

Public

Grid Code Alternative Form

GC0168 Alternative Request 1: Inclusion of a Compensation/Cost Recovery Mechanism for EMT Model Provision

Overview:

The GC0168 modification proposal aims to require certain Users to provide Electromagnetic Transient (EMT) models to NESO to analyse system oscillation, inverter stability, and Transient Over Voltage (ToV) as Great Britain's power system transitions towards net zero carbon operation.

When implementing ex post and retrospective regulation it is appropriate to ensure that this does not unfairly impact affected parties, and there is clear precedent for ensuring such protections in previous code processes.

This would be achievable, with no material negative impact to the modification outcomes, either through alignment of the Implementation timeline with parallel Connection and Use of System Code (CUSC) modifications, or protection written into the GC0168 proposed legal text through deferring the obligation in relation to certain Users either to a specific date, or until a Compensation/Cost Recovery mechanism is available within the CUSC.

Proposer: Andrew Allan, RWE

Public

What is the proposed alternative solution?

In relation to provision of EMT models by GB Code Users, it is essential that a compensation/cost recovery mechanism is directly acknowledged within the solution. This has been a core part of the Original proposal through Workgroup development of the Original solution, and a core element of the implementation plan in the Workgroup Consultation.

The text previously developed is as follows:

PC.A.9.2.2.2 Where there is a requirement for **GB Code Users** to provide EMT models, these models shall be provided in accordance with the timescales and compensation arrangements pursuant to the provisions of the **CUSC** and **Bilateral Agreement**.

The Original solution has been amended to remove the above paragraph from the proposed legal text at the request of the Original Proposer, who now considers that GC0168 should be introduced as a stand-alone modification without the link to the CUSC and Bilateral Agreement.

This alternative is based on the Original proposal, and simply (re)introduces additional text to commercially protect GB Code Users, as had been the intention and design through Workgroup development of the Original to date.

Legal text is still to be developed by the Workgroup.

Public

What is the difference between this and the Original Proposal?

As the Original for GC0168 has been updated to remove explicit reference to compensation, it would be effective immediately on implementation.

As it proposes introduction of new requirements which could not have been reasonably foreseen by parties, and which in many cases may be complex and costly to fulfil; the purpose of this Alternative Request is to ensure that a compensation/cost recovery mechanism is in place either:

1. ahead of/aligned with GC0168 implementation, or
2. ahead of/aligned with the implementation being legally effective, in relation to GB Code Users.

1. would be achieved simply by retaining the previously developed paragraph PC.A.9.2.2.2, which was included as part of the Original legal text solution included in the Workgroup Consultation, while 2. would require some further development of legal text, but may allay certain Parties' concerns regards delaying the implementation timeline in respect of EU Code Users.

What is the impact of this change?

The impact of this change is aligned with the Original proposal and, additionally, is consistent with the Original proposal at Workgroup Consultation stage, through retaining a clear mechanism in the solution to avoid potential for unfair and unreasonable cost burdens for GB Code Users.

Public

Implementing ex post and retrospective regulation without compensation arrangements being defined puts GB Code Users at risk of facing substantial irrecoverable costs which could have a material impact their financial position and viability, and as a result, potentially an impact on GB security of supply. There is clear precedent in previous Code Modifications for such an approach (eg. GC0156 and CMP398), where retrospective regulation is implemented, to quote, “in a way which does not commercially disadvantage individual parties”. Absent an express cost recovery mechanism for GB Code Users, the obligations arising from proposals within GC0168 have the potential to place such parties at a commercial disadvantage.

It is therefore essential to ensure that such a mechanism will be in place, aligned with the new requirements being implemented, or being effective in relation to GB code users, in the Grid Code.

Proposer’s assessment against Grid Code Objectives	
Relevant Objective	Identified impact
(i) To permit the development, maintenance and operation of an efficient, coordinated and economical system for the transmission of electricity;	<p>Positive</p> <p>EMT models will be required to carry out analysis such as system oscillation, inverter stability, ToV analyses, especially noting that EPCs require a more detailed model than that available from a current RMS representation.</p> <p>Without being able to conduct this type of analysis using EMT models, it could lead to unnecessary investment by Users or TOs, significant increase in constraint costs, single events leading to tripping of a number of</p>

Public

	<p>generators and could ultimately lead to loss of supply.</p> <p>Additionally, assurance is provided that the licensee's obligations are satisfied and discharged in a non-discriminatory way</p>
(ii) 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);	<p>Positive</p> <p>As new generation technologies connect to the network, most of which will rely on power electronic converters, more detailed models will be required not only in respect of the new generation itself but also the impact they have on existing generation. This will drive greater impact on competition.</p> <p>Additionally, ensures that individual parties do not face unfair, burdensome and discriminatory costs in achieving this outcome.</p>
(iii) 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;	<p>Positive</p> <p>Due to the increase in EPCs connecting to the grid which is in line with the UK government's Net Zero ambition, this modification will enable a greater volume of EPCs to connect whilst ensuring a more thorough evaluation of the source of oscillations or disturbances and to plan mitigating actions.</p> <p>Additionally, substantial retrospectively applied cost implications could impact the ongoing viability of generating assets. Linking to a compensation mechanism minimises risk that costs could result in early closure, affecting security of supply.</p>

Public

(iv) 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	<p>Positive</p> <p>EMT analysis is important for investigating the dynamics of converters and control interactions with the System, which enables the NESO to meet its licence obligations.</p> <p>Additionally NESO's license requires it to: facilitate competition and fair access (avoiding unfair cost burdens), which is not achieved with the original</p>
(v) To promote efficiency in the implementation and administration of the Grid Code arrangements	<p>Positive</p> <p>At the moment, NESO has a need for analysis to be done, and in many cases the obligations for that analysis are on new entrants in the first instance, without the data to support the analysis. Then beyond that we have requirements to support the planning and operation of the system which are lacking these same models. This modification will give NESO access to models of already connected Plants.</p>

* See Electricity System Operator Licence

When will this change take place?

Implementation date:

Depending on solution development, either in line with associated modifications [CM097](#), [CMP456](#) and [CMP466](#) for Option 1, or 10 Business Days post Authority Decision for Option 2.

Implementation approach:

Public

No systems will have to change as a result of this modification

Acronyms, key terms and reference material

Acronym / key term	Meaning
CUSC	Connection and Use of System Code
EMT	Electromagnetic Transient
EPC	Electronic Power Converter
GB	Great Britain
NESO	National Electricity System Operator
RMS	Root Mean Square
TO	Transmission Owner
ToV	Transient Overvoltage

Reference material:

1. [Modification GC0168](#)