



Manual 15

**Emergency
Operations Manual**

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Revision History

Version	Date	Revisions
1.0	09/01/1999	Initial Release September 1, 1999 Section 4.5-Stability Limit Violation
2.0	09/12/2000	<p>Changes Inserted September 12, 2000</p> <ul style="list-style-type: none"> ➤ Sect. 1.6.1 <ul style="list-style-type: none"> • #2: Replace “Provider” with “Owner” • Paragraph after #5: Replace “Provider” with “Owner” ➤ Sect. 1.6.2 <ul style="list-style-type: none"> • First sentence: Replace “Provider” with “Owner” ➤ Sect. 2.2 <ul style="list-style-type: none"> • #1: delete “NYS ISO” and replace with “NYISO” • #3: Insert “voltage” before “collapse.” • #7: delete “Pool” and replace with “Area” • The following corrections made to the sentence after #11: An Operating Reserve deficiency is predicted, Operating Reserve Deficient. ➤ Sect. 2.3 <ul style="list-style-type: none"> • 1st sentence: Insert “State” after “Alert” • 1st sentence: Insert “Shift Supervisor” after the 1st “NYISO” • #3 c & d: Reverse order of info. Should be as follows: 3c. Activate reserves 3d. Adjust reactive sources and transformer taps • #3e: Insert “Perform” before “Generation shifts.” • #3f: Replace “Modify Physical Schedules” with “Modify Interchange Schedules” • #3h: delete “NYS ISO” and replace with: “NYISO” • #3: Insert text after 3i. Label new text 3j. Text to insert: “May call for a reserve pickup to return to schedule if the NYISO Control Error exceeds -100 MW.” • #3: Insert text after new 3j. Label new text 3k. Text to insert: “Take actions to maintain operating reserve, in accordance with the procedures described in Section 4.2 of this manual.” • #3: Re-number the items after the new 3i and 3j. • #3l: Replace “Transmission Owner” with “Market Participant” • #3m: Order Generation to full Operating capability. • #3q: Insert “and generators” after “customers” • #7: Add: 7. If the NYISO Shift Supervisor or their designee foresees an extended period of operation in the Alert State, a canvass of the Transmission Owners shall be made to determine if assistance can be provided through other appropriate means. • Delete: Other Considerations • 1. For all contingencies which would result in a violation of Alert State criteria, corrective action, which would be necessary if the contingency occurs shall be determined

		<p>through coordination between the NYISO Shift Supervisor or their designee and the affected Transmission Owners.</p> <ul style="list-style-type: none"> • 2. If the NYISO Shift Supervisor or their designee foresees an extended period of operation in the Alert State, a canvass of the Transmission Owners shall be made to determine if assistance can be provided through other appropriate means. <p>➤ Sect. 3.2</p> <ul style="list-style-type: none"> • #5, #6: Replace “Inter-pool” with “Inter-area” • #7, #12: Replace “Pool” with “Area” <p>➤ Sect. 3.3.1</p> <ul style="list-style-type: none"> • #6: Delete “s” at end of “Baseds” • #6 b: Delete “Shift Supervisor after “NYISO” • #6 c & d: Reverse order of info. Should be as follows: 6c. Activate reserves 6d. Adjust reactive sources and transformer taps • #6 f: Replace “Modify Physical Schedules” with “Modify Interchange Schedules” • #6 g: Delete “Request” and Insert “Order” • #6 h: Insert “to” before “be” • #6 i: change the “r” in “Reduction” to a lower case “r” • #6j: Delete “Request voluntary Market Participant Load Reduction” and Insert “May call for a reserve pick up to return to schedule if the NYISO Control Error exceeds - 100 MW.” • #6k: Delete “Generation may be ordered to full operating capability” and insert “Take actions to maintain operating reserve, in accordance with the procedures described in Section 4.2 of this Manual.” • #6l: Delete “Request maximum generation pick-up” and insert “Curtail non-essential Transmission Owner load.” • #6m: Delete “Invoke Emergency Transfer Criteria (ETC).” and insert “Order Generation to full operating capability.” • #6n: Delete “Curtail interruptible load in accordance with contractual arrangements.” and Insert “Order maximum generation pick-up, at emergency response rates.” • #6: Insert a new #6o: Invoke Emergency Transfer Criteria (ETC). And, Insert a new #6p: Curtail interruptible load in accordance with contractual arrangements. • #6: Re-label numbers to accommodate for the insertion of the new 6o and 6p. • New 6q: Delete “Request” and Insert “Order” in its place. • New 6u: Delete “Request” and Insert “Order” in its place. <p>➤ Sect. 6.1</p> <ul style="list-style-type: none"> • Paragraph under two bullets: replace “intra-pool” with “intraarea” <p>➤ Sect. 6.2</p> <ul style="list-style-type: none"> • Transmission Owner Actions: Renumber them as follows: <ul style="list-style-type: none"> • 1 becomes 3, • 2 becomes 1, • 3 becomes 2. <p>➤ Attachment A, Exhibit A-1</p>
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		<ul style="list-style-type: none"> • Change “Pool Control Error” to “Area Control Error.” Also, change acronym “PCE” to “ACE” • Under the “Alert/Frequency” section, change text from: “Frequency is greater than 60.05 Hz and less than 60.10 Hz OR Frequency is greater than 59.90 Hz and less than 59.95 Hz” to: “Frequency is greater than or equal to 60.05 Hz and is sustained at that level or continues to increase OR Frequency is less than or equal to 59.95 Hz and is sustained at that level or continues to decline.” <p>➤ Attachment A, Exhibit A-3</p> <ul style="list-style-type: none"> • Change the Bowline 345's Pre-Low from 338 to 345 • Change the Buchanan 345's Pre-Low from 338 to 346 • Change the Dunwoodie 345's Pre-Low from 338 to 346 • Delete Hurley Ave 345 and all it's information completely • Change the Ladentown 345's Pre-Low from 338 to 346 • Change the Oakdale 345's Pre-Low from 335 to 336 • Change the Pannell Road 345's Pre-Low from “see pg.2” to “see A-4” • Change Pleasant Valley 345's Pre-Low from 338 to 343 • Change Ramapo 345's Pre-Low from 338 to 346 • Insert Rock Tavern 345, Pre-Low: 348, Pre-High: 362, Post-Low: 328, Post-High: 362, Set By: CH • Change Roseton 345's Pre-Low from 338 to 345 • Change Sprainbrook 345's Pre-Low from 338 to 345 • Change Station 80 345's Pre-Low from “see pg 2” to “see A4” <p>➤ Attachment A, Exhibit A-4</p> <ul style="list-style-type: none"> • Delete 3rd Column (Oakdale 345 kV) under “Pre contingency Low Bus Voltage Limits” • Under “HQ-NYCA transfer on 7040 is”, 3rd row, change value in first column from “+1351 to +1850” to: “+1351 to +1800” • Delete 4th and 5th rows of information (4th row: +1851 to +2000 MW, 345 kV, 345 kV”, 5th row: “+2001 to +2350MW, 346 kV, 346 kV”) • Delete row at end: “Fraser SVC out of service or ‘not normal’, 339 kV” <p>➤ Attachment A, Exhibit A-5</p> <ul style="list-style-type: none"> • Under the Pleasant Valley-Wood St. Millwood W. Change W78 to W81 <p>Global Change</p> <p>➤ Replace “Transmission Provider” with “Transmission Owner” throughout the entire manual.</p>
3.0	05/29/2001	<p>Changes Inserted May 29, 2001</p> <p>➤ Sect. 2.2</p> <ul style="list-style-type: none"> • Renumber list so that it runs continuously starting from beginning at number 1. • #11 (Old #9) insert “A” at beginning of sentence. • #12 at end of sentence add: “Operating Reserve Deficient.” • #13 delete “13. An actual operating reserve deficiency exists.” <p>➤ Sect. 2.3</p>

		<ul style="list-style-type: none"> • 1st sentence: delete “Shift Supervisor” after “declared by the NYISO” • NYISO Actions, #4: at end delete “and shall follow the procedures for severe weather operation.” and replace with “and declare an ALERT state.” • Transmission Owner Actions, #2: delete “Supervisor” and replace with “personnel” • Add new category at end: “Other Considerations” and beneath it add: “1. For all contingencies which would result in a violation of the Alert State criteria, corrective action, which would be necessary if the contingency occurs shall be determined through coordination between the NYISO Shift Supervisor or their designee and the affected Transmission Owners.” • NYISO Actions, #7: move under “Other Considerations” as #2. <p>➤ Sect. 3.2</p> <ul style="list-style-type: none"> • #3b: replace “problem” with “collapse” • Add “3e. If having taken the actions above, the actual voltage at any bus listed in Exhibit A-3 remains below its pre-contingency low limit for 30 minutes or declines to a level below the mid-point between the pre and post contingency low limits and remains there for 15 minutes, then the NYISO Shift Supervisor 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.” • #7, delete +/- and replace with “ • #12, replace “overgeneration” with “Overgeneration” <p>➤ Sect. 3.3.1</p> <ul style="list-style-type: none"> • NYISO Actions, #6 I: Replace “Transmission Owner” with “Market Participant” <p>➤ Sect. 4.4.2</p> <ul style="list-style-type: none"> • Under “Declare Warning State” add new #6: “Notify NYISO special ICAP Customers and Emergency Demand Response Program (EDRP) as NYISO Operation Reserves that they may be required to be activated during a specified period of time. (Estimated start and end time announced.)” and renumber the remaining items. • Under “Declare Warning State” add new #10: “Direct Market Participants to activate Emergency Demand Response Program (EDRP) to start at XXXX hrs and end at XXXX hrs.” <p>➤ Sect. 4.4.3</p> <ul style="list-style-type: none"> • Under “Declare Alert State”, #1, Revise as follows: “If deficient of 10-minute reserve, direct all Market Participants to convert 10 minute non-synchronized 30-minute reserve to energy or 10-minute synchronized 10-minute reserve.” • Under “Declare Major Emergency”, # 5, Replace “Customers” with “Customer.” Add “Activate” before “Emergency”. At end add “if possible.” <p>➤ Sect. 4.4.4</p> <ul style="list-style-type: none"> • Under “Declare Major Emergency”, #4, correct spelling of “activate”. Divide sentence into two by ending it at
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		<p>“customer”. Insert “Activate” before “Emergency”. And, at end of sentence, after (EDRP), add “if possible”.</p> <ul style="list-style-type: none"> ➤ Sect. 4.7 <ul style="list-style-type: none"> • Under “NYISO Actions”, #7, replace “reduce” with “request.” ➤ Sect. 6.2 <ul style="list-style-type: none"> • Under “NYISO Actions”, #1, Delete text at end of sentence: “and neighboring control areas where applicable.” • Under “NYISO Actions”, #6, Change 1st word of each bulleted item from uppercase to lowercase. ➤ Sect. 7.2 <ul style="list-style-type: none"> • Rearrange and edit information in this section. ➤ Sect. 8.4.2 <ul style="list-style-type: none"> • Under “Designated NYISO Coordinator Actions”, #10, at beginning, delete “Time Correction and”, make “Magnetic Disturbance” lowercase, replace “Niagara Mohawk” with “NMPC” and replace “Ontario Hydro” with “OH” • Under “Designated NYISO Coordinator Actions” #11, have “Designated Coordinator” be lowercase. <p>Changes Inserted May 1, 2001</p> <ul style="list-style-type: none"> ➤ Sect. 1.1 <ul style="list-style-type: none"> • Definition for Emergency Make “Generation Resources” lower case words. ➤ Sect. 1.2.2 <ul style="list-style-type: none"> • Make the 2nd bulleted list labeled with letters, instead of bullets • Within the 2nd bulleted list, 3rd bullet (now entry c) at the end of the sentence, replace the “Transmission Owner, LSE, and GENCO use” with “Market Participant Load.” ➤ Sect. 2.2 <ul style="list-style-type: none"> • #12, Delete text at end of sentence: “Operating Reserve Deficient.” • Add #13: An actual operating reserve deficiency exists.” ➤ Sect. 4.1.1 <ul style="list-style-type: none"> • b, add “below” before “its LTE rating within 10 minutes from the initial overload.” ➤ Sect. 4.1.2 <ul style="list-style-type: none"> • Replace “NYS Power System” with “NYISO Secured Transmission System or the NERC Bulk Electric System” ➤ Sect. 4.2 <ul style="list-style-type: none"> • Replace “NYS Power” with “NYISO Secured Transmission” 1st paragraph, last sentence ->delete “short of Load Shedding” at end. ➤ Sect. 4.4.1 <ul style="list-style-type: none"> • Change title from “Shortage Operating Reserve – Peak Forecast” to “Shortage Operating Reserve – Day Ahead Forecast” • Replace body text to correlate with new title ➤ Sect. 4.4.2
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		<ul style="list-style-type: none"> • Change title from “4.4.2 Shortage Operating Reserve – Real Time” to “4.4.2 Shortage Operating Reserve – In Day” Replace body text to correlate with new title ➤ Sect. 4.4.3 <ul style="list-style-type: none"> • Renumber Section 4.4.3 to 4.4.4 • Update body text Insert a new section 4.4.3 titled: “4.4.3 Shortage Operating Reserve - Real Time” • Insert body text to correlate with title ➤ Sect. 4.7 <ul style="list-style-type: none"> • NYISO Actions, # 7, replace “request” with reduce” at the beginning. NYISO Actions, # 7, delete “all other” before “inter-Control Area” ➤ Sect. 6.2 <ul style="list-style-type: none"> • NYISO Actions, #1, at the end add “and neighboring control areas where applicable. NYISO Actions, #3, replace “request” with “order” NYISO Actions, #5, replace “adjacent” with “neighboring” ➤ Sect. 7.1 <ul style="list-style-type: none"> • 1st paragraph, last sentence, at the end add “the following types of load curtailment” 1st set of bulleted items, change bullets to letters ➤ Sect. 7.4.2 <ul style="list-style-type: none"> • NYISO Actions, #1, after “Transmission,” add “Owner”. NYISO Actions, #1, in middle of sentence, delete: “via the Emergency Hot Line System” ➤ Attachment D <ul style="list-style-type: none"> • Exhibit D-3, In Table, Heading on 2nd Column, replace “Step” with “Type of Curtailment” Exhibit D-3, Under Table, Under (Time and Date), add: “Type of Curtailment: a. Curtailment of interruptible load, b. Manual (local) voltage reduction, c. Curtailment of nonessential Market Participant load, d. Voluntary curtailment of large LSE customers, e. Public appeals” ➤ Attachment F <ul style="list-style-type: none"> • 1st page, delete “***Note to NYISO: Exhibits F-1 and F-2 need to be replaced.***” • F1, delete table F1 • F2, delete table F1
3.1	08/08/2001	<p>Changes Inserted August 2001</p> <ul style="list-style-type: none"> ➤ Global Change <ul style="list-style-type: none"> • “Special” should change to “Special Case” throughout the entire manual. ➤ Sect. 2.3 <ul style="list-style-type: none"> • Change to “Direct the TOs, via hotline, to prepare to curtail non-essential company loads for next day and to notify appropriate Market Participants to prepare to curtail nonessential company load for the next day.” ➤ Sect. 3.3.1 <ul style="list-style-type: none"> • Insert after the existing (L): “Direct the TOs, via hotline, to prepare to curtail non-essential company loads for next day

		<p>and to notify appropriate Market Participants to prepare to curtail non-essential company load for the next day.”</p> <ul style="list-style-type: none"> • Insert before the existing (L): “Activate Special Case ICAP and EDRP resources.” <p>➤ Sect. 4.4.1</p> <ul style="list-style-type: none"> • # 8: Change to “Notify the appropriate Market Participants to prepare and make special case ICAP and EDRP available for the next day.” <p>➤</p> <p>➤ Sect. 4.4.3</p> <ul style="list-style-type: none"> • # 5: Change to “Notify the appropriate Market Participants to activate NYISO special ICAP customer. Activate Emergency Demand Response Program (EDRP), if possible.” <p>➤ Sect. 4.4.4</p> <ul style="list-style-type: none"> • #4: Change to: “Notify the appropriate Market Participant to activate NYISO special ICAP customer. Activate Emergency Demand Response Program (EDRP), if possible.”
4.0	11/11/2001	<p>Changes Inserted November 11, 2001</p> <p>➤ Sect. 4.4.1</p> <ul style="list-style-type: none"> • First paragraph - delete “ICAP” • First paragraph - after “external energy sales” insert “from NYISO ICAP providers” • #3, delete “external ICAP purchases” and replace with “energy available from external NYCA ICAP providers” • #3, delete “purchases” and replace with “providers” • #4, delete “ICAP exports from NYCA to other control areas” and replace with “external energy sales by NYCA ICAP providers” • #5, delete “special ICAP customers” and replace with “Special Case Resources (ICAP)” • #8, delete “special case ICAP” and replace with “Special Case Resources (ICAP) and” • #8, after “EDRP” insert “resources” • #9, replace “Subsection ” with “Subsection 1” <p>➤ Sect. 4.4.2</p> <ul style="list-style-type: none"> • #3, delete “external ICAP purchases” and replace with “energy recallable from external ICAP resources” • #3, delete “associated with these ICAP purchases” and replace with “available from external NYCA ICAP providers” • #4, delete “ICAP.” After “control areas” add “by NYISO ICAP providers” • #5 and #6, delete “special ICAP customers” and replace with “Special Case Resources (ICAP).” <p>➤ Sect. 4.4.3</p> <ul style="list-style-type: none"> • # 4, delete “ICAP” and replace with “external.” At the end add: “provided by NYCA ICAP providers” • #5, delete “special ICAP customer” and replace with “Special Case Resources (ICAP)” <p>➤ Sect 4.4.4</p> <ul style="list-style-type: none"> • #3, delete “ICAP” and replace with “external.” At the end add: “provided by NYCA ICAP providers.”

		<ul style="list-style-type: none"> • #4, delete “ICAP Customer” and replace with “Case Resources”
5.0	04/01/2004	<p>Changes Inserted April 1, 2004</p> <ul style="list-style-type: none"> ➤ Complete Format Change. <p>Changes Inserted May 22, 2003 (Board approved 3/18/04)</p> <ul style="list-style-type: none"> ➤ Section 4.4.1 <ul style="list-style-type: none"> • #5 deleted “and Emergency Demand Response Program (EDRP)” • #6 Added “Count expected Emergency Demand Response Program (EDRP) as NYISO Operating Reserve and determine if it is of sufficient quantity to eliminate the deficiency.” • Renumbered paragraphs • #9 deleted “”and EDRP resources” • • #10 Added “Notify the appropriate Market Participants to prepare to make the EDRP resources available for the next day.” • After #12 Change numbers to bullets ➤ Section 4.4.2 <ul style="list-style-type: none"> • #5 deleted “and Emergency Demand Response Program (EDRP)” • Renumbered paragraphs • #5 deleted “and Emergency Demand Response Program (EDRP)” • Added #6. “Notify NYISO Special Case Resources (ICAP) that they are counted toward NYISO Operating Reserves, and may be required to be activated during a specified period of time. (Estimated start and end time as announced.)” • Added #7. Count NYISO Emergency Demand Response Program (EDRP) as NYISO Operating Reserves. • #8 deleted “NYISO Special Case Resources (ICAP) and” and deleted “as NYISO Operation Reserves that they may be required to be activated during a specified period of time. (Estimated start and end time announced.) Added “that they are counted toward NYISO Operating Reserves, and may be requested to be activated during a specified period of time. (Estimated start and end time as announced.)” • #12 deleted “Emergency Demand Response Program (EDRP)” and Added “Special Case Resources (ICAP).” • #13 Added “Direct Market Participants to activate Emergency Demand Response Program (EDRP) to start at XXXX hrs and end at XXXX hrs.” ➤ Section 4.4.3 <ul style="list-style-type: none"> • 1st para. Added “real-time” and “count external ICAP available, Special Case Resources (SCR) and Emergency Demand Response Program (EDRP).” Added “to”. • Removed numbering from 1st para. • Renumbered from 2nd para. • Deleted “Notify the appropriate Market Participants to activate NYISO Special Case Resources (ICAP). Activate Emergency Demand Response Program (EDRP), if possible.

		<ul style="list-style-type: none"> • Added “2. Notify the appropriate Market Participants to activate NYISO Special Case Resources (ICAP) if possible.” And added “3. Notify the appropriate Market Participants to activate NYISO Emergency Demand Response Program. ➤ Section 4.44 <ul style="list-style-type: none"> • 4th deleted “Activate Emergency Demand Response Program (EDRP).” • Added “Notify the appropriate Market Participants to activate Emergency Demand Response Program (EDRP), if possible. • Renumbered paragraphs. ➤ Delete from Revision History (May 29, 2001) <ul style="list-style-type: none"> • Sect 4.4.3 – delete “10-minute non-synchronized” and add “30-minute”. Delete “10-minute synchronized” and add “10-minute.” ➤ Delete from Revision History (Sept 12, 2000) <ul style="list-style-type: none"> • Sect 2.2 – delete “and” and add “Operating”. Delete “Condition (2) is in effect.” Add “Deficient.” • Sect 2.3 – add “Order” and delete “may be ordered”. Add “to full Operating capability” and delete “o” and “at normal response rates”. • Attach A, Exh 1- Added “or equal to” after Frequency is greater than. Added “is sustained at that level or continues to increase” after 60.05 Hz and. Added “less” after “Frequency is”. Added “or equal to” after “than”. Added “5” after “59.9”. Added “and is sustained at that level or continues to decline.” After Hz.
6.0	11/11/2004	<p>November 11, 2004</p> <ul style="list-style-type: none"> ➤ All Sections <ul style="list-style-type: none"> • Changes to reflect SMD2 – Throughout the document-All references to SCD changed to RTD, Pool Control Error (PCE) changed to Area Control Error (ACE), Designated Pool Coordinator to Designated NYISO Coordinator, and Security Constrained Dispatch to Real-Time Dispatch. • Reformatted document • Changed all instances of ISO to NYISO • Deleted all instances of the word, “Exhibits” • Updated grammar and spelling • Updated acronym usage • Added section 4.1.3.-Procedure for Relief of Potential Overloads on Non-Bulk Power System Facilities • Added section 7.4.Load Shedding During System Restoration ➤ Section 1.2.3 <ul style="list-style-type: none"> • Added this new section. Transmission Outage Scheduling section and accompanying text (TCC notification provisions). • Removed Off-Dispatch with and without reserve award. ➤ Attachment E <ul style="list-style-type: none"> • Deleted “MDS Sample Screens” and replaced with “Data Collection Forms”
6.10	09/08/2010	<p>Attachment A</p> <ul style="list-style-type: none"> ➤ Updated to correct Table A.3.

6.1	04/15/2005	<p>Section 4.1.3</p> <ul style="list-style-type: none"> ➤ Deleted references to “Bulk Power System” and replaced with “Secured” ➤ NYISO was added before all acronym instances of SS (Shift Supervisor). <p>Section 6.1</p> <ul style="list-style-type: none"> ➤ Added text after 4th paragraph “During the Restoration State, the ISO may reserve blocks of generation for incremental deployment up to 700MW of generation capacity to facilitate restoration of the Con Edison NYC area 345kV transmission path from Sprainbrook/Dunwoodie substations to Freshkills substation.” <p>Attachment B</p> <ul style="list-style-type: none"> ➤ B-1 Restoration Procedures and Diagrams <ul style="list-style-type: none"> • Added paragraph between 1st and 2nd bullet of the first paragraph “The NYISO shall direct the Transmission Owners (TOs) to carry out their assigned steps...”
6.11	2/3/2011	<p>Attachment A</p> <ul style="list-style-type: none"> ➤ Added new column for Millwood to Table A.3. ➤ Added Clarks Corners Rd (new station) to Table A.4
6.12	7/13/2011	<p>Table A.4</p> <ul style="list-style-type: none"> ➤ Designation and Terminal Changes <p>Table C.1</p> <ul style="list-style-type: none"> ➤ Updated Voltage Reduction Tables and Load Relief Tables <p>Table D.6</p> <ul style="list-style-type: none"> ➤ Company Information now required
6.13	11/1/2011	<p>Sections 2.2, 3.2, 4.1</p> <ul style="list-style-type: none"> ➤ Revised to reflect NYSRC Policy No. 1-5 rule change PRR 108 ➤ Fraser SVC” in service” added to Table A.3
6.14	05/01/2013	<p>Section 4.4</p> <ul style="list-style-type: none"> ➤ Revised description of SCUC function regarding Day Ahead forecast Operating Reserve deficiency
6.15	07/11/2013	<p>Appendix Only Revision</p> <p>Table C.1</p> <ul style="list-style-type: none"> ➤ Updated Voltage Reduction Tables and Load Relief Tables
6.16	09/04/2013	<p>Appendix Only Revision</p> <p>Table C.2, C.3</p> <ul style="list-style-type: none"> ➤ Updated title
6.17	2/13/2014	<p>Appendix Only Revision</p> <p>Table A.4</p> <ul style="list-style-type: none"> ➤ Updated to reflect the change in the Moses station exit tower configuration

6.18	07/07/2014	<p>Appendix Only Revision</p> <ul style="list-style-type: none"> ➤ Table A.1 Removed exceptions and referenced the NYSRC exceptions list <p>Table B</p> <ul style="list-style-type: none"> ➤ Removed Table B.1 as the updated version is CEII <p>Table C.1</p> <ul style="list-style-type: none"> ➤ Updated Voltage Reduction Tables and Load Relief Tables <p>Table C.3</p> <ul style="list-style-type: none"> ➤ Replaced the UPNY-SENY load relief table with the UPNY-CON ED table
6.19	07/18/2014	<p>Appendix Only Revision</p> <ul style="list-style-type: none"> ➤ Table C.3 Updated column headers to more accurately represent the transmission locations
6.20	02/25/2015	<p>Appendix Only Revision</p> <p>Table A.2, A.3</p> <ul style="list-style-type: none"> ➤ Updated to reflect the target voltage values and various pre-contingency low voltage limits and transfer combinations based on the study approved by the NYISO Operating Committee on 2/13/15 <p>Table A.6</p> <ul style="list-style-type: none"> ➤ Removed the West Central Interface as an IROL interface based on the study approved by the NYISO Operating Committee on 2/13/15
6.2	08/03/2007	<p>Attachment C</p> <ul style="list-style-type: none"> ➤ Updated tables C-1, C-2, and C-3 with the numbers for Summer 2007. ➤ Removed table C-4.
6.21	07/21/2015	<p>Appendix Only Revision</p> <p>Table C.1</p> <ul style="list-style-type: none"> ➤ Updated Voltage Reduction Tables and Load Relief Tables <p>Table G.2</p> <ul style="list-style-type: none"> ➤ Removed DOE-417 form. ➤ Added hyperlink to online version of OE-417 form
6.13.1	06/12/2012	<p>Appendix Only Revision</p> <p>Table A.4</p> <ul style="list-style-type: none"> ➤ Changed “on line MCE” to CA ➤ Removed Oakdale 32/36 TWR ➤ Updated the Hillside 68/69 to 72/69 TWR based on the addition of Stony Ridge station ➤ Added 2- 230kV/115kV towers based on what National Grid monitors. Dunkirk 68/160 TWR, Packard 61/191 TWR <p>Table A.6</p>

		<ul style="list-style-type: none"> ➤ Removed HQ-NY as a IROL limit based on Operations Engineering assessment <p>Table C.1-C.3</p> <ul style="list-style-type: none"> ➤ Updated to reflect the 2012 Load relief tables. <p>Table G.2</p> <ul style="list-style-type: none"> ➤ Updated the current version of the DOE-417 form. ➤
6.3	06/27/2008	<p>Attachment C</p> <ul style="list-style-type: none"> ➤ Updated tables C-1, C-2, and C-3 for Summer 2008.
6.4	09/04/2008	<p>Global</p> <ul style="list-style-type: none"> ➤ Reformatted per new template to standardize presentation ➤ Standardized labeling and numbering of tabular material <p>Copyright Page</p> <ul style="list-style-type: none"> ➤ Implemented minor stylistic changes <p>Revision History Table</p> <ul style="list-style-type: none"> ➤ Changed column headings as follows: <ul style="list-style-type: none"> • Changed “ Revision” to “Version” • Changed “Changes” to “Revisions” ➤ Standardized date format to mm/dd/yyyy. ➤ Implemented minor stylistic changes in entries <p>Attachment A</p> <ul style="list-style-type: none"> ➤ Updated Table A-2 to reflect Exceptions to the NYSRC Reliability Rules
6.5	06/29/2009	<p>Attachment C</p> <ul style="list-style-type: none"> ➤ Updated tables C-1, C-2, and C-3 for Summer 2009.
6.6	08/12/2009	<p>Attachment C</p> <ul style="list-style-type: none"> ➤ Updated table C-1 to reflect modified amounts of relief Long Island and Con Edison can obtain from load reduction.
6.7	05/14/2010	<p>Attachment A</p> <ul style="list-style-type: none"> ➤ Updated Table A.2,
6.8	07/28/2010	<p>Attachment C</p> <ul style="list-style-type: none"> ➤ Updated Table C.1 for Summer 2010.
6.9	07/28/2010	<p>Global</p> <ul style="list-style-type: none"> ➤ Revised external-document links to explicitly cite URLs from which documents may be accessed. ➤ Implemented minor stylistic and syntactic changes. ➤ Updated entity names as follows: <ul style="list-style-type: none"> • <i>Niagara Mohawk</i> and <i>NM</i> changed to <i>National Grid</i> and <i>NG</i>, respectively. • <i>Long Island Lighting Company</i> changed to <i>Long Island Power Authority (LIPA)</i>. • <i>Ontario Hydro</i> changed to <i>IESO</i>. ➤ Modified titles of personnel responsible for certain tasks to reflect changes in process/procedure, as appropriate.

		<ul style="list-style-type: none"> ➤ Updated terminology for clarification purposes, where appropriate, including changing <i>Control Areas</i> to <i>Reliability Coordinators</i> to indicate personnel. <p>Section 1.1</p> <ul style="list-style-type: none"> ➤ Incorporated material on "ISO Authority to Respond to Transmission Exceedance on Bulk Power System Transmission Facilities" from Technical Bulletin 163. ➤ Clarified that in relation to the policies addressed by this manual, non-specific references to NYISO personnel in the form of <i>the NYISO</i> should be inferred as meaning NYISO Power System Operators in the NYISO control room. <p>Section 1.2.2</p> <ul style="list-style-type: none"> ➤ Specified curtailment of interruptible load as being specific to Special Case Resources (ICAP and SCR) and Emergency Demand Response Programs (EDRP). <p>Section 1.2.3</p> <ul style="list-style-type: none"> ➤ Edited to indicate that self-scheduled fixed units are not exempt from responding to a reserve pickup 10-minute basepoint at their emergency response rates as bid. ➤ Deleted material related to "On Control with or without reserve control." <p>Section 1.3</p> <ul style="list-style-type: none"> ➤ Edited to indicate that the NYISO is required to notify federal and state government agencies, interconnected systems in the event of unusual operating conditions. <p>Section 1.3.1</p> <ul style="list-style-type: none"> ➤ Displaced existing content with new material on "Transmission Owner Emergency Notification," taken from Technical Bulletin 168, resulting in re-numbering of subsequent pre-existing subsections within section 1.3. <p>Section 1.3.2</p> <ul style="list-style-type: none"> ➤ Deleted references to the PSC Notification Book, instead referencing just the PSC Notification List. ➤ Changed "Operations Supervisor (or the NYISO Manager of Operations if the Operations Supervisor is unavailable)" to "NYISO Operations Management," in reference to required internal NYISO communications surrounding occurrence of unusual operating conditions. ➤ Eliminated references to the specific manner whereby NYISO personnel must supply to NYISO Operations Management information provided to the PSC. <p>Section 1.3.3</p> <ul style="list-style-type: none"> ➤ Added new material on "NYISO DOE Notification." <p>Section 1.3.4</p> <ul style="list-style-type: none"> ➤ Changed "media contact" to "NYISO External Affairs contact" in reference to required internal NYISO communications surrounding occurrence of system conditions that may result in general public awareness of an actual or impending situation.
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		<p>Section 1.4</p> <ul style="list-style-type: none"> ➤ Removed Notification Book material, resulting in re-numbering of subsequent pre-existing subsections within section 1, with section 1.4 now focusing on Communications. <p>Section 1.4.1</p> <ul style="list-style-type: none"> ➤ Remove material on communications restrictions between the NYISO and TOs subsequent to notification of an Alert or Major Emergency State. ➤ Remove material on communications restrictions between the NYISO and TOs subsequent to notification of a Restoration State. <p>Section 1.4.2</p> <ul style="list-style-type: none"> ➤ Specified new parameters for non emergency communications between the NYISO and TOs, eliminating constraint to extensions outlined in the Notification Book as well as references to the manner whereby calls will be transferred among NYISO staff. <p>Section 1.4.4</p> <ul style="list-style-type: none"> ➤ Eliminated material specifying the format and vehicle whereby NYISO staff shall disseminate emergency communications. <p>Section 1.5</p> <ul style="list-style-type: none"> ➤ Changed <i>NERC Security Communication Coordination System</i> to <i>NERC Reliability Coordinator Information System</i>. <p>Section 1.5.1</p> <ul style="list-style-type: none"> ➤ Added material on NYISO Emergency Hot Line communication protocol. ➤ Eliminated obsolete material outlining specific method of transferring to the stand-by telephone circuit if loss of communications occurs during a conference call. <p>Section 1.5.3</p> <ul style="list-style-type: none"> ➤ Changed required parameter for testing the conferencing capability of the ACC Emergency Hot Line from monthly to weekly. ➤ Removed material citing the Notification Book as being the source containing the telephone numbers designated by the TOs for the ACC Emergency Hot Line. <p>Section 1.5.4</p> <ul style="list-style-type: none"> ➤ Updated to reflect the name of the system that the Reliability Coordinators use to post messages and share operating information in real time as being the Reliability Coordinator Information System (RCIS). <p>Section 2.2</p> <ul style="list-style-type: none"> ➤ Updated to reflect expanded Alert State Criteria related to Pre-Contingency (Actual) Flow, Post-Contingency Flow, Reserves, and NYISO IROL stability limit. <p>Section 2.3</p>
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		<ul style="list-style-type: none"> ➤ Changed main heading to include <i>IROL</i> so that it reads <i>Post-Contingency Voltage IROL Exceedance</i>. ➤ Updated subheadings to reflect thresholds of <i>Greater Than 100% But Less Than 105%</i> and <i>105% or Greater</i>. ➤ Added material relative to NERC standards IRO-005-2-R3 and TOP 007-0-R2. <p>Section 4.4</p> <ul style="list-style-type: none"> ➤ Reworked material on NYISO actions in responding to a Shortage of Operating Reserve in Day-Ahead Forecast, particularly with regard to the following: <ul style="list-style-type: none"> • Eliminated as an action determining whether energy associated with external energy sales by NYCA ICAP providers as NYISO Operating Reserve is of sufficient quantity to eliminate the deficiency. • Specified that Market Participants to be prepared for "the potential dispatch to UOLe" as opposed to "a maximum generator capability alert." • Clarified the source for information on initiating an Emergency Energy Alert as being NERC Standard EOP 002 and the means of doing so as being the Reliability Coordinator Information System (RCIS). • Changed means of counting load relief that can be implemented within 10 minutes. <p>Section 4.4.1</p> <ul style="list-style-type: none"> ➤ Displaced existing content with new material on " Shortage Operating Reserve New York City– Day-Ahead Forecast," resulting in re-numbering of subsequent pre-existing subsections within section 4.4. <p>Section 4.4.2</p> <ul style="list-style-type: none"> ➤ Reworked material on NYISO actions in responding to a Shortage of Operating Reserve in Day, particularly: <ul style="list-style-type: none"> • Specified that Market Participants to be prepared for "the potential dispatch to UOLe" as opposed to "a maximum generator capability alert." • Clarified the source for information on initiating an Emergency Energy Alert as being NERC Standard EOP 002 and the means of doing so as being the Reliability Coordinator Information System (RCIS). <p>Section 4.4.3</p> <ul style="list-style-type: none"> ➤ Updated the name of the programs used to monitor the total Operating Reserve in real time from <i>Real-Time Dispatch to Reserve Monitor</i>. ➤ Eliminated counting external ICAP available as a measure to be taken in the event of a shortage of operating reserves in real time. ➤ Added new material on "Following a Contingency" and "A Non-Contingency Based Shortage." ➤ Expanded to include additional measures taken when declaring an alert state in the event of a deficiency in 10-minute reserves in real time.
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		<ul style="list-style-type: none"> ➤ Edited to specify that in the event of a Major Emergency Declaration in relation to a shortage of operating reserves in real time, Market Participants are to be notified by TOs that the NYISO is dispatching to UOLe and that Market Participants are to follow basepoints in addition to making all generator capability available. ➤ Eliminated recalling external energy sales made by NYCA ICAP providers as a measure to be taken in the event of a Major Emergency Declaration in relation to a shortage of operating reserves in real time, specifying instead that an Emergency Energy Alert is to be initiated in accordance with NERC standard EOP 002-2 Attachment 1 via the RCIS; NPCC notification requirement (C-19) is to be followed; and NYISO Communications, PSC, DEC, Gas Pipelines, and the Department of Energy (DOE) are to be notified via form OE 417. ➤ Eliminated count the load reduction available from quick response voltage reduction as 10-minute reserve and attempting to purchase emergency energy from sources outside NYISO as measures to be taken in the event of a Major Emergency Declaration in relation to a shortage of operating reserves in real time. <p>Section 4.4.4</p> <ul style="list-style-type: none"> ➤ Specified NERC Standard EOP 002-2 as the reference source for declaring an alert state in the event of a shortage of meeting Load (including the inability to reach a "0" ACE) in real time. ➤ Added notifying gas pipelines via e-mail as a measure to be taken when declaring an alert state in the event of a shortage of meeting Load (including the inability to reach a "0" ACE) in real time. ➤ Edited to specify that in the event of a Major Emergency Declaration in relation to a shortage of meeting Load (including the inability to reach a "0" ACE) in real time, Market Participants are to be notified by TOs to go to UOLe limits and follow basepoints in addition to the fact that the NYISO is in a generation alert. <p>Section 4.5</p> <ul style="list-style-type: none"> ➤ Changed main heading to include <i>IROL</i> so that it reads <i>IROL Stability Limit Violation</i>. ➤ Updated subheadings to reflect thresholds of <i>Greater Than 100% But Less Than 105%</i> and <i>105% or Greater</i>. ➤ Added material relative to NERC standards IRO-005-2-R3 and TOP 007-0-R2. <p>Section 5.1</p> <ul style="list-style-type: none"> ➤ Edited to reflect that voltage criteria in relation to reducing transmission flows is of <i>IROL</i> designation. ➤ Changed <i>normal maximum levels</i> to <i>Upper Operating Limit Normal (UOLn)</i> levels in clarifying the applicable upper threshold to which the NYISO shall request voluntary shifts in generation to help relieve the violation. ➤ Removed reference to the <i>NYISO Transmission and Dispatching Operations Manual</i> as being the source of transaction curtailment procedures.
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		<p>Section 6.0</p> <ul style="list-style-type: none"> ➤ Completely reworked to provide greater detail. <p>Section 7.2</p> <ul style="list-style-type: none"> ➤ Changed entities that the NYISO must direct to implement load relief procedures in the event of ongoing 10-minute reserve shortage following initiation of Quick Response Voltage Reduction from <i>the deficient company or companies (if known) to the TOs.</i> ➤ Eliminated requirement that TOs direct other member companies having quick response voltage reduction capability to reduce voltage up to 5%, or more if available. ➤ Eliminated requirement that NYISO staff must direct TOs to activate quick response voltage reduction previously withheld as required to match load generation to relieve facility overloads in the event that. NYISO resources are less than the NYCA load or NYCA facilities are above ratings or limits. <p>Section 7.3</p> <ul style="list-style-type: none"> ➤ Edited to reflect that NYISO orders rather than requests load shedding. <p>Section 7.5</p> <ul style="list-style-type: none"> ➤ Edited to reflect that NYISO orders rather than requests load shedding. <p>Section 8.2</p> <ul style="list-style-type: none"> ➤ Eliminated language regarding National Grid having to coordinate through NYPA for Hydro Quebec – NYPA contracts. <p>Section 8.3.2</p> <ul style="list-style-type: none"> ➤ Removed material citing the Notification Book as the source of NYISO Operations Management Staff member to be notified by NYISO personnel in the event of PCC evacuation after normal business hours ➤ Specified Fax as the sole means of providing the Security Monitor display to Consolidated Edison and National Grid in the event of PCC evacuation. ➤ Removed NYISO Net Interchange Summary and NYISO Generation Summary from the list of items to be provided to Consolidated Edison and National Grid in the event of PCC evacuation. ➤ Removed keys to the ACC as an item that NYISO staff must take to the ACC in the event of PCC evacuation. ➤ Updated list of entities that NYISO shift staff must notify in the event of PCC evacuation as being PJM, IESO, ISO-NE, and HQ. <p>Section 8.4.1</p> <ul style="list-style-type: none"> ➤ Clarified that DNI to be followed by TOs during initial interim NYCA operation is determined by NYISO Real-Time Dispatch (RTD) as opposed to Security Constrained Dispatch. ➤ Updated list of neighboring control areas for which NYISO must record DNI on the DNI Change log in the event of initial interim NYCA operation. <p>Section 8.4.2</p>
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		<ul style="list-style-type: none"> ➤ Updated list of entities that Consolidate Edison staff must relay notices of solar magnetic disturbances during continuing interim NYCA operation as being ISO-NE, National Grid, and Consolidated Edison's respective TOs. <p>Section 8.5.1</p> <ul style="list-style-type: none"> ➤ Updated NYISO actions with regard to ACC operation as follows: <ul style="list-style-type: none"> • Removed reinitializing load trending. • Removed switching system frequency to an alternate source. • Updated list of entities that NYISO staff must notify that the ACC is operational and with whom NYISO staff must verify schedules. <p>Attachments</p> <ul style="list-style-type: none"> ➤ Added notes clarifying that attachments do not require committee approval and are subject to change at the NYISO's direction. <p>Attachment A</p> <ul style="list-style-type: none"> ➤ Removed Table A.1, resulting in re-numbering of subsequent tables within Attachment A. ➤ Changed NYRSC to NYSRC in Table A.1. ➤ In Table A.2, changed Pre Low Bus Voltage Limits for Dunwoodie 345, Millwood 345, and Pleasant Valley 345 to 348, and added new footnote regarding Sprainbrook 345. ➤ Updated multiple terminals in 335H Table A..2. ➤ Added new Table A.6, IROL Interfaces, and Table A-7, Under Frequency Load Shed (UFLS) Implementation Plan. <p>Attachment B</p> <ul style="list-style-type: none"> ➤ In Table B.1, deleted text reading "Prompt restoration of the NYISO total customer load is best accomplished by the restoration of the NYS Power System. Although some customer load may be picked up during this procedure to maintain stability and voltage levels, priority must be assigned to the restoration of the major transmission ties. Each TO may restore load within its area in accordance with its own restoration plan, but load restoration must not delay the restoration of inter-and intra-Control Area ties." ➤ In Table B.1, deleted TO actions in reference to restoration procedures, replacing instead with update NYISO actions. <p>Attachment C</p> <ul style="list-style-type: none"> ➤ Deleted reference to obsolete Attachment C-4. <p>Attachment D</p> <ul style="list-style-type: none"> ➤ To the list of statements the NYISO Shift Supervisor should make when initiating emergency procedure testing, added one regarding confirmation of the procedures as tests. ➤ In relation Table D.4, changed reference for system restoration procedures to the <i>NYISO System Restoration Manual</i>. <p>Attachment E</p> <ul style="list-style-type: none"> ➤ Under <i>Transfers</i>, changed <i>OH - NY</i> to <i>IESO - NY</i> and changed <i>NE - NY</i> to <i>ISO-NE - NY</i>
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		<p>Attachment G</p> <ul style="list-style-type: none"> ➤ Add new 336H Table G.2, 337H Reporting to the DOE 417 (referenced in Technical Bulletin 168).
7.0	03/17/2016	<p>Section 1.3.3</p> <ul style="list-style-type: none"> ➤ Updates to references to DOE/NERC/NPCC reporting requirements and methods <p>Section 1.3.3</p> <ul style="list-style-type: none"> ➤ Removed <p>Section 1.5</p> <ul style="list-style-type: none"> ➤ Updates to Control Center designations <p>Section 4.1.1</p> <ul style="list-style-type: none"> ➤ Update to reference the Outage Scheduling Manual in which “NYISO Controlled Transmission System” is defined <p>Section 4.1.3</p> <ul style="list-style-type: none"> ➤ Relocated to Attachment A-7 ➤ Updates to include NYISO SOL Methodology to be followed by the Transmission Owners ➤ Updates to reflect contingencies listed in NERC FAC-011 ➤ Updates to procedure for overloads of BES facilities for tower, bus, and stuck circuit breaker contingencies <p>Section 4.4 and 4.4.2</p> <ul style="list-style-type: none"> ➤ Update to correct the order in which steps are taken in the case of an Operating Reserve deficiency or Operating Reserve shortage <p>Section 4.4.4</p> <ul style="list-style-type: none"> ➤ Update to reflect all of the steps taken in the case of a shortage of meeting load <p>Section 4.6</p> <ul style="list-style-type: none"> ➤ Updates to move Under Frequency Load Shed requirements from Table A.7 <p>Section 4.7</p> <ul style="list-style-type: none"> ➤ Update to reflect actions taken during period of NYCA actual overgeneration <p>Section 6.4</p> <ul style="list-style-type: none"> ➤ Updates reflecting language incorporated from Attachment B <p>Section 8</p> <ul style="list-style-type: none"> ➤ Updates throughout all subsections to incorporate language from the Backup Operations Manual <p>Section 8.11.1</p> <ul style="list-style-type: none"> ➤ Update to add PJM-NYISO HTP as one of the neighboring Reliability Coordinators’ proxy busses <p>Section 8.11.2</p> <ul style="list-style-type: none"> ➤ Update to reflect the manner in which time correction and solar magnetic disturbance notices are transmitted

		<p>Section 9.1.1</p> <ul style="list-style-type: none"> ➤ Updated adding a requirement for NYISO to conduct Actual Voltage Reduction test per NYSRC Reliability Rules <p>Section 9.3.2</p> <ul style="list-style-type: none"> ➤ Updated adding the procedure for conducting an Actual Voltage Reduction test <p>Section 9.5.1</p> <ul style="list-style-type: none"> ➤ Update to reflect SOAS review of Interim NYCA Operations (ICO) and Alternate Control Center Operations (ACO) tests <p>Attachment A</p> <ul style="list-style-type: none"> ➤ Deleted Table A.7 UFLS Implementation Plan ➤ Added Attachment A-7, which was moved from Section 4.1.3 <p>Attachment D</p> <ul style="list-style-type: none"> ➤ Added Table D-7 for conduct of Actual Voltage Reduction test <p>Attachment E</p> <ul style="list-style-type: none"> ➤ Updated tables with corresponding tables from Backup Operations Manual
7.1	07/13/2016	<p>Appendix Only Revision</p> <p>Table A.4</p> <ul style="list-style-type: none"> ➤ Added the new double circuit tower following construction of the 76 Rock Tavern-Sugarloaf-Ramapo circuit <p>Table A.5</p> <ul style="list-style-type: none"> ➤ Added new Thunderstorm Multiple Contingencies Cases following construction of the 76 Rock Tavern-Sugarloaf-Ramapo circuit <p>Table C.1</p> <ul style="list-style-type: none"> ➤ Updated load relief values for Summer 2016 <p>Table E.6</p> <ul style="list-style-type: none"> ➤ Updated to show the 2016 SOAS review of the ACC/ICO drill report
7.2	11/18/2016	<p>Appendix Only Revision</p> <p>Attachment A.7</p> <ul style="list-style-type: none"> ➤ Reformatted procedures for clarity ➤ Updated procedures associated with Load Shed by multiple Transmission Owners
7.3	07/06/2017	<p>Appendix Only Revision</p> <p>Table A.1</p> <ul style="list-style-type: none"> ➤ Corrected link to the NYSRC Reliability Rules <p>Table A.4</p> <ul style="list-style-type: none"> ➤ Table reformatted for clarity ➤ Updated to reflect addition of Dolson Ave station <p>Table C.1</p> <ul style="list-style-type: none"> ➤ Updated Voltage Reduction and Load Relief tables for 2017

		<p>Attachments D.1, D.2, D.5, and D.7</p> <ul style="list-style-type: none"> ➤ Updated notification in test procedures to include use of three part communication and notification Major Emergency state does not exist <p>Table D.3</p> <ul style="list-style-type: none"> ➤ Corrected the link to the System Restoration Manual. <p>Table E.6</p> <ul style="list-style-type: none"> ➤ Updated to include SOAS review of 2017 ACC/ICO Drill Report
7.3	3/23/2018	Recertification
7.4	6/29/2018	<p>Appendix Only Revision</p> <p>Table C.1</p> <ul style="list-style-type: none"> ➤ Updated Voltage Reduction and Load Relief tables for 2018 <p>Attachment D</p> <ul style="list-style-type: none"> ➤ Corrected links to Attachment D tables <p>Attachment E</p> <ul style="list-style-type: none"> ➤ Corrected links to Attachment E tables <p>Table E.6</p> <ul style="list-style-type: none"> ➤ Updated to include SOAS review of 2018 ACC/ICO Drill Report
7.5	04/01/2019	<p>Global</p> <ul style="list-style-type: none"> ➤ Ministerial changes throughout the manual <p>Section 1.2.2</p> <ul style="list-style-type: none"> ➤ Updated with additional conditions where NYISO may not be in the Normal State <p>Section 1.5.1</p> <ul style="list-style-type: none"> ➤ Updated to accurately reflect use of the Emergency Hot Line System ➤ Removed description of outdated functionality <p>Section 1.5.2</p> <ul style="list-style-type: none"> ➤ Updated to reflect changes in Load Shed alarm indications <p>Section 2.2</p> <ul style="list-style-type: none"> ➤ Updated to remove required action from criteria description ➤ Removed conditions from some listed actions <p>Section 3.2</p> <ul style="list-style-type: none"> ➤ Updated to clarify voltage criteria, including removal of need to complete actions prior to declaring Major Emergency <p>Section 3.3.1</p> <ul style="list-style-type: none"> ➤ Updated NYISO Actions to remove conditions from some listed actions ➤ Added generator owner to entities requiring notification in Transmission Owner Actions <p>Section 3.3.2</p>

		<ul style="list-style-type: none"> ➤ Added NYISO action to ensure all TO actions are implemented Section 4.1.2 <ul style="list-style-type: none"> ➤ Removed need for ETC operation prior to initiating corrective actions Section 4.4 <ul style="list-style-type: none"> ➤ Remove step for email requesting bids ➤ Updated order of steps Section 4.4.1 <ul style="list-style-type: none"> ➤ Clarified SRE process ➤ Removed requirement for Con Ed local SRE Section 4.4.2 <ul style="list-style-type: none"> ➤ Remove step for email requesting bids ➤ Updated to activate SCR/EDRP instead of counting as reserves without activation Section 4.4.3 <ul style="list-style-type: none"> ➤ Remove redundant notification steps Section 4.4.4 <ul style="list-style-type: none"> ➤ Remove redundant step Section 4.7 <ul style="list-style-type: none"> ➤ Removed inadvertent payback step Section 4.8 <ul style="list-style-type: none"> ➤ Relocated from Attachment A.7 Section A.7.5 Section 5 <ul style="list-style-type: none"> ➤ Removed redundant information ➤ Reserved section for potential future use Section 6.2.4 <ul style="list-style-type: none"> Updated to reflect communication guidelines for TO Section 6.3 <ul style="list-style-type: none"> ➤ Updated coordination and communication requirements ➤ Separated Generator Operator actions from TO actions Section 7.5.1 <ul style="list-style-type: none"> ➤ Updated to reflect changes in Load Shed alarm indications Section 8.14 <ul style="list-style-type: none"> ➤ Remove section, information covered in other sections Attachment A.7 <ul style="list-style-type: none"> ➤ Reformat for clarity ➤ Relocation of Section A.7.5 to Section 4.8 Attachment D <ul style="list-style-type: none"> ➤ Updated D.5 communication statement
7.6	7/1/2019	Appendix Only Revision

		<p>Table A.6</p> <ul style="list-style-type: none">➤ Added Northern Export and HQ Cedars IROL Stability Interfaces <p>Table C.1</p> <ul style="list-style-type: none">➤ Updated Voltage Reduction and Load Relief tables for 2019 <p>Table E.6</p> <ul style="list-style-type: none">➤ Updated to include SOAS review of 2019 ACC/ICO Drill Report
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1. Overview

This section describes the New York Independent System Operator (NYISO) operating policy, operating states, and the emergency communication system.

1.1. Operating Policy

Under the terms of the NYISO Agreement, the NYISO/Transmission Owners (TO) Agreement, and the NYISO/New York State Reliability Council Agreement, the NYISO has the authority and the responsibility to direct the operation of the New York State (NYS) Power System so as to maintain system reliability in accordance with Good Utility Practice and the Reliability Rules which are applied on a system-wide and local basis.

Power system disturbances are most likely to occur as the result of the loss of generating equipment, transmission facilities, or unexpected load changes. These disturbances may be of, or develop into, a magnitude sufficient to affect the reliable operation of the New York Control Area (NYCA). Severe system disturbances generally result in critically loaded transmission facilities, critical frequency deviations, high or low voltage conditions, or stability problems.

NYISO Authority to Respond to Transmission Exceedances on New York State Transmission System (NYS Transmission System)

North American Electric Reliability Corporation (NERC) Reliability Standards provide NERC Registered Entities with the authority to take actions to mitigate System Operating Limit (SOL) and Interconnection Reliability Operating Limit (IROL) exceedances. Transmission Owners (TO) shall disconnect the affected facility if the overload on a transmission facility or if an abnormal voltage or reactive condition persists and equipment is endangered. In doing so, the Transmission Owner shall notify the NYISO and all neighboring Transmission Owners impacted by the disconnection prior to switching, if time permits, otherwise immediately after switching. The NYISO shall maintain the safety and short-term reliability of the NYS Transmission System in accordance with the Reliability Rules and in accordance with the NYISO/NYSRC Agreement and the NYISO/TO Agreement.

This Manual addresses the NYISO and Market Participants' actions under emergency conditions. An ***Emergency*** in the NYCA is defined as:

Any abnormal system condition that requires immediate automatic or manual action to prevent or limit loss of transmission facilities or Generators that could adversely affect the reliability of the NYS Power System.

It is the intention of the NYISO to implement the procedures and criteria provided in this Manual when necessary to maintain a reliable system. In cases where the NYISO makes a judgment that the market cannot provide needed services within criteria, those actions shall be supplemented by those that can provide the fastest possible relief.

The NYISO will restore the NYS Power System to normal operation as soon as possible following any situations where emergency actions have been invoked.

The following definition for “Order” will be used.

After declaration of a Major Emergency, any request made by the NYISO to a Transmission Owner for remedial action including but not limited to, Load Shedding, shall be considered an order to effect such remedial action.

In relation to the procedures addressed by this Manual, non-specific references to NYISO personnel in the form of *the NYISO* should be inferred as meaning the NYISO Power System Operators in the NYISO control room.

1.2. Operating States

The following five operating states are defined for the NYS Power System:

1. Normal
2. Warning
3. Alert
4. Major Emergency
5. Restoration

1.2.1. Determining the Operating State

The NYISO shall determine the state of the NYS Power System by comparing system conditions against certain monitoring criteria. The NYISO also shall monitor weather conditions and forecasts.

- When the NYISO determines that the state of the NYS Power System is Normal or Warning, the NYISO shall operate the NYS Power System according to procedures described in the *NYISO Transmission and Dispatching Operations Manual*.
- When the NYISO determines that the state of the NYS Power System is Alert, Major Emergency, or Restoration, the NYISO shall operate the NYS Power System according to procedures in this Manual.

1.2.2. Operating Objectives

The objective of the NYISO is to operate the NYS Power System within the Normal State. Conditions, however, may cause the NYS Power System to depart from the Normal State. These conditions include, but are not limited to, the following:

- Capacity deficiencies
- Reserve deficiencies
- Energy deficiencies
- Actual transmission system loading
- Predicted transmission system loading
- Loss of generation or transmission facilities
- High voltage
- Low voltage
- Fuel emergencies
- Environmental episodes
- Stability problems
- Voltage Collapse

When the NYS Power System enters a condition other than the Normal State, the NYISO shall act to return the NYS Power System to the Normal State. When all the criteria for the Normal State cannot be achieved, the NYISO shall satisfy as many of the Normal State criteria as possible and shall minimize the consequences of any single contingency. Should a disturbance occur, its extent and duration shall be minimized.

When multiple exceedances occur in the same state, actual exceedances shall be corrected before predicted exceedances. Where multiple exceedances of differing state criteria occur, the most serious exceedance shall be solved first.

The NYISO Schedule Coordinator, the NYISO, or both shall forecast the likelihood of the occurrence of states other than the Normal State as far in advance as possible. If it is predicted that Load Relief, either by Voltage Reduction or Load Shedding, may be necessary during a future period, the NYISO shall notify all TOs and preparatory arrangements shall be made for corrective measures requiring substantial lead time, including:

- a. Curtailment of interruptible load [Special Case Resources (SCR) & Emergency Demand Response Programs (EDRP)]
- b. Manual (local) Voltage Reduction
- c. Curtailment of non-essential Market Participant Load

- d. Voluntary curtailment of large Load Service Entities (LSE) customers
- e. Public appeals

Transmission Owners shall develop the necessary communication policies with their Transmission Customers. The specific operating methods used by each TO are not necessarily identical. The NYISO shall coordinate such methods in order to achieve uniform results.

In the event that a TO loses communications with the NYISO the TO shall operate its system in accordance with the procedures defined in this Manual.

1.2.3. Generator Response During Reserve Activation

Units with or without a Reserve Award

Each unit is expected to respond to a reserve pickup 10-minute basepoint at its emergency response rate as bid. If the unit exceeds the given basepoint within the reserve pickup, it will be paid for the overgeneration. However, the unit must return to its RTD basepoint, which will be consistent with the Locational Based Marginal Pricing (LBMP), within three RTD intervals (15 min) following termination of the reserve pickup. The unit will also be paid for overgeneration during that grace period.

1.3. Governmental and Public Relations Notification Procedures

The NYISO is required to notify federal and state government agencies, interconnected systems, and the designated NYISO External Affairs contact when unusual operating conditions occur on the NYS Power System.

1.3.1. NYISO – Transmission Owner Emergency Notifications

When disturbance events occur, the NYISO and the Transmission Owners must share information to ascertain the state of the system and to provide clear notification to the appropriate groups to meet NYISO and TO reporting criteria.

The NYISO is responsible for the continuous monitoring and assessment of conditions on the NYS Power System. In order to facilitate the NYISO's duty to communicate, TOs shall notify the NYISO of significant disturbance events on their systems.

The NYISO and TOs are required to file reports to the Department of Energy (DOE) for events that are identified and listed in DOE Form OE-417 as well as NERC/NPCC for EOP-004. In the case of events on the facilities that are ISO Controlled, the NYISO will collect information readily available and may request supporting information from the appropriate TOs, if needed. Events that are directed by the NYISO, such as

Load Shedding and Voltage Reduction, need not be reported by the TOs. The NYISO will report on behalf of the NYCA.

Events occurring on facilities *not* ISO Controlled may still require reporting by the appropriate TOs. The NYISO needs to be made aware of these events and may also need to report on them. To ensure information flow and consistency, TOs will send copies of their reports to the NYISO when issuing these reports to the DOE.

Methods of Reporting

TO System Operators will verbally notify the NYISO of local conditions and system status. If unilateral corrective action by the Transmission Owner(s) is required as a result of a violation severe enough to require immediate action, the TO System Operators must keep the NYISO informed as soon as the initial event has been secured.

TO System Operators will e-mail copies of their reports to reliability_compliance@nyiso.com. In the event that e-mail is not functioning, the form will be faxed to the NYISO Control Room. These reports shall be made concurrent with DOE/NERC/NPCC reporting.

1.3.2. NYS Public Service Commission (PSC) Notification

The NYISO shall notify the PSC within one hour, 24 hours per day, when any of the following unusual operating conditions occurs:

- Impending power supply shortfall
- Curtailed electric use
- Voltage Reduction
- Load Shedding
- Unusual events as defined by the PSC
- Major outages in neighboring systems

Information reported to the PSC shall be telephoned to the first individual on the PSC Notification List who is available. The NYISO also shall immediately notify the NYISO Operations Management.

NYISO Management shall notify the PSC on the next business day when other NYS Power System emergencies occur. NYISO Management also shall respond to requests for additional information on conditions reported by the NYISO.

When a Major Emergency is declared, the NYISO shall complete the part of the form in [Attachment F](#) of this Manual that applies to the incident. The NYISO shall supply this information directly to the PSC if required, or NYISO Management responsible for notifying the PSC otherwise.

1.3.3. NYISO Public Relations Notification

The NYISO shall notify the designated NYISO External Affairs contact or the designated alternate when system conditions exist that may result in general public awareness of an actual or impending situation.

1.4. Communications

This section describes communication procedures among the NYISO, the TOs, and neighboring Reliability Coordinators during Alert, Major Emergency, and Restoration States.

1.4.1. Emergency Notification

When an Alert State or Major Emergency State occurs, the NYISO shall communicate with the affected TO(s) to determine the nature of the problem and to make a preliminary estimate of the assistance required.

The NYISO shall notify all TOs via the Emergency Hot Line System that an Alert State or Major Emergency State exists.

When the Restoration State occurs, the NYISO shall notify all TOs via the Emergency Hot Line System that a Restoration State exists.

1.4.2. Non-Emergency Communications

Transmission Owners from non-affected areas who wish to talk with NYISO for communications not related to the Major Emergency shall have their calls responded to as system conditions dictate.

Transmission Owners requesting information on routine business may contact the NYISO; non-emergency communications shall be kept as brief as possible.

TOs shall notify the NYISO immediately of transmission line status changes in non-affected areas.

1.4.3. Emergency Status Updates

As soon as possible after the extent of the system disturbance is determined, the NYISO shall notify all TOs and neighboring Reliability Coordinators of the operating state of the NYS Power System. Neighboring Reliability Coordinators shall be notified via telephone and if appropriate the NERC Reliability Coordinator Information System (RCIS) shall be updated.

The NYISO shall issue reports to the TOs and the neighboring Reliability Coordinators as significant changes occur.

1.4.4. Dissemination of Emergency Communications

When a communication regarding an emergency situation or another significant event not covered in other sections of this Manual is received at the NYISO, the NYISO shall communicate the message to all TOs.

When such a communication is received at a TO Energy Control Center, the TO shall notify the NYISO of the content of the communication. The NYISO shall then notify all TOs.

1.5. Emergency Communication Systems

The NYISO uses several emergency communication systems to coordinate emergency actions and disseminate information during emergency conditions. The following systems are described in this section:

- Emergency Hot Line System
- Load Shed Alarm System
- Alternate Emergency Hot Line
- NERC Reliability Coordinator Information System

1.5.1. Emergency Hot Line System

The Emergency Hot Line System connects the Primary and Alternate Control Centers of all TOs with the NYISO Control Centers. The Emergency Hot Line System provides for notification of Emergency conditions by the NYISO simultaneously to all TOs.

The primary purpose of the Emergency Hot Line System is to notify all TOs that an abnormal condition exists on the NYS Power System. Corrective measures for the situation are directed by the NYISO. The NYISO shall use the Emergency Hot Line System for the following purposes:

- Notifying all TOs that Emergency Transfer Criteria are in effect or terminated.
- Notifying all TOs that a reserve pickup has been activated.
- Declaring or terminating an Alert State, a Major Emergency State, or a Restoration State.
- For Voltage Reduction, or Load Shedding.
- Other communications at the discretion of the NYISO.

The Emergency Hot Line System consists of two paths, designated "A" and "B" from the NYISO Control Centers to each TO Primary and Alternate Energy Control Center, and telephone sets at the TO Energy Control Centers. When a call is initiated by the NYISO, one path from each location is connected to the call.

Equipment in the NYISO Control Centers provides a visual indication to the NYISO as to which TO telephones are on line (off-hook). Visual alarms also indicate any Emergency Hot Line System malfunctions.

Only the NYISO can initiate a conference call connecting all TOs.

1. Upon receiving an Emergency Hot Line signal from the NYISO, each TO shall join the conference without announcing their identity. NYISO Emergency Hot Line communication protocol is to provide information to the TOs. When a directive is issued, the TO will be required to repeat back the directive.
2. If more than ten seconds elapse and all TOs are not on the line, the NYISO shall note which TO(s) is/are not on line and then shall issue necessary instructions. Upon completion of the message, the NYISO shall instruct the non-responding TO(s) by other means.
3. Transmission Owners shall remain on the line until the NYISO indicates the message is complete.
4. A TO may request assistance in meeting a contingency by using the Emergency Hot Line System to contact the NYISO. The NYISO may then conference the remaining TOs on the Emergency Hot Line System if conditions warrant.

Testing of the Emergency Hot Line System shall be initiated by the NYISO on a weekly basis, unless it is used in the course of daily operations. The NYISO receives an indication of any Emergency Hot Line System malfunction and has continuous indication of which TO telephones are off-hook.

The NYISO shall advise all TOs if the Emergency Hot Line System is out of service or is expected to be out of service, and shall advise all TOs regarding its restoration to normal operation.

The NYISO shall report any trouble on the Emergency Hot Line System to the service provider. TOs shall report any problems to the NYISO.

1.5.2. Load Shed Alarm System

The Load Shed Alarm System operates a visual Load Shed indicator in each TO Energy Control Center.

When the NYISO orders a TO to shed load, the NYISO shall immediately activate the Load Shed Alarm System, which activates the visual Load Shed indicator in the TO's Energy Control Center.

For additional detailed information about the use and testing of the Load Shed Alarm System, see section 7 of this Manual.

1.5.3. Alternate Emergency Hot Line

The Alternate Emergency Hot Line consists of telephones with preset conferencing capability for all TOs. When conferencing using this system is required, Transmission Owners must acknowledge this call on their designated telephones when answering, since the NYISO does not have off-hook indication.

Transmission Owners shall acknowledge calls with the name of the TO and the Operator's name.

The NYISO shall test the conferencing capability of the Alternate Emergency Hot Line on a weekly basis and log the results. The NYISO shall report any trouble on the Alternate Emergency Hot Line to the service provider. TOs shall be responsible for their designated telephones.

The designated telephones of TOs are programmed for conferencing by the NYISO. Any change in telephone numbers requires reprogramming. The TO shall notify the NYISO of any change in telephone numbers in advance. The NYISO shall have the change implemented.

1.5.4. NERC Reliability Coordinator Information System

The system the Reliability Coordinators use to post messages and share operating information in real time is called the Reliability Coordinator Information System (RCIS).

2. Alert State

This section describes the Alert State.

2.1. Definition of the Alert State

The Alert State exists when conditions on the NYS Power System are more severe than in the Warning State. Immediate actions are required to return the NYS Power System to the Normal State.

2.2. Alert State Criteria

The Alert State exists when the following occur:

If a transmission facility, defined as the NYISO Controlled Transmission System becomes overloaded, relief measures shall be applied immediately to bring the loading within established ratings.

1. Pre Contingency (Actual) Flow Criteria

- Normal Transfer criteria: When a facility becomes loaded above its Long-Term Emergency (LTE) rating, but below its Short-Term Emergency (STE) rating for less than five (5) minutes
- *Emergency Transfer Criteria are invoked:* Actual loading of equipment defined as the NYISO Controlled Transmission System is greater than Normal rating but less than or equal to Long-Term Emergency (LTE) rating for greater than 30 minutes and may exist up to four continuous hours (or such longer period as may be established by the Rating Authority).

2. Post Contingency Flow Criteria

Single Circuit Criteria:

- *Emergency Transfer Criteria are invoked:* Predicted flow of equipment defined as the NYISO Controlled Transmission System is greater than Short-Term Emergency (STE) rating and corrective action could be taken to reduce the flows under STE in 5 minutes and under LTE within 10 minutes following the contingency **AND** predicted flow has not exceeded its STE rating for greater than 30 minutes.

Two adjacent circuits on the same structure Criteria or stuck circuit breaker contingencies:

- *Emergency Transfer Criteria are invoked:* Post Contingency flow may exceed STE rating.

3. The actual voltage on any bus listed in Table A-2 is below its pre-contingency low limit and is indicative of a system Voltage Collapse or above its pre-contingency high limit for less than 15 minutes or is above its post-contingency high limit for less than 10 minutes.
4. Post-contingency flows exceed IROL limits associated with Voltage Collapse for less than 15 minutes and by less than 5%.
5. Sufficient 10-Minute Reserves exist to meet the requirements as specified in the *NYISO Transmission and Dispatching Operations Manual* (available from https://www.nyiso.com/documents/20142/2923301/trans_disp.pdf/9d91ad95-0281-2b17-5573-f054f7169551), but only if Quick Response Voltage Reduction is counted, and/or there are sufficient sales off the NYISO reference bus, and the appropriate Reliability Coordinator has been notified that those sales are being counted or curtailed by the NYISO based on the Reliability Coordinator's ability to have the transaction curtailed.
6. A NYISO IROL stability limit is exceeded for less than 15 minutes and by less than 5%.
7. The ACE is greater than +/-500 MW for less than 10 minutes.
8. The System Frequency is between 59.90 and 59.95 or between 60.05 and 60.10.
9. Partial communications, computer control or indication facilities necessary to monitor these criteria are not available and, in the judgment of the NYISO, the system is in jeopardy.
10. A neighboring Reliability Coordinator is in Voltage Reduction or Load Shedding, but has not requested that the NYISO go into Voltage Reduction.
11. A situation involving impending severe weather or severe Solar Magnetic Disturbances exists.
12. An Operating Reserve deficiency is predicted.

2.3. Responses to the Alert State

When an Alert State is declared by the NYISO, the NYISO and the TOs shall perform the actions described in this section.

NYISO Actions

The NYISO shall monitor system conditions at all times and determine the action(s) listed below that are necessary to return the NYS Power System to the Warning State and, if possible, to the Normal State.

1. Coordinate actions with TOs and Reliability Coordinators.

2. Communicate as soon as possible with all TOs, via the Emergency Hot Line System, that an Alert State has been declared, stating the reasons for the change of state.
3. Initiate one or more of the following remedial actions based upon severity and time constraints.
 - a. Adjust phase angle regulators.
 - b. Shift or start generation in order to obtain additional reactive power (MVar) control.
 - c. Activate reserves.
 - d. Adjust reactive sources and transformer taps.
 - e. Perform Generation shifts.
 - f. Modify Interchange Schedules.
 - g. Request NYS Transmission System facilities that are out of service for maintenance be returned to service.
 - h. Request NYS Transmission System facilities that are in service be removed from service where appropriate.
 - i. Implement Manual Voltage Reduction.
 - j. Call for a reserve pick-up.
 - k. Take actions to maintain operating reserve, in accordance with the procedures described in section 4.4 of this Manual.
 - l. Request Market Participants and the TOs to
 - Curtail non-essential Market Participant load.
 - Curtail interruptible load in accordance with contractual arrangements.
 - Request large industrial and commercial customers to curtail load voluntarily.
 - m. Move Generation to Upper Operating Limit Emergency (UOLe).
 - n. Request maximum generation pick-up at emergency response rates.
 - o. Invoke Emergency Transfer Criteria (ETC).
 - p. Purchase Emergency Energy from neighboring Reliability Coordinators.
 - q. Issue general radio and television appeals to the public to restrict unnecessary use.
 - r. Communicate with neighboring Reliability Coordinators that are creating the condition and request relief.
 - s. Request assistance from neighboring Reliability Coordinators.

- t. Activate SCR and EDRP Resources.
- 4. When a situation exists in which the effects of impending severe weather may severely jeopardize the security of the NYS Power System, the NYISO shall notify all TOs of the impending conditions and declare an Alert State.
- 5. For all contingencies that would result in an exceedance of Alert State criteria, the NYISO shall determine the corrective actions that would be necessary if the contingency occurs, through coordination with the affected TOs.
- 6. Communicate as soon as possible with all TOs via the Emergency Hot Line when the Alert State has been terminated.

Transmission Owner Actions

The TOs shall perform the following:

- 1. Coordinate and implement corrective actions as required by the NYISO.
- 2. Monitor local weather conditions and inform NYISO if local severe weather conditions occur or if they are predicted to occur by regional forecasts.
- 3. Monitor conditions with respect to their own systems.
- 4. Whenever a TO observes a system condition that exceeds the current NYISO system state, the TO shall take the following actions:
 - a. Notify the NYISO that a local emergency exists.
 - b. Request assistance of the NYISO, as required.
 - c. Disconnect the affected facility if there is an overload on a transmission facility or if an abnormal voltage or reactive condition persists and equipment is endangered. In doing so, the Transmission Owner shall notify the NYISO who will inform all neighboring Transmission Owners and Reliability Coordinators impacted by the disconnection prior to switching if time permits, otherwise immediately after switching.

Other Considerations:

1. For all contingencies that would result in a violation of the Alert State criteria, corrective action, which would be necessary if the contingency occurs, shall be determined through coordination between the NYISO and the affected TOs.
2. If the NYISO foresees an extended period of operation in the Alert State, a canvass of the TOs shall be made to determine if assistance can be provided through other appropriate means.

3. Major Emergency State

This section describes the Major Emergency State.

3.1. Definition of the Major Emergency State

The Major Emergency State exists when conditions on the NYS Power System are more severe than in the Alert State. Immediate actions are required to avoid damage to power system equipment or loss of load and to return the NYS Power System to the Normal State.

3.2. Major Emergency Criteria

The Major Emergency State exists when the following occur:

1. Pre Contingency (Actual) Flow Criteria

Normal Transfer Criteria

- A transmission facility which constitutes part of the NYISO Controlled Transmission System becomes loaded above its Short-Term Emergency (STE) rating.
- *Normal Transfer Criteria:* A transmission facility which constitutes part of the NYISO Controlled Transmission System becomes loaded above its Long-Term Emergency (LTE) rating for five (5) minutes or greater. At the discretion of the NYISO, the Major Emergency State may be declared immediately if system conditions warrant.
- *Emergency Transfer Criteria are invoked:* A transmission facility which constitutes a part of the NYISO Controlled Transmission remains loaded above its Normal rating, but equal to or less than its LTE rating for more than four continuous hours or such longer period as may be established by the Rating Authority.

2. Post Contingency Flow Criteria

Single Circuit Criteria:

- *Emergency Transfer Criteria are invoked:* A transmission facility which constitutes a part of the NYISO Controlled Transmission System remains at a loading level for greater than 30 minutes, which would cause its Short-Term Emergency (STE) rating to be exceeded following a contingency, **or**
- *Emergency Transfer Criteria are invoked:* A transmission facility which constitutes a part of the NYISO Controlled Transmission System becomes loaded to a level that would cause its STE rating to be violated and corrective action could not be taken

rapidly enough to meet the requirements, under STE in 5 minutes and under LTE within 10 minutes of initial overload, once the contingency occurs.

3. The actual voltage on any bus listed in Attachment A, Table A.2 is:
 - a. Below its pre-contingency low limit or above its pre-contingency high limit for 15 minutes, and is indicative of a System Voltage Collapse (low voltage) or system problem (high voltage).
 - b. Below its pre-contingency low limit and is indicative of a System Voltage Collapse, and appropriate voltage control measures have already been utilized.
 - c. Below its post-contingency low limit and is indicative of a System Voltage Collapse.
 - d. Above its post-contingency high limit for 10 minutes and is indicative of a system problem.
 - e. Below its pre-contingency low limit for 30 minutes or declines to a level below the midpoint between the pre- and post-contingency low limits and remains there for 15 minutes, and corrective action could not be completed following a contingency to prevent a System Voltage Collapse.
4. A deficiency in 10-Minute Reserve or Operating Reserve exists. If Sufficient 10-Minute Reserve does not exist to meet the requirements as specified in the *NYISO Transmission and Dispatching Operations Manual* (available from https://www.nyiso.com/documents/20142/2923301/trans_disp.pdf/9d91ad95-0281-2b17-5573-f054f7169551), even after Quick Response Voltage Reduction is counted, and/or there are insufficient sales off the NYISO reference bus, and the appropriate Reliability Coordinator has been notified that those sales are being counted or curtailed by the NYISO based on the Reliability Coordinator's ability to have the transaction curtailed.
5. The post-contingency flow on an internal NYCA IROL interface or towards NYCA on an inter-area IROL interface exceeds limits associated with a Voltage Collapse by 5% or more or those limits are exceeded by less than 5% and corrective measures are not effective within 15 minutes.
6. The power flow on an internal NYCA IROL interface or towards NYCA on an inter-area IROL interface exceeds its stability limit by 5% or more or its stability limit is exceeded by less than 5% and corrective measures are not effective within 15 minutes.

7. The Area Control Error (ACE) is greater than +/-500 MW and normal corrective procedures are not effective within 10 minutes.
8. System Frequency declines to 59.9 Hz or increases to 60.1 Hz, and is sustained at that level or continues to decline below 59.9 Hz or increase above 60.1 Hz.
9. Communications, computer, control, and indications facilities necessary to monitor these criteria are not available and, in the judgment of the NYISO, the system is in serious jeopardy.
10. A neighboring Reliability Coordinator already in Voltage Reduction has requested assistance that can only be achieved through Voltage Reduction within the NYCA.
11. Portions of the NYISO system are separated.
12. The NYCA is overgenerating, and steps outlined in the section 4.7, "Overgeneration," of this Manual have been taken, and are not sufficient to reduce the ACE to zero.

3.3. Responses to Major Emergency

The NYISO has the authority and the responsibility to declare that a Major Emergency State exists whenever any of the defined conditions are met.

TOs have the responsibility to determine that an Emergency exists on their own system and to notify the NYISO of the conditions.

3.3.1. Major Emergency Declared by NYISO

When a Major Emergency is declared by the NYISO, the NYISO and the TOs shall perform the actions described in this section.

NYISO Actions

The NYISO shall monitor system conditions at all times and determine the action(s) listed below that are necessary to alleviate the Emergency and Order that such measures be implemented.

1. Coordinate actions with TOs and other Reliability Coordinators.
2. Communicate as soon as possible with all TOs, via the Emergency Hot Line System, that a Major Emergency has been declared, stating the reasons for the change of state.
3. Suspend all generation status changes until the NYISO determines that they will not aggravate system conditions.
4. Verify the status of the NYS Power System with all TOs whose facilities are involved in the Major Emergency.

5. Determine which remedial actions must be taken by any of the TOs to alleviate the Major Emergency.
6. Order one or more of the following remedial actions in the appropriate sequences based upon severity and time constraints:
 - a. Adjust phase angle regulators.
 - b. Shift or start generation in order to obtain additional reactive power (MVar) control.
 - c. Activate reserves.
 - d. Adjust reactive sources and transformer taps.
 - e. Perform Generation shifts.
 - f. Modify Interchange Schedules.
 - g. Order NYS Transmission System facilities that are out of service for maintenance to be returned to service.
 - h. Order NYS Transmission System facilities that are in service to be removed from service where appropriate.
 - i. Order the affected facility or facilities disconnected if there is an overload on a transmission facility or if an abnormal voltage or reactive condition persists and equipment is endangered.
 - j. Implement Manual Voltage Reduction.
 - k. Call for a reserve pick up.
 - l. Take actions to maintain operating reserve, in accordance with the procedures described in section 4.4 of this Manual.
 - m. Request Market Participants and the TOs to:
 - Curtail non-essential Market Participant load.
 - Curtail interruptible load in accordance with contractual arrangements.
 - Order large industrial and commercial customers to curtail load voluntarily.
 - n. Order Generation to Upper Operating Limit Emergency (UOLe).
 - o. Order maximum generation pick-up at emergency response rates.
 - p. Invoke Emergency Transfer Criteria (ETC).
 - q. Purchase Emergency Energy from neighboring Reliability Coordinators.
 - r. Issue general radio and television appeals to the public to restrict unnecessary use.

- s. Communicate with neighboring Reliability Coordinators that are creating the condition and request relief.
 - t. Request assistance from neighboring Reliability Coordinators.
 - u. Activate SCR and EDRP Resources.
 - v. Order Quick Response Voltage Reduction in those areas where it will relieve the condition that placed the NYISO in the Major Emergency. This step shall be taken immediately if the need for Load Shedding appears likely.
 - w. Determine the amount and location of Load Shedding required to relieve the condition that placed the NYISO in the Major Emergency and order the Load Shedding. Such orders shall be followed immediately by a visual signal to the TO(s) involved via the Load Shed Alarm System.
7. Arrange to notify all TOs and neighboring Reliability Coordinators, and keep them informed, on a timely basis, of the current status of the NYS Power System.
 8. Coordinate the restoration of the NYS Power System and the termination of Load Relief measures, as conditions permit.
 9. Communicate as soon as possible with all TOs, via the Emergency Hot Line System, when the Major Emergency is terminated.

Transmission Owner Actions

The TOs shall perform the following:

1. Execute Orders received from the NYISO in accordance with this section.
2. Notify the NYISO immediately upon completion of Orders received from the NYISO.
3. Inform the NYISO of changes in system status.
4. Coordinate corrective action with the NYISO.
5. Disconnect the affected facility if there is an overload on a transmission facility or if an abnormal voltage or reactive condition persists and equipment is endangered. In doing so, the Transmission Owner shall notify the generation owner and the NYISO. The NYISO will inform all neighboring Transmission Owners and Reliability Coordinators impacted by the disconnection prior to switching if time permits, otherwise immediately after switching.

3.3.2. Emergency Declared by Transmission Owner

When TOs declare that an Emergency exists on their system, the NYISO and the TOs shall perform the actions described in this section.

Transmission Owner Actions

The TOs shall perform the following:

1. Monitor conditions with respect to their own systems at all times.
2. Whenever conditions exist that are within the criteria defined as a Major Emergency, immediately notify the NYISO that a Major Emergency condition exists.
3. Direct the operation of the generation which is connected to its transmission system and transmission facilities to effect prompt remedial action during Emergencies on their own systems.
4. Direct immediate corrective action to prevent cascading events that may cause equipment damage.
5. Keep the NYISO fully informed of local conditions and system status.
6. Request assistance from the NYISO, if needed.

NYISO Actions

The NYISO shall perform the following:

1. Evaluate the problems on the TO system that requires assistance and shall determine whether a Major Emergency should be declared.
2. If the NYISO declares a Major Emergency, the NYISO shall initiate appropriate actions as described in this section.
3. If the NYISO does not declare a Major Emergency, the NYISO shall perform the following actions:
 - a. Notify all TOs, via the Emergency Hot Line System, that a Major Emergency does not exist, but that they should be prepared to provide assistance if it becomes necessary.
 - b. Coordinate any assistance requested by the TO that has declared that an Emergency exists.
4. If the TO does not properly complete actions required to maintain reliability of the BES per NERC requirements, NYISO will direct actions as Reliability Coordinator to ensure reliability of the BES.

4. Monitored Conditions

This section describes all monitored conditions.

4.1. Transmission Rating Exceedance

A Major Emergency may exist due to a transmission rating exceedance for one of the following reasons:

- Actual Long-Term Emergency (LTE) rating exceedance for five (5) minutes or greater
- Actual Long Term Emergency (LTE) rating exceedance with no time delay at the NYISO's discretion
- Actual Short-Term Emergency (STE) Rating Exceedance
- Post-Contingency Short-Term Emergency (STE) Rating Exceedance

4.1.1. Actual LTE and STE Rating Exceedance

If a transmission facility that constitutes a part of the NYISO Controlled Transmission System (as defined in the *NYISO Outage Scheduling Manual*, available from https://www.nyiso.com/documents/20142/2923301/trans_disp.pdf/9d91ad95-0281-2b17-5573-f054f7169551) becomes overloaded, the NYISO shall apply relief measures immediately to bring the flow 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 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 below its LTE rating within 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 below its Normal rating within 30 minutes of the initial overload.

In the event this cannot be accomplished, the NYISO shall invoke Emergency Transfer Criteria (ETC).

Emergency Transfer Criteria (ETC)

When there is insufficient capacity or voltage support to maintain facilities within Normal Transfer Capabilities, facilities may, within the guidelines set forth in this document, be allowed to operate to their Emergency Transfer Capabilities. Facilities operating outside their Normal Transfer Capabilities are operating under “Emergency Transfer Criteria.”

- d. When a facility has been loaded for four 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 30 minutes.

4.1.2. Post-Contingency STE Rating Exceedance

If a transmission facility which constitutes a part of the NYISO Controlled Transmission System 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 reduce loading under STE in 5 minutes and under LTE within 10 minutes of initial overload, this will be treated as an IROL exceedance. 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. To prevent an IROL Violation, pre-contingency action is required to be taken so that the IROL exceedance is not greater than 30 minutes.

4.2. High or Low Voltage

Voltage control of the NYISO Controlled Transmission System as defined in Attachment A, Table A.2, shall be coordinated by the NYISO to provide adequate voltage at all times to maintain power transfer capability. When there is a Major Emergency due to voltage problems, the NYISO shall notify all TOs of the condition and shall direct the necessary corrective action.

- a. If the actual voltage at any bus listed in Attachment A, Table A.2, remains below its pre-contingency low limit for 30 minutes or declines to a level below the mid-point between the pre and post contingency low limits and remains there for 15 minutes, then the NYISO shall discuss the situation with the TO(s) to determine if corrective action could be taken following a contingency to prevent a System Voltage Collapse.

- b. If it is anticipated that adequate time will not exist to prevent a Voltage Collapse following a contingency, then the NYISO shall direct the necessary corrective action, up to and including Load Shedding, to maintain a minimum voltage equal to the pre-contingency low limit.
- c. If the actual voltage at any bus listed in Attachment A, Table A.2, declines below the post-contingency low limit and is indicative of a System Voltage Collapse, then the NYISO shall immediately order Load Shedding in the amount and at the locations deemed necessary to maintain a minimum voltage equal to the pre-contingency low limit.

4.3. Post-Contingency Voltage IROL Exceedance

Less Than 5%

- a. If the post-contingency loading of an internal NYCA IROL interface or the post-contingency flow towards the NYCA on an inter-Reliability Coordinator interface exceeds the IROL limits associated with a voltage collapse by less than 5%, then measures shall be applied immediately to bring the loading to established limits within 15 minutes.
- b. If loadings are not below the limit within 15 minutes, then 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.
- c. NERC Reliability Standards state the IROL flows must be below the limits within 30 minutes. In the event Load Shedding is required to prevent an IROL violation, it must be ordered and implemented prior to 30 minutes from the initial overload to ensure that limits have not been exceeded for greater than 30 minutes.

By 5% or More

- a. If the post-contingency loading of an internal NYCA IROL interface or the post-contingency flow towards the NYCA of an inter-Reliability Coordinator interface exceeds the IROL limits associated with a voltage collapse by 5% or more, then 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.
- b. If loads are not below 105% of the limit within 15 minutes from the initial overload, then Load Relief measures must be instituted. NERC Reliability Standards state the IROL flows must be below the limits within 30 minutes. In the event Load Shedding is required to prevent

an IROL violation, it must be ordered and implemented prior to 30 minutes from the initial overload to ensure that limits have not been exceeded for greater than 30 minutes.

4.4. Operating Reserve Deficiency

Daily Operation

It is the responsibility of the NYISO to monitor Operating Reserve in both day-ahead and in day for the expected system peak.

Shortage Operating Reserve – Day-Ahead Forecast

If the Security Constrained Unit Commitment (SCUC) program indicates that NYISO will be short of Operating Reserves in the DAM, or if SCUC has already been completed and conditions then change such that the forecast indicates there will be an Operating Reserve deficiency, the NYISO will determine the action(s) listed below that are necessary:

In all of the following steps where additional capacity resources are being evaluated, the NYISO shall determine if each step is sufficient to eliminate the deficiency. In addition, all notifications made to TOs shall include approximate next-day starting time and duration associated with each curtailment step.

1. As appropriate, initiate an e-mail to Market Participants requesting additional bids for the specific category required. Perform a Supplemental Resource Evaluation (SRE) Request from the Market Information System (MIS) database of unaccepted/uncommitted bids for additional capacity for the hours specified and commit/schedule the generation.
2. Determine the amount of energy available from external NYCA Installed Capacity (ICAP) providers that were not selected in the DAM. Notify the external ICAP providers to supply the capacity. Count energy associated with these external ICAP providers as NYISO Operating Reserve. Advise the affected external Reliability Coordinator accordingly.
3. Count energy associated with external energy sales by NYCA ICAP providers as NYISO Operating Reserve. Advise the affected external Reliability Coordinator accordingly.
4. Notify NYISO Stakeholder Services of predicted day-ahead system conditions.
5. Notify the appropriate Market Participants to prepare to make Special Case Resources (SCR) available for the next day and count expected relief.
6. Notify the appropriate Market Participants to prepare to make Emergency Demand Response Program (EDRP) resources available for the next day and count expected relief.

7. Direct the TOs to notify the appropriate Market Participants to be prepared for the potential dispatch to UOLe for the next day.
8. Initiate an Emergency Energy Alert in accordance with NERC Reliability Standards for the next day via the RCIS; follow NPCC notification requirements, and notify NYISO External Affairs, PSC, and the NYS Department of Environmental Conservation (DEC).
9. Request the TOs to prepare to curtail non-essential company loads for the next day and to notify appropriate Market Participants to prepare to curtail non-essential company load for the next day.
 - Request the TOs to notify interruptible customers in accordance with contractual agreements to prepare to make interruptible load available for curtailment for the next day.
 - Request the TOs with Manual Voltage Reduction equipment to prepare to initiate procedures to reduce voltage by 5% for the next day.
 - Request the TOs to contact large industrial and commercial customers to request voluntary curtailment of load the next day.
 - Request the TOs to make general radio and TV appeals to the public to request voluntary curtailment of electric power.
10. Count Load Relief that can be implemented within 10 minutes using Quick Response Voltage Reduction as NYISO 10-minute reserve.

4.4.1. Shortage Operating Reserve New York City – Day-Ahead Forecast

New York State Reliability Council Reliability Rules

G.1.R3. Locational Reserves (New York City) Sufficient *ten (10) minute operating reserves* shall be maintained in the New York City (NYC) *zone* as follows:

- a. R3.1.The *ten (10) minute operating reserve* for *NYCA* shall be determined in accordance with Reliability Rules.
- b. R3.2.A percentage of the *ten (10) minute NYCA operating reserves* equal to the ratio of the NYC *zone peak load* to the statewide peak Load shall be required to be selected from *resources* located within the NYC *zone*.
- c. R3.3.NYC *zone ten (10) minute operating reserves* shall be maintained at all levels of dispatch, except as necessary to alleviate *emergency* conditions.

SCUC produces a daily report provided to the NYISO which indicates if the NYC zone is deficient in 10-Minute Reserve. The report is distributed with the daily SCUC documents within the NYISO. In the event that the NYISO sees a deficiency, the NYISO will notify Consolidated Edison of the operating day and hours that SCUC indicates a shortage of NYC 10-Minute reserve.

Actions that may be taken to establish NYC reserves for the hours of the deficiency:

- Perform a Supplemental Resource Evaluation (SRE) Request from the Market Information System (MIS) database of unaccepted/uncommitted bids for additional 10-Minute Reserve or energy for the hours deficient is NYC reserve and commit/schedule the generation.
- Determine if neighboring Reliability Coordinators have sufficient reserve and energy to support transaction to NYCA so that NYC reserves can be reestablished.
-
- In the case there are insufficient bids to meet the NYC reserve requirement, make appropriate notifications to SCR and EDRP resources for the operating day in the NYC Zone to allow these resources to be counted.
- If the actions above do not satisfy the NYC reserve requirement, notify Consolidated Edison that Voltage Reduction is being counted to meet the NYC reserve requirement.

4.4.2. Shortage Operating Reserve – In Day

The NYISO will monitor the total operating capacity in day. The NYISO shall prepare the NYISO Capacity Report twice daily in anticipation of the morning peak and evening peak load. If deficiency in Operating Reserves is still forecasted, or if Real-Time Commitment (RTC) forecasts a shortage of reserve or energy for the next hour, the NYISO will take the steps not taken in the DAM that time permits to meet reserve requirements. Additionally, the NYISO will take any or all of the following actions as required based on the category of Operating Reserve Shortage:

In all of the following steps where additional capacity resources are being evaluated, the NYISO shall determine if each step is sufficient to eliminate the deficiency. In addition, all notifications made to TOs shall include approximate starting time and duration associated with each curtailment step.

1. As appropriate, initiate an e-mail to Market Participants requesting additional bids for the specific category required. Perform an SRE Request from the MIS database of unaccepted/uncommitted bids for additional capacity for the hours specified and commit/schedule the generation.

Warning State

1. Determine the amount of energy available from external NYCA Installed Capacity (ICAP) providers that were not selected in the DAM. Notify the external ICAP providers to supply the capacity. Count energy associated with these external ICAP providers as NYISO Operating Reserve. Advise the affected external Reliability Coordinator accordingly.
2. Count energy associated with exports from NYCA to other Reliability Coordinators by NYISO ICAP providers as NYISO Operating Reserve. Advise the affected Reliability Coordinators accordingly.
3. Notify NYISO Special Case Resources (ICAP) of activation during a specified period of time and that they are counted toward NYISO Operating Reserves.
4. Notify EDRP participants of activation during a specified period of time and that they are counted toward NYISO Operating Reserves.
5. Notify NYISO Stakeholder Services of predicted system conditions.
6. Notify the Market Participants to be prepared for the potential of using UOLe operation for the day and direct all Market Participants to follow basepoints.
7. Initiate an Emergency Energy Alert in accordance with NERC Reliability Standards for today via the Reliability Coordinators Information System (RCIS); Notify natural gas pipelines, follow DOE and NPCC notification requirements, and notify NYISO External Affairs, PSC, and DEC.

Declare Alert State

1. Request the TOs, via Emergency Hot Line, to curtail non-essential company loads and to notify appropriate Market Participants to curtail non-essential company loads.
 - Request the TOs, via Emergency Hot Line, to curtail interruptible customers in accordance with contractual agreements.

- Request the TOs with Manual Voltage Reduction equipment, via Emergency Hot Line, to begin procedures to reduce voltage by 5%.
 - Request the TOs, via Emergency Hot Line, to contact large industrial and commercial customers to request voluntary curtailment of load.
 - Request the TOs, via Emergency Hot Line, to make general radio and TV appeals to the public to request voluntary curtailment of electric power.
2. Count Load Relief that can be implemented within 10 minutes using Quick Response Voltage Reduction as NYISO 10-minute reserve.

4.4.3. Shortage Operating Reserve – Real Time

The NYISO will monitor the total Operating Reserve using the reserve monitor programs. If an operating shortage occurs, the NYISO will take any of the following steps that have not already been taken. Additionally, the NYISO will take any or all of the following actions as required based on the category of reserve shortage:

Following a Contingency

Based on the New York State Reliability Council rules:

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

A Non-Contingency Based Shortage

Based on NPCC policy:

Each *Area* shall restore its *ten-minute reserve* as soon as possible, and within 90 minutes if it becomes deficient and the deficiency is not a result of a contingency that is a *reportable event*.

Each *Area* shall restore its *thirty-minute reserve* within four hours if it becomes deficient.

Declare Alert State

1. If deficient of 10-minute synchronized reserve direct all Market Participants to convert 30-minute non-synchronized reserve or 10-minute non-synchronized reserve to energy or 10-minute synchronized reserve.
2. If deficient of 10-minute reserve:

- Direct all Market Participants to convert 30-minute reserve to energy or 10-minute reserve.
 - Count or curtail energy associated with exports from NYCA to other Reliability Coordinators by NYISO ICAP providers as NYISO Operating Reserve based on the Reliability Coordinator's ability to have the transaction curtailed. Advise the affected external Reliability Coordinator accordingly.
 - Count the load reduction available from Quick Response Voltage Reduction as 10-minute reserve.
 - Activate use of UOLe limits,
 - Direct TOs, via Emergency Hot Line, to notify the appropriate Market Participants that the NYISO is dispatching to UOLe and that they are to follow basepoints and to make all generator capability available
 - Purchase Emergency Energy from sources outside NYISO.
3. If deficient of 30-minute reserve:
- Count or curtail energy associated with exports from NYCA to other Reliability Coordinators by NYISO ICAP providers as NYISO Operating Reserve based on the Reliability Coordinator's ability to have the transaction curtailed. Advise the affected external Reliability Coordinator accordingly.
 - Count the load reduction available from Quick Response Voltage Reduction as 10-minute reserve to increase 10 minute reserve thus increasing 30 minute reserve.
 - Activate use of UOLe Limits,
 - Direct TOs, via Emergency Hot Line, to notify the appropriate Market Participants that the NYISO is dispatching to UOLe and that they are to follow basepoints and to make all generator capability available
 - Purchase Emergency Energy from sources outside NYISO

Declare Major Emergency

Initiate an Emergency Energy Alert in accordance with NERC Reliability Standards for today via the Reliability Coordinators Information System (RCIS); Notify natural gas pipelines, follow DOE and NPCC notification requirements, and notify NYISO External Affairs, PSC, and DEC. Complete any actions not completed during Warning or Alert states.

4.4.4. Shortage of Meeting Load (Including the Inability to Reach a "0" ACE) – Real Time

Declare Major Emergency

1. Initiate an Emergency Energy Alert in accordance with NERC Reliability Standards for today via the Reliability Coordinators Information System (RCIS); Notify natural gas pipelines, follow DOE and NPCC notification requirements, and notify NYISO External Affairs, PSC, and DEC.
2. Direct TOs, via Emergency Hot Line, to notify the appropriate Market Participants that NYISO is dispatching to UOLe limits, and to continue to follow basepoints.
3. Recall external energy sales provided by NYCA ICAP providers.
4. Notify the appropriate Market Participants to activate NYISO Special Case Resources, if possible.
5. Notify the appropriate Market Participants to activate EDRP, if possible.
6. Purchase Emergency Energy from sources outside NYISO.
7. Direct TOs, via Emergency Hot Line, to implement 5% Quick Response Voltage Reduction on a system wide basis.
8. Request neighboring Reliability Coordinators to implement Voltage Reduction to supply Emergency Energy, provided transmission loading permits.
9. Direct all TOs, via Emergency Hot Line, to notify appropriate Market Participants that the NYSDEC air emissions waiver is in effect and to go to generator maximum capability even if it may result in temporary exceedance of NO_x RACT air emission limits and opacity requirements.
10. Direct all TOs, via Emergency Hot Line, to shed load immediately in sufficient amounts to maintain tie loadings within limits, and return the NYCA ACE to zero within 10 minutes attempting to return the system frequency to 60 hertz in accordance with NYISO criteria.

4.5. IROL Stability Limit Violation

Less Than 5%

- a. If the loading of an internal NYCA IROL interface or the power flow towards the NYCA on an inter-Reliability Coordinator IROL interface exceeds the NYCA IROL stability limit by less than

5%, then measures shall be applied immediately to bring the loading to established limits within 15 minutes.

- b. If loadings are not below the IROL stability limit within 15 minutes, then 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.
- c. NERC Reliability Standards state the IROL flows must be below the limits within 30 minutes. In the event Load Shedding is required, to prevent a IROL violation, it must be ordered and implemented prior to 30 minutes from initial overload to ensure that limits have not been exceeded for greater than 30 minutes.

By 5% or More

- a. If the loading of an internal NYCA IROL interface or the power flow towards the NYCA on an inter-Reliability Coordinator IROL interface exceeds NYCA IROL stability limit by 5% or more, then 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.
- b. If loadings are not below 105% of the IROL stability limit within 15 minutes from the initial overload, then Load Relief measures must be instituted. NERC Reliability Standards state the IROL flows must be below the limits within 30 minutes. In the event Load Shedding is required, to prevent a IROL violation, it must be ordered and implemented prior to 30 minutes from initial overload to ensure that limits have not been exceeded for greater than 30 minutes.

4.6. High/Low Frequency

Low Frequency

A sustained low frequency of 59.90 Hz is an indication of major load generation imbalance, in which case the NYISO shall declare a Major Emergency. The NYISO will take appropriate action, to correct any under-generation and bring the NYISO ACE back to zero.

If during a Major Emergency resulting from a low frequency condition caused by load-generation imbalance within the NYCA, additional NYISO generation is lost, the NYISO shall immediately order Load Shedding to alleviate the imbalance.

When the frequency decline is so rapid as to preclude analysis and communication amongst the NYISO and TOs, then the following procedures will apply up to permissible LTE ratings:

a. Under Frequency Load Shed (UFLS)

1. In the following approximate percentages:

- a) 7% - 59.5 Hz (fast)
- b) 7% - 59.3 Hz (fast)
- c) 7% - 59.1 Hz (fast)
- d) 7% - 58.9 Hz (fast)
- e) 2% - 59.5 Hz (10 s)

b. 58.5 Hz – If frequency is still declining, then all TOs shall take such steps as are necessary, including separating units to preserve generation, minimize damage and service interruption.

Rapid Frequency Decline

In the event that the frequency decline is so rapid as to prevent operator action, automatic facilities exist to achieve the required Load Shedding as described above, without regard to transmission loading.

High Frequency

A sustained high frequency of 60.10 Hz is an indication of major load generation imbalance, in which case the NYISO shall declare a Major Emergency. The NYISO will take appropriate action to correct any over generation and bring the NYISO ACE back to zero.

4.7. Overgeneration

Over generation is defined as a condition where minimum generation is greater than the minimum system load requirements. Actions are taken to avoid the export of unscheduled excess energy over NYISO tie lines with neighboring Reliability Coordinators.

To the extent that it is possible to anticipate over generation situations, the NYISO shall make every effort to give advance notice. However, even if a forecast of an overgeneration situation has not been issued, the NYISO shall implement the actions contained in this section, as required.

NYISO Actions

During periods of NYCA actual overgeneration, the NYISO shall take actions in the following order to the extent needed to maintain compliance with the NERC BAAL standard, when system conditions and time permit.

1. Request all over generating suppliers that are contributing to the problem to adjust generation to match their schedules.
2. Reduce applicable NYCA dispatchable generation to minimum operating limits (through RTD) and shall suspend regulating margins if required.
3. Request Internal Generators to voluntarily operate in the “manual mode” below minimum dispatchable levels.
4. Attempt to schedule variable load, including pumped hydro resources to alleviate the problem.
5. Request reduction or cancellation of all transactions that contribute to the violation.
6. If the over generation violation persists, the NYISO shall declare a Major Emergency. The NYISO shall then de-commit applicable internal Generators based on their minimum generation bid, in descending order, until the violation is eliminated.

4.8 Procedure for overloads caused by NYISO Controlled Facility Common Tower, Bus or Stuck Circuit Breaker (SCB) contingencies

1. During normal operation, the NYISO shall monitor the state of the system utilizing the NYISO Security Analysis Program. Whenever the predicted post-contingency power flow on a non-NYISO Controlled NERC BES facility exceeds its applicable limit as a result of a NYISO Controlled facility Common Tower, Bus or SCB contingency, the NYISO shall notify the TO.
2. If the predicted post-contingency loading is greater than LTE, but less than or equal to the STE rating of the facility, an action plan should be formulated, or refer to previously agreed upon operating practice for implementation by the TO.
3. If the predicted post-contingency flow exceeds the STE rating of the facility, the NYISO shall determine if the loss of the facility would cause other non- NYISO Controlled NERC BES facilities to exceed STE post-contingency ratings or NYISO Controlled facilities to exceed LTE post-contingency ratings (except where post-contingency flows up to STE ratings are permitted by exceptions noted in Attachment A, to this Manual). The NYISO shall inform the affected TO(s) and jointly develop a strategy for correcting the condition.

4. If the TO cannot relieve the problem using its own resources, the TO shall obtain assistance from the NYISO.
5. If the condition cannot be corrected within 30 minutes of the initial violation the NYISO shall, through coordination with the TO, neighboring TOs, and neighboring Reliability Coordinators, determine and request the actions necessary to provide relief. Such actions shall include:
 - a. Modifications of energy transactions.
 - b. Phase angle regulator adjustments.
 - c. Generation Shift.
 - d. Reserve activation.
 - e. Generation may be requested to UOLe
 - f. Transmission facilities out of service for maintenance to be returned to service.
6. If these measures are insufficient to comply with Normal Transfer Criteria on NYISO Controlled facilities or ETC for non- NYISO Controlled NERC BES facilities within 30 minutes of the initial violation or Operating Reserve cannot be delivered due to transmission limitations for 30 minutes, the NYISO shall take the following actions:
 - a. Notify all TOs via the Emergency Hot Line System that ETC are in effect, for the facility(ies) involved.
 - b. Take action as required to stay within ETC.

The NYISO shall confer with affected TOs. They shall jointly develop strategies to be followed in the event a contingency occurs. Strategies may include preparation for Quick Response Voltage Reduction and/or Load Shedding.

5. Reserved for future use

- 1.

6. Restoration State

This section describes the implementation of the New York Independent System Operator (NYISO) System Restoration Plan. The *NYISO System Restoration Manual* (available from https://www.nyiso.com/documents/20142/2923301/trans_disp.pdf/9d91ad95-0281-2b17-5573-f054f7169551) addresses the development and maintenance of the procedures, documentation, training, and testing related to New York Control Area Restoration Plan.

6.1. Definition of the Restoration State

The Restoration State exists following a system disturbance affecting the NYS Power System where one or both of the following conditions exist:

- An area within the NYCA becomes islanded
- Customer load becomes interrupted, following a disturbance affecting the NYS Power System

Immediate actions are required to return the NYS Power System to the Normal State. The specific conditions defining each state are contained in [Attachment B](#) of this Manual.

6.2. Restoration Criteria

6.2.1. Scope

The NYISO restoration procedures are based on restoring a backbone of high-voltage lines, while allowing operators flexibility to adjust the restoration path for actual system conditions. From this backbone there are a multitude of options to restore transmission, access available generation, and coordinate restoration efforts with the New York transmission owners and neighboring Reliability Coordinator areas.

6.2.2. Strategy

Prompt restoration of the NYCA total customer load is best accomplished by the restoration of the NYS Power System. The New York Control Area (NYCA) Restoration Plan calls for the energization of a 345-kV and 230-kV transmission backbone from Niagara, St Lawrence, and Gilboa Black Start facilities. This transmission backbone consists of three major paths: Buffalo to Utica to Albany to New York City; Massena to Utica; and Buffalo to Binghamton to Albany. From this backbone there are a multitude of options to restore transmission, access available generation, and coordinate with the restoration efforts with the TOs and neighboring Reliability Coordinators. Because the exact extent or nature of a disturbance cannot be predicted, procedures are prepared as general guidelines. The Basic Minimum Power System to be energized consists of the Black Start facilities and the key facilities identified in [Attachment B](#).

6.2.3. Priorities

The following operations shall have the highest restoration priority:

- Energizing the backbone transmission path of the NYS Power System. (Priority shall be given to energizing the Gilboa to Staten Island and Long Island path, while simultaneously restoring from Niagara and St. Lawrence Black Start facilities.)
- Synchronizing the NYS Power System with the interconnection.
- Restoring off-site power supplies to nuclear power plants.

The next priority shall be load restoration. If there is limited energy available within the NYCA, preference shall be given to generating station startup, followed by the restoration of the high-density load portions of the system.

6.2.4. Responsibilities

The NYISO shall maintain the function of Balancing Authority for all portions of the NYCA system. All TO load and generation restoration on the system under NYISO's Balancing Authority shall be coordinated through the NYISO. Some customer load may be picked up during the early stages of restoration to maintain stability and voltage levels, but priority must be assigned to the restoration of the transmission backbone and major transmission ties. TO generation and load balancing operations shall be included in the NYISO-approved TO SRP plan. Any real time adjustments to the SRP planned generation and load operations shall be coordinated with the NYISO prior to implementation.

Each TO shall have a restoration procedure to meet local priorities. During restoration, each TO shall coordinate restoration within its own area on portions of the system isolated from the NYISO Black Start facilities and/or ties to neighboring Reliability Coordinators. TO load restoration must not delay the restoration of inter- and intra-area ties. The NYISO may order Load Shedding as appropriate to ensure that generation capacity is available to achieve the restoration priorities where load additions are impeding the NYS Power System restoration.

During the Restoration State, the NYISO may reserve up to 700 MW of generation capacity to facilitate restoration of the Con Edison NYC area 345-kV transmission path from Sprainbrook/Dunwoodie substations to Freshkills substation.

If all communication is lost between the PCC and TOs, the TOs shall proceed to restore the NYS Power System using inter-company communication facilities to coordinate all aspects of the restoration.

6.3. Responses to the Restoration State

When a Restoration State is declared by the NYISO, the NYISO and the Transmission Owners (TOs) shall perform the actions described in this section.

If a disturbance occurs in which a portion of the NYS Power System becomes isolated or shut down, the steps defined in the procedures that are applicable to the disturbance shall be used in the restoration of facilities within the area. Load Shedding procedures have been modified during system restoration events and are detailed in section 7.4.

NYISO Actions

The NYISO shall perform the following:

1. Determine that the NYCA is in the Restoration State and notify all TOs.
2. Restore transmission facilities employing the Restoration Procedures and Diagrams found in [Attachment B](#).
3. Coordinate the closing and energizing of inter-company and inter-Control Area transmission ties.
4. Monitor power flow, frequency, and voltage and order appropriate actions by TOs to operate the NYS Power System within NYISO operating criteria.
5. Expedite and coordinate the synchronization of separated areas to adjacent systems within the NYCA and to neighboring Reliability Coordinator areas.
6. Schedule energy transfer, as necessary, with neighboring Reliability Coordinators to facilitate restoration, emphasizing Generator startup and critical loads.
7. Request and permit the restoration of load that has been shed previously when there is sufficient generation and transmission capacity available to maintain the following conditions:
 - nominal frequency of 60 Hz
 - voltages within limits
 - transmission line loading at or below emergency transfer limits
8. Maintain continuous communication with all neighboring Reliability Coordinators impacted by the restoration actions using the most readily available communication device.
9. Communicate periodically with all TOs via the Emergency Hot Line System to provide status reports regarding the restoration actions and the status of the NYCA.
10. Authorize load restoration on the portions of the system electrically connected to the NYISO Black Start facilities and/or neighboring Reliability Coordinators.

11. Authorize generation starts and dispatch on the portions of the system electrically connected to the NYISO Black Start facilities and/or to the neighboring Reliability Coordinator areas.

Transmission Owner Actions

The TOs shall perform the following:

1. Execute orders received from the NYISO to restore the NYS Power System.
2. Notify the NYISO as soon as possible, and periodically thereafter, of system status, including generation, transmission, load, and other appropriate information.
3. In accordance with the TOs' restoration procedures, protect system facilities and make them ready to be energized and begin to energize internal facilities necessary to restart generation, supply critical load, and make inter-company ties available for service.
4. Prior to proceeding with switching, isolate from the system all buses that will become energized as a result of these procedures to avoid the inadvertent pick-up of customer load, except where load restoration is required to stabilize voltage levels.
5. Notify the NYISO of internal system conditions, such as voltage problems, transmission overloads, and local mismatch of generation and load, that must be corrected prior to completing the NYISO requests.
6. Re-establish interconnected operation with neighboring systems with the permission of the NYISO.
7. Coordinate with the NYISO any restoration actions that impact other TOs and Reliability Coordinators.
8. Coordinate with the NYISO to provide startup power to generating facilities.
9. Synchronize the system with the restored NYS Power System under the direction of the NYISO as each TO system completes the restoration of its local facilities.
10. Continue to implement the TOs' restoration plans, subject to NYISO coordination.
11. Continue to coordinate with the NYISO as the Balancing Authority any load restoration when connected to another TO or another RC or not driven by the need to control frequency or voltage.
12. Complete the restoration of all customer load, in accordance with the TOs' restoration plans and in coordination with the NYISO.

The Generator Operators shall perform the following:

1. Execute requests received from the Transmission Owner.
2. Notify the Transmission Owner as soon as possible, and periodically thereafter, of facility status and other appropriate information.
3. Immediately upon de-energization of a Black Start facility, initiate Black Start procedures.

6.4. Criteria and Conditions for Reestablishing Interconnections

6.4.1. Assessment of System Conditions Prior to Interconnecting

Prior to interconnecting, the system operator must be aware of existing system conditions in each of the islands to be interconnected. This includes the following;

1. Magnitude of restored load in the islands;
2. Magnitude of Synchronized Generation;
3. Magnitude of Operating Reserves;
4. Identification of the largest single contingency;
5. Magnitude of armed UFLS;
6. Point of interconnection and supporting System Topology;
7. Prevailing Voltage and Frequency volatility;

6.4.2. Assessment of Tie Line Conditions and Coordination of Tie Line Operating Parameters

The System Operators will select the strongest tie to synchronize (i.e. those with the lowest impedance and with the largest responsive generators connected). It is preferred to synchronize near generating plants which have synchro-check relays and with a synchroscope. System Operators will verify both status of automatic reclosing and line charging on the tie line with associated impacts on voltage for line end closing. They will also establish acceptable ranges of deviations in tie line flows that are caused by system restoration activities and the conditions under which the interconnection point may be deliberately opened. Prior to the synchronization of an interconnection the desired voltage difference should be 3% or less. The frequency difference of one synchroscope rotation should occur in no less than 5 seconds.

6.4.3. Assessment and Coordination of Frequency Control for the Operation after Synchronization

The System Operators will verify and coordinate operable status of AGC after synchronization has occurred. System Operators implement flat frequency control for the larger system, Tie line bias for the smaller system. System Operators shall then discuss a plan to address potential unintended tie flow.

6.5. Communications during Restoration

6.5.1. Normal and Emergency Communications Procedures

Normal and emergency communications procedures and protocols for use during Restoration State recovery actions are found in sections 1.4 and 1.5 of this Manual.

6.5.2. Loss of Communications with the NYISO

If all communication is lost between the Power Control Center and TOs, the TOs shall proceed to restore the NYS Power System using inter-company communication facilities to coordinate all aspects of the restoration according to the procedures in section 6 of this Manual.

6.5.3. Incident Command Structure (ICS) Protocol

The NYISO has developed an internal procedure for establishing an Incident Command Structure protocol in order to manage and prioritize off-floor communications during bulk power disturbances. Key elements of this protocol have been shared with appropriate entities for coordination of communication during system recovery.

6.6. Updating Restoration Documentation

The update and review process applied to the NYCA restoration plan is addressed in the *NYISO System Restoration Manual* (available from the NYISO Web site at the following URL:

https://www.nyiso.com/documents/20142/2923301/trans_disp.pdf/9d91ad95-0281-2b17-5573-f054f7169551).

Due to the Critical Electric Infrastructure Information (CEII) contained in [Attachment B](#) of this *Emergency Operations Manual*, distribution of this attachment is restricted. Revisions to [Attachment B](#) shall be performed as the NYISO or TOs deem necessary due to significant changes to the power system network or modeling. Following the review, the NYISO and TOs will update the System Restoration Plan.

NYISO staff shall make the necessary changes to update [Attachment B](#) and shall distribute it to the NYCA control centers.

7. Load Relief

This section describes the means for reducing load.

7.1. Load Curtailment

The NYISO staff shall forecast the likelihood of occurrence of States other than the Normal State as far in advance as possible. If it is predicted that Load Relief, either by Voltage Reduction or Load Shedding, may be necessary during a future period, all Transmission Owners (TOs) shall be notified and preparatory arrangements shall be made for corrective measures requiring substantial lead-time including the following types of load curtailment:

- a. Curtailment of interruptible load
- b. Manual (local) Voltage Reduction
- c. Curtailment of non-essential Market Participant load
- d. Voluntary curtailment of large LSE customers
- e. Public appeals

Table C-1 of [Attachment C](#) defines the amount of Load Relief available through these measures.

1. External loads (bilateral exports and external LBMP bid load) may be curtailed under a NYISO Alert State or Major Emergency State to avoid involuntary load curtailment (due to a supply deficiency) of Internal NYCA Load.
2. Internal loads may be curtailed under the NYISO Major Emergency State to solve transmission security exceedance.
3. To solve a transmission security exceedance, applicable NYISO Curtailment Steps including Transmission Loading Relief (TLR) procedures will be invoked (as described in the *NYISO Transmission and Dispatching Operations Manual*, available from the NYISO Web site at the following URL:
https://www.nyiso.com/documents/20142/2923301/trans_disp.pdf/9d91ad95-0281-2b17-5573-f054f7169551).
4. To avoid involuntary 5% Quick Response Voltage Reduction and/or Load Shedding internal to NYCA (due to a supply deficiency), only external loads served by the LBMP market or by bilateral transactions from NYCA ICAP providers (up to the amount of ICAP it provides to NYCA) may be curtailed (on a pro rata basis).

5. External loads served by bilateral transactions from non-NYCA ICAP providers (or from the non-NYCA ICAP capacity portion of a NYCA ICAP provider) will not be curtailed (to avoid involuntary 5% Quick Response Voltage Reduction and/or Load Shedding internal to NYCA) for that portion of the transaction that is physically served by that supplier (see example below).

Example of Rules 4 and 5 (All Amounts are in MW)					
Supplier's Attributes	Case 1	Case 2	Case 3	Case 4	Case 5
DMNC Rating	100	100	100	100	100
I = ICAP Being Provided to NYCA	50	50	50	50	50
A = Total Actual Output	50	0	100	50	100
T = Export Transaction	100	100	100	50	20
C = Amount of the Export Transaction that can be Curtailed	100	100	50	50	0

Rule 4 and 5 can be described as follows:

$$C = \text{MAX} [T - \text{MAX} (A - I, 0), 0]$$

C = The amount that the export transaction can be curtailed is equal to MAX (A,B) = the greater of A or B

T = The Amount of the Export Transaction

A = The Actual Output from the Supplier

I = The Amount of NYCA ICAP being provided by this Supplier

Note: For a supplier that has sold ICAP into the NYISO auction, its "I" will be derated on a pro rata basis to account for the amount of ICAP sold in the auction to external LSEs

6. With the exception of the stipulations in Rules 4 and 5 above, load curtailments will not differentiate between loads served by bilateral transactions and LBMP bid loads. Invocation of Rules 4 and 5 above with respect to external loads in a neighboring Control Area presume reciprocal rule treatment by that Control Area.
7. Both internal and external Day-Ahead load bids that are curtailed will be refunded the applicable Day-Ahead LBMP. A bilateral transaction in which loads are curtailed will be considered a financial curtailment so that any applicable Day-Ahead Transmission Usage Charge (TUC) will be refunded.

7.2. Voltage Reduction

Table C-1, [Attachment C](#) defines the amount of Load Relief available through Quick Response Voltage Reduction.

The following Voltage Reduction procedures define the actions to be taken by the NYISO, to include procedures to assist neighboring Reliability Coordinators.

1. When a shortage of Operating Reserve is predicted and adequate time is available to complete Manual Voltage Reduction procedures, such procedures shall be accomplished prior to implementing Quick Response Voltage Reduction.
2. Load Relief attainable by Quick Response Voltage Reduction is classified as 10-minute Reserve after all available capability is used. Emergency Transfer Criteria may be invoked to deliver reserves. This procedure addresses the NYISO actions to implement Quick Response Voltage Reduction.

If, after the above action a shortage of 10-Minute Reserve still exists, the NYISO shall declare a Major Emergency and shall direct that Load Relief procedures be implemented as follows:

- a. Direct the TOs to implement Quick Response Voltage Reduction up to 5%.
- b. If NYISO resources are still less than NYCA Load, request other Reliability Coordinators to go into Voltage Reduction and obtain Emergency Energy from them to avoid Load Shedding
- c. If further load curtailment is required, refer to section 4 of this Manual.
- d. If NYISO resources still do not match NYCA load, refer to section 4 of this Manual.
3. The NYISO will reduce voltage to the extent transmission limitations permit, for neighboring Reliability Coordinators already in Voltage Reduction, to assist in preventing the neighboring Reliability Coordinator from interrupting firm customer load.
4. When implementation of Load Relief measures is indicated the NYISO shall have the authority to order 5% Quick Response Voltage Reduction in those areas where such action will reduce transmission overloads or transient stability transfer limit exceedances.

Authority

The NYISO has the responsibility for administering the Voltage Reduction policy and the NYISO has the authority to direct the actions required as set forth above.

Internal loads may be curtailed under the NYISO Major Emergency State to solve a transmission security exceedance.

7.3. Load Shedding

It is the responsibility of all TOs to shed load as ordered by the NYISO to assist other TOs. A TO is responsible for Load Shedding within the geographic area of its Transmission District in the following ratio:

Load Shedding Ratio	$\frac{\text{Estimated Peak Load in Transmission District for Capability Period}}{\text{Sum of Transmission Owners Estimated Peak Loads for Capability Period}}$
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See [Attachment C](#) for Load Shedding allocation by a TO for the following situations:

- Load reduction by the entire NYCA (Table C-2)
- Load reduction to relieve specific transmission interfaces (Table C-3)

Each Area must be capable of carrying out the following Load Shedding capabilities:

- UFLS based on UFLS Implementation Plan for the Eastern Interconnection Portion of NPCC as defined in section 4.6.
- Load Shedding of at least 50 percent of its load in 10 minutes or less. Insofar as practical, the first half of the Load shed manually should not include any load that is part of any automatic Load Shedding plan.

The New York Power Authority (NYPA) loads are largely wholesale deliveries to other TOs and reduction of such deliverables is not appropriate. Other NYPA loads are supplied by wheeling power over the transmission facilities of other TOs. The NYPA agrees that these wheeled loads may be included in the Load Shedding plans of the wheeling TO on the same basis that the TO applies to its own loads. The NYPA has ad hoc arrangements with its directly served principal industrial customers to reduce load under certain conditions. Such reduction, to the extent that it alleviates an Emergency condition, may be implemented before widespread reduction of other loads.

NYISO Actions

The NYISO shall perform the following:

1. Order the appropriate TO(s) to shed load and specify the amount of load to be shed using the Emergency Hot Line System.
2. Activate the Load Shed Alarm System for the corresponding TO(s).

7.4. Load Shedding During System Restoration

For all system conditions except system restoration, the existing protocol is to shed load as a percentage of TO peak load to NYCA load, as defined in this Manual, section 7.3, "Load Shedding." During system restoration, the distribution of system load may not be as defined by peak load conditions.

During system restoration, the NYISO shall determine the existing load in each TO area. This load distribution should be used to determine the appropriate Load Shedding allocation to each TO based on their current load. The preferred method is to use the Load Shed Ratio listed below.

Load Shed Ratio during Restoration:

$$= \frac{\text{Existing Load in The Transmission District}}{\text{Sum of Transmission Owners Existing Load}}$$

7.5. Load Shed Alarm System

This section describes the NYISO Load Shed Alarm System and the procedures for testing it. The Load Shed Alarm System reinforces any verbal order to shed load and alerts operating personnel at the TO Energy Control Centers that an order to shed load has been given to the TO. The Load Shed Alarm System is designed to meet the recommendations of the NYS PSC and the Task Force Report on the System Disturbance of July 13, 1977.

7.5.1. Operating the Load Shed Alarm System

The Load Shed Alarm System operates a visual Load Shed indicator in each TO Energy Control Center. The NYISO activates the Load Shed Alarm System for a TO by executing on the poke point associated with the TO's display. When the NYISO activates the Load Shed Alarm System for a TO, the following events occur:

- A Load Shed Alarm signal is sent to the appropriate TO. It currently takes up to 8 seconds for each TO to receive the Load Shed Alarm signal at the TO's Energy Control Center where it activates a visual Load Shed indicator.
- When the Load Shed Alarm signal is sent to the TO, the poke point on display associated with the TO inverts and changes color from red to green for approximately 15 seconds.
- A Load Shed Alarm message is logged when the Load Shed Alarm System is activated.

Due to the intended use of this system, sophisticated safeguards and redundancy are not incorporated in its design. Under certain abnormal conditions, the visual Load Shed indicator can operate erroneously. If such a failure occurs, the NYISO shall be notified immediately. It is stressed, therefore, that no Load Shedding action shall be taken by TOs without prior verbal notification of the Emergency situation from the NYISO specifying the amount of load to shed.

7.5.2. Testing the Load Shed Alarm System

The NYISO shall initiate a test of the Load Shed Alarm System on a weekly basis. The NYISO shall report any trouble on the Load Shed Alarm System to the service provider. TOs shall report any problems to the NYISO.

NYISO Actions

The NYISO shall perform the following:

1. Notify a TO that a test of the Load Shed Alarm System is being conducted.
2. Activate the Load Shed Alarm System to that TO.
3. Notify the TO that the test is concluded.
4. Test the remaining TOs' Load Shed Alarms in similar fashion.
5. Log the time and date of the test, as well as any pertinent comments, in the NYISO Log.

8. Control Center and Communications Facilities

This section describes the NYISO Control Center Communications during normal and abnormal conditions.

8.1. Overview

This section defines new terminology, and describes general guidelines and components for the Interim New York Control Area Operation.

8.2. NYISO Power Control Center

The New York Independent System Operator Power Control Center or “NYISO PCC” is the normal operational facility for the NYISO consisting of personnel, Energy Management System (EMS), communications, additional hardware, and software.

8.2.1. Market Suspension

This is a period when the loss of NYISO, Transmission Owner (TO), or Market Participants functionality impedes normal Day-Ahead Evaluation or Real-Time Evaluation processing. The level of market suspension is based on the functionality that has been lost. Additional details on market suspension are described in Section 8.4.3 of this Manual.

8.2.2. Interim New York Control Area Operation

Interim New York Control Area (NYCA) operation may be required during the transition period between losing the NYISO PCC functionality and activating the NYISO Alternate Control Center (ACC). For more details on Interim NYCA operation, see Section 8.11 of this Manual.

8.2.3. NYISO Alternate Control Center

The NYISO Alternate Control Center or “NYISO ACC,” is the NYISO EMS backup facility. It consists of redundant communication facilities and EMS functionality. The NYISO ACC also has provisions for a second, standalone EMS & Business Management System (BMS).

8.3. Security Constrained Unit Commitment

The Security Constrained Unit Commitment (SCUC) is part of the day-ahead process through which the NYISO prepares a generation schedule for the following day. This process evaluates the load forecasts, price and availability bids from generation resources, and information on ancillary services bids and bilateral

transactions. This process uses a computer algorithm that minimizes the total bid price of energy while meeting reliability rules and generator performance constraints consistent with the terms of the NYISO Tariff and Agreements.

The SCUC uses the Day-Ahead bids for services, load forecasts, network conditions, and constraints to produce a commitment of NYCA resources. For more details on SCUC and the day-ahead process, please see the *NYISO Day-Ahead Scheduling Manual* and the *NYISO Transmission & Dispatching Operations Manual* (available from the NYISO Web site at the following URL:

https://www.nyiso.com/documents/20142/2923301/trans_disp.pdf/9d91ad95-0281-2b17-5573-f054f7169551).

8.4. Abnormal Operating Conditions

This section describes the general guidelines, authority, command structure, and market suspension criteria used during abnormal NYISO and/or Transmission Owner operations.

8.4.1. General Guidelines

The procedures presented in this Manual are based on the following minimum set of conditions and requirements:

- Power system security is the primary objective.
- All Transmission Owner Power Control Centers (PCCs) must be capable of operating and dispatching the resources physically located in their control areas and are responsible for regulating the control error for that area.
- Transmission Owner PCCs can provide basic system reliability monitoring, which the NYISO normally provides, if and when, the NYISO is unable to perform that function.
- The dispatching, billing, and documentation tasks that would otherwise be accomplished by a fully functional NYISO computer system are greatly simplified during abnormal NYISO and/or TO operations.
- In order to afford independent operational control of the generation, Transmission Owner Control Area boundaries are defined by their pre-NYISO territorial and electrical configurations. These boundaries do not necessarily coincide with LBMP Zonal boundaries.
- All accounting and billing issues are addressed in the *NYISO Accounting and Billing Manual* (available from the NYISO Web site at the following URL: <https://www.nyiso.com/documents/20142/2923231/acctbillmnl.pdf/b5c1ecb6-82cb-d1e0-9c84-4b2128f1f6bc>)

Two general scenarios have been developed and are addressed by this Manual:

- The Loss of NYISO functionality (see Section 8.8), and
- The Loss of Transmission Owner communication or Control Center functionality (see Section 8.14).

8.4.2. NYISO Authority

The NYISO Shift Supervisor always applies his/her best judgment when considering Operation during Abnormal conditions. All situations need to be evaluated on a case-by case-basis by the NYISO Shift Supervisor.

The NYISO operates all functions that it is capable of handling under emergencies. The Transmission Owners assist in handling other functions.

8.4.3. Market Suspension Criteria

In the event of a loss of NYISO functionality, it may be necessary to suspend portions of the NYISO markets. System reliability criteria can be met by the activation of Interim Control Operation (ICO) until functionality is restored or the NYISO ACC has been established. The NYISO evaluates the status of the NYISO functionality to determine when to re-establish NYISO markets.

All decisions made by the NYISO, and the reasons for making such decisions, are logged by the NYISO. The actions are reviewed by NYISO Operations Management after-the-fact, to determine if the actions were proper, and to verify that the initial causes were properly addressed.

8.4.4. Transmission Owner Dispatching Guidelines

Under normal operating conditions, the NYISO is responsible for the centralized dispatch of generators and loads, and the coordination and scheduling of the bilateral energy markets within, out of, and into the NYCA. This means that all essential scheduling information for generators and loads is handled exclusively by the NYISO. This also means that the Transmission Owners computer control systems lack the necessary on-line information to take over extended NYCA dispatching duties in case of loss of NYISO functionality.

In order to provide the Transmission Owner's computer control systems with the ability to assume dispatching duties under Section 8.8 of this Manual, the NYISO must provide the Transmission Owners with the necessary and most current dispatching information. This information is contained in the NYISO Master Generator Files or MGFs that reside within the NYISO computer system.

Each successful run of the SCUC and the RTS programs creates a pre-MGF file that contains all the data necessary to dispatch the NYCA for the current day and the next day (after SCUC completes for the day). SCUC runs produce data for the next day, and RTC updates that data on a 15-minute basis for the next 2.5-hour horizon in 15-minute periods. Once each Transmission Owner computer control system gets this information, each Transmission Owner can dispatch the generating units assigned to its jurisdiction for ICO purposes. The following requirements apply to the various modes of Transmission Owner NYCA dispatch described in Section 8.8:

1. Each Transmission Owner must be capable of operating as an independent control area, and is responsible for regulating the control error for that area.
2. The Transmission Owners will have access to the NYISO-produced pre-Master Generator Files (pre-MGF) that contain the necessary information to allow control of the NYCA.
3. Pre-MGF data are based on the last good RTC or SCUC (Day-Ahead) run.
4. The Transmission Owners may have a mechanism to input their corresponding pre-MGF data into their own computer control systems, thus giving them the ability to dispatch the NYCA when required to maintain system reliability without regard to economics.
5. The individual Transmission Owners must maintain operating reserves based on system data transmitted from the NYISO to the Transmission Owners. This data identifies the reserve allocated to resources in that control area. Should reserves in any category (spinning, 10-minute, 30-minute, and regulating reserves) fall below the allocated level by the NYISO, the Transmission Owner will immediately notify the NYISO or Designated NYCA Coordinator. The NYISO or Designated NYCA Coordinator will reestablish the required reserve in accordance with the initial allocation provided and revise the Desired Net Interchanges (DNIs) accordingly.
6. If reserve pick-ups are required, they are performed by Transmission Owner control area resources as directed by the NYISO or Designated NYCA Coordinator, in accordance with the 10-minute reserves allocations described above.
7. If during this time a major unit is lost within a Transmission Owner's control area, it may be necessary for the Transmission Owner or the Designated NYCA Coordinator to reassess the Transmission Owner's capability of maintaining previously established DNI values. If necessary, the Designated NYCA Coordinator must adjust the DNIs. The DNI adjustments are coordinated between the Upstate New York (UPNY) and Southeast New York (SENY) Area Coordinators as described in Section 8.11.2 of this Manual.

8.5. Data & Implementation Requirements

This section describes the specific data that is to be shared between the NYISO and the Transmission Owners in order to accomplish the goals of the Interim NYCA Operation.

8.5.1. Sharing of Information

Under the NYISO and the open market structure, a high percentage of the daily prescheduling information is considered confidential. Under normal operations, such data is treated by the NYISO according to the NYISO Tariff and Agreements.

In the event of ICO operation, the NYISO shall inform the market participants as soon as communication conditions permit.

In the event of ICO operations, the Transmission Owners shall inform the generators within their area of control:

- that ICO has been instituted, and
- direct the adjustments to DAM and RT schedules.

In the event of ICO operations, the Transmission Owners will not be responsible for informing market participants other than generators.

For the Transmission Owners to be able to fulfill their responsibility of maintaining reliable system operation under ICO, a minimum set of data sharing is required in three different stages:

- Before ICO activation,
- During ICO process, and
- After ICO de-activation.

8.5.2. Data Sharing Before ICO Activation

The following data is continuously available to the Transmission Owners and accessed through the NYISO File Transfer Protocol (FTP) sites (see Section 8.5.5). Each Transmission Owner has access to a data file with a subset of data from the most current NYISO pre-MGF file that contains information only on those facilities within its control area. This information consists of:

- Generation data, excluding bid curves, for each generator in a Transmission Owner's control area for the next 13 to 36 hours. This includes:
 - Upper operating limits (UOLn & UOLe),
 - Lower operating limits (LOL),
 - Response rates (normal, emergency, and regulation),
 - Reserve capacity by category (spinning, 10-minute, and 30-minute),
 - Regulation MWs,
 - Expected status (on-line, on-dispatch, on-control, etc.), and
 - Day-ahead and Hour-Ahead approved schedules for each market (energy, spinning 10 minutes, spinning 30 minutes, and regulation).

8.5.3. Data Sharing During ICO Activation

The Transmission Owners retrieve the other dispatching data from the NYISO FTP sites every 15-minute period. The Coordinating Authority, in the case of Interim NYCA Operation, communicates the next interval values listed above to the Transmission Owners via regular telephone lines.

8.5.4. Data Sharing After ICO De-Activation

At the resumption of normal NYISO functionality, the Transmission Owners transmit to the NYISO the data necessary to perform the accounting and billing during the ICO period.

The following information is required for ICO billing:

- Additional units committed by the Transmission Owners for regulation purposes;
- Additional units committed by the Transmission Owners for reserve purposes;
- Additional units committed by the Transmission Owners for energy shortages;
- Bid prices used for units committed for regulation, reserves, and energy;
- Megawatt-hours (MWh) output for all generators on an hourly basis;
- Interface megawatt-hours (MWh) flows based on LBMP zones. See *the NYISO Transmission Services Manual* (available from the NYISO Web site at the following URL: <https://www.nyiso.com/documents/20142/2923231/acctbillmnl.pdf/b5c1ecb6-82cb-d1e0-9c84-4b2128f1f6bc>) for NYCA zone and interface, and any changes in bilateral transaction schedules.

8.5.5. Interim NYCA Operation Data

For the purpose of the Interim NYCA operation, where National Grid (NG) and Consolidated Edison (ConEd) have responsibility for security of UPNY and SENY respectively, the Transmission Owner's dispatching data for each Transmission Owner is accessible via the FTP sites as shown in Figure 1.

ICO Data Transfers

Each Transmission Owner downloads data for the units within their respective control areas only.

On a 15-minute basis, the individual Transmission Owner control area generation data file is written to the portion of the NYISO FTP sites accessible to the Transmission Owners.

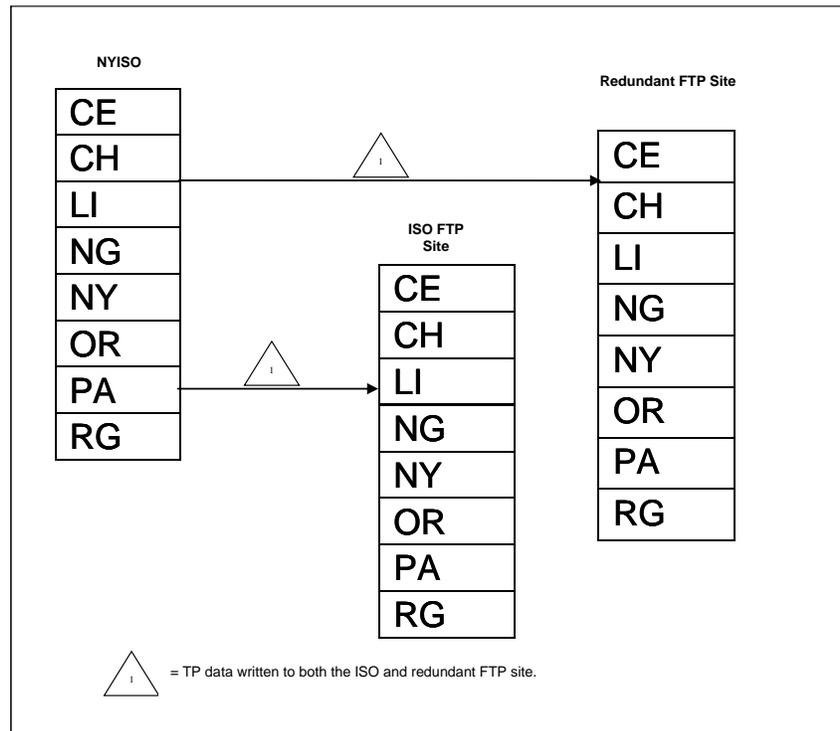
At the 14-minute mark of every hour, a process is executed at the FTP server that checks to see if the Transmission Owner dispatching data files were updated within the last hour.

- If they have been updated, it is assumed that the NYISO is operational.
- If the files have not been updated within the last period, and voice communication between the NYISO and the TO Energy Control Centers is lost, it is assumed that the NYISO is no longer

operational and the Interim NYCA Operation procedures are initiated by the Interim NYCA Coordinators.

For more information on these files and the FTP sites locations see Section 3.0 of the NYISO/TO Interface Document.

Figure 1: NYISO FTP Site ICO Support



8.6. Transmission Owner Control Center Requirements

Transmission Owners have a responsibility for operating and maintaining Control Centers as described in the NYISO Control Center Requirements Manual (available from the NYISO Web site at the following URL: https://www.nyiso.com/documents/20142/2923231/cntrlctrreq_mnl.pdf/a1dcefcf-9fc7-b798-bcd0-1275b4c551a9). Transmission Owners may or may not maintain Alternate Control Centers for backup conditions. The procedures in Section 8.14 of this Manual assume that most Transmission Owners maintain some form of alternate or backup Control Center.

If the Transmission Owner experiences a loss of Control Center facilities and is able to communicate with the NYISO, the Transmission Owner must evaluate whether it is capable of properly dispatching the generation facilities within its jurisdiction. If the Transmission Owner cannot communicate its status to the NYISO, the NYISO will initiate the actions described in Section 8.14 of this Manual.

8.7. Calculation of Desired Net Interchange for Transmission Owners

The algorithms necessary to calculate Transmission Owner DNIs under ICO are incorporated into the NYISO SCUC and Current Operating Plan (COP) software systems. The information is available in the COP. The basic data requirements for the calculation of Transmission Owner based DNIs are:

1. A dispatch based on Day-Ahead/Hour-Ahead commitments modified for current system conditions, such as previous SCUC, RTC, and RTD results.
2. Collection of the basepoints from the dispatch group on a Transmission Owner control area basis.
3. Separation of the 11 LBMP Zone load forecast into subzones. The subzones are then combined to create the Transmission Owner control area load forecast.
4. Transmission Owner DNIs are then calculated by combining the TO control area generation and load forecast.

8.7.1. Control Area DNI Calculation Procedure

The following table and procedure describe the internal process used to obtain the Transmission Owner DNIs:

Figure 2: Transmission Owner Control Area DNI Input Data

Control Area DNI Input Data	
Data	Source
Unit Basepoints	Economic Dispatch
NYCA Load Forecast	Load Forecast
11 Zones to 31 subzones load separated table	Flat File

1. The resulting economic dispatch basepoints, which are saved for comparison with the next period's schedule, are grouped by Control Area.
2. The NYCA load forecast based on the 11-Zone model is segregated into a 31-zone model. It is assumed that the 11 to 31 zonal load segregation will be accomplished with a fixed set of percentages. For example, Zone A load is composed of 40% of TO control area #1, 10% of TO control area #2, and 50% of TO control area #3.
 - The fixed set of percentages is obtained when the factors that segregate the zonal load down to subzonal loads are read into the LBMP Calculator application's database. This

takes place whenever the NYISO EMS system is first built or updated. When starting from a built system, the set of factors are obtained from the most recent NYISO Operating Study. The Operating Studies are traditionally done for the Summer and Winter capability periods. The factors are calculated as the ratio of the sum of bus loads in a subzone and the total load of the zone. Transmission Owner Control Area load can then be obtained by summing the appropriate zones of the 31-zone model.

3. The control area DNIs are calculated by appropriately comparing the total basepoints and load.

8.8. Procedures for Loss of NYISO Functionality and Interim NYCA Operation

Interim operation of the NYISO is defined as that period of time when voice communication between the NYISO and the TO Energy Control Centers is lost. This section describes the procedures for interim operation of the NYCA during the emergency transfer of control after an evacuation of the PCC and prior to activation of an ACC. This policy shall also apply to any period when all voice communication between the TOs and the NYISO is lost due to equipment failure.

The procedures in this section are designed to ensure that the security of the NYS Power System is adequately maintained during periods of interim operation and that a minimum acceptable level of coordination of operation among the TOs and neighboring Reliability Coordinators is maintained. The NYISO has the following primary objectives during this period:

- Maintain system security.
- Maintain the balance of load and generation with existing interchange schedules until TO communication with the PCC or the ACC can be re-established.

8.9. Responsibilities and Authority

The Consolidated Edison System Operator and the National Grid Security Operator have the authority and the responsibility to assume the role of Designated NYISO Coordinators as described in this section. The NYISO will continue to hold the authority and responsibility as Reliability Coordinator for the NYCA, and will coordinate security actions with the Designated NYISO Coordinators as allowed by available communication paths.

NYISO Actions:

Coordinate security actions with the Designated NYISO Coordinators as necessary

Consolidated Edison Actions

1. Coordinate the Southeast New York (SENY) TOs:
 - Consolidated Edison
 - Long Island Power Authority (LIPA)
 - Orange and Rockland
 - Central Hudson
2. Coordinate with the following neighboring Reliability Coordinator:
 - PJM Interconnection, L.L.C.
 - ISO New England
3. Coordinate with National Grid.

National Grid Actions

1. Coordinate the Upstate New York (UPNY) TOs:
 - National Grid
 - New York State Electric & Gas
 - Rochester Gas and Electric
 - New York Power Authority (NYPA)
2. Coordinate with the following neighboring Reliability Coordinators:
 - IESO
 - Hydro Quebec
3. Coordinate with Consolidated Edison.

Transmission Owner Actions

1. Operate at all times in accordance with the NYISO Operating Policies and Procedures stated in this Manual.
2. Coordinate operations with respective Designated NYISO Coordinators under the policies and procedures defined in this Manual.

8.10. Invoking Interim New York Control Area Operation

Interim NYCA Operation procedures may be invoked by the NYISO if it is possible and if time permits or may be invoked by Consolidated Edison and National Grid if voice communication with the NYISO is lost.

8.10.1. Loss of Voice Communications

Normal operations result in regular voice communication between the TOs and the NYISO . If it is determined by the Consolidated Edison System Operator and the National Grid Security Operator that voice communication between the NYISO and the TOs has been lost, Consolidated Edison and National Grid shall perform the actions described here.

Consolidated Edison and National Grid Actions

1. Assume the role of Designated NYISO Coordinators.
2. Declare a Major Emergency State.
3. Immediately, notify their respective TOs and neighboring Reliability Coordinators of the Major Emergency State and of their responsibilities as Designated NYISO Coordinators.
4. Advise their respective neighboring Reliability Coordinators that the Northeast Power Coordinating Council (NPCC) Simultaneous Activation of Reserves (SAR) is terminated and that current schedules with them should be maintained if possible.
 - Request ISO-NE inform New Brunswick that SAR is terminated and to provide solar magnetic disturbance and time error notifications to Con Ed
5. Coordinate NYCA Operations with the TOs and Reliability Coordinators as listed in this section.

During other than normal working hours, Consolidated Edison and National Grid shall notify one of the members of the NYISO Operations Management Staff.

8.10.2. Evacuation Procedure

If it becomes necessary to evacuate the PCC, the NYISO shall follow the procedure described here, to the extent time permits.

NYISO Actions

The NYISO shall perform the following:

1. Declare a Major Emergency.
2. If possible, notify all TOs, using the Emergency Hot Line System of the following information and instructions:
 - The PCC is being evacuated.
 - Transmission Owners shall follow their last Desired Net Interchange (DNI) until further notice from either the Designated NYISO Coordinator or the NYISO ACC.
 - All scheduled outages that affect the New York State Power System are canceled.
 - Transmission Owners shall begin Interim NYCA Operation according to the procedures in this Manual.
 - Transmission Owners shall prepare for establishment of the NYISO ACC.
3. Notify the NYISO Enterprise Operations Center (EOC) of the following information and instructions:
 - Operations will be conducted from the ACC.
 - Report to the NYISO ACC.
 - Prepare the ACC computer for on-line operation.
4. After normal working hours, notify one of the NYISO Operations Management Staff.
5. Notify NYISO Security and the Guilderland, East Greenbush and North Greenbush Police that the PCC is being evacuated and state the nature of the Emergency.
6. Fax the following displays to Consolidated Edison and National Grid:
 - Security Monitor, SPD1, SPD2
7. Take the following documents and equipment to the ACC:
 - All current outage sheets
 - Security monitor, SPD1, SPD2 displays
 - Cellular telephone from the NYISO Shift Supervisor position
8. If time does not permit all notifications to take place before evacuation, make the notifications as soon as possible via the NYISO Shift Supervisor cell phone or after arrival at the ACC.
9. If time permits post Reliability Coordinator Information System (RCIS) notification that NYISO is evacuating the PCC
10. Notify PJM, IESO, ISO-NE, and HQ of the following information:

- The current schedule will remain in effect until further notice from NYISO or a Designated NYISO Coordinator.
- The identity of the NYISO individual or Designated NYISO Coordinator individual that will contact them during the period of Interim NYCA Operation prior to staffing the ACC.
- NPCC Simultaneous Activation of Reserve program is not available,

11. Request ISO-NE inform NB of SAR unavailability and provide any solar magnetic disturbance and time correction notifications to Con Ed.

8.11. Interim New York Control Area Operation (ICO)

This section describes the procedures followed by the Designated NYISO Coordinators and the TOs during the Interim NYCA Operation period.

8.11.1. Initial Operation

Immediately upon beginning the Interim NYCA Operation period, the Designated NYISO Coordinators shall establish Total Operating Reserve Requirements for the NYCA in accordance with the operating policy stated in the *NYISO Ancillary Services Manual* (available from the NYISO Web site at the following URL: <https://www.nyiso.com/documents/20142/2923301/ancserv.pdf/df83ac75-c616-8c89-c664-99dfea06fe2f>) and shall determine the external transaction schedules with neighboring Reliability Coordinators on all proxy busses.

Transmission Owner Actions

All TOs shall initially follow their last DNI, as determined by NYISO Real Time Dispatch (RTD), and regulate their systems to that DNI.

Designated NYISO Coordinator Actions

1. Immediately upon assuming the responsibilities of Designated NYISO Coordinators, Consolidated Edison and National Grid shall poll their respective TOs and record the following data on the forms in [Attachment E](#):
 - Each Member's DNI for the last run of RTD (DNI Change Log)
 - Each Member's 10-Minute Reserve and Total Operating Reserve (Reserve Allocation Survey). Reserves should reflect the most conservative estimate over the next half hour period.

2. The DNI shall be recorded on the attached DNI Change Log for the following neighboring Reliability Coordinators' proxy busses:
 - IESO-NYISO-AC
 - ISO-NE-NYISO-AC
 - ISO-NE-NYISO Cross Sound Cable
 - ISO-NE-NYISO 1385
 - PJM-NYISO-AC
 - PJM-NYISO Neptune
 - PJM-NYISO VFT
 - PJM-NYISO HTP
 - HQ-NYISO 7040
 - HQ-NYISO Cedars
3. With the data obtained above Consolidated Edison shall develop the following sums for SENY, and record them on the attached forms:
 - 10-Minute Reserve in SENY (Reserve Allocation Survey)
 - Total Operating Reserve in SENY (Reserve Allocation Survey)
 - Desired Net Interchange for SENY (DNI Change Log)
4. Similarly, National Grid shall develop the following sums for UPNY and record them on the attached forms:
 - 10-Minute Reserve in UPNY (Reserve Allocation Survey)
 - Total Operating Reserve in UPNY (Reserve Allocation Survey)
 - Desired Net Interchange for UPNY (DNI Change Log)
5. The Designated NYISO Coordinators shall exchange the reserve and DNI information determined for the SENY and UPNY Transmission Owner Systems.
6. The Designated NYISO Coordinators shall determine the availability and location of reserves.
7. The Designated NYISO Coordinators shall discuss reserve pickup strategy for the largest contingency in both UPNY and SENY.
8. The Designated NYISO Coordinators shall agree on the following reserve requirements and record them on the Reserve Allocation Survey:
 - 10-Minute Reserve Requirement for the NYCA, which shall be equal to the most severe contingency in the NYCA, including any single interruptible purchase.
 - Total Operating Reserve Requirement for the NYCA, which shall be equal to 1.5 times the most severe capacity contingency.
9. The Designated NYISO Coordinators shall request out-of-service NYS Transmission System lines restored, only where there is a reliability need for the restoration. Additionally, lines scheduled to be taken out of service shall be deferred.

10. Where it is possible and desirable, generating units scheduled to come off line shall be delayed.

8.11.2. Continuing Operation

At all times, the Designated NYISO Coordinators shall attempt to provide that the NYCA has adequate reserves. The Designated NYISO Coordinators shall monitor the actual reserves of each TO during Interim NYCA Operations. Reserves should reflect the most conservative estimate over the next half hour period.

The Designated NYISO Coordinators shall coordinate schedule changes within the NYCA. Desired Net Interchange changes may be required for one or more of the following reasons:

- As the result of a reserve pick up.
- Changes required by neighboring Reliability Coordinators.
- The inability of a TO(s) to meet its DNI as a result of changes made for security reasons.

Whenever DNI changes are required, every effort should be made to make a reasonable smooth transition, even if this is at the expense of economic operation. All efforts shall be made by each TO and by the Designated NYISO Coordinators to minimize schedule changes during the period of Interim NYCA Operation. This shall include pumped storage hydro schedules and the output levels of large base-load units.

NYISO Actions:

Based on available information, including system information provided by the Designated NYISO Coordinators, coordinate security actions as necessary to maintain or re-establish system security (i.e. system within limits, ACE < +/- 500 MW, reserve requirements met.)

Designated NYISO Coordinator Actions

1. Poll their respective TOs at least every half hour and exchange totals as described for initial operation.
2. If at any time the NYCA becomes deficient in 10-Minute Reserve or Total Operating Reserve, the Designated NYISO Coordinators (independently) shall take one or more of the following actions:
 - Request a TO(s) to convert Total Operating Reserve to 10-Minute Reserve.
 - Request a neighboring Reliability Coordinator to provide capability on an emergency basis.

3. Coordinate all reserve pickups for large negative Area Control Errors. The Designated NYISO Coordinators shall determine reserve pickup for losses greater than 300 MW according to the following guidelines:
 - Within the NYCA, primary consideration shall be given to the most responsive sources, regardless of economics, such as cutting external transactions or modifying pumped storage hydro operation. The actual 10-Minute Reserves in the Reserve Allocation Survey E-3 and E-4 provided in [Attachment E](#) shall be used as a guide.
 - If the loss cannot be picked up in the NYCA, the Designated NYISO Coordinators shall request emergency assistance from neighboring Reliability Coordinators.
4. Coordinate all required changes to external transactions needed for reliability reasons only. The Designated NYISO Coordinators shall make every effort to balance these changes with anticipated changes in NYCA load, or generation, or both.
5. Determine DNI changes, as necessary, and notify each respective TO. Record the DNI changes on the attached DNI Change Log, noting the time, the individual TO DNIs, and a brief description of the reason for the change.
6. Coordinate assistance, if requested, for a TO that is unable to maintain adequate control.
7. Coordinate actions with TOs related to the security of the NYS Power System. Coordinate actions with the NYISO as communications allow.
8. Coordinate actions with TOs related to voltage control, phase shifter, capacitor, and reactor operations.
9. Time Correction and Solar Magnetic Disturbance notices are transmitted from ISO-NE to Consolidated Edison. Consolidated Edison shall relay the messages to National Grid and SENY Transmission Owners. National Grid shall relay the messages to UPNY Transmission Owners.
10. Relay notification of severe weather warnings received from a Transmission Owner to their respective TOs and to the other Designated NYISO Coordinator.
11. Individually, log all orders and events that occur while operating under this procedure, using local logging procedures.

Transmission Owner Actions

The TO shall perform the following:

1. Inform the appropriate Designated NYISO Coordinator of any changes in their actual operating reserves. Reserves should reflect the most conservative estimate over the next half hour period.

2. Inform the appropriate Designated NYISO Coordinator in the event of a loss and, if it has sufficient reserves, attempt to pick up the loss on its own.
3. Maintain area control error (ACE) for their defined TO area.
4. Maintain NYS Power System security under the coordination of the Designated NYISO Coordinators.
5. Coordinate voltage control, phase shifter, capacitor, and reactor operations with each other and with the Designated NYISO Coordinators.
6. Notify the appropriate Designated NYISO Coordinator of severe weather warnings.

8.12. Alternate Control Center Operation

This section describes how the NYISO establishes ACC Operations and operates the NYCA from the ACC.

8.12.1. ACC Operation

If the ACC computer system is fully operational, the NYISO performs the actions described here:

NYISO Actions

The NYISO Operating Personnel shall perform the following:

1. Verify RTC/RTD are running after the ACC computer system has been initialized.
2. Check the PCs for operation.
3. Notify all TOs that the ACC is operational and that NYISO control will be assumed from the ACC.
4. The NYISO shall notify neighboring Reliability Coordinators that the ACC is operational and shall verify current schedules with them on appropriate proxy busses and inform them that NPCC Simultaneous Activation of Reserve is now available (if appropriate). In addition, notify ISO-NE that solar magnetic disturbance and time error correction notifications no longer need to be transmitted to Con Ed.
5. Notify External Reliability Coordinators via RCIS.

8.13. Re-Establishing Power Control Center Control

Operation at the ACC shall be maintained until NYISO Power System Operators have arrived at the PCC and are ready to assume control. Once voice communication between PCC and the TOs and all neighboring Reliability Coordinators have been restored, the NYISO Operator on duty at the PCC shall terminate the

Major Emergency and notify the TOs and all neighboring Reliability Coordinators, and external RCs via RCIS that normal PCC operation has resumed. The dispatching staff at the ACC shall deliver all log sheets and pertinent data to the PCC.

8.14. Critical Data & Components

This section identifies critical communications and Transmission Owner's components to the NYISO's operations. Loss of one or several of these components may require actions by the NYISO Shift Supervisor. Specific actions to be taken by the NYISO, Transmission Owners, and Market Participants are outlined.

8.14.1. Loss of NYISO-Transmission Owner Communications Data

The following data are considered as critical NYISO-TO communications:

1. Critical voice communications
2. TO to NYISO data including:
 - External NYISO ties real power metering in MWs (used for control error calculation);
 - NYS Transmission System real power flows in MWs;
 - NYS Transmission System Critical Bus Voltages, and
 - NYS Transmission System facility outages (breaker status).
3. NYISO to TO data including:
 - AGC data
 - 5-minute dispatch data - including reserve pick-up and other special dispatches.

The NYISO Shift Supervisor evaluates each case based on the impact of the data loss, the location of the loss, and the system conditions at that time. At the NYISO Shift Supervisor's discretion, he/she determines the actions that are necessary to maintain the security on the NY Power System.

If the NYISO is unable to establish voice communications with a TO, and no other form of communications can be established, the NYISO implements the measures described in Section 8.15.2 for loss of TO Control Center functionality.

8.14.2. Loss of Transmission Owner Control Center Functionality

If a Transmission Owner experiences loss of its TO PCC functionality, that Transmission Owner normally transfers its operations and staff to its TO ACC facility, if one is available. During the period between the loss of the TO PCC facility and prior to staffing the TO ACC, the NYISO determines the actions that are necessary to maintain the security on the NY Power System.

In all cases of lack of Transmission Owner PCC functionality, the applicable Transmission Owner must provide a written report explaining the circumstances that caused the loss of its TO PCC functionality.

8.15. Procedures

The following sections summarize the procedures for Transmission Owner loss of functionality or NYISO-TO loss of communication.

8.15.1. General Procedures

The following procedure is applied when any Transmission Owner experiences local Control Center loss of functionality or detects loss of NYISO data and communications with its TO PCC.

Transmission Owner Actions:

1. Under any circumstances involving loss of TO PCC communications or functionality, notify the NYISO immediately, if possible. That notification shall include:
 - Details of the loss and its impact on system operation
 - Plans and timetable for correcting the problem, including plans for staffing alternate facilities
 - An assessment of availability
 - Alternate means for the NYISO to communicate, if necessary
2. Request NYISO monitor the TO system and perform an evaluation of system conditions using real-time data to assess existing (pre-contingency) and potential (post-contingency) operating conditions and inform the TO of any exceedances
3. Maintain frequent communications with the NYISO to verify a common understanding of the situation and events during the episode.

NYISO Actions:

1. If appropriate notify all Transmission Owners over the Emergency Hot Line of the prevailing condition. The notification shall include:
 - actions taken
 - effective start time
2. Monitor the TO system as practicable and inform the TO of any actual or projected post contingency overloads on the TO system.

Market Participant Actions:

1. If communications cannot be established with the affected Transmission Owner, all market participants shall maintain their last schedule.
2. If emergency conditions require those participants to operate otherwise, they shall do so and immediately notify the NYISO Shift Supervisor of the action taken.

8.15.2. Deactivation Procedures for TO or Communications Loss of Functionality

Upon normalization of communications and/or TO PCC functionality, the following procedure is followed.

NYISO Actions:

1. The NYISO Shift Supervisor shall terminate all special procedures when they are no longer needed.
2. The NYISO Shift Supervisor shall notify all Transmission Owners of the current system condition and shall state the time of return to normal operation and any special conditions involved.

9. Testing Emergency Procedures

This section describes the methods for testing emergency procedures.

9.1. Overview

The NYISO shall test emergency procedures on a regular basis to familiarize Operations personnel with these procedures and to be better prepared if an actual emergency occurs.

Testing of emergency procedures is initiated by the NYISO. When testing of emergency procedures is initiated, Transmission Owners are requested to simulate the execution of one of the following emergency procedures:

- Load Shedding
- Voltage Reduction
- NYISO Emergency Restoration
- Interim NYCA and ACC Operation

9.1.1. Frequency of Testing

The NYISO shall initiate tests of emergency procedures periodically, as presented in Figure 3.

Figure 3: Frequency of Testing

Test	Frequency
Load Shedding	Twice each Capability Period
Simulated Voltage Reduction	Once each Capability Period
Actual Voltage Reduction	Once a year during the Summer Capability Period
NYISO Emergency Restoration	Once a year at the start of the Summer Capability Period
Interim Control Operator (ICO) and Alternate Control Center Operation	Once a year at the start of the Summer Capability Period

If an actual emergency occurs during the Capability Period and one or more of these procedures are actually exercised, then additional testing of that procedure may be omitted during the remainder of the Capability Period.

The NYISO shall maintain a log of the tests conducted during each Capability Period to ensure that the required tests have been completed.

9.1.2. General Testing Procedure

At an appropriate time between 1000 and 1400, the NYISO shall initiate a test of one of the Emergency Procedures. The NYISO shall clearly indicate that it is a test and that a Major Emergency does not exist. The NYISO shall use the dialog specified on the relevant form(s) provided in [Attachment D](#).

Upon being notified of the test, the TOs shall proceed through the steps that normally are required if an actual order to implement the procedure is given, without actually activating any Voltage Reduction or Load Shedding devices or performing any switching for restoration procedures.

Throughout the exercise, the TOs shall note the time each step is exercised and the estimated results. Specific responsibilities for each procedure are identified in each procedure.

The NYISO shall assume the communication responsibilities that they have during an actual system emergency.

When a test is completed, the NYISO shall notify all TOs that the test is terminated.

In the event an actual emergency occurs during a test of emergency procedures, the NYISO shall inform all TOs via the Emergency Hot Line System that the test is canceled and that an actual emergency exists.

9.1.3. Review of Testing

NYISO Grid Operations Management and TO Management shall review each test of these emergency procedures with the objective of ensuring that the actual results comply with expected or required objectives and that the emergency procedures can be used promptly and effectively when required. Further, NYISO Grid Operations Management and TO Management reviews the emergency testing procedures annually and revises them, if necessary.

9.2. Test Procedure for Requesting Load Shedding

At an appropriate time between 1000 and 1400, the NYISO shall initiate a test of Load Shedding. The NYISO shall clearly indicate that it is a test and that a Major Emergency does not exist. The NYISO shall use the dialog specified in form [D-1, in Attachment D](#).

Upon being notified of the test, the TOs shall proceed through the steps that normally are required if an actual request to implement Load Shedding is given, without actually activating any Load Shedding devices. The Load Shed Alarm System shall not be activated during a test procedure. In the event an actual

emergency occurs during a test and Load Shedding is required, the Load Shed Alarm System shall be activated.

NYISO Actions

The NYISO shall perform the following:

1. Initiate the test.
2. Record TO test data and times on form [D-1, Attachment D](#).
3. Forward the test data and times to NYISO Grid Operations Management for review.

Transmission Owner Actions

The TOs shall perform the following:

1. Initiate the test at TO level.
2. Report the following information to the NYISO:
 - System load at time of order
 - Time Load Shedding completed
 - Estimated amount of MW shed

9.3. Test Procedure for Requesting Voltage Reduction

9.3.1. Voltage Reduction test - simulated

At an appropriate time between 1000 and 1400, the NYISO shall initiate a test of Voltage Reduction. The NYISO shall clearly indicate that it is a test and that a Major Emergency does not exist. The NYISO shall use the dialog specified in form [D-2, Attachment D](#).

Upon being notified of the test, the TOs shall proceed through the steps that are normally required if an actual request to implement Voltage Reduction is given, without actually activating any Voltage Reduction devices.

NYISO Actions

The NYISO shall perform the following:

1. Initiate the test.

2. Record TO test data and times on form [D-2, Attachment D](#).
3. Forward the test data and times to NYISO Grid Operations Management for review.

Transmission Owner Actions

The TOs shall perform the following:

1. Initiate the test at TO level.
2. Report the following information to the NYISO:
 - System load at time of order.
 - Time notifications completed.
 - Estimated Load Relief achieved.

9.3.2. Voltage Reduction test - actual

At an appropriate time between 1000 and 1400, the NYISO shall initiate a test of Voltage Reduction. The NYISO shall clearly indicate that it is a test and that a Major Emergency does not exist. The NYISO shall use the dialog specified in form [D-7, Attachment D](#).

Upon being notified of the test, the TOs shall proceed through the steps that are normally required to implement Voltage Reduction, activating the appropriate Voltage Reduction devices.

NYISO Actions

The NYISO shall perform the following:

1. Initiate the test.
2. Record TO test data and times on form [D-7, Attachment D](#).
3. Forward the test data and times to NYISO Grid Operations Management for review.

Transmission Owner Actions

The TOs shall perform the following:

1. Initiate the test at TO level.
2. Report the following information to the NYISO:
 - System load at time of order.

- Time notifications completed.
- Load Relief achieved.

9.4. Test Procedure for Requesting Emergency Restoration of NYS Power System

At an appropriate time between 1000 and 1400, the NYISO shall initiate a test of Emergency Restoration. The NYISO shall clearly indicate that it is a test and that a Major Emergency does not exist.

Upon being notified of the test, the TOs shall proceed through the steps that are normally required if an actual request to implement Emergency Restoration is given, without actually performing any switching for restoration procedures.

NYISO Actions

The NYISO shall perform the following:

1. Initiate the test.
2. Forward the test data and times to NYISO Grid Operations Management.

NYISO Grid Operations Management shall perform the following actions:

1. Review test data and times with TOs.
2. Issue a report to the NYISO System Operations Advisory Subcommittee (SOAS).

Transmission Owner Actions

The TOs shall perform the following:

1. Initiate the test at TO level.
2. Report the following information to the NYISO:
 - Estimated time to complete restoration.

9.5. Test Procedure for Interim New York Control Area Operation and ACC Operation

At an appropriate time, between 1000 and 1400, the NYISO shall initiate a test of Interim NYCA Operation and ACC Operation. The NYISO shall clearly indicate that it is a test and that a Major Emergency does not exist. The NYISO shall use the dialog specified in form [D-5, Attachment D](#).

Upon being notified of the test, the TOs shall proceed through the steps that are normally required if an actual order to implement Interim NYCA Operation & ACC Operation is given.

During the test of Interim NYCA Operation & ACC Operation, responsibility for the reliability of the NYS Power System shall be transferred to National Grid and Consolidated Edison, as the designated NYCA coordinators for the interim period and shall be transferred to the ACC once it is staffed. The NYISO Operations Staff shall maintain shift operation at the PCC and shall monitor system conditions at all times. If conditions indicate that the NYS Power System may be in jeopardy, the NYISO at the PCC shall terminate the test and shall re-assume control of the NYS Power System.

NYISO Actions

The NYISO – PCC shall perform the following:

1. Initiate the test.
2. Continue to monitor system conditions.

The NYISO – ACC shall perform the following actions:

1. Evacuate the NYISO PCC with spare crew of NYISO personnel.
2. Set up the ACC and assume control of the NYS Power System.
3. Record test data and times on form [D-5, Attachment D](#).
4. Forward the test data and times to NYISO Grid Operations Management.

NYISO Grid Operations Management shall perform the following actions:

1. Review the test data and times with TOs.
2. Issue a report to NYISO System Operations Advisory Subcommittee (SOAS).

Transmission Owner Actions

National Grid and Consolidated Edison shall perform the following:

1. Assume responsibility for the NYS Power System during the Interim NYCA Operation Period
2. Record test data and times on form [D-6, Attachment D](#).
3. Prepare the logs provided in [Attachment E](#).
4. Forward the test data and times and any logs to the NYISO within 1 week of the test.

All TOs shall perform the following actions:

1. Initiate the test at TO level.
2. Operate in Interim NYCA Operation mode until the NYISO ACC is staffed.
3. Report to the NYISO ACC any problems encountered during the test period. These problems shall also be listed on form [D-6, Attachment D](#).
4. Forward the completed [forms](#) and logs to the NYISO within one week of the test.

9.5.1. Review of Interim New York Control Area and Alternate Control Center Operations

The NYISO System Operations Advisory Subcommittee (SOAS) evaluates each test to ensure the information the ACC collects and disseminates is retained and reviewed.

Attachment A Operating Criteria

- Table A-1 lists exceptions to the NYSRC Reliability Rules
- Table A-2 lists bus voltage limits.
- Table A-3 lists pre-contingency low limits for various HQ to NYISO transfers.
- Table A-4 lists multiple circuit tower lines in the New York Control Area.
- Table A-5 lists the NYISO thunderstorm multiple contingencies.
- Table A-6 lists the IROL Interfaces.
- [Attachment A.7](#) provides the NYISO System Operating Limit Methodology and the Procedure for Relief of Potential Overloads on Non-ISO Controlled NERC Bulk Electric System (BES) Facilities

Note: The above attachments do not require committee approval and are subject to change at the NYISO's direction.

Table A- 1 : Exceptions to the NYSRC Reliability Rules

The exceptions to the NYSRC Reliability Rules are approved by the NYSRC. The current set of exceptions can be found at:

<http://www.nysrc.org/NYSRCReliabilityRulesComplianceMonitoring.html>

Table A- 2: Bus Voltage Limits

Bus Name	Target Voltage	Pre Low	Pre High	Post Low	Post High	Set By
Bowline 345	358	345	371	328	371	OR
Buchanan 345	358	346	362	328	380	CE
Clay 345	353	345	362	328	362	NG
(5) Coopers Corners 345	356	338	362	328	380	NY
(4) Dunwoodie 345	358	Table A.3	362	328	380	CE
(1) Edic 345	354	347	362	328	362	NG
Farragut 345	356	338	362	328	380	CE
Fraser 345	356	338	362	328	380	NY
Gardenville 230	236	225	242	207	242	NY
Gilboa 345	356	348	362	328	362	PA
Goethals 345	357	338	362	328	380	CE
Gowanus 345	356	338	362	328	380	CE
Ladentown 345	358	346	362	328	380	CE
Leeds 345	355	345	362	328	372	NG
(1) Marcy 345	355	348	362	328	380	PA
(4) Millwood 345	356	Table A.3	362	328	380	CE
New Scotland 345	355	348	362	328	362	NG
Niagara 230	238	225	242	219	242	PA
Niagara 345	356	338	362	328	362	PA
Northport 138	142	135	145	131	145	LI
(2) Oakdale 345	353	Table A.3	362	320	380	NY
Pannell Road 345	355	344	359	328	362	RG
(4) Pleasant Valley 345	357	Table A.3	362	328	380	CE
Rainey 345	357	338	362	328	380	CE
(3) Ramapo 345	357	346	362	328	380	CE
Ramapo 500	532	500	550	500	575	CE
Rock Tavern 345	357	348	362	328	362	CH
Roseton 345	359	345	362	328	362	CH
Somerset 345	356	338	362	328	380	NY
(4) Sprainbrook 345	358	Table A.3	362	328	380	CE
Station 80 345	355	343	359	328	362	RG
St. Lawrence 230	235	225	242	219	242	PA
Watercure 230	230	215	242	207	242	NY

Notes

- (1) Marcy 345 kV bus voltage is reduced to 345 kV prior to energizing the Massena-Marcy 765 kV MSU1 line. By exception, Marcy and Edic voltages are allowed below their pre -contingency low limits for this condition.
- (2) Pre-contingency low limits for various configurations of the Fraser SVC are listed in Table A.3.
- (3) Voltage below 327 kV at Ramapo may cause the loss of the Bowline Units.
- (4) Pre-contingency low limits vary with status of Sprainbrook/Dunwoodie Series Reactors listed in Table A.3.
- (5) Pre-contingency high voltage limit at Coopers Corners is 366kV with the 33 Fraser-Coopers Corners and CCDA42 Coopers Corners-Dolson Ave or CCRT34 Coopers Corners-Rock Tavern lines out of service



Table A- 3 : Bus Voltage Limits for Various Sensitivities

NYS Power System Status	Pre-contingency Low Bus Voltage Limits				
	Oakdale 345 kV	Pleasant Valley 345 kV	Sprainbrook 345 kV	Dunwoodie 345 kV	Millwood 345 kV
Fraser SVC status:					
Fraser SVC In service and 'normal'	336 kV	--	--	--	--
Fraser SVC out of service or 'not normal'	339 kV	--	--	--	--
Sprainbrook/Dunwoodie Series Reactors					
Series Reactors Bypassed	--	343 kV	346 kV	346 kV	344 kV
Series Reactors Inserted	--	348 kV	348 kV	348 kV	348 kV



Table A- 4: Multiple Circuit Tower Lines in New York Control Area

Table A.4 Multiple Circuit Tower Lines in New York Control Area

Circuit		Included in	Exemption
Designations	Terminals	Contingency Analysis	and Reason
345 kV			
11 17	Oswego-Volney Oswego-Elbridge-Lafayette	Yes	--
91 92	Athens-Pleasant Valley Leeds-Pleasant Valley	No	Note 1
GNS1 GL3	Gilboa-New Scotland Gilboa-Leeds	No	Note 1
F30/W80 F31/W81	Pleasant Valley-Wood St.-Millwood W. (2 Parallel Circuits)	Yes	--
W82/W65 W85/W78	Millwood W.-Eastview-Sprainbrook (2 Parallel Circuits)	Yes	--
F36 F37	Pleasant Valley-E. Fishkill (2 Parallel Circuits)	Yes	--
F38/Y86 F39/Y87	E. Fishkill-Wood St.-Pleasantville (2 Parallel Circuits)	Yes	--
W89 W90	Pleasantville-Dunwoodie (2 Parallel Circuits)	Yes	--
W93/W79 W99/W64	Buchanan N.-Eastview-Sprainbrook Millwood W.-Eastview-Sprainbrook	Yes	--
W97 W98	Buchanan S.-Millwood W. (2 Parallel Circuits)	No	Note 2
W72 Y94	Ramapo-Ladentown Ramapo-Buchanan N.	Yes	--
Y88 Y94	Ladentown-Buchanan S. Ramapo-Buchanan N.	Yes	--
67 68	Bowline Pt.-W. Haverstraw-Ladentown Bowline Pt.-Ladentown	Yes	--
76 77	Rock Tavern-Sugarloaf-Ramapo Rock Tavern-Ramapo	Yes	--



Table A.4 Multiple Circuit Tower Lines in New York Control Area

Circuit		Included in	Exemption
Designations	Terminals	Contingency Analysis	and Reason
21 22	Goethals-Fresh Kills (2 Parallel Circuits)	Yes	--
69/J3410- 70/K3411	Ramapo-Waldwick (2 Parallel Circuits)	Yes	--
EF24-40 UCC2-41	Edic-Fraser Marcy-Coopers Corners	Yes	--
33 UCC2-41	Fraser-Coopers Corners Marcy-Coopers Corners	Yes	--
CCRT34 CCDA42	Coopers Corners-Middletown-Rock Tavern Coopers Corners-Dolson Ave	Yes	--
CCRT34 DART44	Coopers Corners-Middletown-Rock Tavern Dolson Ave-Rock Tavern	Yes	--
4-46 22	Lafayette-Clarks Corners Dewitt-Lafayette	No	Note 1
11 12	Oswego-Volney (2 Parallel Circuits)	No	Note 1
230 kV & 345 kV			
11 UCC2-41	Chases Lake-Porter (230kV) Marcy-Coopers Corners (345kV)	Yes	--
12 18	Adirondack-Porter (230 kV) Marcy-New Scotland (345 kV)	Yes	--
67 29	Stolle Rd-High Sheldon- (230 kV) Stolle Road-Five Mile Road (345 kV)	Yes	--
31 UCC2-41	Porter-Rotterdam (230 kV) Marcy-Coopers Corners (345 kV)	Yes	--
30 EF24-40	Porter-Rotterdam (230 kV) Edic-Fraser (345 kV)	Yes	--
230 kV			
61 64	Niagara-Packard Niagara-Robinson Road	Yes	--
62 PA27	Niagara-Packard Niagara-Beck	Yes	--
62 BP76	Niagara-Packard Packard-Beck	Yes	--



72 69	Stoney Ridge-Hillside Hillside-Watercure Road	Yes	--
73 74	Gardenville-Dunkirk (2 Parallel Circuits)	Yes	--
77 78	Packard-Huntley (2 Parallel Circuits)	Yes	--
77 80	Packard-Huntley Huntley-Gardenville	Yes	--
78 79	Packard-Huntley Huntley-Gardenville	Yes	--
79 80	Huntley-Gardenville (2 Parallel Circuits)	Yes	--
PA27 BP76	Niagara-Beck Packard-Beck	Yes	--
L33P L34P	St. Lawrence T.S.-Moses (2 Parallel Circuits)	Yes	--
MA-1 MA-2	Moses-Adirondack (2 Parallel Circuits)	Yes	--
MMS1 MMS2	Moses-Massena (2 Parallel Circuits)	Yes	--
61 62	Niagara-Packard (2 Parallel Circuits)	No	Note 1
230 kV & 115 kV			
68 160	Dunkirk-S. Ripley (230 kV) Dunkirk-Falconer (115 kV)	Yes	--
61 191	Niagara-Packard (230kV) Niagara-Packard (115kV)	Yes	--
MW2 MAL4	Moses-Willis (230kV) Moses-Alcoa N. (115kV)	Yes	--

Note 1: Exempt because of 5 tower criteria.

Note 2: Exempt because they are not adjacent.



Table A- 5: List of Thunderstorm Multiple Contingencies Cases

<i>Table A.5</i>	<i>List of Thunderstorm Multiple Contingencies Cases</i>
1.	F38, Y86, F39, Y87, Wood St. Bank 2, Pleasantville Bank 1, 311
2.	F38, Y86, F39, Y87, Wood St. Bank 2, Pleasantville Bank 1, 77
3.	F38, Y86, F39, Y87, Wood St. Bank 2, Pleasantville Bank 1, Y94, TA5, Bank (95891)
4.	F38, Y86, F39, Y87, Wood St. Bank 2, Pleasantville Bank 1, Y88
5.	F38, Y86, F39, Y87, Wood St. Bank 2, Pleasantville Bank 1, F31, W81
6.	F38, Y86, F39, Y87, Wood St. Bank 2, Pleasantville Bank 1, W82, Eastview Bank 2S, W65
7.	F38, Y86, F39, Y87, Wood St. Bank 2, Pleasantville Bank 1, W93, Eastview Bank 2N, W79
8.	F38, Y86, F39, Y87, Wood St. Bank 2, Pleasantville Bank 1, A2253
9.	F38, Y86, F39, Y87, Wood St. Bank 2, Pleasantville Bank 1, W75
10.	F38, Y86, F39, Y87, Wood St. Bank 2, Pleasantville Bank 1, 301
11.	F38, Y86, F39, Y87, Wood St. Bank 2, Pleasantville Bank 1, 303
12.	W89, W73, W90, W74, Y50, Pleasantville Bank 2, 311
13.	W89, W73, W90, W74, Y50, Pleasantville Bank 2, 77
14.	W89, W73, W90, W74, Y50, Pleasantville Bank 2, Y94, TA5 Bank (95891)
15.	W89, W73, W90, W74, Y50, Pleasantville Bank 2, Y88
16.	W89, W73, W90, W74, Y50, Pleasantville Bank 2, F31, W81
17.	W89, W73, W90, W74, Y50, Pleasantville Bank 2, W82 Eastview Bank 2S, W65
18.	W89, W73, W90, W74, Y50, Pleasantville Bank 2, W93, Eastview Bank 2N, W79
19.	W89, W73, W90, W74, Y50, Pleasantville Bank 2, A2253
20.	W89, W73, W90, W74, Y50, Pleasantville Bank 2, W75, 72, 71
21.	W89, W73, W90, W74, Y50, Pleasantville Bank 2, 301
22.	W89, W73, W90, W74, Y50, Pleasantville Bank 2, 303
23.	F36, F37, 301
24.	F36, F37, 303
25.	F36, F37, 311
26.	F36, F37, 77
27.	F36, F37, Y94, TA5 Bank (95891)
28.	F36, F37, Y88
29.	F36, F37, F31, W81
30.	F36, F37, W82, Eastview Bank 2S, W65
31.	F36, F37, W75



Table A.5 List of Thunderstorm Multiple Contingencies Cases

- 32. F36, F37, W93, Eastview Bank 2N, W79
- 33. F36, F37, A2253
- 34. F36, F37, F38, RFK305
- 35. F31, W81, F30, W80, Wood St. Bank 1, 311
- 36. F31, W81, F30, W80, Wood St. Bank 1, 77
- 37. F31, W81, F30, W80, Wood St. Bank 1, Y94, TA5 Bank (95891)
- 38. F31, W81, F30, W80, Wood St. Bank 1, Y88
- 39. F31, W81, F30, W80, Wood St. Bank 1, W75
- 40. F31, W81, F30, W80, Wood St. Bank 1, F38, Y86, Pleasantville Bank 1
- 41. F31, W81, F30, W80, Wood St. Bank 1, W93, Eastview Bank 2N, W79
- 42. F31, W81, F30, W80, Wood St. Bank 1, A2253
- 43. F31, W81, F30, W80, Wood St. Bank 1, 301
- 44. F31, W81, F30, W80, Wood St. Bank 1, 303
- 45. F31, W81, F30, W80, Wood St. Bank 1, 305
- 46. W85, W82, W65, Eastview Bank 2S, Eastview Bank 1S, W99, Eastview Bank 1N, W64, W78
- 47. W85, W82, W65, Eastview Bank 2S, Eastview Bank 1S, W93, Eastview Bank 2N, W79, W78
- 48. W99, W64, Eastview Bank 1N, W93, W79, Eastview Bank 2N, Y94, TA5 Bank (95891), IP2
- 49. W99, W64, Eastview Bank 1N, W93, W79, Eastview Bank 2N, Y88
- 50. W99, W64, Eastview Bank 1N, W93, W79, Eastview Bank 2N, F38, Y86, Pleasantville Bank 1
- 51. W99, W64, Eastview Bank 1N, W93, W79, Eastview Bank 2N, Eastview Bank 1S, W85, W78
- 52. W99, W64, Eastview Bank 1N, W93, W79, Eastview Bank 2N, W82 Eastview Bank 2S, W65
- 53. Y88, Y94, TA5 Bank (95891), 91
- 54. Y88, Y94, TA5 Bank (95891), 92
- 55. Y88, Y94, TA5 Bank (95891), F38, Y86, Pleasantville Bank 1
- 56. Y88, Y94, TA5 Bank (95891), F39, Y87, Pleasantville Bank 2, Wood St. Bank 2
- 57. Y88, Y94, TA5 Bank (95891), F31, W81
- 58. Y88, Y94, TA5 Bank (95891), F30, Wood St. Bank 1, W80
- 59. Y88, Y94, TA5 Bank (95891), W93, Eastview Bank 2N, W79, IP2
- 60. Y88, Y94, TA5 Bank (95891), A2253
- 61. Y88, Y94, TA5 Bank (95891), 301
- 62. Y88, Y94, TA5 Bank (95891), 303
- 63. Y88, Y94, TA5 Bank (95891), RFK305



Table A.5 List of Thunderstorm Multiple Contingencies Cases

- 64. W97, W98, Y88, IP3
- 65. W97, W98, Y88, IP3, 91
- 66. W97, W98, Y88, IP3, 92
- 67. W97, W98, Y88, IP3, F38, Y86, Pleasantville Bank 1
- 68. W97, W98, Y88, IP3, F39, Y87, Wood St. Bank 2
- 69. W97, W98, Y88, IP3, F31, W81
- 70. W97, W98, Y88, IP3, F30, Wood St. Bank 1, W80
- 71. W97, W98, Y88, IP3, W93, Eastview Bank 2N, W79
- 72. W97, W98, Y88, IP3, 301
- 73. W97, W98, Y88, IP3, 303
- 74. W97, W98, Y88, IP3, RFK305
- 75. 91, 92
- 76. 91, 311
- 77. 91, 77
- 78. 92, 311
- 79. 92, 77
- 80. 91, 301
- 81. 91, 303
- 82. 91, RFK305
- 83. 301, RFK305
- 84. 69, South Mahwah Bank, J3410, Waldwick Bank 2, 70, K3411, Waldwick Bank 3, Y88
- 85. Y88, Y94, TA5 (95891), 69, South Mahwah Bank, J3410, Waldwick Bank 2
- 86. Y88, Y94, TA5 (95891), 70, K3411, Waldwick Bank 3
- 87. F38, Y86, F39, Y87, Wood St. Bank 2, Pleasantville Bank 1, 76, Sugarloaf BK 1112
- 88. W89, W73, W90, W74, Y50, Pleasantville Bank 2, 76, Sugarloaf BK 1112
- 89. F36, F37, 76, Sugarloaf BK 1112
- 90. F31, W81, F30, W80, Wood St. Bank 1, 76, Sugarloaf BK 1112
- 91. 91, 76, Sugarloaf BK 1112
- 92. 92, 76, Sugarloaf BK 1112
- 93. 76, Sugarloaf BK 1112, 77, F38, Y86, Pleasantville Bank 1
- 94. 76, Sugarloaf BK 1112, 77, F39, Y87, Wood St. Bank 2
- 95. 76, Sugarloaf BK 1112, 77, W89, W73



Table A.5 List of Thunderstorm Multiple Contingencies Cases

- 96. 76, Sugarloaf BK 1112, 77, W90, W74, Pleasantville Bank 2
- 97. 76, Sugarloaf BK 1112, 77, F36
- 98. 76, Sugarloaf BK 1112, 77, F37
- 99. 76, Sugarloaf BK 1112, 77, F31, W81
- 100. 76, Sugarloaf BK 1112, 77, F30, W80, Wood St. Bank 1
- 101. 76, Sugarloaf BK 1112, 77, 91
- 102. 76, Sugarloaf BK 1112, 77, 92
- 103. 76, Sugarloaf BK 1112, 77, RFK305
- 104. 76, Sugarloaf BK 1112, 77, 311
- 105. 76, Sugarloaf BK 1112, 77, W93, W79, Eastview Bank 2N
- 106. 76, Sugarloaf BK 1112, 77, W85, W78, Eastview Bank 1S
- 107. 76, Sugarloaf BK 1112, 77, W82, W65, Eastview Bank 2S
- 108. 76, Sugarloaf BK 1112, 77, W99, W64, Eastview Bank 1N
- 109. 76, Sugarloaf BK 1112, 77, Y94, TA5 (95891)
- 110. 76, Sugarloaf BK 1112, 77, A2253
- 111. 76, Sugarloaf BK 1112, 77, 301
- 112. 76, Sugarloaf BK 1112, 77, 303
- 113. 76, Sugarloaf BK 1112, 77, Y88
- 114. 76, Sugarloaf BK 1112, 77, 5018
- 115. 76, Sugarloaf BK 1112, 77, 398
- 116. 76, Sugarloaf BK 1112, 77, W97
- 117. 76, Sugarloaf BK 1112, 77, W98



Table A- 6: IROL Interfaces

IROL Stability	Post Contingency Voltage IROL
IESO-NYISO	Central East-VC
ISONE-NYISO	Central East loss of NE Generation
PJM-NYISO	
Western Export	
Dysinger	
Oswego Export	
Moses-South	
Central East	
Total East	
UPNY-Con Ed	
Northern Export	
HQ Cedars	



Attachment A.7 Procedure for Relief of Potential Overloads on Non-ISO Controlled NERC Bulk Electric System (BES) Facilities

The NYISO Security Analysis Program identifies and alerts the NYISO to actual and potential overloads on the NYS Transmission System. Occasionally actual or post-contingency potential overloads on non-ISO Controlled BES facilities occur which, if uncorrected, could lead to cascading outages and subsequent overloads on NYS Transmission System facilities.

This document is the Operations Horizon Methodology for developing System Operating Limits (SOL) of the non-NYISO Controlled NERC BES.

A.7.1 Methodology

TOs are responsible for determining the ratings of their facilities. Studies¹ shall use current or expected system conditions such as facility outages, expected generation dispatch and load level to determine SOLs. SOLs are the most restrictive of the following limits:

Thermal: Normal Rating, LTE Rating and STE Rating.

- Within the associated time parameters
- Cable facility emergency ratings may be defined differently as specified by the TO.

Voltage: Pre-Contingency High Limit, Post-Contingency High Limit, Pre-Contingency Low Limit and Post-Contingency Low limit.

Stability limits as defined by the TO for the local area. Stability limits for interfaces and inter-area limits are defined in Attachment A, [Table A-6](#).

Frequency limits are the responsibility of the NYISO.

The NYISO and TO will resolve any discrepancies between studies and agree on mitigating actions for any identified SOL exceedances. The most limiting analysis shall be utilized until discrepancies can be resolved.

Non-NYISO Controlled NERC BES facilities referenced in NYSRC reliability rules exceptions shall modify facility limits as specified in the exception.

Impact of the operation of Remedial Action Schemes/Special Protection Systems to mitigate overloads as a result of a contingency shall be evaluated and accounted for in determining post-contingency actions.

¹ Studies referenced herein refer to Real-Time Operating Studies performed by the NYISO and TOs.



A.7.2 Normal Operating Criteria

It is intended that the non-NYISO Controlled NERC BES be operated and secured for contingencies as described in Section A.7.4 with the objective to:

Pre-contingency - Be within normal thermal limits and pre-contingency high/low voltage limits.

Post-contingency - Be within emergency thermal limits and within post-contingency high/low voltage limits.

Be within transient and voltage stability limits.

The TO will coordinate and implement operating plans when needed, which may involve the NYISO, GOP's, and neighboring TOP's to restore any thermal or voltage real time exceedance to within normal limits. Flow over a thermal limit is not determined to be an SOL exceedance until the associated time frame has also been exceeded (i.e. 15 min when > LTE).

A.7.3 Operating to System Operating Limit

If a transmission facility becomes overloaded, relief measures shall be applied immediately to bring the loading within established ratings. In the event that Normal Operating Criteria cannot be maintained, the TOs shall operate as follows:

Actual Thermal Operating Limits:

It is intended that the **non-NYISO Controlled NERC BES** be operated in real time with the objective to be within the normal thermal limit. To the extent this cannot be accomplished:

Above Normal

The TO shall notify the NYISO when above the normal facility rating for greater than 30 minutes and provide the actions to resolve the overload up to and including load shed. The TO, after utilizing available resources, may request assistance from the NYISO if required to resolve the issue. The TO shall notify affected neighboring TOs and request assistance if required.

Above LTE

The TO shall notify the NYISO immediately when above LTE if time permits and provide the actions being taken to resolve the overload up to and including load shed. Loading of the



facility must be reduced below LTE within 15 minutes. The TO, in conjunction with utilizing available resources, may request assistance from the NYISO or neighboring TOs to resolve the overload if required.

Above STE

The TO shall notify the NYISO immediately when above STE if time permits and provide the actions being taken to resolve the overload up to and including load shed. Loading of the facility must be reduced below STE within 5 minutes and below LTE within 10 minutes of the initial overload. The TO, in conjunction with utilizing available resources, may request assistance from the NYISO or neighboring TOs to resolve the overload if required.

Post-contingency Thermal Operating Limits:

It is intended that the **non-NYISO Controlled NERC Bulk Electric System (BES)** facilities be operated in real time with the objective to be within emergency limits for projected post-contingency flows. All available local pre-contingency actions up to but not including voltage reduction and load shed must be taken to maintain post-contingency flow below STE. Whenever the predicted post-contingency power flow exceeds its applicable limit for contingencies described in Section A.7.4:

Above post-contingency LTE:

The TO may take local pre-contingency actions to resolve the overload, or develop a post-contingency operating plan up to and including load shed to ensure corrective action could be taken to reduce flow below LTE within 15 minutes once the contingency occurs.

- The TO shall notify the NYISO or neighboring TOs if assistance will be required to resolve the issue following the contingency. The NYISO and TO shall each study the operating plan to ensure it does not create more severe overloads than the loss of the overloaded facility.

Above post-contingency STE:



The TO shall take local pre-contingency actions to resolve the overload. If the overload is not resolved by the pre-contingency actions, the TO shall develop a post-contingency operating plan up to and including load shed to ensure corrective action could be taken to reduce flow below STE within 5 minutes and below LTE within 10 minutes of the initial overload once the contingency occurs. If post-contingency load shed cannot be completed in the required timeframe, pre-contingency load shed may be required.

- The TO shall notify the NYISO or neighboring TOs if assistance will be required to resolve the issue following the contingency. The NYISO and TO shall jointly study the operating plan to ensure it does not create more severe overloads than the loss of the overloaded facility.
 - The NYISO shall determine if the post-contingency operating plan would cause elements of the NYISO Controlled NERC BES to exceed the LTE rating (except where post-contingency flows up to STE ratings are permitted by exception). The NYISO shall inform the TO and jointly develop a strategy for correcting the condition pre-contingency. The TO and NYISO shall carry out these corrective actions to relieve the condition within 30 minutes, excluding Voltage Reduction and Load Shedding.
 - If these measures are insufficient to comply with Normal Transfer Criteria on NYISO Controlled NERC Bulk Electric System facilities within 30 minutes of the initial violation then refer to NYISO Emergency Operations Manual Section 2 “Alert State” or Section 3 “Major Emergency State.”
- If the operating plan for any SOL exceedance would require load shed by more than one TOP, the NYISO and involved TOs will jointly develop the operating plan to coordinate the amount and location of load shed by each TO to restore the system to within limits. The operating plan will be initiated by the TOP of the overloaded element.
- **Cascade Analysis**



If after implementing all available pre-contingency actions, the predicted post-contingency flow on a non-NYISO Controlled NERC Bulk Electric System (BES) facility exceeds the Relay Set Point limit the NYISO and TO will study the loss of the contingency elements and the overloaded facility.

Relay Set Point: As indicated in PRC-023 R1.2 and R1.11, transmission line relays and transformer overload protection relays are set to not operate at or below 115% of the facility's highest emergency rating. If the relay protection is set higher than 115%, the higher setting may be used to determine whether it is a local or cascading event.

- If the study results indicate no additional non-NYISO Controlled NERC BES facilities will be over the Relay Set Point and no additional NYISO Controlled NERC Bulk Electric System facility will exceed the LTE rating (except where post-contingency flows up to STE ratings are permitted by exceptions noted in Attachment A or as noted in the NYSRC rules for underground cables), this is determined to be a localized event and no additional pre-contingency actions are required.
- If the study results show additional non-NYISO Controlled NERC BES facilities exceed their Relay Set Point, the NYISO and TO will continue the analysis to also trip the additional facilities that are over their Relay Set Point. This analysis will evaluate a maximum of five contingencies.
 - If at any point during the analysis sub-transmission (<100kV) is predicted to be over STE, the overloaded facilities will be removed from service during the analysis but do not count towards the five contingencies.
 - If at any point during the analysis it is determined that the contingency will result in the loss of radial load or will be confined to a load pocket such that cascading outages beyond the load pocket will not occur, this is considered a local event and pre-contingency voltage reduction or load shedding does not need to be implemented.



- If analysis of the fifth contingency results in a non-NYISO Controlled NERC BES facility exceeding the Relay Set Point, the potential cascade will be treated as an IROL event:
 - Pre-contingency emergency actions up to and including load shedding are required to be directed by the TOP in the amount needed to maintain the post-contingency flow below the Relay Set point on any of the evaluated cascade contingencies within 30 minutes of detection of the potential cascade situation.

Contingency Analysis non-convergence:

If the studies result in a non-convergence as the result of an unsupportable radial load pocket (i.e. local voltage collapse), or an overloaded facility serving radial load, this will be considered a local event and pre-contingency load shedding will not be required.

- If the non-convergence is due to a system modeling discrepancy, the NYISO and TO will work to correct the discrepancy, and no emergency actions will be required until the discrepancy is corrected.
- Any other non-convergence will be treated as an IROL exceedance and emergency actions including load shedding are required to be directed by the TOP in the amount needed to prevent voltage collapse within 30-minutes of detection of the non-convergence.

External RC impact

If at any point during analysis a BES tie line is projected to exceed its **LTE** rating the NYISO will coordinate operating plans to address the overloads with the external RC. The NYISO and external RC will coordinate additional studies to determine if the contingency continues to cascade further into the neighboring area. If these studies result in a BES facility external to NY exceeding its emergency rating per the NYISO or the external area entity analysis, the contingencies will be considered to have external RC impact, and will be treated as an IROL event.

- Pre-contingency emergency actions up to and including load shedding are required to be directed by the TOP in the amount



needed to maintain the tie line post-contingency flow below LTE within 30 minutes of detection of the potential cascade situation.

- In cases involving a local load pocket under a single Transmission Owner and multiple TOP/RC areas, all impacted TO, TOP, and RC areas must jointly develop operating plans which may include pre- or post-contingency load shed. Where the overloaded facility is serving only radial load, this will be considered a local event and pre-contingency load shedding will not be required.

Voltage Operating Limits:

Voltage Operating Limits for stations not listed in Attachment A Table A.2 or A.3 are specified in the TOs local procedures.

The TO shall notify the NYISO of actual voltage exceeding the pre-contingency voltage limit for greater than 30 minutes and the operating plan to resolve the exceedance up to and including load shed and request assistance from the NYISO if required to resolve the issue.

The TO shall notify the NYISO of actual voltage exceeding the post-contingency voltage limit immediately and the actions being taken to resolve the exceedance up to and including load shed or request assistance from the NYISO or neighboring TOs to resolve the exceedance if required.

For a post-contingency high voltage exceedance an operating plan will be developed which can clear the post-contingency high voltage exceedance. The TO shall notify the NYISO of predicted post-contingency voltage exceeding the post-contingency high voltage limit if assistance from the NYISO or neighboring TOs is required to resolve the exceedance.

The TO shall notify the NYISO of predicted post-contingency voltage exceeding the post-contingency low voltage limit if indicative of voltage collapse or if assistance from the NYISO or neighboring TOs is required to resolve the exceedance.

A.7.4 Applicable Contingencies

The contingencies applicable to the non-NYISO Controlled NERC BES facilities as per FAC-011, that shall be applicable for determining SOLs or SOL exceedances on the non-NYISO controlled NERC BES facilities are:

Single line to ground or 3-phase Fault (whichever is more severe), with Normal Clearing, on any Faulted generator, line, transformer, or shunt device.



Loss of any generator, line, transformer, or shunt device without a Fault.

Single pole block, with Normal Clearing, in a monopolar or bipolar high voltage direct current system.



Attachment B Restoration Procedures and Diagrams

B-1 NYISO Restoration Guidelines

B-2 NYISO Restoration Procedure - which defines the sequence of switching steps used in the event of a complete NYS Power System shutdown, and provides a form for recording execution or simulation of the switching steps.

B-3 NYISO Restoration Diagram

B-4 NYISO Black Start Facilities Table

B-5 NYISO Line Charging Table

B-6 NYISO Inter-Area Restoration Coordination Table

B-7 NYISO Key Facility List

B-8 NYISO Emergency Operations Manual Annual Review Record

Note: Due to the Critical Energy Infrastructure Information (CEII) classification of this information it is not public. In addition, the above attachments do not require committee approval and are subject to change at the NYISO's direction.



Attachment C Load Relief Capability

- Table C-1 tabulates the Load Relief available from Voltage Reduction and load curtailment.
- Table C-2 allocates New York Control Area wide load reduction among the Transmission Owners (TOs).
- Table C-3 allocates load reduction among the TOs on a geographic basis.

Note: The above attachments do not require committee approval and are subject to change at the NYISO's direction.

Table C- 1: Summer 2019 Load Relief Measures

Remote TO---	VOLTAGE REDUCTION CAPABILITY PERIOD																		SUMMER 2019								
	LI			CE			OR			CH			PA			NG		NY			RG			TOTAL (NYISO)			
ZONE	3%	5%	8%	3%	5%	8%	3%	5%	8%	3%	5%	8%	3%	5%	8%	3%	5%	8%	3%	5%	8%	3%	5%	8%			
A																7	7							0	7	7	
B																3	3					4	4		0	7	7
C																26	26			2	2				0	28	28
D																2	2								0	2	2
E																13	13								0	13	13
F																31	31								0	31	31
G								10	10			7	7												0	17	17
H						3	4																		0	3	4
I						28	44																		0	28	44
J						194	311																		0	194	311
K	8	18	18																						8	18	18
TOTAL (TO)	8	18	18	0	225	359	0	10	10	0	7	7	0	0	0	0	82	82	0	2	2	0	4	4	8	347	482

MANUAL TO---	VOLTAGE REDUCTION CAPABILITY PERIOD																		SUMMER 2019							
	LI			CE			OR			CH			PA			NG		NY			RG			TOTAL (NYISO)		
ZONE	3%	5%	8%	3%	5%	8%	3%	5%	8%	3%	5%	8%	3%	5%	8%	3%	5%	8%	3%	5%	8%	3%	5%	8%		
A												5	8						3					5	11	0
B												1	2											1	2	0
C												6	10						4					6	14	0
D												6	9											6	9	0
E												3	5						2					3	7	0
F												0	0						1					0	1	0
G												7												0	7	0
H																			2					0	2	0
I																								0	0	0
J																								0	0	0
K												2	4											2	4	0
TOTAL(TO)	0	0	0	0	0	0	0	0	0	7	23	38	0	0	0	0	0	12	0	0	0	0	23	57	0	



SUMMER 2019

LOAD RELIEF MEASURES

Transmission Owner: Total NYISO

Zone	Mkt. Participant Non-Essential Use			TO Interruptible Customers			Voluntary Large Indus. & Commrcl.			Public Appeal			Total Curtailments
	W	C	E	W	C	E	W	C	E	W	C	E	
A	0.10												0.10
B	0.40												0.40
C		0.40											0.40
D													0.00
E		0.20											0.20
F			0.10										0.10
G			5.25			4.00			4.00				13.25
H						5.00							5.00
I						19.70							19.70
J						102.70			2.00				104.70
K						63.45						80.00	143.45
TOTAL TO	0.50	0.60	5.35	0.00	0.00	194.85	0.00	0.00	6.00	0.00	0.00	80.00	287.30
TOTAL NYCA	6.45			194.85			6.00			80.00			287.30

NOTES:

W	West
C	Central
E	East



Table C- 2: Load Reduction by NYISO (in Megawatts)

REDUCTION REQUIRED	CH	CE	LI	NYSEG	NG	O&R	RGE	TOTAL
100	4	41	16	12	20	3	5	100
200	7	82	32	23	40	7	9	200
300	11	123	47	35	60	10	14	300
400	14	164	63	47	80	14	19	400
500	18	205	79	58	100	17	23	500
600	21	246	95	70	120	21	28	600
700	25	287	110	82	140	24	32	700
800	28	328	126	93	160	27	37	800
900	32	369	142	105	180	31	42	900
1000	35	410	158	117	200	34	46	1000



Table C- 3: Allocation of Load Reduction among All Members in a Geographic Area (In Megawatts)

Load Reduction to Relieve West-Central Transmission

REDUCTION REQUIRED	CH	CE	LI	O&R	NG(C+E)	NYSEG(C+E)	TOTAL
100	4	48	19	4	16	9	100
200	8	97	37	8	32	18	200
300	12	145	56	12	47	27	300
400	17	193	74	16	63	36	400
500	21	242	93	20	79	45	500
600	25	290	112	24	95	55	600
700	29	338	130	28	111	64	700
800	33	386	149	32	126	73	800
900	37	435	167	36	142	82	900
1000	42	483	186	40	158	91	1000

Load Reduction to Relieve Central-East Transmission

REDUCTION REQUIRED	CH	CE	LI	O&RU	NG(E)	NYSEG(E)	TOTAL
100	5	57	22	5	9	3	100
200	10	114	44	9	17	6	200
300	15	171	66	14	26	9	300
400	20	228	88	19	35	12	400
500	24	284	110	24	43	15	500
600	29	341	131	28	52	18	600
700	34	398	153	33	60	21	700
800	39	455	175	38	69	24	800
900	44	512	197	43	78	27	900
1000	49	569	219	47	86	29	1000



Load Reduction to Relieve UPNY-CONED Transmission				
REDUCTION REQUIRED	CE	LI	NYSEG(E)	TOTAL
100	62	36	2	100
200	124	72	4	200
300	186	108	6	300
400	248	144	8	400
500	310	180	10	500
600	372	216	12	600
700	434	252	14	700
800	496	288	16	800
900	558	324	18	900
1000	620	360	20	1000



Attachment D Emergency Procedure Testing Forms

- [D-1](#) defines standard terminology used in conducting tests of the Load Shedding procedure and provides a form for recording test results.
- [D-2](#) defines standard terminology used in conducting simulated tests of the Voltage Reduction procedure and provides a form for recording test results.
- [D-4](#) defines standard terminology used in conducting tests of the Restoration procedure and provides a form for recording test results.
- [D-5](#) defines standard terminology used in conducting tests of the Interim New York Control Area Operation & Alternate Control Center Operation procedures and provides a form for recording test results.
- [D-6](#) defines standard terminology used in conducting tests of the Interim New York Control Area Operation & Alternate Control Center Operation TO Data Submittal procedures and provides a form for recording test results.
- [D-7](#) defines standard terminology used in conducting actual tests of the Voltage Reduction procedure and provides a form for recording test results.

Note: The above attachments do not require committee approval and are subject to change at the NYISO's direction.



D-1 Test of Load Shedding Procedure

The NYISO Shift Supervisor shall make the following statements, using three part communication when appropriate:

- “As of ____ (HH:MM) this is a test of the load shedding procedure that is expected to be completed within 10 minutes. DO NOT shed any actual load. A Major Emergency does not exist.”
- NYISO is simulating ____ (X) MWs of load shed.
- “Report back to the NYISO your load at the time of the load shed order, the estimated load relief, and the time that the test of the load shedding procedure is complete.”
- “Confirm that this is only a test to simulate Load Shed by TO.”
- “This is a test of the load shedding procedure. DO NOT shed any actual load. A Major Emergency does not exist.”

Note: Do not activate the Load Shed Alarm System during test procedure.

Table D- 1: Test of Load Shedding Procedure Form

Test initiated at _____ by _____
 (Time and Date) (NYISO Shift Supervisor)

Transmission Owner	Load Shed Order (MW)	Time of Order	Load at Time of Order (MW)	Time of Completion	Estimated Load Relief (MW)
CE					
LI					
OR					
CH					
NG					
NY					
RG					

Test terminated at _____ by _____
 (Time and Date) (NYISO Shift Supervisor)



D-2: Test of Voltage Reduction Procedure - simulated

The NYISO Shift Supervisor shall make the following statements, using three part communication when appropriate:

- “As of_____ (HH:MM) this is a test of the voltage reduction procedure it is expected to be completed within 10 minutes. DO NOT actually initiate voltage reduction. A Major Emergency does not exist.”
- “Report back to the NYISO your load at the time of the (3%, 5%, 8%) quick response voltage reduction order, the estimated load relief, and the time that the test of the voltage reduction procedure is complete.”
- “Confirm that this is only a test to simulate the Voltage Reduction Procedure.”
- “This is a test of the voltage reduction procedure. DO NOT actually initiate voltage reduction. A Major Emergency does not exist.”

Table D- 2: Test of Voltage Reduction Procedure – simulated Form

Test initiated at _____ by _____
 (Time and Date) (NYISO Shift Supervisor)

Transmission Owner	Voltage Reduction %	Manual or Quick Response	Time of Order	Time of Completion	Estimated Load Relief (MW)
CE					
LI					
OR					
CH					
NG					
NY					
RG					
PA					

Test terminated at _____ by _____
 (Time and Date) (NYISO Shift Supervisor)



D-4: Test of Restoration

Refer to the Restoration Procedures in the *NYISO System Restoration Manual* (available from the NYISO website)



D-5: Test of Interim New York Control Area Operation Procedure & Alternate Control Center Operation

The NYISO Shift Supervisor shall make the following statement, using three part communication when appropriate:

“This is a test of the Interim NYCA Operation Procedure & Alternate Control Center Operation. At this time, a simulated evacuation of the NYISO Power Control Center will begin. National Grid and Con Edison shall assume control of the NYS Power System under the conditions described in section 8 of the Emergency Operations Manual until communication is established from the Alternate Control Center. NYISO systems will continue to operate, producing basepoints that generation should follow unless generation has to be moved to address a local reliability issue (the NYISO should be notified of such moves). Any unit loss should be reported to the NYISO so a redispatch can occur. NYISO will continue to confirm transaction schedules with ISONE, IESO, HQ and PJM. This is a test of the Interim NYCA Operation Procedure & Alternate Control Center Operation, a Major Emergency does not exist.

Test initiated at _____ by _____
(Time and Date) (NYISO Shift Supervisor)

SS-ACC _____
Name

SO-ACC _____
Name

SO-ACC _____
Name

GO-ACC _____
Name

Time of Arrival at ACC _____
Time and Date

Communication Established _____
Time and Date

Transmission Owner Directed Dispatch Begun _____
Time and Date

Problems Encountered:

Test terminated at _____ by _____
(Time and Date) (NYISO Shift Supervisor)

Completed by: _____



(Company/Operator)



**D-6: Test of Interim New York Control Area Operation Procedure & Alternate Control Center
Operation Transmission Owner Data Submittal**

**Table D- 3: Test of Interim New York Control Area Operation Procedure &
Alternate Control Center Operation Transmission Owner Data
Submittal Form**

Test initiation message received at _____
(Time and Date)

Message received from _____ of _____
(Dispatcher) (NYISO or DNC)

Section to be completed by Designated NYISO Coordinator (DNC):

Communication Established with
NG/CE _____
(Time and Date)

Communication Established with
External Systems _____
(Time and Date)

Communication Established with
Internal Systems _____
(Time and Date)

First Reserve Check Completed _____
(Time and Date)

Transmission Owner Directed
Dispatch Begun _____
(Time and Date)

Section to be Completed by ALL other System Operators:

Communication Established with
Designated NYISO Coordinator _____
(Time and Date)

Communication Established with
ACC _____
(Time and Date)

Transmission Owner Directed
Dispatch Begun _____
(Time and Date)

Problems Encountered:

Test terminated at _____ by _____
(Time and Date) (NYISO Shift Supervisor)

Company: _____



D-7: Test of Voltage Reduction Procedure - Actual

Actual Test of Voltage Reduction Capability

The NYISO shall make the following statements, using three part communication when appropriate:

- This is an **actual** test of your ____3%, ____5%, ____8% Quick Response voltage reduction capability. A Major emergency does not exist.
- Report back to the NYISO immediately at the completion of the order:
 - The MW load at the time of the Voltage reduction order
 - The MW amount of load reduction
 - The MW load at completion time for being in ____% Quick Response voltage reduction
- Report to the NYISO immediately if you have a system problem that precludes you from participating in this test.
- The test is initiated at _____ on _____.

Table D- 4: Test of Voltage Reduction Procedure-actual Form

Transmission Provider	Time Reported	Load at Time of Order	Time of Completion	Load at Time of Completion	Load Relief (MW)
CE					
LI					
OR					
CH					
NG					
NY					
RG					
PA					
TO Totals					
NYISO					

The Test of **Actual** ____% Quick response voltage reduction is terminated at _____ . You may resume normal voltage levels.

Shift Supervisor _____

** As a reminder this test does **not** require reporting via DOE OE-417 form, remind the TOs of this on a separate call.



Attachment E Data Collection Forms

- [Table E.1](#): DNI Change Log External Proxy
- [Table E.2](#): DNI Change Log UPNY
- [Table E.3](#): DNI Change Log SENY
- [Table E.4](#): Reserve Allocation Survey UPNY
- [Table E.5](#): Reserve Allocation Survey SENY
- [Table E.6](#): ACC/ICO Drill Annual Review Record

Note: The above attachments do not require committee approval and are subject to change at the NYISO's direction.

The following data shall be monitored during Interim New York Control Area Operation by the Designated NYCA Coordinator(s), National Grid and Consolidated Edison.

Transfers

- Western Export
- Moses - South
- Dysinger - East
- Oswego Export
- Central - East
- Total East
- UPNY-ConEd
- Dunwoodie South
- IESO - NY
- PJM - NY
- ISO-NE NY
- HQ-NY
- Each Transmission Owner System Net Interchange

Voltages

As listed in Attachment A-2 of the NYISO Emergency Operations Manual (available from the NYISO Web site at the following URL:

https://www.nyiso.com/documents/20142/2923301/em_op_mnl.pdf/99ef389d-4bca-fc0e-f12e-d91c0763cdca)

The following data shall be collected during Interim NY Control Area operation by the Designated NYCA Coordinator(s), National Grid and Consolidated Edison

Reserve



- Total Ten-Minute Reserve
- Total Operating Reserve

The following forms shall be used for recording DNI changes and reserve allocations:

- DNI Change Log - UPNY
- DNI Change Log - SENY
- DNI Change Log - Externals
- Reserve Allocation Survey - UPNY
- Reserve Allocation Survey - SENY



Table E- 4: Reserve Allocation Survey UPNY

NOTE: Total operating reserve = 10 minute reserve + 30 minute reserve						Reserve Allocation Survey UPNY			Date: _____		
Time	Category	NG	NYS	RGE	NYPA	Total UPNY	Total SENY	Total Recallable Exports	Total NYCA Reserve	Reserve Req	Surplus/ Deficit
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										



Table E- 5: Reserve Allocation Survey SENY

NOTE: Total operating reserve = 10 minute reserve + 30 minute reserve					Reserve Allocation Survey SENY				Date: _____		
Time	Category	CE	LI	OR	CH	Total SENY	Total UPNY	Total Recallable Exports	Total NYCA Reserve	Reserve Req	Surplus/ Deficit
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										
	10 Minute										
	Operating										



Table E- 6: ACC/ICO Drill Annual Review Record

Reviewed Date	Comments
April 24, 2012	Updated Attachment C-2 to include Company/Operator
April 23, 2013	Revisions listed Revision History
May 7, 2014	Reviewed April 16, 2014 ACC/ICO Drill Report with SOAS no update to the plan required.
May 7, 2015	Reviewed April 15, 2015 ACC/ICO Drill Report with SOAS no update to the plan required.
May 12, 2016	Reviewed April 6, 2016 ACC/ICO Drill Report with SOAS no update to the plan required.
June 5, 2017	Reviewed April 19, 2017 ACC/ICO Drill Report with SOAS no update to the plan required.
June 7, 2018	Reviewed April 24, 2018 ACC/ICO Drill Report with SOAS no update to the plan required.
June 6, 2019	Reviewed April 23, 2019 ACC/ICO Drill Report with SOAS no update to the plan required



Attachment F Notification Form

[Table F.1](#), PSC Notification Form

Note: The above attachments do not require committee approval and are subject to change at the NYISO's direction.



The following standard terminology shall be used when reporting the declaration of Major Emergency to the NYS PSC.

Table F- 1: PSC Notification Form

At _____ on _____ (Time) (Day, Date)
a Major Emergency was declared by the NYISO Shift Supervisor _____ Initials

Due To:

(Circle the item number for one or more of the following items and complete the requested information)

1. Power flow on line _____ exceeded its (LTE Rating/Stability Limit).
2. Voltage at the _____ bus was (less than/greater than) _____ kV.
3. System frequency was less than _____ Hz.
4. Area Control Error exceeded 500 MW for more than 10 minutes.
5. Separation of the NYISO system has occurred at _____
6. NYISO had to go into Voltage Reduction to provide assistance to _____ (CONTROL AREA)
7. Monitoring equipment was unavailable and the system was thought to be in jeopardy.
The Major Emergency was terminated at _____ (TIME)
Load Relief measures (were / were not) required.
Brief statement of apparent cause (if known). _____
Corrective Action Taken: _____