

# Summary of Meeting and Actions

---

Meeting Name	Frequency Response Working Group
Meeting No.	2
Date of Meeting	Thursday, 29 <sup>th</sup> January 2009
Time	10:00am – 2:00pm
Venue	Conference Room 8, National Grid House, Warwick

---

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

## 1) Apologies for Absence

Apologies were received from Malcolm Arthur (National Grid), Jonathan Atyeo (GDF Suez), Ian Foy (Drax Power) Dan Jerwood (GDF Suez), Rob Rome (British Energy), Raoul Thulin (RWE) and John Welsh (Scottish Power – DNO Representative)

## 2) Minutes from Previous Meeting

The draft minutes of the Grid Code/BSSG Frequency Response Working Group meeting held on 22<sup>nd</sup> October 2008 were approved and will be accessible from the Grid Code Website.

## 3) Review of Actions

The Working Group noted the frequency obligations reference document which outlined all existing technical response obligations e.g. statutory, licence, code and operational.

It was agreed that the terms of reference for the Working Group and a link to the relevant external analysis would be circulated to members.

**Action: National Grid**

## 4) Scenarios and Narratives

Members noted and discussed the scenarios and associated narratives which have been developed/selected for the Working Group analysis and circulated for reference and approval.

It was noted that two of the scenarios: 'Gone Green' and 'Business As Usual' were existing, publicly available, scenarios which have been developed by National Grid for their 'Future Networks' discussions with the industry and the Authority. The third scenario, 'Global Tensions', had been especially developed for the Working Group.

Each scenario had a narrative which described the situation in which the scenario occurred and was accompanied by a breakdown of generation (by type and total volume) which would be available and connected to the electricity grid. Each scenario had a specific generation mix for specific years in the future i.e. 2020, 2025 (Business As Usual - 2023/2024), 2030 (Business As Usual – Not Applicable for this timescale).

The Working Group queried the validity of the 'Global Tensions' scenario given the political, commercial and operational changes that would have to be instigated for it to occur. Members also queried some the figures allocated for the 'Global Tensions', especially when the data was compared to the 'Business As Usual' and 'Gone Green' scenarios. Members agreed to articulate their comments to NGET, who would make the necessary enquiries and report back to the group.

**Action: National Grid and All**

The Working Group agreed that the three scenarios did provide diverging views which could be utilised and be useful for Working Group purposes.

The Working Group were informed that the generation mix for each scenario would be further refined into operational scenarios i.e. ranking orders e.g. base load plant and marginal plant. It was agreed that the Working Group had to approve the operational generation mix as this would form the basis of the system studies.

# Summary of Meeting and Actions

---

The Working Group noted that the scenarios made no specific mention or assumptions regarding the availability of demand management and the technical characteristics of the different types of plant.

## 5) Working Group Discussions

The Working Group was given a presentation on frequency performance. The Working Group noted that:

- The frequency response required to achieve a particular frequency is independent of generation mix and system inertia.
- The frequency response required is dependent on generation loss size, demand level and demand reduction with frequency.
- The required frequency response is determined by:
  - ⇒ Response required = Demand at required frequency – remaining post trip generation
- Time of response to limit fall to 49.2 Hz depends on rate of frequency fall – depends on inertia and start time and rate of frequency response.
- Time of response requirement is delayed by:
  - ⇒ higher inertia
  - ⇒ earlier start of response
  - ⇒ higher rate of increase of response
- Frequency must be restored to 49.5 Hz required in 1 minute.
- The frequency response must begin sooner to restore energy to rotating masses.

The Working Group noted that the operational scenarios would be assessed against a system model which would be set up to represent a dynamic system containing:

- One demand block.
- A separate equivalent generator for each type of generator and response.
- A single machine to be tripped.

The results from the system studies would assist the Working Group in:

- Identifying problem areas e.g. security and quality of supply standards cannot be maintained, impact on the settings and operation of the Rate of Change of Frequency (ROCOF) relays etc.
- Investigate corrective measures if necessary e.g. review and improve generation performance, adjust generation mix.
- Establish whether commercial mechanisms are impacted and whether they need modification.
- Cost the alternatives.

The Working Group noted that the existing Grid Code requirements ensured that the system was planned, maintained and operated within the relevant technical obligations.

The Working Group noted that the results from a system study based on the 'Gone Green' scenario for 2020, utilising nuclear, wind and CSS as base load, did not meet the existing frequency obligations i.e. system need. It was noted that it would be possible to meet the frequency requirements by making commercial decisions i.e. displacing base load plant with other types of more responsive generation.

The Working Group discussed the response need at different demand levels, based on existing frequency limits and inclusive of the maximum loss secured on the network (currently 1320MW; Working Group noted that GSR007 is proposing to increase the level to 1800MW, the response need data was inclusive of this proposed change).

The Working Group agreed that in order to quantify the scale of the issue, it would be important to understand which scenarios (which specific generation profile and associated demand) met the existing frequency obligations (and conversely which ones did not).

# Summary of Meeting and Actions

---

It was agreed that for those scenarios which did not meet the frequency requirements, the studies would be adapted e.g. change the type of plant and the associated volumes from each plant, such that the frequency requirements were met. It was noted that it would be difficult to consider and evaluate any market arrangements until the scale of the issues was quantified.

It was agreed that a key input of the studies was the technical characteristics of the differing types of plant. Working Group members agreed to provide the response curve data for the different types of generation specified in the scenario spreadsheet to National Grid by 12<sup>th</sup> February 2009.

**Action: Working Group Members**

It was noted and accepted that specific technical performance data may not be available for certain types of plant e.g. CSS. The Working Group agreed to investigate what information was available and in the absence of specific information what assumptions could be made regarding the technical performance characteristics e.g. similar to other plant types.

The Working Group noted that in reviewing the technical frequency obligations, it would be important to consider the following issues such that any proposed solution was robust, justifiable and met the technical requirements of the GB Transmission System:

- Should there be a requirement for inertial response from wind turbines?
- Should there be a consistent requirement for all types of generator?
- How should the response requirements be specified – time dependence?
- What is the right balance between obligatory requirements and markets?
- What assumptions should we make about response from wind farms?
- What role will demand management play?

It was noted that if the generic technical capabilities of the generation plant did not meet the technical requirements then alternative solutions would have to be considered:

- Frequency Response requirements met via commercial arrangements (only) – market based solution.
- Frequency Response requirements met via Grid Code obligations (only) – technical based solution.
- A combination of technical obligations and a commercial mechanism.
- Demand management solutions e.g. interruptible users/supplies.
- Different technical obligations for particular plant types.

The Working Group noted that the Grid Code represents the minimum technical obligations which are applicable to all affected Users. It does not distinguish between differing types of generation. Any change to this underlying Grid Code principle would have to be justifiable and represent the most economical solution to GB plc in maintaining security of supply.

The Working Group received an overview of the current market arrangements. A presentation summarising the arrangements would be circulated to group members. It was agreed that the market arrangements would be discussed further at the next meeting of the Working Group.

**Action: DS**

## 6) Next Meeting

- It was agreed that the next meeting of the Working Group would be scheduled for 17<sup>th</sup> March 2009, commencing at 10am at National Grid House, Gallows Hill, Warwick.
- Future meeting dates for the rest of 2009 would be pencilled in and circulated to the Working Group.

**Action: National Grid**

# Summary of Meeting and Actions

---

## Appendix 1 – Working Group Attendance

### Members Present:

Lilian Macleod	LM	Working Group Chairperson/Secretary
Stephen Curtis	SC	National Grid
Mark Perry	MP	National Grid
William Hung	WH	National Grid
Mark Baker	MB	Scottish Power
Mike Chowns	MC	RWE
Chris Hastings	CH	Scottish and Southern Electricity
Claire Maxim	CM	E.ON
Damian McCool	DM	Scottish Power Renewables
Paul Newton	PN	E.ON
John Norbury	JN	RWE
Chris Proudfoot	CP	Centrica
David Scott	DS	EDF Energy
Bridget Morgan	BM	Ofgem

### Apologies:

Malcolm Arthur	MA	National Grid
Jonathan Atyeo	JA	GDF Suez
Ian Foy	IF	Drax Power
Dan Jerwood	DJ	GDF Suez
Rob Rome	RR	British Energy
Raoul Thulin	RT	RWE
John Welsh	JW	Scottish Power (DNO Representative)