

Summary of Meeting and Actions

Meeting Name	Frequency Response Working Group
Meeting No.	15
Date of Meeting	Monday, 20 th December 2010
Time	10:00am – 2:00pm
Venue	National Grid House, Warwick Technology Park, Warwick

This note outlines the key action points from the fifteenth meeting of the Frequency Response Working Group.

1) Introductions, Minutes and Apologies

Apologies were received from Francois Luciani (EDF Energy), Chris Proudfoot (Centrica), Guy Phillips (E.On), Antony Johnson (National Grid) and Mick Chowns (RWE).

TD/TI informed the group that AJ will not be attending future meetings as he has changed roles within National Grid. The work that AJ was undertaking as part of this group will be cover by Graham Stein (National Grid) and Stewart Whyte (National Grid). MA noted that he is also unlikely to be attending future meetings due to changing roles.

Concerns were raised in the introductory discussion regarding Authority representation at these meetings. Authority involvement in the Working Group would help ensure that any decisions made within the Working Group have Authority support prior to the submission of a Report to the Authority for a decision. TI agreed to raise issue with Ofgem.

Action: National Grid (TI)

The draft minutes of the Grid Code/BSSG Frequency Response Working Group meeting 14 held on 14th October 2010 were approved and will be accessible from the National Grid Codes Website.

Action: National Grid (TD)

2) Actions from Meeting 14

The Working Group noted that all actions from meeting 14 have been completed save one:

- The outstanding action from a previous meeting was to consider how a payment mechanism for system inertia could be enforced. The Working Group concluded that it was not feasible to consider such commercial mechanisms until the technical system requirements or obligations for system inertia are further developed. Consequently this action will be kept open until such time. The group agreed to keep this action open.

Action: All

3) Feedback from Technical Sub Group

TI updated the group on the progress of the Technical Subgroup.

- National Grid has presented simulated frequency deviations for a variety of different scenarios discussed previously at the FRWG;
- A synthetic inertia requirement based on a df/dt characteristic has been postulated. This helps to illustrate the requirement we are trying to meet;
- National Grid has demonstrated that synthetic inertia is required to manage an 1800MW loss to current standards, assuming the current definition of primary response, and under our current modelling assumptions;

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- Manufacturers have provided clear feedback on the difficulties of specifying a df/dt controller which is quick enough, yet is stable when applied to a heavily interconnected power system. Various alternatives have been suggested including a frequency trigger 'one-shot', a delta frequency control and various hybrids incorporating elements of df/dt and the other methods;
- Some members of the group have provided valuable measurement data which supports this view. Local voltage events can look like frequency deviations as they distort the voltage waveform which would lead to unnecessary triggers and/or instability;
- The Group believes that synthetic inertia will not be quick enough to prevent the operation of ROCOF relays;
- Further National Grid modelling suggests that delivery timescales of 0.5sec or more may be adequate which could substantially reduce the challenge to equipment manufacturers in designing and building synthetic inertia capable equipment;
- The group has requested further clarity on National Grid's modelling assumptions (e.g. "does your frequency responsive plant include wind in frequency sensitive mode?"). National Grid plans to revisit its scenarios based on the load the duration curve, published future plant mix scenarios and a view of plant scheduling issues;
- National Grid plans to examine a variety of different synthetic inertia controller implementations to evaluate their effectiveness and robustness;
- Further debate is expected on a range of issues including concurrent inertia and response delivery and the need for high frequency triggered inertia; and
- The final sub-group meeting is scheduled for the 13th January but the extent of the technical analysis still to be performed (which is predicated on the development of assumptions and potential control philosophies) mean that more time will be needed before a report can be delivered. Our current best view of this is February.

Following the above update from TI, the group discussed the issue of operational cost. It was determined that when the technical sub group report is issued, this working group will need to determine the impact that these conclusions have on operational costs.

The group discussed the issues that might arise if the conclusion from the Technical sub-group is that the current 10/10/10 obligation is a requirement that must be maintained to secure the system. MA reiterated the question that if this requirement is placed on generating units that cannot inherently meet the requirement, what would be the capital cost to enable those units to achieve the requirement. A Cost Benefit Analysis needs to be conducted that compares the current costs versus the costs associated with any change to the requirement, as explained by the Authority representative at the start of the working group process. It is also necessary to determine the additional costs of securing the system if the requirement remains at 10/10/10.

4) Development of a Frequency Response Capability and Delivery Market Paper

MA discussed his paper which brings together the three market options being developed for the provision of frequency response.

Market Option 1 - Grid Code Obligation with the Ability to Trade Capability

This option looks at an incremental change to the current arrangements. The current Grid Code obligation is on generation to provide frequency response capability and, when requested, delivery. Although there is an obligation to provide response, how the capability and delivery is provided by parties obliged under the Grid Code could be changed.

The Grid Code obligation currently states that a generation unit must provide the response capability and delivery. To ensure that the required volumes are provided to maintain current levels of system security, the Grid Code obligation would remain. However, the provision of

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capability does not need to be provided solely by the generating unit but could be provided by another generator or alternative technology.

For example, if a new generator could provide 6% response in 10 seconds (current requirement is for 10% in 10 seconds), it would contract with another party for the 4% deficit.

Market Option 2 - Day Ahead Auction

To ensure that a mix of plant capable of securing the system is generating on any particular day, it is envisaged that at the day-ahead stage, an auction process would be initiated.

To participate in the auction, it would be necessary to be confident in the bidders' ability to deliver the agreed levels of response. Thus there may be a requirement for some pre-qualification process. However, the auction would then be open to any provider, whether generation or demand-side.

Market Option 3 - Bilateral Tender

The general assumption is that the current mandatory requirement would be removed and replaced with the tender/bilateral contract approach. However, an alternative could be to continue with a minimum requirement but that this would be lower than the current mandatory obligation. The revised mandatory requirement could be technology specific, to reduce unnecessary cost to new generation to connect. This would allow for a minimum capability to the system in the event that insufficient frequency response contracted generation is available.

General Group Discussion

Following the presentation of the above paper the group discussed that focusing on one option would allow quicker development of a solution which would feed into the discussion on the largest loss decision. The group noted that option 1 stands fairly independent of the other options it might be a useful way forward to have a meeting to develop and discuss this option in more detail. The other options may have some interaction with the market review that will be undertaken by Ofgem.

It was also noted that a paper needs to be finalised to report to the May GCRP.

5) Next Steps

- MA to update the Frequency Response market paper and send around the group by the end of January 2011 for comment
Action: National Grid (MA)
- Organise a meeting to discuss Option 1 towards the end January/beginning February 2011
Action: National Grid (TI)
- Talk to Ofgem about Authority representation
Action: National Grid (TI)
- Publish the Technical Subgroup update
Action: National Grid (TI)
- Provide update of network code implications to the Working Group
Action: National Grid (TI)

6) AOB/Date of next meeting

The group asked about the impact of the Requirements for Generators work that is being undertaken in Europe and its impact on the Grid Code. TI informed the group that the final framework guidelines have been confirmed by ERGEG. A drafting team of TSOs have produced a draft network code 'Requirements for Generators', to which there will be a formal consultation (expected to be published in April 2011). There are Frequency Response obligations within the codes for generators which vary based on size. Following the

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implementation of this European Network Code in 2013, the GB Grid Code would have to meet its basic standards.

Next meeting is scheduled for 10th February 2011 at the National Grid offices in Solihull.

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Appendix 1 – Working Group Attendance

Members Present:

Tom Ireland	TI	Working Group Chair
Thomas Derry	TD	National Grid
Malcolm Arthur	MA	National Grid
Stephen Curtis	SC	National Grid (dial-in)
William Hung	WH	National Grid
Raoul Thulin	RT	RWE (dial-in)
Bob Nicholls	BN	E.ON UK
Chris Hastings	CH	Scottish and Southern Energy
John Costa	JC	EDF Energy

Apologies:

Chris Proudfoot	CP	Centrica
Francois Luciani	FL	EDF Energy
Guy Phillips	GP	E.ON UK
Mick Chowns	MC	RWE