

Workgroup Report

CM089 & CM091: Implementation of the Electricity System Restoration Standard & Implementation of Emergency and Restoration Code Phase II

Overview: This Modification is proposing several changes to the STC to facilitate Special Condition 2.2 of NGESO Transmission Licence. Implementing an Electricity System Restoration Standard (ESRS) which requires 60% of national demand to be restored within 24 hours in all regions, and 100% of national demand to be restored within 5 days. And align the STC with changes proposed to the Grid Code within GC0148 to facilitate the implementation of Phase II of the EU Emergency and Restoration Code.

Modification process & timetable



Have 5 minutes? Read our [Executive summary](#)

Have 30 minutes? Read the full [Workgroup Report](#)

Have 90 minutes? Read the full Workgroup Report and Annexes.

Status summary: The Workgroup have finalised the proposer's solution. They are now seeking approval from the Panel that the Workgroup have met their Terms of Reference and can proceed to Code Administrator Consultation. No alternative solutions were raised as part of the modification.

This modification is expected to have a: High impact on Transmission Licensees (excluding existing Offshore Transmission Licensees) and the Electricity System Operator

Governance route	Standard Governance modification with assessment by a Workgroup	
Who can I talk to about the change?	Proposer: Sade Adenola, ESO Sade.adenola@nationalgrideso.com Phone: 07748180789	Code Administrator Chair: Milly Lewis Milly.Lewis@nationalgrideso.com Phone: 07811036380

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Executive summary

This modification is seeking to clarify the requirements on STC parties impacted by the ESRS, so that the ESO can satisfy its new Licence Obligation and align the STC with changes proposed to the Grid Code to facilitate the implementation of Phase II of the EU Emergency and Restoration Code.

What is the issue?

There are proposed changes to the Grid Code through Grid Code modification [GC0148 \(Implementation of EU Emergency and Restoration Code Phase II\)](#), the Grid Code is also proposed to be updated through Grid Code modification [GC0156 \(Facilitating the Implementation of the Electricity System Restoration Standard\)](#). Both Grid Code modifications [GC0156](#) and [GC0148](#) if approved will result in consequential changes to the STC.

What is the solution and when will it come into effect?

Proposer's solution: Updating Schedule 2, Schedule 3, Section C, Section D, Section J and Section K of the STC.

Implementation date: 10 working days following The Authority decision.

This would provide clear obligations on parties so the requirements of the ESRS can be met by 31 December 2026.

Workgroup conclusions: The Workgroup concluded unanimously that the Original better facilitated the Applicable Objectives than the Baseline.

What is the impact if this change is made?

High impact: Transmission Licensees and the Electricity System Operator

Interactions

There are a suite of modifications related to the implementation of the Electricity System Restoration Standard; Grid Code [GC0156](#); CUSC [CMP398](#) and [CMP412](#); BSC [P451](#); STC-P changes [PM0128/ PM0132](#) and SQSS [GSR032](#).

In addition, to the suite of ESRS changes as outlined in the document, there are interactions with Grid Code modification [GC0148](#).

What is the issue?

In April 2021, the Department for Business, Energy and Industrial Strategy (BEIS¹) 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 24 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 19 October 2021.

These licence modifications include but 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 DESNZ's policy
- Introduction of updated Special Condition 2.2 of NGENSO's Transmission Licence requiring the introduction of an 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 DESNZ. The date by which DESNZ¹ require the ESO to be compliant with the ESRS is 31 December 2026.

Amalgamation with CM091

At the STC Panel on 31 May 2023² it was agreed the amalgamation of CM089 with [CM091 Implementation of Emergency and Restoration Code Phase II](#); the consequential modification required to align the STC with changes proposed to the Grid Code within Grid Code modification GC0148 to facilitate the implementation of Phase II of the EU Emergency and Restoration Code, due to the interlinking nature of Grid Code modification [GC0156](#) (CM089) and Grid Code modification [GC0148](#) (CM091) as solutions.

Why change?

This modification is seeking to clarify the requirements on STC parties impacted by restoration activities, so that the ESO can satisfy the new Licence Obligation. The Grid Code is proposed to be updated through Grid Code modification [GC0156](#) (which builds on the proposed changes of Grid Code modification [GC0148](#)) and if approved there are consequential changes proposed to the STC to align with the Grid Code so that the ESRS can be implemented.

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

² STC Panel Papers including modification proposal
<https://www.nationalgrideso.com/document/280671/download>

This modification is proposing several changes to the STC to facilitate Special Condition 2.2 of NGESO Transmission Licence. Implementing the ESRS requires 60% of national demand to be restored within 24 hours in all regions, and 100% of national demand to be restored within 5 days.

What is the solution?

Proposer's solution

As part of the solution, and the Workgroup will:

- Identify aspects of the STC that must change as a consequence to the changes proposed by Grid Code modification [GC0156 \(Facilitating the Implementation of the Electricity System Restoration Standard\)](#).
- Identify new requirements to the STC as a consequence of ESRS.

The ESO's aim for implementation of the ESRS is to put in place measures, tools, and procedures that in the event of a total or partial shutdown, 60% of national demand can be restored within all regions in 24 hours and 100% of national demand can be restored in 5 days.

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 \(Implementation of EU Emergency and Restoration Code Phase II\)](#).

To ensure consistency with the STC and the proposed changes through Grid Code modification [GC0156](#) including the additional tools which the [GC0156](#) Workgroup have proposed for the ESRS to be met. At a high level these include the following features:

- Introduction of Distributed Re-Start and Distributed Restoration Zones.
- Changes to permit Restoration from Offshore Transmission Systems.
- Introduction of enhanced Critical Tools and Facilities – i.e., the ability to operate critical systems and assets during a Total System Shutdown or Partial Shutdown including data and communications systems.
- Introduction of an Assurance process including regular testing, desk top exercises and reporting including confirmation of successful plant running when site supplies are restored.
- Greater consistency between Local Joint Restoration Zone Plans and Distribution Restoration Zone Plans.
- Cyber Security requirements to Security of Network and Information System (NIS) Regulations.
- Changes to protection and control settings to permit Restoration.
- Changes to Grid Code Operating Code 9 and the role of Transmission Licensees in Local Joint Restoration Plans and Distribution Restoration Zone Plans.
- References to Black Start changed to System Restoration

Whilst these arrangements are being introduced to the Grid Code, the arrangements need to be applied to Transmission Licensees and reflected in the STC.

Amalgamation with CM091 Implementation of Emergency and Restoration Code Phase II

Due to the similarity between the STC modifications arising from Grid Code modification [GC0148](#) and those arising from Grid Code modification [GC0156](#) it was agreed at the May STC Panel to merge the two modifications (CM089/CM091 and PM0128/PM0132) as provided for in Section B clause 7.2.3 of the STC Governance Rules.

The European Network Code Electricity Emergency and Restoration Code (EU 2017/2196) (NCER) is one of the European Network Codes which defines the requirements for Member States to implement defence and restoration measures. It aims to provide defensive measures to prevent a System shutdown occurring in the first instance and the implementation of restoration measures to enable the System to be restarted if a Total or Partial System Shutdown were to occur.

The EU Emergency and Restoration Code has two compliance dates, the second was 18 December 2022 which has been developed through Grid Code modification [GC0148](#). Although the UK has now left the EU, the requirements of the EU Emergency and Restoration has been implemented into UK law through Statutory Instrument SI 533 / 20193.

Grid Code modification [GC0148](#) which specifically relates to Articles 15(5) – 15(8) (Low Frequency Demand Disconnection), Article 41 (Communications equipment) and Articles 42 (1), (2) and (5) (Critical Tools and Facilities) have an impact on the STC, especially Article 42 and potentially some elements of Article 41.

Other items which fall under Grid Code modification [GC0148](#) including the treatment of Electricity Storage Modules under importing conditions during low system frequencies and how smaller Non-CUSC parties fall under the framework of the EU Emergency and Restoration Code are not relevant to the STC and therefore fall outside this modification.

At the [GC0148](#) Workgroup Consultation phase, it was agreed unanimously that the Distributed Re-Start work should be taken out of the Grid Code modification [GC0148](#) modification and addressed through Grid Code modification [GC0156](#). As such, changes to the STC to implement the Electricity System Restoration Standard including Distributed Re-Start were progressed through CM089.

Grid Code modification [GC0148](#) was originally submitted to the Authority in October 2022 after progressing through the Grid Code Governance process. Due to an issue with Aggregators which was identified in November 2022, the Authority sent Grid Code modification [GC0148](#) back to the Grid Code Review Panel in January 2023, with the Second Final Modification Report submitted on 5 June 2023.

Workgroup considerations

The Workgroup convened 5 times to discuss the perceived issue, detail the scope of the proposed defect, devise potential solutions, and assess the proposal in terms of the Applicable Code Objectives.

³ The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019 (legislation.gov.uk)

The Workgroup held their Workgroup Consultation between 25 April 2023 – 18 May 2023 and received 2 responses. The full responses and a summary of the responses can be found in Annex 5.

Consideration of the proposer’s solution

Electricity Demand definition

The Proposer clarified that for restoration purposes, Electricity Demand is based on the Grid Code definition of National Demand.

National Demand	<p>The amount of electricity supplied from the Grid Supply Points plus:-</p> <ul style="list-style-type: none"> • that supplied by Embedded Large Power Stations, and • National Electricity Transmission System Losses, <p>minus:-</p> <ul style="list-style-type: none"> • the Demand taken by Station Transformers and, Pumped Storage Units’ and Electricity Storage Modules’. <p>and, for the purposes of this definition, does not include:-</p> <ul style="list-style-type: none"> • any exports from the National Electricity Transmission System across External Interconnections.
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Section C: Transmission Services and Operations and Section D: Planning Co-Ordination Legal Text Changes

The Workgroup discussed the inclusion of the proposed Grid Code modification [GC0156](#) legal text (ECC 7.10, ECC 7.11, CC 7.10, CC 7.11, OC 5.7 and OC 9.4.7.6.2) and it was agreed that a reference to the Data Registration Code Schedule 16 should be included to provide clarity around the required assurance activities for TOs.

The ESO representative confirmed that the proposed CC 7.10 and CC 7.11 obligations would be applied retrospectively with regards to Critical Tools and Facilities requirements. A Workgroup member raised concerns about the ability to meet the 72-hour resilience requirements by 2026.

Section K: Technical, Design and Operational Criteria and Performance Requirements for Offshore Transmission Systems Legal Text Changes

It had been agreed that ESRS requirements would only be applicable to OFTOs who had concluded contracts for their assets on or after XXXX (12 months after approval of CM089&91 for example if Ofgem approve CM089&91 on 01/12/2023 then XXXX would become 01/12/2024).

A Workgroup Member queried whether the 12 months post implementation cut off should be closer to 5 - 6 years. The ESO representative advised that the implementation cut off reflects the contract award date and not the connection date, and designs after this date should incorporate restoration.

As the proposed CM089 legal text mirrors the proposed Generator obligation in [GC0156](#) when an asset transfers ownership to the OFTO (if the Offshore Transmission Network was developed under the Generator Build approach) it will have restoration capabilities

incorporated.

A Workgroup Member noted that OFTOs are currently excluded from participating in Restoration Plans as provided for in STCP 06-1.

Noting that a significant volume of future generation will come from the offshore sector, as part of proposed changes to STCP 06-1 within [PM0128/ PM0132](#), this exclusion has been removed for future OFTOs.

A Workgroup member advised that as OFTOs are funded differently to incumbent TOs (no price control mechanism and no provision for cost recovery within their licence) there is no current mechanism to recover the costs for restoration. Whilst also acknowledging there will be no mandatory requirement for existing OFTOs and offshore generation to participate in restoration. Should an existing offshore generator wish to provide restoration capability then arrangements would need to be put in place with the relevant OFTO to participate in an offshore local joint restoration plan. The funding arrangements would therefore need to be addressed under this situation. The Proposer advised that Ofgem have been approached with regards to this issue and guidance is still awaited.

Amalgamation with [CM091- Implementation of Emergency and Restoration Code Phase II](#)

No additional provisions were required to facilitate the implementation of CM091 as the consequential impacts of Grid Code modification [GC0148](#) were already captured as within the CM089 solution developed by the Workgroup.

Workgroup consultation summary

There were two responses received and no alternative requests have been raised. The Workgroup discussed the responses, and the main highlights were:

- The ESO representative advised that the legal text updates for the STCPs have been completed alongside the STC legal text updates and will be issued to the STC Panel for approval.
- A Workgroup member advised that they do not see how this modification addressed STC objectives (e) and (f), but they do not see it as a blocker for the modification. The Proposer explained the rationale behind the assessment made to the objectives and another Workgroup member agreed and advised that they did not believe objective (f) is positive for the modification.
- A Workgroup member explained the negative assessment on objective (b) on the response to the Workgroup Consultation and advised that if objective (b) had reference to resilience or security, they would have put it down as positive. The ESO representative advised that they would revise the Proposer's assessment to make their intent clearer.
- A Workgroup member questioned if the restoration strategy is an annually reviewed document. The Proposer advised that the Special Condition 2.2 of the ESO Transmission License mandates the ESO to prepare an ESRS Assurance Framework which includes a Restoration Strategy. The Assurance Framework is submitted for approval and published post approval.

- A Workgroup member raised questions about Cyber Security and the ESO representative advised that NIS (Network & Information Systems) has been part of the discussions in the Grid Code modification [GC0156](#) subgroups and that it is a standard.

Network Design

Rather than including in the STC, STCP 16-1 clause 4.2.6 and proposed SQSS Appendix I (as part of [GSR032](#)), have been amended to take into account but not limited to; an electrically weak network; reactive gain and ability to energise with limited generating capability.

Consideration of other options

The Workgroup did not consider any Alternatives.

Legal text

The Workgroup were advised that the legal text cover Grid Code modifications [GC0156](#)⁴ and [GC0148](#)⁵ Original solutions as well as the respective WAGCMs (Workgroup Alternative Grid Code Modifications).

The legal text for this change can be found in Annex 3 and a table demonstrating how the STC has been aligned to the Grid Code modification [GC0156](#) and Grid Code modification [GC0148](#) can be found in Annex 4.

What is the impact of this change?

Proposer's assessment against Code Objectives

Proposer's assessment against STC Objectives	
Relevant Objective	Identified impact
(a) efficient discharge of the obligations imposed upon transmission licensees by transmission licences and the Act	Positive The new obligation is part of the ESO Transmission Licence Section 2.2.
(b) development, maintenance, and operation of an efficient, economical, and coordinated system of electricity transmission	Positive Provides a level playing field for STC Parties and to put measures in place to restore the NETS as soon as possible following a total or partial shutdown.
(c) facilitating effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the distribution of electricity	Positive Competition for Restoration Services is encouraged via the tender process to ensure a good availability of services at strategically located points which provides value for money. Transmission Licensees will be a fundamental part of delivering this process
(d) protection of the security and quality of supply and safe operation of the national electricity transmission system insofar as it relates to interactions between transmission licensees	Positive Provide assurance of restoring the System following a total or partial shutdown as quickly as possible

⁴ GC0156: Workgroup Report Annexes (inclusive of proposed legal text)

⁵ GC0148 Second Final Modification Report and Annexes

(e) promotion of good industry practice and efficiency in the implementation and administration of the arrangements described in the STC	Positive Provide assurance that the new licence obligation issued in Oct 2021 can be efficiently discharged.
(f) facilitation of access to the national electricity transmission system for generation not yet connected to the national electricity transmission system or distribution system;	Positive Provide assurance that the NETS is adequately assessed, designed, and maintained to support restoring the System following a total or partial shutdown
(g) compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.	Positive Provide assurance of restoring the System following a total or partial shutdown.

Workgroup vote

The Workgroup met on 11 July 2023 to carry out their workgroup vote. The full Workgroup vote can be found in Annex 7. The table below provides a summary of the Workgroup members view on the best option to implement this change.

The Applicable STC Objectives are:

- a) efficient discharge of the obligations imposed upon transmission licensees by transmission licences and the Act
- b) development, maintenance and operation of an efficient, economical and coordinated system of electricity transmission
- c) facilitating effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the distribution of electricity
- d) protection of the security and quality of supply and safe operation of the national electricity transmission system insofar as it relates to interactions between transmission licensees
- e) promotion of good industry practice and efficiency in the implementation and administration of the arrangements described in the STC.
- f) facilitation of access to the national electricity transmission system for generation not yet connected to the national electricity transmission system or distribution system;
- g) compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.

The Workgroup concluded unanimously that the Original better facilitated the Applicable Objectives than the Baseline.

Option	Number of voters that voted this option as better than the Baseline
Original	5

Workgroup Member	Company	BEST Option?	Which objective(s) does the change better facilitate?
Sade Adenola	National Grid ESO	Original	a,b,c,d,e,f,g
Lewis Morgan	NGET	Original	a,c,d
Mark Holland	Scottish Hydro Electric Transmission Ltd	Original	a,b,c,d,e,f,g

Joel Matthews	Diamond Transmission Corp	Original	a,b,c,d,e,f,g
Graeme Vincent	SP Energy Networks	Original	a,d

When will this change take place?

Implementation date

10 working days following The Authority decision.

This would provide clear obligations on parties so the requirements of the ESRS can be met by 31 December 2026.

Date decision required by

Aligned with the Authority decision for [GC0156](#).

Implementation approach

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

Interactions

<input checked="" type="checkbox"/> Grid Code	<input checked="" type="checkbox"/> BSC	<input checked="" type="checkbox"/> CUSC	<input checked="" type="checkbox"/> SQSS
<input checked="" type="checkbox"/> European Network Codes	<input type="checkbox"/> EBR Article 18 T&Cs ⁶	<input checked="" type="checkbox"/> Other modifications	<input type="checkbox"/> Other

There are a suite of modifications related to the implementation of the Electricity System Restoration Standard; Grid Code [GC0156](#); CUSC [CMP398](#) and [CMP412](#); BSC [P451](#); STC-P changes [PM0128/ PM0132](#) and SQSS [GSR032](#).

In addition, to the suite of ESRS changes as outlined in the document, there are interactions with Grid Code modification [GC0148](#).

Acronyms, key terms, and reference material

Acronym / key term	Meaning
BEIS	Department for Business, Energy, and Industrial Strategy
BSC	Balancing and Settlement Code
CMP	CUSC Modification Proposal
CUSC	Connection and Use of System Code
DESNZ	Department for Energy Security and Net-Zero
EBR	Electricity Balancing Guideline
ESO	Electricity System Operator
ESRS	Electricity System Restoration Standard
NETS	National Electricity Transmission System
NIS	Network and Information System

⁶ If the modification has an impact on Article 18 T&Cs, it will need to follow the process set out in Article 18 of the Electricity Balancing Regulation (EBR – EU Regulation 2017/2195) – the main aspect of this is that the modification will need to be consulted on for 1 month in the Code Administrator Consultation phase. N.B. This will also satisfy the requirements of the NCER process.

SQSS	Security and Quality of Supply Standards
STC	System Operator Transmission Owner Code
T&Cs	Terms and Conditions
WAGCM	Workgroup Alternative Grid Code Modification

Annexes

Annex	Information
Annex 1	Proposal forms
Annex 2	Terms of reference
Annex 3	Legal Text
Annex 4	Mapping Tables
Annex 5	Workgroup consultation responses
Annex 6	Attendance Record
Annex 7	Workgroup vote