Alternative request Proposal form

Grid Code

Modification potential alternative submitted to: *(complete modification number this alternative is being submitted to)*

What stage is this document at?

01	Proposed alternative
02	Formal Workgroup alternative

GC0100

Mod Title: As per original (Banding)

Purpose of alternative Proposal:
As per the Original.

Date submitted to Code Administrator: xxxx

You are: A Workgroup member

Workgroup vote outcome: Formal alternative/not alternative

(Should your potential alternative become a formal alternative it will be allocated a reference)

Any Questions?

Contact:
First Last
Code Administrator

First.Last@nationalgrid.com

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Alternative Proposer(s):
First Last
Company

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Should you require any guidance or assistance with this form and how to complete it please contact the Code Administrator at grid.code@nationalgrid.com

1 Alternative proposed solution for workgroup review

Workgroup members noted that during the GC0048 Workgroup deliberations three options for the GB banding levels for generation had been developed by that Workgroup and subsequently consulted upon with stakeholders[1]. The option with the most support at that time was one that mirrored the maximum values shown in Table 1 (Article 5) of the RfG.

The reasons given for this option are set out in the previous GC0048 consultation and responses, a number of Workgroup members were supportive of a potential alternative to the GC0100 original proposal that would set the GB generator banding levels at the maximum level set in the RfG.

2 Difference between this proposal and Original

This proposal will use the RfG maximum values shown in Table 1 (Article 5) of the RfG.

[1] See, for example, "GC0048: Requirements for Generators – GB Banding Thresholds" consultation dated 4th April 2016
http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/Grid-code/Modifications/GC0048/

3 Justification for alternative proposal against Grid Code objectives

General Intension

The proposer's banding levels appears to be based on a perceived local issue related to local system faults and not cross-border trade issues, which is the purpose of 2016/631(RFG). The original intension of 714/2009 is to improve network access and remove obstacles reducing cost. Given this the proposer's banding proposal is reducing the banding levels from highest possible on the bases of a local issue and not a cross-border issue it is going against the original intension of the third package, by forcing smaller parties to increase their investment costs to cover the additional requirements . It is the view of this respondent that adopting the alternative proposal for the high option will not add additional cost to lower level participants and hence better address the original objectives by increasing access and reducing obstacles.

Harmonisation

The proposer's justification for this reduced banding level states in section 3.2 fourth paragraph "The majority of European TSOs for Member States in Continental Europe are proposing generator banding levels lower than the maximum permitted under RfG, many of which, if not being comparable with the proposed GB levels, are lower than that proposed for GB. The proposer therefore believes there is a greater likelihood of harmonisation with Continental European neighbours with a lesser banding level than the maximum (noting that NRA approval is required to set these levels)." This justification is based on potential harmonisation across Europe which is similarly against the intensions of 714/2009 which states in whereas (29) "In particular, the Commission should be empowered to establish or adopt the Guidelines necessary for providing the minimum degree of harmonisation required to achieve the aims of this Regulation." Again it is the view of this respondent that adopting the alternative proposal for the high option will not add additional cost to lower level participants and hence better address the original objectives by increasing access and reducing obstacles.

Frequency Response

The proposer's justification then moves on in section 3.2 paragraph 6 to state "Threshold of 10MW for GB would provide a greater proportion of Generation inherently capable of contributing to frequency response, noting that commercial facilitation is not in the scope of RfG to consider, but a factor when it comes to cost." Whilst it is accepted that if a lower banding level is used by default this must result in more frequency response capacity, however the real question is, will this not just be added to the current large amounts of unused frequency response capacity at additional cost to the generator? This view has been previously stated by this respondent in the previous banding consultation in April 2016 and a revised version using the proposer's latest banding options is repeated below but due to the short timescales is still based on the late 2015 data, but this is still believed to be relevant.

This analysis initially reviews the existing generation and proposed generation in 5 years' time using data available in the TEC Register dated 16 November 2015, Embedded Register dated 16 November 2015 and 2015 week 24 data plus DNO ED1 allows comparisons between existing and future capacity. Summary tables 1a

& b and 2a & b of this data which are referred to are given at the end of this section of text.

Looking at the available frequency response if the proposed banding were to be applied to the current generation mix it can be seen in tables 1a & b both options would result in a range of the approximately 77 to 88 GW of plant available to provide response. The difference between the high and proposer's banding options only offers 11% increase or 10,000MW of generating capacity. The additional capacity then only equates to potentially 10% additional frequency response capacity of 1000MW comparing proposed banding to the highest banding option.

Similarly looking forward at the potentially available frequency response if the proposed banding were to be applied to the end of 2021 generation mix it can be seen in tables 2a & b both options would result in a range of the approximately 127 to 139 GW of plant available to provide response. The difference between the high and proposed banding options only offers a 7% increase or 12,000MW of generating capacity. The additional capacity then only equates to potentially 10% additional frequency response capacity of 1,200MW comparing proposed banding to the highest banding option. It should also be noted that this has been applied to all generation and not just the generation connected after 2018 and in practice the proposer's banding option may only pick up an additional 2,000MW of generating capacity and not the 17,000MW.

Based on the current frequency response average usage levels of Primary 657MW, Secondary 448MW and High 708MW (based on the average hourly usage volumes from December 2013 to September 2015) less than 7.5% of the current total available capacity is being utilised. If the proposers banding option was to be in place today the potential changes would be to reduce the current frequency response capacity usage to 6.6% of the available total. Looking forward 5 years assuming the infeed lose has not changed then the current response requirements should still be applicable in this scenario. Given that the available generation to provide response increases by just approximately 50GW from current levels under the high option with 70% of plant still providing response there should be in 6 years' time still adequate response margins, with utilisation levels even lower.

Whilst still agreeing the proposer's banding option would result in an increase in frequency response capacity, its usage this is likely to be limited and is not clear what benefit this would provide. The high option would appear to suffice in terms of response requirements as there appear to be no detrimental cost implications.

Tables 1a & b below summaries the data for current generation available volumes based on the TEC Register dated 16 November 2015, Embedded Register dated 16 November 2015 and DNO week 24 data 2015.

Total Generating capacity in MW in each band from each source				
Data source	Generator size band (MW)			
	0.8kW - 1MW	1 to 49.9	50 to 74.9	>75MW
DNO ED1	2880	14585	7199	0
TEC Register		1380.43	887.85	67702.9
Embedded Resister		1269.77	233.1	75
Total	2880	17235.2	8319.95	67777.9
Generator Banding				
Type A		2880		
Type B		15854.77		
Type C		7432.1		
Type D		70046.18		
Total		96213.05		
Total C + D		77478.28	Percentage	80.5

Table 1a – Analysis of current generating levels against high banding option.

Total Generating capacity in MW in each band from each source				
Data source	Generator size band (MW)			
	0.8kW - 1MW	1 to 9.9	10 to 49.9	>50MW
DNO ED1	2880	5226	9359	7199
TEC Register		0	1380.43	68590.75
Embedded Resister		119.15	1150.62	308.1
Total	2880	5345.15	11890.05	76097.75
Generator Banding				
Type A		2880		
Type B		5345.15		
Type C		10509.62		
Type D		77478.18		
Total		96213.05		
Total C + D		87987.8	Percentage	91.4

Table 1b – Analysis of current generating levels against proposed banding option.

Tables 2a & b below summaries the data for predicted generation available volumes in years' time (i.e. end of 2021) based on the TEC Register dated 16 November 2015, Embedded Register dated 16 November 2015 and DNO week 24 data 2015.

Total Generating capacity in MW in each band from each source				
Data source	Generator size band (MW)			
	0.8kW - 1MW	1 to 49.9	50 to 74.9	>75MW
DNO ED1	25062.4	21378.29	7199	750
TEC Register		3352.13	2669.15	112750.1
Embedded Resister		2336.57	283.1	75
Total	25062.4	27066.99	10151.25	113575.1
Generator Banding				
Type A		25062.4		
Type B		23714.86		
Type C		7482.1		
Type D		119596.4		
Total		175855.7		
Total C + D		127078.5	Percentage	72.2

Table 2a – Analysis of current generating levels against high banding option.

Total Generating capacity in MW in each band from each source				
Data source	Generator size band (MW)			
	0.8kW - 1MW	1 to 9.9	10 to 49.9	>50MW
DNO ED1	25062.4	11150.96	10227.33	7949
TEC Register		43.8	3308.28	115419.3
Embedded Resister		617.5	1719.07	358.1
Total	25062.4	11812.26	15254.68	123726.4
Generator Banding				
Type A		25062.4		
Type B		11768.46		
Type C		11946.4		
Type D		127078.48		
Total		175855.7		
Total C + D		139024.88	Percentage	79.1

Table 2b – Analysis of current generating levels against high banding option.

Fault Ride Through

The proposer justification in section 3.2 paragraph 7 then moves on to fault ride through with a vague statement “There is also a cost of tripping synchronous generation in a higher band (10MW – 50MW) which could result in a potential increase in holding additional reserve costs alone of £9 million / annum”. As previously stated the perceived issue the proposer is trying to deal with relates to a need for generators down to 10MW to be capable of withstanding local network faults by providing new fault ride through capabilities which are not a current requirement. The argument seems to be based on the principle if there is a transmission system fault which results in a large 1800MW generator tripping off then the TSO cannot be expected to cover for any other generators tripping off. Given these fault ride through requirements are new it would have been thought that existing generators which currently are without these facilities would be tripping off due to network faults and currently causing issues. To monitor system issues NGET have been producing the Significant System Events Report since 1998 with the most recent version produced in January 2016 (note a 2017 version has not been produced yet). Within this report the largest consequential lose recorded is 400MW in 2011 due to an island being formed in the north of Scotland which then collapsed, equally there is no evidence of significant volumes of secondary generation being disconnected due system events, nor is there any evidence of an increase in this consequential loses as the generation mix has been changing with time. On the bases there appears to be no current issues from generation not having fault ride through capability adopting the high banding option as opposed to the proposer’s option would again not impose further cost increases to smaller new generators.

Other Issues

Although the RFG limits the banding levels to only new entrants other Network codes such as the 2017/1485 Transmission System Operation Guidelines (TSOG) have adopted these banding levels and are applying them to both new and existing generators. Hence the actual full the cost implications of these banding levels will not be clear until exact implementation details of the other codes are developed the possible retrospective application to existing generators may require a sudden increase in communication links with unknown costs and other unknowns.

Summary

On the bases that for the next 5 years the high option suffices and as some potential costs implications will not be known until all the Network Codes are complete, applying the high option and then carrying out a further review if required in 3 years’ time when all codes are complete appears to be the most pragmatic solution.

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**

In broad term the reasons why this proposal better meet the Applicable Objectives are as per the Original whilst, in addition, also being better in terms of competition in generation by not unduly burdening GB generators with connection obligations that are not commensurate with their plant size.

4 Impacts and Other Considerations

As per the Original.

Consumer Impacts

As per the Original.

5 Implementation

As per the Original.

6 Legal Text

As per the Original except for the following section, not yet agreed.

Type (A-D) MW banding levels for GB, as required in RfG

[Location and numbering TBC]

Type A which is a **Power-Generating Module** with a **Grid Entry Point or User System Entry Point** below 110 kV and a **Maximum Capacity** of 0.8 kW or greater but less than 1MW;

Type B which is a **Power-Generating Module** with a **Grid Entry Point or User System Entry Point** below 110 kV and **Maximum Capacity** of 1MW or greater but less than 50MW;

Type C which is a **Power-Generating Module** with a **Grid Entry Point or User System Entry Point** below 110 kV and a **Maximum Capacity** of 50MW or greater but less than 75MW;

Type D which is a **Power-generating Module**: with a **Grid Entry Point or User System Entry Point** at, or greater than, 110 kV; or with a **Grid Entry Point or User System Entry Point** below 110kV and with **Maximum Capacity** of 75MW or greater