nationalgrid

Stage 01: Initial 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 contains the information required under Section B 7.2.5.1 to 7.2.5.8 of the STC.

Published on: **21 August 2012**

The Proposer recommends:
that CA049 should be implemented as it better facilitates Applicable STC (b)

High Impact:
None identified

Medium Impact:
None identified

Low Impact:
Owners and Developers of Offshore Networks

Contents

About this document

This document contains the background and recommendations of the Proposer for the above modification. The STC Committee will need to perform an assessment of the proposal prior to allowing individual parties to comment through consultation.

Document Control

Version	Date	Author	Change Reference
1.0	21 August 2012	National Grid	Draft Initial Amendment Report for STC Committee

Any Questions?

Contact:

Brian Taylor

Brian.Taylor2@nationalgrid.com

01189 363458

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 interface point shortly after being instructed by the NETSO. Generators are obliged to respond to similar instructions within 2 minutes hence it is proposed to place the same obligation on OFTO's

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.

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 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 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 STCP 01-1 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 STCP 01-1 (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 To ensure that the OFTO has the capability to meet this obligation, an obligation will have to be placed on offshore developers to build offshore networks with adequate control systems. It is proposed to amend Section K of the STC to include this obligation.

2.5 The view of the Working Group 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 and derogations may be required if modifications are deemed not to be economically efficient.

2.6 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 at STC Committee meeting 29 Aug

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

The implementation of CA049 may require a request for a derogation for existing offshore transmission networks or networks at an advanced stage of construction/design.

3.1.3 Scottish Hydro-Electric Transmission Limited (SHETL)

Wording to be agreed by SHETL at STC Committee meeting 29 Aug

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 at STC Committee meeting 29 Aug

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

3.2.1 The proposed modification will require a change to STC Section K, Section 2.

3.3 Impact on Greenhouse Gas emissions

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

3.4 Assessment against STC Objectives

3.4.1 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

The proposed modification does not impact on any core industry documents

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 this Initial Amendment Report be circulated to invite each of the Parties to provide its Assessment, following the Committee's referral to the Assessment and Report Phase on the 26 July 2012.

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

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

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 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.

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;