Minutes

Meeting name : GC0087: Frequency Response Provisions

Meeting number: 2

Date of meeting : Monday 10 August

Time : 10:00 – 14:00

Location : National Grid House, Room: E10
Warwick Technology Park, Gallows Hill, Warwick, CV34 6DA

Attendees

Graham Stein	GS	National Grid (Chair)
Antony Johnson	AJ	National Grid
Fiona Williams	FW	National Grid
Guy Nicholson	GN	Element Power – tele conference
Isaac Gutierrez	IG	Scottish Power
Alistair Frew	AF	Scottish Power
Andrejs Svalovs	AS	Alstom
Joe Duddy	JD	RES Ltd
Phil Jenner	PJ	Horizon Nuclear Power
Campbell Mcdonald	CMD	SSE
Franklin Rodrick	FR	National Grid (Technical Secretary)

Apologies

Herve Meljac	HM	EDF Energy
Simon Lord	SC	GDF Suez
Tom Derry	TD	BritNed
Christopher Proudfoot	CP	Centrica
Rui Rui	RR	Scottish Power
Niall Duncan	ND	Senvion
Clement Amerigo	CA	EDF Energy
Andy Vaudin	AV	EDF Energy
Sridhar Sahukari	SS	DONG Energy

Introduction and Apologies

1. GS welcomed everyone to the meeting and the attendees introduced themselves. GS explained that the purpose of the meeting was to review the defect this workgroup had been asked to address and consider how it relates to the work of the RfG GC0048 Workgroup.

Minutes of last meeting

2. GS discussed the draft minutes from the last meeting on 2nd July. GN advised that minute #3 is not clear as there is no evidence around what the defect is. The group discussed and agreed that minute #3 be revised and then the minutes can be published.

Review of actions

3. **Action 1**
   NGET to provide feedback on relevant study work in the System Operability Framework (SOF) – FW advised that the information will be available for challenge and review after 17th August but the publication of the 2015 SOF will be in November.

4. **Action 2**
   NGET to update the Terms of Reference and circulate to the workgroup – GS advised that the ToR's were updated and will be presented to the Panel subject to the agreed conclusions of today's meeting.

5. **Action 3**
   NGET to discuss the Grid Code Secondary Frequency Response defect with HM – Completed on 29th July following meeting with HM.

6. **Action 4**
   NGET to confirm Authority Representative for this workgroup – Gareth Evans advised that there is not an Ofgem rep for this Workgroup at the moment but they are looking into this.

7. **Action 5**
   GS to seek views from the GCRP regarding scope of the GC0087 Workgroup to include all frequency parameters included in RfG (GC0048). GS reported that the GCRP requested that GC0087 agree the way forward in collaboration with GC0048.

8. **Action 6**
   AJ to list the parameters relating to frequency response in the RfG – completed.

9. **Actions 7**
   FR to send out doodle poll to set a date for the September meeting – action superseded.

10. **Actions 8**
    NGET to define the Grid Code defect regarding ramp rates and delay – completed at the meeting.

Grid Code Defect Discussion

11. NGET confirmed non-synchronous plant includes Interconnectors. It was also noted that the reduction in inertia has many facets including energy efficiency, demand reduction, variable speed drives, change in generation technology etc.

12. NGET explained that system inertia illustrated on slide 4 is calculated by summing the machine rated capacity(MW) by the inertia constant (s) (Generator's submitted planning data) for all synchronous plant connected at the time on a half hourly basis. Assumptions are made for the value of inertia for embedded units, although NGET have limited visibility of the distribution network. Inertia can be calculated by analysis of system loss of infeed / outfeed events but NGET do not use this method at the present time.

13. NGET confirmed that there is no Grid Code planning standard or SQSS requirement for system inertia. At the present time the NGET control room calculates RoCoF in respect of the largest system loss and the estimated system inertia at the time and takes actions to ensure that RoCoF does not exceed levels which might cause tripping of embedded generators with G59 RoCoF protection.

14. NGET stated that the system inertia graph on slide 4 demonstrates a significant trend in the decline of system inertia. Although it was questioned whether 2013 was a particularly windy year, it was generally felt that the trend is due to the decline of synchronous plant on the system. NGET will provide an updated graph with 2014 data.

15. NGET confirmed that it assumes an average initial delay of 2s when calculating primary response requirements. This is based on a survey of Generator Compliance test data, but it was noted that it is not a current Grid Code requirement although it is specifically defined in RfG. NGET was asked to provide statistical data regarding generator initial delay.

16. Slide 7 demonstrated the increased level of reserve expected following the decline in system inertia and the subsequent increased RoCoF rate. This was based on a simplified "lumped" model of the GB system and an assumption that the lumped generator has a 2 second initial delay to provide response. NGET explained that although increased levels of reserve can manage the increased RoCoF risk, there is a point at periods of low demand where there is insufficient space on the system for the amount of part-loaded plant required. Shorter initial delay would mitigate the time to reach 49.2 Hz and the response rate (MW/s) needed.

GC0048 Interaction Discussion

17. The current scope of GC0087 is very limited and workgroup members agreed that it should be expanded to include all the GC0048 workstream 6 frequency related issues subject to agreement by GCRP. This will involve expanding the guest list to include all parties involved in GC0048 frequency issues.

18. NGET will propose that GC0087 progress the RfG frequency related issues (Article 15 (1) to (4)) at the September GCRP.

RfG – Workstream 6 issues

19. **Frequency Ranges** – no change required (there may be a small discrepancy with the Distribution Code – AJ to check)

20. **Rate of Change of Frequency** - No value is defined within the Grid Code. GC0079 and GC0035 are already looking at some of the work related to this. It was suggested that the ToRs of these Workgroups could be revised. GC0087 will include the conclusions from these workgroups.

21. **LFSM-O** – activation time is the only issue.

22. **Maintenance of Constant Active Power regardless of changes in System** – no change required.

23. **Power Output with Falling Frequency** – already consistent with Grid Code

24. **LFSM-U** – It was advised that more work would be required on this.

25. **FSM** - Active Power Range, deadband and droop are consistent with GC parameters. Discussion is required on delay times and frequency insensitivity.

26. It was noted that in RfG, LFSM-O and LFSM-U are additive with FSM. In GB Grid Code LFSM-O and FSM are mutually exclusive. It was noted that the RfG's cumulative requirements

would result in complex control systems and it was queried whether this was ENTSO-E deliberate intent or unintended. It was further noted that there exists a short window to notify the EC of any apparent drafting errors.

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Actions

1. FW to investigate provision of 2014/15 inertia data and circulate to the group once information is made public (see attached updated graphs)

2. NGET to provide an update on delay data from generator compliance testing

3. GS to propose that GC0087 progress all frequency issues in GC0048 (workstream 6) at the September GCRP and revise the terms of reference to reflect this

4. AJ to check D Code requirements with the Frequency Ranges in RfG

5. AJ to speak to Celine Reddin about the plan for the RfG mods.

6. Next meeting to be planned for mid-October (FR).