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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 should be presented in a format that includes both a diagram and a detailed explanatory description. This is a subsequent modification to GC0182.

Modification process & timetable

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| 1 | Initial STCP Proposal Form 21 April 2026 |
| 2 | Approved STCP Proposal Form 29 April 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 Onshore and Offshore Transmission Owners, and a **Low Impact** on NESO

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| Proposer's assessment of materiality | A material change – Authority decision. This modification will introduce new Metering Polarity requirements into Appendix B5 of STCP Section 04-3, and we therefore believe this change is material. |
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| Who can I talk to about the change? | Proposer: Thomas Goss Thomas.goss2@neso.energy 07942 602 438 | Code Administrator Contact: STCTeam@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 show NESO Control Room engineers the most up-to-date network status and assist them to take operational actions if necessary.

However, there are occasions where power flow metering data with inconsistent polarity against the NESO convention are fed into the NESO SCADA system, for example negative instead of positive flow. Over 800 metering points have been identified as having incorrect polarity. The NESO SCADA system feeds data to multiple downstream systems used internally to operate the system. Therefore, errors in operational metering systems mean that the operation of the transmission system becomes suboptimal, which will push up operating costs and hence the costs to the end consumer.

Why change?

For NESO, receiving power flow metering data with inconsistent polarity compared to the NESO convention can impact situational awareness for the NESO Control Room engineers, reduce optimal performance and reduce system security, leading to potential SQSS breaches, as well as additional balancing costs. For other industry stakeholders, there can be delays in setting up operational metering for new connections and increased workload, due to the need to update and correct the polarity.

In addition, NESO might need to spend more time making decisions on the outage and commissioning plan, as the power flow data could be misleading. Furthermore, inconsistent polarity may introduce billing errors for settlements between NESO and energy providers. NESO has been liaising with the corresponding parties and trying to follow the guidance and policy in industry

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codes to correct the inconsistent polarity of the received power flow meter data. However, there are a number of issues, 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 standard. 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 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 (STC). Explanatory notes to assist industry stakeholders understand the proposed standard 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, all three onshore TOs and Elexon after the STC Panel meeting, to further develop the proposed Power Flow Metering Polarity standard diagram and ensure the standard is consistent with the polarity conventions of all three onshore TOs and Elexon.

A Modification to introduce the Power Flow Metering Polarity has already commenced through Grid Code Modification GC0182. As a consequence of this change, proposed updates are being made 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 onshore TOs and the OFTOs are

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included in the overall change and that the equivalent changes are made to the STCP documentation.

The original STC Modification, CM0105, has been withdrawn due to the change being understood as only affecting the STCP.

Legal Text

Draft Legal Text (**Annex 01**) for this change is being completed under GC0182. Once a draft has been completed, it will be shared with the Workgroups on this Modification to ensure that appropriate legal wording for the STCP Section 04-3 is confirmed. Once agreed it will be added as an additional Annex.

What is the impact of this change?

This modification will provide clarity to TO's to ensure they meet the appropriate metering polarity standard as provided for in Appendix B5 of STCP 04-3. This will ensure consistency with the same obligations required of User 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 The modification will provide for improved clarity, transparency and consistency regarding meter polarity. In turn this will reduce errors and improve out responses to obligations from the Transmission License. |

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| <p>(b) efficient discharge of the obligations imposed upon the licensee by the Electricity System Operator licence, the Energy Act 2023 and Electricity Act 1989;</p> | <p>Positive</p> <p>As above the modification will provide for improved clarity, transparency and consistency regarding meter polarity. In turn this will reduce errors and improve out responses to obligations from the Transmission License.</p> |
| <p>(c) development, maintenance, and operation of an efficient, economical, and coordinated system of electricity transmission;</p> | <p>Positive</p> <p>Improved situational awareness, system security, better forecast and reduced balancing costs. Reduce and/or mitigate iterations and delays for setting up new transmission connections and installation or replacement of meter and approval for outage and commissioning. Improved coordination, efficiency and transparency between NESO and other parties following the introduction of unified meter polarity standards.</p> |

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| (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 interactions between Transmission Licensees and the licensee*; | Positive See (a) |
| (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 (a) |

* See *Electricity System Operator Licence*

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| Proposer's assessment against the STCP change requirements | 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; | 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:

To align with the timeline of GC0182. This is to ensure the new Meter Polarity standards are implemented consistently across all relevant stakeholders. Currently it is proposed that the GC0182 will be implemented into the Grid Code 10 working days after OFGEM approval and the actual applicable date will be 540 days after the date when GC0182 is implemented into the Grid Code.

Therefore, PM0157 will be implemented on the same date as GC0182.

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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 polarity standard. This modification will introduce new Metering Polarity requirements into Appendix B5 of STCP Section 04-3, and we therefore believe this change is material. Going forward this will require TO's to comply with the metering polarity standard where new transmission equipment is installed or existing transmission equipment is replaced, upgraded or modified.

Interactions

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

This Modification will interact with GC0182, when the Metering Polarity Standard will be incorporated into the Grid Code as an Electrical Standard, which is only applicable to Users. The Metering Polarity Standard should also be applicable to all other industry stakeholders that send data to NESO To ensure equivalent provisions are adopted by transmission licensees, equivalent requirements are being introduced into Appendix B5 of STCP 04-3.

For most transmission connected Generators, the metering will be sent to NESO through onshore TOs' assets and referring the Standard in STCP can make onshore TOs aware and follow the standard in such circumstances.

Panel Determination

| Party | Determination |
|---|---|
| National Energy System Operator (NESO) | To be updated following Panel determination |
| National Grid (TO) | To be updated following Panel determination |

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| Offshore Transmission Owners (OFTOs) | To be updated following Panel determination |
| Scottish Hydro Electric Transmission plc (SHET) | To be updated following Panel determination |
| SP Transmission Limited (SPT) | To be updated following Panel determination |

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 Owner |
| 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 |
| STC | System Operator Transmission Owner Code |
| STCP | SO-TO Code Procedure |
| SQSS | Security and Quality of Supply Standards |
| T&Cs | Terms and Conditions |
| TO | Transmission Owner |

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| Annex | Information |
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| Annex 01 | Draft Legal Text |

Reference material

- None