

ISO new england	CROP.10003 Implement Disturbance Remedial Actions	
© 2024	Approved By: Director, Operations	Effective Date: 08/06/2024
Rev # 25	Procedure Owner: Manager, Control Room Operations	Valid Through: 08/06/2026

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References

1. BAL-002 Disturbance Control Standard – Contingency Reserve for Recovery from a Balancing Contingency Event
2. NPCC Directory 5 Reserve

Procedure Background

The objective of this procedure is to recover from system disturbances, which include Reportable Events.


This procedure documents the responsibilities of the ISO staff and describes how to implement or support, the Simultaneous Activation of ten-minute Reserve (SAR) and Mutual Reserve Assistance (MRA) with the New Brunswick Power System Operator (NB).

It is also intended that ISO New England (ISO), NPCC, and North American Electric Reliability Corporation (NERC) control performance and transmission standards be satisfied.

Compliance with this procedure results in a recovery from system disturbances, which maintains a high level of reliability and avoids increases in the reserve requirements of NPCC Directory # 5, and NERC Reliability Standard BAL-002, Disturbance Control Performance.

Reportable Balancing Contingency Events are defined by the following:

- NPCC: $\geq 500\text{MW}$
- NERC: Any Balancing Contingency Event occurring within a one-minute interval of an initial sudden decline in ACE based on EMS scan rate data that results in a loss of MW output less than or equal to the Most Severe Single Contingency, and greater than or equal to the lesser amount of: (i) 80% of the Most Severe Single Contingency, or (ii) 900MW for the Eastern Interconnection. Prior to any given calendar quarter, the 80% threshold may be reduced by the responsible entity upon written notification to the Regional Entity.
 - Example: ISO-NE largest contingency is Phase II at 1320MW
 - $80\% * 1320 = 1056\text{MW}$
 - Eastern Interconnection threshold = 900MW, this is less than 80% of the largest contingency
 - Therefore, the NERC Reportable Event threshold is 900MW.

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A system disturbance is any perturbation to the electric system or an unexpected change in the Area Control Error (ACE) that is caused by the sudden loss of a Generator or supply ≥ 500 MW. Each resource committed in accordance with SOP-RTMKTS.0050.0010 - Perform Reserve Adequacy Assessment provides for sufficient reserve and assists in recovery from system disturbances. Additionally, Ten-Minute Operating Reserve sufficient to recover from any single event is maintained in Real-Time in accordance with the criteria established in SOP-RTMKTS.0050.0010 - Perform Reserve Adequacy Assessment. CD SPD software is the primary tool used in recovering from a system disturbance. ISO will only use the assistance provided by the Interconnection frequency bias for the time needed to implement actions of this procedure.

A successful recovery from a system disturbance is based on recovery of the New England RCA/BAA ACE, as observed on the RTGEN - NEPEX System Summary display “Native (unadjusted) ACE” value.

When MRA is NOT being used:

ISO Control Room Operators respond to 100% of system disturbances by returning the New England RCA/BAA ACE value to zero (0), or to the Pre-Reporting Contingency Event ACE Value (if the New England RCA/BAA ACE was initially a negative value) within fifteen (15) minutes of the start of the system disturbance.

When MRA is being used:

ISO Control Room Operators respond to 100% of system disturbances by returning the New England RCA/BAA ACE value and combined NE and NB ACE value to zero (0), or to the Pre-Reporting Contingency Event ACE Value (if the New England RCA/BAA ACE was initially a negative value) within fifteen (15) minutes of the start of the system disturbance.


Capacity Scarcity Condition

A Capacity Scarcity Condition will be triggered by the approval of any ONE UDS or CDSPD case that is violating any one or more of the reserve constraints identified below for (1) five minute interval.

- System Ten-Minute Non-Spinning Reserve (TMNSR) – RCPF of \$1,500/MWh
- System Thirty-Minute Operating Reserve (TMOR) – RCPF of \$1,000/MWh
- Local Reserve Zone TMOR – RCPF of \$250/MWh. Local Reserve Zones are:
 - NEMA-Boston
 - CT
 - SWCT

Management Expectation:

Upon indication of a UDS (or CDSPD) case that is violating the System TMNSR, System TMOR, or Local Reserve Zone TMOR requirement the Loader Operator shall communicate the condition to the Operations Shift Supervisor and Senior System Operator for further discussion prior to approval. If the conditions forecasted by UDS (or CDSPD) are as expected, and approval of the UDS or CDSPD case is required, then the case may be approved. If the conditions forecasted by UDS or CDSPD are not as expected, or if approval of the UDS or CDSPD case is not required, then adjustments should be made to the case and it should be re-executed as necessary.

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Common Procedure Information

- A. Any ISO-NE qualified Control Room Operator has the authority to take actions required to comply with NERC Reliability Standards. A qualified ISO-NE Control Room Operator has met the following requirements:
 - 1. Have and maintain a NERC certification at the RC level (per R.1 of PER-003-2)
 - 2. Applicable Requirements of PER-005-2
 - 3. Approved to cover a Control Room Operator shift position by the Manager, Control Room Operations
 - 4. Is proficient at the current qualified level.
- B. Real time operation is defined as the current hour and the current hour plus one.
- C. Future hours are those beyond real time operation.
- D. All verbal communications with Local Control Centers (LCC), neighboring Reliability Coordinators/Balancing Authorities (RC/BA), Designated Entities (DE), Demand Designated Entities (DDE) and/or SCADA centers shall be made on recorded phone lines unless otherwise noted.
- E. For all communications:
 - 1. Use the Basic Protocol for All Operational Communications as prescribed in M/LCC 13
 - 2. Use 'ISO New England' or 'New England'. Refrain from using 'ISO'.
 - 3. Use Asset ID's when communicating with DE/DDEs.
 - 4. Use three-part communication in all situations where its use will enhance communications.
- F. Primary responsibilities are stated for each step within the procedure, but any ISO Control Room Operator qualified at that position or higher can perform the step. The Primary Responsibility may be delegated to an Operator in a lower qualified position, but the responsibility for its completion remains with the identified individual.
- G. The use of “ensure” within this document means that a verification has been performed and if the item is not correct, corrective actions will be performed.

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Procedure

Condition(s) to perform this section:

- Sudden actual net interchange deviations resulting in a supply loss equal to or greater than 500 MW [NPCC Reportable Event]; Or
- Sudden loss of generation equal to or greater than 500 MW [NPCC Reportable Event]; Or
- When the Operations Shift Supervisor determines implementing SAR will improve stressed system conditions; Or
- When requested by the NYISO Shift Supervisor to provide assistance to another RCA/BAA; Or
- When requested by NBP-SO to provide MRA.

Section 1 : Initiating Event

Step 1.1 Primary Responsibility: Senior System Operator

Initiate the actions of EOP - 1 Implement Disturbance Remedial Action.

Standard(s) for completion:

- ISO-NE Native (unadjusted) ACE value is returned to zero or Pre-Reporting Contingency Event ACE Value (if initially negative) within 15 minutes of the start of the system disturbance; OR
- If MRA is being used: ISO-NE Native (unadjusted) ACE value **AND** Combined NE and NB ACE value is returned to zero or Pre-Reporting Contingency Event ACE Value (if initially negative) within 15 minutes of the start of the system disturbance.

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Section 2 : Recovery from System Disturbances

Step 2.1

CD SPD Operation

Instructions

The CD SPD software should be immediately implemented (prior to entering SAR or MRA) following a system disturbance and should **NOT** depend on the status or timing of SAR or MRA.

Notes

- In most instances, placing the Contingent Generator into UCM 1 in the “Unit Limits” display will provide accurate information for resource availability. There may be a case of a Generator experiencing a partial loss of generation and placing that Generator into UCM 3 would be appropriate.
- If a DARD Pump is on-line and self scheduled or the minimum run time has not expired, the CD-SPD solution will not start the generators from the same station.
- The Electronic Dispatch filtering, following approval of a Successful CD SPD case, will prevent:
 - Shutdown signals;
 - DDPs in the lowering direction from being sent to the applicable generators;
 - DDPs to increase load from being sent to the applicable DRRs.
- However, should an active constraint be present, this filtering may **NOT** prevent these signals. In this case, the solution will attempt a security constrained dispatch and allow resources to be dispatched in a manner contrary to the recovery effort. The Loader needs to take additional actions to compensate for these dispatches.
- Resources that were LEG'd prior to the approval of a successful CD SPD case will be highlighted **GREEN**.
- Resources that were Postured prior to the approval of a successful CD SPD case will be highlighted **MAROON**.

Step 2.1.1

Primary Responsibility: Senior System Operator

Instruct the Loader Operator to perform the actions of EOP 1.1 - Run CD SPD using a specified Non-Performance Factor.

Notes

Determination of the Non-Performance Factor is done using the Task Notes of EOP 1.

Step 2.1.2

Primary Responsibility: Any Control Room Operator

Condition(s) to perform this step:

- Start-up recommendation from CD-SPD was cancelled.

Log the fast-start cancelled start-up.

Instructions

Use log entry: > Generation > Fast-Start Start-Up Cancelled [E]

Step 2.2

CD SPD Inoperable.

Step 2.2.1

Primary Responsibility: Loader Operator

Notify the Senior System Operator of the failure.

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Step 2.2.2 Primary Responsibility: Loader Operator

Perform the actions of EOP 1.2 - CD SPD Inoperable.

Notes

If the “Fast Start Manual Dispatch” display is used to recover from a system disturbance, the Loader should consider only the Claim 10 values when determining the desired MW amount.

Step 2.3

Interruption of Firm Load.

Step 2.3.1 Primary Responsibility: Any Control Room Operator

Condition(s) to perform this step:

- Sustained negative ISO ACE is a burden on any other RCA/BAA or the Interconnection frequency.

Perform system wide load shedding to recover the ACE using CROP.10001 Load Shed.

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Section 3 : Implement SAR Procedure

Notes

- From NYISO, ISO-NE will allow 50% of an ISO-NE reportable source loss as SAR, regardless of the pre-contingent tie schedule.
- To NB, ISO-NE will allow 50% of an NB reportable source loss as SAR, regardless of the pre-contingent tie schedule. ISO-NE will allow up to 200 MW of MRA
- SAR will **NOT** be scheduled longer than 15 minutes if there are thermal, voltage, or stability reliability issues. The basis to allow SAR from NYISO and SAR to NB above the scheduling limit regardless if it is thermal, voltage, or stability is that the energy is already flowing from the source loss.
- From NB, ISO-NE will allow up to 200 MW of combined SAR or MRA, as long as there are **no** pre-contingent thermal, stability or voltage issues. During the scheduling of SAR/MRA should post-contingent thermal, voltage, or stability issues arise, SAR or MRA, or both will be held for **no** longer than 15 minutes. SAR and MRA will be limited by all voltage and stability reliability limits and total transfer capability limits.
- To NYISO, ISO-NE will allow SAR over the scheduling limit but not to exceed the stability or voltage limit. SAR will **NOT** be scheduled longer than 15 minutes if there are thermal, voltage, or stability reliability issues.
- When ISO-NE is receiving SAR, the amount of SAR being received is treated as an Energy Only import therefore it is **NOT** counted as capacity and does not contribute toward meeting Operating Reserve requirements.
- When ISO-NE is providing SAR, the amount of SAR being provided is treated as an Energy Only export therefore it is counted toward meeting Operating Reserve requirements since it can be recalled. This treatment helps avoid initiating a Capacity Scarcity Condition when providing SAR to another RCA/BAA.

Step 3.1 Primary Responsibility: Senior System Operator

Condition(s) to perform this step:

- Event occurred in ISO NE and SAR is to be used.

Instruct the Generation Operator to perform the actions of [EOP 1.3 - Request for SAR.](#)

Step 3.2 Primary Responsibility: Senior System Operator

Condition(s) to perform this step:

- SAR has been requested from an External RC/BA.

Initiate the actions of [EOP 1 - Implement Disturbance Remedial Action.](#)

Step 3.2.1 Primary Responsibility: Senior System Operator

Condition(s) to perform this step:

- If the contingent source in an external RCA/BAA affects wheel contracts to ISO-NE.

Initiate the actions of [EOP 1.4 - SAR MRA Implementation with Wheeling Contracts as instructed by EOP 1 - Implement Disturbance Remedial Action implementation.](#)

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Section 4 : Implement MRA Procedure

Notes

- From NB, ISO-NE will allow up to 200 MW of combined SAR or MRA, as long as there are **no** pre-contingent thermal, stability or voltage issues. During the scheduling of SAR/MRA should post-contingent thermal, voltage, or stability issues arise, SAR or MRA, or both will be held for **no** longer than 15 minutes. SAR and MRA will be limited by all voltage and stability reliability limits, and total transfer capability limit.
- When ISO-NE is receiving MRA, the amount of MRA being received is treated as an Energy Only import therefore it is **NOT** counted as capacity and does not contribute toward meeting Operating Reserve requirements.
- When ISO-NE is providing MRA, the amount of MRA being provided is treated as an Energy Only export therefore it is counted toward meeting Operating Reserve requirements since it can be recalled. This treatment helps avoid initiating a Capacity Scarcity Condition when providing MRA to NB.

Step 4.1 Primary Responsibility: Senior System Operator

Condition(s) to perform this step:

- Event occurred in ISO-NE and MRA is to be used.

Instruct the Security Operator to perform the actions of EOP 1.5 - Request for MRA.

Step 4.2 Primary Responsibility: Security System Operator

Condition(s) to perform this step:

- MRA has been requested from NB.


Initiate the actions of EOP 1.5 - Request for MRA.

Step 4.2.1 Primary Responsibility: Senior System Operator

Condition(s) to perform this step:

- If the contingent source in an external RCA/BAA and affects wheel contracts to ISO-NE.

Initiate the actions of EOP 1.4 - SAR MRA Implementation with Wheeling Contracts as instructed by EOP 1 - Implement Disturbance Remedial Action implementation.

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Section 5 : System Disturbance Communications

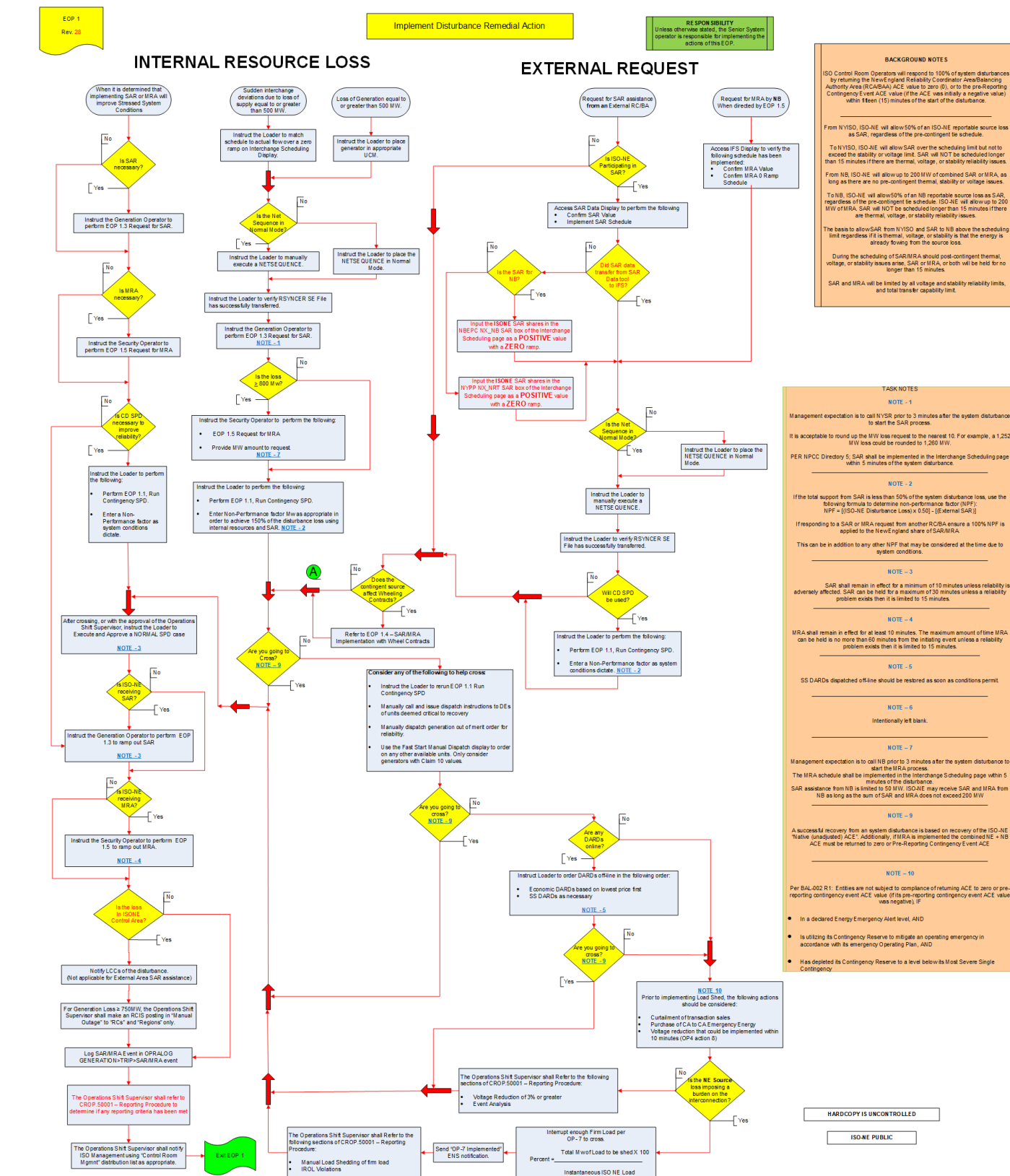
Step 5.1
 Notifications and reporting is performed as specified in [EOP - 1 Implement Disturbance Remedial Action](#).

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Revision History

Rev. No.	Date (MM/DD/YY)	Reason	Contact
--	06/05/19	For previous revision history, refer to Rev 15 available through Ask ISO	Steven Gould
16	07/08/19	Removal of OP-7 ENS Notification in Step 2.3	Steven Gould
17	11/22/19	Removed reference to Directory 5 in the background for Reportable Event.	Steven Gould
18	03/10/20	Added DARD pump information in note of step 2.1 Attachments 1 and 2 revised	Steven Gould
19	05/20/20	Updated Section 3, added notes for SAR reserve accounting; Updated Section 4, added notes for MRA reserve accounting	Steven Gould
20	07/30/20	Minor modification to Procedure Background; Updated Condition to Perform Section 1, Added note to Sections 3&4. Modified Primary Responsibility and direction in Step 4.2. Added RCIS direction, changed wording, and modified providing MRA in EOP-1. Modified EOP 1.5 for Providing MRA	Steven Gould
21	09/29/20	Modified EOP 1 for a request for MRA from NB. Updated EOP 1.4 for handling wheeling contracts.	Steven Gould
22	07/20/22	Added Step 2.1.2, Updated Section 4 for MRA reserve accounting, Updated flowcharts EOP 1, 1.3, 1.4 and 1.5	Jonathan Gravelin
23	05/09/23	Updated flowcharts EOP 1, 1.3 and 1.5	Jonathan Gravelin
24	01/09/24	Updated flowchart EOP 1	Jonathan Gravelin
25	08/04/24	Updated flowchart EOP 1, 1.1, 1.2 and 1.3	Jonathan Gravelin

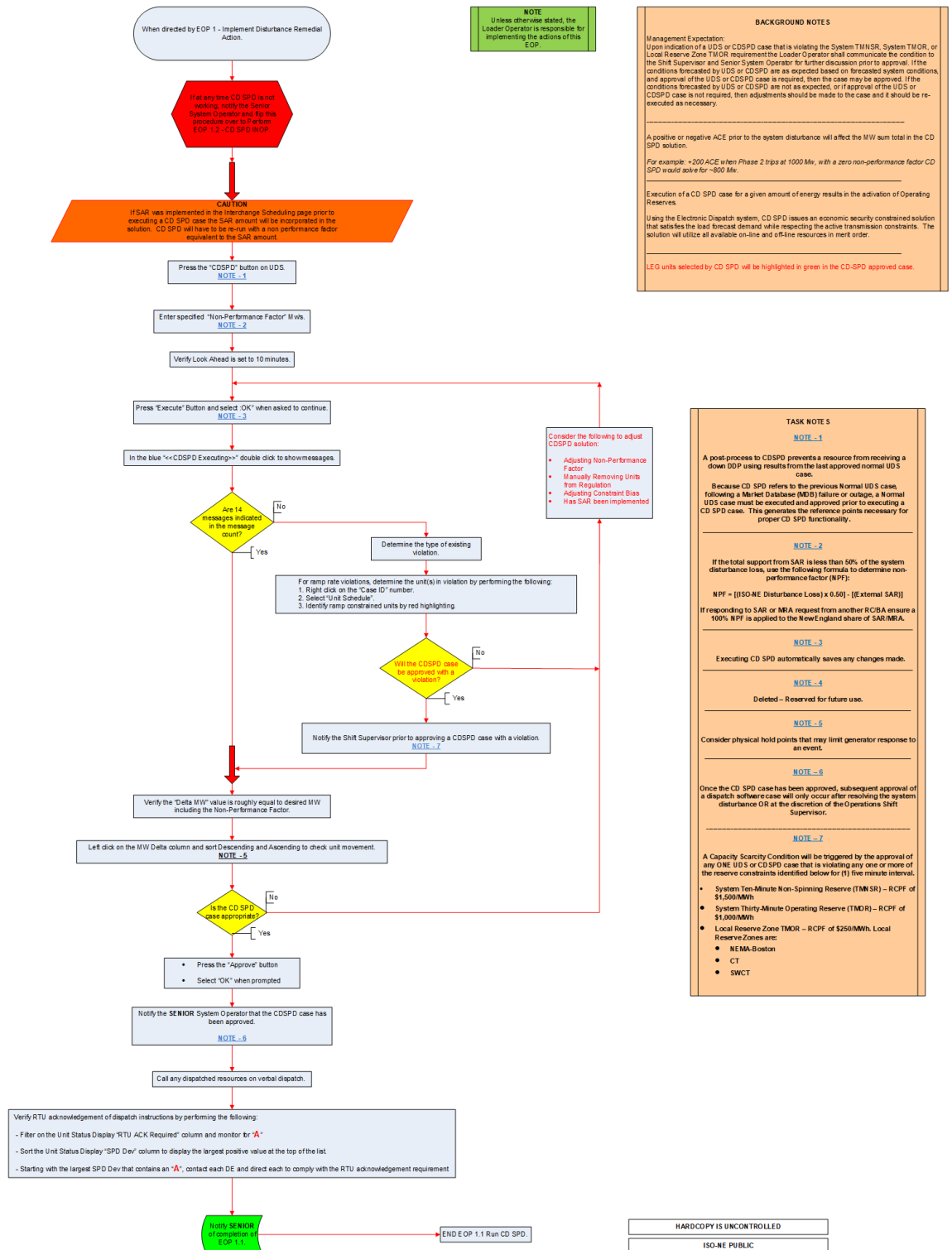
Attachment 1 - EOP 1 - Implement Disturbance Remedial Action



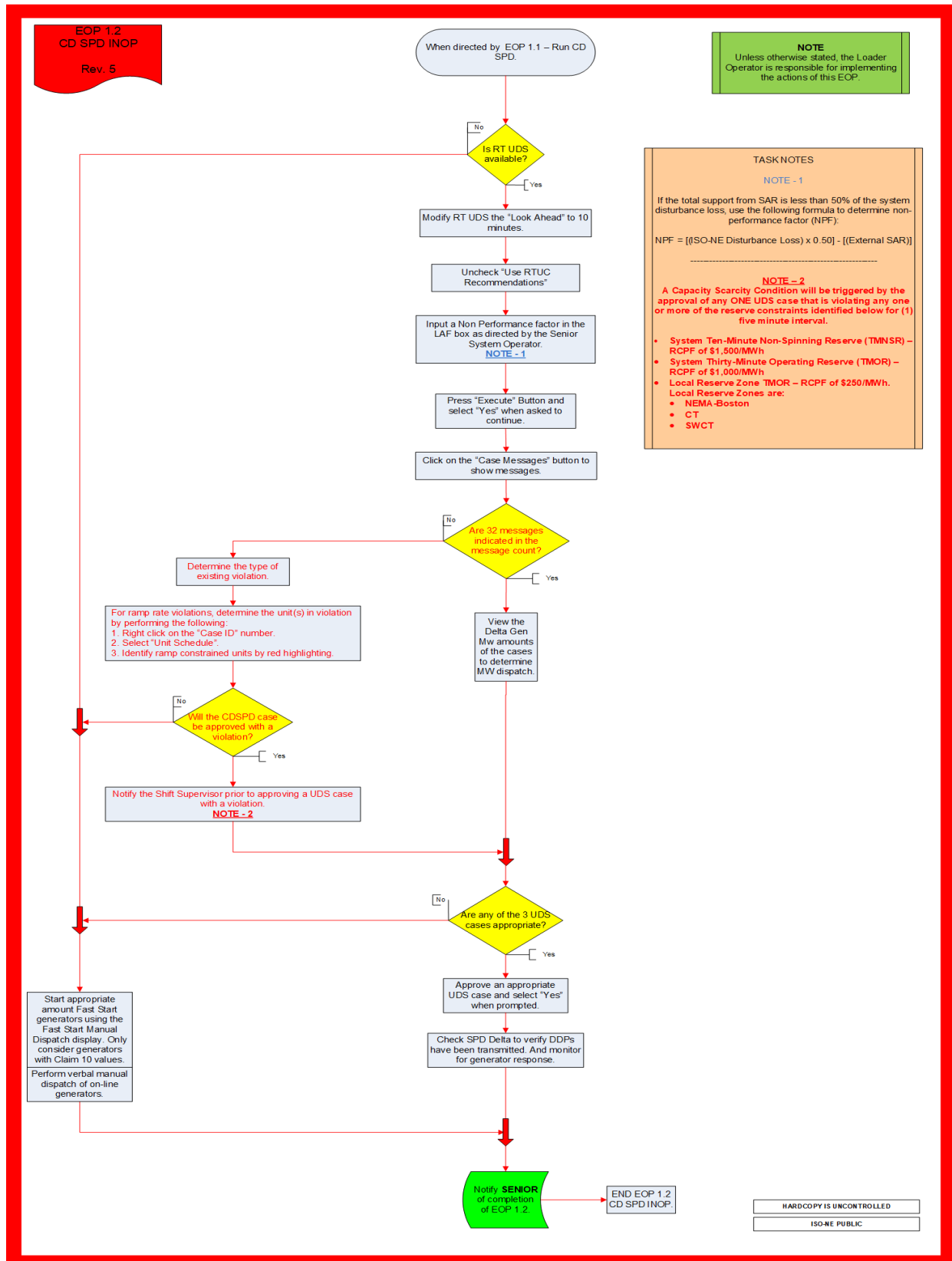
Attachment 2 - EOP 1.1 - Run CD SPD

EOP 1.1
Run CD SPD

Rev. 10

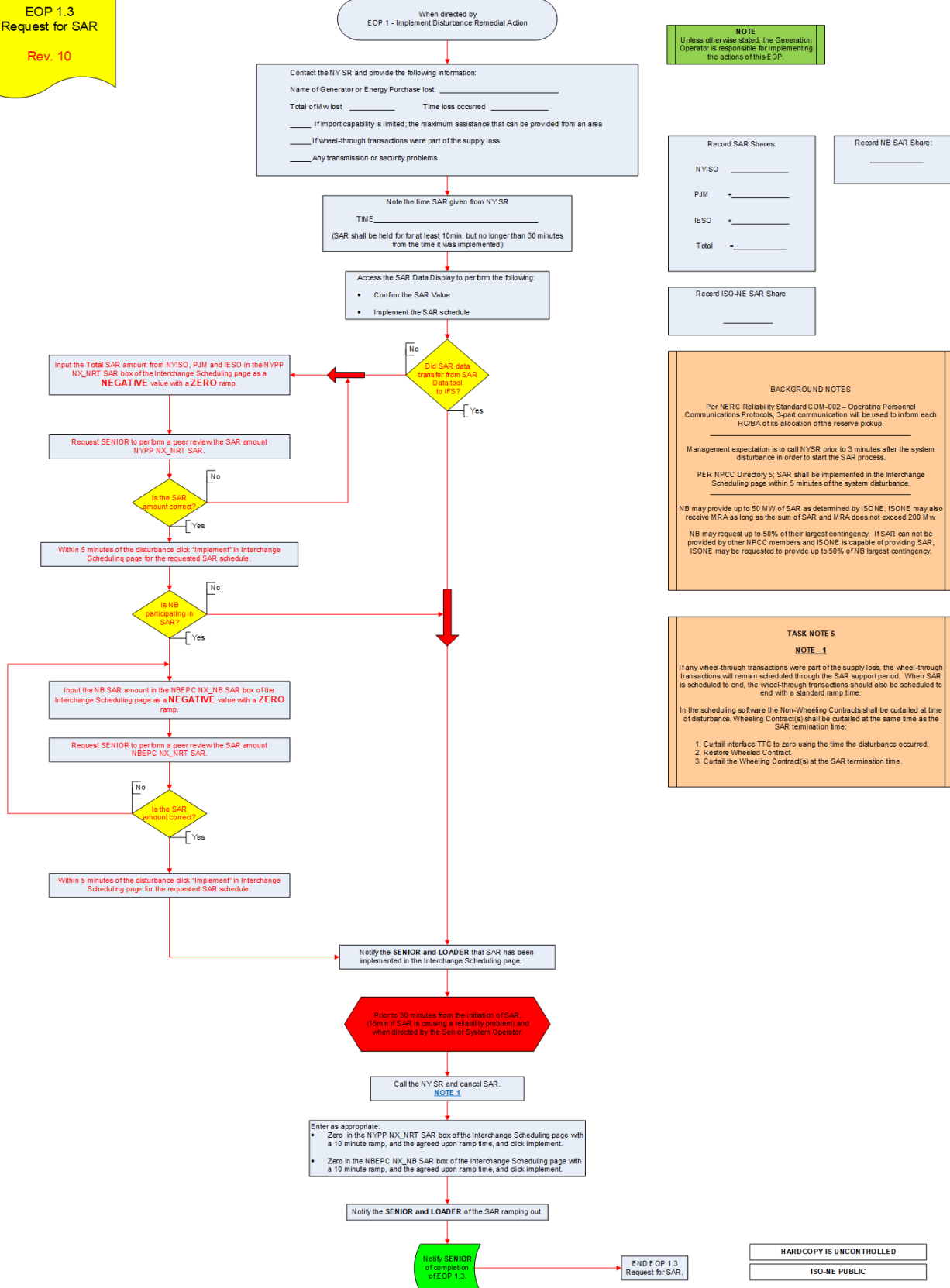



Attachment 3 - EOP 1.2 - CD SPD Inoperable



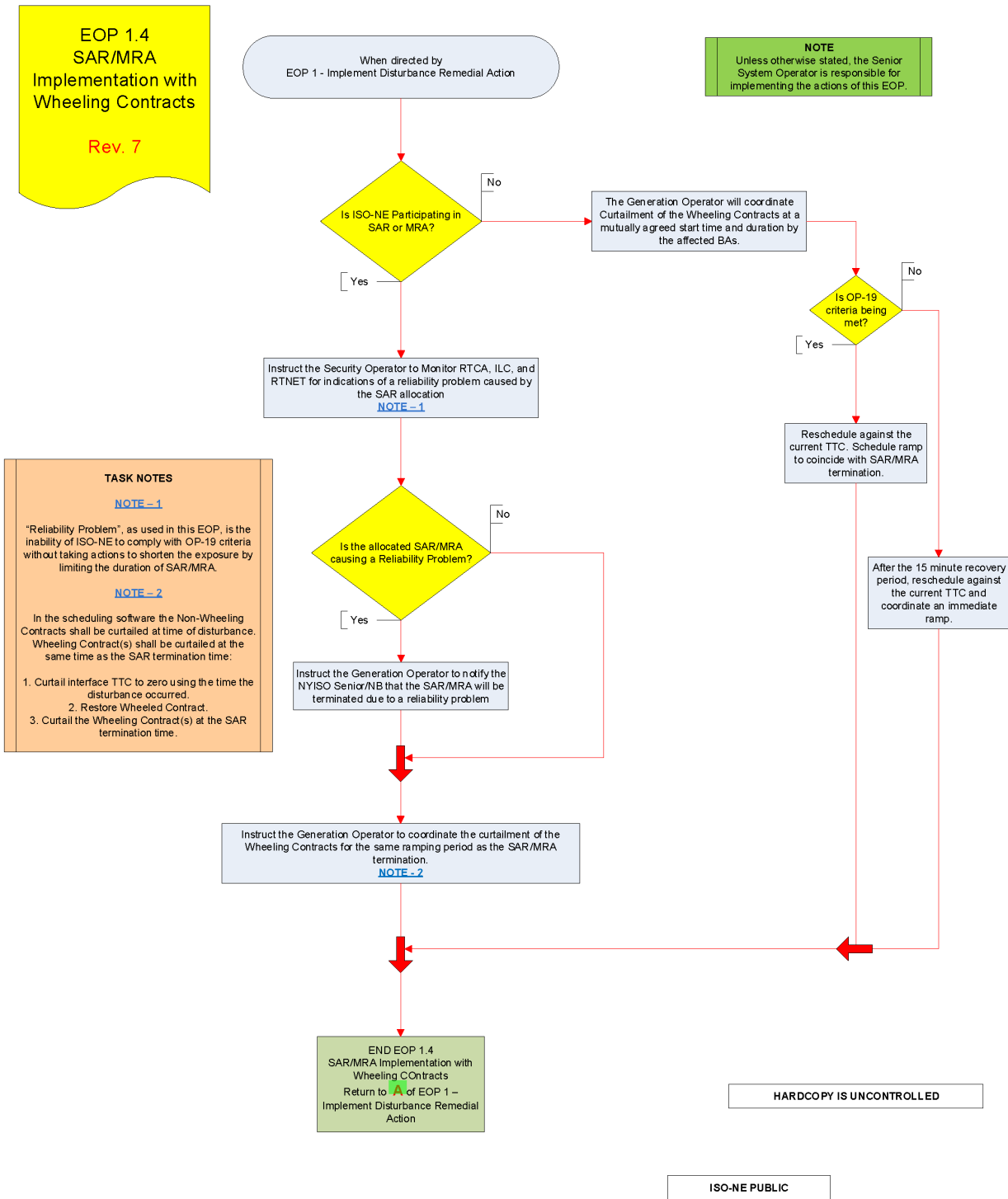
Attachment 4 - EOP 1.3 - Request for SAR

EOP 1.3
Request for SAR
Rev. 10



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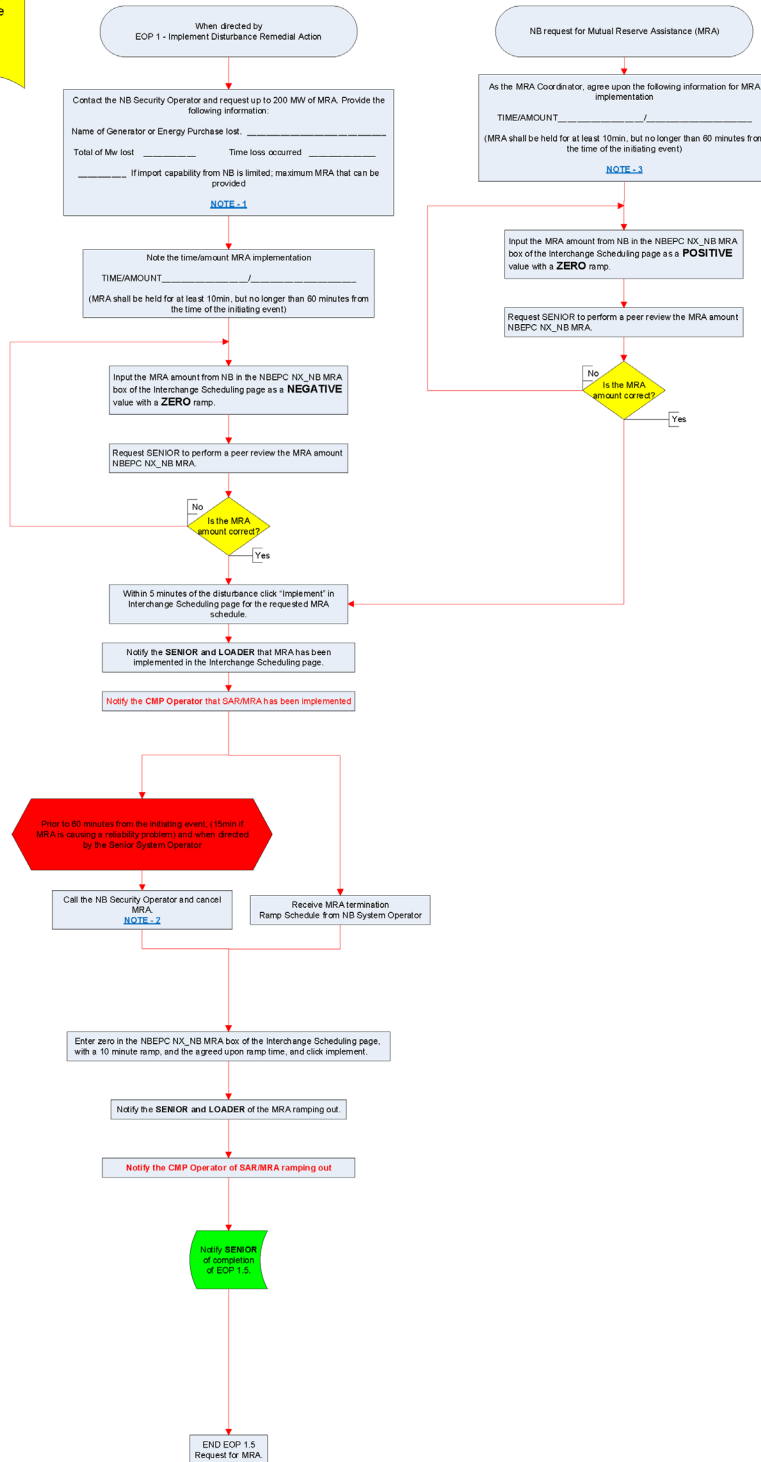
Attachment 5 - EOP 1.4 - SAR_MRA Implementation with Wheeling Contracts



Attachment 6 - EOP 1.5 - Request for MRA

EOP 1.5
Request for Mutual
Reserve Assistance
(MRA)

Rev. 13



NOTE
Unless otherwise stated, the Security Operator is responsible for implementing the actions of this EOP.

BACKGROUND NOTES

Per NERC Reliability Standard COM-002 – Operating Communications Protocols, 3-part communication will be used to inform each RCBA of its allocation of the reserve pickup.

Management expectation is to call NB prior to 3 minutes after the system disturbance in order to start the MRA process.

MRA shall be implemented in the Interchange Scheduling page within 5 minutes of the system disturbance.

TASK NOTES

NOTE - 1
MRA from NB to ISONE may be up to 200 MW. ISONE may receive SAR and MRA from NB as long as the sum of SAR and MRA does not exceed 200 MW.

NOTE - 2
If any wheel-through transactions were part of the supply loss, the wheel-through transactions will remain scheduled through the MRA support period. When MRA is scheduled to end, the wheel-through transactions should also be scheduled to end with a standard ramp time.

NOTE - 3
NB may receive up to 200 MW of MRA from ISO-NE, in addition to any SAR assistance that it receives from all SAR participants including ISO-NE.

HARDCOPY IS UNCONTROLLED

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