

CUSC Amendment Proposal Form	CAP:169
Title of Amendment Proposal: Provision of Reactive Power from Power Park Modules, Large Power Stations and Embedded Power Stations	
Description of the Proposed Amendment (mandatory by proposer):	
<p><u>Amendment Proposal Part 1</u></p> <p>This Amendment Proposal looks to amend various sections of CUSC to accommodate the provision of Reactive Power from Power Park Modules. Currently, the vehicle to enable National Grid to despatch and pay Providers for Reactive Power, the Mandatory Services Agreement (MSA), does not reflect the capability requirement as per Grid Code CC6.3.2 for Power Park Modules i.e. within the Capability Data Tables. It is therefore proposed that additional tables be added to the MSA pro forma in CUSC (Schedule 2 Exhibit 4). This Amendment Proposal also looks to update the Reactive Power Definitions and Interpretations section (Schedule 3, Part I, Clause 1) in line with the Grid Code CC8.1 provisions to reflect that Reactive Power from Power Park Modules is a Mandatory (not Enhanced) Ancillary Service.</p> <p>The current Capability Data Tables within the MSA for Synchronous Generators are not applicable to Power Park Modules due to differences in the Grid Code (CC.6.3.2) requirement. For Synchronous Generators the Reactive Capability requirement is at Rated MW at the LV Stator Terminals whereas the requirement for a Power Park Module is at the Grid Entry Point or User System Entry Point (if embedded) in England and Wales or the HV terminals of the 33/132kV or 33/275kV or 33/400kV transformer in Scotland. It is proposed that the MSA pro forma shall capture the reactive capability at 100%, 50%, 20% and 0% Rated MW for a Power Park Module. Table A of Capability Data Tables shall capture the capability at the Commercial Boundary and Table B will capture the capability at the Grid Entry Point (or User System Entry Point).</p> <p>In order to account for all types of connection configurations of Power Park Modules and remove any ambiguity as to the location of the Commercial Boundary in each case, it is proposed that the Commercial Boundary, at which the Provider will be paid for provision of Reactive Power, is defined within each Power Park Module MSA. The current definition of Commercial Boundary within CUSC allows this flexibility and will therefore not need amending.</p> <p>Sections of CUSC associated with Reactive Power provision (see 'Impact on the CUSC' below) also require amendment in order to accommodate the addition of Power Park Modules as an alternative option to Generating Units and CCGT Modules. The proposal also looks to make similar changes to include DC Converters for which the Reactive Power requirement has also been previously added to Grid Code CC6.3.2. Certain sections also require amendment to reflect that Reactive Power supplied by Power Park Modules from synchronous compensation or static compensation is a System Ancillary Service and Obligatory Reactive Power Service (in line with Grid Code CC8.1)</p> <p><u>Amendment Proposal Part 2</u></p> <p>CUSC Schedule 3, Clause 2.8 states that National Grid is only "obliged" to conclude or amend Mandatory Service Agreements if the Reactive Power capability of the Generating Unit is 15Mvar or more. This equates to a Generating Unit with a size of approximately 45MW. Large Power Stations are defined as those which in NGET's Transmission system have a Registered Capacity of 100MW or more; in SPT's Transmission system have a Registered Capacity of 30MW or more; and in SHETL's Transmission system have a Registered Capacity of 10MW or more. As such all three categories of Large Power Stations are obliged to be signatory to the CUSC, and therefore through the Grid Code have the obligation to provide a Reactive Power Service. However National Grid is only obliged to amend/conclude Mandatory Service Agreements with those above approximately 45MW. This Amendment Proposal seeks to extend the obligation whereby, upon request from a Large Power Station with a reactive capability below 15Mvar, National Grid is obliged to conclude a Mandatory Service Agreement.</p> <p><u>Amendment Proposal Part 3</u></p> <p>A function of the technical specifications that are placed upon Generators by National Grid results in a control philosophy that produces or consumes Reactive Power dependant on the voltage at the Point of Connection (as defined in the Grid Code) to the Distribution System. As generators export Active</p>	

Power onto the system they cause the voltage at the Point of Connection to rise. The control system is designed in such a manner so that when this occurs generators will consume Reactive Power to control the voltage.

Generators directly connected to Distribution System produce Reactive Power which is of benefit to the distribution network operator (DNO) and National Grid and assists in managing voltage on their network. Some DNOs impose connection restrictions which prevent instruction(s) from National Grid to the embedded generator to reduce output to 0 Mvar. These restrictions would result in National Grid being unable to instruct the relevant generator to achieve economic and efficient use of the Reactive Power across the Transmission system, despite the imposed requirement and capability being in place.

The Proposed Amendment seeks to facilitate partial payment to those embedded generators under such restriction conditions by DNOs. This partial payment reflects the Grid Code requirement and dynamic benefit from generators under restriction, whilst acknowledging that it is not possible for National Grid to despatch Reactive Power from such generators to 0 Mvar in line with Transmission system operation requirements.

Payment under such restrictions would be in line with current arrangements in CUSC Schedule 3, Appendix I (2) whereby a 20% payment is made in the event that certain conditions are not met. This Amendment Proposal would therefore seek to include an additional provision in CUSC Schedule 3, Appendix I (2).

Description of Issue or Defect that Proposed Amendment seeks to Address (*mandatory by proposer*):

Amendment Proposal Part 1

Grid Code CC6.3 and CC8.1 have already been amended¹ to document the reactive capability requirements of Power Park Modules. Corresponding changes to CUSC were not made; hence the existing Mandatory Services Agreement template does not explicitly cater for the required method of recording the capability of Power Park Modules. The proposed changes are therefore driven by the requirement to update CUSC to reflect changes made to Grid Code CC 6.3.2 to allow National Grid to despatch Reactive Power from Power Park Modules, and for Providers to be paid accordingly. It is envisaged that the proposed changes will increase the pool of potential providers of Reactive Power and result in increased system security.

The Proposed Amendment also looks to ensure alignment with the Grid Code by ensuring Reactive Power from Power Park Modules is classified as an Obligatory Reactive Power Service and Mandatory Ancillary Service.

Amendment Proposal Part 2

The Proposed Amendment looks to extend Schedule 3, Part 1, Clause 2.8 to ensure that National Grid is obliged to conclude/amend Mandatory Service Agreements with all Large Power Stations, with a reactive capability below 15Mvar, upon request from the Large Power Station.

Amendment Proposal Part 3

The Proposed Amendment seeks to ensure that appropriate payments are made for the provision of a Reactive Power service from embedded generators. It recognises that some embedded generators have connection conditions which prevent National Grid, as GBSO, from despatching through 0 Mvar, and thereby using the service for the purpose of Transmission system operation.

When such circumstances occur a 20% payment will be applied to reflect the capability obligation imposed on such generators, and the associated dynamic benefits. However, the full payment will not be made in recognition of the inability of National Grid to make use of the Reactive Power service through providing a despatch instruction to 0 Mvar.

It is envisaged that the Proposed Amendment will allow the most economic and efficient operation of the system by facilitating appropriate remuneration in all circumstances

¹ Grid Code amendment G/06 Power Park Modules and Synchronous Generating Units
<http://www.nationalgrid.com/uk/Electricity/Codes/gridcode/consultationpapers/2006/>

Impact on the CUSC *(this should be given where possible):*

Changes would be required to Section 1, Section 4, Schedule 3, Schedule 11 and Schedule 2 Exhibit 4, Schedule 3 Part 1.

Further details of the proposed changes are as follows:

Section 1: Applicability of Sections and Related Agreements Structure

- Addition of referencing to Power Park Modules and DC Converters

Section 4: Balancing Services

- Addition of referencing to Power Park Modules and DC Converters

Section 11: Definitions

- Addition of definition of DC Converter

Schedule 2 Exhibit 4: Mandatory Services Agreement

- Clause 3.2.2 expanded to include non-synchronous generating units, DC Converter and Power Park Module in line with changes to Grid Code
- Clause 3.3 (Capability Data) expanded to include two further sections for Power Park Modules. These two further sections refer to new capability tables for Power Parks in Appendix 1
- New Capability Tables added to Appendix 1 depending upon the capability of the Power Park i.e. as per Grid Code CC6.3.2(d) (i) or (ii); the second table in each set is required only in a situation where metering is not located at the Commercial Boundary
- Commercial Boundary of the Power Park Module to be defined in the MSA in the definitions section

Schedule 3, Part 1: Balancing Services Market Mechanism – Reactive Power

- Clause 1.1 amended to reflect that a Power Park Module, where Synchronous or static compensators within the Power Park Module may be used to provide Reactive Power, is classified as Obligatory Reactive Power Service.
- Clause 1.2(b) amended to reflect that a Power Park Module, where Synchronous or static compensators within the Power Park Module may be used to provide Reactive Power, is no longer classified as a Commercial Ancillary Service.
- Clause 2.8(a) amended to reflect the obligation to conclude/amend Mandatory Service Agreements with any Large Power Station with a reactive capability below 15Mvar on request from the Large Power Station.
- Appendix I (2) with an additional provision added to Clause 2, to reflect that a 20% payment will be made at such times when the BM Unit is unable to comply with a Reactive Despatch Instruction to zero Mvar, based on a restriction imposed by the Network Operator.

Impact on Core Industry Documentation *(this should be given where possible):*

Minor amendments would be required to the Methodology for the Aggregation of Reactive Power Metering to accommodate potential metering configurations of Power Park Modules.

Corresponding change to Grid Code whereby DNOs will be required to communicate when such restrictions are in place.

Impact on Computer Systems and Processes used by CUSC Parties *(this should be given where possible):*

The control room software EDL and EDT will need to be updated to allow an instruction to be sent to a Power Park Module asking it to change its slope setting or setpoint voltage.

Details of any Related Modifications to Other Industry Codes *(where known):*

None

Justification for Proposed Amendment with Reference to Applicable CUSC Objectives**

(mandatory by proposer):

National Grid believes that this proposal will better facilitate CUSC Applicable Objective **(a) (The efficient discharge by the licensee of the obligations imposed upon it under the Act and by the Transmission Licence)** and

by ensuring that National Grid can despatch Reactive Power from Power Park Modules, and Large Power Stations, and facilitate payment for this service. This will increase the pool of potential providers of reactive power and result in increased stability and Transmission system security.

The proposal will also ensure appropriate remuneration through ensuring full payment is made only in instances where full access to the service is available for the purposes of Transmission system operation, whilst partial payment (reflecting the Grid Code obligation and associated dynamic benefits) is made when restrictions on instruction to 0 Mvar are in place. Thereby ensuring the system is operated and managed in the most economic and efficient manner.

This amendment will ensure alignment of the CUSC and the Grid Code.

Details of Proposer: Organisation's Name:	National Grid
Capacity in which the Amendment is being proposed: (i.e. CUSC Party, BSC Party or "energywatch")	CUSC Party
Details of Proposer's Representative: Name: Organisation: Telephone Number: Email Address:	Carole Hook National Grid 01926 654211 carole.hook@uk.ngrid.com
Details of Representative's Alternate: Name: Organisation: Telephone Number: Email Address:	Katharine Clench National Grid 01926 656036 Katharine.clench@uk.ngrid.com
Attachments (Yes/No): If Yes, Title and No. of pages of each Attachment:	

Notes:

- Those wishing to propose an Amendment to the CUSC should do so by filling in this "Amendment Proposal Form" that is based on the provisions contained in Section 8.15 of the CUSC. The form seeks to ascertain details about the Amendment Proposal so that the Amendments Panel can determine more clearly whether the proposal should be considered by a Working Group or go straight to wider National Grid Consultation.
- The Panel Secretary will check that the form has been completed, in accordance with the requirements of the CUSC, prior to submitting it to the Panel. If the Panel Secretary accepts the Amendment Proposal form as complete, then he will write back to the Proposer informing him of the reference number for the Amendment Proposal and the date on which the Proposal will be considered by the Panel. If, in the opinion of the Panel Secretary, the form fails to provide the information required in the CUSC, then he may reject the Proposal. The Panel Secretary will inform the Proposer of the rejection and report the matter to the Panel at their next meeting. The Panel can reverse the Panel Secretary's decision and if this happens the Panel Secretary will inform the Proposer.

The completed form should be returned to:

Bali Virk
Panel Secretary
Commercial Frameworks
National Grid
National Grid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

Or via e-mail to: bali.virk@uk.ngrid.com

(Participants submitting this form by email will need to send a statement to the effect that the proposer acknowledges that on acceptance of the proposal for consideration by the Amendments Panel, a proposer which is not a CUSC Party shall grant a licence in accordance with Paragraph 8.15.7 of the CUSC. A Proposer that is a CUSC Party shall be deemed to have granted this Licence).

3. Applicable CUSC Objectives** - These are defined within the National Grid Electricity Transmission plc Licence under Section C7F, paragraph 15. Reference should be made to this section when considering a proposed amendment.