

Stage 01: Proposal

CAP182 Provision of Frequency Response from Direct Current (DC) Converters

The proposal aims to update the CUSC to reflect the requirements for DC converters to provide mandatory frequency response and to allow the current contractual arrangements for generators to also apply to new DC converters.

The *Code Administrator* recommends:



The modification proceeds to Working Group.



High Impact:
Transmission Company; Interconnectors Administrators

What stage is this document in the process?

The following stages are the current BSC stages and will be amended to reflect the Code of Practice

- ▶ 01 Initial Written Assessment
- 02 Definition Procedure
- 03 Assessment Procedure
- 04 Report Phase

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CAP182
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Version 0.1
Page 1 of 7
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Contents

1	Why Change?	3
2	Solution	3
3	Legal text	3
4	Proposed Progression	3
5	Impacts & Costs	4
6	Implementation	5
7	The Case for Change	5
8	Recommendation	6

About this document:

This document is *an Initial Written Assessment*, which National Grid will present to the Amendments Panel on 21 May 2010. The Panel will consider the Proposer's recommendation, and agree whether this Proposal should proceed to consultation or be referred to a Working Group for development.

Further information is available in the Amendment Proposal which is an appendix to this document. In addition the BSSG Terms of Reference are included as an appendix to this document.



Any questions?

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CAP182

11 May 2010

Version 0.1

Page 2 of 7

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1 Why Change?

Grid Code modification H/04 – Changes to Incorporate New Generation Technologies and Dc Interconnectors, obligated DC Converters commissioned after 1st April 2005 to meet certain technical requirements under the Grid Code. This included the capability to provide the mandatory ancillary service of frequency response.

No new DC converters have been commissioned since the introduction of this new requirement. However, BritNed, a DC interconnector between Holland and GB that has a DC converter, is due to commission late 2010 / early 2011. BritNed will need to comply with the mandatory frequency response requirements under the Grid Code. A standing group under the CUSC (Interconnector Frequency Response Working Group – IFRWG) was set up to consider what, if any, changes were required to the CUSC to facilitate new DC Converters meeting this Grid Code requirement.

The assessment indicated that the CUSC does not at present provide the same contractual arrangements for DC Converters as for other obligated providers of frequency response i.e. generators. Therefore changes are required to facilitate the equitable provision of frequency response from DC Converters as governed by the Grid Code. If changes were not made to the CUSC, the System Operator would not be able to instruct DC Converters to provide mandatory frequency response and DC Converters would not be recompensed for providing this service.

2 Solution

The CUSC currently focuses on the provision of mandatory frequency response from generators and does not mention DC Converters. Therefore, changes are required to the CUSC to enable the same arrangements for DC Converters

This Amendment Proposal seeks to include DC Converters into all relevant mandatory frequency response references within the CUSC Section 4 and the Mandatory Service Agreement (Schedule 2 – Exhibit 4).

Such changes will allow the obligations under the CUSC to be utilised by the System Operator and also facilitate the equitable provision of frequency response from DC Converters.

3 Legal text

Indicative legal text was provided by the standing group to indicate the potential scope of changes required. This legal text can be found in the report published on the Balancing Services Standing Group (BSSG) web site.

4 Proposed Progression

The Proposer recommends that CAP182 go to working group for a minimum of one meeting dependent on the volume and complexity of the alternative amendments raised. Therefore, the suggested timetable for the amendment process is set out below.



What is Frequency Response

Frequency response is the automatic change in output from a provider to continually help balance generation and demand. The Grid Code outlines the technical obligations for providing the service where the CUSC has the contractual arrangements outlining how providers are recompensed for providing the service.

Activity	Deadline/Date	Notes
Agree Working Group terms of reference	21 st May 2010	
First Working Group meeting	w/c 7 th June 2010	
Second Working Group meeting	w/c 5 th July 2010	If needed
Draft Working Group consultation document & circulate for comment	w/c 12 th July 2010	Circulate to Working Group members for comment
Issue Working Group consultation document	w/c 19 July 2010	2 week consultation
Deadline for responses to Working Group consultation	Latest 13 th August 2010	
Third Working Group meeting	w/c 16 th August 2010	To discuss consultation responses and any WG Consultation Alternative Requests.
Draft Working Group report and circulate for comment	w/c 23 rd August 2010	Circulate to Working Group members for comment
Deadline for comments on draft Working Group report	w/c 6 th September 2010	
Issue Working Group report to National Grid	w/c 13 th September 2010	
Publish Working Group report with Panel papers	16 September 2010	
Present Working Group report to Amendments Panel	24 September 2010	Working Group Chair to present

5 Impacts & Costs

Estimated Costs

Estimated code administration costs based on proposed timetable

Meeting costs	£XXX for 2 Working Group meetings
National Grid resource	20 man days, equating to £11,775

The costs above are estimates and assume:

- Two Working Group meetings held at National Grid's offices
- Working Group chairman and technical secretary provided by National Grid
- Resource costs are based on National Grid's "Charge-Out Rates", published in Schedule 3 of The Statement of Use of System Charges, on National Grid's website at: <http://www.nationalgrid.com/uk/Electricity/Charges/chargingstatementsapproval/index.htm>
- The published rates include overheads.

Indicative industry costs

None identified

CAP182

18 May 2010

Version 0.1

Page 4 of 7

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Impacts

The standing group provisionally assessed the CUSC to see what changes would be required. This initial assessment showed that Section 4 and the Mandatory Services Agreement (Schedule 2 – Exhibit 4) will be impacted by these changes:

Impact on CUSC Parties (including National Grid)	
Interconnectors	CAP182 allows new interconnectors to contractually meet their Grid Code obligations and to be equitably recompensed.

Impact on Code Systems and process	
Code System/Process	Potential impact
Section 4	<ul style="list-style-type: none">• Insertion of provisions for DC Converters into relevant sections
Mandatory Service Agreement (Schedule 2 – Exhibit 4)	<ul style="list-style-type: none">• Insert relevant definitions applicable to DC Converters

Impact on Core Industry Documents	
Document	Potential impact
Balancing and Settlements Code	The provision of mandatory frequency response from interconnectors will require changes to the BSC. P259 (Provision of Applicable Balancing Service Volumes for Interconnectors) was raised at the May BSC panel to address these BSC changes. The proposed BSC modification does not interact with the CUSC.

6 Implementation

The Proposer has not made any direct recommendation with regard to implementation of CAP182. However, as mentioned, it is anticipated that BritNed will be commissioning either late 2010 or early 2011. Therefore, it is hoped that any changes are in place prior to the provision of frequency response from a fully commissioned BritNed interconnector.

7 The Case for Change

The Proposer believes that CAP182 will better facilitate the achievement of Applicable CUSC Objectives (a) and (b) and offers the following justification.

- (a) the efficient discharge by the licensee of the obligations imposed upon it under the Act and by this license;

The proposal will ensure that all parties obliged to provide mandatory frequency response are treated in a non-discriminatory manner.

(b) facilitating effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the sale, distribution and purchase of electricity.

The proposal will ensure that interconnectors can provide mandatory frequency response equitably with other mandatory providers such as generators, facilitating competition in the provision of balancing services.

8 Recommendation

National Grid invites the Panel to:

- DETERMINE that this CUSC Amendment Proposal progress through the Amendment Process.
- AGREE the proposed timetable that the Working Group Report will be submitted to the September 2010 Amendments Panel meeting
- AGREE the proposed CAP182 Working Group terms of reference

CUSC Amendment Proposal Form	CAP:182
<p>Title of Amendment Proposal:</p> <p>Provision of Frequency Response from DC converters</p>	
<p>Description of the Proposed Amendment (<i>mandatory by proposer</i>):</p> <p>Grid Code modification H/04 – Changes to Incorporate New Generation Technologies and DC Interconnectors (Generic Provisions), approved by the Authority on 23rd November 2005, obligates Direct Current (DC) Converters completed after 1st April 2005 to meet certain requirements under the Grid Code; this includes the capability to provide the mandatory ancillary service of frequency response. The first DC Converter affected by this change (known as BritNed – a DC interconnector between GB and the Netherlands) is due to connect to the National Electricity Transmission System towards the end of 2010.</p> <p>A review of the suitability of the current CUSC arrangements, undertaken in 2009/10 by the Interconnector Frequency Response Working Group, concluded that a number of changes were required to facilitate the provision and settlement of the mandatory ancillary service of frequency response from DC converters.</p> <p>There are a number of references to apparatus providing the frequency response service within Section 4 of the CUSC; however, these references do not currently include DC Converters. Hence this Amendment Proposal seeks to include DC Converters into all relevant references within the CUSC Section 4 and the Mandatory Service Agreement (Schedule 2 - Exhibit 4) to ensure that there are equitable arrangements with all providers of frequency response.</p>	
<p>Description of Issue or Defect that Proposed Amendment seeks to Address (<i>mandatory by proposer</i>):</p> <p>Although the Grid Code obligates DC Converters completed after 1st April 2005 to provide frequency response, the CUSC does not provide the same provisions to DC Converters as for other obligated providers, i.e. generators. Therefore the CUSC does not facilitate the equitable provision of frequency response from DC converters.</p>	
<p>Impact on the CUSC (<i>this should be given where possible</i>):</p> <p>Initial assessment of the CUSC suggests that changes are required to section 4 and the Mandatory Services Agreement (Schedule 2 - Exhibit 4).</p>	

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

The provision of mandatory frequency response from DC Converters requires a number of changes to the Balancing and Settlement Code (BSC) and the CUSC. National Grid has raised BSC Modification Proposal P259: Provision of Applicable Balancing Services Volumes for Interconnectors. This Modification Proposal aims to facilitate the connection of new interconnectors, but will not interact with the changes proposed to the CUSC.

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

None anticipated.

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

National Grid has raised BSC Modification Proposal P259: Provision of Applicable Balancing Services Volumes for Interconnectors. This Modification Proposal aims to facilitate the connection of new interconnectors, but will not interact with the changes proposed to the CUSC.

Justification for Proposed Amendment with Reference to Applicable CUSC Objectives** *(mandatory by proposer):*

- (a) the efficient discharge by the Licensee of the obligations imposed on it by the Act and the Transmission Licence

The Amendment Proposal will ensure that all parties obliged to provide mandatory frequency response are treated in a non-discriminatory manner.

- (b) facilitate the effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the sale, distribution and purchase of electricity

The Amendment Proposal will ensure that DC Converters can provide mandatory frequency response equitably with other mandatory providers such as generators, facilitating competition in the provision of balancing services.

Details of Proposer: Organisation's Name:	National Grid
Capacity in which the Amendment is being proposed: (i.e. CUSC Party, BSC Party or "National Consumer Council")	CUSC Party
Details of Proposer's Representative: Name: Organisation: Telephone Number: Email Address:	Malcolm Arthur National Grid Electricity Transmission plc 01926 654909 malcolm.arthur@uk.ngrid.com
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Attachments (No): If Yes, Title and No. of pages of each Attachment:	

**CUSC AMENDMENTS PANEL
Balancing Services Standing Group (BSSG)
Draft Terms of Reference**

Introduction

1. This paper outlines the working arrangements and Terms of Reference for the BSSG.

Governance

2. The BSSG is established as a Standing Group under the CUSC Amendments Panel and shall act in accordance with Section 8.18 of the CUSC. The BSSG shall have regard for Core Industry Documents (specifically the Grid Code and the BSC).

Membership

3. The BSSG shall comprise a suitable and appropriate cross section of experience and expertise from across the industry, including:
 - National Grid (Chair & Technical Secretary)
 - National Grid representative
 - Generators (Portfolio, Independent and/or representative from the Association of Electricity Producers)
 - Interconnector Operators (*optional*)
 - Distribution Network Operator (*optional*)
 - Supplier (*optional*)
 - Consumer Focus (*optional*)
 - Ofgem (*optional*)

Meeting Administration

4. The frequency of BSSG meetings shall be defined as necessary by the BSSG chair to meet the scope, objectives and time-scales as defined by the Amendments Panel.
5. The BSSG meeting should, where reasonably practicable, be held on the same day as the Commercial Balancing Services Group (CBSG) meeting. The CBSG is in the process of being established by National Grid in order to provide a focal point for the industry, balancing service providers and National Grid to discuss areas for development of commercial balancing services (i.e. those not defined in CUSC).
6. National Grid will provide technical secretary resource to the BSSG and handle administrative arrangements such as venue, agenda and minutes.
7. The BSSG will have a dedicated page under the CUSC section of the National Grid UK website. This will enable BSSG information such as minutes and presentations to be available to a wider audience.

Scope and Objectives

8. The BSSG will review the contractual arrangements for the procurement of Balancing Services as set out in the CUSC. This by definition covers the System Ancillary Services of Reactive Power (mandatory and enhanced services), Frequency Response (part 1 – mandatory services), System to Generator Operational Intertripping and the Maximum Generation Service. The overall objective of the

group will be to consider potential further developments to the provision of these Balancing Services with regards to procurement, charging principles and contracting and to consider priorities for such developments.

9. More specifically the group shall:

Reactive Power:

- i. Consider the current approach to the procurement of Reactive Power and identify areas for future development; in particular, incorporating offshore, impacts of a new generation mix, embedded generation, issues highlighted from CAP169 (Provision of Reactive Power from Power Park Modules, Large Power Stations and Embedded Power Stations) and ongoing applicability of payment structures.

Frequency Response:

- ii. Consider the current approach to the procurement of Mandatory Frequency Response and identify areas for future development; in particular, development of suitable market arrangements in light of new generation mix, frequency response payments (response energy price, and holding price), and Frequency Response arrangements with respect to Interconnectors.

System to Generator Operational Intertripping:

- iii. Consider the current arrangements for operational intertrips introduced by CAP076 (System to Generator Intertripping Schemes), in particular the ongoing applicability of payment structures. In addition, consider the applicability of any new tripping payment level or structure to the disconnection payment arrangements introduced by CAP048 (Firm Access and Temporary Physical Disconnection).

Maximum Generation Service

- iv. Based upon operational experience of using the Maximum Generation Service consider the arrangements of the Maximum Generation Service.

Information Provision:

- v. Consider the current approach of information provision with respect to balancing services and identify areas for future development within the CUSC.

General:

- vi. Provide a focal point within the industry where parties can debate the high level procurement principles for those balancing services procured via the CUSC and enable all CUSC parties to be better informed.
10. BSSG shall identify a priority order for its work (see below) and agree this with the CUSC Amendments Panel. In addition, where necessary, BSSG shall develop more detailed Terms of Reference for approval by the Amendments Panel. The BSSG shall review this priority order as each piece of work is completed, and in any event annually.
 11. It should be noted that, in accordance with Section 8 of the CUSC, the BSSG as a Standing Group under the Amendments Panel cannot itself propose an amendment to the CUSC.
 12. In considering the above issues, the BSSG should be cognisant of any related developments that may progress in any other Industry forums.

Time-scales

13. The BSSG shall consider the scope and objectives above and provide verbal updates at each CUSC Amendment Panel meeting as deemed necessary by the chair and, as a minimum, six monthly.

BSSG Priorities (in order of priority)

- i. Consider the current approach to the procurement of Mandatory Frequency Response and identify areas for future development; in particular, development of suitable market arrangements in light of new generation mix (ongoing working group "Frequency Response Working Group", a joint Grid Code and BSSG Working Group.)
- ii. Consider the mandatory Frequency Response arrangements with respect to Interconnectors (ongoing work within BSSG)
- iii. Consider the issues highlighted from CAP169 (Provision of Reactive Power from Power Park Modules, Large Power Stations and Embedded Power Stations), specifically the suitability of the default payment arrangements. Consider the Reactive payments arrangements for Offshore.
- iv. Consider the current arrangements for operational intertrips introduced by CAP076 (System to Generator Intertripping Schemes), in particular the ongoing applicability of payment structures. In addition, consider the applicability of any new tripping payment level or structure to the disconnection payment arrangements introduced by CAP048 (Firm Access and Temporary Physical Disconnection).
- v. Consider potential improvements to the current payment arrangements for frequency response (to the extent that this has not been covered by the existing "Frequency Response Working Group").
- vi. Consider the current approach to the procurement and payment structures of Reactive Power considering the impacts of a new generation mix.
- vii. Consider the current approach of information provision with respect to balancing services and identify development within the CUSC.