

Minutes

Meeting name	GC0079: Frequency changes during large system disturbances - Phase 2
Meeting number	36
Date	23/11/2015
Time	10.30 – 15.00
Location	Energy Networks Association (ENA), Dean Bradley House, London

Future meeting dates

Meeting Number	Date
36	Mon 23 rd November 2015
37	Mon 21 st December 2015
38	Mon 25 th January 2016
39	Wed 24 th February 2016
40	Wed 23 rd March 2016

1) Introduction & apologies

As MK was joining by phone, GS chaired the meeting on his behalf.

2) Review of minutes/actions

Last meeting minutes

Comments raised by JD were discussed; points on the System Operation Guidelines (SOGL) would be picked up in a later agenda item. Points on smaller generation certification were discussed; MK was satisfied that manufacturer standard covers off any concern. Therefore the minutes were approved and will be uploaded by RJW.

Actions

Re. action 134 (manufacturers meeting with MK and GS) - MK confirmed that for manufacturers of sub generation 1MW, most had control systems which could react to RoCoF measurements. On the whole, this was not enabled for the GB market though.

Power control mode functionality was also limited. Fast-acting voltage control wasn't available for those with power factor mode. MK believed this may have implications on Adam's analysis in the University of Strathclyde report.

MK also stated that power factor control was implemented via agreement with generator and DNO; therefore does this need to be verified with DNOs?

ACTION - GS/MK review notes from meeting and check with ML what would reasonably be happening in islanding scenarios re. voltage control. Need to meet confirm with Bosch (+others), along with GM to better understand use of droop CTs

Re. action 136 - GS to arrange Ecofys report (and University of Strathclyde report) for publication.

Re. action 138 - RJW to recirculate GC0079 membership list separate to minutes.

Re. action 139 withstand GC0079 or GC0048 (Requirements for Generators - RfG) discussion – GS gave details of a meeting with GC0048. At the meeting it was agreed that system parameters needed to be understood to enable to this work. The 2015/16 SOF publication was also a good source for this. This would allow the existing and future system requirements to be considered to figure out the impact on generation. GS prepared a table to capture the questions on this topic. He recommended that GC0079 concluded phase 2; withstand however may need to be considered outside of GC0079, possibly part of frequency work in GC0087 (this will be determined early in 2016). CMD believed that frequency quality was important for determining the withstand requirement. It also sets a design standard for new generation. JD agreed with a different group to consider withstand, as more generators need to be involved. CMD reiterated that system studies were needed, considering inertia and interconnectors. NGET should write paper on this to present to industry (1hz/sec standard), or in a separate workgroup report.

ML presented details of a 11th Nov incident comparing measured frequency deviation (vector shift) in north of Scotland and Reading. This highlighted that NGET need to consider impacts in different locations.

GS confirmed that the existing GC0079 ToR do ask for consideration of the withstand capability of existing plant, and separately for the need to review vector shift.

ML + JD this quality setting needs to go somewhere – is it SQSS? GS confirmed the GC0079 workgroup report would set out protection settings proposals, it might also need to consider SOGL implementation. JD also suggested that system impacts identified in SOF may supersede requirements of SOGL.

ACTION - GS to circulate table from the GC0048 discussions on withstand

ACTION - GS to prepare January panels paper to all panels on level setting (ML requested NGET propose a year on year step change plan so that manufacturers/developers know what they have to work with.

3) Workgroup report

MK went through his two papers which set the context for the workgroup report. The 'future proofing' paper has been updated by MK following the last meeting. There was discussion that RfG's Fault Ride Through requirements needed to be considered. MK agreed to add in; he also invited the workgroup to consider any other topics by circulation.

ML raised the use of voltage control in Scotland; does the group need to consider requirements in different regions? ML and JD also queried the description of NVD in the paper; MK clarified that he meant NVD at HV-LV interface for LV synchronous generation (fitted by DNO). As AH raised it, he also clarified his thinking on this, stating that most DNOs do use this. There was a concern on time delay, ie time needed to allow earthing protection to work. GM told the group that this is being sought in Ireland.

AH queried point 3.4 regarding 'check sync'; he believed the lack of a VT is where the cost would result; ML agreed .

ACTION - MK to add in RfG fault ride through; to re-write NVD points; to clarify costs in 3.4 'Check Sync'

ACTION – workgroup to consider other topics for future consideration by end of November

ACTION - RJW action to tabulate and circulate commercial considerations still outstanding. Ideally needs to be issued imminently for workgroup review

CMD noted the challenges with communicating the changes to sub 5MW generators - particularly admin costs. Would compensation help? Or should set a MW level cut-off where nothing is needed? ML recalled that PV inverters are safe up to 0.7hz/sec (via Ibrahim's report), and believed that generation over 1MW is similar in volume to that over 50MW. Issue is non-inverter sub 1MW. GS brought up EcoFys assessment of same exercise in Germany (re compensation/incentives). CMD admitted that financial incentive set a precedent for future changes too. ML suggested a low-end 1MW cut off; AH suggested 50kW due to cut off for HH metering. It was hoped that the DG Data might show us where the line should be drawn.

4) System RoCoF & Operational Forecast

GS presented his slides on System RoCoF. ML queried the 1600MW infeed loss figure in future years; GS confirmed it was because of Hinkley C. 1800 could also be used.

IK asked what the numbers show. GS confirmed it was percentage of the year where action is needed by SO – for example constraining generation; short term trades etc. ML and CMD discussed local circuit outages and how these contribute to the infeed loss.

'Post 2019/20' figure is effectively the cost saving from making protection setting changes. IK asked what happens if we this is only applied to 1MW and above? GS stated that risk management is key; any residual generation needs to 'not be a problem'.

JD clarified whether the table assumes the constraint is removed all together, which may/may not be totally accurate. We need to be satisfied that DG won't trip.

The accuracy of FES was discussed; political change a key variable which effects all four scenarios.

CMD queried whether the financials in the presentation were large in comparison to existing balancing services cost/year. GM also queried whether there was a favourable cost for changing settings, which MK agreed the group needs to consider. JD reminded the group to consider cost to consumer too.

ACTION - workgroup review tables/slides and provide questions on forming the analysis

5) System RoCoF & Operational Forecast

GS suggested that the generation sources can be applied to Adam's data tables/calculations in the University of Strathclyde report to continue the work. Technology could determine whether

generation is synchronous or not, and potentially whether they use voltage control mode. GS costs can be applied to figure out cost/benefit

ACTION - DNOs to check their week 24 submissions (data is 5MW and below), GS to match up with data NGET has.

6) System Operation Guideline (SOGL)

An interpretation of 'minimum inertia' as quoted in the code is needed - is this a single number or a profile? (JD/ML). Code also not worried about where this comes from.

ACTION – Over-frequency settings on existing generators less than 5MW need to be looked at (GS/ML)

ML asked how NGET are going to figure out amount of inertia - GS suggested that the forecast of synchronous generation can help, but it was difficult to figure out the demand side. ML suggested a real-time analysis of largest infeed loss and load was needed. Inertia can change depending on the nature of the system. JD gave an insight into what the Irish TSO has done, setting and publishing a fixed number for inertia as a constraint to maintain system integrity.

It was agreed that a GC0079 workgroup recommendation on the interpretation on SOGL was needed. This would link to the earlier discussions, and would need to consider SOGL Article 34 'Dynamic System Management' which doesn't involve mitigation rather monitoring. GS stated that NGET do this; but ML/JD suspect this needed to be published. JD mentioned the requirement for 'relevant TSO' to notify inertia studies to NRA, the methodology wasn't necessarily important. As there is nothing about ROCOF in the SQSS, there was a query whether the SOGL requirement needs to be a statutory obligation somewhere.

ACTION - GS to update needs to update system inertia limits paper and circulate; workgroup to review (x2 weeks)

8) AOB

9) Agree actions/next meeting details

Next meeting Monday 21st December at the ENA, London

Attendees		
Name	Initials	Company
Mike Kay (by phone)	MK	ENA
Graham Stein	GS	NGET
Richard Woodward [Technical Sec.]	RJW	NGET
Andy Hood	AH	WPD
Joe Duddy	JD	RES
Campbell McDonald	CMDD	SSE Generation
Greg Middleton	GM	Deepsea Electronics PLC
Sam Turner	ST	NPG
Ioannis Koutsokeras	IK	SP Energy Networks
Martin Lee	ML	SSE Distribution
Miguel Bernardo	MB	UKPN
Karsten Burges (by phone)	KB	Ecofys
Apologies		
Jacob Allinson	JA	RWE

DRAFT