

Minutes

Meeting name	Frequency changes during large system disturbances workgroup, phase 2 (GC0079)
Meeting number	24
Date	24 November 2014
Time	10.30 – 12.00
Location	Teleconference

Future meeting dates

Meeting Number	Date
25	19 th December
26	22 nd January 2015
27	25 th February 2015
28	23 rd March 2015
29	20 th April 2015
30	21 st May 2015
31	24 th June 2015

1) Introduction & apologies

2) Review of previous minutes & actions

The group noted comments on the previous minutes and agreed that they could be approved.

ML advised the group that he was still having issues getting the data about their customers (100kW-5MW) and that Ecofys would like this data for their research if possible. A formal letter would help ML obtain this data.

Action MK: Send letter to Mark Smith (SSE) re data to support Ecofys research

Re the withstand questionnaire, JR provided the group with some feedback from AMPS members. The members who have a focus on electrical issues are less concerned with RoCoF but what the Voltage would be doing at the time of any disturbance. The members who have a mechanical focus would be more concerned with RoCoF but have yet to respond so JR will prompt them for comments. JR advised that AMPS members had suggested adding the following two questions:

- 1) Do you recommend combining RoCoF protection with any other electrical protection specific to operation in parallel with a network? If so, what and why?
- 2) Do you have any examples of nuisance tripping due to RoCoF activation where there was no known network incident that could be traced?

JR noted that we did state that the questionnaire assumed Voltage remains within limits. GS suggested that we aim to send out the questionnaire before Christmas. MK agreed in principle but

suggested that we consider the publicity around Irish work in terms of the timing. ML noted that it is not a straightforward answer to those questions because you have to consider at what Voltage depression you get problems. MK added that not all have a Voltage impact. GS added that he'd received some feedback from a large generator and would incorporate that, and the above, into the questionnaire.

Action GS: Update withstand questionnaire and circulate a final draft to the working group for comments

3) Phase 1 update

MK noted that DNOs have to provide an update to the ENA on phase 1 progress on Friday (28/11). MK has already reminded all DNO colleagues and will circulate a summary when available.

Action MK: Summarise and circulate DNO submissions to ENA around phase 1 progress when available

4) Phase 2

4a) University of Strathclyde (UoS)

AD provided an update to the group. After a discussion around the wording of the contract, this has been agreed and signed by UoS and are awaiting a signature from the ENA. Dave Spillett is going to send out a signed contract in due course. AD cannot start work until the signed contract is received.

There has been an initial meeting with the researchers from the PNDC so that everything is in place. Additional contacts have been acquired and some particularly useful ones from Ecofys which will help to source PV inverter modules.

Re generation and load profiling, AD now has a full set of service data from MK which is likely to be sufficient for studies. MK noted that he wasn't sure if that data included sub-3min interruptions. AD added that this would need to be verified. MK felt there was value in obtaining the short term interruptions data. AD will look into this.

AD advised that new monitoring data had been received from AH and that it was a very good sample (1s resolution for 1 week at 11kV with a 2.5MW – 5.5MW real power range). This provides a good range for the higher-end islanding scenario. AD intends to send some slides after the meeting.

Re generation data, AD has some data but is still hoping for more. AD has explored the possibility of getting some data from the small PV installation at UoS which doesn't appear to be used at the moment. This would help to calibrate the solar PV model in case of no other data. AD has also got half-hourly generation data from NPG which is full year wind generation data but higher resolution would be good. ML believes that he can provide this wind turbine data to a 5s resolution. ML will check and get back to AD. AD is especially in need of any LV data available in the <5MW power range. ML added that this would usually be 5min averages but AD still felt this would be useful. ML also added that he might be able to get data from an 80kW machine. MK will also enquire about LV data. KEB added that UKPN have half hourly averages and will enquire. AD added that he wants about a week of data or at least a weekday and weekend day. JW asked if AD had received anything from WPD on this from the LCNF project. AD responded that he had but that it was load data, although it was for a small power range.

AD advised he had been in contact with Ecofys to see if they can provide any high resolution data on PV from German study and expected to obtain some useful data.

AD summarised that some LV data would be most useful now. MK suggested that AD identifies his latest data requirements and circulates to the group.

Action AD: Circulate updated data requirements to the working group

AD noted the generation capacities to confirm that this is essentially the research Ecofys are doing. MK confirmed and suggested there was no need for AD to duplicate work in this area as this was the aim of having the research split between UoS and Ecofys.

AD also noted that on a larger scale, UoS researchers were already starting modelling on rotating machines and their behaviour.

Action All DNOs: Provide data for AD as per his requirements where possible

4b) Ecofys

KB had advised the working group in advance that an update report would be circulated at the beginning of Week 49 (w/c 1st Dec).

5) Date of next meeting

There was a discussion about whether the next meeting should be a face-to-face meeting in Manchester. It was noted that Ecofys would have circulated an update report by this date and so there might be value in meeting in person to discuss this. AD also advised that the PNDC researchers might come, if it was felt to be appropriate, to talk about the facility and their testing plans. MK noted that this would be useful to arrange at the next physical meeting (as opposed to if it were a teleconference). AD added that it would be an education piece and to allow the group to engage with the researchers. He added that he could provide an update either way. ML felt that there was value in the PNDC researchers attending. ML took an informal action to speak to AD to see if there was a way of aligning the meeting with the PNDC researchers and the meeting in Glasgow AD has already scheduled for 10th December. MK summarised that we'd assume a face-to-face meeting until further notice.

Action SB: Advise the working group by 5/12 if next meeting is in Manchester

6) AOB

JD summarised a meeting he attended on Friday (21/11) in Ireland on alternative solutions on RoCoF ride through for generators. They are considering a number of possible means to boost the inertia of their system. There were presentations by a number of potential new generators. Siemens presented with a partner on a new CCGT (3 spin turbines, 3 gas turbines). This could provide staged operations (i.e. 1 at a time as required for extra inertia or all simultaneously). It was confirmed that the new station would have a 4Hzs^{-1} ride through capability. It was a well-received presentation.

Also proposed by Eirgrid as a potential means of boosting the inertia of the Irish (and GB) system was an AC submarine cable link between NI and Scotland. JD asked whether NG had received any approaches from Eirgrid on this subject and GS confirmed they had not. The question was asked

around potential AC interconnection with GB. JD advised that the cable technology does exist at 220kV .

ML asked if there was any discussion about producing control algorithm on DC links. JD responded that there had been and that EWIC has been deliberately limited by imposing fairly modest ramping limits but understood that it can operate much faster. He added that a question posed at the above workshop was whether you can get “real inertia” from an asynchronous source compared with a synchronous machine. Additional power rapidly delivered from asynchronous sources can still be useful to help with RoCoF over the 500ms ride through window that Ireland has decided upon and to mitigate the frequency nadir. GS asked if this was documented. JD noted he’d ask for the presentations to be published and circulate.

Action JD: Obtain Irish RoCoF presentations and circulate when available.

7) Summary of actions / next steps

Name	Action	No.	By
MK	Send letter to Mark Smith (SSE) re data to support Ecofys research	54	19/12
GS	Update withstand questionnaire and circulate a final draft to the working group for comments	55	19/12
MK	Summarise and circulate DNO submissions to ENA around phase 1 progress when available	56	19/12
AD	Circulate updated data requirements to the working group	57	19/12
All DNOs	Provide data for AD as per his requirements where possible (see #57)	58	19/12
SB	Advise the working group by 5/12 if next meeting is in Manchester	59	5/12
JD	Obtain Irish RoCoF presentations and circulate when available.	60	19/12

Attendees & Apologies**Attendees**

Name	Initials	Company
Mike Kay	MK	ENW (Chair)
Graham Stein	GS	National Grid (Alternative chair)
Scott Bannister	SB	National Grid (Technical Secretary)
Julian Wayne	JW	Ofgem
Adam Dyśko	AD	Uni. Strathclyde
Joe Duddy	JD	RES
Greg Middleton	GM	Deep Sea Electronics
Martin Lee	ML	SSEPD
John Ruddock	JR	Deep Sea Electronics
Kevin Burt	KEB	UKPN

Apologies

Name	Initials	Company
Karsten Burges	KB	Ecofys
Andy Hood	AH	WPD
Mick Walbank	MW	Northern Powergrid
Alastair Martin	AM	Flexitricity
Campbell McDonald	CM	SSE Generation
Gareth Evans	GE	Ofgem
Paul Newton	PN	EON
Jane McArdle	JM	SSE Renewables
John Turnbull	JT	EDF Energy
Mick Chowns	MC	RWE
John Knott	JK	SP Energy Networks
Matthew Penrose	MP	HSE
Lorna Short	LS	RWE Generation