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| Workgroup Consultation | | | |
| GSR032:  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[[1]](#footnote-2) 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**    **Proposal Form**  16 March 2023  **Workgroup Consultation**  31 May 2023 - 20 June 2023  **Workgroup Report**  04 July 2023  **Code Administrator Consultation**  17 July 2023 - 07 August 2023  **Draft Modification Report**  05 September 2023  **Final Modification Report**  25 September 2023  **Implementation**  TBC  **1**  **2**  **3**  **4**  **5**  **6**  **7** | |
| **Have 5 minutes?** Read our [Executive summary](#_Executive_summary_1)  **Have 20 minutes?** Read the full [Workgroup Consultation](#_Why_change?)  **Have 30 minutes?** Read the full Workgroup Consultation and Annexes. | | | |
| **Status summary:** The Workgroup are seeking your views on the work completed to date to form the final solution(s) to the issue raised. | | | |
| **This modification is expected to have a: High Impact** Transmission Owners and Offshore Transmission Owners (**No Impact** on existing OFTO network) | | | |
| **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](mailto:Sade.adenola@nationalgrideso.com)  Phone: 07748180789 | | **Code Administrator** **Chair**: Milly Lewis  milly.lewis@nationalgrideso.com  Phone: 07811036380 |
| **How do I respond?** | Send your response proforma to[box.sqss@nationalgrideso.com](mailto:box.sqss@nationalgrideso.com) **by 5pm on 20 June 2023** | | |

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# Executive summary

This Modification is proposing a number of changes to the Security and Qualtiy of Supply Standard (SQSS) to facilitate the direction issued by BEIS1 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.

What is the issue?

The modification is necessary to implement the Electricity System Restoration Standard (ESRS) issued by BEIS. The date by which BEIS1 require the ESO to be compliant with the ESRS is 31 December 2026.

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

**Proposer’s solution:**  The proposer suggested that the SQSS may need to be changed to reflect the requirements of the ESRS. The issue was discussed amongst the SQSS Panel, and it was agreed a Workgroup should be established to consider if the SQSS needed to be changed. The Proposer has suggested minor changes to the SQSS through the introduction of an Appendix I which specifically addresses the requirements for System Restoration. These changes complement other changes being introduced to the Grid Code and 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.

What is the impact if this change is made?

This modification is as a consequence of the [GC0156 Facilitating the Implementation of the Electricity System Restoration Standard](https://www.nationalgrideso.com/industry-information/codes/gc/modifications/gc0156-facilitating-implementation-electricity-system) and as such will impact Transmission Owners excluding existing Offshore Transmission Network. Modification of SQSS with inclusion of restoration requirements.

Interactions

There are a suite of modifications related to the implementation of the Electricity System Restoration Standard; Grid Code [GC0156](https://www.nationalgrideso.com/industry-information/codes/gc/modifications/gc0156-facilitating-implementation-electricity-system); CUSC [CMP398](https://www.nationalgrideso.com/industry-information/codes/cusc/modifications/cmp398-gc0156-cost-recovery-mechanism-cusc-parties) and [CMP412](https://www.nationalgrideso.com/industry-information/codes/cusc/modifications/cmp412-cmp398-consequential-charging-modification); BSC [P451](https://www.elexon.co.uk/mod-proposal/p451/); STC-P changes [PM0128](https://www.nationalgrideso.com/industry-information/codes/stc/modifications/pm0128-implementation-electricity-system-restoration) and STC [CM089](https://www.nationalgrideso.com/industry-information/codes/stc/modifications/cm089-implementation-electricity-system-restoration).

What is the issue?

In April 2021, the Department for Business, Energy and Industrial Strategy (BEIS1) released a [policy statement](https://www.gov.uk/government/publications/introducing-a-new-electricity-system-restoration-standard) 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](https://www.ofgem.gov.uk/publications/consultation-licence-amendments-facilitate-introduction-electricity-system-restoration-standard) in April 2021 followed by a [statutory consultation](https://www.ofgem.gov.uk/publications/statutory-consultation-licence-amendments-facilitate-introduction-electricity-system-restoration-standard-0) 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](https://www.ofgem.gov.uk/publications/decision-licence-modifications-facilitate-introduction-electricity-system-restoration-standard) stating that they made the decision to make the licence modifications[[2]](#footnote-3). 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 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[[3]](#footnote-4).

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 solution?

## Proposer’s solution

It is proposed to establish a SQSS modification Working Group to determine how implementation of the Electricity System Restoration Standard (ESRS) can be facilitated by code modifications.

This modification will build on the work completed through the implementation of the EU Emergency and Restoration Code[[4]](#footnote-5) ([EU 2017/2196](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.312.01.0054.01.ENG&toc=OJ:L:2017:312:TOC%22)) which was in part introduced to the Grid Code through Grid Code modifications [GC0125](https://www.nationalgrideso.com/industry-information/codes/gc/modifications/gc0125-eu-code-emergency-restoration-black-start), [GC0127](https://www.nationalgrideso.com/industry-information/codes/gc/modifications/gc0127-eu-code-emergency-restoration-requirements) and [GC0128](https://www.nationalgrideso.com/industry-information/codes/gc/modifications/gc0128-eu-code-emergency-restoration-requirements) and further being implemented through Grid Code modification [GC0148 (Implementation of EU Emergency and Restoration Code Phase II)](https://www.nationalgrideso.com/industry-information/codes/gc/modifications/gc0148-implementation-eu-emergency-and-restoration-code) and [GC0156 (Facilitating the Implementation of the Electricity System Restoration Standard).](https://www.nationalgrideso.com/industry-information/codes/gc/modifications/gc0156-facilitating-implementation-electricity-system)

This modification includes the following proposals for Transmission Owners to consider the following issues when designing their networks.

* Each *transmission system* shall be designed to facilitate participation in a *restoration plan* as appropriate including but not limited to reactive gain and the ability for generation to energise sections of the transmission system.
* Each *transmission system* shall be designed to permit *power stations* to subsequently synchronise their plant to the *transmission system* and operate within their normal operational capability limits
* The no load gain between adjacent substations shall be designed to prevent system collapseduring restoration.

Workgroup considerations

The Workgroup convened 4 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.

**Consideration of the proposer’s solution**

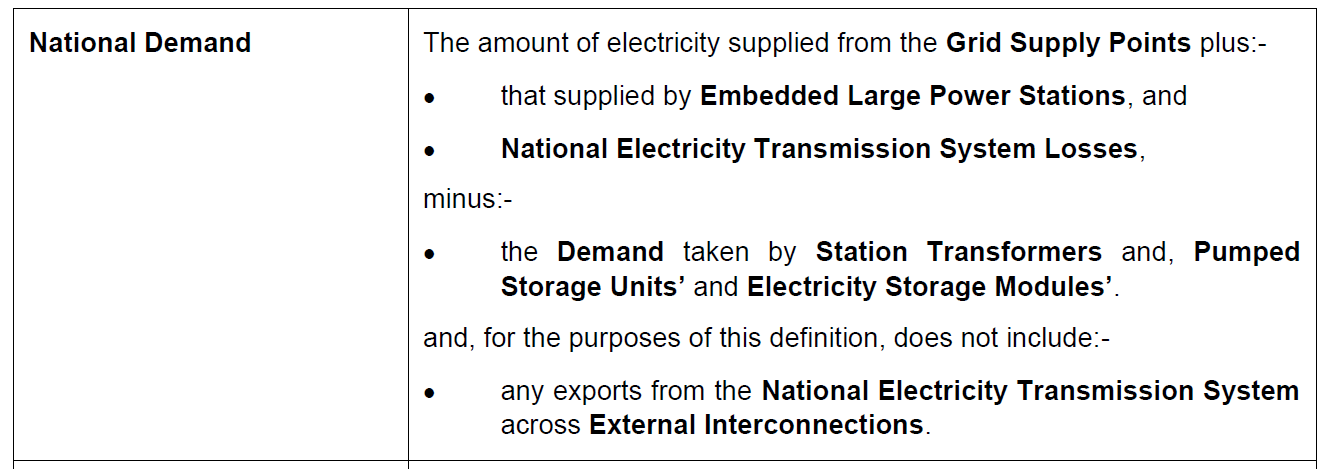
*Updates to the SQSS*

The ERSR subgroups (sub-group reports in Annex 3) which were formerly established prior to the formal implementation of the Industry Codes (i.e., Grid Code, STC, CUSC, BSC, SQSS) identified potential changes to the SQSS. These were presented to the SQSS Panel in March 2023 and again in April 2023 where it was agreed the issue should proceed to Workgroup.

A key point raised was whether there needed to be a change to the SQSS to include System Restoration noting that Licence Standards do not apply during a System Restoration.

The draft legal text developed by the Workgroup reflects the minimal requirements that are believed to be introduced into the SQSS to include a System Restoration capability and does not include specific references to relevant clauses/sections of the Grid Code and STC.

The Workgroup had opposing views as to whether to include the network design requirements for restoration into the SQSS or not, including whether system collapse or voltage collapse.

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

*Obligation, representation, and retrospectivity*

The Proposer confirmed that existing OFTOs are exempt from retrospective ESRS changes for those *offshore transmission systems* who had concluded design contracts for their assets on or after XXXX *(12 months after approval of CMo89 for example if Ofgem approve CM089 01/12/2023 then XXXX would become 01/12/2024)*.

It was confirmed that all existing and future onshore operations would need to be compliant with the ESRS requirements.

The Workgroup suggested that OFTO developers are required to be part of this discussion as they will be involved in implementing any standards to future-proof infrastructure etc. The ESO rep outlined that onshore TOs and DNOs have been involved in ESRS discussions to date, more developers joined at Workgroup 3.

**Consideration of other options**

*Loading capacity*

The Workgroup queried what the expectations for restarting generation in the event of a significant outage event were– i.e., that restarting would need to be at the lowest output to avoid instability issues. It was confirmed that block loading capacity is covered in contracts and not in scope for this Workgroup.

*Impact assessments and cost considerations resulting from the modification*

Some Workgroup members raised concerns about the cost implications of meeting the standards across the whole network (e.g., there is no cost recovery mechanism defined for OFTOs yet). The ESO team acknowledged that to meet the new standards, investments will be required across the industry, the ESO included, and shared that Ofgem have been engaged on this point, however OFTOs would need to approach Ofgem for guidance.

The Workgroup recognised that it is impractical to require all parts of the Transmission System to have a Restoration Capability. However, System Restoration needs to be considered at the design and operational stages, in particular the ability to ensure Generators or interconnectors or other parties who wish to offer a Restoration Capability can do so. Therefore, the draft text has been very specific in defining the need for the Transmission System to facilitate System Restoration through Restoration Plans and the subsequent wider expansion of the System.

The Workgroup acknowledged that whilst ensuring that license standards do not apply during System Restoration the conditions are such that plant and apparatus is not tripped because of the extreme operating conditions.

A question was raised as to whether the modification will result in a blanket change across the whole network or whether implementation of these requirements would be targeted (at first at least) – i.e., sections of the network targeted and tested prior to a blanket roll-out across the network. As a blanket implementation would have significant impacts on TOs and license holders, the group raised the importance of TOs understanding the implications of the ESRS changes and the duty of care to customers to balance against the changes needed. The ESO agreed that impacts would need to be scoped but the ESRS changes are required to meet a license obligation therefore, the need to implement the requirements remains unchanged.

In response to the request for more design specifications to help assess the impact of the changes across the network the ESO did confirm that they had received a request to remove some specific details during earlier ESRS discussions.

The Workgroup raised a need for an impact assessment to understand the implications for compliance (including the network’s current compliance status) and the impact to investment plans from this change. When ESO asked whether the workgroup could deliver such numbers to inform the discussion, the Workgroup suggested that impacts could be shared but not costs.

## Draft legal text

The draft legal text for this change can be found in Annex 5.

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 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 |
| (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. |

Do you believe that GSR Original proposal better facilitates the Applicable Objectives?

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

Q3 2023.

### Implementation approach

New Restoration Decision Support Tool, Restoration Tool, Local Joint Restoration Plans, Distributed Restoration Zone Plans & Annual Restoration Strategy.

Do you support the implementation approach?

Interactions

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

How to respond

## Standard Workgroup consultation questions

1. Do you believe that the Original Proposal and/or any potential alternatives better facilitate the Applicable Objectives?
2. Do you support the proposed implementation approach?
3. Do you have any other comments?

## Specific Workgroup consultation questions

1. Do you believe it is appropriate to include clarifications within the SQSS to define the restoration capability requirements as drafted?
2. Do you believe that there are any further requirements that should be considered during network design phase?
3. Is it clear from the draft legal text within Appendix I.1.2 that once a power island is created, it must be possible to energise the next user on the network to either offer auxiliary supplies or to Synchronise Power Islands?
4. Do you believe that the reference to no load gain is required as part of modification?

The Workgroup is seeking the views of SQSS Users and other interested parties in relation to the issues noted in this document and specifically in response to the questions above.

Please send your response to[box.sqss@nationalgrideso.com](mailto:box.sqss@nationalgrideso.com) using the response pro-forma which can be found on the SQSS modification page.

In accordance with Governance Rules if you wish to raise a Workgroup Consultation Alternative Request, please fill in the form which you can find at the above link.

*If you wish to submit a confidential response, mark the relevant box on your consultation proforma. Confidential responses will be disclosed to the Authority in full but, unless agreed otherwise, will not be shared with the Panel, Workgroup, or the industry, and may therefore not influence the debate to the same extent as a non-confidential response.*

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 |
| EU | European Union |
| GC | Grid Code |
| NETS | National Electricity Transmission System |
| OFTO | Offshore Transmission System |
| SEL | Stable Export Limit |
| SQSS | Security and Quality of Supply Standards |
| STC | System Operator Transmission Owner Code |
| T&Cs | Terms and Conditions |
| TO | Transmissions Owner |

### Reference material

* [GC0156 Modification](https://www.nationalgrideso.com/industry-information/codes/grid-code-old/modifications/gc0156-facilitating-implementation)

Annexes

|  |  |
| --- | --- |
| **Annex** | **Information** |
| Annex 1 | Proposal form |
| Annex 2 | Terms of reference |
| Annex 3 | ESRS Subgroup Reports |
| Annex 4 | Workgroup assessment on assurance activity |
| Annex 5 | Draft legal text |
|  |  |

1. BEIS is now referred to as Department for Energy Security and Net-Zero (DESNZ) [↑](#footnote-ref-2)
2. Which can be found via this link: [Decision on Licence modifications to facilitate the introduction of an Electricity System Restoration Standard | Ofgem](https://www.ofgem.gov.uk/publications/decision-licence-modifications-facilitate-introduction-electricity-system-restoration-standard) [↑](#footnote-ref-3)
3. BEIS later specified that “electricity Demand” should be calculated as the forecast peak “Transmission Demand” in the 24 hours after a Shutdown. [↑](#footnote-ref-4)
4. [Commission Regulation (EU) 2017/2196 of 24 November 2017 establishing a network code on electricity emergency and restoration (Text with EEA relevance) (legislation.gov.uk)](https://www.legislation.gov.uk/eur/2017/2196/contents) &

   [The Electricity Network Codes and Guidelines (System Operation and Connection) (Amendment etc.) (EU Exit) Regulations 2019](https://www.legislation.gov.uk/uksi/2019/533/made) [↑](#footnote-ref-5)