Summary of Meeting and Actions

Meeting Name	E3C Small Embedded Generation Frequency Obligations Working Group
Meeting No.	7
Date of Meeting	Monday 19th October 2009
Time	10:00am – 3:30pm
Venue	Meeting Room G1/G2, National Grid House, Warwick

This note outlines the key issues and actions from the seventh meeting of the E3C Small Embedded Generation Frequency Obligations Working Group.

1) Apologies for Absence

Apologies were received from Bridget Morgan, Barbara Vest and Ham Hamzah

2) Previous Meetings

The minutes for meeting 5 & 6 were approved subject to the incorporated comments provided by the Working Group members

3) Actions outstanding

GN to determine the implications from the European Grid Code on the Working Group – GN informed the group that a paper is due to be published imminently – Ongoing.

Action: GN

RN reported back on a previous action, regarding the reporting of operational data by embedded generation, to the System Operator. RN proposed that an obligation may require a day ahead schedule of generation, with a half hourly resolution for all generation greater than 1MW. In order to assess accuracy a previous day's reconciliation could also be applied.

CM stressed to the group the amount of work involved to provide this granularity and type of data would be significant. The DNO would have to employ a separate entity just to collate this information. CM strongly opposed the notion and questioned whether National Grid would be able to process such a volume of data.

A proportion of the group felt that the issue to provide data a day ahead was too big for this Working Group and members agreed there should be some clarity of what the Working Group's objectives were. AC questioned whether this issue was even a remit of the Working Group to discuss and that such obligations would be greater than that currently applied to Medium sized power stations. The Working Group concurred that such work does fit within the defined Terms of Reference although, it is inherently different to topics discussed so far.

A Group member pointed out that National Grid could do some offline data analysis, looking at existing data which could act an intermediate stage in moving forward.

GN proposed that typical generator running profiles exist for small generators and they could be estimated. MP asked the DNO representatives whether the DNOs could provide running profiles for each plant. The members indicated information such as this could be determined although use of generic profiles determined at connection cannot accurately forecast actual export levels in real time but are only an approximation.

It was concluded that increased operational data from small generators would only need to be considered if a significant volume of such generators respond that they cannot

change their protection frequency settings in response to the recent DNO letters. National Grid to produce a draft paper to clarify the need and the nature of the operational information would be beneficial from the generators.

Action: RN

4) Discussions

AC highlighted that there may be a potential issue if existing generators respond that their frequency settings can not be changed. A member of group questioned whether the group should think about changing the obligations in the Grid Code? WH considered this outside the scope of the WG and nevertheless pointed out that the feedback received from the technical workshop indicated that existing Generators could operate at abroad frequency range. WH added that should an existing station have technical problems meeting the required settings and can justify them, the proposed Distribution Code change has the flexibility of accommodating this shortfall without a derogation. But these will be considered as an exceptional case.

TI to check the Terms of Reference originally submitted to the DCRP and the version submitted to the GCRP and report back how consistent they are.

Action: TI

WH confirmed that the Grid Code low frequency continuous operating range was raised from 47.0 Hz to 47.5 Hz with a limited operation period of 20 seconds between 47.0 to 47.5 Hz. This was introduced in the 1990's. The current G59/1 low frequency setting is 47.0 Hz but the proposed Distribution Code change has brought the 2-stage low frequency settings in line with that of the Grid Code.

MP and the DNO representatives confirmed that a draft of a letter had been agreed and the majority of the DNOs had sent the letter out to their customers. The remainder were expected to be posted within the week. Responses had been requested for the end of October 2009. Several DNO's letters had requested that the Generators get in contact with their DNOs prior to any protection setting changes. AC agreed to contact John Smart (SSE) to ensure letters had been published.

Action: AC

5) Progress Update Note

There was concern over the progress made on the two outstanding actions set out by the GCRP/ DCRP. To help focusing on the issue, a paper was circulated by National Grid to the members prior to the meeting. WH gave a presentation summarising the key points in the paper. These include the outstanding actions, update on the current position and suggests ways forward to complete the required actions for reporting to the GCRP. CM pointed out that the papers had been circulated just before the meeting and therefore some members did not have sufficient time to consider each aspect.

Outstanding Actions

The two outstanding actions were summarised as below:

Action 1- GCRP Chair to report by December 2009

- 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 reasonably practicable

Action 2 - GCRP Chair to report by June 2009

- Modify where reasonably practicable the frequency range settings on existing small embedded generation to improve their resilience to frequency excursions

Current Position and Baseline Assumptions

In the Working Group meetings to date there ahs been a number of useful debates with productive outcomes. But to focus on the discussion, WH shared his line of thoughts below:

- To improve the resilience of existing and future small embedded plant to minimise any adverse effects on the overall GB electrical power system performance in particular during large frequency excursion incidents.
- The one-off cost of adjusting frequency relay settings on the affected plant would be insignificant to the costs associated with procuring additional response (ie £160m pa) and energy loss (ie £45k per MWh).
- This implies, as set out in 'Action1', the need for alignment of the requirements in D Code and G Code as far as reasonably practical.
- The settings proposed by the DCRP G59/G75 Review WG meets the need above
- These proposed settings, already in the public domain, present no major technical issues with manufacturers and have been adopted by some members of the industry as their design reference.

The group discussed whether it was economically viable for NGET to procure extra response, rather than change generator's frequency settings. WH clarified that the option of NGET procuring additional response to cover the uncertainties has been ruled out in the Report to DECC by the E3C Task Group on the ground of unjustifiable economic case (ie £160m pa on current cost). From the cost of energy loss perspective, the report indicated the rate, based upon the National Grid Transmission Network Reliability Incentive scheme, is £45k per MWh. WH view was that the one-off cost of adjusting frequency relay settings on the affected plant would be relatively insignificant compared to the costs stated above. CM stated that National Grid was not holding any additional reserve currently therefore there were no costs.

It was also discussed that if NGET does not carry any additional reserve currently to cover the uncertainties, there will be no additional cost to the system for the high frequency risk. NGET's position is that it is unjustifiable to schedule more high frequency response as reported and also the scheduling of more response will only reduce the risk of demand disconnections but not mitigating it. This is the reason for the pressing need for the Working Group to correct the high frequency position with the affected plant owners as soon as practically possible as set out in Action 2.

Given the above position, the group believed a recommended change to the Distribution Code, in terms of a protection setting range as a minimum, was required.

CM highlighted the frequency range setting only needs to be modified where it was reasonably practical to do so. It was confirmed at the meeting that the proposed Distribution Code protection setting changes have been accepted by some members of the industry and are available in the public domain on the website.

Next Steps for Actions 1 and 2

For Action 2, the agreed DNO letter initially drafted by MP has been circulated to all DNOs for them to forward to their affected customers as reported above. The feedback is requested to be by the end of October.

For Action 1, some legal text changes to the Distribution Code were presented at the meeting. The aim was to put an obligation on small generators to stay connected at frequencies between the HF and LF relay settings unless there were valid technical justifications for generators to be disconnected, such as possible plant damage. The proposed wordings incorporated in DPC7.4.3.6 is generally acceptable but members suggested it may be more appropriate to insert them in DPC7.4.1. CM suggested that if draft legal text was to be discussed at a meeting, more time was more useful to allow member to familiarise themselves with its context. WH to circulate the proposed draft legal text

Action: WH

The above discussion paper was circulated prior to the meeting but the associated presentation slides will be circulated to the members after the meeting.

Action: TI

6) Further discussion on Legal Text Drafting

It was suggested that the proposed wording should contain a "best endeavours" clause with a stage by stage approach and Members were invited to email in proposed wording if they felt that the wording could be improved.

There were discussions on retrospectively and a threshold for the proposed setting changes. WH believes the current position with the G59 Review Working Group is that the change could be retrospective with no threshold level defined as long as it is covered by the G59/2. However, there is flexibility built in the draft Distribution Code that in exceptional circumstances Generators have the option to agree more sensitive settings with their DNO if there are valid technical justifications.

The 5MW threshold adopted for Action 2 is a pragmatic approach to minimise the number of stations which DNOs are required to contact and resolve the setting issues with them. Depending on the outcome of the action, the Working Group may be in a better position to judge if the affected stations have to be extended downward to reduce the system risk to a manageable level.

It was also suggested in addition to the frequency operating range requirements, it may be useful to include power vs. frequency profile to the change. However, it was agreed in the Group that this may cause more complications on the plant design and controls and cost implications to Generators and manufacturers. The current key objective of the Working Group is to improve system security by avoiding small embedded plant tripping prematurely during large frequency excursions. Any need for more detailed power vs. frequency requirements or other EU development can be considered in the future when required.

The Working Group discussed if there is a need to include tolerance requirements on protection settings. It was agreed it could be left out as generally these are defined in industrial standards or by adopting best industry practices.

In order to draft the text for the DCRP, it was agreed to recommend setting range of 47.0 to 51.5 Hz and this range could be refined by the G59/G75 Review WG to bring it in line with that specified in the draft Distribution Code and G59/2 which are to be issued for consultation.

GN informed the group of the Government's renewable energy consultation, in which it was proposed that energy from small (<5mw) renewables under the new Feed in Tariff should deliver 8TWh annually, by 2020 in addition to much bigger number for larger renewable obligation. The government highlighted that this figure was only going to be achieved if significant steps were taken to overcome constraints. GN suggested this matter should be included in the Working Group report.

7) Any Other Business

GN described New Zealand's approach in dealing with generator tripping on the transmission system. All larger plant that trips off the transmission system must fund the cost of transmission system reserve holding. It was suggested that this mechanism focuses the generator's attention on minimising the probability of system trips.

8) Next Meeting

It was agreed that the next meeting of the Working Group would be provisionally scheduled for 13th November 2009.

Appendix 1 – Working Group Attendance

Members Present:		
Mark Perry	MP	Working Group Chairperson
William Hung	WH	National Grid
Tom Ireland	TI	National Grid
Alan Creighton	AC	CE Electric UK
Guy Nicholson	GN	Senergy E.Connect
Dan Randles	DR	Electricity North West
Paul Newton	PN	E.ON
Raj Nagarajan	RN	National Grid
Keith Hodson	KH	Central Networks
Andy Hood	AH	Western Power Networks
Claire Maxim	CM	E.ON UK
Hamish Dallachy	HD	Scottish Power
Apologies:		
Bridget Morgan	BM	Ofgem
Barbara Vest	BV	AEP
Ham Hamzah	HH	RWE