# GC0156 - Assurance Activities Subgroup Report

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# Executive Summary

The ESO has been directed by the Secretary of State that in accordance with Special Condition 2.2 of the National Grid Electricity System Operator's Transmission Licence, The Electricity System Restoration Standard is set at –

60% of electricity demand being restored within 24 hours in all regions, and
100% of electricity demand being restored with 5 days nationally.

It is an essential requirement for the NETS to have electricity system restoration capability. The ESO delivers this requirement by determining and procuring sufficient system restoration capability for the NETS on an ongoing basis.

The directive requires the ESO to –

Ensure and maintain an electricity restoration capability; and
Ensure and maintain the restoration timeframe.

***Note: In accordance with the advice from BEIS[1]- at GC0156 "electricity demand" will be calculated by way of the forecast of the next peak transmission demand.***

***During the working group consultation, it became apparent that the term Restoration Service Providers already exist with a different meaning therefore, a new terminology Restoration Contractors has been defined for Anchor and Top Up service Providers. Within this report, all references to Restoration Service Providers (RSP) is now Restoration Contractors.***

The objectives of the Assurance Activities Subgroup were to develop the assurance framework and performance monitoring framework, to enable the industry performance against the ESRS to be evaluated and to review, assess and modify the ESRS Working Group recommendations and create proposals to the GC0156 Working Group.

This report presents the requirements identified by the Assurance Activities Subgroup and their suggested implementation routes together with the relevant changes to Codes**.** The report covers the following:

Proposals from the Assurance Activities Subgroup to the GC0156 Working Group:
Outline of any changes necessary to Grid Code and associated documents
Outline of any changes necessary to Distribution Code and associated documents
Identification of any new industry documentation, i.e., standards or codes etc, to implement the assurance framework.

[1] BEIS is now referred to as Department for Energy Security and Net-Zero (DESNZ)

Indication of how the above changes affect the ESO, TOs, CATOs, OFTOs, DNOs, restoration service providers, and any other users.

Disagreements and perceived challenges.

# 1 Introduction

## 1.1 Secretary of State Direction

The ESO has been directed by the Secretary of State that in accordance with Special Condition 2.2 of the National Grid Electricity System Operator's Transmission Licence, The Electricity System Restoration Standard is set at –

a) 60% of electricity demand being restored within 24 hours in all regions, and

b) 100% of electricity demand being restored with 5 days nationally.

It is an essential requirement for the NETS to have electricity system restoration capability. The ESO delivers this requirement by determining and procuring sufficient system restoration capability for the NETS on an ongoing basis.

The purpose of this direction is to require that the ESO –

a) Ensures and maintains an electricity restoration capability; and

b) Ensures and maintains the restoration timeframe.

*Note: "electricity demand" will be calculated by way of the forecast of the next peak transmission demand.*

## 1.2 GC0156 & Assurance Subgroup

The ESO has raised Grid Code modification GC0156 to ensure that the industry is aware of what its needs to do to ensure and maintain an electricity restoration capability, and restoration timeframes.

This document presents the needs identified by the Assurance Activities Subgroup and their suggested implementation routes together with the relevant changes to Codes.

### Terms of References

**Purpose/Scope**

To develop the assurance framework and performance monitoring framework, to enable the industry performance against the ESRS to be evaluated.

Review, assess and modify the ESRS Working Group recommendations and create proposals to the GC0156 Working Group.

**Inputs**

- ESRS Assurance working group report recommendations
- The current restoration assurance arrangements
- Relevant codes
- An understanding of the restoration process, demand restoration requirements, restoration service provider (volumes, geographic distribution), and how these may change in the future

**Outputs**

A report, to be delivered by 20 October 2022, covering all the below aspects and including an appropriate level of detail for assurance of the functional requirements:

- Proposals from the Assurance Framework Subgroup to the GC0156 Working Group:
    - Outline of any changes necessary to Grid Code and associated documents
    - Outline of any changes necessary to Distribution Code and associated documents
    - Identification of any new industry documentation, i.e., standards or codes etc, to implement the assurance framework.
    - Identification of likely necessary actions beyond the scope of GC0156
- Indication of how the above changes affect the ESO, TOs, CATOs, OFTOs, DNOs, restoration service providers, and any other users, including timescale and cost for the adoption of any proposals where this is available from subgroup members. Note – potential cost impacts will be forwarded to the Markets and Funding Mechanism Subgroup.

Provide regular progress updates to general GC0156 group.

Propose draft legal text for Grid Code and Distribution Code and associated documents.

**Members (Update based on Nominations list)**

| Role | Name | Organization |
|---|---|---|
| Chair | | NGESO |
| Technical secretary | | NGESO |
| Generator rep | | |
| TO Rep | | |
| DNO Rep | | |
| Other | | |
| Etc | | |

**Standing Agenda**

1. Safety/Wellbeing/inclusion Moment
2. Actions Update
3. Progress/project update
4. Analysis and discussion of issues within scope
5. Decisions/Actions
6. Risk/Issues for escalation to GC0156
7. AOB

**Logistics**

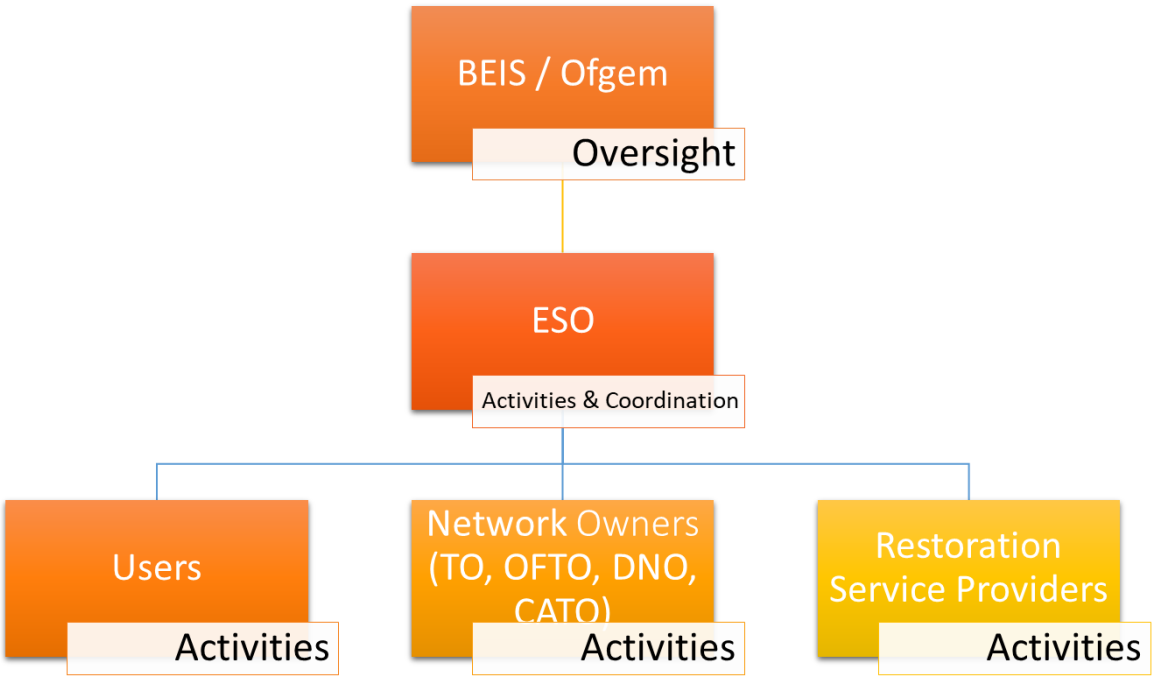
- Cadence –Meetings scheduled bi-weekly.
- Duration – 2 hours

- Location – Teams Meeting
- Submissions due and pre-read – slides/papers with clear confirmation of input/decisions needed 5 business days prior. Papers are to be read ahead of the meeting.
- Minutes – to be taken and circulated with the Action/decision Log
- Quorum – All standing members to attend. Deputies can attend with full decision-making authority delegated.
- Disagreement - Proposals will be based on majority decisions. Disagreement from the proposals shall be recorded.

*Note: CATOs are not yet defined in the Grid Code, hence are not referenced in the draft legal text for GC0156, however, the subgroup considered CATOs and once implemented via GC0159, the legal text will be amended to include CATOs.*

## 2 Compliance & Monitoring

### Proposal




It will be for the ESO & Ofgem as the monitoring body to assess individual, regional and GB assurance levels. This process will be aligned to the Assurance Framework. Templates and processes to be made available at a later stage by the ESO following engagement with the Monitoring Body.

# 3 Network & Demand Activities

## 3.1 System Restoration Power Island Review

### Proposal

**Parties required**

ESO, TOs, OFTOs, CATOs, TO HVDC Networks, DNOs & IDNOs (directly connected only).

**Description**

Provide evidence that new or reconfigured Transmission and Distribution Networks are assessed and designed with the capability to

- Meet requirements identified to support the implementation of ESRS e.g. create and sustain parts of the system within a LJRP and DRZP
- then energise further sections of network to access [generation], demand and energise relevant substations.

**Requirement**

In line with the planning of network infrastructure (within Planning Timescales), to provide evidence of energisation routes that are suitable for use within 24 hours (0-60% demand loading) of the start of a restoration process.

This will involve a process being established to consider Restoration within the long-term design process across the network operators. This assurance activity checks that the process has been completed and a design is in place.

**Test/Reporting Cycle**

Studies will be done periodically (on a three yearly basis per specific study need) but reported annually

**Annual reporting to the Monitoring Body**

List of routes and studying completed.

Date(s) updated report.

Confirmation of Assurance/capability.

**Contribution to Preparedness Level**

Adequate network design is in place for the Restoration strategy.

### Disagreements

None

### Legal Text References

STC Section C Part Three, Clause 2.1.3, STCP 06-1 and STCP 08-3

Grid Code OC5.7.4.2(iv), OC9.4.7.6 and DRC Schedule 16, Part III

SQSS - Appendix I

### Alternatives

None

## 3.2 System Restoration Power Island Availability

### Proposal

**Parties Required**

ESO, TOs, OFTOs, CATOs, TO HVDC Networks, DNOs & IDNOs (directly connected only).

**Description**

Report on the assessment of the operational availability of routes utilised in the restoration plans and as part of the operational planning process, DNOs will notify the ESO of outages and TOs will notify ESO of outages affecting DRZPs and LJRPs that would interfere with the use of those plans as part of the restoration strategy during the period.

**Requirement**

For LJRP, within planning and operational timescales, assess the outages/availability of the network within LJRPs required to deliver the requirements provided for in Restoration Service Providers Contracts. This includes consideration of circuit outages.

For DRZP, within planning and operational timescales, assess the outages/ availability of the network within DRZPs across each DRZ to deliver upon the requirements provided for in Restoration Service Providers Contracts. This includes circuit outage considerations.

**Annual reporting to the Monitoring Body**

Statistical summary of Skeleton Network availability at various Planning and Operational timescales, TO/DNO Network asset assessments, Year ahead handover, operational planning, and outturn.

Date(s) of assessment.

**Contribution to Preparedness Level**

Adequate network is available to implement the Restoration strategy.

### Disagreements

None

### Legal Text References

STC Section C Part Two, STCP 11-1 and STCP 16-1

Grid Code OC2 (in particular OC2.1.1 (e), OC2.1.2, OC2.1.8, OC2.2, OC2.3.1, OC2.4.1.2.1), BC1.6.1
Grid Code OC5.7.4.2(iv), OC9.4.7.6 and DRC Schedule 16, Part III

Distribution Code DOC 2.6.3.4; DOC 2.6.5.3; DOC 2.6.6.2

### Alternatives

None

## 3.3 Remote Synchronization Testing

### Proposal

**Parties required**

TOs, OFTOs, CATOs, TO HVDC Networks, DNOs & IDNOs (directly connected only).

**Description**

Report on the capability of power islands to be synchronized as expected.

**Requirement**

Test power island Synchronization, i.e. demonstrate the ability to resynchronise adjacent power islands. It involves the Restoration Service Provider starting up as usual, re-energising a dead test section of the NETS and then synchronising to the NETS at a Transmission Owners' substation other than that at which this normally occurs. As a minimum, the capability assessment shall include a dummy remote synchronisation.

**Test/Reporting Cycle**

At least every three years

**Annual reporting to the Monitoring Body**

List of synchronization points established for LJRPs, DRZPs and as required for system restoration purposes outside the scope of LJRPs and DRZPs and for each synchronising point:

- Date(s) of last test(s).
- Confirmation of capability.

**Contribution to Preparedness Level**

Power Island Synchronisation last tested.

### Disagreements

None

### Legal Text References

STC Section C Part Three, Clause 2.1.3, STCP 06-1, STCP 08-3 and STCP 16-1

Grid Code OC5.7.2.1(g), OC5.7.2.3(d) and DRC Schedule 16 Part III

Distribution Code DOC 5.7.3.2 & DOC 5.7.3.3

### Alternatives

None

## 3.4 Low Frequency Demand Disconnection Test

### Proposal

**Required Parties**

TOs, CATOs, TO HVDC Networks, DNOs & IDNOs (directly connected only).

TOs, DNOs. Currently mandatory. Appendix A5 of Grid Code European connection conditions for new distribution networks.

**Description**

Report on the capability of Low Frequency Relays.

**Requirement**

Test in line with OC6 of the Grid Code. As a minimum, the relay capability assessment shall comply with ENA's Technical Specification 48-6-5, ENA Protection Assessment Functional Test Requirements Voltage and Frequency Protection. Grid Code CC.A.5.4.1 (ECC.A.5.4.1 for new distribution networks).

**Measure**

Self-evaluation.

**Test/Reporting Cycle**

Each Network Operator and Relevant Transmission Licensee shall aim to execute testing on its low frequency demand disconnection relays installed within its network and in service at least once every three years, although this may be extended to no more than every five years if considered to be required for operational purposes.

**Annual reporting to the Monitoring Body**

List of Low Frequency Relays in service/maintained.

Date(s) of last Test(s).

Confirmation of Assurance/capability.

**Contribution to Preparedness Level**

Low Frequency Relays last tested in purposes of restoration alone:

### Disagreements

None

### Legal Text References

STC Section D Part One Clause 2.2.6

CC.A.5.4.3 and ECC.A.5.4.3

### Alternatives

None

# 4 Anchor and Top Up Restoration Service Providers

## 4.1 Anchor Restoration Service Providers Tests

### Proposal

**Classification**

Mandatory.

**Required Parties**

ESO, DNO, Anchor Restoration Service Providers

**Implementation**

Codes and contract between ESO and Anchor Restoration Service Provider

Codes and contract between ESO, Anchor Restoration Service Provider and DNO

**Description**

Test in line with requirements within OC5.7.2

Note, for Anchor Restoration Service Providers within a Distributed Restoration Zone Plan, energise the busbar of the local substation.

**Requirement**

To demonstrate its technical capability to start from shut down without any external electrical energy supply and energise the busbar of the local substation to which it is connected.

**Test/Reporting Cycle**

At least once every three years

**Annual reporting to the Monitoring Body**

Date(s) of last Test(s).

Confirmation of Assurance/capability.

### Disagreements

None

### Legal Text References

Grid Code OC5.7.2.1, OC5.7.2.2 and OC5.7.2.3

Distribution Code DOC 5.7.3.2 & DOC 5.7.3.3

### Alternatives

None

## 4.2 Top Up Restoration Service Providers Tests

### Proposal

**Classification**

Mandatory.

**Required Parties**

ESO, DNO, Top Up Restoration Service Providers

**Implementation**

Codes and contract between ESO and Top Up Restoration Service Provider.

Codes and contract between ESO, Top Up Restoration Service Provider and DNO.

**Description**

Disconnect and shutdown the Top Up Restoration Service Provider from the Network and restart the plant and apparatus from shutdown following the restoration of an external electrical energy supply.

Whilst the external electrical energy may be supplied from the network, rather than an anchor generator, it is important to ensure that this supply is monitored so it doesn't go beyond the capability of that anchor generator.

Note: for Top Up Restoration Service Provider within a Distributed Restoration Zone Plan, test as far as practicable due to network configuration.

**Requirement**

To demonstrate its technical capability to start from shut down following the restoration of an external electrical energy supply and to then provide services in line with the Top Up Restoration Contract.

**Test/Reporting Cycle**

At least once every three years

**Annual reporting to the Monitoring Body**

Date(s) of last Test(s).

Confirmation of Assurance/capability.

### Disagreements

None

### Legal Text References

Grid Code OC5.7.2.4

Distribution Code DOC 5.7.3.5

### Alternatives

None

## 4.3 Resilience to Partial or Total Shutdown of Restoration Service Providers

### Proposal

**Classification**

Mandatory.

**Required Parties**

For ESO, Restoration Service Providers

**Description**

Restoration Service Providers will be required to assure the resilience of their plant and apparatus for at least 72 hours.

Their plant and apparatus should be such that their plant can be shutdown in a safe manner in a Partial or Total Shutdown such that it does not pose a risk to plant or personnel without supplies for up to 72 hours so there is some assurance that the plant will not have to be subject to major component replacement thereafter.

**Requirement**

Annual reporting confirming the current plant is in good condition, has the required capability and evidenced as appropriate.

**Test/Reporting Cycle**

At least once every year

**Annual reporting to the Monitoring Body**

Date(s) of last test(s).

Confirmation of capability.

### Disagreements

None

### Legal Text References

Grid Code CC.7.10, ECC.7.10, CC.7.11,ECC.7.11, OC5.7.4.2(iii) and OC9.4.7.6.2

Distribution Code DOC 5.7.3.6

### Alternatives

None

## 4.4 Quick Resynchronisation Unit Test

### Proposal

**Classification**

Mandatory. (ECC 6.3.5.6 – Directly Connected RfG Compliant Plant)

**Required Parties**

ESO, RfG compliant plants and DNO's

**Implementation**

ECC.6.3.5.6 requires a quick resynchronisation capability and as part of this requirement if a power generating module has a minimum re-synchronisation time greater than 15 minutes it is required to have a trip to house load capability. Simulation Studies to demonstrate trip to house load are covered in ECP.A.3.6.

These requirements apply to any Generator caught by the requirements of RfG which is any Generator which concluded purchase contracts for its main Plant and Apparatus on or after 17 May 2018 and connected to the System on or after 27 April 2019.

**Description**

Test in line with requirements within OC5.7

**Requirement**

For the generating unit to trip and resynchronise with the system without Auxiliary or external electrical supplies.

**Test/Reporting Cycle**

At least once every year

**Annual reporting to the Monitoring Body**

Date(s) of last test(s).

Confirmation of capability.

### Disagreements

None

### Legal Text References

Grid Code OC5.7.2.5

Distribution Code DOC 5.7.3.4

### Alternatives

None

## 4.5 Distribution Restoration Zonal Control Test

### Proposal

**Classification**

Mandatory.

**Required Parties**

DNO led, Anchor and Top Up Restoration Service Providers that are referenced in a DRZP, ESO.

**Implementation**

Codes and contract between ESO, DNO and Restoration Service Providers.

**Description**

Test in line with requirements within OC5.7.2.6

**Requirement**

For each Distribution Restoration Zone Controller, at least every three years, to demonstrate its technical capability to operate as per the Distribution Restoration Zone contract.

**Test/Reporting Cycle**

At least once every three years

**Annual reporting to the Monitoring Body**

Date(s) of last test(s).

Confirmation of capability.

### Disagreements

None

### Legal Text References

Grid Code OC5.7.2.6

Distribution Code DOC 5.7.3.8

### Alternatives

None

## 4.6 Dead Line Charge Test

### Proposal

**Classification**

Mandatory.

**Required Parties**

ESO, Anchor Restoration Service Providers that are referenced in LJRP or DRZP, TOs, DNO.

**Implementation**

Codes and contract between ESO, DNO and Anchor Restoration Service Provider.

**Description**

The Anchor Restoration Service Provider referenced within a DRZP to re-energise a dead test section of the Network that would be energised when the DRZP is implemented.

For Anchor Restoration Service Provider referenced within LJRP, the test is described in OC5.7.2.1(g)(a) and OC5.7.2.3(d)(a).

**Requirement**

The Anchor Restoration Service Provider to energise a dead test section of network that would be energised when the DRZP is implemented, isolated from the system by the Network Operator/Owner.

Typically, this will be completed as part of the Anchor Restoration Service Provider Tests in OC5.7.2.1

**Test/Reporting Cycle**

At least once every three years

**Annual reporting to the Monitoring Body**

Date(s) of last test(s).

Confirmation of capability.

### Disagreements

None

### Legal Text References

STC Section C Part Three, Clause 2.1.3, STCP 06-1, STCP 08-3

Grid Code OC5.7.2.1(g)(a), OC5.7.2.3(d)(a) and OC5.7

Distribution Code DOC 5.7.3.2 (h) & DOC 5.7.3.3 (g)

### Alternatives

None

## 4.7 Remote Synchronisation Tests

### Proposal

**Classification**

Mandatory.

**Required Parties**

ESO, Anchor and Top Up Restoration Service Providers that are referenced in LJRP or DRZP, TOs, DNOs.

**Implementation**

Codes.

**Description**

A Restoration Service Provider or the action of a Distribution Restoration Zone Controller to re-energise a dead test section of the Network with the Network Operator. The Restoration Service Provider or Distribution Restoration Zone Controller, led by the Network Operator, then synchronises the Power Island on the test network area with the main power system.

**Requirement**

Demonstrate the ability to create and re-synchronise power islands, controlling Voltage and Frequency.

**Test/Reporting Cycle**

At least once every three years

**Annual reporting to the Monitoring Body**

Date(s) of last test(s).

Confirmation of capability.

### Disagreements

None

### Legal Text References

STC Section C Part Three, Clause 2.1.3, STCP 06-1, STCP 08-3

Grid Code OC5.7.2.1(g)(b), OC5.7.2.3(d)(b) and OC5.7

Distribution Code DOC 5.7.3.2(m) & DOC 5.7.3.3(g)

### Alternatives

None

## 4.8 Assurance Visits

### Proposal

**Classification**

Mandatory.

**Required Parties**

ESO led, Restoration Service Providers (LJRP and DRZP), TOs, DNOs.

**Implementation**

Codes, Contracts between ESO, DNOs and Restoration Service Providers.

**Description**

Validate that Restoration Service Providers have the appropriate documentation, operational and training procedures in place to support Restoration.

**Requirement**

ESO and each Restoration Service Provider referenced in an LJRP shall carry out an Assurance Visit at least every three years.

DNO and each Restoration Service Provider referenced in a DRZP shall carry out an Assurance Visit at least every three years.

ESO, TO(s) and DNO(s) to assure the Restoration Service Providers documentation, operational and training procedures.

Share key themes from lessons learnt across the industry.

**Test/Reporting Cycle**

At least once every three years

**Annual reporting to the Monitoring Body**

Date(s) of last visit(s)

Confirmation of Assurance.

### Disagreements

None

### Legal Text References

STC Section C Part Three, Clause 2.1.3

Grid Code OC5.7.4 and OC5.7.5

Distribution Code DOC 5.7.5

### Alternatives

None

# 5 Communications Assurance

On 04.08.2022, the Assurance Activities Subgroup agreed for the assurance activities relating to communications to be discussed and agreed within the Communications Infrastructure Subgroup.

Members of the assurance activities subgroup also agreed to have the outcome of this review put in their report.

## Proposal

**Classification -** Mandatory.

**Required Parties**

ESO, Restoration Service Providers, TOs/OFTOs/CATOs, DNOs

**Implementation**

Codes.

**Description**

Parties shall confirm that potential failure scenarios have been envisaged and that contingency plans for service restoration have been prepared, tested and are in place. Contingency plans shall guarantee the imparted parties' ability to fulfil, as a minimum, its service obligations in the event of a Power Network failure.

**Requirement**

Stakeholders shall confirm the resilience of the voice systems by its ability to withstand a minimum of 72 hours under a Restoration event. Note: demonstration should be achieved by complying with Restoration Auxiliary Power Source Tests.

**Measure**

Self-evaluation.

**Test/Reporting Cycle**

At least once every year

**Annual reporting to the Monitoring Body**

List of Voice systems (internal/external) installed.

Minimum service obligations per system installed.

Confirmation of resilience from the relevant parties

Statement of compliance.

## Disagreements

SPEN – Not in agreement to annual submission

## Legal Text References

STCP 04-2 and STCP 04-5,

Grid Code CC.7.10, ECC.7.10 and OC5.7.4.2(vi)

Distribution Code DOC 5.7.3.6 & DOC 5.7.3.7

## Alternatives

None

## 5.1 Control Systems Resilience Demonstration – Client Application Power Resilience

### Proposal

**Note -** Main Control Centre and Disaster Recovery SCADA (DRS) Centres

**Classification**

Mandatory.

**Applicability**

ESO, Restoration Service Providers, TOs/OFTOs/CATOs, DNOs

**Implementation**

Codes – G&D, CC/ECC7.10 and Test Plan.

**Description**

Relevant parties shall confirm the Control System's ability to withstand a minimum of 72 hours under a Restoration event. *Note: demonstration should be achieved by complying with* Restoration *Auxiliary Power Source Tests.*

**Measure**

Self-evaluation.

**Test/Reporting Cycle**

At least once every year

**Annual reporting to the Monitoring Body**

Date(s) of last check(s)

Statement of compliance around Power Resilience.

### Disagreements

None

### Legal Text References

STC Section C Part Three, Clause 2.1.3, STC Section D Part One 2.2.6, STC Section K, STCP 04-2, STCP 04-6 and STCP 08-3

Grid Code CC.7.10.7, ECC.7.10.7, OC.5.7.2.6, OC5.7.4.2(iii) and OC5.7.4.2(ix)

Distribution Code DOC 5.7.3.6

### Alternatives

None

## 5.2 Control Systems Resilience Demonstration – Server Power Resilience

### Proposal

**Classification**

Mandatory.

**Applicability**

ESO, Restoration Service Providers, TOs/OFTOs/CATOs, DNOs

**Implementation**

Codes.

**Description**

Power supply requirements of the Control System environment to withstand a sustained Restoration event.

**Requirement**

At least annually, stakeholders shall demonstrate the Control System's ability to withstand a minimum mains independence event of 72 hours under a Restoration event. Note: demonstration should be achieved by complying against Restoration Auxiliary Power Source Tests.

**Measure**

Self-evaluation.

**Test/Reporting Cycle**

At least once every year

**Annual reporting to the Monitoring Body**

Date(s) of last check(s)

Statement of compliance around Power Resilience.

### Disagreements

None

### Legal Text References

STC Section C Part Three, Clause 2.1.3, STC Section D Part One 2.2.6, STC Section K, STCP 04-2, STCP 04-6 and STCP 08-3

Grid Code CC.7.10.7, ECC.7.10.7, OC.5.7.2.6, OC5.7.4.2(iii) and OC5.7.4.2(ix)

Distribution Code DOC 5.7.3.6

### Alternatives

None

## 5.3 Control Systems Resilience Demonstration – Server Architecture & Connectivity

### Proposal

**Classification**

Mandatory.

**Applicability**

ESO, Restoration Service Providers, TOs/OFTOs/CATOs, DNOs

**Implementation**

Codes.

**Description**

Demonstration can be achieved via compliance with Network & Information Systems (NIS) regulations, provided the stakeholder (1) didn't have a 'significant impact' on the continuity of the service over the assessment period, (2) provides the relevant compliance status report (red/amber/green) against the individual elements of the NIS Regulations and (3) shares the planned roadmap for achieving compliance.

**Measure**

Self-evaluation.

**Test/Reporting Cycle**

At least once every year

**Annual reporting to the Monitoring Body**

List of key resources required to ensure Control System's Operability.

Test results demonstrating ability to lock down Control System to external interference.

Test results demonstrating ability to operate Control System with no external connections (standalone).

### Disagreements

None

### Legal Text References

STC Section C Part Three, Clause 2.1.3, STC Section D Part One 2.2.6, STC Section K, STCP 04-2, STCP 04-6 and STCP 08-3

Grid Code CC.7.10.7, ECC.7.10.7, OC.5.7.2.6, OC5.7.4.2(iii) and OC5.7.4.2(ix)

DPC6.7.3, DP6.8.4

### Alternatives

None

## 5.4 Control Systems Resilience Demonstration – Alarm Event Handling

### Proposal

**Classification**

Mandatory.

**Applicability**

ESO, Restoration Service Providers, TOs/OFTOs/CATOs, DNOs

**Implementation**

Codes.

**Description**

Assess the performance of the Control System when handling a Restoration event.

**Requirement**

Stakeholders shall demonstrate the Control System's ability to handle challenging events like a blackout (stress tests).

**Measure**

Self-evaluation.

**Test/Reporting Cycle**

At least once every year

**Annual reporting to the Monitoring Body**

Date(s) of last Test(s)

Event(s) considered, test(s) conducted over the review period, test results.

Statement of compliance on the Control System's ability to handle challenging events.

### Disagreements

None

### Legal Text References

STC Section C Part Three, Clause 2.1.3, STC Section D Part One 2.2.6, STC Section K, STCP 04-2, STCP 04-6 and STCP 08-3

Grid Code CC.7.10.7, ECC.7.10.7, OC.5.7.2.6, OC5.7.4.2(iii) and OC5.7.4.2(ix)

Distribution Code DPC6.8.6

### Alternatives

None

## 5.5 Control Systems Resilience Demonstration – Diagram & Topology

### Proposal

**Classification**

Mandatory.

**Applicability**

ESO, Restoration Service Providers, TOs/OFTOs/CATOs, DNOs

**Implementation**

Codes.

**Description**

Assess Control System's performance to an upstream de-energised Network and actions required to demonstrate the Network topology as de-energised.

**Requirement**

At least annually, stakeholders shall demonstrate the capability of the Control System to handle customer incidents when the entire Network is shown in a de-energised state.

**Measure**

Self-evaluation.

**Test/Reporting Cycle**

At least once every year

**Annual reporting to the Monitoring Body**

Date(s) of last Test(s)

Test results demonstrating the system's ability to handle customer incidents when the entire Network is shown in a de-energised state.

Risk assessment and mitigation actions taken over the review period to address dependencies and criticality of other supporting IT systems on the core Control System.

Statement of compliance.

### Disagreements

SPEN & NPG – Confirmed they would not take this activity back to the experts within their organisations to confirm if this assurance activity is appropriate.

### Legal Text References

STC Section C Part Three, Clause 2.1.3, STC Section D Part One 2.2.6, STC Section K, STCP 04-2, STCP 04-6 and STCP 08-3

Grid Code CC.7.10.7, ECC.7.10.7, OC.5.7.2.6, OC5.7.4.2(iii) and OC5.7.4.2(ix)

Distribution Code DPC6.8.6

### Alternatives

None

## 5.6 Cyber-Security Tests

### Proposal

**Classification**

Mandatory.

**Applicability**

ESO, Restoration Service Providers, TOs/OFTOs/CATOs, DNOs

**Implementation**

Codes.

**Description**

Demonstration can be achieved via compliance with Network & Information Systems (NIS) regulations, provided the stakeholder (1) didn't have a 'significant impact' on the continuity of the service over the assessment period, (2) provides the relevant compliance status report (red/amber/green) against the individual elements of the NIS Regulations and (3) shares the planned roadmap for achieving compliance.

**Requirement**

At least annually, stakeholders shall demonstrate the cyber-security of their Voice and Control Systems.

**Measure**

Self-evaluation of whether Cyber resilient test/audit to be carried out in line with the NIS regulations

**Test/Reporting Cycle**

At least once every year

**Annual reporting to the Monitoring Body**

Date(s) of last Test(s)

Test results demonstrating the Voice and Control System's ability to defend themselves against computer failure including cyber-attacks.

Risk assessment and mitigation actions taken over the review period to address cyber-security vulnerabilities.

Statement of compliance.

### Disagreements

None

### Legal Text References

STC Section C Part Three, Clause 2.1.3, STC Section D Part One Section 2.2.6, STC Section K

Grid Code CC.7.10.6, ECC.7.10.6, OC5.7.4.2(iii) and OC5.7.4.2(x)

Distribution Code DOC 5.7.3.6(b)

### Alternatives

None

## 5.7 Telephony Services

### Proposal

**Classification**

Mandatory.

**Applicability**

ESO, Restoration Service Providers, TOs/OFTOs/CATOs, DNOs

**Implementation**

Grid Code, Distribution Code, STC Codes and Contracts

**Description**

To ensure that communication infrastructure and applications are maintained to a high standard.

An end-to-end confirmation of the voice route should be confirmed by a live test at least once per year.

**Requirement**

Reporting of Service Level Agreement compliance.

Report of infrastructure and service provision.

**Measure**

Self-evaluation.

**Test/Reporting Cycle**

At least once every year

**Annual reporting to the Monitoring Body**

Date(s) of last Test(s)

Annual statistics on compliance.

**Contribution to Preparedness Level**

Statement of compliance last issued

### Disagreements

None

### Legal Text References

STC Section C Part Three, Clause 2.1.3 and STCP 04-5

Grid Code CC.6.5.1 – CC.6.5.5, ECC.6.5.1 – ECC.6.5.5, OC5.7.4.2(vi), OC5.7.4.2(xi) and OC5.7.4.2(xii)

Distribution Code DOC 5.7.3.7

### Alternatives

None

# 6 CUSC parties

## 6.1 Resilience to Partial or Total Shutdown of CUSC parties

### Proposal

**Classification**

Mandatory. (CC/ECC.7.11)

**Required Parties**

For ESO, CUSC Participants

**Description**

ESRS will need the Users to be able to operate once auxiliary supplies are returned from the system. CUSC Parties, including existing parties, will be required to ensure that their plant and apparatus has a resilience period of up to 72 hours such that when supplies are restored their plant and apparatus shall be returned to service in an equivalent time scale that would be expected from a cold plant

Their plant and apparatus should be such that their plant can be shut down in a safe manner in a Partial or Total Shutdown and remain in a safe state without external supplies for up to 72 hours so there is some assurance that the plant will not have to be subject to major component replacement thereafter.

**Requirement**

Annual reporting confirming the current plant is in good condition and has the required capability, evidenced.

Data submissions to inform ESO on the designed resilience level, estimated durations to start and synchronise with a Power Island via OC2 with notifications of any change to capability.

**Test/Reporting Cycle**

At least once every year

**Annual reporting to the Monitoring Body**

Date(s) of last check(s)

Evidence of designed resilience level

### Disagreements

SSE Gen - Disagree with the retrospective 72hrs resilience requirement especially for generators that were designed and connected to the grid a long time ago. Also mentioned that it might be practically impossible for some generators to implement this requirement.

ESO/Proposer – Plants that cannot be modified retrospectively to meet the requirements can apply for a derogation from Ofgem.

### Legal Text References

Grid Code OC5.7.4 and OC5.7.5

### Alternatives

None

# 7 Planning and Training

## 7.1 Restoration Procedure Review

### Proposal

**Classification**

Mandatory.

**Required Parties**

ESO, Restoration Service Providers, CUSC Participants, Offshore TOs, Onshore TOs, CATO, DNOs, IDNOs

**Description**

Internal organisational review of all relevant restoration related procedures to ensure these are up to date. These internal procedures are separate from the LJRP and DRZPs themselves.

For example: for ESO - restoration procedure; for TO and DNO - loss of external grid supplies; for Generators - loss of network procedures.

**Requirement**

Procedure review

**Measure**

Self-evaluation

**Test/Reporting Cycle**

At least once every three years

**Annual reporting to the Monitoring Body**

Date(s) of last Review

Statement of compliance.

### Disagreements

None

### Legal Text References

STC - Section C Part Three, Clause 2.1.3 and STCP 06-1

Grid Code OC5.7.4.2(iv) and OC9.4.7.6.2

Distribution Code 5.7.5

### Alternatives

None

## 7.2 LJRP & DRZP Reviews

### Proposal

**Classification**

Mandatory. (OC9.4.7)

**Required Parties**

ESO, DNO, Anchor and Top-up Plant Owners, Offshore TOs, Onshore TOs, CATO.

ESO leads the review of LJRPs. DNO leads the review of DRZPs.

**Implementation**

Codes (between ESO, TO and Anchor and Top-up Plant Owners) and contract (between ESO, DNO and Anchor and Top-up Plant Owners).

**Description**

Review to increase the familiarity around the relevant plan and also an opportunity to agree any areas for development.

Review and re-issue on a need basis following a change that has a material impact.

**Requirement**

Restoration plan(s) reviewed, agreed and ready to re-issue at least every three years and/or when applicable.

**Test/Reporting Cycle**

At least once every three years and/or when applicable.

**Annual reporting to the Monitoring Body**

Date(s) of last Review

Statement of compliance.

### Disagreements

None

### Legal Text References

STC - Section C Part Three, Clause 2.1.3 and STCP 06-1

Grid Code OC5.7.4.2(iv) and OC9.4.7.6

Distribution Code DOC9.4.6

### Alternatives

None

## 7.3 Awareness Training for Restoration Service Providers and CUSC parties

### Proposal

**Classification**

Mandatory.

**Required Parties**

ESO, Transmission Owners (Offshore TO's, Onshore TO's, CATOs), Distribution Network Operators (DNO & IDNO), Restoration Service Providers and CUSC Parties.

**Description**

Requirement for parties captured under the EU code definition of "Restoration Service Providers" and CUSC Parties, to attend annual awareness training every 3 years on Restoration and Resilience processes and procedures.

ESO to provide an annual awareness presentation communicating key facts of the restoration process to industry parties.

**Requirement**

To report key statistics around industry training, number of staff, percentage complete, high-level description of training delivered.

**Attendance Cycle**

At least once every three years

**Annual reporting to the Monitoring Body**

Date(s) of last Training(s)

Statement of compliance.

### Disagreements

None

### Legal Text References

STC - Section C Part Three, Clause 2.1.3 and STCP 06-1

Grid Code OC5.7.4 and OC9.4.7.6.2

Distribution Code DOC 5.7.5 and DOC9.4.7

### Alternatives

None

## 7.4 Cross Industry Training

### Proposal

**Classification**

Mandatory (OC5.7 and OC9.4.7.6.2)

**Required Parties**

ESO, Transmission Owners (Offshore TO's, Onshore TO's, CATOs), Distribution Network Operators (DNO & IDNO), Anchor and Top-up plants, CUSC Parties.

**Description**

The capability for cross industry desktop exercises to include all relevant parties, extending to LJRPs, DRZPs and CUSC parties.

**Requirement**

Opportunity for key members of staff from across the industry to attend desktop exercises with ESO. This will provide learning for the restoration process and create subject matter experts that can cascade learning to the industry. In addition, it will allow for training in the sharing of available generation across regions and review this process.

**Test/Reporting Cycle**

At least once every three years

**Annual reporting to the Monitoring Body**

Date(s) of last Exercise(s)

Statement of compliance including parties involved.

### Disagreements

None

### Legal Text References

STC - Section C Part Three, Clause 2.1.3 and STCP 06-1

Grid Code OC5.7.4 and OC9.4.7.6.2

Distribution Code DOC 5.7.5

### Alternatives

None

# 8 Equipment & Plant Assurance Activities

## 8.1 Auxiliary Power Sources - **REFERENCE TEST ONLY**

**Proposal**

Classification

**Mandatory**

Required Parties

ESO, Restoration Service Providers, TOs/OFTOs/CATOs, DNOs

**Description**

Assess the performance and capability of backup auxiliary power sources.

**Requirement:**

At least annually, demonstrate the Auxiliary Power Source's capability to operate minimum of 72 hours post-power outage event.

Specific requirements per technology:

- Diesel Generator: as a minimum, the capability assessment shall include a fuel quality test and a load test run at rated output for a minimum of two hours.
- Uninterruptable Power Source: as a minimum, the annual capability assessment shall include a load test (Steady-state and transient load).
- Batteries: as a minimum, the annual capability assessment shall include a capacity test (discharge test) and an Impedance test. *Note: the assessment will take cognisance of the fact that once back up supplies are restored, the batteries duty may be complete and that therefore the batteries duty is likely to cover the period between loss of grid supplies and back up supplies, unless the batteries are the source of site back up supply, being established.*

**Measure**

Self-evaluation.

**Test/Reporting Cycle**

At least once every year

**Annual reporting to the Monitoring Body**

List of Auxiliary Power Sources installed/maintained.

Date(s) of last test(s).

Statement of compliance.