

Stage 02: Code Administrator Consultation

Grid Code

GC0108: EU Code: Emergency & Restoration: Black start testing requirement

Purpose of Modification: This modification seeks to align the GB Grid Code with the European Emergency and Restoration code. The purpose of this proposal is to align and regulate the testing of black start stations across the two codes.

The purpose of this document is to consult on GC0108 with Grid Code Parties and other interested industry members. Representations received in response to this consultation document will be included in the Code Administrator's Draft Grid Code Modification Self-Governance Report that will be furnished to the Grid Code Panel for their Determination.

Published on: 18 April 2018
Length of Consultation: 15 Working Days
Responses by: 10 May 2018



High Impact: Transmission System Operators (TSOs) and black start providers. This modification is linked to TSO compliance with EU Regulation 2017/2196 (Emergency and Restoration).



Medium Impact: None



Low Impact: None

What stage is this document at?

01	Modification Proposal
02	Code Admin Consultation
03	Draft Self-Governance modification Report
04	Final Self-Governance modification Report

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Timetable

Modification Proposal submitted to Grid Code Panel	14 March 2018
Modification Proposal discussed at Grid Code Panel	22 March 2018
Code Administration Consultation issued/closes to Industry	18 April 2018/10 May 2018
Draft Self-Governance Modification Report presented to Panel	28 June 2018
Grid Code Modification Panel Recommendation Vote	28 June 2018
Final Self-Governance Modification Report published	09 July 2018
Appeal window opens and closed	09 July 2018/30 July 2018
Decision implemented in Grid Code	13 August 2018



Any Questions?

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1 Summary

What

Following a code mapping review of the Emergency and Restoration European Network Code undertaken by an industry review group on the 31st January 2017 an amendment to the Grid Code was identified as outlined in this paper to ensure alignment between these requirements and GB frameworks. The code mapping session was an open invitation sent to all parties on the Joint European Stakeholder Group (JESG) distribution list on the 13th January 2017.

The Emergency and Restoration code states that each black start service provider shall execute a black start unit test at least once every three years. Current GB legislation states that this should be tested no more than once every two years. Our position is that a change to align these requirements is necessary. Further information on engagement carried out ahead of raising this modification can be located in the Consumer Impact section of this modification.

Why

The Emergency & Restoration code requires that a system operator produce a system defence plan, to be enacted in the event of significant issues affecting the system. It also requires a restoration plan, detailing the actions to be taken to restore supply in the event that the system enters the Blackout state as defined by SOGL. Finally, it details how the defence and restoration capabilities should be tested for compliance.

Currently the system defence and system restoration plans are under development within National Grid and it is not expected that these will raise any further Grid Code Modifications. Details of these plans will be published to stakeholders in due course.

Some clauses in the Emergency and Restoration network code relating to black start service testing frequency are different to current GB practices. Specifically, under EU Regulation Emergency and Restoration 2017/2196 Article 44 Compliance testing of power generating module capabilities is required such that “each restoration service provider which is a power generating module delivering black start service shall execute a black start capability test, at least every three years” and following the methodology laid down in Article 45(5) of EU Regulation 2016/631 Requirements for Generators. This proposal is to make a change to the Grid Code to reflect these requirements.

How

This modification proposes to align the testing requirements set out in the Emergency and Restoration code with GB frameworks by changing the wording in OC5 of the Grid Code to require the testing of power generating modules delivering a black start service at least every three years.

2 Governance

Justification for Self-Governance Procedures ahead of Panel

We consider that this modification should be considered for self-governance procedures as although it will impact the operation of the National Electricity Transmission System, it will only affect a subset of parties who have already been engaged, and the modification describes arrangements which are already in place between NGET and black start service providers. In changing the interval only of testing the modification will align the Grid Code with European law.

Self-Governance - *The modification is unlikely to discriminate between different classes of Grid Code Parties and is unlikely to have a material effect on:*

- i) Existing or future electricity customers;*
- ii) Competition in the generation, distribution, or supply of electricity or any commercial activities connected with the generation, distribution or supply of electricity,*
- iii) The operation of the National Electricity Transmission System*
- iv) Matters relating to sustainable development, safety or security of supply, or the management of market or network emergencies*
- v) The Grid Code's governance procedures or the Grid Code's modification procedures*

Panel decision on Governance route 22 March 2018

The Grid Code Panel decided that GC0108 met the Self-Governance criteria and should proceed under this route. They agreed to issue this modification to Code Administrator Consultation for 15 working days.

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. Some EU Network Guidelines are still in development and these may in due course require a review of solutions developed for Codes that come into force beforehand. The full set of EU network guidelines 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
- Regulation 2017/2196 - Emergency and Restoration (E&R) which entered into force 18 December 2018.

Emergency and Restoration is crucial to the interconnected internal energy market in the UK and specifically maintaining security of energy supply, increasing competitiveness and ensuring that all consumers within EU Member States can purchase energy at affordable prices. This code sets out harmonised rules on how to deal with emergency situations and to restore the system as efficiently and as quickly as possible. The European Network Code Emergency and Restoration will ensure the highest level of system security for Europe.

4 Code Specific Matters

Reference Documents

GB Grid Code

<https://www.nationalgrid.com/sites/default/files/documents/8589935310-Complete%20Grid%20Code.pdf>

Commission Regulation (EU) 2017/2196 of 24 November 2017 establishing a network code on electricity emergency and restoration:

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

5 Solution

It is proposed that the interval specified in the GB Grid Code for “black start testing” is revised to align with the EU Emergency and Restoration Code. This specifies that power generating modules having black start capability within stations opting to provide black start services should be tested at least once every three years. Current Grid Code provisions are that testing of black start units within a station should occur no more than every year.

6 Impacts and Other Considerations

Who

This impacts black start service providers, NGET and External System Operators.

Which

The black start testing process in the GB Grid Code section OC5, which sets out the testing requirements for black start stations in GB.

Systems impacted

NGET Black Start testing

Black Start service providers

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 security of supply across GB and Europe.

Prior to raising this modification, engagement was carried out at the Joint European Stakeholder Forum on the 12th February 2018. The presentation was given at the link below to advise stakeholders of the upcoming amendment to the Grid Code: (<https://www.nationalgrid.com/uk/electricity/codes/european-network-codes/meetings/jesg-meeting-12022018>)

Members of the NGET Black Start team attended the Black Start Task Force on the 31st January 2018 to make relevant stakeholders aware of the changes that are being proposed in this Grid Code Modification Proposal. The item was raised under 'any other business' and no objections were made.

Prior to this National Grid Electricity Transmission also attended the Joint European Stakeholder Group on the 9th January 2018 to outline the Emergency & Restoration impacts. The slide pack containing this information can be located below:

<https://www.nationalgrid.com/uk/electricity/codes/european-network-codes/meetings/jesg-meeting-09012018>

7 Relevant Objectives

Impact of the modification on the Relevant Objectives:

Relevant Objective	Identified impact
To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity	Positive
To facilitate 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)	Positive
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
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
To promote efficiency in the implementation and administration of the Grid Code arrangements	Neutral

8 Implementation

The implementation should be in line with the date as described in the European Emergency and Restoration code of the 18th December 2018.

9 Legal Text

It is proposed that the following changes are made to OC5 of the Grid Code:

OC 5.7.1 General

(a) **NGET** may require a **Generator** with a **Black Start Station** to carry out a test (a "**Black Start Test**") on a **Genset or Power Generating Module** in a **Black Start Station** either while the **Black Start Station** remains connected to an external alternating current electrical supply (a "**BS Unit Test**") or while the **Black Start Station** is disconnected from all external alternating current electrical supplies (a "**BS Station Test**"), in order to demonstrate that a **Black Start Station** has a **Black Start Capability**.

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(b) ~~Where~~ **NGET shall** requires a **Generator** with a **Black Start Station** to carry out a **BS Unit Test** on each **Genset or Power Generating Module** which has **Black Start Capability** within such a **Black Start Station** to demonstrate this capability at least once every three years. **NGET** shall not require the **Black Start Test** to be carried out on more than one **Genset or Power Generating Module** at that **Black Start Station** at the same time, and would not, in the absence of exceptional circumstances, expect any of the other **Gensets or Power Generating Modules** at the **Black Start Station** to be directly affected by the **BS Unit Test**. This test will be deemed a success where starting from shutdown is achieved within a time frame specified by NGET and which may be agreed in any relevant contract

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(c) **NGET** may require a **Generator** with a **Black Start Station** to carry out a **BS Unit Test** at any time (but will not require a **BS Unit Test** to be carried out more than once in each calendar year in respect of any particular **Genset** unless it can justify on reasonable grounds the necessity for further tests or unless the further test is a re-test, and will not require a **BS Station Test** to be carried out more than once in every two calendar years in respect of any particular **Genset** unless it can justify on reasonable grounds the necessity for further tests or unless the further test is a re-test).

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(d) When **NGET** wishes a **Generator** with a **Black Start Station** to carry out a **Black Start Test**, it shall notify the relevant **Generator** at least 7 days prior to the time of the **Black Start Test** with details of the proposed **Black Start Test**.

10 Recommendations

The Panel agreed that GC0108 should follow the self-governance route and proceed directly to Code Administrator Consultation for 15 working days.

11 How to respond to this consultation

If you wish to respond to this Code Administrator Consultation, please use the response pro-forma which can be found under the 'Industry Consultation' tab via the following link;

<https://www.nationalgrid.com/uk/electricity/codes/grid-code/modifications/eu-code-emergency-restoration-black-start-testing>

Responses are invited to the following questions;

1. Do you believe that GC0108 better facilitates the Grid Code objectives? Please include your reasoning.
2. Do you support the proposed implementation approach? If not, please state why and provide an alternative suggestion where possible.
3. Do you have any other comments?

Views are invited on the proposals outlined in this consultation, which should be received by **5pm on 10 May 2018** Please email your formal response to:

Grid.code@nationalgrid.com

If you wish to submit a confidential response, please note the following;

Information provided in response to this consultation will be published on National Grid's website unless the response is clearly marked 'Private & Confidential', we will contact you to establish the extent of this confidentiality. A response marked 'Private & Confidential' will be disclosed to the Authority in full by, unless agreed otherwise, will not be shared with the CUSC Modifications Panel or the industry and may therefore not influence the debate to the same extent as a non-confidential response.

Please note an automatic confidentiality disclaimer generated by your IT System will not in itself, mean that your response is treated as if it had been marked 'Private & Confidential'

Annex 1 – Extracts from European Network Codes

Emergency & Restoration code, EU Reg 2017/2196:

Article 44 - Compliance testing of power generating module capabilities

1. *Each restoration service provider which is a power generating module delivering black start service shall execute a black start capability test, at least every three years, following the methodology laid down in Article 45(5) of Regulation (EU) 2016/631.*
2. *Each restoration service provider which is a power generating module delivering a quick re-synchronisation service shall execute tripping to houseload test after any changes of equipment having an impact on its houseload operation capability, or after two unsuccessful consecutive tripping in real operation, following the methodology laid down in Article 45(6) of Regulation (EU) 2016/631.*

Requirements for Generators Code, EU Reg 2016/631:

Article 45 - Compliance tests for type C synchronous power-generating modules
(NB Note that this also applies to type D generating modules)

5. *With regard to the black start capability test the following requirements shall apply:*
 - (a) *for power-generating modules with black start capability, this technical capability to start from shut down without any external electrical energy supply shall be demonstrated;*
 - (b) *the test shall be deemed successful if the start-up time is kept within the time frame set out in point (iii) of Article 15(5)(a).*
6. *With regard to the tripping to houseload test the following requirements shall apply:*
 - (a) *the power-generating modules' technical capability to trip to and stably operate on house load shall be demonstrated;*
 - (b) *the test shall be carried out at the maximum capacity and nominal reactive power of the power-generating module before load shedding;*
 - (c) *the relevant system operator shall have the right to set additional conditions, taking into account point (c) of Article 15(5);*
 - (d) *the test shall be deemed successful if tripping to house load is successful, stable houseload operation has been demonstrated in the time period set out in point (c) of Article 15(5) and re-synchronisation to the network has been performed successfully.*

Article 15 - General requirements for type C power-generating modules
(NB As referenced in article 45.5(b) above; noting that this also applies to type D generating modules)

5. *Type C power-generating modules shall fulfil the following requirements relating to system restoration:*

(a) with regard to black start capability:

(iii) a power-generating module with black start capability shall be capable of starting from shutdown without any external electrical energy supply within a time frame specified by the relevant system operator in coordination with the relevant TSO;

Annex 2 – Self Governance Statement to Authority

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23 March 2018

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Reference: GC0108 Self-Governance Statement

Dear Gurpal

This is the Grid Code Review Panel's Self-governance Statement to the Authority for Grid Code Modification Proposal GC0108 - Emergency & Restoration: Black Start testing requirement. National Grid Code Administrator has prepared this Self-Governance Statement on behalf of the Grid Code Review Panel and submits it to you in accordance with the Grid Code.

On 22 March 2018 the Grid Code Review Panel considered GC0108 and confirmed unanimously that it meets the Self-Governance Criteria.

As such, GC0108 is unlikely to discriminate between different classes of Grid Code Parties and is unlikely to have a material effect on:

- i) Existing or future electricity customers;
- ii) Competition in the generation, distribution, or supply of electricity or any commercial activities connected with the generation, distribution or supply of electricity,
- iii) The operation of the National Electricity Transmission System
- iv) Matters relating to sustainable development, safety or security of supply, or the management of market or network emergencies
- v) The Grid Code's governance procedures or the Grid Code's modification procedures

The proposed timetable for the progression of GC0108 is as follows:

14 March 2018	Grid Code Modification Proposal submitted
22 March 2018	Proposal presented to Grid Code Review Panel
w/c 23 April 2018	Code Administrator Consultation issued

w/c 14 May 2018	Code Administrator Consultation closes
20 June 2018	Draft Final Self-Governance Modification Report issued to Panel
28 June 2018	Draft Final Self-Governance Modification Report presented to Panel
28 June 2018	Panel Determination vote
9 July 2018	Final Self-Governance Modification Report published
9 July 2018	Appeal window opens
30 July 2018	Appeals window closes
13 August 2018	Implementation (10 Working days after appeal window closes)

The GC0108 form is available at;

<https://www.nationalgrid.com/uk/electricity/codes/grid-code/modifications/eu-code-emergency-restoration-black-start-testing>

If you require any further information please do not hesitate to contact me.

Yours Sincerely,

Chrissie Brown
Grid Code Review Panel Secretary