

Minutes

Meeting name	Frequency Response
Meeting number	17
Date of meeting	12 th September 2011
Time	11:00 - 15:00
Location	National Grid House, Warwick, CV34 6DA

Attendees

Name	Initials	Company
David Smith (Chair)	DS	National Grid
Thomas Derry	TD	National Grid
Tom Ireland	TI	National Grid
Ben Smith	BS	National Grid
Graham Stein	GS	National Grid
Raoul Thulin	RT	RWE
Chris Hastings	CH	SSE
Bob Nichols	BN	E.ON
Guy Phillips	GP	E.ON
John Morris	JM	EDF Energy
Mick Chowns	MC	RWE
John Costa (dial-in)	JC	EDF Energy
Christopher Proudfoot	CP	Centrica

Apologies

Name	Initials	Company
William Hung	WH	National Grid
Francois Luciani	FL	EDF Energy
Mike Murphy	MM	SP Power Systems

1 Review of Terms of Reference

1. The Working Group reviewed the Terms of Reference to ensure that they were still reflective of the work being carried out.
2. The Working Group questioned the inclusion of islanding scenarios in point (ii). The Working Group agreed that once there is a solution for the whole system then it might be worth considering the islanding scenarios against the baseline. It will be noted as a secondary aspect for assessment.
3. On point (iii) TI noted that Ofgem are looking for feasible options to be worked up into sufficient detail to allow for assessment. It is not worth taking any option forward that cannot be supported with sufficient analysis.
4. TI clarified point (vi) in that all feasible options will require the necessary legal drafting to bring them into force.
5. On point (viii), other comparable networks could be Canada, Japan, New Zealand or Sardinia.
6. The Working Group noted that there needs to be some consideration against the European regulations that have come into force.
7. JC noted that this group is joint GCRP/BSSG and it needs to be made clear in the Terms of Reference that it comes under Grid Code governance. It is also worth taking into account changes to standard Terms of Reference from the BSSG to see if they can apply here.
8. It was also recommended that the reporting date to the GCRP be changed from November 2011 to January 2012. This will allow the review of the Technical Sub Group report prior to submission of the final Frequency Response Working Group Report.
9. **ACTION:TI** Update Terms of Reference as per the above discussions and submit a request to the September 2011 GCRP

2 Draft Conclusions from Technical Sub Group

10. GS informed the group of the progress made by the Technical Sub Group (TSG). The TSG has looked at a number of elements of its Terms of Reference.
11. Various synthetic inertia scenarios were created and analysed to determine if they are able to deliver. There have been RoCoF trigger issues identified that result in the requirement not being delivered within adequate timescales. This has raised questions around whether it is possible to develop a stable system with this solution.
12. A 'one shot' solution was examined. This is the system used in Canada which is based on a square response time, however, it is not suitable for the UK. It is believed that they deal with the RoCoF issues using a set frequency trigger.
13. Future generation patterns indicate that primary response on wind is needed in its conventional form. There can't be synthetic inertia and primary on the same machine. Having some machines run synthetic and some primary was looked at but there are not enough machines to cover the requirement.
14. We have used a balanced plant scenario (National Grid's gone green 2020) and modelled low, average and high wind scenarios. Looking at the load duration curve, it appears that 35GW is the half way point. In the studies, we are struggling to make frequency containment under 35GW with a high wind scenario.

15. In our analysis we have tried to pin down ramp rate assumptions and have assumed there is some inertia in demand. We have also looked at faster primary response on wind which has started to solve some of the issues that have appeared in other analysis. We modelled a 5 second primary response product on wind and this solved some issues as it doesn't have the noise amplifying issues of df/dt.
16. A questionnaire has been sent out to manufacturers to gauge ability to provide response in 5 seconds.
17. MC questioned if National Grid has the compliance testing data on typical response from the wind farms and suggested that this data may be utilised in the studies. GS agreed that this data may be able to be used and will look into it.
18. **ACTION: GS** Determine if wind farm compliance data can be used for analysis
19. Over next few weeks the intention is to finalise the report ready to submit to the Frequency Response Working Group. There will be a final meeting in early/mid October 2011 with publication of the report by end of October.

3 Discussion/decision on progression of option 2

20. RT led the discussion on Option 2 and noted that this is not an RWE model but rather a discussion point. The presentation slides can be found on the National Grid website¹.
21. SC noted that this option is trying to address the utilisation of frequency response rather than the capability that option 1 is addressing. RT explained that the model is concerned with trying to address the significant costs identified early on. The group noted that the flexibility and capability of the solution might deal with the costs and allow costs to be recovered. Depends on how much there is a diversion between the capability and the cost.
22. TI questioned if this option essentially builds on Option 1? SC suggested that you could start with an obligation as in Option 1 and then optimise the operational cost through an Option 2 'bolt-on'. Option 2 appears to be dealing with the cost inefficiencies rather than system issues
23. RT noted that as long as the mix that turns up can support the system it shouldn't be necessary to have the market. It was questioned how it could be guaranteed that providers would turn up to a market and that there may need to be some element of persuasion or penalty. A provider could put in place the capital to have the provision but then have such a high utilisation cost that they price themselves out of the market. The group noted that at the time of the investment, a provider will look at the whole life of the investment.
24. It was agreed that there needs to be a balance between cost and return to allow providers to recoup their investment. There needs to be reassurance the market will not disappear in 5 or 10 years otherwise investment for providers is unlikely. With some flexibility and reassurance it would be possible to make sensible capital decisions.

4 Discussion/decision on progression of option 3

25. GP led the discussion on Option 3 and noted that this is not an E.On model but rather a discussion point. The presentation slides can be found on the National Grid website².
26. The starting point for this option is that there is no frequency response provision and the SO is required to contract with providers to obtain that provision. Currently there is no real benefit for generators to build capacity above current required minimum. A frequency market which would

¹ <http://www.nationalgrid.com/NR/rdonlyres/11D0BC00-AB40-4177-B300-8194111F8033/49133/Option2Slides.pdf>

² <http://www.nationalgrid.com/NR/rdonlyres/2DD47206-00B0-4C33-9D3E-C6E0D755C01E/49134/Option3Slides1.pdf>

allow generators to recover investment and provide revenue would provide encouragement to participate in this market as well as the energy market.

27. Similarities were drawn between this option and STOR (Short Term Operating Reserve) tendering.
28. SC raised the issue that contracts could be expensive to service as there would be a utilisation price on top of the contract price. The group noted that there could be options within the bilateral agreement for the utilisation and energy price to be fixed if both parties agree or there could be a mixture where the energy price is fixed with a flexible utilisation fee.
29. SC also pointed out that there is a risk that insufficient capability will appear which will be a risk to the system. Concerns were also raised around signalling future generation to build this capability. Questions were raised about how National Grid will forecast its frequency response requirements 5/10/15 years in advance.
30. The group recognised that there are transitional issues with this model, as with all models. There cannot be an overnight reform from a world of mandatory provision to no requirement and bilateral tenders for provision. There should be a sliding scale between the changes to allow for a better transition.
31. MC suggested that the options themselves could work as the transition e.g. option 1 to option 2 to option 3.
32. CH noted that the answer could be somewhere between Option 1 and Option 3. The main concern is achieving the critical mass required to sustain a free marketplace with no obligation.
33. The group recognised the key issue to assuring that frequency response is provided as efficiently and economically as possible.

5 AOB

34. No further business was discussed at the meeting.

6 Next Meeting

35. The group agreed that in order to progress this issue further analysis will be required for each of the models. This can then be used to conduct some scenario analysis to see how well each could work.
36. It is important to capture the work done to date on this issue including the high level principles and work that is yet to be done. It was suggested that this Working Group, in its current guise, may not be the most appropriate to work up the models in sufficient detail for them to be properly considered. Therefore, the snapshot wouldn't include the qualitative or quantitative analysis of the market options.
37. **ACTION: ALL** Establish a programme of work which includes consideration of the Technical Sub Group conclusion and development of a final report for submission to the GCRP. This will be the topic of the next Frequency Response Working Group.
38. Next meeting due to take place October/November following completion of the Technical Sub Group Report.