nationalgrid

Stage 02: Proposed Amendment Report

System Operator Transmission Owner Code (STC)

CA049 Amendment to Section K to provide OFTOs with the capability to respond to Reactive Power Instructions within 2 minutes

What stage is this document at?

01	Initial Amendment Report
02	Proposed Amendment Report
03	Amendment Report

This proposal seeks to modify the System Operator Transmission Owner Code (STC) to place an obligation on developers of offshore transmission networks to provide OFTOs with the capability to vary the reactive flows at the Interface Point within two minutes.

This document is open for Industry Consultation. Any interested party is able to make a response in line with the guidance set out in Section 5 of this document.

Published on: **XX XX 2012**
Length of Consultation: **XX Working Days**
Responses by: **XX XX 2012**

The STC Committee recommends:
That CA049 should be implemented as it better facilitates Applicable STC objective (b)

High Impact:
None identified

Medium Impact:
None identified

Low Impact:
Owners and Developers of Offshore Networks

Contents

About this document

This Proposed Amendment Report is for Industry Consultation and outlines the information required for interested parties to form an understanding of a defect within the STC and the proposed solutions.

Document Control

Version	Date	Author	Change Reference
1.0		STC Committee	Proposed Amendment Report for Industry Consultation

Any Questions?

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Proposer:
Brian Taylor
National Grid Electricity Transmission

1 Executive Summary

1.1 As the capacity of offshore transmission increases, the System Operator will become increasingly reliant on the OFTO's reactive capability at the offshore to onshore interface to manage onshore voltages. To cope with changing system conditions, OFTOs will be expected to vary the reactive flows at the interface point shortly after being instructed by the National Electricity Transmission System Operator (NETSO). Generators are obliged to respond to similar instructions within 2 minutes hence it is proposed to place the same obligation on OFTOs.

1.2 To ensure that OFTOs are able to fulfil this obligation, it is proposed to amend Section K of the STC to ensure offshore networks are built with control systems which will enable reactive flows to be varied within these timescales. A modification will also be required to the Grid Code to ensure that generators fulfil this obligation under Generator Build.

STC Committee Recommendation

1.3 The STC Committee provisionally recommends that STC Amendment Proposal CA049 be approved for implementation.

1.4 Should the Authority approve STC Amendment Proposal CA049, it is provisionally recommended that the STC be modified 5 days after the Authority decision.

2 Description of Proposed Modification and its Effects

2.1 The NETSO uses reactive compensation equipment connected to the Onshore Transmission System and the reactive capability of onshore Generating Units to keep system voltages within limits defined in the National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS). Generators are instructed to vary the reactive power at the Grid Entry Point by the NETSO and are obliged (through the Grid Code) to respond to these instructions within 2 minutes of receipt.

2.2 As the capacity of offshore generation increases and displaces onshore generation, the loss in onshore reactive compensation will need to be replaced both in terms of quantity and timescales for delivery following instruction.

2.3 OFTOs are obliged under the STC to provide reactive assets with a capability similar to Generators at the Interface Point and STCP01-1 allows the NETSO to alter the output. Response times are not mentioned explicitly but it is recognised that they need to be short. To avoid ambiguity, an amendment to STCP01-1 (PA065) has been proposed which will place an obligation on OFTOs to respond within the same timescales as Generators (i.e. 2 minutes).

2.4 It is proposed to amend Section K of the STC to ensure that OFTOs are able to fulfil this obligation. Additionally, an obligation will have to be placed on offshore developers to build offshore networks with adequate control systems and this will be addressed through a modification to the Grid Code.

2.5 To expediate the process of changing Reactive Power, the OFTO could provide the NETSO with a means of issuing the instruction by electronic data transfer or a means of changing the Reactive Power directly.

2.52.6 The view of the Workgroup is that this capability is inherent in offshore networks and therefore this modification should not increase costs. However, it is possible that some Offshore transmission networks which have either been built or are at an advanced stage of design may be incapable of meeting this obligation. If this is the case, derogations may be required if modifying equipment is not deemed economically efficient.

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2.62.7 No Alternative Amendments to CA049 were submitted.

3 Impacts & Assessment

3.1 STC Parties' Assessments

3.1.1 National Grid

National Grid is supportive of Amendment Proposal CA049 and has carried out an Assessment of the Proposed Amendment.

The implementation of CA049 would not have any physical impact on National Grid's Transmission system or require any changes to the IS systems. No additional works or monies would be required to implement the proposed change.

3.1.2 Offshore Transmission Owners (OFTOs)

Wording to be agreed by OFTOs

The OFTOs are supportive of Amendment Proposal CA049, and have completed an Assessment on the Proposed Amendment.

There may be a number of existing offshore transmission networks or networks at an advanced stage of construction/design that are unable to meet the requirements of CA049. ~~Ofgem have asked for information regarding the cost of achieving compliance to~~ The cost and time taken to achieve compliance should be taken into consideration. Information in this regard will be collected from OFTOs and Developers as part of the consultation.

3.1.3 Scottish Hydro-Electric Transmission Limited (SHETL)

Wording to be agreed by SHETL

SHETL is supportive of Amendment Proposal CA049, and has completed an Assessment on the Proposed Amendment.

The implementation of CA049 would not have any physical impact on SHETL System(s) or require changes to IS systems. No additional works or monies would be required to implement the proposed change.

3.1.4 SP Transmission Limited (SPT)

Wording to be agreed by SPT

SPT is supportive of Amendment Proposal CA049, and has completed an Assessment on the Proposed Amendment.

The implementation of CA049 would not have any physical impact on SPT System(s) or require changes to IS systems. No additional works or monies would be required to implement the proposed change.

3.2 Impact on STC/STCPs

The proposed modification will require a change to STC Section K, Section 2. Amendments to STCP01-1 are also required and these are being addressed under PA065.

3.3 **Impact on Greenhouse Gas emissions**

The proposed modification will not have an impact on Greenhouse Gas emissions.

3.4 **Assessment against STC Objectives**

The STC Committee considers that CA049 would better facilitate the STC objective(s):

(b) development, maintenance and operation of an efficient, economical coordinated system of electricity transmission;

The modification will ensure that offshore transmission networks are built in way which will enable NGET to use the reactive capability at the interface point in a timely manner for the purpose of managing voltages on the onshore network. This will mitigate the cost of managing onshore voltages by avoiding:-

- *Running generation for voltage control*
- *Installing additional compensation equipment onshore*

3.5 **Impact on core industry documents**

A proposal to amend the Grid Code has been made to the Grid Code Review Panel (GCRP) to ensure that the basic rules for designing and building an Offshore Transmission System applicable to Users and Offshore Transmission Owners (as defined in the Grid Code and STC respectively) will remain equivalent after this amendment to the STC has been implemented.

3.6 **Impact on other industry documents**

The proposed modification does not impact on any other industry documents.

4 Recommendations

4.1 The STC Committee recommends that STC Amendment Proposal CA049 be approved for implementation.

4.2 Should the Authority approve Amendment Proposal CA049, it is recommended that the STC be modified 5 business days after the Authority's decision.

5 Responses

5.1 Views are invited upon the proposals outlined in this consultation, which should be received by xx xxxx 2012

5.2 If you wish to make a representation, please use the response proforma which can be found under CA049 at the following link:

http://www.nationalgrid.com/uk/Electricity/Codes/sotocode/Amendments/

5.3 Responses are invited to the following questions:

Question 1. Do you believe that the proposal better facilitates the Applicable STC Objectives?

Question 2. Do you support the proposed implementation approach? If not, please state why and provide an alternative suggestion where possible.

Questions 3, 4 and 5 relevant to Generators constructing Offshore assets

Question 3. Has the plant or apparatus which will be transferred to an Offshore Transmission Owner (OFTO) been built/designed with the capability to enable the OFTO to change reactive flows at the Interface Point within 2 minutes of receiving an instruction from the System Operator?

Question 4. If the capability is not available, are you able to provide an estimate of the cost to include it?

Question 5. If the capability is not available, **please indicate if you would apply for a derogation. If a derogation is requested, please indicate for what period of time the derogation would be requested.**

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Questions 6, 7 and 8 relevant to Offshore Transmission Owners (OFTOs) constructing Offshore assets

Question 6. Are you able to change the reactive flows at the Interface Point within 2 minutes of receiving instructions from the System Operator?

Question 7. If this is not achievable, are you able to provide an estimate of the cost to enable this to be achieved?

Question 8. If the capability is not available, **please indicate if you would apply for a derogation. If a derogation is requested, please indicate for what period of time the derogation would be requested.**

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Question 9. Do you have any other comments?

5.4 Your formal responses may be submitted via email to:-

STCTeam@nationalgrid.com

Annex 1 - Amendment Proposal

STC Amendment Proposal Form

CA049

1. Title of Amendment Proposal

Amendment to Section K, to provide OFTOs with the capability to respond to Reactive Power Instructions within 2 minutes

2. Description of the Proposed Amendment *(mandatory field)*

Section K of the STC will be amended to oblige offshore transmission systems to provide OFTOs with the capability to change the reactive output at the Interface Point in accordance with an instruction given by NGET within 2 minutes of receiving that instruction

3. Description of Issue or Defect that Proposed Amendment seeks to Address *(mandatory field)*

To keep voltages within limits as system conditions change, the System Operator instructs Generators to vary the reactive power at the Grid Entry Point. The Grid Code places an obligation on Generators to implement these instructions within 2 minutes of receipt.

As the capacity of offshore transmission systems increases, NGET will become increasingly reliant on the OFTO's reactive capability at the Interface Points to control voltages on the onshore network. As this reactive capability will be displacing the capability provided by onshore Generators, OFTOs will be required to vary the reactive output within 2 minutes of an instruction being received. An amendment to STCP 01-1 (PA065) has been proposed which will place an obligation on OFTOs to meet this deadline. However for this to be possible the offshore transmission systems must be capable of being operated in this way and therefore it is proposed to include an obligation to this effect in Section K of the STC.

4. Impact on the STC *(information should be given where possible)*

Indicative Legal Text

Amendment to Section K:

REACTIVE CAPABILITY AND VOLTAGE CONTROL

2.1 All Offshore Transmission Systems must be capable of delivering Reactive Power at the Interface Point as described in paragraphs 2.2 and 2.3 of Section K below. The Reactive Power capability that an Offshore Transmission System must be able to provide at the Interface Point may be delivered using a combination of Plant owned by the Offshore Transmission Owner concerned and Plant owner by a Generator or Generators connected to that Offshore Transmission System. Where Generator Plant is out of service, these Reactive Power capability requirements will be reduced pro rata to the maximum Active Power capability of Generator Plant in service.

2.2 All Offshore Transmission Systems must be designed to enable the OFTO to comply within two minutes of an instruction being received from NGET relating to a change in Reactive Power or voltage set point at the Interface Point

5. Impact on other frameworks e.g. BSC, CUSC, Grid Code *(information should be given where possible)*

None identified

6. Impact on Core Industry Documentation *(information should be given where possible)*

None identified

7. Impact on Computer Systems and Processes used by STC Parties *(information Offshore transmission networks which have been built or at an advanced stage of design may not be capable of meeting the obligation. Therefore a derogation against modification of a start date for obligation to become active may be required.*

None identified

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

An amendment to STCP 01-1 (PA065) has been proposed which will place an obligation on OTFOs to respond to an instruction to change reactive output within 2 minutes

9. Justification for Proposed Amendment with Reference to Applicable STC Objectives ***(mandatory field)***

STC Objectives

(b) development, maintenance and operation of an efficient, economical and co-ordinated system of electricity transmission;

The modification will ensure that offshore transmission networks are built in way which will enable NGET to use the reactive capability at the interface point in a timely manner for the purpose of managing voltages on the onshore network. This will mitigate the cost of managing onshore voltages by avoiding :-

- Running generation for voltage control
- Installing additional compensation equipment onshore

Details of Proposer Organisation's Name	Brian Taylor National Grid
Capacity in which the Amendment is being proposed (i.e. STC Party or other Party as designated by the Authority pursuant to STC section B7.2.2.1 (b))	STC Party

Details of Proposer's Representative Name Organisation Telephone Number Email Address	 Brian Taylor National Grid Electricity Transmission plc 01189 363458 brian.taylor@nationalgrid.com
Details of Representative's Alternate Name Organisation Telephone Number Email Address	 Audrey Ramsay National Grid Electricity Transmission plc 01189 363633 audrey.ramsay@nationalgrid.com
Attachments (Yes/No):	

Notes:

1. Those wishing to propose an Amendment to the STC should do so by filling in this "Amendment Proposal Form" that is based on the provisions contained in Section 7.2 of the STC.

2. The Committee Secretary will check that the form has been completed, in accordance with the requirements of the STC, prior to submitting it to the Committee. If the Committee Secretary accepts the Amendment Proposal form as complete, then she/he will write back to the Proposer informing them of the reference number for the Amendment Proposal and the date on which the Committee will consider the Proposal. If, in the opinion of the Committee Secretary, the form fails to provide the information required in the STC, then he/she may reject the Proposal. The Committee Secretary will inform the Proposer of the rejection and report the matter to the Committee at their next meeting. The Committee can reverse the Committee Secretary's decision and if this happens the Committee Secretary will inform the Proposer.

   The completed form should be returned to:

   Lucy Hudson
   STC Committee Secretary
   Regulatory Frameworks
   National Grid
   National Grid House
   Warwick Technology Park
   Gallows Hill
   Warwick, CV34 6DA

   Or via e-mail to: Lucy.Hudson@nationalgrid.com

Annex 2 - Draft Legal Text

For ease of reference, the text in red is the proposed additional text for CA049.

2. REACTIVE CAPABILITY AND VOLTAGE CONTROL

2.1 All Offshore Transmission Systems must be capable of delivering Reactive Power at the Interface Point as described in paragraphs 2.~~2~~3 and 2.~~3~~4 of Section K below. The Reactive Power capability that an Offshore Transmission System must be able to provide at the Interface Point may be delivered using a combination of Plant owned by the Offshore Transmission Owner concerned and Plant owner by a Generator or Generators connected to that Offshore Transmission System. Where Generator Plant is out of service, these Reactive Power capability requirements will be reduced pro rata to the maximum Active Power capability of Generator Plant in service.

2.2 All Offshore Transmission Systems must be capable of enabling the OFTO to comply with an instruction received from NGET relating to a change in Reactive Power or voltage set point at the Interface Point within 2 minutes of such instruction being received.

2.~~2~~3 All Offshore Transmission Systems must be capable of transmitting Active Power equivalent to the Interface Point Capacity at any point between the limits 0.95 Power Factor lagging and 0.95 Power Factor leading at the Interface Point. The Reactive Power limits defined at the Interface Point Capacity:

2.3.1 at lagging Power Factor will apply to all Active Power transfer levels above 20% of the Interface Point Capacity as defined in Figure K1 below;