Request to Develop Reliability Rules for Implementation of Rules Enhancement Plan (REP)

Item	Response
1.Rules Enhancement Plan (REP) Description	On April 11, 2013, the NYSRC Executive Committee adopted a Rules Enhancement Plan (REP) which: (1) restructures the present NYSRC Reliability Rules and supporting elements, and (2) proposes new rules and revises others to ensure they are consistent with current and pending NERC and NPCC standards and criteria, while continuing to maintain NYSRC's more stringent and specific requirements. Proposed new and revised rules are highlighted below in red-line. The REP is described in the report, *Rules Enhancement Plan*, www.nysrc.org/____, which describes the restructured rule format (PRR Lines 3-7) and the tasks for implementing the REP.
2. Reliability Rule Requester	NYSRC Reliability Rules Subcommittee (RRS)
3. REP Proposed Reliability Rule (PRR) No.	REP-15
4. Title & No. of Proposed Reliability Rule	**B-R1: Transmission System Planning Performance Requirements**
5. Section A – Reliability Rule Elements	
1. Reliability Rule	**Transmission facilities in the NYS Bulk Power System shall be planned to operate reliably over a broad spectrum of system conditions and following a wide range of contingencies.**
2. Associated NERC & NPCC Standards and Criteria	NERC TPL-001-4 NPCC Directory 1
3. Applicability	NYISO
6. Section B – Requirements	
Requirements	**R1.** Transmission facilities in the NYS Bulk Power System shall be planned to meet the respective performance requirements in Table A for the contingency events as specified in Table B. **R2**. The impact of extreme contingencies shall be assessed to recognize the performance assessments described in Table C for the extreme contingency events as specified in Table D. **R3**. The impact of extreme system conditions shall be assessed as described in Table E. **R4.** *Fault duty* levels shall be planned to be within appropriate equipment ratings **R5.** System expansion or reconfiguration plans shall include an assessment of their impact on the existing NYCA System Restoration Plan (NYCA SRP). **R5.1.** Any impacts identified shall be described in terms of how and where the SRP may need to be modified, and made available to the NYISO Operating Group and the operating function of the appropriate transmission owners for consideration in the annual review and update of NYISO and transmission owner restoration plans as required by Reliability Rule G-R1.

7. Section C – Compliance Elements	
1. Measures	**M1**. The NYISO planned transmission facilities in the NYS Bulk Power System in accordance with requirements defined in B-R1_R1 though R5.
2. Levels of Non-Compliance	**For M1:** Level 1: Not applicable Level 2: Not applicable Level 3: Not applicable Level 4: The NYISO did not plan transmission facilities in the NYS Bulk Power System in accordance with Requirements B-R1_R1 through R5.
3. Compliance Monitoring Process (See Policy 4):	
3.1 Compliance Monitoring Responsibility	M1: RCMS
3.2 Reporting Frequency	M1: In accordance with NYSRC Compliance Monitoring Program schedules.
3.3 Compliance Reporting Requirements	M1: Self-Certification
8. Comments	
9. Date Reliability Rule Adopted	
10. REP PRR Revision Dates	6/16/14, 7/15/14, 7/31/14

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Table A

NYSRC Planning Design Criteria: Performance Requirements

Type of Assessment	Performance Requirements for Thermal, Voltage and Stability Assessments
	Pre-Contingency Assessment

Thermal	1. For normal transfers, no transmission facility shall be loaded beyond its normal rating. 2. For *emergency* transfers, no transmission facility shall be loaded beyond its *normal rating*. However, a facility may be loaded to the *long-term emergency ("LTE") rating* pre-contingency, if the *short-term emergency ("STE") rating* is reduced accordingly. **Post-Contingency Assessment** 1. For normal transfers, no facility shall be loaded beyond its *LTE rating* following the most severe of Contingency Events "a" through "g" specified in Table B. An underground cable circuit may be loaded to its *STE rating* as following: <u>Loss of *Generation*</u> - provided *ten (10) minute operating reserve* and/or phase angle regulation is available to reduce the loading to its *LTE rating* within fifteen (15) minutes and not cause any other facility to be loaded beyond its *LTE rating*. <u>Loss of Transmission Facilities</u> - provided phase angle regulation is available to reduce the loading to its *LTE rating* within fifteen (15) minutes and not cause any other facility to be loaded beyond its *LTE rating*. For Contingency Events "b", "c", "e", "f," and "g" in Table B that are not confined to the loss of a single *element*, *transmission owners* may request permission from the *NYISO* to design the system so that post-contingency flows up to the *STE ratings* on the remaining facilities can occur. This is permissible provided operating measures are available to reduce the loading to its *LTE rating* within fifteen (15) minutes and not cause any other facility to be loaded beyond its *LTE rating*. Design exceptions should be well documented, including *NYISO* comments, and must be approved by the *NYSRC*. 2. For *emergency* transfers, no facility shall be loaded beyond its *STE rating* following the more severe of Contingency Events "a" or "d" in Table B. 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.

Table A (continued)
Planning NYSRC Design Criteria: Performance Requirements

Type of Assessment	Performance Requirements for Thermal, Voltage and Stability Assessments
Voltage	Reactive power shall be maintained within the *NYS Bulk Power System* in order to maintain voltages within applicable pre-disturbance limits for both normal and emergency transfers, consistent with the Reliability Rules and all applicable guidelines and procedures. **Pre-Contingency Assessment** 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*. **Post-Contingency Assessment** No bus voltage shall fall below its post-contingency low *voltage limit* nor rise above its post-contingency high *voltage limit*. For normal transfers, Contingency Events "a" through "g" specified in Table B are applicable. For *emergency* transfers, Contingency Events "a" through "g" specified in Table B are applicable.
Stability	Stability of the NYS Bulk Power System shall be maintained during and following the most severe of the design criteria contingencies "a" through "g" specified in Table B, with due regard to reclosing. For each of those design criteria contingencies that involves a fault, stability shall be maintained when the simulation is based on fault clearing initiated by the "system A" protection group and also shall be maintained when the simulation is based on fault clearing by the "system B" protection group. **System Stability** 1. For normal transfers, the *stability* of the *NYS Bulk Power System* shall be maintained during and after the most severe of Contingency Events "a" through "g" specified in Table B. The *NYS Bulk Power System* must be stable if the faulted *element* is re-energized by *delayed reclosing* before any manual system adjustment, unless specific alternate procedures are documented. 2. For *emergency* transfers, the *stability* of the *NYS Bulk Power System* shall be maintained during and after the more severe of Contingency Events "a" through '"g" specified in Table B. The *NYS Bulk Power System* must also be stable if the faulted *element* is re-energized by *delayed reclosing* before any manual system adjustment. *Emergency* transfer levels may require *generation* adjustment before manually reclosing faulted *element*s not equipped with automatic reclosing or whose automatic reclosing capability has been rendered inoperative. **Generator Unit Stability** With all transmission facilities in service, generator unit *stability* shall be maintained on all facilities not directly involved in clearing the *fault* for Contingency Events "a" through '"g" specified in Table B.

Table B
NYSRC Planning Design Criteria: Contingency Events

	Contingency Events and Related Fault Types
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 or bus section, with *delayed fault clearing*.
d	Loss of any *element* without a *fault.*
e	A permanent phase-to-ground *fault* on a circuit breaker, with *normal fault clearing*. (*Normal fault clearing* time for this condition may not always be high speed.)
f	Simultaneous permanent loss of both poles of a direct current bipolar HVDC facility without an a-c *fault*.
g	The failure of a circuit breaker to operate when initiated by a *special protection system ("SPS")* following: loss of any *element* without a *fault*; or a permanent phase-to-ground *fault*, with *normal fault clearing*, on any transmission circuit, transformer or bus section.

Table C
NYSRC Planning Design Criteria: Extreme Contingency Performance Assessments

1	Model the following pre-contingency conditions: a. Pre-contingency *load* flows chosen for analysis should reflect reasonable power transfer conditions. b. The testing shall be conducted at megawatt ("MW") transfers at a level which is expected at least 75% of the time on a load flow duration basis, but not to exceed the maximum operating limit for the interface being tested. This may be at or near the *normal transfer limit* for some *interface*s. c. Analytical studies shall be performed to determine the effect of the extreme contingencies in Table D.
2	Assessment of the extreme contingencies listed in Table D shall examine post-contingency *steady state* conditions as well as overload cascading and voltage collapse.
3	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.

Table D
NYSRC Planning Design Criteria: Extreme Contingency Events

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

Table E
NYSRC Planning Design Criteria: Extreme System Condition Assessments

Events that have a low probability of occurrence shall be assessed to determine, through transmission and resource adequacy assessments, the impact of these conditions on expected steady-state and dynamic system performance. These assessments shall provide an indication of system robustness or the extent of a widespread adverse system response. Transmission assessments shall consider the effect of design criteria contingencies specified in Table B on the NYS Bulk Power System. Analytical studies shall be conducted under the following Extreme System Condition events:

a. Peak load conditions resulting from extreme weather conditions with applicable rating of electrical elements.
b. Generating unit(s) fuel shortage, e.g., gas supply adequacy.

After due assessment of the above Extreme System Conditions, measures may be utilized, where appropriate, to mitigate the consequences that are indicated as a result of testing such system conditions. The NYSRC may require that the NYISO to conduct studies for other types of extreme condition events as deemed necessary.