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| --- | --- | --- | --- | --- |
| Stage 02: Workgroup Report  **Joint Grid Code and Distribution Code Report** | **National_Grid_logo_white**  **National_Grid_logo_white** | | |  |
|  |  | | | What stage is this document at? |
|  | GC0110: **LFSM-O compliance requirements for Type As and B PGMs** | | | 03  Code Admin Consultation |
|  | **Purpose of Modification:** To update the Grid Code and G99 with revised text for *limited frequency sensitive mode- overfrequency* compliance so that manufacturers have clear pass/fail criteria for limited frequency sensitive mode- overfrequency compliance. | | | 05  Final self-Governance Report  04  Draft Self-Governance Report |
|  | YES_GREENThis document contains the discussion of the Workgroup which formed in June 2018 to develop and assess the proposal, the voting of the Workgroup held on 18 June 2018 and the Workgroup’s final conclusions | | |  |
|  |  |
|  | High_Impact | | High Impact: Manufacturers, installers and owners of Type A and B power generating modules connected to both distribution and transmission systems |  |
|  | Low_Impact | | Medium Impact: DNOs |  |
|  | Medium_Impact | | Low Impact: None |  |

01

Modification Proposal

02

Workgroup Report

|  |
| --- |
| Question |
| Any Questions? |
| Contact:  Chrissie Brown  Code Administrator |
| Mouse  [christine.brown1 @nationalgrid.com](mailto:First.Last@nationalgrid.com)  Phone  01926 65 3328 |
| Proposer:  Chris Marsland  Centrica PB Limited |

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Timetable

|  |  |
| --- | --- |
| Workgroup Meeting 1 | 6 June 2018 |
| Workgroup Meeting 2 | 18 June 2018 |
| Workgroup Report submitted/presented to Panel | 20 June/28 June 2018 |
| Code Administration Consultation Report issued to the Industry | 6 July 2018 |
| Draft Modification Self-Governance Report presented to Panel/Industry | 29 July 2018 |
| Grid Code Panel Determination Vote | 15 August 2018 |
| Final Modification Self-Governance Report published | 16 August 2018 |
| Appeal window opens/closes | 7 September 2018 |
| Decision implemented in Grid Code (10 WDs following closure of appeal window) | 21 September 2018 |

# About this document

This report contains the discussion of the Workgroup which formed in June 2018 to develop and assess the proposal.

Section 2 (Original Proposal) and Section 4 (Proposer’s solution) are sourced directly from the Proposer and any statements or assertions have not been altered or substantiated/supported or refuted by the Workgroup. Section 5 of the Workgroup contains the discussion by the Workgroup on the Proposal and the potential solution.

The Grid Code Panel detailed in the Terms of Reference the scope of work for the GC0110 Workgroup and the specific areas that the Workgroup should consider.

The table below details these specific areas and where the Workgroup have covered them within the Workgroup Report.

The full Terms of Reference can be found in Annex 1.

**Table 1: GC0110 Terms of Reference**

|  |  |
| --- | --- |
| **Specific Area** | **Location in the report** |
| 1. *Implementation and costs;* | Section 10 |
| 1. *Review draft legal text should it have been provided. If legal text is not submitted within the Grid Code Modification Proposal the Workgroup should be instructed to assist in the developing of the legal text; and* | Annex 2 and 3 |
| 1. *Consider whether any further Industry experts or stakeholders should be invited to participate within the Workgroup to ensure that all potentially affected stakeholders have the opportunity to be represented in the Workgroup. Demonstrate what has been done to cover this clearly in the report* | Section 5 |
| 1. *Consider materiality of change* | Section 5 |
| 1. *Workgroup consultation and whether required* | Section 5 |

**Table 2: Acronym Table**

|  |  |
| --- | --- |
| **Acronym** | **Meaning** |
| LFSM-O | Limited frequency sensitive mode - overfrequency |

# Original Proposal presented to Grid Code Review Panel

#### ***Defect***

The Grid Code legal text proposed to be implemented as part of GC0102 introduces new specific limited frequency sensitive mode - overfrequency requirements for all Type A and B generators. This is a new requirement for all distribution connected generation, and also a new limitation of frequency sensitive mode requirements for transmission connected smaller (ie Type A and B) generation.

#### ***What***

The specification and testing requirements for Type A and B limited frequency sensitive mode- overfrequency need to be clarified – and this clarification fed into G99 which also need to be updated to reflect this*.*

#### ***Why***

Manufacturers of Type A and B power generating modules (PGM) need clarity on the limited frequency sensitive mode- overfrequency requirements so that then can ensure compliance at the point of manufacture. For reciprocating gas engines in the Type B size range the performance requirements are onerous. Although not a mass market product, these are nevertheless turned out in significant numbers and it is not appropriate or efficient to have a dialogue in every instance when a Type B PGM is commissioned.

#### ***How***

The Grid Code and EREC G99 will need to be modified post clarification of the compliance requirements.

**Why Change?**

In the development of GC0102 and the associated EREC G99 documentation, the existing Grid Code requirements were identified as being RfG compliant and appropriate to retain in GB. However the application of limited frequency sensitive mode- overfrequency to distribution connected generation as small as Type B is completely new. Also, as well as being new, it has not been the practice that limited frequency sensitive mode- overfrequency is provided in isolation from frequency sensitive mode. Hence the historic approach to assessing limited frequency sensitive mode- overfrequency has been as part of a wider assessment of frequency sensitive mode.

The current Grid Code drafting includes phrases such as “as much as possible” and only indicative performance requirements. The proposer accepts that such drafting prompts appropriate discussions regarding performance with Generators on a case by case basis for Large Power Stations. However it is not appropriate for manufacturers making many-off common products such as Type B power generating modules, where a prescriptive pass/fail criterion for compliance is required.

***Code Specific Matters***

* Familiarity with current Grid Code requirement.
* Understanding of the practical issues associated with frequency following performance of generating modules, particularly synchronous, in the Type B size range.
* Familiarity with the performance characteristics of smaller asynchronous generating units.

#### *Reference Documents*

GC0102 Grid Code modification

EREC G99

# Governance

#### ***Proposed Governance:***

#### ***Joint work with the DCRP***

As many of the PGMs affected by these requirements will be connected to the Distribution Network it is appropriate that this is a joint Workgroup, carrying on the approach taken in drafting EREC G99, whereby it is National Grid’s responsibility under the RfG to specify these parameters, but their implementation needs to be jointly agreed between transmission and distribution.

Although this is unlikely to be a contentious modification as the intent is only to clarify the exact requirements, it is expected that there will be high degree of interest in ensuring that the proposed revised text is both clear and does not inadvertently impose new requirements on Users.

#### ***Requested Next Steps***

This modification should:

* Progress as Self-Governance
* be assessed quickly by a Workgroup with a view to an imminent Code Administrator consultation ahead of Panel Determination

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

1. *Existing or future electricity customers;*
2. *Competition in the generation, distribution, or supply of electricity or any commercial activities connected with the generation, distribution or supply of electricity,*
3. *The operation of the National Electricity Transmission System*
4. *Matters relating to sustainable development, safety or security of supply, or the management of market or network emergencies*
5. *The Grid Code’s governance procedures or the Grid Code’s modification procedures*

***Panel decision on Governance following presentation of Proposal on 26 April 2018***

GC0110 was presented to the Grid Code Panel on the 26 April 2018. The Panel determined that the modification met the Self-Governance Criteria and that the modification should be assessed by a Joint Workgroup with the Distribution Code.

# Proposers Solution

The requirements for Types A & B generators (as specified in ECC 6.3.7.1, in EREC G99 A.7.1.3, A7.2.4, B.5.6, B.6.6) have been updated following agreement in the working group as to the precise requirements that need to be complied with.

Final legal text for ECC 6.3.7.1 and G99 is included with this Workgroup Report.

# Workgroup discussions and vote

The workgroup met on 6 June. Following discussion, the Workgroup supported the legal text (with one amendment), and agreed that the Workgroup Report should be submitted to the Grid Code Panel without a Workgroup Consultation to be approved and issued to Code Administrator Consultation.

It was agreed to modify the legal text of ECC 6.3.7.2(iii) to make it clear that if a generating module needed to make use of the provision in Article 13.2(e) whereby the initial response could be delayed by more than 2s, then it would be for the generator also to justify what the overall response would be and how much would be delivered in 10s, as opposed to having to ensure that the overall response was not unduly arduous in meeting the 10s requirement in 6.3.7.2(v). This modification to 6.3.7.2(iii) is included in Appendix 1.

It was also noted that there risks to overall harmonization if the drafting of the Grid Code and G99 are not word-for-word identical. Whilst accepting this point and the theoretical risk the majority of the workgroup were content that ensuring the requirements were identical, irrespective of the exact wording used, was the key objective and that the proposed drafting was adequate in this respect.

The workgroup reviewed the efforts taken by the Code Administrators to ensure that affected parties were aware of the proposed revisions. The Code Administrators explained that apart from the normal circulation lists in use, the modification had also been brought to the attention of the VSM expert group currently meeting. The G99 consultation and workshops held between October and February had also extended the distribution code administrator’s circulation list, picking up a number of manufacturers of smaller generation equipment who had not previously been registered on the D Code mailing list. A small number of these who make inverters for Type A and B modules had been contacted directly to appraise them of the GC0110 work. The Workgroup did not identify any obvious additional publication of GC0110 that should be undertaken outside of the normal consultation process.

The workgroup also discussed the materiality of the changes. It had been demonstrated in the meeting by National Grid that existing larger synchronous machines, and a variety of inverter connected generation would have no trouble meeting the newly defined LFSM-O timings (largely because they also have to meet the more onerous FSM requirements too). Representatives of manufacturers of smaller synchronous generation in the meeting confirmed that they thought the proposed interpretation would have no effect on their current designs, ie there is no material effect on costs etc.

No potential alternatives were proposed as part of the Workgroup phase.

A presentation was also given by National Grid at the initial Workgroup meeting along with a paper that was circulated, these can be found in Annex 5 and add context to the discussions held.

**Workgroup Vote**

The Workgroup convened on the 18 June 2018 to carry out the Workgroup Vote. The details of this can be found below:

**Vote 1 *– does the original or WACM facilitate the objectives better than the Baseline?***

***Vote recording guidelines:***

“Y” = Yes

“N” = No

“-“ = Neutral

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Workgroup Member** | **Better facilitatesGCO (i)** | | **Better facilitates GCO (ii)?** | **Better facilitates GCO (iii)?** | **Better facilitatesGCO (iv)?** | **Better facilitates GCO (v)?** | **Overall (Y/N)** |
| Chris Marsland | | | | | | | |
| Original |  | |  |  |  |  |  |
| Voting Statement: | | | | | | | |
| Simon Sheridan | | | | | | | |
| Original |  | |  |  |  |  |  |
| Voting Statement: | | | | | | | |
| Garth Graham | | | | | | | |
| Original | |  |  |  |  |  |  |
| Voting Statement: | | | | | | | |
| Isaac Gutierrez/ Rui Rui | | | | | | | |
| Original |  | |  |  |  |  |  |
| Voting Statement: | | | | | | | |
| Gregory Middleton | | | | | | | |
| Original |  | |  |  |  |  |  |
| Voting Statement: | | | | | | | |
| Alastair Frew | | | | | | | |
| Original |  | |  |  |  |  |  |
| Voting Statement: | | | | | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| David Saez/Sigrid Bolik | | | | | | |
| Original |  |  |  |  |  |  |
| Voting Statement: | | | | | | |
| Mike Kay | | | | | | |
| Original |  |  |  |  |  |  |
| Voting Statement: | | | | | | |

**Vote 2 – *Which option is the best? (Baseline or Original Proposal)***

|  |  |
| --- | --- |
| **Workgroup Member** | **BEST Option?** |
| Chris Marsland |  |
| Simon Sheridan |  |
| Garth Graham |  |
| Isaac Gutierrez/ Rui Rui |  |
| Gregory Middleton |  |
| Alastair Frew |  |
| David Saez/Sigrid Bolik |  |
| Mike Kay |  |

The Workgroup concluded that xxxx and agreed that they had met their Terms of Reference and that the Workgroup Report should be issued to the Grid Code Review Panel for their approval to proceed to Code Administrator Consultation.

# Impacts and Other Considerations

The key documents affected by this modification proposal are the Grid Code and EREC G99. There are no other effects on other industry documents.

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

No

#### *Consumer Impacts*

#### There are no consumer impacts.

# Relevant Objectives – Proposers assessment

|  |  |
| --- | --- |
| Impact of the modification on the Relevant Objectives: | |
| Grid Code Relevant Objectives | 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 | Neutral |
| *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 arrangement mote efficiency in the implementation and administration of the Grid Code arrangements* | Neutral |
| Distribution Code Relevant Objectives |  |
| Permit the development, maintenance, and operation of an efficient, coordinated and economical System for the distribution of electricity. | Neutral |
| Facilitate competition in the generation and supply of electricity. | Neutral |
| Efficiently discharge the obligations imposed upon DNOs by the Distribution Licence and comply with the Regulation (where Regulation has the meaning defined in the Distribution Licence) and any relevant legally binding decision of the European Commission and/or Agency for the Co-operation of Energy Regulators. | Positive |
| Promote efficiency in the implementation and administration of the Distribution Code | Neutral |

**Proposers view:**

This change will dispel any confusion over what compliance with limited frequency sensitive mode- overfrequency means for Type B power generating modules and how it is to be demonstrated. This will help GB stakeholders comply efficiently with the RfG requirements.

# Implementation

**Original Proposal:**

This modification needs to be progress without delay so that manufacturers gearing up for producing compliant equipment by the May 2019 deadline have sufficient time to design and implement solutions.

**Following Workgroup discussions:**

This Workgroup Report will be issued to the Grid Code Panel for their approval to be issued to Code Administrator Consultation, following this the Grid Code Self-Governance Vote will take place and the modification will be implemented on the 21 September 2018 subject to any appeals being received following the Panel vote.

# Annex 1: Terms of Reference

# Annex 2: Grid Code Legal Text

# Annex 3: Distribution Code Legal Text

# Annex 4: Grid Code Self-Governance Statement

# Annex 5: LFSM-O National Grid paper & presentation

# Annex 6: Attendance Register

A – Attended

X – Absent

D – Dial-in

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Organisation** | **Role** | **6/06/2018** | **18/06/2018** |
| Chrissie Brown | Grid Code Code Administrator | Technical Secretary | A | A |
| Mike Kay | Distribution Code Code Administrator | Chair (Distribution Code) | A |  |
| Chris Marsland | Centrica | Proposer and Workgroup member | A |  |
| Simon Sheridan | National Grid System Operator | Workgroup member | A |  |
| Garth Graham | SSE Generation | Workgroup member | A |  |
| Isaac Gutierrez/ Rui Rui | Scottish Power Renewables | Workgroup member | A |  |
| Gregory Middleton | Deep Sea Electronics Plc | Workgroup member | A |  |
| Alastair Frew | Scottish Power Generation | Workgroup member | A |  |
| David Saez/Sigrid Bolik | Senvion | Workgroup member | A |  |
| Ian Wassman | Industrial Power Units | Observer | A | X |