

Grid Code Review Panel
DEVELOPMENT OF GRID CODE FREQUENCY RESPONSE PROVISIONS

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Summary

Proposals to develop the Frequency Response provisions of the Grid Code under GC0022 did not reach a conclusion. National Grid believes that there are a number of outstanding defects with the Frequency Response provisions of the Grid Code which should be addressed in a new Workgroup under the issue reference GC0087.

Users Impacted

High

Generators and Interconnectors.

Description & Background

The proposals packaged up under GC0022 resulted from extended discussions under a joint Grid Code and Balancing Services Standing Group workgroup. The workgroup itself commissioned further work from a technical sub-group. The workgroup's proposals were presented in a Workgroup Consultation which closed on the 30th October 2012.

The proposals included the development of mandatory provisions for "5 second response from non-synchronous plant". Responses to the workgroup consultation were evenly divided in support and against developing these proposals. The consultation also included proposals for the development of clearer requirements with respect to the delivery of frequency response in terms of minimum delay and ramping parameters. A majority of the respondents were in favour of developing these.

Subsequent discussions at the Balancing Services Standing Group confirmed that there is still no consensus over the benefit of "5 second response" as a mandatory requirement for new non-synchronous generation. In the meantime, National Grid has developed commercial terms for the provisions of a 5 second response service.

A number of additional issues relating to Grid Code requirements were highlighted in the Frequency Response workgroup which remaining outstanding. These included the suppression of the inertial effect of synchronous generators, the provisions of frequency response by generators at low loads and the provisions of frequency response from on-site sources other than generators.

National Grid believes that it is necessary to form a Grid Code Workgroup to progress the outstanding issues related to Grid Code provisions to a conclusion. Given the expert input required and the general level of industry workload it is proposed that work should commence in April 2015. This will also allow the Workgroup to consider the changes necessary to implement the Requirements for Generators provisions from frequency response.

¹ The Code Administrator will provide the paper reference following submission to National Grid.

	Issue	Defect	Pros	Cons
a	5 second response for non-synchronous generators	The current mandatory capability is not efficient in addressing future frequency requirements on its own	Reduced Balancing Services costs	Increased costs for generators
b	Clearer delay and ramp-rate requirements	Current provisions leave some uncertainty over how generators should deliver frequency response	Clearer requirements	Risk of requirements being too onerous
c	Low Load operation	Current provisions limit generator's ability to operate at low loads	Facilitates flexible operation from generators	Complex requirements
d	Alternative on-site sources	Current provisions limit the use of alternative solutions (eg on-site batteries)	Alternative ways of providing response	Potentially limited application

National Grid sees significant future benefits from faster forms of frequency response. Updated analysis of the year 2021/22 suggests that a 5 second response capability has value on 60% of summer overnight periods, with an average of 945MW of "rapid" response scheduled (with a peak value of 1624MW scheduled). The capability also had value on 24% of winter overnight periods.

Clearer delays and ramp-rate requirements would have benefits for National Grid in assessing system performance and would help developers to specify plant capability. There may be benefits in reviewing frequency response requirements for generators at low loads and also reviewing how alternative on-site sources might contribute to mandatory frequency response requirements.

In National Grid's view there is value in reviewing the four items listed above. There will also be a requirement to review Grid Code provisions for frequency response to implement the provisions of the European Commission's Requirement for Generators Code and to co-ordinate with the GCRP/DCRP Workgroup on GB Application of RfG (GC0048).

Feedback is sought from the Panel on the merits of developing conclusions for (a) to (d) above and whether there are any material related issues which could be dealt with in the same package. Subject to the Panel's feedback, detailed terms of reference will be presented in January 2015. It is anticipated that a Grid Code Workgroup would commence its work in or around April 2015.

Proposed Solution

Develop proposals to address issues (a) to (d) above in the context of RfG

Assessment against Grid Code Objectives

The proposed changes to the Grid Code will better facilitate the Grid Code Objectives:

(i) to permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;

Faster frequency response and flexible operation has the potential to reduce future

Balancing Services costs.

(ii) 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);

Facilitating the use of alternative on-site sources may allow generators to use alternative approaches to frequency response

(iii) 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; and

(iv) 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.

Grid Code provisions for frequency response need to be aligned with the Requirements for Generators European code

Impact & Assessment

Impact on the National Electricity Transmission System (NETS)

No

Impact on Greenhouse Gas Emissions

Faster frequency response and flexible operation has the potential to reduce Greenhouse gas emissions

Impact on core industry documents

The Workgroup will consider any consequential impacts on the CUSC

Impact on other industry documents

None

Supporting Documentation

None

Recommendation

The Grid Code Review Panel is invited to:

Review the issues presented for consideration under the Grid Code Workgroup GC0087.

Document Guidance

This proforma is used to raise an issue at the Grid Code Review Panel, as well as providing an initial assessment. An issue can be anything that a party would like to raise and does not have to result in a modification to the Grid Code or creation of a Working Group.

Guidance has been provided in square brackets within the document but please contact National Grid, The Code Administrator, with any questions or queries about the proforma at grid.code@nationalgrid.com.