
System Operator ("SO") – Transmission Owner ("TO") Code ("STC") CM085 – To clarify OFTO reactive power requirements at <20% output

Decision:	The Authority ¹ directs this modification to be made ²
Target audience:	National Energy System Operator (NESO), Parties to the STC, bidders and prospective bidders to the offshore tender process and other interested parties
Date of publication:	01 November 2024
Implementation date:	10 working days after Authority's decision

Background

The requirements on Offshore Transmission Owners (OFTOs) to provide access to reactive power capability at low windfarm outputs, <20%, are not clearly defined in the STC. At low windfarm outputs the onshore reactive capability could be of considerable help in maintaining system voltage within acceptable limits.

This Modification seeks to clarify that, when windfarm output is below 20% and OFTO Reactive Power is technically available, this should be made available to the National Energy System Operator (NESO).

The modification proposal

The first Final Modification Report (FMR) on this Modification was proposed by NESO (the Proposer) and issued to the Authority on the 13 December 2022. The Authority considered the FMR and decided to send it back for further work as it was not possible to form an opinion

¹ References to the "Authority", "Ofgem", "we" and "our" are used interchangeably in this document. The Authority refers to GEMA, the Gas and Electricity Markets Authority. The Office of Gas and Electricity Markets (Ofgem) supports GEMA in its day-to-day work. This decision is made by or on behalf of GEMA.

² This document is notice of the reasons for this decision as required by section 49A of the Electricity Act 1989.

based on the information submitted, and on the 31 March 2023 directed the STC Panel to revise and resubmit the FMR³.

The STC Panel, on the 26 April 2023, considered the Authority send back and agreed that a Workgroup was needed to discuss and address the reasons for send back. The Workgroup was formed to consider the points in the send back letter and a Cost Benefit Analysis (CBA) was also conducted to establish the costs and consumer benefit, of the proposed Modification. The Proposer also engaged further with the interested stakeholders.

After addressing the points raised in the send back letter, a revised FMR was submitted to the Authority on 11 April 2024.

This Modification proposes to make changes to Section K of the STC to confirm that, when transferring Active Power equivalent to less than 20% of the Interface Point Capacity, any Reactive Power available should be provided, when requested by the NESO, subject to a pragmatic and agreed assessment of the impact on the equipment.

This STC change will not require any changes to equipment but will help to clarify an area of uncertainty.

The Proposer considers this Modification would better facilitate objectives a)⁴, b)⁵ and d)⁶.

STC Modification Panel⁷ recommendation

The Panel considered that CM085 would better facilitate STC Objectives (a), (b) and (d), and therefore recommended by majority its approval.

³ <https://www.ofgem.gov.uk/decision/authority-decision-send-back-final-modification-report-system-operator-so-transmission-owner-code-stc-cm085-clarify-of-to-reactive-power-requirements>.

⁴ (a) efficient discharge of the obligations imposed upon transmission licensees by transmission licences and the Act.

⁵ (b) development, maintenance, and operation of an efficient, economical, and coordinated system of electricity transmission.

⁶ (d) protection of the security and quality of supply and safe operation of the national electricity transmission system

⁷ The STC Modification Panel is established and constituted from time to time pursuant to and in accordance with section B6 of the STC.

The Panel considered that the Modification proposal had a neutral impact on the remaining STC (c) and (e) objectives.

Our decision

We have considered the issues raised by the proposal and the FMR. We have considered and taken into account the responses of the STC Parties included in the FMR.

We have concluded that:

- implementation of the modification proposal will better facilitate the achievement of the applicable STC Objectives;⁸ and
- directing that the modification be made is consistent with our principal objective and statutory duties.⁹

Reasons for our decision

We consider this Modification proposal will better facilitate STC Objectives (a), (b), (d), and has a neutral impact on the remaining STC objectives.

(a) efficient discharge of the obligations imposed upon transmission licensees by transmission licences and the Act;

The existing requirements allow OFTOs to continue to provide voltage control utilising available Reactive Power capability, though this is not a definitive obligation. This modification proposal clarifies that any Reactive Power capability that is available should be provided if requested by NESO, where this can be achieved without unduly affecting the equipment. The Modification proposal will therefore ensure consistent interpretation and application of the requirement, allowing for it to be discharged efficiently. We therefore consider this modification to have a positive impact on this objective.

⁸ The Applicable STC Objectives are set out in Standard Condition B12 of the Transmission Licence and Standard Condition E4 of the Electricity System Operator Licence.

⁹ The Authority's statutory duties are wider than matters that the Panel must take into consideration and are detailed mainly in the Electricity Act 1989 as amended.

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

The NESO states that at present, power system studies do not account for OFTO Reactive Power provision when windfarm output is <20%. The NESO conducted a CBA on this and concluded that full access to OFTO Reactive Power at low windfarm outputs would avoid the need to invest in 6 to 8 shunt reactors in 2027, equating to circa £48m to £65m of savings, adding that there would be further savings in future years. We note that the costs for avoided shunt reactors are based on full time access to Reactive Power however the NESO requires access only when the windfarm output is less than 20%, a condition that occurred only 28 to 45% of the year during 2020. OFTO Reactive Power will not be contracted to be available at all times. NESO should be cognisant of this in system planning and operation.

We note that, as mentioned previously, this Modification will not make changes to OFTOs' level of Reactive Power capability, however it will clarify when access to that capability should be offered to NESO. Therefore, costs associated with the increased access to this existing equipment, typically Static VAR Compensator (SVC), is limited to the potential increased maintenance costs only, which are estimated by OFTOs to be circa £75k per SVC per annum. Therefore, it is sufficiently evident that the typical additional operational costs for SVCs borne by OFTOs is significantly less than the investment that would be required to install new shunt reactors. We therefore consider that the NESO's CBA demonstrates that this Modification proposal better facilitates this STC Objective.

The STC Panel Member, who voted against this proposal, considers that it does not address the matter of OFTOs taking potential additional operational costs and risks without compensation or mitigation. We note that OFTOs have an obligation, pursuant to section 9 of the Electricity Act 1989¹⁰, to operate an efficient, co-ordinated, and economical system of electricity transmission. In addition, OFTOs bid to own and operate the Offshore Transmission System and are granted a licence to do so. They are aware of the licence requirements and the STC cost recovery mechanism set out in the licence conditions, which has a threshold of £1m per annum. As the need for access to OFTO Reactive Power is driven by changing system circumstances, OFTOs have an obligation to operate efficiently, and the licence requirements are clear on this.

¹⁰ [Electricity Act 1989](#)

(d) protection of the security and quality of supply and safe operation of the national electricity transmission system insofar as it relates to interactions between transmission licensees;

This modification will better ensure the protection of the security and quality of supply of the National Electricity Transmission System by making OFTO Reactive Power available at low windfarms output. This will increase the options to the NESO to provide voltage control. We note that OFTO Reactive Power will not always be available so NESO should be aware of this in operation and system planning.

Overall, we consider the increased volume of Reactive Power equipment available to the NESO outweighs any potential impact due to lack of full contractual availability of the equipment, as would be present in the counterfactual use of shunt reactors within the NESO's CBA. We therefore consider this Modification to have a positive impact on this objective.

Decision notice

In accordance with Standard Condition B12 of the Electricity Transmission Licence and Standard Condition E4 of the Electricity System Operator Licence, the Authority hereby directs that modification proposal CM085: To clarify OFTO Reactive Power requirements at <20% output be made.

Gurpal Singh

Head of Engineering and Professions Lead

Signed on behalf of the Authority and authorised for that purpose.