ISO New England Operating Procedure No. 2

Maintenance of Communications, Computers, Metering and Computer Support Equipment

Effective Date: August 30, 2022

Review By Date: August 30, 2024

References:

NERC Reliability Standard IRO-002, Reliability Coordination - Monitoring and Analysis

NERC Reliability Standard TOP-001, Transmission Operations

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PART I - INTRODUCTION

This Operating Procedure (OP) establishes ISO New England (ISO) criteria for identification, repair and maintenance of equipment that affects the reliability of the Bulk Electric System (BES) in the New England Reliability Coordinator Area/Balancing Authority Area (RCA/BAA). The following are examples of equipment that is critical to BES reliability:

- Computers
- Metering, telemetering and control equipment
- Communications equipment (including the shared telecommunications network)
- Computer support equipment
- Inter and intra-net systems and associated equipment

This OP also establishes the process for ISO's consideration of proposed equipment maintenance and outages. ISO has the ultimate authority for approval of proposed maintenance and outages.

PART II - SCOPE

This OP covers certain critical equipment located at:

- Main Control Centers[1] (MCCs) and Backup Control Centers (BCCs) for:
  - ISO
  - CONVEX
  - Maine
  - New Hampshire
  - NGRID
  - NSTAR
  - VELCO
- Supervisory Control and Data Acquisition[2] (SCADA) Centers located at:
  - Versant Power
  - National Grid Companies
  - United Illuminating Company
- Microwave and communication facilities located remotely from ISO and the Local Control Centers (LCCs), that have an impact on operations

OP-2A - Itemized Equipment Maintenance of Communications, Computers, Metering and Building Services (OP-2A) lists equipment that affects the reliability of the BES in the New England RCA/BAA.

In order to promote efficient repair or maintenance of critical equipment, the following aspects of repair and maintenance work are covered in this OP:

- Criteria for repair/maintenance priority
- Establishment of criteria
- Responsibility for repair/maintenance
- Scheduling of routine maintenance
- Performance of routine and emergency/unplanned maintenance (day of)

[1] Control Center is defined in the Glossary of Terms Used in NERC Reliability Standards.
[2] Supervisory Control and Data Acquisition (SCADA) is defined in the Glossary of Terms Used in NERC Reliability Standards.

PART III - PROCEDURE

I. CRITERIA FOR REPAIR/MAINTENANCE (PRIORITY)

The following criteria identify required response times to begin repair of failed equipment. The times are based upon the importance of the equipment to system operations. These same criteria are used to prioritize requests made for equipment maintenance.

A. Class A (immediate)

This highest priority for repair or maintenance applies to equipment that is critical to maintain adequate system security and reasonable economic dispatch. The classification of immediate is assigned for critical equipment that must be returned to service as soon as possible. It is expected that these repairs or maintenance activities will be conducted continuously until returned to service.

B. Class B (regular working hours weekdays - except when they are more than sixteen (16) hours removed)

This intermediate priority is intended for the temporary loss of equipment that can be tolerated for limited periods of time, but may **not** be tolerated for prolonged periods of time.

C. Class C (regular working hours)

This is the preferred priority for the performance of all repairs and maintenance. It applies to all equipment **not** covered in Part III.I. Sections A or B.

II. ESTABLISHMENT OF CRITERIA

A. Under normal conditions, the criteria (priority classification) for maintenance of various equipment affecting ISO operations is established in OP-2A.

B. Under either emergency or abnormal conditions, the ISO System Operators and/or the LCC or SCADA Center System Operator(s) have the authority and responsibility to change the criteria established in OP-2A. If any criterion is changed, it shall be communicated to the ISO System Operators.

III. RESPONSIBILITY FOR REPAIR/MAINTENANCE

A. Assignment of Repair/Maintenance Responsibility

In most instances, the location of the equipment determines who has the responsibility for repair or maintenance. Equipment located at a specific LCC or SCADA Center is generally the responsibility of that Control Center. Equipment located at ISO is an ISO responsibility. Repair or maintenance of microwave or other communication facilities used in support of ISO operation but **not** owned by ISO, shall be the responsibility of the owner.

B. Repair Work

An equipment failure shall be responded to within the time requirements prescribed in Section I. Repair work status shall be communicated among all affected parties.

C. Coordination of Maintenance

ISO shall coordinate all maintenance on equipment listed in OP-2A. This includes the scheduling, approval or denial of requests for planned maintenance, and the change in criteria classification in the event of an emergency or abnormal condition. LCC and SCADA Center System Operators also have the authority and responsibility to effect temporary changes to the criteria established in OP-2A.

IV. SCHEDULING OF ROUTINE MAINTENANCE

A request for arranging advance schedules for routine maintenance on any equipment affecting ISO shall be submitted to the ISO Outage Coordinator via the contact listed in OP-2, Appendix B ISO/Local Control Center/SCADA Center OP-2 Staff (OP-2B), which contains a table of maintenance contacts. Each contact listed in OP-2B shall obtain operational approval at his or her facility prior to submitting a maintenance request to a higher level facility, LCC or ISO, in the approval process.

Whenever maintenance is being performed at any LCC, or SCADA Center, an ISO IT technician shall be available to the ISO System Operators should the need arise for technical assistance during the outage.

In the event that the timelines described in Sections IV.A., IV.B., and IV.C. **cannot** be complied with due to unforeseen circumstances, the ISO Outage Coordinator shall consider a maintenance request on a short notice basis. Each maintenance request shall be handled on a case-by-case basis following the steps described below.

A. Steps to Schedule SCADA Center Routine Maintenance

1. The appropriate SCADA Center contact listed in OP-2B shall:
    a. Determine the equipment involved in the maintenance request
    b. Determine the effect on system operations
    c. Complete the Equipment Maintenance Request Form located in OP-2, Appendix C - Equipment Maintenance Request Form (OP-2C)
    d. Obtain clearance from the LCC System Operators to perform the required maintenance
    e. By 1600 on Thursday, send the maintenance request for work beginning the following Monday at 0700 through the next seven (7) day period to the appropriate LCC contact listed in OP-2B
2. The appropriate LCC contact listed in OP-2B shall:
    a. Review the maintenance request and:
        (1) Obtain approval from the LCC System Operators to perform the required maintenance
        (2) As required, make any preliminary notifications to the appropriate staff member at the affected SCADA Center listed in OP-2B
    b. By 1200 on Friday, forward the maintenance request for work beginning the following Monday at 0700 through the next seven (7) day period to the ISO Outage Coordinator.

3. The ISO Outage Coordinator shall, by 1500 on Friday,:

    a. Review each received maintenance request and provide verbal and electronic approval or disapproval to the LCC contact

    b. Electronically communicate the final approved maintenance schedule (see OP-2, Appendix D - OP-2 Approved Scheduled Maintenance Report [OP-2D]) for the following week to each organization listed in OP-2B

    c. Electronically communicate the maintenance request to each appropriate Reliability Coordinator (RC) contact listed in OP-2D.

4. The LCC contact shall notify their counterparts at the SCADA Center of the ISO approval or disapproval.

B. Steps to Schedule LCC Routine Maintenance

1. The appropriate LCC contact listed in OP-2B shall:

    a. Determine the equipment involved in the maintenance request

    b. Determine the effect on system operations

    c. Complete the Equipment Maintenance Request Form located in OP-2C

    d. Obtain clearance from the LCC System Operator to perform the maintenance

        (1) The appropriate LCC contact listed in OP-2B shall make any preliminary notifications to each affected SCADA Center contact listed in OP-2B.

    e. By 1200 on Friday, forward the maintenance request for work beginning the following Monday at 0700 through the next seven (7) day period to the ISO Outage Coordinator.

2. The ISO Outage Coordinator shall:

    a. Review each submitted maintenance request

    b. By 1500 on Friday, provide verbal and electronic approval or disapproval to the appropriate LCC contact listed in OP-2B.

        (1) The appropriate LCC contact listed in OP-2B shall provide verbal and electronic notification to the appropriate SCADA Center listed in OP-2B.

    c. By 1500 on Friday, electronically communicate the final approved maintenance schedule (see OP-2D) for the following week to each organization listed in OP-2B.

    d. By 1500 on Friday, electronically communicate the maintenance request to each appropriate RC contact listed in OP-2D.

C. Procedure to Schedule ISO Control Center Routine Maintenance

1. The ISO contact listed in OP-2B shall:
    a. Determine the equipment involved in the maintenance request
    b. Determine the effect on system operations
    c. Complete the Equipment Maintenance Request Form OP-2C
    d. Make any preliminary notifications to affected LCCs counterparts
    e. By 1200 on Friday, forward the maintenance request for work beginning the following Monday at 0700 through the next seven (7) day period to the ISO Outage Coordinator.
2. The ISO Outage Coordinator shall, by 1500 on Friday:
    a. Review each submitted maintenance request and provide verbal approval or disapproval to the applicant.
    b. Electronically communicate the final approved maintenance schedule (see OP-2D) for the following week to each organization listed in OP-2B.
    c. Electronically communicate the maintenance request to each appropriate RC contact listed in OP-2D.

V. PERFORMANCE OF ROUTINE AND EMERGENCY/UNSCHEDULED MAINTENANCE (DAY OF)

A. Procedure to Perform SCADA Center Routine Maintenance (Day Of Maintenance)

1. The SCADA Center maintenance staff shall request concurrence from their SCADA Center System Operator prior to performing the approved maintenance described in the Equipment Maintenance Request Form (OP-2C).

2. The SCADA Center System Operator shall request concurrence from their LCC System Operator.

3. The LCC System Operator shall request approval of the maintenance request from the ISO System Operator.

4. If the maintenance request is approved by ISO, the LCC System Operator shall:

   a. Notify the SCADA Center System Operator to proceed with the maintenance and to notify the LCC System Operator when the maintenance is complete.

   b. Repair work status shall be communicated among all affected parties.

B. Procedure to Perform LCC Routine Maintenance (Day Of Maintenance)

1. The LCC maintenance staff shall request concurrence from their LCC System Operator prior to performing the approved maintenance described in the Equipment Maintenance Request Form (OP-2C).

2. The LCC System Operator shall request approval of the maintenance request from the ISO System Operators.

   a. If approved by ISO, the LCC shall notify ISO when the maintenance is complete. Repair work status shall be communicated among all affected parties.

C. Procedure to Perform ISO New England Routine Maintenance (Day Of . Maintenance)

1. For maintenance performed at ISO, the ISO IT technician shall:

   a. Coordinate with all parties who are to perform maintenance

   b. Request permission from the ISO System Operators to proceed with the maintenance and notify them when the work is complete.

   c. Communicate repair work status among all affected parties.

D. Procedure to Perform Emergency/Unplanned Maintenance

It should be recognized by operations and technical staffs that emergency or unplanned maintenance will be performed from time-to-time. This maintenance is done to enhance the operation of the affected equipment and is in the best interest of all parties involved. While unplanned maintenance may **not** meet the criteria for an emergency, operations and technical staffs should perform this maintenance if system conditions permit.

1. The ISO IT staff, LCC, or SCADA Center shall make known to the ISO System Operator any impact to data flow to any LCC, RC or SCADA Center. If there are known impacts, the ISO System Operator shall coordinate with the affected LCC or affected RC System Operator.

2. The communication process for LCC or SCADA emergency or unplanned maintenance will follow the process described in Section V.

VI. OP-2 REVISION HISTORY

Document History (This Document History documents action taken on the equivalent NEPOOL Procedure prior to the RTO Operations Date as well revisions made to the ISO New England Procedure subsequent to the RTO Operations Date.)

Rev. No.	Date	Reason
Rev 1	6/15/1998	
Rev 2	02/01/05	Updated to conform to RTO terminology
Rev 3	05/06/05	Update for initiation of VELCO Local Control Center
Rev 4	10/13/06	Revised contact information
Rev 5	08/03/12	Biennial review by procedure owner; Added disclaimer on 1st page Footer; Updated LCC Instruction No. listing; Globally implemented administrative changes, changed font to Arial, changed page number to “Page x of y” format. Minor editorial revisions: use of “shall” in place of “will”; formatting, clarification of content, etc. to be consistent with current practices). Defined acronyms: ISO New England (ISO); Local Control Center (LCC); Part II, Added ISO and LCC BCCs to Scope statement; Part III, Section I A: added clarification for definition of “Class A (Immediate)”prioritization;
Rev 6	06/12/13	Biennial review completed by procedure owner; Global, minor grammar, format, punctuation, etc changes; Update CONVEX OI relating to maintenance ; IV.A.5. and IV.B.5.and IV.C.5 Language added for coordination with affected Reliability Coordinator; V.A.4 and V.B.3 and V.C.2 Language added for communication and coordination with affected entities;
Rev 7	06/05/15	Biennial review completed by procedure owner; corrected attributions for Attachments as identified in document;
Rev 7.1	01/30/17	Biennial review completed by procedure owner; Made administrative changes required to publish a Minor Revision (including added required corporate document identity to all page footers);
Rev 8	05/10/17	References, added four OP-2 Appendices as reference document; Globally, minor editorial changes to be consistent with current practices and management expectations; Modified Section V.D to meet NERC Standard TOP-001-3, R9.
Rev 8.1	01/22/19	Periodic review performed requiring no changes; Made administrative changes required to publish a Minor Revision;
Rev 9	05/07/19	Biennial review completed by procedure owner; Globally, made clarifications and editorial changes to update for current system conditions and to be consistent with current practices and management expectations;
Rev 10	12/10/19	Reference section, relocated and added a reference document (NERC Reliability Standard IRO-002, Reliability Coordination - Monitoring and Analysis); Introduction section, added additional language (i.e., a new last paragraph); Section V.D, modified 1st paragraph and V.D.2 1st sentence; Section VII, added “(Confidential)” to the titles for OP-2B and OP-2C;
Rev 10.1	01/27/21	Biennial review completed by procedure owner, no intent changes required; ; Made administrative changes required to publish a Minor Revision (including updated entity names and document titles)
Rev 11	06/03/21	Removed step V.A.4, V.A.6, V.B.3, V.B.5, V.C.4, V.C.5 referencing ISO notification process to align with current practice; Combined V.B.4 into step V.B.2; Combined V.C.3 into V.C.1; Clarified process in V.D.1 and 2; Removed VI and renumbered remaining sections.

Rev. No.	Date	Reason
Rev 11.1	08/30/22	Biennial review completed by procedure owner; Made non-intent editorial changes; Updated terminology of SCADA Control Center to SCADA Center.

VII. APPENDICES

OP-2, Appendix A - Itemized Equipment Maintenance of Communications, Computers, Metering and Building Services

OP-2, Appendix B - ISO/Local Control Center/SCADA Center OP-2 Staff (Confidential)

OP-2, Appendix C - Equipment Maintenance Request Form

OP-2, Appendix D - OP-2 Approved Scheduled Maintenance Report (Confidential)