

Change proposal:	Grid Code [Grid Code D/10]: Frequency and Voltage Operating Range		
Decision:	The Authority ¹ directs that the proposed change to the Grid Code ² be made		
Target audience:	National Grid Electricity Transmission PLC (NGET), Grid Code users and other interested parties		
Date of publication:	4 July 2011	Implementation Date:	18 July 2011

Background to the change proposal

The Grid Code includes provisions in relation to frequency and voltage operating range. Amongst other things, generators are required under the current Grid Code to be capable of continuous operation in a frequency range between 47.5Hz and 52Hz (as defined in CC.6.1.3)

The issue of frequency and voltage operating range was initially brought to the Grid Code Review Panel (GCRP) by generator representatives for discussion in May 2009. In their view, the current Grid Code obligations were prohibitive in procuring of generation plant in the global market. It was argued that the UK is no longer a significant enough player in the global market to influence generator design and therefore as off-the-shelf plant does not meet Grid Code obligations, a significant additional cost is added. Following discussion the Panel agreed that a review of the existing Grid Code frequency and voltage operating range obligations on generators should be undertaken.

A GCRP working group (D/10 Frequency and Voltage Operating Range) was established to undertake this review. The Working Group considered a wide range of aspects of the Grid Code requirements for frequency and voltage operating ranges for generators. The Working Group conducted an industry consultation proposing two alternative options for changes to the lower frequency limit of the operating range for continuous generator operation.

As a result of responses to the consultation, NGET carried out further detailed work to evaluate the risks from the implementation of the Option 2 favoured by consultation respondents (i.e. frequency range from 49.0Hz to 51.0Hz). A Grid Code amendment proposal (D/10) was raised with details of changes to the Grid Code that NGET and GCRP considered would not have an adverse effect on the security and integrity of the National Electricity Transmission System (NETS).

The change proposal

NGET, with the assistance of the Working Group, developed proposed Grid Code changes that were intended to clarify the requirements of Voltage and Frequency obligations on generators and assess whether they are still appropriate. Following the agreement of the GCRP in May 2010, NGET raised Grid Code change proposal D/10 and issued a consultation in August 2010.

D/10 consultation proposed changes to:

¹ The terms 'the Authority', 'Ofgem' and 'we' are used interchangeably in this document. Ofgem is the Office of the Gas and Electricity Markets Authority.

²This document is notice of the reasons for this decision as required by section 49A of the Electricity Act 1989.

- clarify voltage operating range requirements (as defined in the Connection Conditions).
- improve the consistency of voltage requirement specifications by aligning the under-voltage tripping time to that of the fault ride through profile.
- introduce two options (Option 1: 48.5Hz to 51.0Hz; Option 2: 49.0Hz to 51.0Hz) for revised time limited frequency operating ranges.

After consulting on these proposed changes, NGET undertook further analysis of the impact of the implementation of respondents' preferred D/10 Option 2 on the security and integrity of the NETS.

NGET considers that D/10 Option 2 would provide additional clarity about voltage operating range requirements and would ensure that those requirements are interpreted consistently by all Grid Code users. NGET considers that D/10 Option 2 is more closely aligned with international standards, and better meets the standard capabilities of globally available generation plant and thus avoids over-investment in future generation equipment thereby reducing a barrier to market entry. NGET considers that the implementation of the revised frequency operating ranges would not have an adverse effect on the security and integrity of the NETS.

NGET's recommendation

NGET submitted a final report to the Authority with a recommendation that change proposal D/10 Option 2 is implemented³. NGET subsequently made a minor change to correct an error in the legal drafting associated with D/10 Option 2. The report was re-submitted on 27 May 2011.

The Authority's decision

The Authority has considered the issues raised by the change proposal and in the final Report dated 27 May 2011. The Authority has considered and taken into account the responses to NGET's consultation on the change proposal which are included in the final Report⁴. **The Authority has concluded that:**

- 1. implementation of the change proposal will better facilitate the achievement of the objectives of the Grid Code⁵; and**
- 2. approving the change is consistent with the Authority's principal objective and statutory duties⁶.**

Reasons for the Authority's decision

We note that all respondents were supportive of the D/10 Option 2 change proposal. We consider that the following objectives of the Grid Code are relevant to our decision.

Facilitate competition in the generation and supply of electricity and facilitate the national electricity transmission system being made available to persons authorised to supply or

³ Issue 1.0 was submitted on 26 May 2011

⁴ Grid Code proposals, final reports and representations can be viewed on NGET's website at: <http://www.nationalgrid.com/uk/Electricity/Codes/gridcode/consultationpapers/>

⁵ As set out in Standard Condition C14(1)(b) of NGET's Transmission Licence, see: http://epr.ofgem.gov.uk/document_fetch.php?documentid=14343

⁶The Authority's statutory duties are wider than matters which NGET must take into consideration and are detailed mainly in the Electricity Act 1989 as amended.

generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity

We note that the changes in proposal D/10 Option 2 introduce revised time limited frequency operating ranges for generators. We consider that these amendments will reduce a potential barrier to market entry and facilitate competition in generation as we agree that the D/10 Option 2 changes are likely to better facilitate generators to procure plant in a global market. We note NGET's assessment that the proposal would not have any detrimental impact on the security of the NETS. We therefore agree that D/10 Option 2 changes would better facilitate the achievement of this Grid Code objective.

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

We note that the changes in proposal D/10 Option 2 clarify the voltage operating ranges and improve consistency of voltage requirement specifications. We consider that additional clarity in respect of voltage operating range requirements will promote consistency in the application of those requirements. We therefore agree that D/10 Option 2 changes would better facilitate the achievement of this Grid Code objective.

Other issues

One respondent suggested removal of the clause in CC6.1.3 that prohibits the use of speed based relays from disconnecting generators. We note that this had been considered by the working group and the protection for generators from the effect of the low or high frequency can be achieved by other means. Therefore we agree that this clause is not an impediment and should be retained.

We agree that approving the D/10 Option 2 changes would be consistent with the Authority's principal objective and statutory duties.

Decision notice

In accordance with Standard Condition C14 of NGET's Transmission Licence, the Authority hereby directs that change proposal Grid Code D/10 Option 2 '*Frequency and Voltage Operating Range*' be made.

Hannah Nixon
Partner, Smarter Grids and Governance

Signed on behalf of the Authority and authorised for that purpose.