

Grid Code Alternative and Workgroup Vote

GC0163: GB Grid Forming (GBGF) - Removal of Virtual Impedance restriction

Please note: To participate in any votes, Workgroup members need to have attended at least 50% of meetings.

Stage 1 - Alternative Vote

If Workgroup Alternative Requests have been made, vote on whether they should become Workgroup Alternative Grid Code Modifications (WAGCMs).

Stage 2 - Workgroup Vote

2a) Assess the Original and WAGCMs (if there are any) against the Grid Code objectives compared to the baseline (the current Grid Code).

2b) Vote on which of the options is best.

Terms used in this document

Term	Meaning
Baseline	The current Grid Code (if voting for the Baseline, you believe no modification should be made)
Original	The solution which was firstly proposed by the Proposer of the modification
WAGCM	Workgroup Alternative Grid Code Modification (an Alternative Solution which has been developed by the Workgroup)

The Applicable Grid Code Objectives:

- a) To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity
- b) Facilitating effective 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);
- c) 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;
- d) 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
- e) To promote efficiency in the implementation and administration of the Grid Code arrangements

Workgroup Vote

Stage 1 – Alternative Vote

No alternative requests were raised.

Stage 2a – Assessment against objectives

To assess the Original against the Grid Code objectives compared to the baseline (the current Grid Code).

You will also be asked to provide a statement to be added to the Workgroup Report alongside your vote to assist the reader in understanding the rationale for your vote.

AGCO = Applicable Grid Code Objective

Workgroup Member	Better facilitates AGCO (a)	Better facilitates AGCO (b)	Better facilitates AGCO (c)	Better facilitates AGCO (d)	Better facilitates AGCO (e)	Overall (Y/N)
	Ronak Rabbani - National Grid ESO					
Original	Y	Y	Y	-	-	Y
Voting Statement: Yes – we support this modification. By removing the obligation to have a real impedance between the Internal Voltage Source of a Grid Forming Converter and the Grid Entry Point or User System Entry Point (if Embedded) we believe this provides greater flexibility and cost savings to developers and manufacturers. In this regard we believe this modification will provide greater efficiency which will deliver cost savings for end consumers, it will improve competition in providing flexibility for developers and it will help facilitate the volume of Grid Forming technology across GB which is an industry pre-requisite for promoting net zero. We believe this modification facilitates Grid Code objectives A, B and C.						

Workgroup Member	Better facilitates AGCO (a)	Better facilitates AGCO (b)	Better facilitates AGCO (c)	Better facilitates AGCO (d)	Better facilitates AGCO (e)	Overall (Y/N)
	Xiaoming Li - Zenobe					
Original	Y	Y	Y	N	N	Y
Voting Statement: This GC0163 Group gives clear information regarding the characteristics of Impedance between IVS and Grid Entry Point which allows the flexibility regarding inverter-based technology. Zenobe does agree with the positive contribution to a, b and c, but we don't see the contribution to d and e of this specific Group						

Workgroup Member	Better facilitates AGCO (a)	Better facilitates AGCO (b)	Better facilitates AGCO (c)	Better facilitates AGCO (d)	Better facilitates AGCO (e)	Overall (Y/N)
	Tusitha Abeyasekera- Vestas					
Original	Y	Y	Y	-	-	Y

Voting Statement:

The new formulation provides flexibility.

Workgroup Member	Better facilitates AGCO (a)	Better facilitates AGCO (b)	Better facilitates AGCO (c)	Better facilitates AGCO (d)	Better facilitates AGCO (e)	Overall (Y/N)
	Adil Abdalrahman- Hitachi					
Original	Y	Y	Y	Y	Y	Y

Voting Statement:

The proposed solution will enable more suppliers to participate in the competition of offering services to the grid. It will also give GBGF suppliers the freedom to optimize their systems to improve performance and reduce cost.

Workgroup Member	Better facilitates AGCO (a)	Better facilitates AGCO (b)	Better facilitates AGCO (c)	Better facilitates AGCO (d)	Better facilitates AGCO (e)	Overall (Y/N)
	Sigrid Bolik - Siemens					
Original	Y	Y	Y	-	Y	Y

Voting Statement:

The change improves competitive development with removing restrictions in prescribing a solution and focusing on the desired behaviour.

Workgroup Member	Better facilitates AGCO (a)	Better facilitates AGCO (b)	Better facilitates AGCO (c)	Better facilitates AGCO (d)	Better facilitates AGCO (e)	Overall (Y/N)
	Thorsten Buelo - SMA					
Original	Y	Y	Y	Y	-	Y

Voting Statement:

Workgroup Member	Better facilitates AGCO (a)	Better facilitates AGCO (b)	Better facilitates AGCO (c)	Better facilitates AGCO (d)	Better facilitates AGCO (e)	Overall (Y/N)
	Isaac Gutierrez – Scottish Power					
Original	Y	Y	Y	-	-	Y
Voting Statement: The introduction of virtual impedance will facilitate the development of more projects in Great Britain using grid forming technology.						

Of the X votes, how many voters said this option was better than the Baseline.

Option	Number of voters that voted this option as better than the Baseline
Original	7

Stage 2b – Workgroup Vote

Which option is the best? (Baseline or Proposer's solution (Original Proposal))

Workgroup Member	Company	BEST Option?	Which objective(s) does the change better facilitate? (if baseline not applicable)
Ronak Rabanni	National Grid ESO	Original	A, B, C
Xiaoming Li	Zenobe	Original	A, B, C
Tusitha Abeyasekera	Vestas	Original	A, B, C
Christer Danielsson	Hitachi	Original	A, B, C, D, E
Sigrid Bolik	Siemens	Original	A, B, C, E
Thorsten Buelo	SMA	Original	A, B, C, D
Isaac Gutierrez	Scottish Power	Original	A, B, C