

Workgroup Consultation Response Proforma

GC0141: Compliance Processes and Modelling amendments following 9th August Power Disruption

Industry parties are invited to respond to this consultation expressing their views and supplying the rationale for those views, particularly in respect of any specific questions detailed below.

Please send your responses to grid.code@nationalgrideso.com by 5pm on **30 March 2021**. Please note that any responses received after the deadline or sent to a different email address may not receive due consideration by the Workgroup.

If you have any queries on the content of this consultation, please contact Joseph Henry Joseph.henry@nationalgrideso.com or grid.code@nationalgrideso.com

Respondent details	Please enter your details
Respondent name:	Julian Werrett
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For reference the Applicable Grid Code Objectives are:

- a) *To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity*
- b) *Facilitating effective competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);*
- c) *Subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;*
- d) *To efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and*
- e) *To promote efficiency in the implementation and administration of the Grid Code arrangements*

Please express your views regarding the Workgroup Consultation in the right-hand side of the table below, including your rationale.

Standard Workgroup Consultation questions		
1	Do you believe that the GC0141 Original Proposal better facilitates the Applicable Objectives?	<p>Yes.</p> <p>However, there are several questions that still need to be answered. In particular, who will take the responsibility to exchange the data and simulation models from competitors, Role of Independent Engineer, Selection criteria and process.</p>
2	Do you support the proposed implementation approach?	Yes
3	Do you have any other comments?	No
4	Do you wish to raise a Workgroup Consultation Alternative Request for the Workgroup to consider?	No
Modification Specific Workgroup Consultation questions		
5	What should the Independent Engineer's deliverables be with respect to the outcome of the compliance process?	<p>The Independent Engineer could review, verify and validate that studies are competent.</p> <p>We need to ensure that the Independent Engineer does not delay and add complication to the process.</p> <p>Independent Engineer's scope to include reviewing whether the number/type of studies have been performed according to grid code requirements.</p> <p>The assessment of the simulation scenarios and whether the result demonstrate compliance should remain the responsibility of the User and ESO.</p>
6	Should there be specific requirements on the retention of data for the User and/or the ESO?	Yes. The as-built data should be retained by User and ESO.
7	Should the detailed design stage be more clearly identified within the Grid Code?	No. The Grid Code should only be involved in outcomes, not detailed design.
8	What stages of implementation would the industry believe are appropriate?	Implement sequentially too avoid too many changes and delays to new generators that are proceeding through the Compliance process.

		Existing generators that are already connected already meet the Grid Code requirements
9	Should the ESO be required to undertake the responsibilities associated with an independent engineer? Please outline your rationale.	<p>Yes. There will be fewer interfaces, and it would preserve IPR where the ESO undertakes this responsibility.</p> <p>There will need to be an agreed scope and time scale, to reduce further risks to a new generator's connection time schedule.</p> <p>Involving an Independent Engineer may lead to project delays if there is no clarity on role, selection criteria, timeline, process, and employer of the Independent Engineer.</p>
10	Should there be greater definition be given to "substantial modification" given that the self-certification process places the onerous on the User to make these decisions?	Yes, there should be greater clarity to what is meant by "substantial modification".
11	Should there be a review of the effectiveness of GC0141 post implementation and after the industry has experience of implementing?	Yes
12	What are your thoughts on the workgroup's discussions regarding compliance repeat plan? How would this work in regard to Independent Engineer Verification?	<p>The User would advise ESO on any changes that affect Grid Compliance, and jointly agree with the ESO if there is a requirement to demonstrate compliance eg by repeating tests or studies.</p> <p>Compliance shall only be repeated for significant changes that would affect the performance of the system, and only the relevant parts of the compliance shall be repeated.</p> <p>Repeating compliance where no changes have occurred does not make any sense, as we will get the exact same results, and there will be additional costs incurred.</p> <p>If an Independent Engineer is to be involved as a last resort, for example if the User and ESO cannot</p>

		reach an agreement on the retesting protocol, their role would be to verify the changes that have occurred to control parameters or infrastructure.
13	Do you believe that screening processes should be applied ahead of detailed dynamic EMT simulation, and if so, do you believe data exchange should support that?	<p>The screening process shall be done prior to any major interaction study and detailed dynamic EMT simulations.</p> <p>In case the screening study/process shows issues, any needed data shall be provided by ESO to allow User to do the studies.</p> <p>The ESO shall hold all data and models for large generators, and take the responsibility for data exchange and protecting the data.</p>
14	Do you agree that the roles and responsibilities associated with interaction studies should be detailed and clarified, and to what extent?	<p>Yes they should be.</p> <p>Consider definition of required study area, grid data and models, generator models and data, type of study and responsibility for confidential data exchange between different OEMs which are competitors.</p> <p>Even though we see the benefit of sharing data this is not possible in anyway due to IPR issues for our OEM. The OEM's only share black boxed models with the developers, and they will all always deviate from such requirement when we add it. As a minimum, we need to remove the need for developers and various OEMs to share models.</p> <p>Hence to be realistic black boxed models can be shared however not with anyone. We cannot ask one OEM to handover even a black boxed model to another OEM since they do not accept that either, and will clearly deviate from it.</p> <p>Our preferred outcome is that the User does a screening study to analyze if any projects are showing potential interaction. In case interactions are expected for one or more systems, ESO collects the detailed black boxed models from the different projects.</p> <p>ESO then takes responsibility for executing the studies themselves or hires an Independent Third Party. The User and OEMs will naturally support and be involved in the study where possible. In this</p>

		<p>case we reduce the number of interfaces, IPR issues and influence on project time schedules.</p> <p>Such a study would need to have clearly defined milestones when the models are delivered and the duration of the study. Furthermore, a clear definition/agreement need to be in place for the success criteria for the study. This is important since results from the study could cause updated parameterization of the models that needs to be implemented. Finally, the studies and results have to be accepted by the involved OEM and User to assure that liability issues do not occur at a later stage.</p>
15	<p>Do you agree that improved definitions of the types of analysis and definitions suitable analysis environments ahead of the detailed design phase provides useful clarity and minimised project disruption in delivering the principles of this grid code change? Should these form part of legal text or made available with the modification as guidance that may be separately updated from time to time</p>	<p>Yes we agree, however the changes shall not be a disadvantage or large hurdle for User that would create time schedule issues or contractual deviations from OEM's.</p> <p>We do agree that improved definitions of types of analysis would help the User performing required studies and submit the required data and reports.</p> <p>We do prefer if it is made available as a Guidance Note and updated based on the experience gained through implementation of the changes.</p> <p>The legal text shall not be too specific for the types of analysis, to allow some future flexibility for incorporating new technology.</p>
16	<p>Do you agree that clarifying roles and responsibility in the management of interaction studies assists more clearly defining the analysis needs of each party, minimising confusion, unnecessary overlap and cost in the design phase?</p>	<p>Yes, we agree.</p>

17	Do you agree that small signal analysis supporting the screening of interaction cases should be clearly specified within this grid code change, to better focus the range of EMT studies being discussed, and within the context of existing SSTI and SSO analysis better inform assessment of risks and the need for detailed dynamic simulation which includes shaft data for SSTI?	Only if the descriptions are in accordance to best practices known by the industry and agreed upon by the industry.
18	What is your view on the separation of the simplified RMS model and EMT model when it comes to confidentiality, distribution and the protection of IP?	<p>IP protection is necessary for both RMS and EMT models. The confidentiality for both must be protected unless they are generic models. This includes the sharing of blacked boxed models with competitors for both RMS and EMT.</p> <p>RMS models can be submitted as international standard models (IEC/IEEE) according to the existing Grid Code, however parameterisation appropriate for the connection site is required and not generic to bring the model performance in line with the real plant within the accuracy limitations of RMS models.</p>
19	As it currently stands, what is your view on the process by which detailed manufacturer EMT-type models are exchanged for necessary studies as part of project delivery?	<p>Our answer depends on who the model is shared with and what is meant by “detailed”. If “detailed” is referring to open models, then that is not realistic nor convenient for anyone.</p> <p>If black boxed models are meant then they should be shared were relevant to an Independent Third Party (possibly ESO) to ensure relevant studies are done to an acceptable standard.</p> <p>Even though encryption of the EMT models are allowed, there should be a framework to exchange the models between manufacturers. ESO should</p>

		take the responsibility of sharing the required manufacturer models with the User.
20	Are sections PCA.9.8 and PC.A.9.9 better suited to a guidance document and or should they be included, at least partly, within the legal text? Are there any specific concerns with respect to requirements set out within those sections?	<p>A Guidance Note would also be helpful, if this is clearly aligned with the legal text, and correctly interprets the requirements.</p> <p>IP protection is necessary for both RMS and EMT models. The confidentiality for both must be protected unless they are generic models. This includes the sharing of blacked boxed models with competitors for both RMS and EMT.</p> <p>RMS models can be submitted as international standard models (IEC/IEEE) according to the existing Grid Code, however parameterisation appropriate for the connection site is required and not generic to bring the model performance in line with the real plant within the accuracy limitations of RMS models.</p> <p>According to "PC.A.9.8.2.2, it is suggested that the use of any "black boxes" encrypted code or external DLLs is not acceptable for RMS model." However, this may be not practical nor helpful as the quality increases (drastically) by using models that are based on source code.</p> <p>Moreover, under PC.A.9.8.2.4, we feel there are very stringent requirements For example, number of lines of the code in each macro block is limited to 30. Why such detailed requirements? What is more important: quality or simple models?</p> <p>Also in PC.A.9.8.2.5, the requirements are not very clear. Models as already used in other markets should be used; otherwise a detailed model implementation specification may be helpful; would these kind of requirements apply to all equipment models in the grid? a test system / benchmark system and type registration of models may be helpful to go through this process (see Ireland & Australia), incl. checklist</p> <p>According to PC.A.9.9.2 , "The EMT control system models must be open, unencrypted to similar level provided for RMS control system models i.e. Power Park Module controllers and Power Park Unit controllers". What is the objective here? Are you looking for some generic models? If it is expected to</p>

		provide actual control systems models, then how to handle IP issues?
21	In terms of the requirement for existing users to provide sub-synchronous torsional data for existing plant that may be provided, do you see any issues in regard to the provision of this data?	<p>No, these shall be provided to allow for accurate SSTI studies in case the screening shows potential resonances.</p> <p>It is important to get this data to perform SSTI studies. Absence of any such data would not guarantee accurate results.</p>
22	Should responsibility for interoperability remain with the generator or the ESO, inclusive of interoperability studies such as control interactions and SSCI/SSTI studies? Please provide your reasoning.	<p>For SSTI, the responsibility can remain with the User, however the responsibility to provide necessary models, within strict timelines, shall remain with ESO. Where the User is responsible, we have control of the study.</p> <p>For SSCI, ESO should take the responsibility and manufacturers support the ESO to carry out such studies.</p>