Public

Code Administrator Meeting Summary

Meeting name: GC0155 Clarification of Fault Ride Through Technical Requirements - Workgroup Meeting 18

Date: 20/09/2024

Contact Details

Chair: Teri Puddefoot, NESO (terri.puddefoot@nationalgrideso.com)

Proposer: Bieshoy Awad, NESO (bieshoy.awad@nationalgrideso.com)

Key areas of discussion

The Chair welcomed attendees to the Workgroup and outlined the objectives for the meeting:

- Review the Action Log for any updates.
- Discuss the remaining questions on Temporary Over Voltage (TOV).
- Discuss next steps.

Review of the Action Log

- Actions 39 and 56 - Work is ongoing, further updates will be provided at the next Workgroup.
- Action 45 – TP to double check if Ofgem's guidance is referring to a new CUSC modification being raised.
- Actions 49, 61, 65 and 66 – To be discussed further in the next few Workgroup meetings and for Workgroup members to make sure their views are documented within the draft Workgroup Consultation document.
- Actions 47, 62 and 63 - The Workgroup agreed to close these actions.
- Action 64 - No update was provided.

Remaining Questions on Temporary Over Voltage (TOV)

The Proposer presented slides outlining the differences between the Original Proposal, and the current two alternatives (WAGCM1 and WAGCM2) before examining the remaining issues that still needed to be agreed on TOV. The key points were:

Overview of Original Proposal and current Alternatives:

- The Original Proposal, addresses clarifications, TOV requirements and compliance studies for line-to-line faults. WAGCM2 is the same as the Original Proposal but removes TOV requirements which would be picked up via a separate modification.
- WAGCM1 also looks to address clarifications and TOV. However, the Proposer raised concerns that it needed updating so that the clarifications were aligned with the current Original Proposal and that further details and discussions were needed on how it planned on addressing TOV, as it was currently an un-workable solution.

Where should the TOV requirements sit?

- The Proposer explained that his preferred view was that TOV requirements should be considered as system characteristics which need to be considered during design and operation and should therefore sit under CC.6.1/ECC.6.1. The Original Proposal therefore refers to CC.6.1.7/ECC.6.1.7 and adds a reference in the fault ride through section. Whilst WAGCM1 places the TOV requirements completely within the fault ride through section.
- The Proposer explained his views on the implications/risks of placing TOV requirements under either of these sections to different parties:

  CC.6.1/ECC.6.1: This limits the risk to TOs who would have to invest to meet the requirements. The ESO would also have to find a way of managing the risk in real time and the cost to the TOs/ESO would have to be passed on to consumers, but there would be no risk to the Generators.
  Fault Ride Through: Limits specified in the fault ride through sections would not apply to the transmission system (TOs), only to Generators, who could trip if a TOV were to occur. But as there would be no obligation on the ESO to manage TOV, this could ultimately lead to frequency excursions and possible loss of supply. Unless the ESO were to pay for frequency response to ensure Grid stability, but this cost would then need to be passed back to consumers via balancing service charges via Generators and Suppliers.

What is the magnitude and duration allowed for TOV

- The Proposer stated his preference was to use the TGN288 figures over the RFG-2 figures as they had some basis for their numbers and were also preferred by the TOs. But acknowledged that Generators preference was to use the RFG-2 figures.
- The Workgroup highlighted that TGN288 figures would not be practical in Scotland because they had different voltage levels and low connection transmission at 33 KV and they did not apply to plants.
- The Proposer explained that they could define 400, 275 and 132 KV and then everything else could be defined at the point of common coupling. They were also happy to consider specifying other voltage levels if needed.
- The Proposer also stated that his preference was to have tighter magnitude requirements but acknowledged that this may result in additional investment/operational costs, which would need to be balanced out between the TOs and Generators. To fully understand the impact of this additional information would be needed from TOs on the investment needed in the transmission system and from Generators/Manufacturers on equipment capability.
- The Workgroup highlighted that they also needed to consider the technically feasibility of different magnitudes and the overall impact this would have on the stability of the system. The Proposer confirmed that this was something that would need to explore further with TOs to understand the risks/benefits of having a higher or lower magnitude.
- The Workgroup highlighted difficulties that they had experienced earlier on in the Workgroup, in relation to manufacturer confidentiality and problems obtaining information from them in order to understand if either the TGN288 or the RFG-2 figures could be met and to explore other levels under option 3. The Workgroup also discussed issues around the information that had been shared with Generators being different to what had been provided to the Proposer and suggested having a joint meeting with everyone present to

address this issue as well as trying to obtain written documentation from manufacturers. The Workgroup also proposed doing some case studies on specific plants to understand how the solution may be implemented in reality.

Which plants are captured by the TOV requirements

- The Proposer went through the three different options, retrospectivity and the issues that needed to be considered.
- The Proposer confirmed that he did not think compliance could be demonstrated via insulation coordination studies and that he would be looking further into the requirements on how this could be demonstrated.
- Workgroup members highlighted that from an already operating offshore wind perspective they would not be able to accommodate retrofitting extra pieces of equipment at their offshore substation. They may have to try and see if an agreement could be reached with the OFTO, but doubted they would have any space at their substation either.

Next Steps:

The Chair confirmed that the next Workgroup was scheduled for 15 October.

Next Steps:

- *All Workgroup members to review and update the Draft Workgroup Consultation report to ensure their views are captured.*
- *BA to ensure that the legal text is removed from the Consultation Document, tidied up and placed on the baseline.*
- *All Workgroup members to prepare any draft Workgroup Consultation questions that they would like to add to the report.*
- *Timeline to be adjusted and shared with the Workgroup.*
- *The next Workgroup meeting will be held on the 15 October 2024.*

Actions Log

Action number	Workgroup Raised	Owner	Action	Comment	Due by	Status
39	WG8	BA	Discuss CC.6.1.11 with TOs and manufactures and feedback to WG with strawman	A number of meetings have been held, but there is nothing to report back to the WG as yet.	Ongoing	Ongoing
45	WG10	Ofgem	Check with Legal if Cost Recovery Mechanism (CRM) should be put in place if applying retrospectively	Ofgem have advised that it is for industry to consider whether or not a CRM is appropriate, and if so, to propose a modification to facilitate this. If submitted, Ofgem	WG19	Open

				will assess such a proposal on its merits. TP to double check if this is referring to a new CUSC modification being raised, rather than Grid Code.		
47	WG11	SS	Ofgem Legal view on whether the TOV-RT requirements are clarifications to existing FRT requirements or new requirements entirely.	Ofgem have advised that their view on this will be reflected in their decision. They therefore urge the GC0155 WG to develop WAGCMs to facilitate this.	Early August 2023	Closed
49	WG12	All	Consider TOV graph, what palatable limits might be	Consider whether WAGCM1 need updating to align with the current proposal	Ahead of WG Consultation	Open
56	WG14	BA	Proposer to trace discussions on issues with fault ride through requirements from GC0111 and GC0137	BA has not found anything yet within GC0111 & GC0137 that explains the narrative for GC0155 but will continue to check them.	Ahead of WG Consultation	Open
61	WG15	All	Workgroup members to provide feedback on why BCA doesn't work and how they feel they can better comply	To be provided during WG discussions & documented within the WG consultation document.	Ahead of WG Consultation	Open
62	WG16	AP	Draft legal text wording for Max Reactive Current and share with the WG	WG agreed that this was no longer needed, as they were happy with the amended legal text provided by the Proposer and agreed to close this action.	WG 17	Closed
63	WG16	BA	Review formatting of text	This has been amended and has been reviewed by the WG.	WG 17	Closed
64	WG16	BA	Review text for ECC.6.3.15.8 and consider non-compliance issues	No update given.	Ahead of WG Consultation	Open
65	WG16	All	Provide challenge and provide feedback on risks re Operation	To be provided during WG discussions & documented within the	Ahead of WG Consultation	Open

			During Temporary Overvoltage's section	WG consultation document.		
66	WG16	All	Provide feedback on the Issues with the current requirements and validate that these points are correct.	To be provided during WG discussions & documented within the WG consultation document.	Ahead of WG Consultation	Open
67	WG18	BA/AP	Consider the technically feasibility of different magnitudes and the overall impact this would have on the stability of the system.		WG20	Open
68	WG18	ALL	Have further discussions with manufacturers with everyone present or obtain written documents from them to understand if TGN288/ RFG-2 figures can be met or if other levels need to be considered. Also carry out some case studies on specific plants to understand how the solution may be implemented in reality.		WG20	Open
69	WG18	TP	Re-share information presented by Tony earlier in the Workgroup on Compliance studies for line-to-line fault.		WG19	Open

Attendees

Name	Initial	Company	Role
Teri Puddefoot	TP	Code Administrator, ESO	Chair
Shazia Akhtar	SA	Code Administrator, ESO	Tech Sec
Bieshoy Awad	BA	ESO	Proposer
Afshin Pashaei	AP	NGET	Workgroup Member
Alastair Frew	AF	Drax Power Station	Workgroup Member
Isaac Gutierrez	IG	Scottish Power	Workgroup Member

Martin Aten	MA	Uniper	Workgroup Member Alternate
Nicola Barberis Negra	NN	Orsted	Workgroup Member
Owen Curran	OC	Siemens	Workgroup Member
Tim Ellingham	TE	RWE	Workgroup Member
Andrew Larkins	AL	Sygensys	Observer
David Halford	DH	ESO	Observer
Fiona Williams	FW	ESO	Observer
Graham Lear	GL	ESO	Observer
Harry Burns	HB	EDF	Observer
John Fradley	JF	ESO	Observer
Nathanael Sims	NS	ESO	Observer
Sigrid Bolik	SB	Siemens	Observer