

# NC HVDC User Group 5<sup>th</sup> meeting

Date: 10 March 2014

Time: 11h00 – 16h00

Place: ENTSO-E offices, Brussels

## MINUTES

Participants	Affiliation	Present	Excused
<b>Stakeholders</b>			
Magnus CALLAVIK	ABB	X	
Sebastian PAPANAGIOTOU	ABB	X	
Marcelo FERRAZ	ALSTOM Grid UK	X	
Andrew McINTOSH	BritNed		X
Alan CROES	BritNed	Web	
Torsten HAASE	Dong Energy	X	
Muhammad JAFAR	DNV KEMA		X
Dania CRISTOFARO	ECOS		X
Thomas WILLSON	ECOS		X
Gunnar KAESTLE	ECOS (TU Clausthal)	X	
Simon LUDLAM	Eleclink		X
Angus NORMAN	Eleclink		X
Ton GERAERDS	Eurelectric (Essent)	X	
Herman BAYEM	Eurelectric (EdF)	X	
Paul WILCZEK	EWEA	X	
Ivan PINEDA	EWEA		X
Frans van HULLE	EWEA		X
Joe CORBETT	Friends of the Supergrid (Mainstream Renewable)		X
Norman MacLEOD	Friends of the Supergrid (PB World)		X
Peter CLAES	IFIEC		X
Jan SUCKOW	FNN/VDE	X	
Stijn COLE	GDF Suez		X
Ara PANOSYAN	GE Global Research		X
Emad AHMED	GE Global Research		X
Stephen MILLAR	Iberdrola Engineering		X
Mukund BHAGWAT	IFIEC		X

Petter LONGVA	IFIEC		X
Michelle MANNING	Mitsubishi Electric	Web	
Steve LANGDON	Mitsubishi Electric		X
Mike WILKS	Pöyry		X
Eckhart LINDWEDEL	Pöyry		X
Kim WEYRICH	REpower		X
Michael ALDERS	Eurelectric (RWE)		X
Daniel EICHHOFF	RWTH Aachen / CENELEC WG06		X
Gavin GREENE	Scottish Power	Web	
Frank SCHETTLER	Siemens / CENELEC WG06	X	
Manfred POHL	Siemens		X
Fabio SPINATO	Statkraft		X
Kamran SHARIFABADI	Statoil	X	
Ifigenia STEFANIDOU	Swisselectric	X	
Chuan ZHANG	The Crowne Estate	X	
Peter Wibæk CHRISTENSEN	Vestas Wind Systems A/S	Web	
Eric DEKINDEREN	VGB PowerTech (GDF Suez)		X
Helge REGBER	VGB PowerTech (EON)	X	
Claudio GIANOTTI	World Energy SA		X
Mario GENOVESI	World Energy SA	X	
Philippe ADAM	CIGRÉ B4-56		X
Elizabeth MACLEOD	OFGEM	X	
Natasha SMITH	OFGEM	X	
Uroš GABRIJEL	ACER	Web	
Anne de GEETER	ACER	Web	
Tadhg O'BRIAIN	EC		X
Wilhelm WINTER	ENTSO-E / TenneT GmbH	X	
Pascal BERTOLINI	ENTSO-E / RTE	X	
Helge URDAL	ENTSO-E	X	
Edwin HAESSEN	ENTSO-E	X	
Ádám SZÉKELY	ENTSO-E	X	

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## 1. Introduction

ENTSO-E welcomed all participants and proposed the agenda of the meeting, which was accepted.

It was explained that the document sent to User Group members one week ahead of the meeting is still a working draft, has not gone through a formal approval process yet, and therefore does not constitute a final ENTSO-E position on the NC HVDC.

Public consultation of the draft code was open during the period from 7 November 2013 through 7 January 2014. Various organisations from the industry, investors as well as academia submitted a total of nearly 2500 individual comments, which have all been assessed by ENTSO-E. A document answering each issue raised in the consultation is being prepared and will be sent to User Group members in the coming days for information.

The aim of this 5<sup>th</sup> User Group meeting is for ENTSO-E to present and explain the main changes in the draft code after review of all consultation feedback, to capture the views from User Group members on this draft and to give an opportunity for further suggestions before finalisation of the code and its submission to ACER.

VGB expressed that without seeing the full list of responses to consultation issues explaining how each comment was taken on board or why it was rejected, VGB is unable to give an opinion on the draft code. Further, VGB considered that the concept of grid users “deemed significant” lacks a clear definition in the code. ENTSO-E stated that the article on scope of the code speaks for itself and defines in a clear manner which grid users need to comply with which requirements.

Statoil requested further justification as to why certain requirements, bearing cost implications, are needed. ENTSO-E reiterated that such argumentation is already given in the supporting documents published in November, which are to be further updated with the finalization of the NC text.

The Crown Estate requested clarification on why voltage withstand ranges applicable for DC-connected PPMs are not fully aligned with those in NC RfG and DCC. ENTSO-E explained that technical characteristics of small AC collection networks warrant such deviation, and pointed to the supporting documents for further details.

Swisselectric explained their view that distribution-connected DC links may have a significant impact on highly meshed transmission networks and vice versa, therefore the concept of Relevant Network Operator should be more precisely defined and used consequently. ENTSO-E mentioned that in this respect, the same concept as in NC RfG is used, and the entire text has been reviewed to clarify in all articles the relevant rights and responsibilities of the Relevant Network Operator.. Eurelectric asked why the TSO needs to be involved regarding voltage issues of distribution connected links, as this is deemed to be a local issue.

## 2. User Group Member presentations

Besides the brief summary of key issues outlined below, the full presentations are available for download from the ENTSO-E website.

### **Views of ECOS / TU Clausthal (see slides)**

Measurement window length of RoCoF requirement is discussed. A non-exhaustive approach to the measurement method is suggested, with further details to be filled in by standards. Clarification requested in the text that the 1 second value clearly only applies in this article.

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### 3. Detailed discussion of key topics

ENTSO-E provided an overview of most significant improvements made in the draft code in four key areas most intensively discussed. The summary of this overview is to be found in the slides published along these minutes. A summary of comments and questions raised in the meeting is given below.

#### Offshore PPM

VGB questioned the necessity of having requirements applicable at offshore connection points (CP) in case the PPM, collection network and link to onshore CP are owned and operated by the same entity. ENTSO-E reiterated that the code does not make differences to technical requirements based on ownership of DC links and generation. This ensures non-discriminatory treatment. It is also noted that ownership may change over time, while compliance has to be maintained throughout the lifetime.

The Crown Estate explained that the current definition of Remote-end Converter does not cover back-to-back onshore converters in case a frequency other than 50 Hz is used for the collection network and the link. The wording will be revised by ENTSO-E. Furthermore, it was questioned why the fault-ride-through requirements of HVDC converters and PPMs are not aligned. ENTSO-E argued that transmission assets need to be more resilient to disturbances, including the case that they should be able to transmit power when PPM(s) are connected or can re-connect after a disturbance. The Crown Estate also requested explanation on why voltage withstand ranges in Table 10 differ from those in NC RfG. ENTSO-E said that as over time PPMs may become connected to more than one synchronous area; therefore, a harmonised set of values needed to be set, which covers the voltage/time ranges of all synchronous areas in the NC RfG requirement.

Statoil expressed that clarifications already made in several areas of the draft text are much appreciated, and further work in this direction is desirable, e.g. as to how long-term development of the network shall be assessed when setting parameters of certain requirements. ENTSO-E clarified that European Regulations already prescribe the frame for national, regional and European network development plans (Reg 714/2009 and 347/2013). This NC HVDC cannot set further conditions on these plans (approval, binding nature, etc...). It is assumed that the long-term network development plans referred to in Chapter 3 cover such plans in the Article 4(3) procedures of implementation.

Swisselectric asked why different principle is applied than in NC DCC regarding reactive power for HVDC connected to Distribution. ENTSO-E will recheck consistency of the requirement and provide further clarification where necessary.

EWEA expressed that a clarification on the shape of reactive power profile in Figure 7 would be welcome, eventually with an example of shaded corners or a reference to possible cost impact. ENTSO-E's view is that drawing an example within the code itself would raise more questions than it would answer, as the decision on the exact parameters and shape of profile is left to national specification. The supporting documents and/or implementation guidelines will provide more clarity on this. ENTSO-E will look into whether some guidance can be given in the NC HVDC text itself.

Statoil repeated their view that no offshore requirements should be specified if all equipment beyond the onshore AC connection point is owned by the same entity. ENTSO-E reiterated that ownership can change over time, therefore these requirements are necessary. The NC HVDC technical requirements apply to HVDC Systems and DC-connected PPMs as categorized in Art 3, regardless of ownership.

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## **Withstand capabilities for HVDC Systems**

Statoil stated that links which are only to be used for unidirectional power transfer need not to have all capabilities regarding droop, FSM, etc. both ways. ENTSO-E explained that in case of rare system disturbances, these capabilities may become essential also in the direction otherwise not used, whereas no significant cost impact is expected. The NC HVDC sets capabilities to ensure future operation modes.

Eurelectric pointed out that embedded links should be utilised for inter-area oscillation damping by their inherent capabilities. In ENTSO-E's view this was already covered in Article 28 of the present draft. The wording will be reviewed.

## **Technology neutrality**

ALSTOM requested clarification on fast active power reversal article wording, to be checked by ENTSO-E.

Swisselectric asked why certain requirements are mandatory when they could form the basis of paid-for ancillary services. It was clarified that connection codes only lay down the necessary technical capability, the use of which and its economic framework being in scope of operational and market codes, respectively.

Statoil made a disclaimer that the lack of immediate comments does not mean there are no views on the text, but more time is needed to review it. ENTSO-E still welcomes further bilateral discussions with any User Group member if requested.

Worldenergy asks for clarification on the black start capability since not all technologies can provide this. What is meant by obtaining a quote? ENTSO-E clarifies that the right of the TSO to obtain a quote if deemed necessary cannot result in forcing the connectee to use a fundamentally different technology than originally intended.

## **Scope of code**

Statoil requested an explicit exclusion of offshore loads connected to PPMs, without direct connection to the main AC system, from the scope of the code. ENTSO-E's view is that the scope is sufficiently detailed. Network codes by their very nature do not apply in isolated systems. Thus applicability of requirements to such arrangements would fall under national rules.

Eurelectric pointed out that the revised wording of Article 9(1)a/i. "minimum power step size" is not precise and does not help understanding. ENTSO-E will review the wording.

VGB expressed their view that the revisions of power quality chapter are steps in a good direction and further additions of hard values (e.g. THD) should be considered. ENTSO-E maintains the view that such parameters are not best placed in European regulation, and should be specified on a national level, based on technical standards. It is noted that NCs cannot refer to external standards.

## 4. Next steps

ENTSO-E's draft response to the consultation comments will be sent to User Group members as soon as available, i.e. before formal ENTSO-E approval process.

The necessity of a further User Group meeting (beyond the planned and organised 5 meetings) was discussed. ENTSO-E concludes to not plan any further group meeting on the NC HVDC before the submission of the Network Code to ACER. ENTSO-E remains open for further discussions on remaining issues, also on a bilateral basis, if requested in the coming days/weeks.

Everybody's active input and constructive feedback in this meeting is much appreciated.

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