












Grid Code Modification Proposal Form		At what stage is this document in the process?												
<h1>GC0128:</h1> <p>Mod Title: EU Code Emergency & Restoration: Requirements resulting from System Restoration Plan</p>		<table border="1"> <tr> <td>01</td> <td>Proposal Form</td> </tr> <tr> <td>02</td> <td>Workgroup Consultation</td> </tr> <tr> <td>03</td> <td>Workgroup Report</td> </tr> <tr> <td>04</td> <td>Code Administrator Consultation</td> </tr> <tr> <td>05</td> <td>Draft Grid Code Modification Report</td> </tr> <tr> <td>06</td> <td>Final Grid Code Modification Report</td> </tr> </table>	01	Proposal Form	02	Workgroup Consultation	03	Workgroup Report	04	Code Administrator Consultation	05	Draft Grid Code Modification Report	06	Final Grid Code Modification Report
01	Proposal Form													
02	Workgroup Consultation													
03	Workgroup Report													
04	Code Administrator Consultation													
05	Draft Grid Code Modification Report													
06	Final Grid Code Modification Report													
<p>Purpose of Modification: This modification seeks to align the GB Grid Code with the European Emergency and Restoration code, specifically in relation to requirements on Grid Code parties set out in the System Restoration Plan (SRP) that need to be implemented by 18 December 2019.</p>														
	<p>The Proposer recommends that this modification should be:</p> <ul style="list-style-type: none"> assessed by a Workgroup <p>This modification was raised 15 April 2019 and will be presented by the Proposer to the Panel on 25 April 2019. The Panel will consider the Proposer’s recommendation and determine the appropriate route.</p>													
	<p>High Impact: Electricity System Operator (ESO), Transmission Owners, Generators who have signed a CUSC Contract, HVDC System Owners, DC Converter Station Owners, Network Operators, Non-Embedded Customers and BM Parties.</p>													
	<p>Medium Impact: None.</p>													
	<p>Low Impact: None.</p>													

Guidance on the use of this Template: Please complete all sections unless specifically marked for the Code Administrator. Green italic text is provided as guidance and should be removed before submission. **Contact us:** *The Code Administrator is available to help and support the drafting of any modifications, including guidance on completion of this template and the wider modification process. If you require any advice on how to fill in this form please contact the Panel Secretary e-mail: grid.code@nationalgrid.com*

Contents		 Any questions?
1	Summary	4
2	Governance	5
3	Why Change?	6
4	Code Specific Matters	6
5	Solution	7
6	Impacts & Other Considerations	8
7	Relevant Objectives	9
8	Implementation	9
9	Legal Text	Error! Bookmark not defined.
10	Recommendations	9
Timetable		 email address
The Code Administrator recommends the following timetable:		 telephone
Presented to Panel	25 April 2019	Proposer: Insert name
Initial consideration by Workgroup	May 2019	 email address
Workgroup Report presented to Panel	30 July 2019	 telephone
Code Administration Consultation Report issued to the Industry	August 2019	National Grid Representative: Insert name
Draft Final Modification Report presented to Panel	26 September 2019	 email address.
Modification Panel decision	26 September 2019	 telephone
Final Modification Report issued to the Authority	11 October 2019	
Expected Authority Decision	29 November 2019	
Decision implemented in Grid Code	18 December 2019	

Proposer Details

Details of Proposer: (Organisation Name)	Rachel Woodbridge-Stocks National Grid ESO
Capacity in which the Grid Code Modification Proposal is being proposed: (e.g. CUSC Party)	Electricity System Operator
Details of Proposer's Representative: Name: Organisation: Telephone Number: Email Address:	Rachel Woodbridge-Stocks National Grid ESO 07976708078 Rachel.WoodbridgeStocks@nationalgrideso.com
Details of Representative's Alternate: Name: Organisation: Telephone Number: Email Address:	Susan Mwape National Grid ESO 07976836946 Susan.Mwape@nationalgrideso.com
Attachments (Yes/No): No If Yes, Title and No. of pages of each Attachment:	

Impact on Core Industry Documentation.

Please mark the relevant boxes with an "x" and provide any supporting information

BSC	<input type="checkbox"/>
CUSC	<input type="checkbox"/>
STC	<input checked="" type="checkbox"/>
Other	<input type="checkbox"/>

A few STCPs will need to be amended, not as a direct consequence of this Grid Code modification but in relation to the System Restoration Plan.

1 Summary

Defect

The [Emergency and Restoration Code \(E&R\)](#) requires the Electricity System Operator to create a [System Restoration Plan \(SRP\)](#), which National Grid ESO produced and consulted on in September 2018. There are requirements on SGUs and providers of Black Start in the SRP that are not currently in the Grid Code and so the two need to be aligned for transparency.

The SRP needs to be implemented by 18 December 2019 so this modification will need to be in the Grid Code by the same date.

What

This modification proposes to align E&R, the SRP and the Grid Code.

Why

This modification needs to progress to ensure the sections of the SRP that need to be implemented by 18 December 2019 meet those timescales.

How

- Frequency management within a Black Start (Articles 27,28,29,30,31)
- SRP Resynchronisation of Power Islands (Articles 32,33,34)
- SRP Compliance Testing for System Restoration Providers equipment and communications (Article 48)

Frequency management within a Black Start (Articles 27,28,29,30,31)

Article 27 – Activation of the Re-energisation Procedure

Changes to clarify the requirements on Distribution System Operator (Transmission Owner and Distribution Network Operator) to provide demand, expected duration and risk information during a restoration.

Article 28 – Frequency Management Procedure

Modification to OC9 in relation to System Restoration Providers (SRPs) configuring their governor to act in “free governor action” mode to aid in frequency control.

Articles 29, 30 & 31 – Appointment of a Frequency Leader, Frequency Management after frequency deviation, and Frequency management after synchronous area split

Modification to OC9 to clarify frequency leader delegation, handover and responsibilities to third parties.

SRP Resynchronisation of Power Islands (Articles 32,33,34)

In line with the Resynchronisation Procedure in the System Restoration Plan (SRP).

Article 32 – Resynchronisation Procedure

Introduce requirements for the Power System Synchroniser in relation to the maximum limits for phase angle, frequency and voltage differences for connecting lines.

Article 33 - Appointment of a Resynchronisation Leader

Small changes required to OC9.

Article 34 – Resynchronisation Strategy

Small changes required to OC9.

SRP Compliance Testing for System Restoration Providers equipment and communications (Article 48)

Article 48 – Testing of Communication System

Test communication system at least every year – OC6 needs to be updated.

Test backup power supply of communication systems at least every 5 years – update required to OC5.

There is a clause in Article 48 in relation to consulting with other Transmission System Operators (TSO) to define a test plan for testing the inter-TSO communication, however, it won't form part of this modification.

National Grid ESO recorded a presentation on [E&R Restoration Modifications](#) which provides some further explanation around the changes in this proposal and the expected STCP changes.

2 Governance

Justification for Normal Procedures

Normal Governance procedures should apply as there will be a material impact on providers of Black Start and SGUs.

There is no need for this modification to be treated as urgent as it does not need to be implemented until 18 December 2019 and the Normal Governance timescales will be able to achieve this.

Requested Next Steps

This modification should:

- be assessed by a Workgroup

It is recommended that a workgroup be formed to fully understand the consequences of these changes for SGUs and providers of Black Start and to ensure that the technical solution is developed to allow minimum disruption for these parties.

3 Why Change?

This Proposal is one of a number of Proposals which seek to implement relevant provisions of a number of new EU Network Codes/Guidelines which have been introduced in order to enable progress towards a competitive and efficient internal market in electricity. The full set of EU network guidelines and codes are;

- Regulation 2015/1222- Capacity Allocation and Congestion Management (CACM) which entered into force 14 August 2015;
- Regulation 2016/1719 – Forward Capacity Allocation (FCA) which entered into force 17 October 2016;
- Regulation 2016/631- Requirements for Generators (RfG) which entered into force 17 May 2016;
- Regulation 2016/1388 – Demand Connection Code (DCC) which entered into force 7 September 2016;
- Regulation 2016/1447 – High Voltage Direct Current (HVDC) which entered into force 28 September 2016;
- Transmission System Operation Guideline (SOGL) - which entered into force 14 September 2017; and
- Regulation 2017/2196 - Emergency and Restoration (E&R) which entered into force 18 December 2017.

The Regulation establishing a Network Code on Emergency and Restoration entered into force on 18 December 2017. The Emergency and Restoration network code sets out rules relating to the management of the electricity transmission system in the emergency, blackout and restoration states. The main objective of the relevant rules is to bring the system back to the normal state as quickly and efficiently as possible.

4 Code Specific Matters

Technical Skillsets

Appreciation of the SRP and E&R.

Reference Documents

Emergency and Restoration Code:

<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R2196&from=EN>

Emergency and Restoration consultation documents (including the System Restoration Plan):

<https://www.nationalgrideso.com/codes/european-network-codes/meetings/emergency-and-restoration-consultation>

5 Solution

Articles referenced below can be found in Annex 1: Relevant Code Articles.

Frequency management within a Black Start (Articles 27,28,29,30,31)

The majority of changes are based on the Frequency Management Procedure in the SRP (section 3.3).

Articles 27-29

Frequency Leaders will be required to follow instructions from National Grid ESO and will be responsible for establishing a defined frequency.

Suggested text can be found in Section 9: Technical Solution for more detail.

Article 30 – Frequency management after frequency deviation

When a frequency leader has been appointed as described in Article 29, after consulting with National Grid ESO they will establish the operating mode to be applied.

The frequency leader shall manage the manual activation of frequency restoration reserves and replacement reserves within GB, aiming at regulating the frequency of the synchronous area towards the nominal frequency and taking into account the operational security limits defined in Article 25 of System Operation Guideline (SOGL). Upon request, National Grid ESO shall support the frequency leader.

These requirements will be included in OC9.4.

Article 31 – Frequency management after synchronous area split

When a frequency leader has been appointed as described in Article 29, after consulting with National Grid ESO they will establish the operating mode to be applied.

The frequency leader shall manage the manual activation of frequency restoration reserves and replacement reserves within GB, aiming at regulating the frequency of the synchronous area towards the target frequency established by the resynchronisation leader (National Grid ESO in the case for GB) and taking into account the operational security limits set out pursuant to Article 25 of SOGL.

Upon request, National Grid ESO shall support the frequency leader.

These requirements will be included in OC9.4.

SRP Resynchronisation of Power Islands (Articles 32,33,34)

In line with the Resynchronisation Procedure in the System Restoration Plan (SRP).

Following any shutdown, the re-energisation procedure requires that several Power Islands are created and expanded with the objective of creating the Skeleton Network to grow to reach available generation and demand. The Skeleton Network is then expanded until all demand, generation and appropriate circuits have been restored. It will, therefore, be necessary to interconnect Power Islands.

During this occurrence, Frequency Leaders will be required to follow instructions from National Grid ESO to connect Power Islands.

These requirements will be included in OC9.4.

SRP Compliance Testing for System Restoration Providers equipment and communications (Article 48)

Article 48 – Testing of Communication System

Test communication system at least every year – OC6 needs to be updated.

Test backup power supply of communication systems at least every 5 years – update required to OC5.

There is a clause in Article 48 in relation to consulting with other TSOs to define a test plan for testing the inter-TSO communication, however, it won't form part of this modification.

6 Impacts & Other Considerations

Black Start providers will be affected by this modification as will Generators who have signed a CUSC Contract, HVDC System Owners, DC Converter Station Owners, Network Operators, Non-Embedded Customers and BM Parties.

Does this modification impact a Significant Code Review (SCR) or other significant industry change projects, if so, how?

No.

Consumer Impacts

This change will facilitate the implementation of the EU Emergency and Restoration code which helps to facilitate a harmonised electricity system as part of the package of European Network Codes, and will help to deliver and facilitate a significant benefit to the end consumer by ensuring a coordinated security of supply across GB and Europe.

7 Relevant Objectives

Impact of the modification on the Applicable Grid Code Objectives:

Relevant Objective	Identified impact
(a) To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity	Neutral
(b) Facilitating effective competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);	Neutral
(c) Subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;	Positive (Incorporating the requirements of the System Restoration Plan into the Grid Code will increase security of the system)
(d) To efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and	Positive Discharges the obligations of the Emergency and Restoration code into GB frameworks)
(e) To promote efficiency in the implementation and administration of the Grid Code arrangements.	None

8 Implementation

The SRP must be implemented by 18 December 2019 (2 years after E&R entered into force); therefore this modification must also be implemented by 18 December 2019.

9 Technical Solution

This is an initial draft of what the technical solution may look like but will be subject to change following the workgroup assessment.

Article 27, 1 (b)

OC9.4.4 In a Total Shutdown and in a Partial Shutdown and during the subsequent recovery, it is likely to be necessary for The Company to issue Emergency Instructions in accordance with BC2.9. The Company will also collate information relating to the

ability to contribute to a restoration for the purposes of strategizing next steps and developing the expected duration of possible re-energisation strategies.

Article 27, 2

OC9.4.7.6 (f) Operation in accordance with the Local Joint Restoration Plan will be terminated by The Company (by notifying the relevant Users) prior to connecting the Power Island to other Power Islands (other than, in Scotland, as allowed for in the Local Joint Restoration Plan), or to the User System of another Network Operator, or to the synchronising of Gensets at other Power Stations (other than, in Scotland, those forming part of the Local Joint Restoration Plan). The Company shall instruct an individual party to become the “Frequency Leader” responsible for aiming to control Voltage and Frequency parameters for the specified Power Island. Operation in accordance with the Local Joint Restoration Plan will also terminate in the circumstances provided for in OC9.4.7.6(a) if an agreement is not reached or if The Company states that it does not wish the remainder of the Local Joint Restoration Plan to apply. Users will then comply with the Bid-Offer Acceptances or Emergency Instructions of The Company.

Article 27, 4

OC9.4.7.5 Without prejudice to the provisions of OC9.4.7.8, Network Operators with Embedded Power Stations will comply with any directions of The Company to restore Demand to be met by the Embedded Power Stations. Following Consultation with the Transmission and Distribution Operators The Company will establish and notify the amount of netted demand to be reconnected on each Grid Supply Point. The Transmission and Distribution operators will then work to ensure that the netted demand remains within the agreed parameters.

Article 28, 1

The Company Instructions

OC9.4.7.3 The procedures for a Black Start will, therefore, be those specified by The Company at the time. These will normally recognise any applicable Local Joint Restoration Plan. Users shall abide by The Company's instructions during a Black Start situation, even if these conflict with the general overall strategy outlined in OC9.4.7.2 or any applicable Local Joint Restoration Plan. The Company's instructions may (although this list should not be regarded as exhaustive) be to a Black Start Station relating to the commencement of generation, to a Network Operator or Non-Embedded Customer relating to the restoration of Demand, and to a Power Station relating to preparation for commencement of generation when an external power supply is made available to it, and in each case may include the requirement to undertake switching.

In respect of Scottish Transmission Systems SPT and SHETL will act on The Company's behalf in accordance with its duties under the relevant Local Joint Restoration Plan. Scottish Users shall abide by SPT's or SHETL's instructions given in accordance with the Local Joint Restoration Plan during a Black Start situation.

Where possible, a Power Island should be operated by the Frequency lead in accordance with following frequency and voltage criteria:

- the frequency on the Transmission System shall be nominally 50Hz and shall be controlled within the limits 49.5 – 50.5Hz;

the voltage on the Transmission System shall normally remain within +/- 5% of nominal. The minimum voltage is –10% and the maximum is +10% of nominal. Voltages of +10% and –5% should not prevail for more than 15 minutes.

The frequency lead should establish a frequency to the target prescribed within the instruction, ensure actions are in place following a frequency deviation, and/ or synchronous area split. The amount of load and generation to be reconnected should be determined, taking into account the available active power reserves within the synchronised region in order to avoid major frequency deviations.

Article 29

OC9.4.7.2 The complexities and uncertainties of recovery from a Total Shutdown or Partial Shutdown require that OC9 is sufficiently flexible in order to accommodate the full range of Genset and Total System characteristics and operational possibilities, and this precludes the setting out in the Grid Code itself of concise chronological sequences. The overall strategy will, in general, include the overlapping phases of establishment of Genset(s) at an isolated Power Station, together with complementary local Demand, termed "Power Islands", step by step integration of these Power Islands into larger sub-systems which includes utilising the procedures in OC9.5 (Re-Synchronisation of De-Synchronised Island) and eventually reestablishment of the complete Total System.

The Company will instruct an individual party to become the frequency lead for the Power Island. The migration of this responsibility from one party to another will be further agreed by The Company via a control instruction or a pre-agreed process.

The appointed Frequency Leader shall act as such until:

- Another frequency leader is appointed by The Company for its synchronised region,
- A new frequency leader is appointed as the resolute of resynchronisation of its synchronised region with another synchronised region,
- The synchronous area has been completely resynchronised, the system frequency is within the standard frequency range and the local frequency control operated by each TSO of the synchronous area is back to its normal operating mode.

When synchronising synchronous areas, a resynchronisation lead will be appointed by The Company or pre-agreed process. The Resynchronisation lead will act as frequency lead for the Synchronous area and lead the synchronisation procedure. The frequency lead of the synchronising power island will be responsible for their system until a successful synchronisation is completed.

10 Recommendations

Proposer's Recommendation to Panel

Panel is asked to:

- Agree that Normal governance procedures should apply; and
- Refer this proposal to a Workgroup for assessment.

Annex 1 Relevant Code Articles

Frequency management within a Black Start (Articles 27,28,29,30,31)

Article 27

Activation of the re-energisation procedure

1. When activating the re-energisation procedure, each TSO shall set up the strategy to be applied, taking into account:
 - (a) the availability of power sources capable of re-energisation in its control area;
 - (b) the expected duration and risks of possible re-energisation strategies;
 - (c) the conditions of the power systems;
 - (d) the conditions of the directly connected systems, including at least the status of interconnectors;
 - (e) the high priority significant grid users listed pursuant to Article 23(4); and
 - (f) the possibility to combine top-down and bottom-up re-energisation strategies.
2. When applying a top-down re-energisation strategy, each TSO shall manage the connection of load and generation with the aim to regulate the frequency towards the nominal frequency with a maximum tolerance of the maximum steady-state frequency deviation. Each TSO shall apply the conditions for connection of load and generation defined by the frequency leader, where appointed in accordance with Article 29.
3. When applying a bottom-up re-energisation strategy, each TSO shall manage the connection of load and generation with the aim to regulate the frequency towards the target frequency established in accordance with point (c) of Article 28(3).
4. During re-energisation, the TSO shall, after consultation with DSOs, establish and notify the amount of netted demand to be reconnected on distribution networks. Each DSO shall reconnect the notified amount of netted demand, while respecting the block loading and taking into account the automatic re-connection of load and generation in its network.
5. Each TSO shall inform its neighbouring TSOs on its capability to support a top-down re-energisation strategy.
6. For the activation of a top-down re-energisation strategy, the TSO shall request neighbouring TSOs to support the re-energisation. This support may consist in

assistance for active power, in accordance with paragraphs 3 to 5 of Article 21. The requested TSOs shall provide assistance for the re-energisation, unless it would lead their systems to the emergency or blackout states. In this case, the requesting TSO shall use the bottom-up re-energisation strategy.

Article 28

Frequency management procedure

1. The frequency management procedure of the restoration plan shall contain a set of measures aiming at restoring system frequency back to the nominal frequency.
2. Each TSO shall activate its frequency management procedure:
 - (a) in preparation of the resynchronisation procedure, when a synchronous area is split in several synchronised regions;
 - (b) in case of frequency deviation in the synchronous area; or
 - (c) in case of re-energisation.
3. The frequency management procedure shall include at least:
 - (a) a list of actions regarding the setting of the load-frequency controller before the appointment of frequency leaders;
 - (b) the appointment of frequency leaders;
 - (c) the establishment of target frequency in case of bottom-up re-energisation strategy;
 - (d) frequency management after frequency deviation; and
 - (e) frequency management after synchronous area split.
 - (f) the determination of the amount of load and generation to be reconnected, taking into account the available active power reserves within the synchronised region in order to avoid major frequency deviations.

Article 29

Appointment of a frequency leader

1. During system restoration, when a synchronous area is split in several synchronised regions, the TSOs of each synchronised region shall appoint a frequency leader, in accordance with paragraph 3.
2. During system restoration, when a synchronous area is not split but the system frequency exceeds the frequency limits for the alert state as defined in Article 18(2) of Regulation (EU) 2017/1485, all TSOs of the synchronous area shall appoint a frequency leader, in accordance with paragraph 3.
3. The TSO with the highest real-time estimated K-factor shall be appointed as the frequency leader, unless the TSOs of the synchronised region, or of the synchronous area, agree to appoint another TSO as the frequency leader. In that case, the TSOs of the synchronised region, or of the synchronous area, shall consider the following criteria:
 - (a) the amount of available active power reserves and especially frequency restoration

reserves;

- (b) the capacities available on interconnectors;
 - (c) the availability of frequency measurements of TSOs of the synchronised region or of the synchronous area; and
 - (d) the availability of measurements on critical elements within the synchronised region or the synchronous area.
4. Notwithstanding paragraph 3, where the size of the synchronous area concerned and the real time situation allow it, the TSOs of the synchronous area may appoint a predetermined frequency leader.
5. The TSO appointed as frequency leader pursuant to paragraphs 1 and 2 shall inform the other TSOs of the synchronous area of its appointment without delay.
6. The appointed frequency leader shall act as such until:
- (a) another frequency leader is appointed for its synchronised region;
 - (b) a new frequency leader is appointed as the result of resynchronisation of its synchronised region with another synchronised region; or
 - (c) the synchronous area has been completely resynchronised, the system frequency is within the standard frequency range and the LFC operated by each TSO of the synchronous area is back to its normal operating mode in accordance with Article 18(1) of Regulation (EU) 2017/1485.

Article 30

Frequency management after frequency deviation

1. During system restoration, when a frequency leader has been appointed pursuant to Article 29(3), the TSOs of the synchronous area, other than the frequency leader, shall as a first measure suspend the manual activation of frequency restoration reserves and replacement reserves.
2. The frequency leader shall establish, after consultation with the other TSOs of the synchronous area, the operating mode to be applied on the LFC operated by each TSO of the synchronous area.
3. The frequency leader shall manage the manual activation of frequency restoration reserves and replacement reserves within the synchronous area, aiming at regulating the frequency of the synchronous area towards the nominal frequency and taking into account the operational security limits defined pursuant to Article 25 of Regulation (EU) 2017/1485. Upon request, each TSO of the synchronous area shall support the frequency leader.

Article 31

Frequency management after synchronous area split

1. During system restoration, when a frequency leader has been appointed pursuant to Article 29(3), the TSOs of each synchronised region, with the exception of the frequency leader, shall as a first measure suspend the manual activation of frequency restoration reserves and replacement reserves.

2. The frequency leader shall establish, after consultation with the other TSOs of the synchronised region, the operating mode to be applied on the LFC operated by each TSO of the synchronised region.

3. The frequency leader shall manage the manual activation of frequency restoration reserves and replacement reserves within the synchronised region, aiming at regulating the frequency of the synchronised region towards the target frequency established by the resynchronisation leader, if any, pursuant to point (a) of Article 34(1) and taking into account the operational security limits set out pursuant to Article 25 of Regulation (EU) 2017/1485. When no resynchronisation leader is appointed for the synchronised region, the frequency leader shall aim at regulating the frequency towards the nominal frequency. Upon request, each TSO of the synchronised region shall support the frequency leader.

SRP Resynchronisation of Power Islands (Articles 32,33,34)

SECTION 4

Resynchronisation

Article 32

Resynchronisation procedure

The resynchronisation procedure of the restoration plan shall include, at least:

- (a) the appointment of a resynchronisation leader;
- (b) the measures allowing the TSO to apply a resynchronisation strategy; and
- (c) the maximum limits for phase angle, frequency and voltage differences for connecting lines.

Article 33

Appointment of a resynchronisation leader

1. During system restoration, when two synchronised regions can be resynchronised without endangering the operational security of the transmission systems, the frequency leaders of these synchronised regions shall appoint a resynchronisation leader in consultation with at least the TSO(s) identified as the potential resynchronisation leader and in accordance with paragraph 2. Each frequency leader shall inform without delay the TSOs from its synchronised region of the appointed resynchronisation leader.

2. For each pair of synchronised regions to be resynchronised, the resynchronisation leader shall be the TSO that:

- (a) has in operation at least one substation equipped with a parallel switching device on the border between the two synchronised regions to be resynchronised;
- (b) has access to the frequency measurements from both synchronised regions;

(c) has access to the voltage measurements on the substations between which potential resynchronisation points are located; and

(d) is able to control the voltage of potential resynchronisation points.

3. Where more than one TSO fulfils the criteria under paragraph 2, the TSO with the highest number of potential resynchronisation points between the two synchronised regions shall be appointed as the resynchronisation leader, unless the frequency leaders of the two synchronised regions agree to appoint another TSO as resynchronisation leader.

4. The appointed resynchronisation leader shall act as such until:

(a) another resynchronisation leader is appointed for the two synchronised regions; or

(b) the two synchronised regions have been resynchronised, and all the steps in Article 34 have been completed.

Article 34

Resynchronisation strategy

1. Prior to the resynchronisation, the resynchronisation leader shall:

(a) establish, in accordance with the maximum limits referred to in Article 32:

(i) the target value of the frequency for resynchronisation;

(ii) the maximum frequency difference between the two synchronised regions;

(iii) the maximum active and reactive power exchange; and

(iv) the operating mode to be applied on the LFC;

(b) select the resynchronisation point, taking into account the operational security limits in the synchronised regions;

(c) establish and prepare all necessary actions for the resynchronisation of the two synchronised regions at the resynchronisation point;

(d) establish and prepare a subsequent set of actions to create additional connections between the synchronised regions; and

(e) assess the readiness of the synchronised regions for resynchronisation, taking into account the conditions set out in point (a).

2. When carrying out the tasks enumerated in paragraph 1, the resynchronisation leader shall consult the frequency leaders of the involved synchronised regions and, for the tasks listed in points (b) to (e), it shall also consult the TSOs operating the substations used for resynchronisation.

3. Each frequency leader shall inform the TSOs within its synchronised region of the planned resynchronisation without undue delay.

4. When all conditions established in accordance with point (a) of paragraph 1 are fulfilled, the resynchronisation leader shall execute the resynchronisation by activating the actions established in accordance with point (c) and (d) of paragraph 1.

SRP Compliance Testing for System Restoration Providers equipment and communications (Article 48)

Article 48

Testing of communication systems

1. Each DSO and SGU identified pursuant to Article 23(4), each TSO and each restoration service provider shall test the communication systems defined in Article 41, at least every year.
2. Each DSO and SGU identified pursuant to Article 23(4), each TSO and each restoration service provider shall test the backup power supply of their communication systems at least every five years.
3. By 18 December 2024 each TSO, in consultation with other TSOs, shall define a test plan for testing the inter-TSO communication.