New York ISO
Independent System Operator

Manual 15

Emergency Operations Manual

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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 shall be declared 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 mid-point 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 for 10 minutes or longer, or those limits are exceeded and corrective measures are not effective within 15 minutes. At the discretion of the NYISO, a Major Emergency may be declared immediately following such a post-contingency flow exceedance of the IROL if system conditions warrant.
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 for 10 minutes or longer, or its stability

limit is exceeded and corrective measures are not effective within 15 minutes. At the discretion of the NYISO, a Major Emergency may be declared immediately following such a post-contingency flow exceedance of the IROL if system conditions warrant.

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.
10. 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.
7. 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/outage_sched_mnl.pdf/1c2cc085-0fce-6540-fded-c95d0c662568) 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 an Alert State shall be declared immediately and corrective measures shall be initiated to bring the loading to established limits. At the discretion of the NYISO, the Major Emergency State may be declared immediately following such an exceedance of the IROL if system conditions warrant.

b. If after taking corrective measures, loadings are not below 105% of the limit within 10 minutes, or are not below the established limit within 15 minutes, 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.

c. 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 it if may result in temporary exceedance of NOx 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 Exceedance

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 an Alert State shall be declared immediately and corrective measures shall be initiated to bring the loading to established limits. At the discretion of the NYISO, the Major Emergency State may be declared immediately if system conditions warrant.

b. If after taking corrective measures, loadings are not below 105% of the limit within 10 minutes, or are not below the established limit within 15 minutes, 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.

c. 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)
b. In the following approximate percentages:
c. 7% - 59.5 Hz (fast)
d. 7% - 59.3 Hz (fast)
e. 7% - 59.1 Hz (fast)
f. 7% - 58.9 Hz (fast)
g. 2% - 59.5 Hz (10 s)
h. 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.