

Modification proposal:	<b>Grid Code GC0096: Energy Storage</b>		
Decision:	The Authority <sup>1</sup> directs <sup>2</sup> that the proposed modification to the Grid Code be made.		
Target audience:	National Grid Electricity System Operator (NGESO), the Grid Code Review Panel (GCRP), Grid Code users and other interested parties.		
Date of publication:	20 May 2020	Implementation date:	4 June 2020

## Background

GC0096 (“the modification proposal”), was proposed to specify the appropriate technical requirements for electricity storage facilities<sup>3</sup> connecting to the National Electricity Transmission System (NETS) and implement these changes in the Grid Code.<sup>4</sup>

Currently, the Grid Code does not clearly set out the technical requirements that apply to electricity storage facilities connecting to the NETS. Connection applications for electricity storage facilities have become more common and are expected to continue to increase. NGESO (“the Proposer”) argues that modification of the Grid Code is required in order to clarify the technical requirements that apply to electricity storage facilities.

The technical requirements for electricity storage facilities need to be consistent with existing industry codes and give due consideration to compatibility with developments needed in other Grid Code areas, for example, the Planning Code and the Data Registration Code. The legal text associated with the Final Modification Report (FMR)<sup>5</sup> for Grid Code GC0096: Energy Storage (“the FMR”) was updated to reflect recent changes to the Grid Code that were implemented with the aim of achieving consistency with the relevant European connection network codes.<sup>6</sup>

The modification proposal acknowledges the cross-sectoral interest in the technical and connection requirements for electricity storage facilities. The FMR was circulated to the Distribution Code Review Panel (DCRP). Any changes that may be required to the Distribution code are outside the scope of this decision.

## The modification proposal

The Proposer submitted the modification proposal to the GCRP for consideration in May 2016 to expand the definitions for “storage” in the Grid Code and clearly specify the appropriate Grid Code provisions for electricity storage facilities. The GCRP sent the modification proposal to a Workgroup to develop and assess it against the Grid Code Objectives.

<sup>1</sup> The terms “Authority”, “Ofgem”, “we” and “our” are used interchangeably in this decision. The Authority refers to GEMA, the Gas and Electricity Markets Authority. The Office of Gas and Electricity Markets (Ofgem) supports GEMA in its day-to-day work. This decision is made by or on behalf of GEMA.

<sup>2</sup> This document is notice of the reasons for this decision as required by section 49A of the Electricity Act 1989.

<sup>3</sup> The FMR uses various terms (e.g. “storage technology” and “storage devices”) to describe the technologies encompassed in the modification proposal. To ensure consistency with related code modifications (e.g. [DCP 341 and 342](#)), we are using the term “electricity storage facilities” to describe the technologies encompassed in the modification proposal.

<sup>4</sup> <https://www.nationalgrideso.com/document/33821/download>

<sup>5</sup> <https://www.nationalgrideso.com/document/158576/download>

<sup>6</sup> The European connection network codes are the Requirements for Generators (RfG), High Voltage Direct Current (HVDC) Code, and Demand Connection Code (DCC).

The Workgroup consulted on the modification proposal.<sup>7</sup> The Workgroup Consultation ran from 07 December 2018 to 11 January 2019. Eight responses were received to this consultation and a number of stakeholders included suggestions for amending the proposed legal text. The Workgroup reviewed these suggested amendments and the Proposer updated the legal text incorporating all of the changes that had been discussed.

The first code administrator consultation ran from 10 May to 20 June 2019. Overall, the eight responses to this consultation assert that the modification proposal better facilitates the Grid Code objectives and support the proposed implementation approach.

The second code administration consultation ran from 18 October until 18 November 2019. Two responses were received. Both responses agreed that the modification proposal better facilitates the Grid Code objectives. One respondent raised a concern around the omission to clarify testing for “Electricity Storage Modules” within the Grid Code Operating Code (OC) OC5.7. However, the Proposer believes that GC0125<sup>8</sup> will address this and sees no need to change the legal text of the modification proposal.

On 28 November 2019, members of the GCRP met and unanimously agreed that the modification proposal better facilitates the Grid Code objectives.

The modification proposal extends the Grid Code “Glossary and Definitions” section to clarify what is meant by “storage” and sets out the applicable requirements for energy storage facilities connecting to the NETS. Broadly speaking, the modification proposal treats electricity storage facilities like other generators. This approach is aligned with the definition of storage “as a distinct subset of the generation asset class” as proposed in the Authority and Government’s joint Call for Evidence for A Smart, Flexible Energy System.<sup>9</sup> The Government has stated that it intends to amend the Electricity Act 1989 to include this definition.<sup>10</sup>

The modification proposal ensures that the minimum requirements that apply to a “Generating Unit” or “Power Generating Module” under the Grid Code also apply to electricity storage facilities. It does this by defining electricity storage facilities as a subset of “Generating Unit” and “Power Generating Module.” Furthermore, it allows standalone electricity storage facilities and electricity storage facilities co-located at an existing or new generation/demand scheme to be treated equally.

The modification proposal is further aligned with the Authority’s preference to omit the phrase “in a controllable manner” from the definition of “Electricity Storage.”<sup>11</sup> By omitting this phrase, the definition of “Electricity Storage” encompasses technologies that can be operated in a non-controllable manner. This would impose the requirements for electricity storage facilities onto non-controllable technologies, which cannot re-convert energy back into electricity at the time when it is needed.<sup>12</sup> To mitigate this issue, the modification proposal introduces the term “Non-controllable Electricity Storage Equipment” and

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<sup>7</sup> The full consultation responses are provided at Annex 4, 5 and 6 of the FMR for Grid Code GCO096: Energy Storage: <https://www.nationalgrideso.com/document/158576/download>

<sup>8</sup> <https://www.nationalgrideso.com/codes/grid-code/modifications/gc0125-eu-code-emergency-restoration-black-start-testing-requirements>

<sup>9</sup> [https://www.ofgem.gov.uk/system/files/docs/2016/12/smart\\_flexible\\_energy\\_system\\_a\\_call\\_for\\_evidence.pdf](https://www.ofgem.gov.uk/system/files/docs/2016/12/smart_flexible_energy_system_a_call_for_evidence.pdf)

<sup>10</sup> [https://www.ofgem.gov.uk/system/files/docs/2017/07/upgrading\\_our\\_energy\\_system\\_-\\_smart\\_systems\\_and\\_flexibility\\_plan.pdf](https://www.ofgem.gov.uk/system/files/docs/2017/07/upgrading_our_energy_system_-_smart_systems_and_flexibility_plan.pdf)

<sup>11</sup> This view was set out in our [2017](#) and [2019](#) consultations on modifications to the electricity generation licence for storage.

<sup>12</sup> [https://www.ofgem.gov.uk/system/files/docs/2019/06/storage\\_licensing\\_-\\_statcon\\_covering\\_letter\\_final\\_for\\_website.pdf](https://www.ofgem.gov.uk/system/files/docs/2019/06/storage_licensing_-_statcon_covering_letter_final_for_website.pdf)

excludes technologies that cannot be independently controlled from the requirements for “Electricity Storage.” Therefore, the requirements that apply to “Non-controllable Electricity Storage Equipment” are different to those which apply to “Electricity Storage.”

The modification proposal includes the phrase “in a controllable manner” within the definitions of “Synchronous Compensation Equipment” and “Synchronous Flywheel.” Consequentially, when these technologies are operated in a controllable manner, they will be subject to the same technical requirements as other types of electricity storage facilities in the Grid Code.

To ensure the Grid Code treats comparable technologies consistently, the modification proposal applies certain demand provisions to electricity storage facilities when they are operating analogously. For instance, the modification proposal clarifies Grid Code OC6.6.6 to state that Low Frequency Demand Disconnection (LFDD) data is only required when electricity storage facilities are operating in demand mode.

The modification proposal goes on to update the remaining sections of the Grid Code to reflect the updated definitions set out in the “Glossary and Definitions” section.

### **Grid Code Review Panel recommendation**

The GCRP met on 28 November 2019 and carried out a recommendation vote on the effect of the modification proposal on the applicable Grid Code Objectives. The GCRP discussed the responses received as part of the second code administrator consultation and agreed that the modification proposal better facilitated Grid Code objectives (a), (b), and (c). The GCRP then recommended to us that the modification proposal should be implemented.

### **Our decision**

We have considered the issues raised by the modification proposal and set out in the FMR dated 11 December 2019. We have also taken into account the consultation responses set out in Annexes 4, 5 and 6 of the FMR<sup>13</sup>. We have concluded that:

- implementation of the modification proposal will better facilitate the achievement of the objectives of the Grid Code;<sup>14</sup> and
- approving the modification is consistent with our principal objective and statutory duties.<sup>15</sup>

The reasons for our decision are set out below. As requested by the Workgroup, we instruct NGESO to replace the DDMMYY definition of EU Code User with the appropriate implementation date for the modification proposal to ensure that it is clear when the requirements of the modification proposal apply.

### **Reasons for our decision**

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<sup>13</sup> Grid Code proposals, final reports and representations can be viewed on NGESO’s website at: <http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/Grid-code/Modifications/>

<sup>14</sup> As set out in Standard Condition C14(1)(b) of the Electricity Transmission Licence, available at: <https://epr.ofgem.gov.uk/>

<sup>15</sup> The Authority’s statutory duties are wider than matters which the Grid Code Panel Review must take into consideration and are primarily contained in the Electricity Act 1989 as amended.

We consider that the modification proposal will better facilitate Grid Code objectives (a), (b), and (c) and will have a neutral impact on Grid Code objectives (d) and (e). Our view reflects the views of the Review Panel set out in the FMR.

***(a) to permit the development, maintenance and operation of an efficient, co-ordinated and economical system for the transmission of electricity***

The modification proposal specifies the appropriate Grid Code requirements for electricity storage facilities. Making the requirements that apply to electricity storage facilities clear lowers the barriers for connection and will increase the number of electricity storage facilities that are able to connect to the NETS. This will support greater efficiency in system operation by encouraging greater provision of market-based solutions.

For the reasons set out above, we consider that the modification proposal will better facilitate Grid Code objective (a).

***(b) to facilitate 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)***

The modification proposal expands the definition of "storage" in the Grid Code and clarifies the technical requirements that apply to electricity storage facilities. These changes will make it easier for providers of ancillary services to connect to the NETS. This will have the effect of increasing competition in the provision of ancillary services and will assist NGENSO in procuring economic options for system balancing. We would expect potential cost savings that are derived from these options to result in a reduction to the cost of consumers' bills.

For the reasons set out above, we consider that the modification proposal will better facilitate Grid Code objective (b).

***(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***

The modification proposal clarifies the technical requirements that apply to electricity storage facilities that connect to the NETS. This will make it easier for electricity storage facilities to understand what is required to connect to the NETS and assist the development of a more diverse range of options in the energy market for balancing supply and demand. A more diverse range of options will help to make the energy system more efficient by supporting network flexibility and security.

For the reasons set out above, we consider that the modification proposal will better facilitate Grid Code objective (c).

**Decision notice**

In accordance with Standard Condition C14 of the Transmission Licence, the Authority hereby directs that Grid Code modification proposal Grid Code GC0096: *Energy Storage* be made.

**Martin Queen**

**Principal Engineer, Systems and Networks**

Signed on behalf of the Authority and authorised for that purpose