

Summary of Meeting and Actions

Meeting Name	E3C Small Embedded Generation Frequency Obligations Working Group
Meeting No.	1
Date of Meeting	Thursday, 22 nd January 2009
Time	09:30am – 12:30pm
Venue	Conference Room 8, National Grid House, Warwick

This note outlines the key action points from the first meeting of the E3C Small Embedded Generation Frequency Obligations Working Group.

1) Apologies for Absence

Apologies were received from Tim Moore (EDF Energy), Barbara Vest (AEP) and Ham Hamzah (RWE).

2) Background - GB Transmission System Incident (27th May 2008)

National Grid discussed the background to the establishment of the joint Grid/Distribution Code E3C Small Embedded Generation Frequency Obligations Working Group i.e. GB Transmission System incident on 27th May 2008. The incident resulted in approximately 2GW of generation (direct connected and embedded) being disconnected from the grid within a matter of minutes. This exceeded the maximum secured credible generation loss which resulted in the frequency dropping below 48.8 Hz giving rise to automatic demand disconnection before recovering.

The formal investigation and associated findings into the May 2008 incident was reported back to the Energy Emergency Executive Committee (E3C). The E3C made the following recommendations:

- Address the lack of an explicit frequency range requirement on small embedded generation plant in the Distribution Code. Review and align the Grid and Distribution Codes as far as practicable.
- Modify where reasonably practicable the frequency range settings on existing small embedded generation to improve their resilience to frequency excursions.
- Work with the AEP to gather further data on embedded generational performance to establish as far as possible the timing and causes of such losses.

The Working Group noted similarities with the UCTE incident which happened in late 2006; of which an overview was presented to members.

In the region of 370MW of distributed generation was lost during the May 2008 incident. The group enquired as to the amount of generation, which was lost, against the total amount of distributed generation which was available.

There was also a discussion on whether it was possible to establish any pattern to the types, sizes and protection system of the generation that was disconnected on May 27th to see if this could help focus the group discussions.

The Working Group noted that it has been difficult to obtain a high level of granularity in the information available on metering and SCADA systems as the majority of data was based on aggregated half hourly metered readings which, given that the incident took place over a matter of minutes, did not provide the detail which was necessary to answer all the questions which the incident posed.

3) Working Group Discussions

Group members noted the significant amount of Small Power Stations (below 50MW in NGET's Transmission Area, 30MW in SPT's Transmission Area and 10MW in SHETL's Transmission Area) already connected (i.e. in the region of 6GW based upon the 2007

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ENA records) and acknowledged that this trend was set to increase in future years. The Working Group noted the concerns raised by National Grid regarding the risk to security of the GB Transmission posed by the likely tripping of a large volume of embedded generation during secure, credible large frequency excursions. The current on-going investigation with DNOs via GCRP on quantifying the volume of potential loss of embedded generation on high frequency excursion to and above 50.5Hz was reported, indicating that NGET's concern is not only limited to low frequency excursions.

The Working Group discussed the applicable provisions relating to frequency that currently existed within the relevant Codes and associated documents. They are summarised as follows:

Grid Code

- CC.6.1.3 technical obligations based on statutory provisions
- CC.6.3.3 technical performance obligations
- CC.6.3.12 frequency sensitive relays specifications

Distribution Code

- DPC7.4.1
- DPC7.4.6
- DPC7.5.2

Engineering Recommendations

- G59 (Recommendations for the Connection of Embedded Generating Plant to the Public Electricity Suppliers' Distribution System) limited information; focused primarily on protection settings on LV supply.
- G75 (Recommendations for the Connection of Embedded Generating Plant to the Public Distribution System above 20kV or with Outputs over 5MW).

The Working Group agreed to review all applicable Codes and Documentation to ensure that all the provisions had been captured.

Action: All

The Working Group noted that Embedded Large and Embedded Medium Power Stations are subject to the Grid Code technical provisions either via the CUSC or through LEEMPS provisions.

Given that G59 and G75 are recommendations only, the Working Group acknowledged that there may be some variation in the way in which the provisions are interpreted and applied across Users/Network Operators. The Working Group agreed to review how the current provisions are interpreted/applied across the DNOs. It was also agreed to review the applicable provisions such that an understanding of how the provisions have evolved (and the reasoning/rationale behind the changes) could be captured.

Action: DR/AC/KH/PN/AH

The Working Group acknowledged that the Engineering Recommendations do not cover the settings on the Generators which may be different from the settings on protection systems at the DNO/User interface. It was acknowledged that it would be useful to ascertain what the current User practices are.

The Working Group discussed the ROCOF impact arising from the May 2008 incident and queried as to when the next ROCOF report will be made public. National Grid will check the maximum rate of change of frequency during the incident and will confirm when the next GCRP ROCOF report including the incident is to be issued.

Action: National Grid

The Working Group discussed the implication of islanding and what the impact would be on the distribution/transmission network. In summary, the DNO/User interface protection

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is currently aimed at protecting against the risks associated with a generator supplying a section of islanded DNO network rather than to preserve the integrity of the total system. If there is a view that these protection settings might change to support the total system, the implications for islanded systems will need to be considered.

The Working Group queried why the Grid Code does not cover Small Embedded Generation within its provisions i.e. what was the tangible difference between Small and Medium Power Stations.

Action: National Grid

The Working Group noted that any proposal which would place a frequency range obligation on distributed generation would require careful consideration in terms of a cost benefit analysis and the timing of any proposed implementation.

The Working Group agreed that it would be beneficial to understand how the distribution system currently operates e.g. technical obligations, performance, current practices etc such that it could inform group discussions. It was agreed that the relevant information would be acquired and reported back to the Working Group.

Action: GN

The Working Group agreed that it would be useful to gain a formal understanding of the technical functionality of small generating plant from manufacturers e.g., current, future, additional functionality.

Action: AEP

It was noted that that a wider frequency range was currently available from some manufacturers but it required additional technical functionality which may not be available from standard product.

4) Working Group Terms of Reference and Governance Arrangements

Members noted that the Working Group covered the joined Grid Code and Distribution Code Small Embedded Generation frequency obligations. The terms of reference would be reviewed/approved by the Grid Code Review Panel and the Distribution Code Review Panel at their February 2009 meetings subject to members agreeing on the text.

Members noted that the Working Group's findings and recommendation are to be presented to the E3C by December 2009. It was agreed that the Working Group should present their findings and recommendations to November's GCRP and DCRP meetings.

The Working Group reviewed the draft terms of reference making suggestions and querying the scope of the discussion e.g. should distributed generation play a part in securing the Total System?

The Working Group agreed to provide comments on the terms of reference which would be updated and circulated for comment/approval by 28th January 2009.

Action: All

5) Next Steps

- Update, circulate and approve Terms of Reference.
- Submitted Terms of Reference to February 2009 GCRP and DCRP.
- Confirm what the current technical requirements/obligation are for distribution connected generation regarding frequency and what the current practice is amongst affected parties.
- Confirm when the GCRP ROCOF type report including the May 2008 incident is to be issued and the recorded maximum rate of change of frequency during the incident.
- Determine why small generation has been treated differently in the past.
- Ascertain how the distribution system operates currently e.g. technical obligations, performance.
- Develop and circulate a draft action plan which descriptions the scope of the Working Group discussions and the relevant order in which to undertaken the discussions.

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6) Next Meeting

- It was agreed that the next meeting of the Working Group would be scheduled for Thursday, 19th March 2009 commencing at 10am at National Grid House, Warwick.

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Appendix 1 – Working Group Attendance

Members Present:

Mark Perry	MP	Working Group Chairperson
Lilian Macleod	LM	Working Group Secretary
William Hung	WH	National Grid
Raj Nagarajan	RN	National Grid
Bridget Morgan	BM	Ofgem
Alan Creighton	AC	CE Electric UK
Hamish Dallachy	HD	Scottish Power
Keith Hodson	KH	Central Networks
Andy Hood	AH	Western Power Distribution
Paul Newton	PN	E.ON UK
Guy Nicholson	GN	Senergy Econnect
Dan Randles	DR	Electricity North West

Apologies:

Ham Hamzah	HH	RWE
Tim Moore	TM	EDF Energy
Barbara Vest	BV	AEP