

CP Assessment Report

CP1553 ‘Tightening the requirements for the minimum accuracy classes for Meters in CoP 5 and Current Transformers in CoPs 3, 5, and 10’

Contents

About This Document	1
1. Summary	3
2. Why Change?	5
3. Solution	7
4. Impacts and Costs	9
5. Implementation Approach	11
6. Initial Committee Views	12
7. Industry Views	13
8. Recommendations	16
Appendix 1: Glossary & References	17

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

This document is the Change Proposal (CP) Assessment Report for CP1553 which Elexon will present to the ISG and SVG at their respective meetings on 11 January 2022. The Committees will consider the proposed solution and the responses received to the CP Consultation before making a decision on whether to approve CP1553.

There are six parts to this document:

- This is the main document. It provides details of the solution, impacts, costs, and proposed implementation approach. It also summarises the ISG and SVG’s initial views on the proposed changes and the views of respondents to the CP Consultation.



Committee

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

Recommendation

Approve

Implementation Date

30 June 2022
(June 2022 Release)



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ISG249, SVG251

CP1553
CP Assessment Report

11 January 2022

Version 1.0

Page 1 of 19

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- Attachment A contains the CP proposal form.
- Attachments B-D contain the proposed redlined changes to deliver the CP1553 solution.
- Attachment E contains the full responses received to the CP Consultation.

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CP1553

CP Assessment Report

11 January 2022

Version 1.0

Page 2 of 19

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1. Summary



Central Data Collection Agent (CDCA)

The CDCA retrieves, validates processes and aggregates metered data associated with the Central Registration Agent (CRA).

Why change?

The metering Codes of Practice (CoPs) detail the standards and minimum accuracy classes for certain Metering Equipment, i.e. for Meters, current transformers (CTs) and voltage transformers (VTs).

Currently, the minimum accuracy class required for a Meter in [CoP5 'for the metering of energy transfers with Max Demand of up to \(and including\) 1MW for Settlement Purposes'](#) is class 2¹ (or class A²), which means that the Meter must have an accuracy within $\pm 2\%$ over most of its current range³. However, the overall accuracy limit for a CoP5 Metering System is $\pm 1.5\%$ ⁴. This makes it difficult for Meter Operator Agents (MOAs) to assure overall accuracy of a Metering System is met, if they do not, or cannot, provide Calibration Certificates, for certain items of Metering Equipment. Calibration Certificates detail the actual errors obtained through testing. This can result in the Technical Assurance Agent (TAA) assigning a category 2 non-compliance⁵ for overall accuracy not being maintained.

Additionally, the minimum accuracy class for a CT in [CoPs 3 'for the metering of circuits with a rated capacity not exceeding 10 MVA for Settlement purposes'](#), 5 and 10 ['for the metering of energy via low voltage circuits for Settlements Purposes'](#) is class 0.5⁶. This standard requires class 0.5 CTs to be tested to a minimum of 5% of rated measuring current. This means that when a CT measures current below 5% of rated measuring current, its errors, and therefore its contribution to overall accuracy of the Metering System, will not be known. Knowing the CT errors at currents below 5% provides assurance that overall accuracy is more likely to be maintained when CTs operate at such low loads.

Solution

CP1553 proposes to tighten the minimum accuracy class for Meters in CoP5 from class 2 (or class A) to class 1 (or class B). It also proposes to update the CT accuracy class in CoPs 3, 5 and 10 from class 0.5 to class 0.5S.

Impacts and costs

CP1553 will have a positive impact on Registrants, Licensed Distribution System Operators (LDSO) and Supplier Volume Allocation (SVA) MOAs by further assuring the overall accuracy of Metering Systems and better protect Settlement through knowing CTs are tested to 1% rated measuring currents for CoPs 3, 5 and 10 Metering Systems and Meters in CoP5 will be class 1 (or class B).

ISG249, SVG251

CP1553
CP Assessment Report

11 January 2022

Version 1.0

Page 3 of 19

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¹ In accordance with BS EN/IEC 62053-21 for static/electronic Meters or BS EN 62053-11 for electromechanical Meters.

² In accordance with BS EN 50470-3.

³ For whole current Meters, it is between 10% and I_{max} at Unity Power Factor (UPF). For CT operated Meters its between 5% and I_{max} at UPF.

⁴ From 20% to 100% of rated measuring current at UPF.

⁵ A category 2 non-compliance has the potential to impact Settlement.

⁶ In accordance with BS EN/IEC 61869-2.

The central implementation cost for CP1553 will be less £2,000 to update the relevant documents.

Implementation

CP1553 is proposed for implementation on 30 June 2022 as part of the standard June 2022 Balancing and Settlement Code (BSC) Release.

Recommendation

We invite the **ISG** and **SVG** to:

- **APPROVE** the proposed changes to CoPs 3, 5 and 10 for CP1553; and
- **APPROVE** CP1553 for implementation on 30 June 2022.

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CP1553
CP Assessment Report

11 January 2022

Version 1.0

Page 4 of 19

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2. Why Change?

What is the issue?

The metering CoPs detail the standards and minimum accuracy classes for certain Metering Equipment, i.e. for Meters, CTs and VTs.

Meter Accuracy Class

Currently, the minimum accuracy class required for a Meter in CoP5 is class 2, in accordance with the British Standards (BS) EN/IEC 62053-21 or class A in accordance with BS EN 50470-3. This means that a class 2.0 (or class A) Meter must have an accuracy within $\pm 2\%$ when it is manufactured and stamped with the standard and accuracy class. However, the overall accuracy required for a CoP5 Metering System is $\pm 1.5\%$. The current requirements in CoP5 for the accuracy of the Meter makes it difficult for MOAs to assure overall accuracy is met, if they do not or cannot obtain the actual Calibration Certificates for certain items of Metering Equipment, notably CTs from LDSOs, detailing the actual errors obtained through testing. The Technical Assurance Agent (TAA) will assume a worst case error of the accuracy class, in the absence of the Calibration Certificates detailing the actual errors. So, for example, the TAA will assume a class 2.0 Meter, with no Calibration Certificate provided, to have a worst case error of $\pm 2\%$. This is before considering the error contributions of any CTs and VTs (as applicable), and the evidence of such. Where overall accuracy has not been evidenced as met, the TAA will assign a non-compliance for this.

CT Accuracy Class

Additionally, the minimum accuracy class required for CTs in CoPs 3, 5 and 10 is class 0.5, in accordance with BS EN/IEC 61869-2. However, the standard requires class 0.5 CTs to be tested to a minimum of 5% of rated measuring current. This means that when these CTs measure current below 5% of rated measuring current, their errors, and therefore overall accuracy of the Metering System, will not be known. This is particularly the case where the owners of the CTs bulk purchase certain ratios of CTs which may not be best suited to the actual range of current the CTs will see at a site. In other words, the CT may be 'oversized' for the agreed capacity or a Customer may end up reducing their loads so the CTs more regularly run at below 5% of rated measuring current.

Background

The TAA is responsible for completing audits on Metering Systems to confirm compliance with BSC [CoP 4 'for the calibration, testing and commissioning requirements of metering equipment for settlement purposes'](#). When a Metering System is found to be non-compliant, the TAA will issue a Category 1 non-compliance where Settlement is being impacted, a Category 2 non-compliance where Settlement may be being impacted or an Observation where Settlement is not being impacted but there is a non-compliance with a requirement (e.g. labels are missing). The TAA issues these non-compliances to industry participants (e.g. Registrants, MOAs, Half Hourly Data Collectors or LDSOs).

The Meter accuracy and CT accuracy class issue was initially discussed by the Technical Assurance of Metering Expert Group (TAMEG), and has since been considered and progressed by the [Issue 93 Work Group](#) at its meetings in June and August 2021.

ISG249, SVG251

CP1553

CP Assessment Report

11 January 2022

Version 1.0

Page 5 of 19

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The Issue 93 group believes that tightening the minimum accuracy class requirements will reduce the number of non-compliances the TAA assigns for the non-provision of Calibration Certificates and overall accuracy not being maintained, and increase the likelihood of CT errors at the low operating loads being known therefore better protecting Settlement.

Feedback from participants at TAMEG and the Issue 93 Work Group indicate that many participants are already procuring equipment to these tighter tolerances for the reasons already stated. The marginal additional costs of the equipment to these tighter tolerances are reported as minimal.

ISG249, SVG251

CP1553

CP Assessment Report

11 January 2022

Version 1.0

Page 6 of 19

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3. Solution

Proposed solution

CP1553 proposes to make changes to the CoPs to raise the accuracy class for Meters in CoP5 and change the accuracy class for CTs in CoPs 3, 5 and 10. This document change includes the following:

- Update the requirements for the minimum accuracy class of Meters to class 1/ class B for CoP5; and
- Update the requirements for the minimum accuracy class of CTs from 0.5 to 0.5S for CoPs 3, 5 and 10.
- Changing the accuracy class for CoP5 Meters will help MOAs to assure overall accuracy of CoP5 low voltage CT Metering Systems is met without necessarily evidencing this with Calibration Certificates. This should result in the TAA assigning fewer category 2 non-compliances for overall accuracy not being maintained.
- Additionally, changing the CT accuracy class in CoPs 3, 5 and 10 from class 0.5 to class 0.5S will provide greater assurance that accuracy is being maintained, especially when sites operate at currents below 5% of rated measurement current. This is because class 0.5S CTs will be tested down to 1% of rated measuring current and their error contribution at 1% will be known. The standard for class 0.5S CT also has tighter accuracy requirements at 20% and 5% of rated measuring current than for a class 0.5 CT. e.g.:

Accuracy Class	Ratio Error (%)				
	1% rated current	5% rated current	20% rated current	100% rated current	120% rated current
Class 0.5	-	1.5	0.75	0.5	0.5
Class 0.5S	1.5	0.75	0.5	0.5	0.5

Proposer's rationale

Meter Accuracy Class

Category 2 non-compliances (following a TAA visit) against Metering Systems potentially being outside of the overall accuracy limits have been noted as a significant issue for a number of years.

CoP5 Meters are class 2, which means that their accuracy must be within $\pm 2\%$. When MOAs calculate overall accuracy for a Metering System, if they do not or cannot provide a Meter Calibration Certificate, it becomes difficult for the MOA to assure the Metering System is within $\pm 1.5\%$, the overall accuracy limits for CoP5 Metering Systems. Absence of the Calibration Certificate for a class 2.0 Meter will prompt the TAA to assign a non-compliance for the missing Calibration Certificate and where overall accuracy cannot be demonstrated to be within CoP5 limits.

ISG249, SVG251

CP1553

CP Assessment Report

11 January 2022

Version 1.0

Page 7 of 19

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Tightening the requirements to ensure that all Meters registered against CoP5 are class 1/class B Meters will remove the need for MOAs to present Calibration Certificates for LV CoP5 Metering Systems.

CT Accuracy Class

By mandating that class 0.5S CTs (which have tighter error limits at 20% and 5% and a specified error limit for 1% of rated current) are installed for Metering Systems registered against CoPs 3, 5 and 10, CT errors at low operating loads will be known and overall accuracy of the Metering System more likely to be maintained.

Proposed redlining

CP1553 proposes to update CoPs 3, 5 and 10. Please see Attachments B-D for the proposed redlining.

ISG249, SVG251

CP1553
CP Assessment Report

11 January 2022

Version 1.0

Page 8 of 19

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4. Impacts and Costs

BSC Party & Party Agent impacts and costs

Participant impacts

The solution from CP1553 will require MOAs and LDSOs to update their Meter and CT Installation processes to reflect the new class requirements.

BSC Party & Party Agent Impacts

BSC Party/Party Agent	Impact
Meter Operator Agents (MOAs)	Time and resources associated with updating processes to reflect the new Meter and CT class requirements.
Licensed Distribution System Operators	

Participant costs

Cost and resources associated with purchasing higher specification Meters when installing new and replacement CoP5 Meters and CTs for CoPs 3, 5 and 10.

Central impacts and costs

Central impacts

The solution from CP1553 only affects BSC documentation, specifically CoPs 3, 5 and 10. Therefore, no BSC Central Systems will be impacted.

Central Impacts

Document Impacts	System Impacts
<ul style="list-style-type: none">Code of Practice 3 'The Metering of Circuits with a Rated Capacity not Exceeding 10 MVA for Settlement Purposes'Code of Practice 5 'The Metering of Energy Transfers with Max Demand of up to (and including) 1MW for Settlement Purposes'Code of Practice 10 'The Metering of Energy via Low Voltage Circuits for Settlement Purposes'	<ul style="list-style-type: none">None

Central costs

The central implementation costs for CP1553 will be approximately £2,000 to implement the relevant document changes.

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CP1553
CP Assessment Report

11 January 2022

Version 1.0

Page 9 of 19

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ISG249, SVG251

CP1553

CP Assessment Report

11 January 2022

Version 1.0

Page 10 of 19

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5. Implementation Approach

Recommended Implementation Date

CP1553 is recommended for implementation on 30 June 2022 as part of the standard June 2022 BSC Release.

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CP1553
CP Assessment Report

11 January 2022

Version 1.0

Page 11 of 19

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6. Initial Committee Views

ISG's initial views

This change was presented to the ISG committee at its meeting on [Tuesday 2 November](#), with comments from two members.

One ISG member asked if Elexon was aware of the number of class 0.5 measurement transformer stock available in the market, noting that it should be considered to prevent stranded assets. The second member agreed with the first member's comment. Elexon noted this comment and confirmed that it would be included in the consultation questions.

SVG's initial views

This change was presented to the SVG committee at its meeting on [Tuesday 2 November](#), with no comments or views from any member.

7. Industry Views

This section summarises the responses received to the CP Consultation. You can find the full responses in Attachment E.

We received five responses to CP1553, two Distributors, two Supplier Agents, and a Trade Body. All respondents were in favour of progressing CP1553 and agreed with the proposed solution. However, the Supplier Agent noted a low impact to their Organisation, while the Distributor provided some rationale on how it could affect them albeit the impact level was unknown.

Implementation Date

Two Distributors disagreed with the proposed implementation date of June 2022.

One of the Distributors noted that it may not provide them with enough time to finalise all procurement agreements.

Elexon engaged this distributor to understand the procurement issues and what other implementation date would better suit them. Following the engagement, the respondent confirmed that after speaking to their Current Transformer (CT) equipment supplier, they believe that they will be ready for the proposed implementation date.

Another concern from the first Distributor was the allowance to use up existing stock of class 0.5 CTs post implementation date. Elexon replied confirming that a generic Metering Dispensation can be raised to allow stocks of class 0.5 CTs to be used post implementation date. The respondent agreed with this.

The second Distributor believed it will be more effective to delay the implementation date until the review of the CoP threshold (as aspect of Issue 93) under Issue 93 is concluded so that all specifications change requirements arising in the future can be addressed together for efficiency.

Elexon noted this comment but disagreed with delaying the implementation date for the reasons given above. It further explained that there isn't a guarantee that the Issue group will recommend a change to the CoP thresholds.

The below table has been amended to reflect the updated views of the respondents.

Summary of CP1553 CP Consultation Responses

Question	Yes	No	Neutral/No Comment	Other
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ISG249, SVG251

CP1553
CP Assessment Report

11 January 2022

Version 1.0

Page 13 of 19

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Do you agree with the CP1553 proposed solution?	3	-	-	-
Do you agree that the draft redlining delivers the intent of CP1553?	2	-	1	-
Will CP1553 impact your organisation?	2	1	-	-
Will your organisation incur any costs in implementing CP1553?	2	1	-	-
Do you agree with the proposed implementation approach for CP1553?	3	-	-	-
Do you currently have existing stock of Class 0.5 CTs?	1	-	2	-
Do you currently have existing stock of Class 2 Meters?	-	1	2	-
Do you currently have existing stock of Class 0.5s CTs?	-	1	2	-
Do you currently have existing stock of Class 1 Meters?	-	1	2	-
Do you think the proposed implementation date provides you with enough time to use up the existing Class 0.5 CTs?	-	1	2	-
Do you think the proposed implementation date provides you with enough time to use up the existing Class 2 Meters?	-	1	2	-
Do you have any further comments on CP1553?	1	2	0	-

Comments on the proposed redlining

No comments were received from the respondents on the redlining, with two out of the three respondents agreeing to the proposed redlining, while the Trade Body remained neutral.

Comments on the CP1553 Proposed Redlining

ISG249, SVG251

CP1553
CP Assessment Report

11 January 2022

Version 1.0

Page 14 of 19

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Document & Location	Comment	Elexon's Response
We received no comments from the respondents.		

8. Recommendations

We invite the **ISG** and **SVG** to:

- **APPROVE** the proposed changes to CoPs 3, 5 and 10 for CP1553; and
- **APPROVE** CP1553 for implementation on 30 June 2022 as part of the standard June 2022 Release.

ISG249, SVG251

CP1553
CP Assessment Report

11 January 2022

Version 1.0

Page 16 of 19

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Acronyms

Acronyms used in this document are listed in the table below.

Acronyms	
Acronym	Definition
BS	British Standard
BSC	Balancing and Settlement Code
BSCCo	Balancing and Settlement Code Company
CoP	Code of Practice
CP	Change Proposal
CPC	Change Proposal Circulars
CT	Current Transformer
EN	European Normative Standard
IEC	International Electro-technical Commission
ISG	Imbalance Settlement Group
LV	Low Voltage
MOA	Meter Operator Agent
SVG	Supplier Volume Allocation Group
TAA	Technical Assurance Agent
TAMEG	Technical Assurance of Metering Expert Group
VT	Voltage Transformer

External links

A summary of all hyperlinks used in this document are listed in the table below.

[ISG249, SVG251](#)

[CP1553](#)
[CP Assessment Report](#)

[11 January 2022](#)

[Version 1.0](#)

[Page 17 of 19](#)

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All external documents and URL links listed are correct as of the date of this document.

External Links		
Page(s)	Description	URL
2,3,5,7	Code of Practice 3 'The Metering of Circuits with a Rated Capacity not Exceeding 10 MVA for Settlement Purposes'	https://elexon-bsc-production-cdn.s3.eu-west-2.amazonaws.com/wp-content/uploads/2019/06/28155615/BSC-CoP3-Issue5.pdf
2,3,5,7	Code of Practice 5 'The Metering of Energy Transfers with Max Demand of up to (and including) 1MW for Settlement Purposes'	https://www.elexon.co.uk/documents/bsc-codes/codes-of-practice/code-of-practice-5-the-metering-of-energy-transfers-with-max-demand-of-up-to-and-including-1mw-for-settlement-purposes/
2,3,5,7	Code of Practice 10 'The Metering of Energy via Low Voltage Circuits for Settlement Purposes'	https://www.elexon.co.uk/documents/bsc-codes/codes-of-practice/code-of-practice-10-the-metering-of-energy-via-low-voltage-circuits-for-settlement-purposes/
5	Code of Practice 4 'The Calibration, Testing and Commissioning Requirements of Metering Equipment for Settlement Purposes'	https://elexon-bsc-production-cdn.s3.eu-west-2.amazonaws.com/wp-content/uploads/2012/01/28153820/BSC-CoP4-Issue6.pdf
3	TAMEG	https://www.elexon.co.uk/group/technical-assurance-of-metering-expert-group-tameg/
4	British Standards Institution (BSI) Group	https://www.bsigroup.com/en-GB/about-bsi/
4	Royal Charter	https://www.bsigroup.com/Documents/about-bsi/royal-charter/bsi-royal-charter-and-byelaws.pdf
4	National Standards Body (NSB)	https://www.bsigroup.com/en-GB/about-bsi/uk-national-standards-body/

ISG249, SVG251

CP1553
CP Assessment Report

11 January 2022

Version 1.0

Page 18 of 19

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5	Issue 93 Workgroup	https://www.elexon.co.uk/smg-issue/issue-93/
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ISG249, SVG251

CP1553
CP Assessment Report

11 January 2022

Version 1.0

Page 19 of 19

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