be found on the NYISO web site, www.nyiso.com/services.

References

NPCC Documents A-2, B-3, C-4, C-13, C-15; NERC Operating Policies 2A, 2B, 4C.

E. TRANSMISSION CAPABILITY - OPERATING (CONT'D.)

Reliability Rules E-R1 through E-R3 and E-R5 through E-R7 are more specific or more stringent than the above NPCC and NERC Standards. Reliability Rule E-R4 is not more specific or more stringent than the above NPCC and NERC Standards.

F. OPERATION DURING MAJOR EMERGENCIES

Introduction

This Section sets forth Reliability Rules to be used by the *NYISO* in the event of eight types of *major emergencies.*

After declaration of a *major emergency,* any request made by the *NYISO* to a *Market Participant* dispatcher for remedial action including, but not limited to, *load shedding,* shall be considered an order to effect such remedial action. Normally, those orders shall be made over the hot line to the *transmission owners.*

Reliability Rules

F-R1. Transmission Thermal Overloads

If a transmission facility, which constitutes a part of the *NYS Bulk Power System*, becomes overloaded, relief measures shall be applied immediately to bring the loading within established *ratings.*

a. When a facility becomes loaded above its *LTE rating,* but below its *STE rating* corrective action which may include *voltage reduction* and/or *load shedding,* must be taken to return the loading on the facility to its *LTE rating* or lower within fifteen (15) minutes.

b. When a facility becomes loaded at or above its *STE rating,* immediate corrective action which may include *voltage reduction* and/or *load shedding,* must be initiated to reduce the

loading on the facility to below its *STE rating* within five (5) minutes and furthermore, to continue to reduce the loading on the facility to below its *LTE rating* within ten (10) minutes from the initial overload. If the loading is substantially above the *STE rating*, *load relief* should be considered as the initial action to be taken.

c. **After the loading on a facility has been reduced below its *LTE rating* additional corrective action, excluding further *voltage reduction* and/or *load shedding*, should be taken to reduce the loading on the facility to below its *normal rating* within thirty (30) minutes of the initial overload. In the event this cannot be accomplished, *emergency transfer criteria* shall be invoked.**

d. **When a facility has been loaded for four (4) continuous hours (or such longer period as may be established by the *Rating Authority*) above its *normal rating*, but at or below its *LTE rating*, corrective action, which may include *voltage reduction* and/or *load shedding*, must be taken to return the facility to its *normal rating* within thirty (30) minutes.**

Procedures shall be developed by the *NYISO* consistent with the NYISO tariffs that resolve transmission overloads caused by both internal and external events to the *NYS Bulk Power System*.

F-R2. Post-Contingency STE Rating Violations

If a transmission facility which constitutes a part of the *NYS Bulk Power System* is being operated under *emergency transfer criteria* and becomes loaded to a level which would cause its

post-contingency loading to exceed its *STE rating* and corrective action could not be taken rapidly enough to meet the requirements of this policy once the *contingency* occurs, immediate corrective action which may include *voltage reduction* and *load shedding*, must be taken to reduce the loading such that sufficient time will be available to apply corrective action following the *contingency*.

F-R3. High or Low Voltage

Voltage control of the *NYS Bulk Power System* shall be coordinated to provide adequate voltage at all times to maintain power *transfer capability*.

When in a *major emergency* due to voltage problems, all *transmission owners* shall be notified of the condition and direct the necessary corrective actions short of *load shedding*.

If, having taken the actions above, the actual voltage at any *NYS Bulk Power System* bus remains below its pre-contingency low limit for thirty (30) minutes or declines to a level below the midpoint between the pre- and post-contingency low limits and remains there for fifteen (15) minutes, the *NYISO* shall discuss the situation with the *transmission owner(s)* to determine if corrective action could be taken following a *contingency* to prevent a system voltage collapse. If it is anticipated that adequate time will not exist to prevent a voltage collapse following a *contingency*, the *transmission owners* shall be directed to take the necessary corrective action, including *load shedding*, to maintain a minimum voltage equal to the pre-contingency low limit. If the actual voltage at any *NYS Bulk Power System* bus declines below the

post-contingency low limit and is indicative of a system voltage collapse, the *NYISO* shall immediately order *load shedding* in the amount and at the locations deemed necessary to maintain a minimum voltage equal to the pre-contingency low limit.

F-R4. Post-Contingency Voltage

a. Less than 5%

If the post-contingency loading of an internal New York transfer *interface* or the post-contingency flow towards New York on an inter-*control area interface* exceeds the limits associated with a voltage collapse by less than 5%, measures shall be applied immediately to bring the loading to established limits within fifteen (15) minutes. If, after taking corrective action, loadings are not below the limit within fifteen (15) minutes, a *major emergency* shall be declared and corrective measures, which may include *load relief*, shall be initiated to bring the loading to established limits within fifteen (15) minutes. If loadings are not below the limit within thirty (30) minutes from the initial overload, *load relief* measures must be instituted.

b. More than 5%

If the post-contingency loading of an internal New York transfer interface or the post-contingency flow towards New York of an inter-*control area* interface exceeds the limits associated with a voltage collapse by 5% or more, a major emergency shall be declared immediately and corrective measures, which may include *load relief*, shall be initiated to

bring the loading to established limits. If loadings are not below 105% of the limit within fifteen (15) minutes from the initial overload, or below the limit within thirty (30) minutes from the initial overload, *load relief* measures must be instituted.

F-R5. Operating Reserve Deficiency

Emergency transfer criteria shall be invoked if necessary to provide transmission capability to deliver *operating reserve* to an area deficient in *operating reserve*. The *NYISO* shall notify all *transmission owners* that *emergency transfer criteria* have been invoked and *transmission owners* in the deficient area shall be prepared to return facilities to appropriate *ratings* within the prescribed time should such *ratings* be exceeded. If, after the above action, a shortage of *ten (10) minute operating reserve* or *operating reserve* still exists, the *NYISO* shall declare a *major emergency* and shall direct that *load relief* procedures be implemented.

F-R6. Stability Limit Violation

a. Less than 5%

If the loading of an internal New York transfer *interface* or the power flow towards New York on an inter-*control area* interface exceeds the system *stability limit* by less than 5%, measures shall be applied immediately to bring the loading to established limits within fifteen (15) minutes. If, after taking corrective action, loadings are not below the *stability limit*

within fifteen (15) minutes, a *major emergency* shall be declared and corrective measures, which may include *load relief*, shall be initiated to bring the loading to established limits within fifteen (15) minutes. If loadings are not below the *stability limit* within thirty (30) minutes from the initial overload, the *transmission owners* shall be ordered by the *NYISO* to institute *load relief* measures.

b. More than 5%

If the loading of an internal New York transfer *interface* or the power flow towards New York on an inter-*control area interface* exceeds the system *stability limit* by 5% or more, a *major emergency* shall be declared immediately and corrective measures, which may include *load relief*, shall be initiated to bring the loading to established limits. If loadings are not below 105% of the *stability limit* within fifteen (15) minutes from the initial overload, or below the *stability limit* within thirty (30) minutes from the initial overload, *load relief* measures must be instituted.

F-R7. Low Frequency

A sustained low frequency of 59.9 Hz is an indication of major *load-generation* imbalance in which case a *major emergency* shall be declared. During a *major emergency* resulting from a low frequency condition caused by *load-generation* imbalance within the *NYCA*, *load* shall be shed in accordance with a schedule previously determined.

F-R8. Load Shedding Allocation

In the event that the frequency decline is so rapid as to prevent operator action, automatic facilities shall achieve *load shedding* without regard for transmission loadings. *Load shedding* allocation procedures shall be developed which meet the requirements of the NPCC Underfrequency Load Shedding Guides.

The *NYCA* must be capable of shedding at least 50 percent of its *load* in ten (10) minutes or less. Insofar as practical, the first half of the *load* shed manually should not include that *load* which is part of any automatic *load shedding* plan.

If frequency is still declining below 58.5 Hz, all transmission systems shall take such steps as are necessary, including separating units to preserve *generation*, minimize damage and service interruption.

Measurements

F-M1. The *NYISO* shall maintain procedures and systems that ensure that appropriate actions are taken when frequency, *reserves*, *thermal*, *voltage*, and/or *stability limits* are violated. The *NYISO* must notify the *NYSRC* of any changes to these procedures and systems. (F-R1 through F-R7)

F-M2. The *NYISO* shall report to the *NYSRC* on every instance of a *major emergency*. Included in this report shall be a description of the incident, a summary of conditions that warranted the change to a *major emergency* state, a summary of actions taken, and the effectiveness of those actions. (F-R1 through F-R7)

F-M3. The *NYISO* shall maintain procedures and systems that ensure that sufficient *load shedding* capability exists for both manual and automatic response. The *NYISO* must notify the *NYSRC* of any changes to these procedures and systems. (F-R8)

F-M4. Each *transmission owner* shall report to the *NYISO* the amount of *load* that is expected to be shed through automatic and manual *load shedding*, coincident with the peak *load* of its *transmission district*. The *NYISO* shall annually report compliance of this requirement to the *NYSRC*. (F-R8)

F-M5. Every month the *NYISO* shall report to the *NYSRC* on the following *emergency* actions that were initiated: *emergency* assistance from neighboring *Control Areas*, manual (local) *voltage reductions*, quick response (remote control) *voltage reductions* (5 and 8%), voluntary *load* curtailment, public appeals, Special Case Resources, Emergency Demand Response Program, and *load shedding*. For each *emergency* action the report shall include: (a) the date of the *emergency* action; (b) the *zone(s)* where the *emergency* action was implemented; (c) an estimate of the MW *capacity* addition or *load relief* achieved, by *zone*; and (d) the reason(s) why the emergency action was implemented. (F-R5)

References

NPCC Documents A-3, A-8, C-5, C-19, C-20, C-21, C26; NERC Operating Policies 5A, 5C.

Reliability Rules F-R1 through F-R8 are more specific or more stringent than the above NPCC and NERC Standards.

G. SYSTEM RESTORATION

Introduction

This Section sets forth Reliability Rules for system restoration in the event *NYCA* experiences a partial or system-wide shutdown. These Reliability Rules cover requirements for *NYISO* and *transmission owner* procedures, system *blackstart* capability, training, and restoration simulations.

Reliability Rules

G-R1. Emergency Restoration Procedures

The *NYISO* shall establish procedures applicable to the restoration of the *NYS Transmission System* following a partial or system-wide shutdown, consistent with the Reliability Rules. Such procedures shall be implemented by the *NYISO* in coordination with the restoration procedures of the *transmission owners*, as may be appropriate to restore the system. The procedures shall include *blackstart* facilities distributed throughout the *NYCA* in such a manner as to promptly restore *NYCA generation*. The *NYISO* shall require all *Market Participants* to follow instructions from the *NYISO* and/or *transmission owners* in executing elements of the restoration plans.

G-R2. Blackstart Resources

A coordinated system *blackstart* capability plan shall be established, maintained, and verified through analysis indicating

how *blackstart resources* will perform their intended functions as required in system restoration plans under G-R1. Each *blackstart* resource shall be tested to verify that it can be started and operated without being connected to the system.

G-R3. Restoration Training and Simulation Programs

A training program, encompassing the integrated coordination of the various restoration procedures (G-R1 and G-R2), shall be developed for the operators to effectively implement restoration. The *NYISO* shall conduct annual simulations of full or partial system shutdowns and restoration, and shall issue a critique report of the test.

Measurements

G-M1. The *NYISO* shall establish and maintain a coordinated system restoration plan. The plan shall include a *blackstart* capability procedure that will be coordinated, as appropriate, with the *blackstart* capability plans of *transmission owners* and neighboring *control areas*. Further, the *NYISO* shall maintain a record of all system *blackstart* generators. This record shall include the name, location, MW *capacity*, type of unit, and starting method of each *blackstart* generating unit. The *NYISO* shall require that all *blackstart* generators demonstrate, at least annually, that the unit can perform intended functions as required in the NYISO System Restoration Plan. In addition to *blackstart* generators, the *NYISO* shall maintain an inventory of other key facilities and their critical components required for the restoration of the *NYS Transmission System*, including testing requirements of such critical components in accordance with the NPCC Document A-3. (G-R1 and G-R2)

G-M2. Each *transmission owner* shall establish and maintain a *blackstart* capability procedure for facilities under its control and shall coordinate such procedures with those of the *NYISO*. (G-R1)

G-M3. The owner of each *blackstart* generating unit shall demonstrate that the unit can perform its intended functions as required by the NYISO System Restoration Plan. Documentation of the analysis shall be provided to the *NYISO* on request. (G-R2)

G-M4. The *NYISO* shall establish a procedure for annual simulations of full or partial system shutdowns and restoration, and schedule the conduct of such simulations. Finally, the procedure shall include details of a system program to train operators to implement restoration and schedule for the conduct of the next training program. (G-R3)

References

NPCC Documents A-3, A-8, B-20, C-20, C-31; NERC Operating Policies 5E, 6D, Planning Standard IVA.

Reliability Rules G-R1 through G-R3 are more specific or more stringent than the above NPCC and NERC Standards.

H. SYSTEM PROTECTION

Introduction

In general, the function of a *protection system* is to limit the severity and extent of system *disturbances* and possible damage to system equipment. Therefore, the *reliability* of the *NYS Bulk Power System* is impacted by the proper design, operation, maintenance, and application of *protection systems* in order to properly meet this function. Such *protection systems* include:

1. Underfrequency *load shedding* and equipment tripping
2. *NYS Bulk Power System protection*
3. *Special protection systems*

To meet these requirements, the Reliability Rules in this Section adopt the criteria for *protection systems* defined by NERC and NPCC Standards.

Reliability Rules

H-R1. Bulk Power System Protection

Protection systems **shall be designed to limit the severity and extent of system** ***disturbances*** **and possible damages to system equipment in accordance with** ***protection*** **dependability and severity levels implicit in B-R1 through B-R4, and** ***protection*** **criteria established in NPCC "Bulk Power System Protection Criteria" (A-5).**

H-R2. Bulk Power System Protection Maintenance

Comprehensive maintenance and testing programs for ***protection***

equipment shall consist of verifying that *protection* equipment is capable of reliably and accurately performing their intended *protection* functions, in accordance with *protection* maintenance criteria established in NPCC "Maintenance Criteria for Bulk Power System Protection" (A-4).

Measurements

H-M1. The *NYISO* shall provide the *NYSRC* with compliance documentation and data for meeting NPCC Document A-5, in accordance with requirements of NPCC "Procedure For Reporting and Reviewing Proposed Protection Systems for the Bulk Power System" (Document C-22), and requirements of the NPCC and NERC Compliance Programs, as requested. (H-R1)

H-M2. The *NYISO* shall provide the *NYSRC* with compliance documentation and data for meeting the requirements of the *NYISO* system protection maintenance procedure required by Measurement H-M3, as requested. (H-R2)

H-M3 The *NYISO* shall establish and maintain a procedure for monitoring compliance with the NPCC Document A-4,"Maintenance Criteria for Bulk Power System Protection," as applied to the New York Control Area. This procedure shall include a description of how the system of compliance reporting is implemented within the *NYISO*. (H-R2)

References

NPCC Documents A-2, A-4, A-5, A-8, B-11, C-16, C-22; NERC Operating Policy 4D, Planning Standards IIIA, B, C, F.

H. SYSTEM PROTECTION (CONT'D.)

Reliability Rules H-R1 and H-R2 are not more specific or more stringent than the above NPCC and NERC Standards.

NYSRC Reliability Rules

I. LOCAL RELIABILITY RULES

Introduction

Local reliability rules have been adopted that apply to individual *zones*. These Reliability Rules are more stringent than other Reliability Rules because of the need to protect the reliable delivery of electricity for specific electric system characteristics and demographics relative to these *zones*. These conditions include unique circumstances and complexities related to the maintenance of reliable transmission service, and the dire consequences that would result from failure to provide uninterrupted service. Certain of these Reliability Rules have been instituted as the result of NYS Public Service Commission orders or directives. The *local reliability rules* apply to the New York City (I-R1 through I-R4) and Long Island (I-R3) *zones*.

Reliability Rules

I-R1. Operating Reserves/Unit Commitment (New York City)

Certain areas of the Con Edison system are designed and operated for the occurrence of a second *contingency*. Unit commitment is based on second *contingency* operation as well as consideration of the Storm Watch Procedure, loss of the six lines south of Millwood and the locational requirements for its *operating reserves*.

I-R2. Locational Reserves (New York City)

Sufficient *ten (10) minute operating reserves* shall be maintained in the New York City (NYC) *zone* as follows:

a. The *ten (10) minute operating reserve* for *NYCA* shall be determined in accordance with Reliability Rules.

b. A percentage of the *ten (10) minute NYCA operating reserves* equal to the ratio of the NYC *zone* peak *load* to the statewide peak *load* shall be required to be selected from generating units located within the NYC *zone*.

c. NYC *zone ten (10) minute operating reserves* shall be maintained at all levels of dispatch, except as necessary to alleviate *emergency* conditions.

I-R3. Loss of Generator Gas Supply (New York City & Long Island)

The *NYS Bulk Power System* shall be operated so that the loss of a single gas facility does not result in the loss of electric *load* within the New York City or Long Island *zones*.

I-R3 Reliability Rule Application

Currently there are long standing applications that were adopted by the New York Power Pool, and reaffirmed by the *NYSRC*, for implementing this Reliability Rule with respect to specified generators in New York City and Long Island. These applications are as follows:

- **Gas Burning Procedure** - New York City (formerly Local Rule #3): A sudden loss of gas pressure in the gas transmission facilities that supply Con Edison's In-City generators could result in the units tripping off line. This rule requires certain In-City units to burn oil at a minimum level, based on the forecasted system *load* as follows:

1. Above 8000 MW - two of the three Astoria generators must be switched to minimum oil burn.
2. Above 9000 MW - all of the generators at Astoria, Ravenswood and East River should be switched to minimum oil burn.

- **Loss of Generator Gas Supply** - Long Island (formerly Local Rule #5): Considering the loss of gas supply as a single *contingency* that will impact the electric power system, the number of gas fired generators must be limited above critical system *load* levels. Above 3200 MW, two Northport units can be gas fired. At peak *loads*, Port Jefferson 3-4 gas operation must be restricted.

Changes in system conditions and other circumstances may render these current applications inadequate, or may require alternate applications. Con Edison and LIPA, with *NYISO* review and approval, shall determine whether revised or additional applications are necessary to meet this Reliability Rule and associated measurements. Any changes will be reviewed by the *NYSRC* for compliance with the Reliability Rules.

I-R4. Thunderstorm Watch (New York City)

Con Edison will operate its system as if the first *contingency* has already occurred on its northern transmission system when thunderstorms are within one hour of the system or are actually being experienced.

Measurements

I-M1. The *NYISO* shall document, maintain, and publish requirements for Con Edison to develop procedures for operating its system in accordance with I-R1, I-R3, and I-R4, including notification of the *NYISO* when actions are taken in accordance with these *local reliability rules*, and the reasons thereof. The *NYISO* shall review and approve Con Edison procedures and required studies, including any updates to such procedures and studies.

I-M2. The *NYISO* shall document, maintain, and publish requirements for LIPA to develop procedures for operating its system in accordance I-R3, including notification of the *NYISO* when action is taken in accordance with this *local reliability rule*, and the reasons thereof. The *NYISO* shall review and approve LIPA procedures and required studies, including any updates to such procedures and studies.

I-M3. The *NYISO* shall have in place procedures to ensure that sufficient *ten (10) minute reserves* are maintained in the NYC *zone* in accordance with I-R2.

I-M4. The *NYISO* shall apply I-R1 through I-R4 in:

a. the assessment of future transmission capability and analysis of transmission *adequacy* and *security*.

b. the establishment of *operating limits*, assessment of operating *adequacy*, and operation on the *NYS Bulk Power System*.

I-M5. Con Edison shall have in place procedures for operating its system in accordance with I-R1, I-R3, and I-R4 and *NYISO* requirements (see I-M1). These procedures must include notification to the *NYISO* when actions are taken in accordance with these *local reliability rules*, and the reasons thereof.

I-M6. LIPA shall have in place procedures for operating its system in accordance with I-R3 and *NYISO* requirements (see I-M2). These procedures must include notification to the *NYISO* when actions are taken in accordance with the *local reliability rules*, and the reasons thereof.

References

Reliability Rule 1 – PSC Directive, July 17, 1961
Reliability Rule 2 – PSC Order #27302
Reliability Rule 4 – PSC Order #27302

J. NYISO CONTROL CENTER COMMUNICATIONS

Introduction

Adequate data and voice communication interfaces between the *NYISO* and *Market Participants* is essential for meeting the Reliability Rules and ensuring *reliability*. This Section covers *NYISO* procedures necessary for supporting the required *NYISO/Market Participant* communication facilities for meeting this objective.

Reliability Rules

J-R1. NYISO/Market Participant Communications

Procedures shall be developed to support communications between the *NYISO* and *Market Participants* during both normal and off-normal conditions. These procedures shall recognize the need for *NYISO/Market Participant* voice communications using *emergency* hot lines and "red phones" during off-normal conditions.

J-R2. NYISO Communications Under Emergency Conditions

Procedures shall be developed to support data and voice communications between the *NYISO* and *Market Participants* to ensure safe and reliable operations under the following emergency conditions:

a. Failure of data and/or voice communications between the *NYISO* and *Market Participants*.

b. Emergency transfer of control after evacuation of the *NYISO* Power Control Center.

c. Continued operations from the *NYISO* Alternate Control Center.

The procedures shall identify how various systems are monitored for availability and include methods of tracking performance measures of system availability.

Measurements

J-M1. The *NYISO* shall develop the necessary procedures and other required documentation in compliance with J-R1 and J-R2, which shall be provided to the *NYSRC* on request.

J-M2. The *NYISO* shall prepare reports summarizing performance data of control center communication interfaces. These reports shall be provided to the *NYSRC* on request or when significant changes are made, and shall include a tracking basis of historical performance of voice and data communication equipment. (J-R2)

J-M3. The *NYISO* shall provide to the *NYSRC* within one month a report summarizing any loss of critical voice and/or data systems. The report shall describe the problem and its relationship to the control of the *NYS Bulk Power System*, the cause of the problem, the corrective action, and implementation schedule. (J-R2)

References

NPCC Document C-3; NERC Operating Policies 6D, 7.

Reliability Rules J-R1 and J-R2 are more specific or more stringent than the above NPCC and NERC Standards.

K. RELIABILITY ASSESSMENT

Introduction

To ensure the *reliability* of the *NYS Bulk Power System*, the *NYSRC*, though the Reliability Compliance Monitoring Subcommittee ("RCMS"), reviews and assesses NYISO Planning and Operating Manuals to evaluate if they are in concert with the Reliability Rules.

In addition, the *NYSRC*, also through RCMS, reviews and assesses the overall *reliability* of the *NYS Bulk Power System*, both existing and planned, to be sure that it conforms to the Reliability Rules.

To carry out this mission, RCMS must have sufficient data, reports, and other documentation from the *NYISO*, first, to ensure that *NYISO* planning analyses and operations meet the Reliability Rules, and second, to prepare and publish annual *NYSRC* assessments of the *reliability* of the existing and future *NYCA generation* and transmission system.

The *NYISO* must also assess the *NYCA* system within the context of interconnected networks. Therefore, the *NYISO* must coordinate its assessment efforts with neighboring *control areas*.

Reliability Rules

K-R1. NYISO Manuals

NYISO Planning and Operating Manuals shall conform to the Reliability Rules.

K-R2. Reliability Assessments

The overall *reliability* (*adequacy* and *security*) of the *NYCA* interconnected *NYS Bulk Power System* shall be reviewed and assessed, both in real-time and as planned, to ensure that the *NYISO* and its *Market Participants* conform to the Reliability Rules.

Measurements

K-M1. The NYISO Planning and Operating Manuals shall be prepared by the *NYISO* in conformance with the Reliability Rules and submitted to the *NYSRC* for compliance review on request. (K-R1)

K-M2. The *NYISO* shall conduct, and provide to the *NYSRC*, the following *reliability* assessments:

a. A *NYCA* Transmission Review covering an assessment of system performance results of simulation tests for the 4-6 year planning horizon, for demonstrating compliance with Reliability Rules. This report shall be prepared annually.

b. A *NYCA resource adequacy* assessment for the next summer period and two years beyond, for demonstrating next *capability period* compliance with the *NYSRC IRM* requirement and *NYISO* *locational ICAP requirements*, and prospective future compliance. The assessment shall include statewide and New York City and Long Island *resource adequacy*.

c. Interregional *reliability* assessments for ensuring that the *NYCA* inter-*control area* and internal transmission system is developed on a coordinated basis. Reports on these assessments shall be provided as requested by the *NYSRC*.

d. Monthly operating reports covering occurrences of *major emergency* and alert states, a summary of the NERC/NPCC Control Performance, a list of NPCC Reportable Events, and other indices identified by the *NYSRC* for monitoring the *security* of the system.

e. *Major emergency* reports, which will include critiques of operating incidents. Preliminary reports shall be provided to the *NYSRC* within one week of the incident and final reports provided within one month following completion.

f. Special *reliability* assessments that may be requested by the *NYSRC*.

g. Copies of additional system *reliability* assessments requested by NPCC, but not covered above.

These assessments shall be coordinated with NERC and NPCC assessment requirements. (K-R2)

References

NPCC Document A-8, B-4, B-8; NERC Planning Standard IB.

Reliability Rules K-R1 and K-R2 are more specific or more stringent than the above NPCC and NERC Standards.

III. NYSRC/NPCC/NERC RELIABILITY RULE CROSS-REFERENCE

Section	NYSRC Rules	NPCC Criteria	NERC Criteria
A. Resource Adequacy	A-R1. Statewide Installed Reserve Margin Requirement	A-2	—
	A-R2. LSE Installed Capacity Requirement	----	—
	A-R3. External Installed Capacity ("External ICAP")	----	—
B. Transmission Capability – Planning	B-R1. Thermal Assessment	A-2	PS IA
	B-R2. Voltage Assessment	A-2	PS IA
	B-R3. Stability Assessment	A-2	PS IA
	B-R4. Extreme Contingency Assessment	A-2	PS IA
	B-R5. Restoration	----	----
	B-R6. List of NYS Bulk Power System Facilities	----	----
	B-R7. Fault Current Assessment	A-2	----
C. Resource, System, & Demand Data Requirements	C-R1. Verification Testing of Resource Capacity	A-2, B-9, B-18, C-7	PS IIB
	C-R2. Resource Availability Requirements	A-2	----
	C-R3. Load Forecasting	A-2, C-28	PS IID
	C-R4. System Data Requirements	A-2	----
D. Operating Reserves	D-R1. Operating Resource Adequacy	A-2, A-6, C-9, C-19	OP 1A
	D-R2. Minimum Operating Reserve Requirement	A-6, A-8, C-9, C-19	OP 1A
	D-R3. Availability and Category	A-6, A-8, C-9, C-19	OP 1A
	D-R4. Restoration of Ten (10) Minute Reserve	A-6, A-8, C-9, C-19	OP 1A
E. Transmission Capability – Operating	E-R1. Thermal Assessment	A-2	OP 2A
	E-R2. Voltage Assessment	A-2, B-3, C-4	OP 2A, 2B
	E-R3. Stability Assessment	A-2	OP 2A
	E-R4. Post-Contingency Operation	A-2	OP 2A
	E-R5. Outage Coordination	A-2, C-13	OP 2A, 2B, 4C
	E-R6. Operation During Impending Severe Weather	A-2, C-13	OP 2A, 2B, 4C
	E-R7. Operation During a Severe Solar Magnetic Disturbance	C-15	----
	E-R8. Fault Current Assessment		
F. Operating During Major Emergencies	F-R1. Transmission Thermal Overloads	A-3, C-5, C-21	OP 5A, 5C
	F-R2. Post-Contingency STE Rating Violations	A-3, C-5, C-20	OP 5A, 5C
	F-R3. High or Low Voltage	A-3, C-5, C-20	OP 5A, 5C
	F-R4. Post-Contingency Voltage	A-3, C-5	OP 5A, 5C
	F-R5. Operating Reserve Deficiency	A-3, C-5, C-19	OP 5A, 5B
	F-R6. Stability Limit Violation	A-3, C-5	OP 5A, 5C
	F-R7. Low Frequency	A-3, C-5, C-20	OP 5A, 5C
	F-R8. Load Shedding Allocation	A-3, A-8, C-5, C-26	OP 5A

NYSRC/NPCC/NERC RELIABILITY RULE CROSS-REFERENCE (CONT'D)

Section	NYSRC Rules	NPCC Criteria	NERC Criteria
G. System Restoration	G-R1. Emergency Restoration Procedures	A-3, A-8, B-20, C-20, C-31	OP 5E, OP 6D
	G-R2. Blackstart Resources	A-3, B-20, C-20, C-31	PS IVA, OP 6D
	G-R3. Restoration Training and Simulation Programs	A-3	----
H. System Protection	H-R1. Bulk Power System Protection	A-2, A-5, B-11, C-16, C-22	OP 4D, PS IIIA, B, C, F
	H-R2. Bulk Power System Protection Maintenance	A-4, A-8, C-26	OP 4D, PS IIIA, B, C, F
I. Local Reliability Rules	I-R1. Operating Reserves/Unit Commitment (New York City)	----	----
	I-R2. Locational Reserves (New York City)	----	----
	I-R3. Loss of Generator Gas Supply (New York City & Long Island)	----	----
	I-R4. Thunderstorm Watch (New York City)	----	----
J. NYISO Control Center Communications	J-R1. NYISO/Market Participant Communications	C-3	OP 7
	J-R2. NYISO Communications Under Emergency Conditions	C-3	OP 6D, OP 7
K. Reliability Assessment	K-R1. NYISO Manuals	----	----
	K-R2. Reliability Assessments	A-8, B-4, B-8	PS IB

KEY: PS = NERC Planning Standard; OP = NERC Operating Policy.

The above NPCC Standards may be downloaded from:
http://www.npcc.org/CriteriaGuidesProcedures.htm

The above NERC Standards and Policies mat be downloaded from:
http://www.nerc.com/standards.htm

IV.
GLOSSARY

A. GLOSSARY INDEX

Glossary Index	Introduction or Rule Section(s)	Source of Definition
Applications of the Reliability Rules	Introduction	NYSRC
Availability	A, C	NPCC
Blackstart	G	NPCC
Bulk Power System		See NYS Bulk Power System
Capability Period	A, K	NYISO
Capacity	Introduction, A, C, D, F, G	NPCC
Installed Capacity ("ICAP")	A, C	NYSRC
Installed Capacity Requirement ("ICR")	Introduction, A	NYSRC
External Installed Capacity ("External ICAP")	A	NYSRC
Net Dependable Capacity	C	NYSRC
Contingency	B, D, E, F, I	NYSRC
Control Area	A, D, G, K	NYSRC
Demand	Introduction, A, B, C	NPCC
Disturbance	Introduction, B, E, H	NPCC
Element	Introduction, B, E, G	NYSRC
Emergency	Introduction, B, E, F, I, J	NPCC
Major Emergency	Introduction, F, K	NYSRC
Emergency Transfer Criteria	E, F	NYSRC
Fault	Introduction, B, E, F	NPCC
Fault Clearing	B	NPCC
Delayed Fault Clearing	B	NPCC
Normal Fault Clearing	B	NPCC
Generation	Introduction, B, C, D, E, F, G,	NPCC
Interface	B, F, J	NPCC
Load	A, B, C, D, F, I	NPCC
Firm Load	A, E	NYSRC
Interruptible Load	D	NYSRC
Load Relief	A, F	NYSRC
Load Shedding	E, F, H	NPCC (modified)
Load Serving Entities ("LSE")	A	NYSRC
Local Reliability Rules	Introduction, E, I	NYSRC
Locational Installed Capacity Requirement ("Locational ICAP Requirement")	A, K	NYISO (modified)
Market Participant(s)	Introduction, D, E, F, G, J, K	NYSRC
NYISO Secured Transmission System	Introduction	NYSRC
New York Control Area ("NYCA")	Introduction, A, C, D, E, F, G,	NYISO
New York Independent System Operator ("NYISO")	Introduction, A-K	NYISO
New York State Bulk Power System ("NYS Bulk Power System")	Introduction, B, C, E, F, H, I, K	NYSRC
New York State Power System ("NYS Power System")	Introduction, B	NYISO
New York State Reliability Council, LLC ("NYSRC")	Introduction, A, B, C, D, E, F,	NYSRC
New York State Transmission System ("NYS Transmission System")	Introduction, A, G	NYISO
Normal Transfer Criteria	D	NYSRC
Normal Transfer Limit	B	NYSRC
Obligation Procurement Period	A	NYISO
Operating Limit	E, I	NPCC

GLOSSARY INDEX (CONT'D.)

Glossary Index	Introduction or Rule Section(s)	Source of Definition
Operating Procedures	Introduction, A	NPCC
Protection	E, H	NPCC
Protection Group	E	NPCC
Protection System	B, H	NPCC
Rating	B, E, F	NPCC
Normal Rating	B, E, F	NYSRC
Long Time Emergency ("LTE") Rating	B, E, F	NYSRC
Short Time Emergency ("STE") Rating	B, E, F	NYSRC
Rating Authority	F	NYSRC
Reactive Power	B, C	NYSRC
Reactive Power Capacity	B, C	NYSRC
Reclosing		
Delayed Reclosing	B, E	NYSRC
With Due Regard to Reclosing	B	NPCC
Reliability	Introduction, A, B, C, E, H, J, K	NPCC
Adequacy	Introduction, A, D, I, K	NPCC
Security	Introduction, E, I, K	NPCC
Reserve	D, F	NPCC
Installed Reserve Margin ("IRM")	A, C, K	NYSRC
Operating Reserve	D, E, F, I	NYSRC
Non-synchronized Ten (10) Minute Operating Reserve	D	NYSRC
Synchronized Operating Reserve	D	NPCC (modified)
Ten (10) Minute Operating Reserve	B, D, E, F, I	NPCC
Thirty (30) Minute Operating Reserve	D	NYSRC
Resource	A, C, D, E, G, K	NPCC
Energy-Only Resources	C	NYISO
Significant Adverse Impact	Introduction	NPCC
Special Protection System ("SPS")	B, E, H	NPCC
Stability	B, E, F	NPCC
Stability Limit	E, F	NPCC (modified)
Steady State	B	NYSRC
Thermal Limit	E, F	NYSRC
Transfer Capability	A, E, F	NYPP
Transmission District	C, F	NYISO (modified)
Transmission Owners	Introduction, B, C, E, F, G	NYSRC
Voltage Limit	B, E	NYSRC
Voltage Reduction	E, F	NYSRC
Zone	A, C, F, I	NYISO

B. GLOSSARY

Applications of the Reliability Rules – New York transmission owner operating procedures that apply to very specific NYCA system locations or conditions which are applications of the NYS Reliability Rules, and require close coordination between the transmission owners and the NYISO.

Availability – A measure of time a generating unit, transmission line, or other facility is capable of providing service, whether or not it actually is in service. Typically, this measure is expressed as a percent available for the period under consideration.

Blackstart - The ability of a generating unit or station to go from a shutdown condition to an operating condition and start delivering power without assistance from the electric system.

Bulk Power System – See NYS Bulk Power System

Capability Period - Six (6) month periods which are established as follows: (1) from May 1 through October 31 of each year ("Summer Capability Period"); and (2) from November 1 of each year through April 30 of the following year ("Winter Capability Period"); or such other periods as may be determined by the Operating Committee of the NYISO. A summer capability period followed by a winter capability period shall be referred to as a "Capability Year." Each capability period shall consist of on-peak and off-peak periods.

Capacity – The rated continuous load-carrying ability, expressed in megawatts ("MW") or megavolt-amperes ("MVA") of generation, transmission or other electrical equipment.

Installed Capacity ("ICAP") - Capacity of a facility accessible to the NYS Bulk Power System, that is capable of supplying and/or reducing the demand for energy in the NYCA for the purpose of ensuring that sufficient energy and capacity is available to meet the reliability rules.

Installed Capacity Requirement ("ICR") - The annual statewide requirement established by the NYSRC in order to ensure resource adequacy in the NYCA.

External Installed Capacity ("External ICAP") – Installed capacity from resources located in control areas outside the NYCA that must meet certain NYISO requirements and criteria in order to qualify to supply New York LSEs.

Net Dependable Capacity – The capability of electric generation resources that shall be the sustained maximum net output averaged over a period of time defined by the NYISO Installed Capacity Manual, Section 4.2.2, for the determination of net system capacity. The certified ability by equipment used for providing resource capacity shall be verified in accordance with the NYISO Installed Capacity Manual, Section 4.0.

Contingency - An actual or potential unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch, or other electrical element. A contingency also may include multiple components, which are related by situations leading to simultaneous component outages.

Control Area - An electric system or systems, bounded by interconnection metering and telemetry, capable of controlling generation to maintain its interchange schedule with other control areas and contributing to frequency regulation of the interconnection.

Demand – The rate at which energy must be generated or otherwise provided to supply an electric power system.

Disturbance – Severe oscillations or severe step changes of current, voltage and/or frequency usually caused by faults.

Element - Any electrical device with terminals which may be connected to other electrical devices; usually limited to a generator, transformer, transmission circuit, circuit breaker, an high voltage direct current ("HVDC") pole, braking resistor, a series or shunt compensating device or bus section. A circuit breaker is understood to include its associated current transformer(s) and the bus section between the breaker bushing and its current transformer(s).

Emergency - Any abnormal system condition that requires automatic or immediate, manual action to prevent or limit loss of transmission facilities or generation resources that could adversely affect the reliability of an electric system.

Major Emergency - A situation usually accompanied by abnormal frequency, abnormal voltage and/or equipment overloads which might seriously affect the reliability of the NYS Bulk Power System.

Emergency Transfer Criteria - It is intended that the NYS Bulk Power System be operated within normal transfer criteria at all times insofar as possible. However, in the event that adequate facilities are not available to supply firm load within normal transfer criteria, emergency transfer criteria may be invoked. Under emergency transfer criteria, transfers may be increased up to, but not exceed, emergency ratings and limits as follows:

a. Pre-contingency line and equipment loadings may be operated up to LTE ratings for up to four (4) hours, provided the STE ratings are set appropriately. Otherwise, pre-contingency line and equipment loadings must be within normal ratings. Pre-contingency voltages and transmission interface flows must be within applicable pre-contingency voltage and stability limits.

b. Post-contingency line and equipment loadings within STE ratings. Post-contingency voltages and transmission interface flows within applicable post-contingency voltage and stability limits.

Contingencies a and d in Table A "Design Criteria Contingencies", in the reliability rules apply under emergency transfer criteria. Contingency b, c, e, f, and g, which may result in the loss of more than one element, may be suspended under emergency transfer criteria.

Fault – An electrical short circuit.

Fault Clearing

Delayed Fault Clearing - Fault clearing consistent with correct operation of a breaker failure protection group and its associated breakers, or of a backup protection group with an intentional time delay.

Normal Fault Clearing - Fault clearing consistent with correct operation of the protection system and with correct operation of all circuit breakers or other automatic switching devices intended to operate in conjunction with that protection system.

Generation – The process of producing electrical energy from other forms of energy; also, the amount of electric energy produced, usually expressed in kilowatt-hours ("kWh") or megawatthours ("MWh").

Interface – The specific set of transmission elements between two areas or between two areas comprising one or more electrical systems.

Load – The electric power used by devices connected to an electrical generating system. (IEEE Power Engineering)

Firm Load - The load of a market participant that is not contractually interruptible.

Interruptible Load – The load of a market participant that is contractually interruptible.

Load Relief - Load reduction accomplished by voltage reduction or load shedding or both. Voltage reduction and load shedding as defined in this document, are measures by order of the NYISO.

Load Shedding – The process of disconnecting (either manually or automatically) preselected customers' load from a power system in response to an abnormal condition to maintain the integrity of the system and minimize overall customer outages. Load shedding is a measure undertaken by order of the NYISO. If ordered to shed load, transmission owner system dispatchers shall immediately comply with that order. Load shall normally all be shed within 5 minutes of the order.

Load Serving Entity ("LSE") - In a wholesale competitive market, Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., Long Island Power Authority ("LIPA"), New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation, Orange & Rockland Utilities, Inc., and Rochester Gas and Electric Corporation, the current forty-six (46) members of the Municipal Electric Utilities Association of New York State, the City of Jamestown, Rural Electric Cooperatives, the New York Power Authority ("NYPA"), any of their successors, or any entity through regulatory requirement, tariff, or contractual obligation that is responsible for supplying energy, capacity and/or ancillary services to retail customers within New York State.

Local Reliability Rule – Reliability rules of the individual transmission owners which are based on meeting specific reliability concerns in limited areas of the NYS Bulk Power System, including but not limited to special conditions that apply to nuclear plants, such as NRC licensing requirements, and special requirements applicable to the New York City metropolitan area.

Locational Installed Capacity Requirement ("Locational ICAP Requirement") – Due to transmission constraints, that portion of the NYCA ICAP requirement that must be electrically located within a zone, in order to ensure that sufficient energy and capacity are available in that zone and that NYSRC Reliability Rules are met.

Locational ICAP requirements are currently applicable to two transmission constrained zones, New York City and Long Island, and are normally expressed as a percentage of each zone's annual peak load.

Market Participant(s) - Entity or entities producing, transmitting, selling, and/or purchasing for resale capacity, energy, and ancillary services in the wholesale market, excluding the NYISO.

NYISO Secured Transmission System – Those specific facilities monitored and secured by the NYISO in the day-ahead unit commitment and real-time dispatch consistent with the reliability rules.

New York Control Area ("NYCA") – The control area located within New York State which is under the control of the NYISO. See Control Area.

New York Independent System Operator ("NYISO") – The NYISO is a not-for-profit organization formed in 1998 as part of the restructuring of New York State's electric power industry. Its mission is to ensure the reliable, safe and efficient operation of the State's major transmission system and to administer an open, competitive and nondiscriminatory wholesale market for electricity in New York State.

New York State Bulk Power System ("NYS Bulk Power System") – The portion of the bulk power system within the New York control area, generally comprising generating units 300 MW and larger, and generally comprising transmission facilities 230 kV and above. However, smaller generating units and lower voltage transmission facilities on which faults and disturbances can have a significant adverse impact outside of the local area are also part of the NYS Bulk Power System.

New York State Power System ("NYS Power System") – All facilities of the New York State transmission system, and all those generators located within New York State or outside New York State, some of which may be from time-to-time subject to operational control by the NYISO.

New York State Reliability Council, LLC ("NYSRC") - An organization established by agreement (the "NYSRC Agreement") by and among Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., LIPA, New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation, Orange & Rockland Utilities, Inc., Rochester Gas and Electric Corporation, and the New York Power Authority, to promote and maintain the reliability of the Bulk Power System, and which provides for participation by Representatives of Transmission Owners, sellers in the wholesale electric market, large commercial and industrial consumers of electricity in the NYCA, and municipal systems or cooperatively-owned systems in the NYCA, and by unaffiliated individuals.

New York State Transmission System ("NYS Transmission System") – The entire New York State electric transmission system, which includes (1) the transmission facilities under NYISO operational control; (2) the transmission facilities requiring NYISO notification; and (3) all remaining facilities within the NYCA.

Normal Transfer Criteria - Under normal transfer criteria, adequate facilities are available to supply firm load with the bulk power transmission system within applicable normal ratings and limits as follows:

a. Pre-contingency line and equipment loadings within normal ratings. Pre-contingency voltages and transmission interface flows within applicable pre-contingency voltage and stability limits.
b. Post-contingency line and equipment loadings within applicable emergency (LTE or STE) ratings. Post-contingency voltages and transmission interface flows within applicable post-contingency voltage and stability limits.

All contingencies listed in Table A "Design Criteria Contingencies", in the reliability rules apply under normal transfer criteria.

Normal Transfer Limit - The maximum allowable transfer is calculated based on thermal, voltage, and stability testing, considering contingencies, ratings, and limits specified for normal conditions. The normal transfer limit is the lowest limit based on the most restrictive of these three maximum allowable transfers.

Obligation Procurement Period – The period of time for which LSEs shall be required to satisfy their ICAP. Starting with the 2001-2002 winter capability period, obligation procurement periods shall be one calendar month in duration and shall begin on the first day of each calendar month.

Operating Limit –The maximum value of the most critical system operation parameter(s) which meet(s): (a) pre-contingency criteria as determined by equipment loading capability and acceptable voltage conditions; (b) stability criteria; (c) post-contingency loading and voltage criteria.

Operating Procedures – A set of policies, practices, or system adjustments that may be automatically or manually implemented by the system operator within a specified time frame to maintain the operational integrity of the interconnected electric systems.

Protection – The provisions for detecting power system faults or abnormal conditions and taking appropriate automatic corrective action.

Protection Group - A fully integrated assembly of protective relays and associated equipment that is designed to perform the specified protective functions for a power system element independent of other groups.

Notes:

(a.) Variously identified as main protection, primary protection, breaker failure protection, back-up protection, alternate protection, secondary protection, A protection, B protection, Group A, Group B, System 1 or System 2.

Protection – (Cont'd.)

Protection System –

(b) Pilot protection is considered to be one protection group.

<u>Element Basis</u>
One or more protection groups; including all equipment such as instrument transformers, station wiring, circuit breakers and associated trip/close modules, and communication facilities; installed at all terminals of a power system element to provide the complete protection of that element.

<u>Terminal Basis</u>
One or more protection groups, as above, installed at <u>one</u> terminal of a power system element, typically a transmission line.

Rating – The operational limits of an electric system, facility, or element under a set of specified conditions.

Normal Rating - The capacity rating of a transmission facility that may be carried through consecutive twenty- four (24) hour load cycles.

Long Time Emergency ("LTE") Rating - The capacity rating of a transmission facility that can be carried through infrequent, non- consecutive four (4) hour periods.

Short Time Emergency ("STE") Rating -The capacity rating of a transmission facility that may be carried during very infrequent contingencies of fifteen (15) minutes or less duration.

Rating Authority - The transmission owner who has the authority and responsibility for maintaining the correct dynamic rating for NYS Bulk Power System facilities in the NYISO Power Control Center computer.

Reactive Power - The product of voltage and the quadrature component of alternating current. Reactive Power, is usually measured in mega-volt-amperes-reactive ("MVAr").

Reactive Power Capacity - The certified ability of an electrical element to produce or absorb Reactive Power, as defined in the NYISO Services Manual, Section 3.5.2.

Elements that produce reactive power such as capacitors and over-excited generators/synchronous condensers; and elements that absorb reactive power such as reactors, under-excited generators/ synchronous condensers and other inductive devices including the inductive portion of loads.

Reclosing

Delayed Reclosing - The reclosing of a circuit breaker after a time delay which is intentionally longer than that for high speed reclosing.

With Due Regard to Reclosing - This phrase means that before any manual system adjustments, recognition will be given to the type of reclosing (i.e., manual or automatic) and the kind of protection systems.

Reliability – The degree of performance of the bulk electric system that results in electricity being delivered to customers within accepted standards and in the amount desired. Reliability may be measured by the frequency, duration, and magnitude of adverse effects on the electric supply. Electric system reliability can be addressed by considering two basic and functional aspects of the electric system – adequacy and security.

Adequacy – The ability of the electric system to supply the aggregate electrical demand and energy requirements of the customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system elements.

Security – The ability of the electric system to withstand disturbances such as electric short circuits or unanticipated loss of system elements.

Reserve – In normal usage, reserve is the amount of capacity available in excess of the demand.

Installed Reserve Margin ("IRM") - That capacity above firm system demand required to provide for equipment forced and scheduled outages and transmission capability limitations.

Operating Reserve - Generating capacity that is available to supply energy, or curtailable load that is willing to stop using energy, in the event of emergency conditions or increased system load, and can do so within a specified time period.

Non-synchronized Ten (10) Minute Operating Reserve - The portion of ten (10) minute reserve consisting of generating capacity such as hydroelectric, pumped storage hydroelectric, and quick start combustion generation which can be synchronized and loaded to claimed capacity in ten (10) minutes or less. Non-synchronized reserve must not exceed half of the ten (10) minute reserve.

Synchronized Operating Reserve -The portion of ten (10) minute reserve consisting of unused generating capacity which is synchronized and ready to pick up load or generating capacity which can be made available by curtailing pumping hydro units or canceling energy sales to other systems.

Ten (10) Minute Operating Reserve - The sum of synchronized and non-synchronized reserve capacity that is fully available in ten (10) minutes.

Thirty (30) Minute Operating Reserve - That portion of the NYISO's operating reserve requirement that includes unused generating capacity which can and will be made fully available as promptly as possible, but in no more than thirty (30) minutes. It is the sum of synchronized and non-synchronized reserve that can be utilized in thirty (30) minutes, excluding reserve that is counted as ten (10) minute reserve.

Resource - The total contributions provided by supply-side and demand-side facilities and/or actions. Supply-side facilities include utility and non-utility generation and purchases from neighboring systems. Demand-side facilities include measures for reducing load, such as conservation, demand management, and interruptible load.

Energy-only Resource – A resource that has a contractual obligation to provide energy and no obligation to provide ancillary services and capacity.

Significant Adverse Impact – With due regard for the maximum operating capability of the affected systems, on or more of the following conditions arising from faults or disturbances, shall be deemed as having significant adverse impact:

Significant Adverse Impact – (Cont'd.)

a. system instability;
b. unacceptable system dynamic response or equipment tripping;
c. voltage levels in violation of applicable emergency limits;
d. loadings on transmission facilities in violation of applicable emergency limits;
e. unacceptable loss of load.

Special Protection System ("SPS") - A protection system designed to detect abnormal system conditions, and take corrective action other than the isolation of faulted elements. Such action may include changes in load, generation, or system configuration to maintain system stability, acceptable voltages or power flows. Automatic under frequency load shedding is not considered an SPS. Conventionally switched, locally controlled shunt devices are not SPSs.

Stability – The ability of an electric system to maintain a state of equilibrium during normal and abnormal system conditions or disturbances.

Stability Limit – The maximum power flow possible through a particular transmission element or interface, while maintaining stability in the entire system or the part of the system to which the stability limit refers.

Steady State – That point in time following a contingency after fast acting automatic equipment has operated. This equipment includes generation rejection, transmission cross-tripping (including capacitors and reactors), load rejections, generator voltage regulators, and static VAR compensators.

Thermal Limit - The maximum power flow through a particular transmission element or interface, considering the application of thermal assessment criteria.

Transfer Capability - The measure of the ability of interconnected electrical systems to reliably move or transfer power from one area to another over all transmission lines (or paths) between those areas under specified system conditions.

Transmission District – The geographic area served by the NYCA investor-owned transmission owners and LIPA, as well as customers directly interconnected with the transmission facilities of NYPA.

Transmission Owner - Those parties who own, control and operate facilities in New York State used for the transmission of electric energy in interstate commerce. Transmission owners are those who own, individually or jointly, at least 100 circuit miles of 115 kV or above in New York State and have become a signatory to the TO/ISO Agreement. The Transmission owners currently consist of Central Hudson Gas and Electric Corporation, Consolidated Edison Company of New York, Inc., LIPA, New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation, Rochester Gas and Electric Corporation, and the New York Power Authority.

Voltage Limit – The maximum power flow through some particular point in the system considering the application of voltage assessment criteria.

Voltage Reduction - A means of achieving load reduction by reducing customer supply voltage, usually by 3, 5, or 8 percent. If ordered by the NYISO to go into voltage reduction, transmission owner system dispatchers shall immediately comply with that order. Quick response voltage reduction shall normally be accomplished within ten (10) minutes of the order. See "Order" definition.

Zone - A defined portion of the NY control area that encompasses a set of load and generation buses. Each zone has an associated zonal price that is calculated as a weighted average price based on generator LBMPs and generator bus load distribution factors. A "zone" outside the NY control area is referred to as an external zone. Currently New York State is divided into eleven zones, corresponding to ten major transmission interfaces that can become congested

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V.

SYSTEM CONDITIONS FOR OPERATING STATES OF THE NYS BULK POWER SYSTEM

MONITORED CRITERIA	NORMAL	WARNING	ALERT	MAJOR EMERGENCY	RESTORATION
Transmission Facility Pre-Contingency Flow	Flow is less than or equal to Normal rating	Flow is greater than Normal rating but less than or equal to LTE rating for not more than 30 minutes. **OR** Emergency Transfer Criteria have been invoked but flow is less than or equal to Normal rating	Emergency Transfer Criteria have been invoked **AND** Flow is greater than Normal rating but less than or equal to LTE for not more than 4 hours	Flow is greater than LTE rating. **OR** Flow is greater than Normal rating but less than or equal to LTE rating for 4 hours.	
Transmission Facility Post-contingency Flow for loss of generation or single facility	Predicted flow is less than or equal to LTE rating	Predicted flow is greater than LTE rating but less than or equal to STE rating.	Predicted flow is greater than STE rating and there is sufficient time to take corrective action following contingency **AND** Emergency Transfer Criteria have not been exceeded for more than 30 minutes.	Predicted flow is greater than STE rating and there is not sufficient time to take corrective action following contingency. **OR** Emergency Transfer Criteria have been invoked and criteria have been exceeded for more than 30 minutes.	
Transmission Facility Post-contingency Flow for loss of two adjacent circuits on the same structure	Predicted flow is less than or equal to LTE rating	Emergency Transfer Criteria have been invoked. Post-contingency flow may exceed STE rating.	Emergency Transfer Criteria have been invoked. Post-contingency flow may exceed STE rating.	Emergency Transfer Criteria have been invoked. Post-contingency flow may exceed STE rating.	
Actual Voltage	Voltage is within pre-contingency limits	Not Applicable	Voltage is less than its pre-contingency low limit or greater than its pre-contingency high limit for less than 15 minutes. **OR** Voltage is greater than its post-contingency high limit for less than 10 minutes and is indicative of a system problem.	Voltage is less than its pre-contingency low limit or greater than its pre-contingency high limit for 15 minutes and is indicative of a system problem. **OR** Voltage is less than its pre-contingency low limit, is indicative of a system problem, and appropriate voltage control measures have already been taken. **OR** Voltage is less than its post-contingency low limit and is indicative of a system problem. **OR** Voltage is greater than its post-contingency high limit for 10 minutes.	

Note: From NYISO Emergency Operations Manual, Exhibit A-1

SYSTEM CONDITIONS FOR OPERATING STATES OF THE NYS BULK POWER SYSTEM (CONT'D.)

MONITORED CRITERIA	NORMAL	WARNING	ALERT	MAJOR EMERGENCY	RESTORATION
Post-contingency voltage	Post-contingency transmission facility flow is less than or equal to voltage collapse limit	Not Applicable	Post-contingency transmission facility flow is greater than voltage collapse limit by less than 5% for less than 15 minutes.	Post-contingency transmission facility flow is greater than voltage collapse limits by less than or equal to 5% for 15 minutes, or by more than 5%.	
Reserve 10 minute Reserve	No 10-Minute Reserve deficiency	No 10-Minute Reserve deficiency, but only if using Emergency Transfer Criteria.	No 10-Minute Reserve deficiency, but only including quick response Voltage Reduction.	10 Minute Reserve deficiency exists after taking all actions defined in the NYISO Manual for Emergency Operations including purchase of operating capability.	
Reserve Operating Reserve	No Operating Reserve deficiency	No Operating Reserve deficiency, but only if using Emergency Transfer Criteria.	No Operating Reserve deficiency, but only using Emergency Transfer Criteria.	Operating Reserve deficiency exists after taking all actions defined in the NYISO Manual for Emergency Operations including purchase of operating capability.	
Stability Limits	Transmission facility flow is less than or equal to stability limit	Not Applicable	Transmission facility flow is greater than stability limit by less than 5% for less than 15 minutes.	Transmission facility flow is greater than stability limit by less than or equal to 5% for 15 minutes, or by more than 5%	
Area Control Error ("ACE")	ACE is less than ±100 MW **OR** ACE is less than ±500 MW for less than 10 minutes	ACE is greater than ±100 MW but less than ± 500MW for more than 10 minutes.	ACE is greater than or equal to ± 500 MW for less than 10 minutes.	ACE is greater than or equal to ± 500 MW for more than 10 minutes.	
Frequency	Frequency is greater than or equal to 59.95 Hz and less than or equal to 60.05 Hz	Not Applicable	Frequency is greater than or equal to 60.05 Hz and is sustained at that level or continues to increase. **OR** Frequency is less than or equal to 59.95 Hz and is sustained at that level or continues to decline.	Frequency is greater than or equal to 60.10 Hz and is sustained at that level or continues to increase. **OR** Frequency is less than or equal to 59.90 Hz and is sustained at that level or continues to decline.	
Communication, Computer, Control, & Indication Facilities	Sufficient facilities to monitor system status	Not Applicable	Partial failures impairing the capability of monitoring system status and the NYISO Shift Supervisor determines the power system is in jeopardy.	Insufficient communication facilities to monitor system status and the NYISO Shift Supervisor determines the power system is in serious jeopardy.	

Note: From NYISO Emergency Operations Manual, Exhibit A-1

SYSTEM CONDITIONS FOR OPERATING STATES OF THE NYS BULK POWER SYSTEM (CONT'D.)

MONITORED CRITERIA	NORMAL	WARNING	ALERT	MAJOR EMERGENCY	RESTORATION
Neighboring Systems	All neighboring systems operating under normal conditions	One or more neighboring systems not operating under normal conditions.	One or more neighboring systems in Voltage Reduction.	One or more neighboring systems in Voltage Reduction and requesting NYISO assistance via Voltage Reduction.	
Separation within the New York Control Area	NO	NO	NO	YES	An area within the NY Control Area is islanded, customer load is interrupted, or both, following a system disturbance affecting the NYS Power System.
Overgeneration	–	–	–	NYCA is overgenerating and corrective measures are not sufficient to reduce ACE to zero.	
Other	–	--	A situation involving impending severe weather exists. **OR** A situation involving severe Solar Magnetic Disturbances exists.	--	

Note: From NYISO Emergency Operations Manual, Exhibit A-1

VI. EXCEPTIONS TO RELIABILITY RULES

Reliability Rule	Category Of Exception	Company	Specific Exception	NYISO System Operation Procedures Manual – Exhibit A-2 Exception Reference
AS ABOVE	BULK POWER SYSTEM Run Back of Generators	NYPA	POST CONTINGENCY FLOW ON MARCY-NEW SCOTLAND The post contingency flow on the Marcy-New Scotland 18 line is allowed to exceed its LTE rating for the loss of the Edic New Scotland 14 line by the amount of relief that can be obtained by tripping the Gilboa pumping load as a single corrective action. Also the post-contingency flow on the Edic-New Scotland 14 line is allowed to exceed its LTE rating for either the loss of the Marcy-New Scotland 18 line alone, or the double circuit loss of the Marcy-New Scotland 18 and Adirondack-Porter 12 lines, by the amount of relief that can be obtained by tripping the Gilboa pumping load as a single corrective action.	Exception No.1
AS ABOVE	BULK POWER SYSTEM Run Back of Generators	NIAGARA MOHAWK	POST CONTINGENCY FLOW FOR VOLNEY-CLAY AND NINE MILE-CLAY Allow post-contingency flow on Volney-Clay No. 6 and Nine Mile-Clay No. 8 for "normal" transfers.	Exception No. 2
AS ABOVE	BULK POWER SYSTEM Run Back of Generators	NIAGARA MOHAWK	POST CONTINGENCY FLOW ON NEW SCOTLAND-LEEDS For transfers to NE and SENY, with sufficient generation at Gilboa, allow post-contingency STE on NS-Leeds.	Exception No. 3
AS ABOVE	BULK POWER SYSTEM Monitoring	NIAGARA MOHAWK	MONITORING OF TRANSMISSION TRANSFORMERS NMPC to be responsible for monitoring all NMPC 345/115, 345/230, and 230/115 kV transformer overloads and contingency overloads. The ISO is to notify NMPC of any overloads it detects, but not to invoke these limits, unless requested to do so by NMPC.	Exception No. 4
PRE-CONTINGENCY AND POST-CONTINGENCY THERMAL CRITERIA Reliability Rule E-R1. No facility shall be loaded pre-contingency beyond its normal rating, and no facility shall be loaded post-contingency beyond its LTE rating (STE rating for underground cables	BULK POWER SYSTEM Run Back of Generators	NYPA	POST CONTINGENCY LOADING ON GILBOA-LEEDS *Allow post-contingency loading to STE on Gilboa-Leeds (GL-3) with four generators on at Gilboa.*	Exception No. 5
AS ABOVE	BULK POWER SYSTEM *Run Back of* Generators	NYPA	POST CONTINGENCY LOADING ON L33P AND L34P Allow post-contingency STE loading on L33P and L34P provided there is sufficient generation rejection at the Saunders generating station in Ontario, or sufficient control remaining on the phase angle regulators *to return the loading* to LTE within 15 minutes.	Exception No. 6

EXCEPTIONS TO RELIABILITY RULES (CONT'D.)

Reliability Rule	Category Of Exception	Company	Specific Exception	NYISO System Operation Procedures Manual – Exhibit A-2 Exception Reference
PRE-CONTINGENCY AND POST-CONTINGENCY THERMAL CRITERIA Reliability Rule E-R1. No facility shall be loaded pre-contingency beyond its normal rating, and no facility shall be loaded post-contingency beyond its LTE rating (STE rating for underground cables)	BULK POWER SYSTEM Run Back of Generators	CON EDISON	OPERATIONAL CONTROL OF FEEDER 21192 FOR LOSS OF FEEDERS 21, 22, A2253 AND 21191 The loss of the common tower carrying feeders 21 and 22 results in Arthur Kill generator 3 feeding into the remaining 345/138 kV Fresh Kills transformer. To avoid overloading this transformer (Feeder 21192), the output of Arthur Kill 3 must be reduced so that the transformer is below its STE rating within 5 minutes and below its LTE rating within 10 minutes, post contingency.	Exception No. 7
POST CONTINGENCY PROTECTION SYSTEMS THERMAL ASSESSMENT Reliability Rule E-R1*	BULK POWER SYSTEM Special Protection System	CON EDISON	POST CONTINGENCY FLOW ON BUCHANAN-MILLWOOD W97 OR W98 The post contingency flow on Feeder W97 (or W98) for the loss of Feeder W98 (or W97) may exceed its LTE rating up to its STE rating if the contingency W98 (or W97) and Y88 does not cause resulting flows on any other feeder to exceed their Normal Transfer Criteria.	Exception No. 8
AS ABOVE	BULK POWER SYSTEM Monitoring	NIAGARA MOHAWK	POST CONTINGENCY FLOW ON OSWEGO-VOLNEY Allow the post-contingency flow on the Oswego-Volney No.12 line to exceed its STE rating for the simultaneous loss of the Oswego-Elbridge-Lafayette No. 17 line and the Oswego-Volney No. 11 line.	Exception No. 9
POST CONTINGENCY PROTECTION SYSTEMS THERMAL ASSESSMENT Reliability Rule E-R1*	BULK POWER SYSTEM Special Protection System	NYPA	POST CONTINGENCY FLOW ON MARCY AT-1 TRANSFORMER Allow post contingency flow on the Marcy AT-1 bank to exceed its STE rating for the loss of the Marcy AT-2 bank, provided that the overload relay protection on the AT-1 bank is in-service.	Exception No. 10
AS ABOVE	BULK POWER SYSTEM Special Protection System	NYPA	POST CONTINGENCY FLOW ON PLATTSBURGH-VERMONT PV20 LINE Allow post contingency flows on the Plattsburgh-Vermont PV20 tie line to be operated up to the STE rating so long as NYPA can assure that the Overload Mitigation system is available on a manual or automatic basis to reduce the flow to below the LTE rating immediately following the actual occurrence of the contingency.	Exception No. 11
AS ABOVE	BULK POWER SYSTEM Monitoring	NYPA	POST CONTINGENCY FLOW ON MARCY TRANSFORMER T2 Allow the post-contingency flow on the Marcy Transformer T2 to exceed its LTE rating up to its STE rating following the loss of Marcy Transformer T1.	Exception No. 12

* See Rule Section E Introduction for note on SPSs

* See Rule Section E Introduction for note on SPSs

EXCEPTIONS TO RELIABILITY RULES (CONT'D.)

Reliability Rule	Category Of Exception	Company	Specific Exception	NYISO System Operation Procedures Manual – Exhibit A-2 Exception Reference
AS ABOVE	BULK POWER SYSTEM Run Back of Generators	NYPA	POST CONTINGENCY FLOWS ON NIAGARA PROJECT FACILITIES For the following Niagara Project facilities, allow post-contingency loading up to STE ratings, if NYPA can assure that sufficient generation can be reduced at Niagara to insure that loading can be returned to *limits within OP1 time requirements:* A. Niagara Project transformers B. Lines connected directly to the Niagara Project C. The Niagara-Robinson Road 230 kV Line 64 when Niagara 230 kV bus ties (breakers 2332 and 2342) are open.	Exception No. 13
AS ABOVE	BULK POWER SYSTEM Run Back of Generators	CON EDISON	OPERATION OF THE LINDEN COGEN PLANT FOR TRANSMISSION OUTAGES ON THE CON EDISON SYSTEM Due to the breaker configuration at Fresh Kills, Goethals and Gowanus, certain contingencies could result in short term emergency violations with the Linden Cogen plant at maximum output if Feeders 21, 26, or 42 are out of service. For such situations the Cogen plant will be re-dispatched post contingency to avoid overloading other transmission feeders.	Exception No. 15
VOLTAGE ASSESSMENT Reliability Rules B-R2 and E-R2. Reactive power reserves should be available to maintain voltages within applicable pre-disturbance and post-disturbance limits.	REACTIVE POWER SUPPORT Bulk Power System	NYSEG	POST CONTINGENCY VOLTAGE AT OAKDALE AND WATERCURE Allow the post contingency voltage at Oakdale 345kV bus and the Oakdale and Watercure 230kV buses to fall below their respective post –contingency low voltage limits for either the simultaneous loss of the *Oakdale-Lafayette 4-36 line and the Oakdale-Fraser 32 line, or the loss of one of these lines when the* other line is already out of service.	Exception No. 16
THERMAL ASSESSMENT Reliability Rule E-R1	*BULK* POWER SYSTEM	*CON* EDISON	*EAST 13TH STREET AND EAST RIVER LOAD POCKET* Con Edison is responsible for operating contingencies resulting from the loss of any East 13th Street 345/138kV transformer, or the 345/69kV transformer. These facilities provide radial support for the East 13th Street and East River load pocket and are not part of the bulk power system.	Exception No. 17
POST CONTINGENCY PROTECTION SYSTEMS THERMAL ASSESSMENT Reliability Rule E-R1.b*	BULK POWER SYSTEM Overload Protection System	CON EDISON	RAMAPO TO BUCHANAN 345KV FEEDER OUTAGES During times when 345kV feeder Y94 - Ramapo to Buchanan is out of service, allow post-contingency loading for the loss of 345kV feeder W93 to exceed STE ratings on Transformer TA-5 and 138kV feeder 95891; and during times when 345kV feeder W93 – Buchanan to Eastview is out of service, allow post-contingency loading when 345kV feeder Y94 is open ended at Ramapo to exceed STE ratings on Transformer TA-5 and 138kV feeder 95891. If the stated event occurs during the specified outages, there is automatic overload protection installed to trip Buchanan 138kV breaker F7.	Exception No. 18

* See Rule Section E Introduction for note on SPSs

EXCEPTIONS TO RELIABILITY RULES (CONT'D.)

Reliability Rule	Category Of Exception	Company	Specific Exception	NYISO System Operation Procedures Manual – Exhibit A-2 Exception Reference
PRE-CONTINGENCY AND POST-CONTINGENCY THERMAL ASSESSMENT Reliability Rule E-R1. No facility shall be loaded pre-contingency beyond its normal rating, and no facility shall be loaded post-contingency beyond its LTE rating (STE rating for underground cables)	BULK POWER SYSTEM Run Back of generators	CON EDISON	EASTVIEW TO SPRAINBROOK 345KV FEEDER W79 OUTAGES During an outage to either feeder Y94/95891 or feeder W79, post-contingency loadings shall be allowed to exceed the STE rating of Eastview transformer 2N for the loss of W79 or Y94/95891, respectively, provided Indian Point #2 generation can and will back down post-contingency to reduce flows through transformer 2N within applicable limits, i.e.: less than STE within 5 minutes and less than LTE within 10 minutes from the initial overload.	Exception No. 19
POST CONTINGENCY THERMAL ASSESSMENT Reliability Rule E-R1.b.	BULK POWER SYSTEM Run Back of Generators	NYPA	*POST CONTINGENCY LOADING ON POLETTI FEEDERS Q35L AND Q35M* Allow post-contingency loading on Q35L and Q35M to exceed STE loading for loss of one of these circuits on each other. If the contingency occurs, NYPA is responsible for immediately reducing Poletti generation in order to clear the overload	Exception No. 20
AS ABOVE	BULK POWER SYSTEM Operating Limitation	CON EDISON	PSE&G TIE FEEDERS A2253, B3402, C3403 Con Edison operates to post-contingency on underground circuits based on the ability to reduce the loading to LTE ratings within 15 minutes and not exceed LTE ratings on any other facilities. *The following PSE&G tie feeders are operated to post-contingency LTE ratings:* _ A2253 Linden- Goethals 230kV _ B3402 Hudson-Farragut 345kV _ C3403 Hudson-Farragut 345kV	Exception No. 21
POST CONTINGENCY PROTECTION THERMAL ASSESSMENT SYSTEMS Reliability Rule E-R1*	BULK POWER SYSTEM Overload Protection System	CON EDISON	F30, F31, F36, F37, W64, W65, 69, 70, W72, W75, W79, W80, W81, W82, W85, Y86, Y87, Y88, W89, W90, W93, Y94 and W99 ABOVE NORMAL RATING OPERATION These feeders between Pleasant Valley-Wood St, Pleasant Valley-Wood St., Pleasant Valley-East Fishkill, Pleasant Valley-East Fishkill, Eastview-SprainBrook, Eastview-SprainBrook, Ramapo-South Mahwah, Ramapo-South Mahwah, Ramapo-Ladentown, SprainBrook-Dunwoodie (Winter Rating Period Only), Eastview-SprainBrook, Wood St.-Millwood West, Wood St.-Millwood West, Millwood West-Eastview, Millwood West-SprainBrook, Wood St.-Pleasantville, Wood St.-Pleasantville, Ladentown-Buchanan South, Pleasantville-Dunwoodie, Pleasantville-Dunwoodie, Buchanan North-Eastview, Ramapo-Buchanan North, and Millwood West-Eastview, respectively, have STE ratings which are limited by disconnect or wavetrap restrictions and not by conductor sagging limitations. These feeders will be operated above normal and up to LTE (for 4 hours) without changing their STE ratings.	Exception No. 22

* *See Rule Section E Introduction for note on SPSs*

EXCEPTIONS TO RELIABILITY RULES (CONT'D.)

Reliability Rule	Category Of Exception	Company	Specific Exception	NYISO System Operation Procedures Manual – Exhibit A-2 Exception Reference
AS ABOVE	BULK POWER SYSTEM Overload Protection System	CON EDISON	W97 and W98 ABOVE NORMAL RATING OPERATION These feeders, between Buchanan South and Millwood West, have overload relay protection, and will be operated above normal rating and up to LTE rating (for 4 hours) without changing their STE ratings.	Exception No. 23

VII. RULE REVISION LOG

Rule/Measurement	Initially Adopted	Revisions
A. Resource Adequacy		
R1. NYCA Installed Reserve Margin Requirement	09/10/99	08/17/01, 12/10/04
R2. LSE Installed Capacity Requirement	09/10/99	10/12/01
R3. External Installed Capacity ("External ICAP")	08/17/01	
M1	08/17/01	
M2	08/17/01	
M3	08/17/01	
M4	08/17/01	
B. Transmission Capability – Planning		
R1. Thermal Assessment	09/10/99	03/14/03
R2. Voltage Assessment	09/10/99	
R3. Stability Assessment	09/10/99	12/10/04
R4. *Extreme Contingency Assessment*	09/10/99	
R5. Restoration	09/10/99	
R6. List of NYS Bulk Power System Facilities	06/14/02	
R7. Fault Current Assessment	02/14/03	
M1	10/12/01	03/14/03
M2	10/12/01	
M3	10/12/01	
M4	06/14/02	
C. Resource, System & Demand Data Requirements		
R1. Verification Testing of Resource Capacity	09/10/99	08/17/01, 05/10/02*, 03/14/03
R2. Resource Availability Requirements	02/08/01	10/12/01
R3. Load Forecasting	08/17/01	
R4. System Data Requirements	02/14/03	
M1	08/17/01	05/10/02*, 03/14/03
M2	08/17/01	
M3	08/17/01	
M4	10/12/01	
M5	10/12/01	
M6	10/12/01	
M7	08/17/01	
M8	08/17/01	
M9	02/14/03	
M10	02/14/03	
M11	09/12/03	
D. Operating Reserves		
R1. Operating Resource Adequacy	09/10/99	
R2. Minimum Operating Reserve Requirement	09/10/99	
R3. Availability and Category	09/10/99	01/09/04
R4. Restoration of Ten (10) Minute Reserve	09/10/99	
M1	10/12/01	
M2	10/12/01	
M3	10/12/01	

RULE REVISION LOG

Rule/Measurement	Initially Adopted	Revisions
E. Transmission Capability – Operating		
R1. Thermal Assessment	09/10/99	
R2. Voltage Assessment	09/10/99	
R3. Stability Assessment	09/10/99	
R4. Post-Contingency Operation	09/10/99	
R5. Outage Coordination	09/10/99	
R6. Operation During Impending Severe Weather	09/10/99	
R7. Operation During a Severe Solar Magnetic Disturbance	09/10/99	
R8. Fault Current Assessment	09/12/03	
M1	10/12/01	
M2	10/12/01	10/07/03
M3	10/12/01	
M4	10/12/01	
M5	10/12/01	
M6	09/12/03	
M7	09/12/03	
F. Operating During Major Emergencies		
R1. Transmission Thermal Overloads	09/10/99	
R2. Post-Contingency STE Rating Violations	09/10/99	
R3. High or Low Voltage	09/10/99	
R4. Post-Contingency Voltage	09/10/99	
R5. Operating Reserve Deficiency	09/10/99	
R6. Stability Limit Violation	09/10/99	
R7. Low Frequency	09/10/99	
R8. Load Shedding Allocation	09/10/99	
M1	10/12/01	
M2	10/12/01	
M3	10/12/01	
M4	10/12/01	
M5	10/07/03	
G. System Restoration		
R1. Emergency Restoration Procedures	09/10/99	09/14/01
R2. Blackstart Resources	09/10/99	09/14/01
R3. Restoration Training and Simulation Programs	09/10/99	09/14/01
M1	09/14/01	01/09/04
M2	09/14/01	
M3	09/14/01	
M4	09/14/01	
H. System Protection		
R1. Bulk Power System Protection	09/10/99	08/17/01
R2. Bulk Power System Protection Maintenance	09/10/99	08/17/01
M1	08/17/01	01/03/04
M2	08/17/01	06/14/02; 05/09/03, 10/07/03
~~M3~~	05/09/03	Replaced by New H-M2, 10/07/03

RULE REVISION LOG

Rule/Measurement	Initially Adopted	Revisions
I. Local Reliability Rules		
R1. Operating Reserves/Unit Commitment (New York City)	09/10/99	
R2. Locational Reserves (New York City)	09/10/99	09/14/01
R3. Loss of Generator Gas Supply (NYC & LI)	09/10/99	04/11/02
R4. Thunderstorm Watch (New York City)	09/10/99	
~~R5. Loss of Generator Gas Supply (Long Island)~~	09/10/99	Replaced by New I-R3, 04/11/02
M1	12/14/01	
M2	12/14/01	03/14/03, 05/09/03
M3	12/14/01	05/09/03
M4	12/14/01	
M5	12/14/01	
M6	12/14/01	
J. NYISO Control Center Communications		
R1. NYISO/Market Participant Communications	09/10/99	
R2. NYISO Communications Under Emergency Conditions	09/10/99	12/10/04
M1	10/12/01	
M2	11/12/02	12/10/04
M3	12/10/04	
K. Reliability Assessment		
R1. NYISO Manuals	08/17/01	
R2. Reliability Assessments	08/17/01	
M1	08/17/01	
M2	08/17/01	

*Expedited Reliability Rule and Measurement modification.

VERSION HISTORY

Version	Date	Change
1	2/1/02	Initial Rev 2 version
2	4/11/02	Table of Contents; Rules I-R3 & 5 replaced by new I-R3 (PRR #47)
3	5/10/02	Expedited rule modification to C-R1 and C-M1 (PRR #50); Revision to rule exception #19 (PRR #49)
4	6/14/02	Table of Contents; New Rule B-R6 and Measurement B-M4 (PRR #48); Revision to Measurement H-M2; Update of NYSRC/NPCC/NERC Reliability Rule Cross-Reference
5	11/12/02	New measurement J-M2 (PRR #53); Glossary: Revised definition of *Reactive Power* (PRR #51)

VERSION HISTORY (Cont'd.)

Version	Date	Change
6	3/14/03	Table of Contents; New Rule B-R7 and modified Measurement B-M1 (PRR #29); Modified Rule C- R1 and Measurement C-M1 (PRR #50); New Rule C-R4 and Measurements C-M9&10 (PRR #58); Update of NYSRC/NPCC/NERC Reliability Rule Cross-Reference; Revised Glossary definition of *Dependable Maximum Net Capacity*
7	5/9/03	Modified Measurement H-M2 and new Measurement H-M2 (PRR #55); Modified Exception #18 (PRR #56)
8	10/07/03	New Rule E-R8 and related Measurements E-M6 & E-M7 (PRR #57); New Measurement C-M11 (PRR #63); Revised Measurement E-M2 & New Measurement F-M5 (PRR #64); Updated Reliability Rules Section B & E Guidelines
9	01/09/04	Revised Rule D-R3 (PRR #65); Revised Measurement G-M1 (PRR#66); New Glossary definition of *Interruptible Load.*
10	12/17/04	Revised Rule J-R2 & Measurement J-M2 and New Measurement J-M3 (PRR #67); Revised Rule B-R3 (PRR #70); Revised Rules Section B Tables A & B (PRR #71); Revised Rule A-R1 (PRR #75); Revised Rules Section B Introduction
11	03/04/05	Revisions to the Introduction and Glossary Index