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STCP Modification Proposal Form

PM0157: Standardisation of Power Flow Metering Polarity

Overview: This modification aims to provide a unified standard for Power Flow Metering Polarity when data is sent to NESO. The standard will be in the format of a diagram and an explanatory description. This is a parallel STCP modification to the Grid Code modification GC0182.

Modification process & timetable

1. **Initial STCP Proposal Form**
   21 April 2026
2. **Approved STCP Proposal Form**
   28 October 2026
3. **Implementation**
   In line with GC0182

Status summary: The Proposer has raised a modification and is seeking a decision from the Panel on whether the modification should be implemented.

This modification is expected to have a:
High Impact on: Transmission Licensees
Low Impact on: NESO

Proposer's assessment of materiality	A material change – Authority decision This modification will introduce new Metering Polarity requirements into Section 3 and Appendix B5 of STCP 04-3, and we therefore believe this change is material. The Authority has deferred the final decision to panel.

Who can I talk to about the change?	**Proposer:** Thomas Goss Thomas.goss2@.neso.energy 07942 602 438	**Code Administrator Contact:** Teri Puddefoot Teri.puddefoot@neso.energy

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What is the issue?

NESO must operate the GB electricity network securely and safely in real-time using the Supervisory Control and Data Acquisition (SCADA) tool. The NESO SCADA system constantly receives power flow metering data from external parties including Generators, Transmission Owners (TOs), Offshore Transmission Owners (OFTOs) and Distribution Network Operators (DNOs) to provide NESO Control Room engineers with up-to-date system power flows and support operational decisions. However, there are occasions where power flow metering data that has polarity inconsistent with NESO's convention (e.g. negative instead of positive flow) is fed into the NESO SCADA system, due to the lack of a unified metering polarity convention.

As of February 2025, more than 800 meters were identified with incorrect polarity (compared with NESO's convention). NESO liaises with the appropriate stakeholders to request the polarity of these meters be corrected where possible. However, without a compulsory convention, the polarity is often not amended, and the number of metering points that do not comply with NESO's convention continues to increase. NESO currently applies workarounds such as creating a calculated point equal to −1 × the provided metering value or configuring the network model to reverse the input. These workarounds become difficult to manage and are not sustainable as the number of metering points with incorrect polarity increases.

Since NESO SCADA data feeds multiple internal downstream systems, errors in operational metering polarity can lead to suboptimal transmission system operation, increasing operating costs and ultimately raising costs for consumers.

Why change?

Receiving power flow metering data with inconsistent polarity compared to NESO's convention can, if not compensated for, undermine situational awareness for NESO Control Room engineers, reduce system security, and lead to suboptimal performance, potential SQSS breaches, and higher balancing costs. NESO currently applies temporary workarounds, but this is not a favourable or a long-term solution.

For other stakeholders, it can delay operational metering setup for new connections, increase workload due to the need for corrections, and add potential errors in the data and decisions made as a result. Industry stakeholders may also face delays in NESO's approval of outage plans. NESO has worked with industry parties to address these issues, but challenges remain, including:

- No clear and unified power flow polarity standard for the power flow data sent to NESO;
- No clause in industry Codes or Licence obligations requesting parties to follow a power flow polarity convention. Therefore, certain parties may choose their own convention which is inconsistent with other parts of the network; and
- No clause in industry Codes requiring parties sending power flow metering signals with inconsistent polarity to fix the issue.

What is the Proposer's solution?

We propose to introduce and publish a diagram indicating the convention of Power Flow Metering Polarity when sending data to NESO in a System Operator - Transmission Operator Code Procedure (STCP), the appropriate references already being present in the System Operator -Transmission Operator Code (STC). Explanatory notes to assist industry stakeholders understand the proposed convention will also be introduced. This will only focus on new, upgraded or modified transmission assets and new or replacement metering points at existing substations at this stage.

The potential for a Metering Polarity Modification was discussed at the STC Panel in September 2024 to introduce the change. Subject Matter Experts (SMEs) within NESO have engaged with stakeholders, including Generators, OFTOs, all three onshore TOs and Elexon after the STC Panel meeting, to further develop the proposed Power Flow Metering Polarity convention diagram and ensure the convention is consistent with the those of all three onshore TOs and Elexon.

A Modification to introduce the Power Flow Metering Polarity standard has already commenced through Grid Code Modification GC0182: Standardisation of Power Flow Metering Polarity. As a consequence of this change, proposed

updates are also proposed to STCP 04-3 to introduce the equivalent requirements on Transmission Licensees. This STCP proposal is to run concurrently with GC0182 to ensure that the Transmission Licensees are included in the overall change and that the equivalent changes are made to the STCP documentation.

We propose that the Modification PM0157 (affecting the STCP 04-3) and GC0182 Modification including the new Electrical Standard go live at the same time so that the proposed metering polarity convention will be applicable to the whole of industry. These changes include:

- PM0157 Modification:
    - Diagram and explanatory note of proposed metering polarity convention introduced as Appendix B5 of STCP 04-3
    - Legal Text introduced in Section 3 of STCP 04-3 for requirement to follow the proposed metering polarity convention as provided in Appendix B5 of STCP 04-3

- GC0182 Modification:
    - Reference to the new Electrical Standard introduced in the Annex to the General Condition of Grid Code
    - Legal Text introduced in CC/ECC 6.5.6 for requirement to follow the proposed metering polarity convention as provided in Electrical Standard

- Diagram and explanatory note of proposed metering polarity convention published as a new Electrical Standard of the Grid Code

The original STC Modification, CM0105: Standardisation of Power Flow Metering Polarity, was withdrawn due to the change being understood as only affecting the STCP as the solution developed.

Legal text

The completion of draft legal text for this STCP change was paused until the proposed legal text for the Grid Code Modification GC0182 was sufficiently

developed, as the two Modifications needed to align. As this has now been achieved, we have aligned the STCP legal text proposal for STCP 04-3. The proposed STCP legal text can be found at **Annex 01**.

What is the impact of this change?

This modification will provide clarity to Transmission Licensees to ensure that they meet the appropriate metering polarity convention as provided for in Appendix B5 of STCP 04-3. This will ensure consistency with the same obligations required of Grid Code Users being introduced through Grid Code Modification GC0182.

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 Electricity Act 1989;	**Positive** This modification will provide for improved clarity, transparency and consistency regarding power flow metering polarity. In turn this will reduce errors and improve our reporting accuracy.
(b) efficient discharge of the obligations imposed upon the Transmission Licensee by the Electricity System Operator licence, the Energy Act 2023 and Electricity Act 1989;	**Positive** As above the modification will provide improved clarity, transparency and consistency regarding power flow metering polarity. In turn, this will reduce errors and

	improve our reporting accuracy.
(c) development, maintenance, and operation of an efficient, economical, and coordinated system of electricity transmission;	**Positive** Improved situational awareness, system security, better forecasting and reduced balancing costs. Reduce and/or mitigate iterations and delays for setting up new transmission connections and installation or replacement of meters and approval for outage and commissioning. Improved coordination, efficiency and transparency between NESO and other parties following the introduction of the unified power flow metering polarity convention.
(d) facilitating effective competition in the generation and supply of electricity, and (so far as consistent therewith) facilitating such competition in the distribution of electricity;	**Neutral**
(e) protection of the security and quality of supply and safe operation of the National Electricity Transmission System insofar as it relates to	**Positive** See objective (a) response

interactions between Transmission Licensees and the licensee*;	
(f) promotion of good industry practice and efficiency in the implementation and administration of the arrangements described in the STC;	**Positive** By implementing the changes to the STCP we are ensuring that we are collating power flow metering data in the best manner, which will lead to more accurate reporting and forecasting as well as reducing balancing costs.
(g) facilitation of access to the National Electricity Transmission System for generation not yet connected to the National Electricity Transmission System or Distribution System; and	**Neutral**
(h) compliance with the Electricity Regulation and any Relevant Legally Binding Decisions of the European Commission and/or the Agency.	**Positive** See objective (a) response

** See Electricity System Operator Licence*

Proposer's assessment against the STCP change requirements[1]	**Proposer's assessment**
(a) the amendment or addition falls within the terms and arrangements set out in condition E4 of the ESO Licence Standard Condition B12 of the Transmission Licence; and	Requirement met
(b) the amendment or addition does not impair, frustrate or invalidate the provisions of the Code	Requirement met

(c) the amendment or addition does not impose new obligations or liabilities or restrictions of a material nature on Relevant Parties which are not subsidiary to the rights and obligations of the Relevant Parties under the Code	Requirement met
(d) the amendment or addition is not inconsistent or in conflict with the Code, ESO Licence or Transmission Licence Conditions or other relevant statutory requirements; and	Requirement met
(e) the Relevant Party Representatives deem that the amendment or addition is appropriate to support compliance with the Code	Requirement met

When will this change take place?

Implementation date:

The goal of this Modification is to align with the timeline of GC0182. Since Ofgem has confirmed that it will be a Panel decision to move ahead with the changes it will therefore be for Panel to confirm that the changes to the STCP will not be made until the equivalent decision has been made in GC0182. This is to ensure that the new Meter Polarity standards are implemented consistently across all relevant stakeholders. Currently it is proposed that GC0182 will be implemented into the Grid Code 10 working days after Ofgem approval (assuming the modification is approved) and the actual operational implementation date will be 540 days after the date when GC0182 is implemented into the Grid Code.

The operational implementation date of PM0157 will be the same as GC0182, which will be 540 days after the date when GC0182 is implemented into the Grid Code.

Implementation approach:

During the planning and design stage of new connections or replacement of existing metering points, a specific team within NESO will be the contact point and they will inform the third party of the metering polarity convention. This modification will introduce new Metering Polarity requirements into STCP 04-3, and we therefore believe this change is material. Going forward this will require Transmission Licensees to comply with the metering polarity convention where new transmission equipment that provides Real-Time Data Provision is installed or existing transmission equipment is replaced, upgraded or modified.

Interactions

☒Grid Code	☐BSC	☐CUSC	☐SQSS
☐European Network Codes	☐Other modifications	☐Other	

This Modification will interact with GC0182, when the requirement to follow the proposed Metering Polarity Convention will be incorporated into the Grid Code and the proposed Metering Polarity Convention published as a new Electrical Standard, which is only applicable to Grid Code Users. The proposed Metering Polarity Convention should also be applicable to all other industry stakeholders that send power flow data to NESO. To ensure that equivalent provisions are adopted by Transmission Licensees, this modification proposes that the equivalent requirement is introduced into Section 3 of STCP 04-3 and the proposed Metering Polarity Convention included as Appendix B5 of STCP 04-3.

For most transmission connected Generators, the power flow metering data will be sent to NESO through onshore TOs' assets. Including the proposed Metering Polarity Convention in STCP 04-3 will ensure that TOs are aware of the convention and are required to follow the convention in relevant circumstances.

Panel Determination

Party	Determination
National Energy System Operator (NESO)	Approved
National Grid (TO)	Approved
Offshore Transmission Owners (OFTOs)	Approved
Scottish Hydro Electric Transmission plc (SHET)	Approved
SP Transmission Limited (SPT)	Approved

Acronyms, key terms and reference material

Acronym / key term	Meaning
BSC	Balancing and Settlement Code
CC	Connection Conditions
CUSC	Connection and Use of System Code
DNO	Distribution Network Operator
EBR	Electricity Balancing Regulation
ECC	European Connection Conditions
EON	Energisation Operational Notification
GC	Grid Code
GCDF	Grid Code Development Forum
ION	Interim Operational Notification
LON	Limited Operational Notification
NESO	National Energy System Operator
OFGEM	Office of Gas and Electricity Markets
OFTO	Offshore Transmission Owner
SCADA	Supervisory Control and Data Acquisition
SME	Subject Matter Expert
SQSS	Security and Quality of Supply Standards

STC	System Operator Transmission Owner Code
STCP	STC Procedure
T&Cs	Terms and Conditions
TO	Transmission Owner

Annex	Information
Annex 01	PM0157 Legal text

Reference material

- None