

# Summary of Meeting and Actions

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Meeting Name	Frequency Response Working Group
Meeting No.	7
Date of Meeting	Wednesday, 2 <sup>nd</sup> December 2009
Time	10:00am – 3:00pm
Venue	Conference Room 8, National Grid House, Warwick

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

## 1) Apologies for Absence

Apologies were received from William Hung (National Grid), Malcolm Arthur (National Grid), Mark Baker (Scottish Power), and John Welsh (Scottish Power Systems).

## 2) Minutes from Previous Meeting

The draft minutes of the Grid Code/BSSG Frequency Response Working Group meeting held on 27th October 2009 were approved with some changes and will be accessible from the National Grid Code Website.

## 3) Review of Actions from previous meetings

TI presented the revised Terms of Reference which took into account the post offshore Go-Active nomenclature and confirmed that NETS SQSS was the preferred term. These will be viewed at the next meeting.

**Action: TI**

Mark Perry had previously agreed to provide high level overview on Option 2 (Frequency Response obligations by portfolio) & Option 3 (FR obligations differ by generation technology) – completed by AJ (detailed below).

**Action: MP**

## 4) Cost estimation for Frequency Response

The group discussed the issues around alternative providers of frequency response such as the Britned Interconnector. TI informed the group of some of the discussions that took place at the last meeting for the non attendees. At the last meeting it was established how the DC link had the capability and technology to provide frequency response but it was highlighted that utilising such capability within the current commercial framework was not fully developed yet.

Within the Working Group it was made clear that there were different time frames associated with Primary and Secondary response used in GB as compared with the EU. The Secondary response time frame used in GB (30s) is similar to that of EU 'primary response' timescales. The magnitude and inertia of the European Transmission System allows the frequency response from EU generators permits different GB requirements compared to the UK. Consequently it is hard to disaggregate individual requirements.

TI informed the Group that the GCRP would like the working group to look at the different models for Frequency Response from other countries/ networks. The group agreed for TI to add this to the ToR reference.

**Action: TI**

CP suggested that Sam Mathews (National Grid) may have access to additional relevant information on Denmark's Frequency Response provisions.

**Action: CP**

The group engaged in debate on whether it was possible to forecast the response levels needed in continental Europe. FL believed that it was almost impossible for countries in

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Europe to do this. It was identified that Europe was so inter-connected that that it is able to share frequency response by allocation of a component to each member country.

The Working Group looked at future nuclear generation technology. It was identified that whilst the Grid Code does not require Magnox or AGR nuclear plants to provide frequency response it will require new nuclear units to have the capability [**Post meeting note:** it was confirmed that the Grid Code currently requires Sizewell B to have the capability]. To understand how nuclear response is provided and controlled in France FL offered to provide a report based on a portfolio of French generators providing frequency response reserve.

**Action: FL**

It was identified the nuclear generating plants built in France were equipped to provide Primary frequency response up to 2.5 % in timescales that are comparable to GB secondary response. It was confirmed that France does not currently use EPR technology, although one in under construction. It was noted that EPR has the ability to provide frequency response (10% in 10s) however the only concern with it was how often it could do this and what the true associated cost would be.

The group discussed the potential drivers for these costs and identified aspects such more frequent refuelling, cost of enhanced maintenance and erosion of assets. It became apparent that from a nuclear operating perspective, plants prefer to operate at base loads rather than in a frequency sensitive mode. It requires plant to run in a constrained manner to allow frequency response margin and thus refuelling is required after a shorter period. In France 80% of plant operates using nuclear fuel. The cost of FR provision from nuclear stems from their resultant lower availability.

The group looked at whether Commercial Services could be provided and whether their existing contracts would accommodate this. A suggestion was made that a matrix of Frequency Response capability could be determined so different levels and speeds of FR could be priced at different levels.

The group discussed the importance of inertia from generating plant and how it could help embedded plant during future frequency tripping events. The increasing volume of Small Embedded Power Stations connecting to the system was also recognised as a potential problem.

SC said that depending on the size of the Embedded Plant the use of sensitive ROCOF relays was also considered to potentially leading to future tripping events. Members felt that these relays may be currently set too sensitively and it was suggested that the use of inter-tripping schemes may be better to reduce the risk. TI suggested he could discuss the issue with the Chair of the Grid Code Review Panel to assess whether it warrants discussion at a future Panel meeting.

**Action: TI**

CP informed the group the feedback received from the wind farms (via Renewable Energy Systems) was that if 10% FR was provided there would not be a significant increase in either capital costs or ongoing maintenance costs. He continued that there was a lost opportunity cost associated with having to operate the turbine in a permanently constrained mode. Mechanical wear on the wind farm's systems was not expected to be increased.

A member reported that Super Critical Coal may require many millions of pounds of incremental investment in order to meet the existing provision of Frequency Response. A maximum of 3% primary response could be achieved without significant additional investment but greater response would only be possible in secondary response timescales.

Representatives of future wind and nuclear generators stated that whilst the marginal operating and capital cost for the provision of FR has been shown to be relatively low, such operation could be a substantial physical risk to the plant which would have to be taken into account. National Grid agreed that such risk could be factored into the price

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submitted to the FR market. That includes both mandatory and enhanced frequency response.

AJ presented a short paper reliant to the characteristics of the “Gone Green” scenario and KA was asked to distribute this paper.

**Action: KA**

AJ discussed two possible scenario options, frequency response obligation and provision by portfolio and provision that differs by generation technology.

## 1) Portfolio Obligations

Obligation will be based on generating companies rather than generating units and power plant modules.

## 2) Generation technology based obligations

The Group discussed the current options identified within the working group in order develop and take forward as required by the ToR. It was stated that more consideration should be given to the counterparties involved within the options identified and to consider what the obligation would mean for them.

### Product

AJ explained that required primary response was a function of the maximum credible loss. Bids are requested for FR and the lowest cost bids typically selected. CP stated that the definition of response as Primary, Secondary and High means that future generator technology is going to be designed to fulfil such characteristics rather than the characteristics being altered to reflect the inherent ability of the generation mix. CP continued that there is a requirement to value all useful aspects of FR provision. A redefinition of the FR product (such as timescales) would allow a full market but the Working Group agreed that this would require enhanced measurement and audit capability.

The Working Group discussed that there is no mention of inertia in the Grid Code and no obligations to provide it, which may need to be considered. Three options were discussed for the codification of inertia:

- A *de minimis* minimum inertia for each generating unit
- Specific technology specifications (e.g. the application of synthetic inertia)
- A market for inertia

### Option Analysis

Below are the past options that were identified

- 1) Minimum provision obligation per unit.
- 2) Minimum provision per group of generating unit or portfolio.
- 3) Defining requirements by generating technology.
- 4) System operating balancing response.
- 5) Frequency Response Market
- 6) Demand side response obligation.

It was suggested that National Grid should identify if there are any existing frequency response markets in operation, world wide.

**Action: National Grid**

It became apparent going forward most of these options identified could be utilised into one. It was agreed that there is need to identify who the counter parties are. CP agreed to provide pros and cons for each of the options identified.

**Action: CP**

TI agreed to send out the presentation slides on the options presented.

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Action: TI

## 5) AOB

A member questioned whether there were any other groups looking at frequency standards.

TI informed the group that the Frequency and Voltage Operating Range Working Group is due start in January 2010.

TI agreed to email round a web link to the SQSS Working Group that is currently assessing whether the largest credible loss should be increased.

Action: TI

## 6) Next Meeting

The next meeting of the Working Group is scheduled for 15<sup>th</sup> February 2010 commencing at 10am at National Grid House, Gallows Hill, Warwick.

## Appendix 1 – Working Group Attendance

### Members Present:

Tom Ireland	TI	Working Group Chairperson
Kabir Ali	KA	Technical Secretary
Stephen Curtis	SC	National Grid
Antony Johnson	AJ	National Grid
Damian McCool	DM	Scottish Power Renewables
Chris Hastings	CH	Scottish-Southern
Francois Luciani	FL	British Energy
Bob Nicholls	BN	E.ON
Raoul Thulin	RT	RWE
Bridget Morgan	BM	Ofgem
Claire Maxim	CM	E.ON
Chris Proudfoot	CP	Centrica
Mike Chowns	MC	RWE

### Apologies:

William Hung	WH	National Grid
Malcolm Arthur	MA	National Grid
Mark Baker	MB	Scottish Power
John Welsh	JW	Scottish Power (DNO Representative)