

Request to Develop or Modify Reliability Rules and Requirements (NYSRC Policy No. 1-7)

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Item	Information
1. PRR No. & Title of Reliability Rule or Requirement change	PRR 122 Revision of C.1, <i>Establishing Operating Transfer Capabilities</i>
2. Rule Change Requester Information	
Name	RRS
Organization	
3. New rule or revision to existing rule?	Revision
4. Need for rule change, including advantages and disadvantages	This revision is needed in order that C.1 is consistent with NPCC transmission operation criteria (R13 and R14) in the final approved NPCC Directory 1, dated 9/30/15.
5. Related NYSRC rules	C.1 Requirements to be revised.
6. Section A – Reliability Rule Elements	
1. Reliability Rule	C.1 – no changes
2. Associated NERC & NPCC Standards and Criteria	No changes
3. Applicability	NYISO
7. Section B – Requirements	
Requirements	<p>R1. Normal and <i>emergency</i> operating transfer capabilities shall be established to meet the respective performance requirements in Table C-1 <u>and supplemental performance requirements in Table C-2</u>, for the <i>contingency</i> events specified in Table <u>C-1B-2</u>.</p> <p><u>R1.1. The NYISO shall consider Local Area Operation G.1 through G.3 requirements in the establishment of operating limits, assessment of operating adequacy, and operation on the NYS Bulk Power System.</u> [From old I-M4b.]</p> <p>R2. The NYISO shall maintain procedures and systems that ensure that appropriate actions are taken when <i>thermal, voltage, and/or stability limits</i> are exceeded. The NYISO must notify the NYSRC of any changes to these procedures and systems.</p>
8. Section C – Compliance Elements	
1. Measures	M1. The NYISO maintained procedures and systems in accordance with R1 and R2 which identify appropriate actions to be taken whenever the bulk power transmission system’s <i>thermal, voltage, and stability limits</i> are exceeded. Any revisions to these procedures or systems were reported to the NYSRC.
2. Levels of Non-Compliance	No changes
3. Compliance Monitoring Process (See Policy 4):	No changes
3.1 Compliance	

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Monitoring Responsibility	
3.2 Reporting Frequency	
3.3 Compliance Reporting Requirements	
9. Implementation Plan	NYISO procedures shall revised as appropriate to reflect PRR 122 rules changes within 60 days of rule change adoption.
10. Comments	
11. Date Rule Adopted	
12. PRR Revision Dates	2/10/15, 3/10/15, 9/22/15, 10/16/15, 12/28/15

Table C-1

NYSRC Operating Transfer Capability Requirements¹

Contingency events, Fault type and Performance requirements to be applied to bulk power system elements to establish transfer capabilities.

	Contingency events Simulate the removal of all elements that protection systems, including Special Protection Systems, are expected to automatically disconnect for each event that involves an AC fault.	Fault type (permanent) On the listed elements where applicable	Performance requirements	
			<u>Normal Transfer Capability</u>	<u>Emergency Transfer Capability</u> (only after an Emergency is identified)
	a. Fault on any of the following: a. transmission circuit b. transformer c. shunt device d. generator e. bus section	Three-phases fault, with normal fault clearing	i, .ii, iii, iv, v, vi, vii, viii, x	i, ii, iii, iv, v, vi, vii, ix, xi
	2. Opening of any circuit breaker or the loss of any of the following: a. transmission circuit b. transformer c. shunt devise d. generator e. bus section	No fault		
	3. Loss of single pole of a direct current facility	No fault		
	4. Fault on any of the following: a. transmission circuit b. transformer c. shunt device d. generator e. bus section	Phase to ground fault with failure of a circuit breaker to operate and correct operation of a breaker failure protection system and its associated breakers.	i,ii,iii,iv,v,vi,vii,ix,x	Contingency Events 4 through 8 do not apply after an emergency is identified.

¹ Table C-1 incorporates Table 3 of NPCC Directory 1, with the following modifications: (1) bolded NPCC glossary terms have been removed, (2) more stringent NYSRC contingency event criteria are shown in bold, and (3) NYSRC glossary terms are shown in italics. NPCC performance criteria at the bottom of Table C-1 is supplemented by more stringent NYSRC performance criteria in Table C-2.

	5. Fault on a circuit breaker	Phase to ground fault, with normal fault clearing		
	6. Simultaneous fault on two adjacent transmission circuits on a multiple circuit tower.	Phase to ground faults on different phases of each circuit, with normal fault clearing		
	7. Simultaneous permanent loss of both poles of a direct current bipolar facility	Without an ac fault		
	8. The failure of a circuit breaker to operate when initiated by a SPS after a fault on the following: a. transmission circuit b. transformer c. shunt device d. generator e. bus section <u>g. loss of any element (without a fault)</u>	Phase to ground fault, with normal fault clearing		
	9. The failure of a circuit breaker to operate when initiated by a SPS after opening of any circuit breaker or the loss of any of the following: a. transmission circuit b. transformer c. shunt device d. generator e. bus section	No fault.	i,ii,iii,iv,v,vi,vii,viii,ix,x ,	

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Performance Requirements for the contingencies defined in Table C-1:

- i. Loss of a major portion of the system or unintentional separation of a major portion of the system shall not occur.
- ii. Loss of small or radial portions of the system is acceptable provided the performance requirements are not violated for the remaining bulk power system.
- iii. The NYCA shall be operated in a manner such that contingencies and conditions applied can be withstood without causing significant adverse impact on other Control Areas.
- iv. Voltages and loadings shall be within applicable limits for the pre-contingency conditions.
- v. Voltages and loadings shall be within applicable limits for post-contingency conditions except for small or radial portions of the system as described in ii.
- vi. The stability of the bulk power system shall be maintained, with due regard to successful and unsuccessful reclosing except for small or radial portions of the system as described in ii.
- vii. For each of the contingencies that involve fault clearing, 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 initiated by the “system B” protection group. When applying this requirement to contingency Event *no 6*, the failure of a protection group shall apply only to one circuit at a time. When evaluating contingency event #4 breaker failure protection is assumed to operate correctly even if only a single breaker failure protection system exists.

- viii. Regarding contingency *no 6*, 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 an acceptable risk and therefore can be excluded. Other similar situations can be excluded on the basis of acceptable risk, provided that the NYSRC Executive Committee specifically accepts each request for exclusion.
- ix. Appropriate adjustments shall be made to NYCA operation to accommodate the impact of protection group outages, including the outage of a protection group which is a part of a Type I special protection system. For typical periods of forced outage or maintenance 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, additional adjustments to operations may be appropriate considering other system conditions and the consequences of possible failure of the remaining protection group.
- x. Normal transfer levels shall not require system adjustments before attempting manual reclosing of elements unless specific instructions describing alternate actions are in effect to maintain stability of the BPS.
- xi. Emergency transfer levels may require system adjustments before attempting manual reclosing of elements to maintain stability of the bulk power system.

Operating to the contingencies listed above in Table C-1 is considered to provide an acceptable level of bulk power system security. However, under high risk conditions, such as severe weather, the expectation of the occurrence of contingencies not listed in Table C-1 and/or the associated consequences may be judged to be significantly greater. When these conditions exist, consideration should be given to operating in a more conservative manner.

Table C-2

Operating Transfer Capabilities – Supplemental Performance Requirements

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Type of Assessment	Performance Requirements for Thermal, Voltage and Stability Assessments
Thermal	<p>a. Pre-Contingency Criteria</p> <ol style="list-style-type: none"> For normal transfers, no transmission facility shall be loaded beyond its <i>normal rating</i>. For <i>emergency</i> transfers, no transmission facility shall be loaded beyond its <i>normal rating</i>. However, a facility may be loaded up to the <i>LTE rating</i> pre-contingency if the <i>STE rating</i> is reduced accordingly. <p>b. Post-Contingency Criteria</p> <ol style="list-style-type: none"> For normal transfers, no facility shall be loaded beyond its <i>LTE rating</i> following the most severe of contingencies <u>1 through 9</u> "a" through "g" specified in Table <u>C-1B-2 in Reliability Rule Section B</u>. An underground cable circuit may be loaded to its <i>STE rating</i> following: <u>Loss of Generation</u> - provided <u>ten (10) minute operating reserve</u> and/or phase angle regulation is available to reduce the loading to its <i>LTE rating</i> within fifteen (15) minutes and not cause any other facility to be loaded beyond its <i>LTE rating</i>. <u>Loss of Transmission Facilities</u> - provided <u>ten (10) minute operating reserve and/or</u> phase angle regulation is available to reduce the loading to its <i>LTE rating</i> within fifteen (15) minutes and not cause any other facility to be loaded beyond its <i>LTE rating</i>. For contingencies <u>4 through 9</u> "b", "c", "e", "f", and "g" in Table <u>C-1B-2</u> that are not confined to the loss of a single <i>element</i>, <i>Transmission Owners</i> may request the <i>NYISO</i> for an exception to allow the post-contingency flow on a facility up to its <i>STE rating</i>. This is permissible provided operating measures are available to reduce the flow below the <i>LTE rating</i> within fifteen (15) minutes and not cause any other facility to be loaded beyond its <i>LTE rating</i>. Operating exceptions shall be well documented, including <i>NYISO</i> comments, and must be approved by the <i>NYSRC</i>. For <i>emergency</i> transfers, no facility shall be loaded beyond its <i>STE rating</i> following the more severe of contingencies <u>1, 2, or 3</u> "a" or "d" listed in Table <u>C-1B-2</u>. The <i>STE rating</i> is based on an assumed pre-loading equal to the <i>normal rating</i>. A limiting facility may be loaded up to the <i>LTE rating</i>, pre-contingency, if the <i>STE rating</i> is reduced accordingly.

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<p>Voltage</p>	<p><i>Reactive power</i> shall be maintained within the <i>NYS Bulk Power System</i> in order to maintain voltages within applicable pre-disturbance and post-disturbance limits, for both normal and <i>emergency</i> transfers, as specified below:</p> <p>a. Pre-Contingency Criteria</p> <p>For both normal and <i>emergency</i> transfers, no bus voltage will be below its pre-contingency low <i>voltage limit</i> nor be above its pre-contingency high <i>voltage limit</i>. The pre-contingency voltage on a bus is permitted to operate below its pre-contingency low <i>voltage limit</i> or above its pre-contingency high <i>voltage limit</i> if all corrective actions short of <i>load shedding</i> have been taken and conditions are not indicative of system problems, or sufficient time and <i>resources</i> exist to take corrective action to prevent voltage collapse should a <i>contingency</i> occur.</p> <p>b. Post-Contingency Criteria</p> <p>No bus voltage will fall below its post-contingency low <i>voltage limit</i> nor rise above its post-contingency high <i>voltage limit</i>. For normal transfers, contingencies <u>1 through 9</u> "a" through "g" specified in Table <u>C-1B-2</u> are applicable. For <i>emergency</i> transfers, contingencies <u>1 through 9</u> "a" through "g" specified in Table <u>C-1B-2</u> are applicable</p>
<p>Stability</p>	<p>System <i>stability</i> transfer limits shall be consistent with the Reliability Rules and all applicable guidelines and procedures in the <i>NYISO</i> Transmission Planning Guideline #3-1, "Guideline for Stability Analysis and Determination of Stability-Based Transfer Limits".</p> <p>a. For normal transfers, <i>stability</i> of the <i>NYS Bulk Power System</i> shall be maintained during and after the most severe of contingencies <u>1 through 9</u> "a" through "g" specified in Table <u>C-1B-2</u>. The <i>NYS Bulk Power System</i> must also be stable if the <i>faulted element</i> as described in Table <u>C-1B-2</u> is re-energized by <i>delayed reclosing</i> before any manual system adjustment, unless specific alternate procedures are documented.</p> <p>b. For <i>emergency</i> transfers, when <i>firm load</i> cannot be served, <i>stability</i> of the <i>NYS Bulk Power System</i> shall be maintained during and after contingencies <u>1 through 9</u> "a" through "g" specified in Table <u>C-1B-2</u>. The <i>NYS Bulk Power System</i> must also be stable if the <i>faulted element</i> as described in Table <u>C-1B-2</u> is re-energized by <i>delayed reclosing</i> before any manual system adjustment.</p>