Summary of Meeting and Actions

Meeting Name	Frequency Response Working Group
Meeting No.	5
Date of Meeting	Tuesday, 1st September 2009
Time	10:00am – 2:00pm
Venue	Conference Room 6, National Grid House, Warwick

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

1) Apologies for Absence

Apologies were received from Mark Baker (Scottish Power), Chris Hastings (Scottish – Southern), Dan Jerwood (GDF Suez) John Welsh (Scottish Power Systems), John Norbury (RWE), James Evans and Claire Maxim (E.On)

2) Minutes from Previous Meeting

The draft minutes of the Grid Code/BSSG Frequency Response Working Group meeting held on 3rd July 2009 were approved and are accessible from the National Grid Code Website.

MA recalled that at the previous meeting he had invited Working Group members to develop and present any potential future straw men models that they had for Frequency Response. This action has been added to the minutes and the invitation repeated.

3) Review of Actions from previous meetings

The Working Group discussed whether the effect of diversity of wind has an effect on the SQSS model. CM to investigate whether wind pattern data can be distributed amongst working group – ongoing.

Action: CM

Working Group members were invited to develop and present alternative Frequency Response straw men models for discussion – Invitation reiterated

Action: All

Various Working Group members have previously been actioned to determine the incremental capital costs associated with the provisional of the existing Grid Code frequency response obligations from the anticipated future generating technologies:

Super Critical Coal – [MC]
On and Offshore Wind – CP
Nuclear – JE
CCGT – BN

CP stated that this is particularly complex and not a problem that can be solved by this Working Group. [MC] reported that he had been unable to get the required data and such issues are not on the developers current horizons.

Another member stated that the capital cost of frequency response can be determined but a far more difficult cost is that of the cost of permanently constraining back such technology. Developers have not anticipated, to date, that generation plant may have to run for long periods of time, under constrained condition in order to provide frequency response. Such physical stress may invalidate the warranty on the generators and therefore results in an additional risk. To summarise, such future plant could meet the existing GC obligations but would be extremely expensive. An example given was concerning super critical coal, which could only provide 10% response by bypassing 10% of its steam continuously, which is very expensive, risky and inefficient. In addition such a

process has not been trialled yet. It was confirmed that if the provision of response is exceptionally expensive this may be grounds for requesting a licence derogation from the Authority.

A generation representative confirmed that if response is difficult/ risky to provide the generator is able to price the provision of its response out of the market.

4) Costing Methodology Spreadsheet

The Working Group discussed an enhanced version of a spreadsheet MA had previously presented. The revised model included improvements to reflect improved profiles for demand levels and frequency response.

MA explained to the group that the spreadsheet could be used as a platform to make comparisons between the cost of providing higher levels of reserve against capital investment for frequency response provision. TI reminded the group that a positive cost benefit would be a requisite in justifying any future recommendations to alter the Frequency Response obligations.

The model inherently assumes that thermal plant will be running at full export although in practice some plant will be running part loaded and therefore will be able to provide a degree of frequency response. MA agreed although highlighted that plant such as nuclear and wind generation is unlikely to choose to run part loaded. An potential enhancement identified was to include accuracy on wind speed frequency data.

The model concluded that the cost of the provision of response in the future will increase by approximately 3 to 4 times.

It was highlighted that wind farm owners were not happy with running in a constrained state and developers would need to consider the risks associated with this. Even though manufactures state that wind turbines can provide response, many generators would not feel confident at this time to do so for continuous operation.

The members discussed whether the cost of operating generation under a constrained state could be passed through, reflecting the potential reduction of the generator's asset life. National Grid confirmed that currently the Grid Code does not have such a specific mechanism.

In order to meet existing Grid Code response obligations members reflected whether modifications to the generators would be an option, such as using a bypass arrangement however there are also significant costing issues that need to be considered.

A member highlighted that no matter what the obligations are under the Grid Code, the model has shown that the cost of frequency response is driven by the cost of constraining back nuclear and wind and that 75% of the total cost stems from the cost of ROCs.

SC questioned whether there was a requirement to change the Grid Code frequency requirements or whether the change should be to the market arrangements for funding frequency response provision. MP stated that the Grid Code achieves flexibility through the market.

The time profile for the provision of frequency response was thought to be important. Namely that the energy delivered before the system frequency minimum, will reduce the frequency drop and energy delivered after that point will ensure system frequency is restored quickly. MP agreed to look as the option of a profiled frequency response, perhaps involved a multiple tiered obligation.

Action: MP

MP talked through the frequency costing model on coal, gas, carbon capture and wind. CH proposed that it may be more proportional for wind generation to provide frequency response proportional to its annual export rather than its export capacity, reflecting its lower load factor.

5) Working Group Discussions

It was agreed that the Terms of Reference should be updated with the correct post Offshore go-active nomenclature e.g. NETS.

Action: TI

The Working Group agreed that there was still a substantial amount of work left to complete and therefore TI should inform the GCRP that the initial deadlines are unlikely to be met and suggest that an update of findings and progress should be brought to the November GCRP and further timescales considered there.

Action: TI

6) High level option presentation

TI presented an updated version of the high level options considered to date by the Working Group. The options included:

1. Minimum provision per unit
   (a) – provision could be contracted from others
   (b) – 'Frequency Capability Mode'
2. Minimum provision per group of gen units/ portfolio
3. Differing requirements for various generation technology
4. System Operating supplies balancing response
5. Frequency Response market established
6. Potential additional option of demand side response

MP confirmed that levels of inertia are not currently included in the Grid Code. A member questioned whether the current obligation to provide 10% frequency response in 10 seconds has actually been tested as the true requirement. It was argued that such a broad obligation is a broad brush approach of ensuring enough response. National Grid confirmed that following a simultaneous loss of generation, the minimum frequency is reached before 10 seconds, exactly when depends on the inertial of the system at the time.

Under Option 4, the question was raised whether the use of a flywheel by the System Operator would contravene National Grid's transmission licensee as active power is not actually produced but stored.

It was stated that a frequency response market is required to drive innovation and it is important that Grid Code obligations are not a barrier to such development. Consequently it was argued that Grid Code obligations could be retained (in part to ensure minimum security) and a market should also be facilitated.

A member questioned whether by increasing the maximum permitted drop in system frequency, the levels of required frequency response could be reduced. National Grid explained that the current maximum drop of 0.8Hz is derived from the largest permitted loss (1320MW) occurring during minimum demand and when system frequency is at the lowest operational limit (49.8Hz). The resultant system frequency would be 49.0Hz which is as close as can be reliably achieved to 48.8Hz at which point stage 1 of the Demand Disconnection Scheme would operate.

Action: National Grid (MP)

The high level options were assigned to various Working Group members who would develop the detail for each option.

Option 1(a): MP agreed to determine what the future GC obligations would be under a Gone Green scenario.

Action: National Grid (MP)

Various Working Group members agreed to expand on the high level options being considered

- Option 2 & 3: MP

- Option 1(b) & 4: MA
- Option 5: TI
- Option 6: CP

Action: Various

TI agreed to email round the link to the SQSS review

Action: TI

5) Next Meeting

It was agreed that the next meeting of the Working Group would be scheduled for 13th October 2009, commencing at 10am at National Grid House, Gallows Hill, Warwick.

[Post meeting note: the next meeting was postponed until Tuesday, 27th October]

Appendix 1 – Working Group Attendance

Members Present:		
Tom Ireland	TI	Working Group Chairperson
Kabir Ali	KA	Technical Secretary
Malcolm Arthur	MA	National Grid
Stephen Curtis	SC	National Grid
Mark Perry	MP	National Grid
William Hung	WH	National Grid
Damian McCool	DM	Scottish Power Renewables
Chris Proudfoot	CP	Centrica
Bridget Morgan	BM	Ofgem
Mike Chowns	MC	RWE NPower
Bob Nicholls	BN	E.ON
John Morris	JM	British Energy
Raoul Thulin	RT	RWE
Apologies:		
Mark Baker	MA	Scottish Power
Chris Hastings	CH	Scottish and Southern Electricity
Dan Jerwood	DJ	GDF Suez
John Welsh	JW	Scottish Power (DNO Representative)
Claire Maxim	CM	E.On
John Norbury	JN	RWE
James Evans	JE	British Energy