

ISO newengland	CROP.44003 Perform a Reactive Capability Test	
© 2023	Approved By: Director, Operations	Effective Date: 03/09/2023
Rev# 5	Procedure Owner: Manager, Control Room Operations	Valid Through: 03/09/2025

Conditions to Enter

1. Requested by a DE to perform a reactive capability test for a resource listed in OP-23 Appendix G.

References

1. OP 23 Resource Auditing
2. OP 23 Appendix G - Reactive Resources Required to Perform Reactive Capability Auditing
3. OP 23 Appendix H – Reactive Capability Audit Request Form
4. SOP-RTMKTS.0180.0055 - Process and Perform Reactive Capability Tests

Procedure Background

ESF – Electric Storage Facility
CSF – Continuous Storage Facility
NRC – Network Resource Capability

Reactive resources that require a Reactive Capability audit have been identified in OP 23 Appendix G - Reactive Resources Required to Perform Reactive Capability Auditing. Currently this list contains **NO** CSF resources. Therefore, the instructions outlined in this CROP **DO NOT** reflect the process to be used to audit this resource type.

Reactive Capability Tests are submitted and scheduled using the process defined in SOP-RTMKTS.0180.0055 - Process and Perform Reactive Capability Tests.

Each reactive capability test is required to be sustained for:


- **Non-ESF Resources** - a minimum of sixty (60) consecutive minutes
- **ESF Resources** - a minimum of sixty (60) consecutive minutes OR, if the Reactive Resource cannot operate at full MW consumption or output for sixty (60) consecutive minutes because the installed storage capability does not support sixty (60) minutes of operation, then the maximum consumption or production time at the required MW output given that, at the start of the Reactive Capability Audit, the ESF Reactive Resource is, at its minimum or maximum available energy.

During a Leading Reactive Test:

- Non-CSF Generator - shall be generating within 5% or 2 MW (whichever is greater) of its Economic Min for the entire duration of the audit.
- CSF - shall be neither generating nor consuming, taking into account losses, during the entire duration of the audit.
- Ambient Limited Generator - shall be generating between 105%-95% of its Economic Min in effect at the start of the audit.
- Intermittent Generator - shall be performed at the maximum allowable real power output at the time of the audit with at least 90% of the turbines or inverters at the Generator Asset on-line.

During a Lagging Reactive Test:

- Non-CSF Generator - shall be generating within 5% or 2 MW (whichever is greater) of its Summer-SCC for the entire duration of the audit.
- CSF - shall be generating within 5% or 2 MW (whichever is greater) of 90% of the Generator Asset summer NRC for the entire duration of the audit.
- Ambient Limited Generator - shall be generating at the maximum real power capability at the time of the audit.
- Intermittent Generator - shall be performed at the maximum allowable real power output at the time of the audit with at least 90% of the turbines or inverters at the Generator Asset on-line.

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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 communication.
- 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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Notes

- Reactive Capability testing is performed in accordance with OP-23 Resource Auditing.
- Reactive Capability testing is required to be scheduled using the ISO Outage Scheduling software. Resource tests that are requested in Real-Time or less than 5 days advance notice may be granted with an application and Real Time Studies (RTS) authorization.

Step 1 Primary Responsibility: Generation Operator
Inform the Security Operator, Senior System Operator and Operations Shift Supervisor of the reactive capability test request.

Step 2 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- The request is short notice; And
- No CROW application has been submitted.

Request the DE or Forecaster to submit a CROW application containing the applicable OP-23 Appendix H forms.

Notes

Per OP23 the DE should submit CROW applications by 1500 the day prior to the requested testing. The DE has the opportunity to submit them up to 0930 on the day of testing. After 0930 on the day of testing the Forecaster will need to write up the outage application and the DE will need to provide the OP-23 Appendix H form to the control room.

Step 2.1 Primary Responsibility: Security Operator
Notify RTS On-call Engineer of the request.

Step 3 Primary Responsibility: Security Operator
Review the OP-23 Appendix H form within the CROW application to determine the operating conditions or restrictions.

Step 3.1 Primary Responsibility: Security Operator

Condition(s) to perform this step:

- Reactive Resource performing the audit is $\geq 10\text{MVar}$.

Perform a security analysis to verify adequate reactive resources are available to maintain voltages within applicable limits during the test.

Step 3.2 Primary Responsibility: Security Operator

Condition(s) to perform this step:


- Reactive Resource performing the audit is $\geq 10\text{MVar}$.

Contact the applicable LCC Operator to determine if the reactive capability test will create or worsen a local limit exceedance.

Instructions

Discuss the following items:

- ☐ Details of the testing on the OP-23 Appendix H form;
- ☐ Any applicable TOGs;
- ☐ Any applicable guidance from the RTS Group;
- ☐ Security Assessment results and actions taken if required.

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Step 4 Primary Responsibility: Security Operator
Notify the Senior System Operator and Operations Shift Supervisor of the ISO and LCC security assessment results.

Step 5 Primary Responsibility: Operations Shift Supervisor
Determine if the reactive capability test will be approved or denied.

Instructions

A reactive capability test will be approved unless OP-19 Normal Criteria or MLCC15 - H limits **cannot** be maintained.

Step 5.1 Primary Responsibility: Operations Shift Supervisor
Notify the Control Room Operators of the determination.

Step 6 Primary Responsibility: Security Operator
Inform the LCC Operator of the approval or denial of the reactive capability test.

Instructions

If approved, the LCC Operator is expected to communicate maximum and minimum voltage limits to the specific resource and adjust system voltage in preparation for the test.

Step 7 Primary Responsibility: Generation Operator
If approved, perform the following:

Step 7.1 Primary Responsibility: Operations Shift Supervisor
Conduct a shift brief.

Instructions

Engage the on-shift System Operators to provide and confirm the following information:

- ☐ Identify the following:
 - ☐ Resource testing
 - ☐ Duration of testing
 - ☐ Target MVar value
 - ☐ Applicable guidance from the RTS Group
 - ☐ Applicable TOGs

Step 7.2 Primary Responsibility: Generation Operator
Ensure the resource's Eco Max and Eco Min, or Min Cons and Max Cons values are equal to the test value.

Notes

The test value is entered in outage application.

Step 7.3 Primary Responsibility: Generation Operator
Notify the DE that the reactive capability test has been approved and to coordinate with the applicable LCC to perform the test.

Instructions

If the resource limit(s) are **NOT** bid appropriately for the test, inform the DE that the incorrect limit(s) will need to be redeclared to match the test value.

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Step 7.3.1 Primary Responsibility: Generation Operator

Condition(s) to perform this step:

- Resource's limit values do NOT equal the test value.

Redeclare the appropriate limits to equal the test value.

Step 7.4 Primary Responsibility: Generation Operator

Place the resource in a UCM 3.

Step 7.5 Primary Responsibility: Generation Operator

Select the "OT" reason code.

Step 7.6 Primary Responsibility: Generation Operator

Implement the outage.

Step 8 Primary Responsibility: Generation Operator

If denied, perform the following:

Step 8.1 Primary Responsibility: Generation Operator

Notify the DE that the reactive capability test has been denied and the reason.

Step 8.2 Primary Responsibility: Generation Operator

Update the outage application.

Instructions

For an application that has a status of "Approved" but NOT implemented in the Outage Scheduling software, toggle the "Cancel" status button. Enter appropriate comments in the Outage Scheduling Software.

Step 8.3 Primary Responsibility: Generation Operator

Log the outage denial

Instructions

Use log entry: > OUTAGE > Denied

Enter the following:

- ☐ CROW ID;
- ☐ Description of the Denied Outage;
- ☐ Reason for denial.

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Revision History

Rev. No.	Date (MM/DD/YY)	Reason	Contact
0	06/09/15	Initial Draft of this Procedure	Steven Gould
1	05/16/17	Biennial Review	Steven Gould
2	06/14/17	Administrative change for modification to procedure format	Steven Gould
3	05/10/19	Biennial Review	Steven Gould
4	04/28/21	Biennial Review; Updated references and background information, added Step 2.1& 2.2, Updated Step 5.2.1, Updated Step 6.3	Steven Gould
5	03/09/23	Updated procedure as an action item of an HPI analysis; Updated References; Updated Common Procedure Information; Added Notes prior to Step 1; Updated Step 1; Added Step 2 and 2.1; Added information to Step 3; Added Instructions to Step 3.2; Added Step 4; Added Step 5.1; Added Step 7.1; Added information to Step 7.3.	Jonathan Gravelin