

An aerial photograph of a lush green agricultural landscape, likely cornfields, with distinct rows of crops. Several bright, glowing yellow diagonal streaks, resembling light trails or energy beams, cut across the fields from the bottom left towards the top right. The text is overlaid on the upper left portion of the image.

Electricity System Restoration Standard

TOs obligations under ESRS

June 2023

The Electricity System Restoration Standard (ESRS)

- The Electricity System Restoration Standard (ESRS) was introduced in October 2021 and requires
 - 60% of National Demand to be restored within 24 hours in all regions; and
 - 100% to be restored nationally within 5 days;
- post Total or Partial System Shut down.

IMPACT OF ESRS ON TOs

- There are several obligations imposed on OFTOs by the ESRS Regulatory Framework modification.
- The obligations include:
 - Resilience of Critical tools and facilities
 - Operational capability
 - Protection settings
 - Provision of reactive compensation
 - Management (synchronisations) of power islands
 - Assurance testing and reporting

IMPACT OF ESRS ON TOs Contd.

- It is important to note that barrier to OFTO connected users preventing them from participating in restoration process has been eliminated under ESRS. The whole of STCP 06-1 has been rewritten to include Restoration from offshore transmission systems. In particular STCP 06-1 3.1.2 states that
 - 'NGESO shall establish Local Joint Restoration Plans which also includes Offshore Local Joint Restoration Plans. In addition, NGESO shall also instruct relevant Network Operators to establish Distribution Restoration Zone Plans.
- However there is an exemption for existing OFTOs as stipulated in STC Section K
 - 1.5.2 NGESO will make an allowance for the Critical Tools and Facilities required to be installed by an Offshore Transmission Owner as provided for in Grid Code ECC.7.10 where that Offshore Transmission Owner had concluded purchase contracts for its Main Plant and Apparatus before XXXX (12 months after approval of CM089) and that Offshore Transmission Owner does not have Critical Tools and Facilities installed on its Offshore Transmission System. This clause shall not apply where a Transmission Owner is part of an Offshore Local Joint Restoration Plan.
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RESILIENCE OF CRITICAL TOOLS AND FACILITIES

- This requirement is to ensure that the transmission network is operable during Total or Partial System Shutdown. This will allow the switching of equipment when restoration commences.
- The Requirement is found in section D part 1 2.2.6 of the STC.
 - Section D- 2.2.6.1- the minimum technical, design and operational criteria and performance requirements set out or referred to in Connection Conditions 6.1, 6.2, 6.3, 6.4, 7.10 and 7.11 as applicable to Type 1 Transmission Owners or European Connection Conditions 6.1, 6.2, 6.3, 6.4, 7.10 and 7.11 as applicable to Type 2 Transmission Owners and in Planning Code 6.2 and/or 6.3;
 - such other technical criteria or requirements as apply to any relevant part of its Transmission System by virtue of a current Transmission Derogation; and
 - in the case of an Offshore Transmission System, each Transmission Owner shall also ensure that:
 - Section D-2.2.6.3 -its Transmission System meets the minimum technical, design and operational criteria and performance requirements set out or referred to in Section K of this Code;

For the purposes of the EU Emergency and Restoration code, it is understood that many of the requirements for critical tools and facilities (as defined in Grid code modification GC 0148) would already be met though some further assessment is required. Note that the obligations of critical tools and facilities has been enhanced as part of GC0156.

OPERATIONAL CAPABILITY

- This requirement is to ensure that there is sufficient switching speeds as per Restoration Plans. The requirement also covers the management of outages so that they do not have material effect on our ability to meet ESRS. The requirements are captured in section 3.3 of STCP 01-1, STCP 11-1 and Section C of the STC.
- STCP 01-1
 - 3.3.7-During a System Restoration, either as part of a Restoration Plan or subsequently as part of the wider System Restoration process, the switching method employed shall be agreed between the TO, NGESO and relevant Network Operator so as to ensure the requirements of 3.3.6 above can be satisfied whilst maintaining appropriate safeguards for Plant and personnel.
- STC Section C Part two
 - 2.4.3 -ensure any Outage Proposal does not have a material effect on NGESO's ability to be able to comply with the requirements of the Electricity System Restoration Standard through the implementation of Restoration Plans as provided for in STCP 11-1
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PROTECTION SETTINGS DURING RESTORATION

- This requirement is to ensure that TOs to operate in safe condition during restoration and also to contribute to changes of protection schemes by Network Operators so that their personnel and equipment are protected during the restoration process.
- The requirement is captured in STCP 16-1 and section D Part 1 2.2.6 of the STC as shown in slide 4
- STCP 16-1 - 4.26
- Where a TO is involved in developing a Local Joint Restoration Plan, those parts of the Transmission System which are part of that Local Joint Restoration Plan shall enable energisation from Restoration Contractors Plant and permit them to operate within their safe operating limits.
- The requirement can be found in CC/EC. 6.2.3.8.2 and which states
 - 'Subject to the requirements of ECC.6.2.3.8.1, any changes to the schemes and settings, defined in ECC.6.2.3.8.1 of the different control devices of the Network Operator's or Non-Embedded Customer's System at the EU Grid Supply Point shall be coordinated and agreed between The Company, the Relevant Transmission Licensee, the Network Operator or Non Embedded Customer. Network Operators shall have the ability to switch between to alternative control settings on their Plant and Apparatus if they are required to do so to be able to satisfy their obligations of a Restoration Plan. Any alternative control settings shall be included in the Restoration Plan.

PROVISION OF REACTIVE COMPENSATION

- This requirement is to ensure that Offshore TOs have the necessary capabilities to support Users who want to participate in the restoration process
- The requirement is captured in section D Part 1 2.2.6 of the STC as shown in slide 4
- The Requirement is in ECC.6.3.2.5.3/ CC 6.3.2.e.(iii). For example ECC.6.3.2.5.3 states
 - 'In the case of EU Code Users and Restoration Contractors who own and operate Anchor Plant and/or Top Up Restoration Plant or EU Code Users who own and operate Plant and Apparatus which is operating with a Grid Forming Capability in service, the Reactive Power capability requirements (including steady state tolerance) at the Offshore Grid Entry Point shall be agreed between the Restoration Contractor or EU Code User, the Offshore Transmission Licensee and The Company in order to facilitate the operation of an Offshore Local Joint Restoration Plan.'

MANAGEMENT (SYNCHRONISATIONS) OF POWER ISLANDS

- This requirement is for TOs to have the capability to synchronised power islands formed as a result of the implementation of LJRPs/DRZPs. The power islands formed from Offshore Joint Restoration plans should also have this capability.
- The requirements are in STCP 06-01 and OC9.
- STCP 06-01
 - 3.5.11.1- NGESO shall agree with the TO to the interconnection of any Power Islands which are not expressly allowed for in a Local Joint Restoration Plan or Distribution Restoration Zone Plan. Local Joint Restoration Plan operation and Distribution Restoration Zone Plan operation shall terminate at this point and NGESO shall take back control of that part of the TO's Transmission System formed from the interconnected Power Islands irrespective of whether they were formed by a Local Joint Restoration Plan or Distribution Restoration Zone Plan. TOs shall not operate a Power Island that contains part of more than one TO's Transmission System unless through a prescribed Local Joint Restoration Plan Annex.
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ASSURANCE TESTING AND REPORTING

- This requirement is to ensure that TOs are compliant with the Assurance levels required by the Authority. The requirement also captures the support needed from TOs by other Users to ensure that these Users meet their Assurance obligations under ESRS.
- STC section C Part 3 2.13 captures the requirements and it states
 - ‘Notwithstanding that a Transmission Owner is not a party to the CUSC and is not thereby required to comply with the Grid Code, a Transmission Owner shall comply with the relevant sections of OC5.7 of the Grid Code (as amended from time to time) as agreed between NGESO and with the Transmission Owner pursuant to facilitate testing for System Restoration purposes. As part of this requirement, Transmission Owners shall be required to satisfy the applicable requirements of OC5.7.4.2 including the need to submit the data required under Part IV of Schedule 16 of the Grid Code Data Registration Code.
 - This requirement is to ensure that TOs are compliant with the Assurance levels required by the Authority.’
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