SQSS Modification Proposal Form

GSR032:

Facilitate Implementation of the Electricity System Restoration Standard

Overview: This Modification is proposing a number of changes to the SQSS to facilitate the direction issued by BEIS in accordance with Special Condition 2.2 of National Grid's Electricity System Operator's Transmission Licence. Implementing an Electricity System Restoration Standard (ESRS) which requires 60% of electricity demand to be restored within 24 hours in all regions, and 100% of electricity demand to be restored within 5 days nationally.

Modification process & timetable

1. **Proposal Form**
   01 March 2023
2. **Workgroup Consultation**
   12 May 2023 – 05 June 2023
3. **Workgroup Report**
   04 July 2023
4. **Code Administrator Consultation**
   17 July 2023 - 07 August 2023
5. **Draft Final Modification Report**
   05 September 2023
6. **Final Modification Report**
   25 September 2023
7. **Implementation**
   TBC

Status summary: The Proposer has raised a modification and is seeking a decision from the Panel on the governance route to be taken.

This modification is expected to have a: High impact

Transmission Owners and Offshore Transmission Owner

Proposer's recommendation of governance route	Standard Governance modification with assessment by a Workgroup

Who can I talk to about the change?	**Proposer:** Sade Adenola Sade.adenola@nationalgrideso.com 07748180789	**Code Administrator Contact:** Banke John-Okwesa Banke.John-Okwesa@nationalgrideso.com 0792 971 6301

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What is the issue?

In April 2021, the Department for Business, Energy and Industrial Strategy (BEIS)[1] released a policy statement setting out the need to introduce a legally binding target for the restoration of electricity supplies in the event of a total or partial shutdown of the National Electricity Transmission System (NETS) .

This new policy is called the Electricity System Restoration Standard (ESRS). As a consequence of BEIS's policy statement, Ofgem performed an initial consultation in April 2021 followed by a statutory consultation in July 2021 on licence amendments to facilitate the introduction of an ESRS, and to align the regulatory framework for procurement of restoration services with that of other balancing services.

On 24th August 2021, Ofgem published a decision letter stating that they made the decision to make the licence modifications. The modification decisions are publicly available and were implemented on 19th October 2021.

These licence modifications include but are not limited to:

- Introducing the definition of "restoration services" in Standard Condition C1 and amending the definition of balancing services to include "restoration services".
- Replacing all references to "black start" with "Electricity System Restoration" in the Electricity Transmission Licence, including in the ESO's Special Licence Conditions, to align the licence terminology with BEIS's policy.
- Introduction of updated Special Condition 2.2 of National Grid's Electricity System Operator's Transmission Licence requiring the introduction of an Electricity System Restoration Standard (ESRS) which requires 60% of electricity demand to be restored within 24 hours in all regions and 100% of electricity demand to be restored within 5 days nationally.

This modification is therefore necessary following a direction issued by BEIS. The date by which BEIS require the ESO to be compliant with the ESRS is 31 December 2026.

Why change?

This modification is proposing a number of changes to the SQSS to facilitate the direction issued by BEIS in accordance with Special Condition 2.2 of National Grid's Electricity System Operator's Transmission Licence.

The SQSS requires further review to ensure it is consistent with the changes being introduced to the Grid Code and STC to facilitate the implementation of the ESRS.

What is the proposer's solution?

This modification will build on the work completed through the implementation of the EU Emergency and Restoration Code (EU 2017/2196) which was in part introduced to the Grid Code through Grid Code modifications GC0125, GC0127 and GC0128 and further being implemented through Grid Code modification GC0148 (Implementation of EU Emergency and Restoration Code Phase II) and GC0156 (Facilitating the Implementation of the Electricity System Restoration Standard).
This modification includes the following proposals for Transmission Owners to consider the following issues when designing their networks.

- At each Grid Entry Point, the ability for Restoration Contractors to energise part of the Transmission System at 0MW output and subsequently load the generator above

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

Stable Export Limit (SEL) to feed local demand. This process would rely on Restoration Contractors[2] sufficient volumes of the reactive power be it from an Anchor Plant or Top Up Plant.

- No Load gain between adjacent substations must be designed so that it can be energised during System Restoration. (i.e., circuit busbars and associate reactive plant) This would include energising from Anchor Plant or synchronising Top Up Plant such that demand can be supplied as part of a Local Joint Restoration Plan or Distribution Restoration Zone Plan. Once a power island is created by Restoration Contractors, it must be possible to synchronise other Users to the network to either offer auxiliary supplies or enable the Synchronising of other Power Islands.
- The ability to deliver reactive compensation in steps of up to 60MVAr from a proportion of the reactive compensation equipment thereby enabling utilisation of this equipment during a restoration.
- Compensation equipment, such as Static Compensators or rotary compensators should be energised and used within the initial stages of a restoration.
- The ability to utilise Offshore Networks as part of the Restoration Process.

Draft legal text

The Legal text for this solution will be developed in line with the legal text drafted for GC0156. As part of this modification the following but not limited to sections of the SQSS Procedures are expected to require updating.

- Generation Connection Criteria Applicable to an Onshore Transmission System
- Operation of the Onshore Transmission System
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- Operation of an Offshore Transmission System

What is the impact of this change?

Proposer's assessment against SQSS Objectives	
Relevant Objective	**Identified impact**
(i) facilitate the planning, development and maintenance of an efficient, coordinated and economical system of electricity transmission, and the operation of that system in an efficient, economic and coordinated manner;	**Positive** The SQSS is introducing robust network design to support the ability to restore the network following a total or partial shutdown.
(ii) ensure an appropriate level of security and quality of supply and safe operation of the National Electricity Transmission System;	**Positive** Proposed changes would ensure stability of Power

[2] Please note, 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.

	Islands by restoring sufficient demand during system restoration.
(iii) facilitate effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the distribution of electricity; and	**Neutral** [Please provide your rationale]
(iv) facilitate electricity Transmission Licensees to comply with any relevant obligations under EU law	**Positive** Provide assurance of restoring the System following a total or partial national power outage.

Proposer's assessment of the impact of the modification on the stakeholder / consumer benefit categories	
Stakeholder / consumer benefit categories	**Identified impact**
Improved safety and reliability of the system	**Positive** It is in the widest possible interest of the country and consumers as a whole to restore power supplies as soon as possible following a total or partial shutdown. This modification seeks to do that and therefore seen as positive.
Lower bills than would otherwise be the case	**Positive** The financial implications of a national power outage can run into many tens of millions of pounds very quickly. Restoring power supplies as soon as possible and in the shortest possible time frame is essential to the country as a whole. Whilst not having a direct effect on consumer bills the loss of production for business and the wider community would be substantial and therefore insurance to minimise against the risk of a power outage is imperative.
Benefits for society as a whole	**Positive** Improve the reliability and resilience of the National Electricity Transmission System.
Reduced environmental damage	**Positive** This proposal will support the use of a diverse range of technologies, many of which are low carbon sources. The proposal also recognises the important role of all

	technologies following a Total or Partial shutdown and therefore this modification is seen as a net positive in minimising environmental damage.
Improved quality of service	**Positive** This modification provides the potential for Restoration from renewable sources in addition to encouraging the use of embedded generation which is currently being trialled through the distributed restart project.

When will this change take place?

Implementation date
31st December 2026.

Date decision required by
September 2023.

Implementation approach
Implementation of ESRS will be facilitated by a New Restoration Decision Support Tool, Restoration Tool, Local Joint Restoration Plans, Distributed Restoration Zone Plans & Annual Restoration Strategy.

Proposer's justification for governance route
Governance route: Standard Governance modification with assessment by a Workgroup

There are other industry code modifications for ESRS running in parallel. The Standard governance route will provide the platform for Workgroup members to review the proposed changes and identify those essential for implementation via the SQSS to support ESRS.

Guidance on governance routes

Timescales	Route	Who makes the decision (Governance type)
All SQSS modifications require an update to the Transmission Licence. The Authority must consult on Transmission Licence changes which takes ~6 months from the date we receive an Authority decision on the modification.	Proceed to Code Administrator Consultation*	Authority (Standard Governance)***
	Assessment by a Workgroup**	

***** This route is for modifications which have a fully developed solution and therefore don't need to be considered by a Workgroup.
****** For modifications which need further input from industry to develop the solution.
*** All SQSS modifications require an Authority decision.

Interactions

☒Grid Code ☒BSC ☒STC ☒CUSC
☒European Network Codes ☒Other modifications

This is a consequential change as a result of GC0156

Acronyms, key terms and reference material

Acronym / key term	Meaning
BEIS	Department for Business, Energy and Industrial Strategy
BSC	Balancing and Settlement Code
SEL	Stable Export Limit
STC	System Operator Transmission Owner Code
CUSC	Connection and Use of System Code
ESO	Electricity System Operator
ESRS	Electricity System Restoration Standard
EU	European Union
GC	Grid Code
NETS	National Electricity Transmission System
SQSS	Security and Quality of Supply Standards
T&Cs	Terms and Conditions
TO	Transmissions Owner
OFTO	Offshore Transmission Owner

Reference material

- GC0156 Modification