

CP Progression Paper

Clarify the requirements for the number of Meter measuring elements and measurement transformers in the CoPs

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About This Document



Not sure where to start? We suggest reading the following sections:

- Have 5 mins? Read section 1
- Have 15 mins? Read sections 1, 4, 5 and 6
- Have 30 mins? Read all sections
- Have longer? Read all sections and the annexes and attachments
- *You can find the definitions of the terms and acronyms used in this document in the [BSC Glossary](#)*

This document provides information on a new Change Proposal (CP) and outlines our proposed progression timetable for this change, including when it will be issued for CP Consultation in the next suitable Change Proposal Circular (CPC) batch.

We are presenting this paper to the ISG and SVG on 1 November 2022 at their respective meetings to capture any comments or questions from Committee Members on this CP before we issue it for consultation.

There are 3 parts to this document:

- This is the main document. It provides a summary of the solution, impacts, anticipated costs, and proposed implementation approach, as well as our proposed progression approach for this CP.
- Attachment A contains the CP proposal form.



Committee

Imbalance Settlement Group (ISG) and Supplier Volume Allocation Group (SVG)



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- Attachment B contains the proposed redlined changes to deliver the CP solution.

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1. Summary

Why change?

The Metering Codes of Practice (CoPs) specify the number of measuring elements required to be metered in relation to the number of primary system conductors. However, the requirements don't appear to be sufficiently clear or are not being complied with, highlighting a scenario where a Meter Operator Agent (MOA) reported the lack of clarity on determining the number of measuring elements required by the CoP.

Solution

This CP proposes to clarify the requirements to equipment owners regarding the number of Current Transformers (CT) needed, and the possible need for a Voltage Transformer (VT) neutral.

Impacts and costs

This CP will have no impact on BSC Parties.

The central implementation cost for this CP will be <£1k to update the relevant documents.

Implementation

The CP is proposed for implementation on 29 June 2023 as part of the standard June 2023 Balancing and Settlement Code (BSC) Release.

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2. Why Change?

What is the issue?

At the second subgroup meeting under [Issue 93 'Review of the BSC metering Codes of Practice'](#)¹, the Workgroup agreed to raise a Change Proposal (CP) that addresses the 'Measuring elements on neutral and earth conductors' aspect of Issue 93.

Section 5.3 'Meters' of metering Codes of Practice (CoPs) 1, 2, 3 and 5 requires Active Energy Meters to have, or be configured with, the correct number of measuring elements compared to the number of primary system conductors, with clarification that, in certain primary system configurations, neutral and/or earth conductors may need to be considered in the total number of primary system conductors.

However, the requirements don't appear to be sufficiently clear, or are not being complied with, highlighted by a scenario where a Meter Operator Agent (MOA) reported that the CoPs lack clarity in determining the number of measuring elements required.

Linked to this lack of clarity in determining the number of measuring elements required is that section 5.1 'Measurement Transformers' of CoPs 1, 2, 3 and 5 makes no reference to providing a suitable number of CTs, and a VT neutral connection (where required), based on the number of primary system conductors, so this matches up with the number of measuring elements provided, or configured, in the Meter that the MOA installs.

This has resulted in issues with the accuracy of Settlement data where the equipment owner has provided an incorrect number of high voltage (HV) CTs, and no neutral connection on the VT. This results in the Metering System being inaccurate where the load across the phases, is, or becomes, unbalanced.

CoPs 6, 7, 8, 9 and 10 are not impacted as these CoPs apply to low voltage circuits where the risk of providing an incorrect number of CTs (no VT is required) is very low, e.g. for a 1 phase 2 wire (i.e. one phase wire and one neutral wire) system configuration, one CT and a 'phase to neutral' voltage connection is required. For a 3 phase 4 wire system configuration (i.e. three phase wires and one neutral wire), three CTs are required with three 'phase to neutral' voltage connections.

Background

Issue 93

The [Association of Meter Operators \(AMO\)](#)² raised Issue 93 on 15 January 2021 to review the metering Codes of Practice (CoPs), which have never been reviewed in totality before. The main aim of the review was to improve the CoPs, and where appropriate, remove existing perceived ambiguities and obsolete processes and technology.

The Group considered 18 issues, which the Group referred to as Aspects, over 12 meetings, resulting in 13 Change Proposals (CPs) and one Modification being recommended.

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¹ <https://www.elexon.co.uk/smg-issue/issue-93/>

² <https://meteroperators.org.uk/>

Codes of Practice

The CoPs set out the minimum engineering and data requirement that Metering Systems must adhere to in order to be classified as compliant Metering Systems under the BSC. There are various metering CoPs (1, 2, 3, 5, 6, 7 and 10 for Half Hourly (HH) Metering Systems and 8 and 9 for Non-HH (NHH) Metering Systems). CoP4³ is different as it sets out the minimum requirements for calibrating, testing and commissioning the Metering Equipment installed in Metering Systems under all the other CoPs. The CoPs are owned by the ISG and the SVG and changes to the CoPs must be approved by the ISG and SVG dependent on ownership defined in the [BSC Baseline Statement](#)⁴.

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³ Code of Practice for the Calibration, Testing and Commissioning Requirements of Metering Equipment for Settlement Purposes

⁴ <https://www.elexon.co.uk/documents/bsc-codes/bsc-sections/bsc-baseline-statement-2/>

3. Solution

Proposed solution

This CP proposes to make changes to CoPs 1, 2, 3, and 5 in section 5.3 'Meters', to delete the sentence: 'These include the neutral conductor, and/or the earth conductor where system configurations enable the flow of zero sequence energy' and refer to having to match the configuration provided by the owner of the measurement transformers in compliance with section 5.1 'Measurement Transformers'.

This CP will also amend section 5.1 'Measurement Transformers', of CoPs 1, 2, 3 and 5 (where measurement transformer owners are more likely to refer to) to clarify the requirements to measurement transformer owners. This CP proposes to add a paragraph on the number of CTs, and possible need for a VT neutral, to be provided in section 5.1 'Measurement Transformers'. The proposed wording is:

'The number of CTs provided shall be equal to or one less than the number of primary system conductors. These include the neutral conductor and/or earth conductor, where system configurations enable the flow of zero sequence energy. Consideration shall be given as to whether a VT neutral is required to be provided, depending on the number of CTs provided.'

Proposer's rationale

There have been three reported instances of an unsuitable configuration of metering being installed on sites (e.g. wrong number of CTs and no VT neutral). A lack of clarity in the CoPs has been cited as the reason. Any issue with the accuracy of the Metering System can have an impact on Settlement data. This CP seeks to provide that clarification to owners of measurement transformers, in the section of the CoPs most relevant to them (i.e. 5.1 'Measurement Transformers'), rather than only being in section 5.3 'Meters', which is relevant to the MOA.

Without additional clarification in the CoPs there is a risk that this issue will occur again and negatively impact the accuracy of Settlement data.

Proposed redlining

The proposed redlining to CoPs 1, 2, 3 and 5 to deliver the solution can be found in Attachment B.

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4. Impacts and Costs

BSC Party & Party Agent impacts and costs

There will be no impact on BSC Parties as this CP just provides a clarification on existing requirements.

Central impacts and costs

Central impacts

This CP solution only affects BSC documentation, specifically CoPs 1, 2, 3 and 5. Therefore, no BSC Central Systems will be impacted.

Central Impacts	
Document Impacts	System Impacts
<ul style="list-style-type: none">• Code of Practice 1: The Metering of Circuits with a Rated Capacity Exceeding 100 MVA for Settlement Purposes⁵• Code of Practice 2: The Metering of Circuits with a Rated Capacity not Exceeding 100 MVA for Settlement Purposes⁶• Code of Practice 3: The Metering of Circuits with a Rated Capacity not Exceeding 10 MVA for Settlement Purposes⁷• Code of Practice 5: The Metering of Energy Transfers with Maximum Demand of up to (and Including) 1MW for Settlement Purposes⁸	<ul style="list-style-type: none">• None

⁵ <https://bscdocs.elexon.co.uk/codes-of-practice/code-of-practice-1-the-metering-of-circuits-with-a-rated-capacity-exceeding-100-mva-for-settlement-purposes>

⁶ <https://bscdocs.elexon.co.uk/codes-of-practice/code-of-practice-2-the-metering-of-circuits-with-a-rated-capacity-not-exceeding-100-mva-for-settlement-purposes>

⁷ <https://bscdocs.elexon.co.uk/codes-of-practice/code-of-practice-3-the-metering-of-circuits-with-a-rated-capacity-not-exceeding-10-mva-for-settlement-purposes>

⁸ <https://bscdocs.elexon.co.uk/codes-of-practice/code-of-practice-5-the-metering-of-energy-transfers-with-maximum-demand-of-up-to-and-including-1mw-for-settlement-purposes>

Impact on BSC Settlement Risks

Impact on BSC Settlement Risks

Clarification on installation requirements should reduce the likelihood of errors in Metering Equipment configurations and have a positive impact on:

[Risk 003 'Metering Equipment installation, programming, maintenance and Commissioning \(SVA\)'](#)⁹;

and

[Risk 020 'Metering Equipment installation, programming, maintenance and Commissioning \(CVA\)'](#)¹⁰.

Central costs

The central implementation costs for this CP will be approximately <£1k.

⁹ <https://www.elexon.co.uk/reference/performance-assurance/performance-assurance-processes/003-sva-risk-metering-equipment-installations-are-incorrect/>

¹⁰ <https://www.elexon.co.uk/reference/performance-assurance/performance-assurance-processes/performance-assurance-risk-evaluation-register/020-cva-risk-cva-metering-equipment-installation-and-commissioning/>

5. Implementation Approach

Recommended Implementation Date

This CP is recommended for implementation on 29 June 2023 as part of the standard June 2023 BSC Release.

This is the earliest available release in order to realise the benefits of this CP as early as possible.

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6. Proposed Progression

Progression timetable

The table below outlines the proposed progression plan for this CP:

Progression Timetable	
Event	Date
CP Progression Paper presented to ISG for information	1 November 2022
CP Progression Paper presented to SVG for information	1 November 2022
CP Consultation	7 November – 2 December 2022
CP Assessment Report presented to ISG for decision	10 January 2023
CP Assessment Report presented to SVG for decision	10 January 2023
Proposed Implementation Date	29 June 2023 (June 23 Release)

CP Consultation questions

We intend to ask the standard CP Consultation questions for this CP. We do not believe any additional questions need to be asked for this CP.

Standard CP Consultation Questions
Do you agree with the CP proposed solution?
Do you agree that the draft redlining delivers the CP proposed solution?
Will this CP impact your organisation?
Will your organisation incur any costs in implementing this CP?
Do you agree with the proposed implementation approach for this CP?

7. Recommendations

We invite you to:

- **NOTE** the proposed progression timetable for the CP; and
- **PROVIDE** any comments or additional questions for inclusion in the CP Consultation.
- **NOTE** that this CP will be presented to:
- the SVG on 1 November 2022.