Frequency Changes during Large System Disturbances Workgroup Meeting 6
11 April 2013 at Electricity North West Offices, Manchester

Attendees

Name	Initials	Company
Mike Kay	MK	Chairman
Robyn Jenkins	RJ	Technical Secretary
Martin Lee	ML	SSEPD
Graham Stein	GS	National Grid
Geoff Ray	GR	National Grid
Jane McArdle (by phone)	JM	SSE Renewables
Adam Dysko	AD	Strathclyde University
Julian Wayne	JW	Ofgem
Joe Duddy	JD	RES

Apologies

Name	Initials	Company
Paul Newton	PN	EON
Gareth Evans	GE	Ofgem
John Turnbull	JT	EDF Energy
Campbell McDonald	CM	SSE Generation
Mick Chowns	MC	RWE
Joe Helm	JH	Northern Powergrid
William Hung	WH	National Grid
John Knott	JK	SP Energy Networks

Minutes of last meeting

The workgroup approved the minutes for publication.

Actions

The Workgroup discussed the ongoing actions, details of these discussions are captured in the action log or on the meeting agenda.

Review of ToRs and Timescales.

A copy of the redrafted Terms of Reference was circulated before the workgroup meeting.

JW asked which documents/codes the workgroup will develop proposals for as this is not specified in the ToR. MK noted that this was kept deliberately high level as the outcome of the risk assessment will determine which specific provisions in which documents need to change.

JW noted that the current G59 settings are recommended and the group's discussions indicated a desire for a mandatory requirement as soon as possible, and asked whether we are now looking at making it a compulsory setting. MK explained that the actual settings are contained as essentially mandatory in the D Code. G59 repeats these as a convenience to readers. Also as G59 is an Annex 1 document of the D Code, compliance with it is mandatory too, irrespective of "Recommendation" being in its title.

ML noted that the current RoCoF ride through tests could be extended to include inverter based equipment, and make it compulsory for non-inverter based equipment to do an engineering assessment of whether that generator is capable of doing what is required. He added that something like this should be brought in soon to prevent the problem worsening. MK noted that awareness of RfG is necessary but this work is foreshadowing RfG implementation. JD added that, in the latest drafting, RfG says RoCoF ride through setting is to be determined on a national basis which means there is a requirement for GB to set a limit. GS noted that NGET's preference would be to see a mandatory minimum RoCoF ride through requirement. ML added that there should be a process in place to provide assurance that the generator can achieve it. MK noted that there is no actual ride through requirement in GB and nothing in the code mandating a setting at the moment, but there is a requirement for a generator to come off under loss of mains. JD commented that this situation is uncomfortable for a generator in GB.

The workgroup suggested that the different phases of work should be more clearly defined in the ToR.

JW noted that clarity is needed in the ToR as it is not clear which category a 5MW plant would fall into.

GS noted that he would like to take the Workgroup report and a work plan for future work to the July GCRP which means AD would need to deliver the risk assessment before that. It may then lead to a need to a change an Engineering Recommendation any such changes will likely require a 6 week consultation.

JW queried whether there should be a feedback stage to prove that the changes which ultimately get proposed do actually solve the original problem, i.e. will/how much will the changes to the ROCOF settings increase frequency stability in the event of a large loss of generation. JW noted that, given the potential expensive and effort required of any change to ROCOF settings, it is likely that industry and Ofgem will want to understand the justification and benefit. GS suggested that any change to a recommended setting of over 0.5Hz/s will solve the problem for a few years there may be a need to be revisit requirements after that, A setting of 1Hz/s would substantially reduce the risk of having to revisit requirements. Any change to settings lower than 0.5 would have a severely time limited benefit. MK added that it could reach a point where we have to specify something other than ROCOF for small generators.

JD asked if there is a clear picture of the problem, including an explanation of the costs, to explain why the changes are necessary. GS suggested that this will be captured in the workgroup's proposals.

AD asked whether the reducing levels of inertia are guaranteed or will there be something in the future that improves the situation. JD noted that GB could follow the precedent set by recent Irish Ancillary Services proposals and specify synthetic inertia from asynchronous generators or for enhanced inertia constant from synchronous generation. GS added that if the market behaves in unconstrained fashion rates of change of up to 1Hz/s are conceivable by 2020, and it is the collective responsibility of the network companies to be able to accommodate this economically and efficiently. GS also noted that NGET are exploring a new balancing service for inertia.

MK noted that looking at the full range of issues may not be the best use of resources, instead time could be spent looking at highest ranking defence methods. JD suggested that all tools which mitigate the problems caused by reduction in inertia should be captured in workgroup report, but possibly in the form of areas for further investigation.

ML highlighted his concerns on vector shift adding that he doesn't want the workgroup want to lose sight of it. ML added that we have some phasor measurements, but they only show worst case scenarios and suggested that Imperial had other information. MK asked what information we have about what tripped. ML noted that 70-80% was in the old SEEboard area. GS noted that the DNOs submit this information to GR's team and that further information could be requested on why it tripped, whether it tripped on LoM and what type of LoM it was. MK suggested asking colleagues at UKPN for this information. MK noted that it would make sense to do this as part of the data collection exercise. GR added that NGET know how much generation tripped, not what generation tripped. MK agreed to ask UKPN for any information on what tripped during the September events.

GS asked for guidance on presenting proposals to the DCRP, as the group is targeting the July GCRP. MK suggested keeping GCRP as the target as the DCRP is June. If something urgent is required after GCRP then an extraordinary meeting can be arranged.

Preparation for seminars

RJ noted that venues for the seminars have been chosen, the Radisson Blu in Glasgow and the Grand Connaught Rooms in London.

The workgroup agreed the agenda, and ML added that he would be speaking on behalf of the DNOs.

RJ agreed to arrange two teleconferences to discuss the presentation material and any final details.

Safety Risk Assessment

AD gave a presentation highlighting the load data received from SP. He also highlighted the outstanding data requests.

AD recapped the simulation based assessment of NDZ noting that as per the suggestions from JW, 0.2, 0.12 and 0.13 Hz/s setting have been added. 0.12 and 0.13Hz/s have been added as the current setting is 0.125Hz/s but the lab testing equipment will not go to three decimal places. It was clear from the presentation that the assessment of the likely duration of NDZ conditions requires high sample rate data which is unfortunately lacking at present.

AD highlighted the progress made so far with lab testing and the risk level calculation, noting that the complete results will be presented at the May workgroup meeting.

MK noted queried whether, for phase 2, the ToR include factoring in how control gear onto smaller plant will have an impact.

JD asked whether there is a list of the requirements that sets out which are mandatory and which are reasonably practicable.

Information gathering process

GS presented a slide which depicts the average amount of time the SO would need to take actions to maintain system inertia to avoid the risk of incorrect RoCoF trips in summer 2013 if it is presumed that LoM protection is set at 0.125Hz/s. The slides showed that action would be required on the majority of summer nights. A further slide showed the amount of SO actions which would be required if the assumed setting is 0.15Hz/s highlighting that minimal action would be required, and minimal cost incurred if it could be definitively established that only a small volume of generation was protected at 0.125Hz/s. This means that the information which National Grid has requested from DNOs on generator protection settings could make the difference between incurring Balancing Services costs to manage RoCoF risks costs this year or not.

Mk suggested that a regular return should be sought for the next few months and it was agreed that the ENA will be asked to do a monthly report, highlighting how many surveys sent, returned, complete etc.

AOB

ML noted that PV invertors are not something which can be investigated by looking at RoCoF settings and questioned whether the workgroup needs to develop a stability test soon. JD suggested this is a risk for National Grid so it should be looked at by them. MK suggested that NGET could investigate it

and if something material is found then it could be looked at collaboratively. GS noted that in normal circumstances this would be work for the ENA. MK added that this may become a DNO responsibility given the change under RfG. ML agreed to write a proposal looking at how to investigate this.