

## Final Modification Report

# CM085: To clarify OFTO reactive power requirements at <20% output

**Overview:** It is unclear what the requirements are on OFTOs to provide access to reactive power capability at low windfarm outputs. This modification seeks to clarify that where reactive capability is available it should be provided which is operationally useful to the ESO.

## Modification process &amp; timetable



**Have 5 minutes?** Read our [Executive summary](#)

**Have 20 minutes?** Read the full [Final Modification Report](#)

**Have 30 minutes?** Read the full Final Modification Report and Annexes.

**Status summary** This report will be submitted to the Authority for them to decide whether this change should happen.

The Panel recommended by majority that the Proposer's solution better facilitate the applicable STC objectives than the current STC arrangements.

**This modification is expected to have a: Low impact**

OFTOs and generators (specifically offshore windfarms)

<b>Governance route</b>	This modification followed the Standard Governance route and proceeded straight to Code Administrator Consultation.	
<b>Who can I talk to about the change?</b>	<b>Proposer:</b> Rob Wilson <a href="mailto:Robert.wilson2@nationalgrideso.com">Robert.wilson2@nationalgrideso.com</a> 07799 656402	<b>Code Administrator Contact:</b> Sally Musaka <a href="mailto:Sally.musaka@nationalgrideso.com">Sally.musaka@nationalgrideso.com</a> 07790 778560

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## Executive summary

It is unclear what the requirements are on OFTOs to provide access to reactive power capability at low windfarm outputs. This modification (CM085) seeks to clarify that where reactive capability is available it should be provided which is operationally useful to the ESO.

The Proposer believes that the particular case that this seeks to address is where, as part of an offshore windfarm connection, onshore reactive compensation has been installed often to compensate for the capacitive impact of an offshore cable network. At low windfarm outputs clearly, this onshore reactive capability remains and if it is instructible by the ESO is a considerable help in maintaining system voltage within acceptable limits.

### What is the issue?

In the Proposer's view it has become apparent that the requirements on OFTOs to provide access to reactive power capability at low windfarm outputs are unclear with the consequence that there have been instances when reactive capability has been withheld. Having predictable and firm access to reactive capability is essential to the ESO in operating the system. Where this cannot be assured it leads to the ESO having to spend money in taking additional operational actions.

### What is the solution and when will it come into effect?

#### Proposer's solution:

OFTOs are generally required to fulfil SQSS voltage obligations, and the provision of reactive range is set out in the STC section K which stems in turn from the requirements on generators as set out in the Grid Code.

Below 20% output, while OFTOs may continue to provide voltage control utilising any available reactive capability this is not set out as a definitive obligation. It is proposed to make minor changes to the STC text to confirm that any reactive capability that is available should be provided when requested by the ESO. This change will not require any changes to equipment but will help to clarify an area of uncertainty.

Following discussions with the OFTOs it is apparent that there are concerns regarding the regular utilisation of reactive equipment, for example synchronous compensators, for general system reasons rather than as part of the compliant operation of a windfarm, and the additional costs that might be incurred associated with wear and tear. However, the ESO still needs to determine the overall most efficient solutions for consumers which in this case are likely to be using the equipment that is already there rather than prompting further system reinforcements.

The legal text has been written and revised to try to achieve a balance while helping to clarify that equipment that forms part of a TO or OFTOs regulatory asset base should generally be available unless there is good reason.

**Implementation date:** CM085 modification will be implemented 10 working days after Authority's decision.

**Panel recommendation:** The Panel has recommended by majority that the Proposer's solution is implemented

## What is the impact if this change is made?

The Proposer believes that by ensuring the availability of reactive equipment this will help the ESO to efficiently operate the system.

### Interactions

- |  |   |                                |                               |
|--|---|--------------------------------|-------------------------------|
| <input type="checkbox"/> Grid Code                 | <input type="checkbox"/> BSC                    | <input type="checkbox"/> CUSC  | <input type="checkbox"/> SQSS |
| <input type="checkbox"/> European<br>Network Codes | <input type="checkbox"/> Other<br>modifications | <input type="checkbox"/> Other |                               |

None.

## What is the issue?

The Proposer believes it has become apparent that the requirements on OFTOs to provide access to reactive power capability at low windfarm outputs are unclear with the consequence that there have been instances when reactive capability has been withheld. In the Proposer's view having predictable and firm access to reactive capability is essential to the ESO in operating the system.

## Why change?

CM085 modification seeks to clarify that where reactive capability is available at low windfarm outputs, access to this by the ESO should be provided by the OFTOs.

The Proposer believes the particular case that CM085 seeks to address is where, as part of an offshore windfarm connection, onshore reactive compensation has been installed often to compensate for the capacitive impact of an offshore cable network. At low windfarm outputs clearly, this onshore reactive capability remains and if it is instructible by the ESO is a considerable help in maintaining system voltage within acceptable limits.

## What is the solution?

### Proposer's solution

OFTOs are generally required to fulfil SQSS voltage obligations, and the provision of reactive range is set out in the STC section K which stems in turn from the requirements on generators as set out in the Grid Code.

Below 20% output, while OFTOs may continue to provide voltage control utilising any available reactive capability this is not set out as a definitive obligation. The Proposer is seeking to make minor changes to the STC text to confirm that any reactive capability that is available should be provided when required. This change will not require any changes to equipment or additional costs but will help to clarify an area of uncertainty.

Following discussions with the OFTOs it is apparent that there are concerns regarding the regular utilisation of reactive equipment, for example synchronous compensators, for general system reasons rather than as part of the compliant operation of a windfarm, and the additional costs that might be incurred associated with wear and tear. However, the

ESO still needs to determine the overall most efficient solutions for consumers which in this case are likely to be using the equipment that is already there rather than prompting further system reinforcements.

The legal text has been written and revised to try to achieve a balance while helping to clarify that equipment that forms part of a TO or OFTOs regulatory asset base should generally be available unless there is good reason.

### Legal text

The legal text for this change can be found in Annex 2.

## What is the impact of this change?

Proposer's assessment of the impact of the modification on the stakeholder / consumer benefit categories	
Stakeholder / consumer benefit categories	Identified impact
Improved safety and reliability of the system	<b>Positive</b> Helps to ensure cost effective and secure operation of the system.
Lower bills than would otherwise be the case	<b>Positive</b> In clarifying the availability and use of existing equipment this modification avoids the ESO having to over-invest in additional reactive support.
Benefits for society as a whole	<b>Positive</b> Efficient and secure operation of the electricity transmission system.
Reduced environmental damage	<b>Neutral</b>
Improved quality of service	<b>Neutral</b>

### Proposer's assessment against the Applicable Objectives

Proposer's assessment against STC Objectives	
Relevant Objective	Identified impact
(a) efficient discharge of the obligations imposed upon transmission licensees by transmission licences and the Act	<b>Positive</b>
(b) development, maintenance and operation of an efficient, economical and coordinated system of electricity transmission	<b>Positive</b> By ensuring the availability of reactive equipment this will help the ESO to efficiently operate the system
(c) facilitating effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the distribution of electricity	<b>Neutral</b>
(d) protection of the security and quality of supply and safe operation of the national electricity transmission system	<b>Positive</b>

insofar as it relates to interactions between transmission licensees	
(e) promotion of good industry practice and efficiency in the implementation and administration of the arrangements described in the STC	<b>Positive</b> Helps to clarify an area of the STC
(f) facilitation of access to the national electricity transmission system for generation not yet connected to the national electricity transmission system or distribution system;	<b>Neutral</b>
(g) compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency.	<b>Neutral</b>

### **Code Administrator consultation summary**

The Code Administrator Consultation was issued on the 04 August 2022 closed on 26 October 2022 and received 4 responses. A summary of the responses can be found in the table below, and the full responses can be found in Annex 3.

<b>Code Administrator Consultation summary</b>	
<b>Question</b>	
Do you believe that the CM085 Original Proposal better facilitates the Applicable STC Objectives?	<p><b>The ESO</b> – Believe the Original Proposal has the potential to be positive on Objectives A, B and D.</p> <p>CM085 addresses an area of uncertainty in the STC regarding the operational availability to the ESO of reactive equipment owned by OFTOs during periods of low windfarm output. The STC section K states currently that below 20% windfarm output reactive capability may still be available. It is unclear what this means, but on occasion having access to available capability would be useful operationally to the ESO and would avoid the ESO having to take costly alternative operational actions or triggering further system reinforcements.</p> <p>A clarification has therefore been added to both annexes 1 and 2 of section K covering pre- and post-RfG plant to note that available capability may be instructed by the ESO but is subject to a pragmatic and agreed assessment of the impact on such equipment. The text as discussed with OFTOs is intended to allow this agreement and had been amended from the original proposal with this in mind.</p> <p><b>NGET</b> – Believe the Original Proposal has the potential to be positive on Objectives A, B and D.</p>

NGET shares responsibility for ensuring the onshore transmission network in England and Wales remains compliant with the requirements of the Grid Code and the Security and Quality of Supply Standards (SQSS).

Although there is an increasing power transfer requirement during peak demands, there is a challenge to ensure the network remains compliant during the off-peak periods with lower demands across the network.

CM085 does not intend to amend the absolute technical requirements of OFTO equipment or triggers any further investment but just opens a dialogue to use the equipment that has already been installed efficiently in managing the system.

**SHET**– SHET does not believe the Original Proposal better facilitate the objectives.

**OFTO** – They are of the view that seeking to achieve access to the range of reactive power through this amendment is less likely to be successful compared to using the existing processes. There are potential commercial implications where assets are required to operate outside of the range for which they are designed and tested for.

The wording of the amendment provides two potential reliefs from being obliged to take such an instruction. First that it is not a design requirement and secondly that carrying out the NG ESO instruction is “without unduly affecting such equipment.” For those with long-term fixed commercial arrangements, taking on additional operational risk would likely be seen as “unduly affecting the assets”, as (without proper analysis) it cannot be known what impacts it may have on reliability and then consequential commercial implications on availability in the future.

As TCP has pointed out on a number of occasions since the inception of the offshore regime, compliance with Section K in operation timescales is ambiguous, and potentially results in different types of licenced parties who own

	<p>and operate exactly the same equipment being treated differently and with significant commercial implications. This result in a potentially high commercial risk to OFTOs, should the availability of reactive compensation equipment decrease as a result of the proposed modification.</p>
<p>Do you support the proposed implementation approach?</p>	<p><b>The ESO-</b> Yes. The ESO supports the implementation approach.</p> <p><b>NGET</b> - Yes. NGET supports the implementation approach.</p> <p><b>SHET- No.</b> SHET does not support the proposed implementation as it puts undue requirements on equipment that don't know can support the request.</p> <p><b>OFTO- No.</b> The STC already contains a controlled and proper process, under STC Section C, 3.3.2, that allows the NG ESO to propose modifications to the minimum Offshore Transmission Owner's Services Capability Specification or using STCP 04-4 to create Enhanced Operational Capability Limits. In OFTO's view, these processes provide an appropriate and controlled route for NG ESO to achieve this outcome, and therefore this amendment to the STC is unnecessary.</p>
<p>Do you have any other comments?</p>	<p><b>The ESO</b> - The words '<i>and, if applicable, as instructed by The Company</i>' should be added to the legal text change in section K annex 1 clause 2.4.1 to match the planned addition to annex 2 clause 1.3.2.1. This is a minor version control error that has come about during the discussions and amendments carried out with the OFTO representatives.</p> <p><b>NGET</b> – Proposed clarification and fully support the changes to the STC. Whilst fully supportive of an expedient change to the code, NGET would also welcome clarity on the capability that would be unlocked by the proposals that can be relied upon by NGET in discharging its obligations under the SQSS.</p> <p><b>OFTO-</b> The proposed amendment text can be read as to provide a unilateral ability for NG ESO to instruct a change to the operating capability limits, outside of the existing STC processes.</p>



	<p>Accepting this amendment could be seen to set a precedent that allows changes to the technical requirements for an OFTO to be changed unilaterally, outside of the agreed processes within the STC. This would have wider commercial implications for the perception of risk for the OFTO regime, where STC modifications add further new obligations onto the OFTO, beyond those agreed at the time of the transaction.</p> <p>Therefore, CM085 could have a material effect on OFTO competition and the commercial activities of OFTOs. They are of the view that the proposed amendment would not satisfy the Self Governance Criteria (a) (ii).</p> <p>Also, TCP would also suggest that this amendment fails on Criteria (b) "...is unlikely to discriminate between different classes of Parties".</p> <p>The introduction of an additional route to change the OFTO services capability limits in addition to the existing STC processes, would see OFTOs being treated differently to other parties to the STC.</p>
<b>Legal text issues raised in the consultation</b>	
Yes – Minor version control error	
<b>EBR issues raised in the consultation</b>	
None	

### **Panel recommendation/determination vote**

The Panel met on 30 November 2022 to carry out their recommendation vote.

They assessed whether a change should be made to the STC by assessing the proposed change and any alternatives against the Applicable Objectives.

Before the Panel Recommendation vote took place, the OFTO representatives raised some concerns around this modification. The first concern is the ESO might want to operate the equipment outside of its currently declared envelope. Compliance testing will only have been declared against the requirements of the STC and not to prove what capability exists beyond that. If the process in STCP4-4 is not followed and the ESO does not request an enhanced rating, then potentially the ESO will be operating outside any tested and safe zone as the TO will not have determined what the appropriate values are.

The other concern is around compliance whether section K is a standard that applies in operational timescales too. TCP sought clarification about this in 2014 regarding

shortfalls in reactive power capability in operational timescales and the STC Committee determined that a shortfall was not a non-compliance with Section K, but rather something that was managed by an OCLR under STCP4-4. This has never been codified and the OFTO reps suggested that the ESO did not completely subscribe to this view, as there has been a number of occasions where ESO personnel have suggested that such a non-compliance should result in the OFTO network being disconnected. The OFTO reps has previously suggested that resolving this issue in the same STC Modification would go a significant way to allaying their concerns with the proposed modification.

The ESO representative did state whilst they understood the points made, as per their CAC response, the intention of this modification is not to cause unnecessary increased costs to OFTOs and is to provide certainty to the control room that will provide efficiency to consumers" as that's what I said a few times at the panel so think that's fair.

**Vote 1: Does the Original, facilitate the objectives better than the Baseline?**

Panel Member: **Jamie Webb: National Grid Electricity System Operator (NGESO)**

	Better facilitates AO (a)?	Better facilitates AO (b)?	Better facilitates AO (c)?	Better facilitates AO (d)?	Better facilitates AO (e)?	Better facilitates AO (f)?	Better facilitates AO (g)?	Overall (Y/N)
Original	Yes	Yes	Neutral	Yes	Neutral	Neutral	Neutral	Yes
<b>Voting Statement</b>								
<p>The modification addresses an area of uncertainty in the STC regarding the operational availability to the ESO of reactive equipment owned by OFTO's. The STC section K states that below 20% windfarm output reactive capability "may" still be available, it is unclear what this means and provides uncertainty, providing the certainty that the reactive power will e available would mean on occasions the ESO would be able to avoid having to make costly alternative actions or trigger further system reinforcements.</p> <p>The intention of this modification does not seem to change absolute technical requirements of an OFTO or to our understanding trigger any further investment, but just provides more certainty to the ESO to access equipment that has already been installed.</p>								

**Vote 1: Does the Original, facilitate the objectives better than the Baseline?**

Panel Member: **Michelle MacDonald Sandison: Scottish Hydro Electric Transmission plc. (SHET)**

	Better facilitates AO (a)?	Better facilitates AO (b)?	Better facilitates AO (c)?	Better facilitates AO (d)?	Better facilitates AO (e)?	Better facilitates AO (f)?	Better facilitates AO (g)?	Overall (Y/N)
Original	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	No
<b>Voting Statement</b>								
<p>SHET does not believe the Original Proposal better facilitates the objectives. The proposal as it is currently written would allow for NGESO to change the technical requirements of the OFTO and add additional requirements beyond their original agreement without proper consultation.</p>								

**Vote 1: Does the Original, facilitate the objectives better than the Baseline?**

Panel Member: **Milorad Dobrijevic: Scottish Power Transmission plc. (SPT)**

	Better facilitates AO (a)?	Better facilitates AO (b)?	Better facilitates AO (c)?	Better facilitates AO (d)?	Better facilitates AO (e)?	Better facilitates AO (f)?	Better facilitates AO (g)?	Overall (Y/N)
Original	Yes	Yes	Neutral	Yes	Yes	Neutral	Neutral	Yes
<b>Voting Statement</b>								
SPT supports the proposer’s solution. SPT views this change to section K as a sensible technical requirement need to facilitate the ESO's ability to manage Grid system voltage with minimal impact to the generator apparatus								

**Vote 1: Does the Original, facilitate the objectives better than the Baseline?**

Panel Member: **Mike Lee Offshore Transmission Owner (OFTO)**

	Better facilitates AO (a)?	Better facilitates AO (b)?	Better facilitates AO (c)?	Better facilitates AO (d)?	Better facilitates AO (e)?	Better facilitates AO (f)?	Better facilitates AO (g)?	Overall (Y/N)
Original	No	No	No	No	No	Neutral	Neutral	No
<b>Voting Statement</b>								
As we have set out in the STC Committee meetings and in our consultation response, the OFTOs do not support the proposed amendment. We believe that the modification does not consider the negative impacts of working equipment harder, it does not address the potential for significant commercial harm to OFTOs, as the cost of the assets (unlike general TO infrastructure) is wholly recovered from the offshore generator it is inappropriate that the SO is seeking to use additional capacity without appropriate financial payments and finally, we believe an adequate process to request the additional capacity already exists under the STC / STCPs.								

**Vote 1: Does the Original, facilitate the objectives better than the Baseline?**

Panel Member: **Richard Woodward (NGET)**

	Better facilitates AO (a)?	Better facilitates AO (b)?	Better facilitates AO (c)?	Better facilitates AO (d)?	Better facilitates AO (e)?	Better facilitates AO (f)?	Better facilitates AO (g)?	Overall (Y/N)
Original	Yes	Yes	Neutral	Yes	Neutral	Neutral	Neutral	Yes
<b>Voting Statement</b>								
We welcome the proposed clarification and fully support the changes to the STC. We do recognise that there may be a marginal increase in the operational costs for some OFTOs because of the proposed modification, however, this is significantly outweighed by the avoided investment costs that would be the alternative.								
We would welcome clarity on the capability that would be unlocked by the proposals that can be relied upon by NGET in discharging its obligations under the SQSS.								

**Vote 2 – Which option is the best?**

Panel Member	BEST Option?	Which objectives does this option better facilitate? (If baseline not applicable).
Jamie Webb	Original	A, B, D
Michelle MacDonald Sandison	Baseline	N/A

Milorad Dobrijevic	Original	A, B, D, E
Mike Lee	Baseline	N/A
Richard Woodward	Original	A, B, D

### Panel conclusion

The Panel recommended by majority that the Proposer's solution better facilitate the applicable STC objectives than the current STC arrangements.

## When will this change take place?

### Implementation date

This modification will be implemented 10 working days following Authority's decision.

### Date decision required by

As soon as possible.

### Implementation approach

OFTOs will need to be aware of this change to make sure that reactive capability is available unless there is a good reason for it not to be – such as a fault or ongoing maintenance.

## Interactions

<input type="checkbox"/> Grid Code	<input type="checkbox"/> BSC	<input type="checkbox"/> STC	<input type="checkbox"/> SQSS
<input type="checkbox"/> European Network Codes	<input type="checkbox"/> EBR Article 18 T&Cs <sup>1</sup>	<input type="checkbox"/> Other modifications	<input type="checkbox"/> Other

None

## Acronyms, key terms and reference material

Acronym / key term	Meaning
BSC	Balancing and Settlement Code
CMP	CUSC Modification Proposal
CUSC	Connection and Use of System Code
EBR	Electricity Balancing Regulation
STC	System Operator Transmission Owner Code
SQSS	Security and Quality of Supply Standards
T&Cs	Terms and Conditions
OFTO	Offshore Transmission Operator
ESO	Electricity System Operator.

### Reference material

- Annex 2 – CM085 Legal Text

## Annexes

Annex	Information
Annex 1	CM085 Proposal form

<sup>1</sup> If the modification has an impact on Article 18 T&Cs, it will need to follow the process set out in Article 18 of the European Electricity Balancing Guideline (EBGL – EU Regulation 2017/2195) – the main aspect of this is that the modification will need to be consulted on for 1 month in the Code Administrator Consultation phase. N.B. This will also satisfy the requirements of the NCER process.

Annex 2	CM085 Legal Text
Annex 3	CM085 Code Administrator Consultation responses