New York State Reliability Council

Initial Reliability Rules For Planning and Operating the New York State Power System

September 10, 1999

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INITIAL RELIABILITY RULES FOR PLANNING AND OPERATING THE NEW YORK STATE POWER SYSTEM

1.0 INTRODUCTION

Attached are the Initial Reliability Rules for Planning and Operating the New York State Power System ("Initial Reliability Rules") initially adopted by the Executive Committee of the New York State Reliability Council ("NYSRC") for the start of operation of the New York Independent System Operator ("ISO"). These Initial Reliability Rules were summarized by the New York Power Pool ("NYPP") from the existing rules currently in effect, and are hereby adopted in accordance with the ISO/NYSRC Agreement.

Changes to these Initial Reliability Rules may be made from time to time as determined by the NYSRC in order to maintain reliability, as operating procedures are implemented under the ISO. Also, the NYSRC may change the organization of the Initial Reliability Rules presented in this document.

In order to maintain the reliability of the New York State Power System ("NYS Power System"), it is necessary to have reliability rules governing performance, that must be used when planning and operating the NYS Power System, including those facilities that are designated as Bulk Power System ("BPS") by the NYPP. These reliability rules are developed by the NYSRC and shall be used by the ISO and Market Participants to maintain the secure operation of the NYS Power System, including any additions thereto. The responsibilities, duties, and obligations of the NYSRC and the purpose of these reliability rules are further defined in the NYSRC Agreement and the ISO/NYSRC Agreement.

The ISO shall develop operating and planning procedures that are compliant with these Initial Reliability Rules and all future modifications to these rules. The NYSRC has developed these Initial Reliability Rules in accordance with the reliability criteria of the Northeast Power Coordinating Council (“NPCC”), North American Electric Reliability Council (“NERC”), Federal Energy Regulatory Commission ("FERC"), New York State Department of Public Service ("PSC"), and the Nuclear Regulatory Commission ("NRC"). These Initial Reliability Rules in some cases reflect more specific or more stringent requirements particular to New York State, including the Local Reliability Rules of individual Transmission Owners. The more specific and more stringent rules are identified in this document as ***bold and italicized text.***

These Initial Reliability Rules are applicable to the ISO and all Market Participants. Specific exceptions to the current NYPP reliability rules are also included in this document. The ISO shall implement rules, policies and procedures that assure that the Initial Reliability Rules are adhered to by all Market Participants. Nothing in this document is intended to resolve cost allocation issues among Market Participants that may be subject to existing agreements.

2.0 GENERAL PLANNING & OPERATING RELIABILITY RULES

The following considerations apply to both planning and operations.

2.1 Thermal Ratings and Voltage Limits

Thermal and voltage ratings of each BPS facility shall be determined by its owner, or operator pursuant to contractual arrangement, consistent with the NYSRC Reliability Rules and all applicable guidelines and procedures in the "NYPP Tie-Line Ratings Task Force - Final Report on Tie-Line Ratings," (attached hereto as Exhibit 2) and "NYPP Voltage Study Task Force Final Report," (attached hereto as Exhibit 3). These ratings and limits will be used for all studies conducted by the ISO and Transmission Owners and in the operation of the BPS.

2.2 System Contingencies

Except as may be approved in writing by the NYSRC, the BPS shall be designed and operated to a level of reliability such that the loss of a major portion of the system, or unintentional separation of a major portion of the system, should not result from any reasonably foreseeable contingency. The BPS shall be designed and operated to withstand representative contingencies as specified in these Reliability Rules and in the NPCC basic criteria. Analyses of these contingencies should include assessment of the potential for widespread cascading outages due to overloads, instability or voltage collapse. Loss of small portions of a system (such as radial portions) may be tolerated provided these do not jeopardize the reliability of the overall BPS.

The BPS will be designed and operated to withstand the following 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 High Voltage Direct Current ("HVDC") facility without an ac fault.

g. The failure of a circuit breaker associated with a Special Protection System ("SPS") to operate when required 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.

3.0 PLANNING RELIABILITY RULES

3.1 Resource Adequacy

Initially, the NYSRC will adopt the Installed Capacity Requirement as set forth in the current NYPP Agreement as filed with the FERC on December 30, 1996. The Installed Capacity Requirement stated therein is based upon a statewide Installed Reserve Requirement of 22%.

3.1.1 General Requirements

Adequate resource capability shall exist in New York State such that, after due allowance for scheduled outages and deratings, forced outages and deratings, assistance over interconnections with neighboring systems, uncertainty of load forecasting, and capacity and/or load relief from available operating procedures, the probability of disconnecting firm load due to resource deficiency will be, on the average, no more than once in ten years.

The NYSRC will periodically perform resource adequacy studies to update the required statewide reserve requirement. These studies include the consideration of interconnection capacity limitations; internal transmission limitations will be addressed in studies for establishing Load Serving Entity ("LSE") locational capacity responsibilities.

The NYSRC will periodically update the required statewide reserve requirement to conform to this criterion.

3.1.2 Locational Capacity Responsibility

LSE installed capacity located in New York State and from sources

external to New York State shall be distributed so as to meet the reserve requirement criteria stated in Section 3.1.1 with recognition of internal transmission capability. LSEs with external installed capability must ensure that transmission capability is available to deliver the claimed capability to New York State. Locational capacity requirements shall consider the availability of the New York State Transmission System to the extent necessary to maintain reliability.

3.1.3 Performance Standards

Eligible generators supplying installed capability must meet the performance standards to be established by the ISO:

3.1.3.1 Testing of Dependable Maximum Net Capability ("DMNC")

Demonstration of DMNC shall be made at least once each Capability Period. Winter tests shall be done between November 1 and April 15, and Summer tests shall be done between June 1 and September 15. All resulting capability tests must be representative of weather conditions during peak periods. The required duration of tests must be for four (4) consecutive hours with the exception of internal combustion units which is one (1) hour.

3.1.3.2 Availability Targets

Minimum availability targets shall be established for installed capability providers. Remedies will be determined if generation resources do not meet availability targets. The ISO shall track generator availability and report performance to the NYSRC on a regular basis. The NYSRC shall monitor availability performance for possible reliability impacts.

3.1.4 Monthly and Capability Period Capability Responsibilities

LSE installed capability responsibilities, including any locational responsibilities, shall meet minimum monthly and Capability Period requirements. If any LSE has either a monthly or Capability Period deficiency, it must purchase the deficient amount for the entire Capability Period.

3.1.5 Net System Capability

The Net System Capability of an LSE shall be the following:

1. ***Qualified firm capability purchases minus firm capability sales, if appropriate; plus,***

2. ***Qualified capacity from owned or contracted units or entitlements from jointly owned units that meet DMNC capacity requirements; plus,***

3. ***Qualified Demand Side Management ("DSM") and renewable sources.***

All qualifications for these capability sources shall be in accordance with the ISO.

3.2 Transmission Capability

3.2.1 General Requirements

The BPS shall be designed with sufficient transmission capability to serve forecasted loads under conditions noted in Sections 3.2.2 through 3.2.4. These criteria will also apply after any critical generator, transmission circuit, transformer, series or shunt compensating device or HVDC pole has already been lost, assuming that generation and power flows are adjusted between outages by the use of Ten (10) Minute Reserve and, where available, phase angle regulator control and HVDC control.

3.2.2 Thermal Assessment

3.2.2.1 Pre-Contingency Thermal Criteria

a. For normal transfers, no transmission facility shall be loaded beyond its Normal Rating.

b. 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.***

3.2.2.2 Post-Contingency Thermal Criteria

a. For normal transfers, no facility shall be loaded beyond its LTE Rating following the most severe of contingencies "a" through "g" specified in Section 2.2.

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

Loss of Generation - provided Ten (10) Minute Reserve and/or phase angle regulation is available to reduce the loading to its LTE Rating within 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 15 minutes and not cause any other facility to be loaded beyond its LTE Rating.

For contingencies "b", "c", "e", "f", and "g" in Section 2.2 that are not confined to the loss of a single element, Transmission Owners may request permission from the ISO 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 15 minutes and not cause any other facility to be loaded beyond its LTE Rating.

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

b. For emergency transfers, no facility shall be loaded beyond its STE Rating following the more severe of contingencies "a" or "d" listed in Section 2.2. 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.

3.2.3 Voltage Assessment

Reactive power shall be maintained within the BPS in order to maintain voltages within applicable pre-disturbance and post-disturbance limits (attached hereto as Exhibit 6 subject to change by the ISO), for both normal and emergency transfers, consistent with the NYSRC Reliability Rules and all applicable guidelines and procedures. ***The "NYPP Bulk Power Guideline for Determining Voltage-Constrained Transfer Limits", attached as Exhibit 4, is used to evaluate voltage-constrained transfer limits used in transmission planning studies.***

3.2.3.1 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.

3.2.3.2 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, contingencies "a" through "g" specified in Section 2.2 are applicable. For emergency transfers, contingencies "a" and "d" specified in Section 2.2 are applicable.

3.2.4 Stability Assessment

Stability transfer limits shall be consistent with the NYSRC Reliability Rules and all applicable guidelines and procedures in the "***NYPP Bulk Power System Stability Guideline," attached as Exhibit 5.***

3.2.4.1 System Stability

a. For normal transfers, stability of the BPS shall be maintained during and after the most severe of contingencies "a" through "g" specified in Section 2.2 above. ***The BPS must also be stable if the outaged element as described in Section 2.2 is re-energized by delayed reclosing before any manual system adjustment, unless specific alternate procedures are documented.***

b. For emergency transfers, stability of the BPS shall be maintained during and after the more severe of contingencies "a" or "d" specified in Section 2.2 above. ***The BPS must also be stable if the outaged element as***

described in Section 2.2 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.

3.2.4.2 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:

a. ***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.***

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

3.2.5 Extreme Contingency Assessment

Extreme contingency assessment recognizes that the BPS can be subjected to events which exceed in severity the contingencies listed in Section 2.2. One of the objectives of extreme contingency assessment is to determine, through planning studies, the effects of extreme contingencies on system performance. This is done in order to obtain 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. The specified extreme contingencies listed below are intended to serve as a means of identifying some of those particular situations that could result in a widespread BPS shutdown.

Assessment of the extreme contingencies listed below should examine post-contingency steady state conditions as well as stability, overload cascading and voltage collapse. Pre-contingency load flows chosen for analysis should reflect reasonable power transfer conditions. ***The testing should be conducted at megawatt 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 following extreme contingencies:

a. Loss of the entire capability of a generating station.

b. Loss of all lines emanating from a generating station, switching station 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 New York BPS.

g. Failure of an SPS to operate when required following the normal contingencies listed in Section 2.2.

h. The operation or partial operation of an SPS for an event or condition for which it was not intended to operate.

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.

3.2.6 Local Reliability Rules ("LRR")

All Local Reliability Rules that have been adopted by the NYSRC shall apply in the assessment of transmission capability and determination of transmission adequacy for reliability purposes. These Local Reliability Rules are listed in Appendix C.

3.2.7 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 BPS.

4.0 OPERATING RELIABILITY RULES

4.1 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 its forecasted load and reserve requirements. Policies shall be developed consistent with these 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.

4.1.1 Minimum Operating Reserve Requirement

The Minimum Operating Reserve Requirement of the ISO shall be the sum of:

A. Sufficient Ten (10) Minute Reserve to replace the operating capability loss caused by the most severe contingency observed under Normal Transfer Criteria.

B. Sufficient Thirty (30) Minute Reserve equal to one-half of the Ten (10) Minute Reserve necessary to replace the operating capability loss caused by the most severe contingency observed under Normal Transfer Criteria.

At all times sufficient Ten (10) Minute Reserve shall be maintained to cover the energy loss due to the most severe Normal Transfer Criteria contingency within the New York Control Area ("NYCA") or the energy loss caused by the cancellation of an interruptible energy purchase from another system, whichever is greater.

4.1.2 Availability and Category

A. The Ten (10) Minute Reserve portion of the NYPP's Minimum Operating Reserve Requirement shall be fully available within ten (10) minutes and shall be in the following categories:

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

2. Non-Synchronized Reserve - The remainder of the Ten (10) Minute Reserve may be composed of non-synchronized capability such as hydro, pumped storage hydro and quick start combustion generation which can be synchronized and loaded to claimed capability in ten (10) minutes or less.

B. The Thirty (30) Minute Reserve portion of the NYPP's Operating Reserve Requirement is that portion of unused generating capability which can and will be made fully available as promptly as possible,

but in no more than thirty (30) minutes.

C. Generating capability associated with the delivery of interruptible sales to adjacent pools may be included as Operating Reserve in the category agreed upon by the purchaser.

4.2 Transmission Capability

4.2.1 General Requirements

The operating criteria set out in this Section (4.0) provide the basis for application of the design criteria to inter-pool and BPS operation. They represent the minimum level of security that shall apply to the operation of the New York BPS. Where New York BPS or inter-pool security is affected, operating limits shall be established so that the contingencies stated in Section 2.2 can be withstood without adversely affecting the reliability of the New York BPS 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 BPS.

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 BPS facilities are not available, SPSs may be employed to maintain system security. The requirements of SPSs shall be defined by the ISO.

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 ISO.

4.2.1.1 Local Conditions

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 BPS, 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 ISO, 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 ISO and will be posted on the ISO's Open Access Same-Time Information System ("OASIS").

a. <u>Year 2000 ("Y2K") Addendum</u>

In accordance with good utility practice, until the Y2K threat is no longer present, any Transmission Owner that judges the need to have additional generators committed, beyond those needed to meet the increased operating reserve provided for in the NYPP Y2K Contingency Plan Procedure, will have the flexibility to cause additional generators to be committed for service. Transmission Owners will

discuss their Y2K plans with generators in their respective franchise area prior to the commencement of the Y2K period. The ISO shall honor such requests and shall commit the additional generating units for service during this period.

4.2.2 Thermal Assessment

4.2.2.1 Pre-Contingency Thermal Criteria

a. ***For normal transfers, no transmission facility shall be loaded beyond its Normal Rating.***

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

4.2.2.2 Post-Contingency Thermal Criteria

a. ***For normal transfers, no facility shall be loaded beyond its LTE Rating following the most severe of contingencies "a" through "g" specified in Section 2.2.***

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

Loss of Generation - provided Ten (10) Minute Reserve and/or phase angle regulation is available to reduce the

loading to its LTE Rating within 15 minutes and not cause any other facility to be loaded beyond its LTE Rating.

<u>Loss of Transmission Facilities</u> - provided phase angle regulation is available to reduce the loading to its LTE Rating within 15 minutes and not cause any other facility to be loaded beyond its LTE Rating.

For contingencies "b", "c", "e", "f", and "g" in Section 2.2 that are not confined to the loss of a single element, Transmission Owners may request the ISO 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 15 minutes and not cause any other facility to be loaded beyond its LTE Rating.

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

b. ***For emergency transfers, no facility shall be loaded beyond its STE Rating following the more severe of contingencies "a" or "d" listed in Section 2.2. The STE Rating, is based on an assumed pre-loading equal to the normal rating when determined in accordance with the report of the "NYPP Tie-Line Ratings Task Force-Final Report on Tie-Line Ratings," attached as Exhibit 2. A***

limiting facility may be loaded up to the LTE Rating, pre-contingency, if the STE Rating is reduced accordingly.

4.2.3 Voltage Assessment

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

4.2.3.1 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.

4.2.3.2 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 Section 2.2 are applicable. For emergency transfers, contingencies "a" and "d" specified in Section 2.2 are applicable.

4.2.4 Stability Assessment

System stability transfer limits shall be consistent with the NYSRC Reliability Rules and all applicable guidelines and procedures in the "NYPP Bulk Power System Stability Guideline," **attached as Exhibit 5.**

a. For normal transfers, stability of the BPS shall be maintained during and after the most severe of contingencies "a" through "g" specified in Section 2.2 above. ***The BPS must also be stable if the outaged element as described in Section 2.2 is re-energized by delayed reclosing before any manual system adjustment, unless specific alternate procedures are documented.***

b. For emergency transfers, stability of the BPS shall be maintained during and after the more severe of contingencies "a" or "d" specified in Section 2.2 above. ***The BPS must also be stable if the outaged element as described in Section 2.2 is re-energized by delayed reclosing before any manual system adjustment.***

4.2.5 Post-Contingency Operation

Immediately after the occurrence of a contingency, the status of the BPS 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 Section 4.2.2.1 b, 4.2.2.2 b, 4.3.2.2 and 4.2.4 b above.

4.2.6 Outage Coordination

Scheduled outages of facilities that affect the reliability of the BPS 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 BPS. A list of facilities that must be secured by the ISO and require coordination shall be maintained including any other abnormal transmission configuration which may impact the reliability of the BPS. Work on facilities which impact the reliability of the BPS 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.

4.2.7 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 BPS, 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 capability and transmission facilities out of service for maintenance may be ordered restored to service.

The ISO shall enter this mode of operation for those portions of the BPS affected by actual or impending severe service 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 BPS.

4.2.8 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 ISO 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 ISO shall enter this mode of operation for those portions of the BPS 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 BPS.

4.3 BPS States

The objective is to direct the operation of the BPS within the Normal State as defined in Exhibit 1. It is recognized, however, that conditions may cause the system to depart from this state. Such conditions include, but are not limited to, capacity deficiencies, energy deficiencies, loss of generation or transmission facilities or voltage levels. When the system enters a condition other than the Normal State, the primary objective shall be to return the system to the Normal State. When all of the criteria for the Normal State cannot be achieved, the objective shall be to satisfy as many of the Normal State criteria as possible, and also, to minimize the consequences of any single contingency. Should a disturbance occur, its extent and duration are to be minimized.

The specific methods to be used in implementing these Reliability Rules are not necessarily identical among all Market Participants, but it will be the responsibility of the ISO to coordinate such methods in order to achieve uniform results.

In the event that a Transmission Owner loses communications with the ISO Power Control Center (PCC), the Transmission Owner must operate its system in accordance with the procedures set forth in these Reliability Rules.

The NYSRC defines five (5) states that must be operated to; Normal, Warning, Alert, Major Emergency, Restoration. All of these states are summarized in Exhibit 1. The Restoration State exists when an area within the BPS becomes islanded and/or customer load becomes interrupted, following a system disturbance affecting the BPS. Procedures shall be developed to restore the system or parts of the system.

4.4 Major Emergency - Transmission Thermal Overloads

If a transmission facility, which constitutes a part of the BPS, 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 within 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 5 minutes and furthermore, to continue to reduce the loading on the facility to 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 consistent with the ISO Tariff that resolve transmission overloads caused by both internal and external events to the New York BPS.

4.5 Major Emergency - Post-Contingency STE Rating Violations

If a transmission facility which constitutes a part of the BPS 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.

4.6 Major Emergency - High or Low Voltage

Voltage control of the BPS 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 BPS 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 15 minutes, the ISO 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 BPS bus declines below the post-contingency low limit and is indicative of a system voltage collapse, the ISO 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.

4.7 Major Emergency-Post-Contingency Voltage

1. 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-pool 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 15 minutes. If, after taking corrective action, loadings are not below the limit within 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 15 minutes. If loadings are not below the limit within thirty (30) minutes from the initial overload, Load Relief measures must be instituted.

2. <u>More than 5%</u>

If the post-contingency loading of an internal New York transfer interface or the post-contingency flow towards New York of an inter-pool 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 15 minutes from the initial overload, or below the limit within thirty (30) minutes from the initial overload, Load Relief measures must be instituted.

4.8 <u>Major Emergency - Operating Reserve Deficiency</u>

Emergency Transfer Criteria shall be invoked if necessary to provide transmission capability to deliver Operating Reserve to an Area deficient in Operating Reserve. The ISO 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 Reserve or Operating Reserve still exists, the ISO shall declare a Major Emergency and shall direct that Load Relief procedures be implemented.

4.9 Major Emergency-Stability Limit Violation

1. Less than 5%

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

2. More than 5%

If the loading of an internal New York transfer interface or the power flow towards New York on an inter-pool 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 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.

4.10 Major Emergency - 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 New York load shall be shed in accordance with a schedule previously determined.

4.11 Major Emergency - 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.

4.12 Notification

Notification procedures shall be developed to communicate with all Market

Participants during normal and off-normal conditions, recognizing the need to communicate with the Transmission Owners on the "red phone" or "hot line" during off-normal conditions.

4.13 ISO Operation Under Failure of Communications

Procedures shall be developed to continue safe and reliable operations: during failure of communications between the ISO and Market Participants; during emergency transfer of control after evacuation of the main control center; and, for continued operations from an alternate control center. The plans shall be tested on a regular basis to maintain proficiency during any of these emergencies.

4.14 Procedures to develop Operating Limits

Uniform procedures shall be developed for the: development, approval and implementation of thermal, stability, and voltage operating limits; and, collection and maintenance of operating data required to determine the limits.

4.15 Local Reliability Rules

All Local Reliability Rules that have been adopted by the NYSRC shall apply in the establishment of operating limits, assessment of operating adequacy, and operation of the BPS by the ISO.

4.16 Restoration

The NYSRC shall promulgate criteria for restoration following a partial or system-wide shutdown. The ISO and Transmission Owners shall establish restoration procedures applicable to the restoration of the NYS Transmission System consistent with the NYSRC criteria. Such procedures shall be implemented under the auspices of the ISO either directly by the ISO or the Transmission Owners, as

may be appropriate to restore the system following a system-wide or partial shutdown. The ISO shall require all Market Participants to follow instructions from the ISO and or Transmission Owners in executing elements of the restoration plans.

The restoration procedures shall include an identification of the black start resources required to execute the restoration procedures. The initial restoration procedures and any such revisions must be reviewed by the NYSRC.

A training program, encompassing the integrated coordination of the various restoration procedures, shall be developed for the operators to effectively implement restoration. The ISO shall conduct annual simulations of full or partial system shutdowns and restoration and will issue a critique report of the test.

4.17 System Protection

The reliability of the BPS is impacted by the proper design, operation and application of protection systems whose function is to maintain a secure system in the event of contingencies and major emergencies. Such protection systems include:

Underfrequency Load Shedding and Generator Tripping
Bulk Power System Protection
Special Protection Systems

The NYSRC will initially adopt the criteria for protection systems defined by NERC and NPCC criteria, standards and guidelines, PSC directives, and Local Reliability Rules.

4.18 Implementation and Compliance

The ISO must have the authority to direct the operation of any facility connected to the BPS which can affect the reliable operation of the BPS as defined in these Reliability Rules and in the ISO Tariff. The ISO shall establish procedures that require generators and demand side resources impacting the loadings and voltage levels of BPS transmission facilities to respond to instructions from the ISO or responsible Transmission Owner to satisfy the criteria in these Reliability Rules. In addition, Transmission Owners shall have the authority to operate electrical equipment, such as phase angle regulators, which are under their jurisdiction to satisfy the criteria in these Reliability Rules.

The status of the BPS shall be monitored on a real-time basis. This includes monitoring specific system attributes, such as thermal loading, frequency, or voltage levels of all BPS facilities on a pre- and post-contingency basis. Also, operating conditions shall be anticipated which may impact the ability to maintain system security (i.e., comparing available generation capability and electric load forecasts.) To provide for reliable operation of the system, sufficient resources shall be committed, including generators, to meet the anticipated electric load for the next day.

The NYSRC shall be provided with critiques of all significant operating incidents on the BPS, i.e., including loss of load. Preliminary reports shall be available one week after the incident and final reports published within one month. Disturbances or unusual occurrences, suspected or determined to be caused by sabotage, shall be reported to the appropriate systems, government agencies, and regulatory bodies. A monthly report shall be published on the reliability of the system. This report will include; the number of hours that the system was operated in each of the operating states, a listing of all operating incidents, a distribution of the

statewide control error and control performance, the results of any tests or audits, a compilation of all transmission line or other significant transmission facilities outages and any other indices of the security of the system which has been identified to the NYSRC. All reports will be provided to Market Participants upon request.

4.19 Contractual Agreements

If the provisions of existing contractual agreements as of the date these Reliability Rules are adopted by the NYSRC violate the basic criteria of these Reliability Rules, such provisions must be considered for approval as an exception to these Reliability Rules. Any new contractual agreements established after the initial adoption of these Reliability Rules must conform to the criteria contained herein.

5.0 COORDINATION AND ENFORCEMENT

Procedures shall be developed to coordinate all actions with respect to operating, planning, and maintaining secure operation of the BPS in accordance with these Reliability Rules. This will include, but not be limited to, outage and maintenance scheduling, BPS switching, phase angle and transformer tap movements, emergency responses to operating incidents, system restoration, metering, data collection, and any transactions which could impact operation of the BPS.

The NYSRC shall review seasonal and long-term assessments, along with associated backup information, demonstrating that the NYSRC Reliability Rules have been met. Deficiencies found by the NYSRC will be remanded for resolution pursuant to Section 4.03 of the ISO/NYSRC Agreement. The NYSRC reliability assessment procedure will be coordinated with NERC and NPCC assessment requirements.

Transmission studies shall be performed to develop procedures and operating limits (for the facilities under its control) including: thermal, voltage and stability limits in accordance with the Reliability Rules developed by the NYSRC. The adequacy and security of the system to meet these reliability guidelines shall be evaluated. Appropriate evaluations will be conducted on a day-to-day basis to provide for sufficient operating reserves for the next day.

Studies shall be performed and reviewed which assess the design of proposed generation and transmission facilities, and assess the overall reliability of the planned BPS, with respect to these planning Reliability Rules and guides. Locational installed capacity requirements shall be determined by the ISO for the LSEs.

The ISO shall require Market Participants to provide such information and data as is

necessary and timely for the implementation of these Reliability Rules. The ISO shall determine types of data required for real time operations using real time telemetry. This shall include, but not be limited to, data that is essential to electric system operation, control, and analyses. In order to ensure that facilities and procedures are adequate to meet potential operating conditions or incidents, performance tests and operating audits are required. Testing procedures to provide the information necessary to monitor compliance with these Reliability Rules and the ISO's rules, policies and procedures are required shall be audited for compliance with the Reliability Rules.

6.0 EXCEPTIONS TO AND MODIFICATIONS OF THESE RELIABILITY RULES

Any requests to modify or obtain exceptions to the Reliability Rules must be submitted to and approved by the NYSRC. If satisfactory resolution of the requested exceptions or modifications can not be reached within thirty (30) days, then the issue may be referred to dispute resolution in accordance with the provisions of the ISO/NYSRC Agreement. A list of specific exceptions to these Reliability Rules is included in Appendix B.

APPENDIX A

GLOSSARY

Bulk Power System ("BPS")

Those transmission facilities and generation resources that can have a significant adverse effect on the continuity of service in New York State, or can have a significant adverse impact on areas outside the New York State system when faults or disturbances occur. These facilities generally include:

- those transmission facilities in the New York State system which connect Transmission Owners to each other and neighboring control areas and/or are of 230kv or higher, and

- those generation resources located within New York State, and those generation resources outside New York State that may be from time to time subject by contract to dispatch by the ISO.

- and those facilities defined by the ISO to be included in the ISO Secured System.

Capability Periods

Capability Periods of six (6) months each are established, as follows: (i) from May 1 through October 31 of each year (Summer Capability Period); and (ii) 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 ISO.

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.

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.

Delayed reclosing

Delayed reclosing refers to the reclosing of a circuit breaker after a time delay which is intentionally longer than that for high speed reclosing.

Dependable Maximum Net Capability ("DMNC")

The capability of electric generation resources that shall be the sustained maximum net output averaged over a four consecutive hour period for the determination of net system capability. The only exception is for simple cycle combustion turbines, where DMNC is the maximum sustained output over a one-hour period.

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.

Emergency Transfer Criteria

It is intended that the BPS 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 Section 2.2 of these Reliability Rules apply under Emergency Transfer Criteria. Contingencies b, c, e, f, and g, which may result in the loss of more than one element, may be suspended under Emergency Transfer Criteria.

Emergency transfer limit

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

Extreme Loading Conditions

Under extreme conditions, such as may exist under transmission outage conditions where the alternative is Load Relief, facilities may be operated up to the LTE Rating upon notification to the SPD and after making any necessary adjustments to the STE Rating to reflect the higher pre-loading.

Firm Capability

Firm Capability, purchased or sold under separate contract, is generating capability which has substantially the same availability to buyer as the buyer's own generating capability.

Firm load

The load of a Market Participant that is not contractually interruptible.

High speed fault clearing

Fault clearing with no intentional time delay.

Installed Capability

Capability or capacity of a facility accessible to the BPS, that is capable of supplying and/or reducing the demand for Energy in the New York Control Area for the purpose of ensuring that sufficient Energy and Capacity is available to meet the Reliability Rules.

Installed Capability Requirement, (see Required System Capability)

Installed Capability - Monthly Deficiency Calculation

This deficiency is defined as the largest difference between the LSE Net System Capability for each calendar month or part thereof and Required System Capability during each month that would result in the largest deficiency or the smallest surplus.

Installed Capability -Capability Period Deficiency Calculation

This deficiency is defined as the difference between the LSE average Net System Capability for the Capability Period and the largest of the actual experienced Required System Capability through the entire Capability Period.

ISO Secured System

Those specific facilities monitored and secured by the ISO in the day-ahead unit commitment and real-time dispatch consistent with the Reliability Rules.

Load Relief

Load Reduction accomplished by Voltage Reduction or Load Shedding or both. Voltage Reduction and Load Shedding are measures which shall be ordered by the ISO.

Load Serving Entities ("LSEs")

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.

Load Shedding

The systematic reduction of system demand by temporarily decreasing load consumption in response to transmission system or area capacity shortages, system instability, or voltage control considerations. Interruption of customer load by manual or automatic means. Voltage Reduction and Load Shedding are measures which shall be ordered by the ISO. 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. See "order" definition.

Local Reliability Rules

Reliability rules of the individual Transmission Owners which are based on meeting specific reliability concerns in limited areas of the BPS, including but not limited to special conditions that apply to nuclear plants, such as NRC licensing requirements, or the New York City Metropolitan Area.

Long Time Emergency (LTE) Rating

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

Major Emergency

A situation usually accompanied by abnormal frequency, abnormal voltage and/or equipment overloads which might seriously affect the reliability of the BPS.

Market Participants

Entities producing, transmitting, selling, and/or purchasing for resale Capacity, Energy, and Ancillary Services in the Wholesale Market, excluding the ISO.

Max Gen Pick-Up

When ordered by the ISO, Market Participants shall immediately increase and/or start all capable generation at emergency response rates until ordered to stop. This order can be made on a statewide or geographical basis.

Maximum One Hour Independent Net Load

For any LSE the electric energy used to supply the load on that party's system during the clock hour when such usage is greatest. The Maximum One Hour Independent Net Load (integrated) of NYPA shall be the electric energy used to supply its retail load during the clock hour when such electric energy is greatest.

Such usage shall include firm sales but exclude:

1. electric energy delivered within the amounts of generating capability sold to other utilities under separate contract, deliveries of emergency or economy energy, other deliveries of electric energy to other utilities for other than firm load, and the internal system losses in conjunction with such deliveries;

2. loads which are not supplied from the party's Net System Capability; and,

3 internal losses incurred in the through transmissions of energy for others.

Net System Capability(see Section 3.1.4)

New York State Reliability Council ("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 Buyers, Sellers and Consumer and Environmental Groups.

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.

Normal Rating

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

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 Section 2.2 of these 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.

Operating Capability

The real time operating capacity in MW that can be provided, without reservation, over the peak period and under prevailing conditions for a four consecutive hour period.

Operating Reserves

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.

Operating Reserve - Non-synchronized Ten (10) Minute

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

Operating Reserve - Synchronized

The portion of Ten (10) Minute Reserve consisting of unused generating capability which is synchronized and ready to pick up load or generating capability which can be made available by curtailing pumping hydro units.

Operating Reserve - Ten-minute

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

Operating Reserve - Thirty-minute

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.

Order

After declaration of a Major Emergency, any request made by the ISO 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. All orders involving load relief must be made by the ISO. Normally, those orders shall be made over the hot line to the Transmission Owners.

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.

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

Quick Response Voltage Reduction

A form of "voltage reduction" (defined separately) accomplished by supervisory control methods.

Rating Authority

The Rating Authority is the Transmission Owner who has the authority and responsibility for maintaining the correct dynamic rating for BPS facilities in the ISO PCC computer.

Reliability (as defined by NERC)

Reliability, in a bulk electric system, is the degree to which the performance of the elements of that system results in electricity being delivered to customers within accepted standards and in the amount desired. The degree of reliability may be measured by the frequency, duration, and magnitude of adverse effects on the electric supply (or service to customers.)

Bulk electric system reliability can be addressed by considering two basic and functional aspects of the bulk electric system - adequacy and security.

Adequacy is the ability of the bulk electric system to supply the aggregate electrical demand and energy requirements of the customers at all times, taking into account scheduled and unscheduled outages of system components.

Security is the ability of the bulk electric system to withstand sudden disturbances such as electric short circuits or unanticipated loss of system components. (North American Electric Reliability Council definition)

Required System Capability

Statewide: The statewide peak load times 1.22.

Resource

Resource refers to 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.

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.

Special Protection System ("SPS")

A Special Protection System ("SPS") is defined as 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.

Steady state

Steady state is 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.

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 Owners

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 class currently consists 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, Orange and Rockland Utilities, Inc., Rochester Gas and Electric Corporation, and the New York Power Authority.

Voltage Reduction

A means of achieving load reduction by reducing customer supply voltage, usually by 3, 5, or 8 percent. If ordered to go into voltage reduction, Transmission Provider 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.

With due regard to reclosing facilities

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.

Appendix B

Exceptions to Reliability Rules

Basic Reliability Rule	**Category Of Exception**	**Company**	**Specific Exception**	**Document Containing The Exception**
VOLTAGE ASSESSMENT Sections 3.2.3 and 4.2.3 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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E, Exception No. 14
PRE-CONTINGENCY AND POST-CONTINGENCY THERMAL CRITERIA Sections 4.2.2.1 and 4.2.2.2. 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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E, Exception No. 7
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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E, Exception No. 15
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 ratingfor either the loss of the Marcy-New Scotland 18 line alone, or the double circuit loss of the Marcy-New Scotland 18 and Adirondack-Poerter 12 lines, by the amount of relief that can be obtained by tripping the Gilboa pumping load as a single corrective action.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E, Exception No.1

Basic Reliability Rule	**Category Of Exception**	**Company**	**Specific Exception**	**Document Containing The Exception**
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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E, 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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E Exception No. 3
PRE-CONTINGENCY AND POST-CONTINGENCY THERMAL CRITERIA Sections 4.2.2.1 and 4.2.2.2. 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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E, 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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E, Exception No. 6
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: Niagara Project transformers Lines connected directly to the Niagara Project The Niagara-Robinson Road 230 kV Line 64 when Niagara 230 kV bus ties (breakers 2332 and 2342) are open.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E Exception No. 13

Basic Reliability Rule	**Category Of Exception**	**Company**	**Specific Exception**	**Document Containing The Exception**
POST CONTINGENCY PROTECTION SYSTEMS THERMAL ASSESSMENT Section 4.2.2 and GENERAL REQUIREMENTS FOR SPSs Section 4.2.1	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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E 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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E Exception No. 11
POST CONTINGENCY THERMAL ASSESSMENT Section 4.2.2.2.	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	NYPP OPERATING PROCEDURE OP 1-20 Appendix E Exception 19.
POST CONTINGENCY PROTECTION SYSTEMS THERMAL ASSESSMENT Section 4.2.2 and GENERAL REQUIREMENTS FOR SPSs Section 4.2.1	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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E, Exception No. 8

Basic Reliability Rule	**Category Of Exception**	**Company**	**Specific Exception**	**Document Containing The Exception**
POST CONTINGENCY PROTECTION THERMAL ASSESSMENT SYSTEMS Section 4.2.2 and GENERAL REQUIREMENTS FOR SPSs Section 4.2.1	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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E Exception No. B 2
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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E Exception No. B 3
THERMAL ASSESSMENT Section 4.2.2	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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E, Exception No. 16.
POST CONTINGENCY PROTECTION SYSTEMS THERMAL ASSESSMENT Section 4.2.2 .2 and GENERAL REQUIREMENTS FOR SPSs Section 4.2.1	BULK POWER SYSTEM Overload Protection System	CON EDISON	RAMAPO TO BUCHANAN 345KV FEEDER OUTAGES During times when the Y94 Ramapo to Buchanan 345kV Feeder 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. If this event occurs, there is automatic overload protection installed to trip Buchanan 138kV breaker F7.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E, Exception No. 17

Basic Reliability Rule	**Category Of Exception**	**Company**	**Specific Exception**	**Document Containing The Exception**
PRE-CONTINGENCY AND POST-CONTINGENCY THERMAL ASSESSMENT Sections 4.2.2.1 and 4.2.2.2. 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 times when the W79 Eastview to Sprainbrook 345kV feeder is out of service, allow post contingency loadings for loss of Feeder Y94/95891 to exceed STE ratings on Transformer TR-2N. This exception will only be applied under conditions where Indian Point # 2 generation can and will run back following the contingency in order to reduce flows through TR-2N within applicable limits, i.e., less than its STE rating within 5 minutes and to less than its LTE rating within 10 minutes from the initial overload.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E, Exception No 18.
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	NYPP OPERATING PROCEDURE OP 1-20 Appendix E, Exception No.B 1.
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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E Exception No. 4
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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E Exception No. 9
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.	NYPP OPERATING PROCEDURE OP 1-20 Appendix E Exception No. 12

Appendix C

LOCAL RELIABILITY RULES OF THE NEW YORK TRANSMISSION PROVIDERS

Local Rule No.	Company	Specific Local Reliability Rule	Justification
1	CON EDISON	OPERATING RESERVES/UNIT COMMITMENT 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 Six Lines South of Millwood and the locational requirements for its operating reserves.	PSC Directive July 17, 1961
2	CON EDISON	LOCATIONAL RESERVES Con Edison must maintain its 10 Minute Operating Reserve on in-City steam units and on Fast Start Gas Turbines.	PSC Order No.27302
3	CON EDISON	GAS BURNING PROCEDURE 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.	Exceeds Minimum Criteria
4	CON EDISON	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.	PSC Order No.27302
5	LIPA	LOSS OF GENERATOR GAS SUPPLY 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, 2 North Port units can be gas fired. At peak loads, Port Jefferson 3-4 gas operation must be restricted.	Exceeds Minimum Criteria