

Minutes

Meeting name : GC0087: RfG Frequency Provisions

Meeting number: 3

Date of meeting : Friday 13 November

Time : 10:00 – 14:00

Location : National Grid House, Room: E6
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
Joe Duddy	JD	RES
Niall Duncan	ND	Senvion
Peter Woodcock	PW	RWE
Clement Amerigo	CA	EdF - Energy
Chris Marsland	CM	Energ
Phillip Jenner	PJ	Horizon
Amir Dahresobh	AD	Nordex
Stephen Perry	SP	Ofgem
Guy Nicholson	GN	Element Power
Andrejs Svalov	AS	Alstom
Alistair Frew	AF	Scottish Power
Damian Jackman	DJ	SSE
Ben Turner	BT	ESB Carrington Power
Ian Nuttall	IN	National Grid
Franklin Rodrick	FR	National Grid (Technical Secretary)

Apologies

Peter Christensen	PC	Vestas
Konstantinos Pierros	KP	Enercon
Jawad Al-Tayie	JAT	Cummins

Introduction

1. GS welcomed everyone to the meeting and the attendants introduced themselves. GS explained that the purpose of the meeting was to discuss and agree a way forward for implementation of workstream 6 GC0048 Requirement for Generators which covers the frequency response issues.

Minutes of last meeting

2. FW discussed the draft minutes from the previous meeting on 10 August. The comments were agreed and will be revised and published.

Review of actions

3. **Action 1:** FW circulated to the group updated graphs of inertia data including 2014/15. GS confirmed that the graphs did not include inertia assumptions for embedded generation but did include all generator data included in the Balancing Mechanism. (completed)
4. **Action 2:** IN confirmed that 2s delay is a reasonable assumption based on generator test data. (completed)
5. **Action 3:** GS proposed that the GC0087 workgroup progress all frequency issues in GC0048 workstream 6 at the September GCRP (excluding RoCoF). This proposal was accepted and the Terms of Reference have been amended accordingly. (completed)
6. **Action 4:** AJ checked D code requirements with the Frequency Ranges in RfG and confirmed that the frequency ranges in the Demand Connection Code are the same. (completed)
7. **Action 5:** AJ confirmed that he had spoken to Celine Reddin re the plan for RfG mods, all modification proposals are expected to be completed by Q4 2016. (completed)
8. AJ gave an update on the secondary frequency response discussion was held with EdF and Horizon. The discussion covered differing definitions of secondary frequency response.
9. **Action 6 – FW to provide inertia duration curves and also, following a discussion on frequency monitoring rates, FW to look at what monitoring related work is being done at National Grid.**

RfG Frequency Parameter Discussion

Frequency Ranges

10. Although the Frequency Ranges in RfG are consistent with the requirements set out in the Grid Code PJ highlighted that the main issue is with the concurrent voltage ranges.
11. This is captured in Article 16.2(a)(ii) of RfG and there is a need to deal with potential interactions.
12. **Action 7 – FW to liaise with voltage reactive group and also to add an interaction column to the parameter table.**

Limited Frequency Sensitivity Mode – Overfrequency (LFSM-O)

13. Although Article 13.2 is also consistent with BC.3.7.2, there is no activation time in the Grid Code. Concern was expressed about whether RfG obligations are concurrent or cumulative. If the obligations are cumulative, this could lead to overly complicated control systems and would be difficult to manage.
14. Concurrent: with the largest active power deviation from FSM and LFSM-U or O taking precedence or
15. Cumulative – with the active power deviations due to FSM and LFSM-U or O added together.
16. **Action 8 – FW to liaise with the GC0048 workgroup and clarify the cumulative/concurrent with ENTSO-E**

Maintenance of Constant Active Power regardless of changes in System Frequency

17. RfG requirement Article 13.3 is consistent with Grid Code CC.6.3.3 but there is a need to clarify the references to ambient conditions.
18. **Action 9 – FW to check other Grid Code references with ambient conditions**

Power Output with Falling Frequency

19. CC.6.3.3 in the Grid Code states that if the System Frequency drops to 47Hz the Active Power output should not decrease by more than 5%. RfG defines the requirement but the admissible active power reduction must be within the ranges within Fig 2 of RfG.
20. **Action 10 – FW to check figures relating to frequency fall with ENTSO-E**

Limited Frequency Sensitivity Mode – Underfrequency (LFSM-U)

21. This is a new requirement for Grid Code. There is again a need to establish whether the RfG requirements are cumulative or concurrent. It is also important to understand whether RfG is defining a capability and then whether NG could instruct generators to the appropriate status depending on system requirements.
22. **Action 11 – FW to establish whether the requirement for LFSM-U is a cumulative or concurrent capability with ENTSO-E.**

Frequency Sensitive Mode (FSM)

23. IN provided a presentation on the difference between Ramp and Step frequency testing which highlighted that for the synchronous and non-synchronous examples shown both demonstrated the required capability in 10s.
24. There is a need to clarify with ENTSO-E the exact meaning of “justify to the TSO” which appears in RfG. This is particularly relevant for generators with technology dependent limitations.
25. **Action 12 – FW to confirm with ENTSOE the intended meaning of “justify to the TSO”.**

Ancillary Services Business Monitoring (ASBMON)

26. This was not covered at this meeting.

AOB

27. The Terms of Reference were discussed, comments made by AF had not been included. SP also asked that regular liaison with GC0048 and the DCC and HVDC groups be included.
28. **Action 13 – FW to confirm compliance is to be included in the terms of reference (completed).**
29. **Action 14 – GS to present updated Terms of Reference at the November GCRP (completed)**

Actions

30. **Action 6 – FW to provide inertia duration curves and also, following a discussion on frequency monitoring rates, FW to look at what monitoring related work is being done at National Grid.**
31. **Action 7 - FW to liaise with voltage reactive group and also to add an interaction column to the parameter table.**
32. **Action 8 – FW to liaise with GC0048 workgroup and clarify the cumulative/concurrent with ENTSO-E**
33. **Action 9 – FW to check other Grid Code references with ambient conditions**
34. **Action 10 - FW to check figures relating to frequency fall with ENTSO-E**
35. **Action 11 – FW to establish whether the requirement for LFSM-U is a cumulative or concurrent capability with ENTSO-E.**
36. **Action 12 – FW to confirm with ENTSOE the exact meaning of “justify to the TSO”.**
37. **Action 13 – FW to confirm compliance is to be included in the terms of reference (completed).**

38. Action 14 – GS to present updated Terms of Reference at the November GCRP (completed)