

Issue Form - BSCP40/04	Issue Number 93
Issue Title	
Review of the BSC metering Codes of Practice (CoPs)	
Issue Description	
<p>Meter Operators believe the metering CoPs would benefit from improvement and/or clarification on a number of aspects to be identified and confirmed by this Issue. To optimise the activity of an Issue Group a series of aspects impacting the metering CoPs are combined in this single Issue.</p> <ol style="list-style-type: none"> 1. The threshold boundaries between the CoP applicability is inconsistent. CoPs 1, 2 & 3 are defined by circuit capacity, whereas CoPs 5 & 10 are based on maximum demand. 2. The use of Half Hourly (HH) and Non-Half Hourly (NHH) within the CoPs are no longer appropriate as the market arrangements transition to Market Wide Half Hourly Settlement (MHHS). 3. The requirement in CoPs 1 and 2, to install duplicate remote communications paths to the Metering Equipment, is overly restrictive and has not kept up with the developments in technology. 4. It is not clear if the calibration checks and operation checks for main and check meters are being done and whether they are working, as there is currently no requirement to report on this. 5. The current requirements in relation to de-energised circuits/feeders are inconsistent between the CoPs and do not adopt best practice. This could result in estimated data unnecessarily entering Settlement. 6. CoPs 6, 7, 8 and 9 are regarded as redundant. It is potentially misleading industry and undermining good governance to keep them. To maintain them fully would include wasteful effort by industry. 7. Inconsistent use of energy units (MWh vs. kWh) and the granularity. This makes it harder to compare and contrast across the CoPs. 8. The obsolete metering requirements in the CoPs are not robust or clear. This poses a risk of erroneous or estimated data entering Settlement caused by faulty Metering Equipment. 9. Remote notification to manned locations of voltage failures is allowed in CoPs 1 & 2. This requires action on the next working day, whereas modern metering equipment should identify this within a day without a dependency on staff in a manned control room. 10. Consider consolidation of the metering CoPs into a single document. 11. Reduce unnecessary administrative burden on stakeholders where Settlement accuracy is not impacted by the Actual Defined Metering Point (AMP) and Defined Metering Point (DMP) not being co-incident and clarify an acceptable proximity of the AMP and the DMP. 12. Review the ambiguity to clarify when it is necessary to include measuring elements on the neutral and/or earth conductors. 13. Tighten the minimum accuracy classes for Meters (CoP5) and current transformers (CTs) (CoPs 3, 5 and 10) as part of the review. 	

Please note that this list is not exhaustive and some issues may be consolidated, or new issues added, as part of the Issue Group process.

Justification for Examining Issue

The metering CoPs¹ set out the requirements for the specification and arrangement of Metering Equipment. Good governance requires these requirements to be set out clearly and unambiguously. The requirements should also be defined to ensure the cost of compliance is justifiable for the benefit of meeting the BSC Objectives. The origins of the CoPs were Engineering Recommendation M24 “Code of Practice for the Metering of Supplies from the CEGB” April 1973, which became the CEGB National Final Metering Scheme, which was absorbed into the Pooling and Settlement Agreement in 1990, which in turn were incorporated into the BSC in 1998. In the past 30+ years metering technology and the industry arrangements have changed significantly.

To optimise the activity of an Issue Group a series of aspects impacting the metering CoPs are combined in this single Issue.

1 Threshold boundaries between the CoP applicability

CoPs 1, 2 & 3 are defined by circuit capacity, whereas CoPs 5 & 10 are based on maximum demand. This inconsistent approach results in debate over which CoP is appropriate in certain cases. There are regular debates between the boundary, for example:

- What is meant by ‘circuit capacity’ when loading is near the boundary between CoP3 and CoP2.
- A high voltage (HV) supply can be considered a CoP5 installation if the maximum demand at the time of installation does not exceed 1MW, whereas an HV supply circuit capacity probably should be CoP3 (therefore requiring a check Meter) based on circuit capacity which would allow a maximum demand over 1MW.
- A CoP10 CT Meter can be used up to 100kW², but if the load exceeds 100kW it becomes non-compliant as it should be metered by a CoP5 meter.

The requirements between adjacent CoPs do not change significantly. It is proposed that the current boundaries should be reviewed to determine if they are still optimal for the current industry arrangements. It may be possible to consolidate or redefine the boundaries on a different basis, ideally one that does not need any further interpretation as it is based on physical criteria, for example:

- Low Voltage (LV) whole current
- LV CT
- HV CT up to a certain threshold
- HV CT above a certain threshold

The aim of consideration is to simplify the boundary definitions to remove the current ambiguity which leads to different interpretations.

¹ excluding CoP4

² Where relevant criterion, in Section X Annex X-1, for a 100kW Metering System is not met.

2 Review the use of the terms NHH & HH

During the migration of Metering Systems trading in the NHH market to the HH market, as a result of [P272 'Mandatory Half Hourly Settlement for Profile Classes 5-8'](#), there were questions raised about configuration requirements which differed even though there was no requirement to change the Metering Equipment - just that they were changing trading arrangements. Although the activity involved in P272 has declined it is still ongoing and the issue remains for some 50,000+ CT operated Metering Systems. The differences between NHH & HH are primarily within CoP4 associated with Commissioning.

Where the use of the terms Non-Half Hourly (NHH) & Half Hourly (HH) within the Metering CoPs can be eliminated it would future proof the requirements ahead of MHHS. Any Metering System can change how it is settled at any time. Therefore, making the requirements for commissioning, etc., consistent between NHH and HH reduces the opportunity for confusion of obligations or non-compliance during, or following, a Change of Measurement Class.

The aim of consideration is to simplify and, wherever possible, make consistent the requirement for HH & NHH settled Metering Systems.

3 Clarity for the specification of duplicate communications routes

Section 5.5 of CoP1 and CoP2 seek to set out a requirement to install duplicate remote communications paths to the Metering Equipment. The CoPs currently use different wording for no apparent reason.

The objective of section 5.5 is intended to reduce the risk of communications equipment failure preventing remote communication with the Metering Equipment for these higher volume sites. Failure to remotely communicate with Metering Equipment in a timely manner can result in material impacts on early Settlement runs. In principle, later Settlement runs should have metered data collected by a site visit, although some sites are particularly difficult to site visit (e.g. Offshore and remote locations). The risk of Settlement inaccuracy increased during the recent lockdown.

It is proposed to review the wording in both CoP 1 and CoP2 to create some wording which sets out the requirement in more generic terms which are not defined by a technical solution. The communications technical solutions have changed over the past 30 years and are continuing to change significantly. Participants have interpreted the CoP requirements differently and implemented different solutions for similar installations. These solutions cost the participant different costs and have differing resilience. The BSC should be setting out clear and uniformly interpreted requirements.

The aim of consideration is to refine the requirement into a consistent requirement for CoPs 1 and 2 using terminology that is not technical solution dependent or ambiguous.

4 Use of different manufacturers for main and check Meters

The CoP used to require different makes and models for main and check Meters. This was intended to mitigate the risk of type failures of Metering Equipment. This requirement was removed from the CoPs by [CP1224 'Review of Code of Practice 4'](#) which introduced into CoP4 a different calibration frequency for the main and check Meters. There is no industry

reporting as to whether calibration checks are occurring or revealing any concerns about Meter accuracy. As a result, a resilience to error which was designed into the use of different Metering Equipment has been replaced with operational checks, but there is no industry recognition as to whether the checks are happening. It is proposed to revisit this decision based on the experience over 11 years.

A recent significant trading Dispute occurred when the main metering failed and shortly followed by the check Meter. The lead time for replacement equipment was many months. This led to erroneous estimated data being used within Settlement, which was then corrected to more accurately reflect estimated data. Use of different equipment may have reduced the likelihood of failure at the same time.

One of the BSC validation checks is the comparison of main and check Meter data. If either or both of the Meter's accuracy drifts from alignment then a validation failure will alert to the failure. Metering Equipment of the same make/model and probably of the same batch can have a type fault that can allow a consistent drift, which will not trigger a main/check error.

The aim of consideration is to review the operational impact of the changes and determine if reporting is required and/or whether the requirement for the use of different equipment should be reinstated.

5 Requirement for Outstation to be interrogated when circuit de-energised

Good practice for larger metering installations is to ensure that Metering Equipment remains operational so that it can be interrogated when a circuit/feeder is de-energised - this is not mandated by the BSC. As a result, when a single circuit on a multi-feeder site is de-energised for operational reasons the Metering Equipment on that circuit can cease to operate. This results in the data for that circuit having to be estimated, which in turn results in the whole multi-feeder Metering System being regarded as estimated, which can adversely affect the apparent Supplier SVA Settlement performance. Some stakeholders have adopted manual 'workarounds' to amend the Meter Technical Details (MTD) to remove the temporarily de-energised feeder from the MTD. This increases the risk of Settlement data error if not managed correctly when the circuit is actually re-energised and the removed circuit is not reintroduced to the MTD.

CoP3 and CoP5 Appendix E states "Options for ensuring meters and displays can be read and remotely interrogated". The word 'options' leaves the use open to interpretation. Either the approach should be mandatory, or removed, if it is not a BSC obligation. These are the only CoPs that has this Appendix whereas it could be applicable to any multi-circuit Metering System. The Appendix also constrains the consideration to 'not normally maintained for a significant period' which means it may not be applicable to a temporary circuit de-energisation.

It should be reviewed whether there is justification for the BSC to require Metering Equipment at multi-feeder sites to be designed so that alternative sources of power to the Metering Equipment can ensure the data is maintained during circuit outages for maintenance, etc.

The aim of consideration is to review the requirements for multi-feeder sites and operational continuity of the Metering Equipment during de-energisation of a circuit.

6 CoP 6, 7, 8 & 9

These CoPs are regarded as redundant and as such it is proposed that it should be reviewed whether they should be removed from the BSC framework. It is believed they are no longer updated with relevant changes which increases their potential for misleading industry and undermining good governance. To maintain them fully would include wasteful effort by industry.

The aim of consideration is to consider removal of these apparently redundant CoPs.

7 Data Granularity - MWh vs. kWh

CoPs 1 and 2 refer to Measured Quantities as MWh (and kWh for SVA). CoPs 3, 5 and 10 refer to Measured Quantities as kWh. However, there is not any requirement for the level of granularity of the kWh/MWh data specified in the CoPs.

Smart metering is driving a granularity of Wh, so kWh with three decimal places. Smart metering data flows D0379/D0380 are specified in kWh to this level of granularity.

It is understood that the CVA convention is to use MWh data to 5dp which is equivalent to kWh to 2dp.

It should be reviewed whether the CoPs should be consistent in the use of data MWh vs. kWh. Then also consider whether the granularity of data of data recorded should be specified. It would seem reasonable to specify all whole current metering to the same granularity as smart metering (kWh to 3dp) and for LV CT and above to different levels of granularity. The exact detail to be considered by the Issue Group.

The aim of consideration is to review whether the BSC should require a certain level of data granularity for Metering Equipment.

8 Obsolete Metering Equipment

Anecdotal evidence indicates there are significant numbers of old and 'unsupported' Metering Equipment still in use. The BSC does not currently identify which equipment is supported or not. Where Metering Equipment is no longer supported by equipment manufacturers with firmware upgrades, calibration services, replacement parts or manufacturer interrogation software then that increases the risk to Settlement. The risk is that obsolete equipment cannot be promptly repaired or replaced on a 'like for like' basis after failure. As a result, new equipment will need to be specified, obtained, installed and commissioned. With larger value metering installations this can take many months. During this period, the Settlement data may be estimated or rely on a single Meter rather than a main/check pair reducing the resilience of the Metering Equipment due to failure of the remaining Meter and the loss of the main/check validation.

It should be considered how 'unsupported' should be defined which would include whether different risks/issues exist in different segments of the market. Then what notification and/or action industry stakeholders should take when Metering Equipment is deemed to be

‘unsupported’. Intuitively, the larger the site consumption, together with the longer ‘unsupported’ equipment is in use, the risk of unplanned failure and therefore loss of (or erroneous) Settlement data increases.

The aim of consideration is to review the risk of failure and identifying obsolete equipment would enable Registrants to take a proactive replacement programme to reduce the opportunity for Settlement errors.

9 Remote notification

Section 5.1.3 of CoP1 and CoP2 allows for a voltage failure to be notified to a manned location by the next working day. This reflects a legacy arrangement for Metering Equipment which does not promptly alert the Data Collector to a potentially serious error with the Settlement data. This arrangement is not mentioned in CoP3, 5 or 10. Removing this from CoPs1 and 2 would align the requirements across the CoPs and strengthen the requirement. The BSC does not explain or appear to require any action as the result of the alarm. Whereas for a remotely informed alarm the DC is required to inform the Meter Operator and/or Registrant. As a result, a failure could remain unresolved indefinitely resulting in incorrect data entering Settlement.

New metering arrangements installed will probably have eliminated this feature on legacy installations if and when the Metering Equipment was replaced. Removing the option from CoP1 and CoP2 will allow existing arrangements to remain but require new arrangements to ensure the DC is automatically aware of a voltage failure.

The aim of consideration is to review the risk reporting to a manned location leading to incorrect Settlement data being identified and/or resolved promptly.

10 Consider consolidation of the Metering CoPs into a single document

Based on the review of the CoP thresholds, consider whether the Metering CoPs (except CoP4) should be combined into a single document or remain as separate documents. The intention would be to develop clear document(s) for users.

Having a separate document for each makes maintenance of the documents harder and can be confusing for participants. Combining CoPs 1, 2, 3, 5 and 10 into a single CoP and highlighting the areas where there are differences could bring user experience and efficiency benefits for maintenance.

There is a lot of similarity across CoPs 1, 2, 3, 5 and 10. Where a Modification or Change Proposal is relevant to some or all of the CoPs there is an administrative burden on Elexon to update multiple documents. It would simplify the CoPs to industry if there was a single document where any differences are highlighted in the relevant section (e.g. Metering Equipment minimum accuracy requirements). This would support wider industry drives for Code simplification.

Conversely, users of the document may prefer to identify the type of connection that they are seeking to design (e.g. LV CT) and then refer to a single document that clearly defines the specific requirements. Contractually, many end user customers have a commercial arrangement that specifies the metering service for a “CoP5 LV installation” as opposed to

a “CoP3 HV installation”. This distinction is more understandable to many industry stakeholders than para X subsection Y para Z of a much larger document.

If consideration of this Issue results in a more consistent document of metering requirements then the unnecessary differences between the documents will decline.

The aim is to ensure the document(s) are presented in a clear way for users and to assist with stakeholder compliance.

11 Clarify an acceptable proximity of the Actual and Defined Metering Points

The ISG initiated action in February 2019 ([214/01](#)) to discuss criteria to define cable loss materiality, and the level where compensation need not be applied. This is seeking to determine proximity of the AMP and DMP, which is allowable with or without a Dispensation and/or Compensation. Consideration needs to be given to an approach that minimises effort when there is no Settlement impact. Although raised by ISG the consideration should be across CVA and SVA connection points.

Where the cable loss is having no material impact on Settlement data, an application for a Metering Dispensation still needs to be made even if no Compensations are applied to metered data. This causes an unnecessary burden on the applicant and Elexon to process a Metering Dispensation application. This could be avoided if the CoPs specified over what distances, at different voltage levels, the impact on Settlement was not material and would not require a Metering Dispensation to be applied for.

The aim is to reduce unnecessary administrative burden on stakeholders where Settlement accuracy is not impacted by the AMP and DMP not being co-incident.

12 Unbalanced loads

The Metering CoPs currently include text which describes the need for metering on all measuring elements which for unbalanced loads may include the neutral and/or earth conductor. It appears the requirement is either not sufficiently clear or is not being complied with.

A Meter Operator raised whether the wording in the CoPs is clear enough when it comes to the number of measuring elements required by the CoP. They are concerned that if a mistake is made it is then difficult to correct as it requires a change to the switchgear. For any future circuits it could be better to have a VT with star secondary connection and CTs on all three phases to mitigate the risk of a mistake being made. The only additional cost would be a CT as the VT secondary can be configured in Star / Delta. The Meter Operator was also concerned about the accuracy of a Metering System should the load be unbalanced on a three phase three wire system.

The aim is to review the ambiguity to clarify when it is necessary to revise the requirements for measuring elements on the neutral and/or earth conductors.

13 Revise the minimum class accuracy for certain Meters and CTs

Tightening the minimum accuracy classes for Meters (CoP5) and CTs (CoPs 3,5 and 10) has been a longstanding stakeholder desire to enable easier compliance with the CoP

overall accuracy requirements. Including in this Issue will enable a change to be formally progressed

Where a low voltage CT metering installation does not have calibration certificates with errors and only a certificate of conformity, the current requirements in CoP 5 do not allow the overall accuracy to be proved to be compliant if the minimum accuracy classes are used (i.e. in CoP5 a Class 2.0 Meter and Class 0.5 CT). This creates a Category 2 non-compliance when the Metering System is audited by the TAA. This could be avoided if the minimum accuracy classes were amended. It will also look into the use of Class 0.5s CTs to cater for CT ratios with a primary side rated significantly higher than the load being measured and being below 5% rated current value that the CT is not required to meet the accuracy limits of the relevant IEC standard.

The aim is to propose changes to the minimum accuracy requirements for certain meters and CTs.

Potential Solution(s)

The solutions for each of the above aspects should be developed by an Issue Group. The Issue Group may propose that one or more Change Proposals are raised to amend the relevant Metering CoPs.

The aspects considered may impact on Meter or Protocol approvals under BSCP601. For the following aspects:

- if CoP threshold boundaries would be amended then some deemed compliance continuity may be required; and
- if data granularity is specified then confirmation of capability may need to be confirmed.

Proposer's Details

Name

Tom Chevalier, AMO Consultant

Organisation

Association of Meter Operators

Email Address

AMO@PowerDataAssociates.com

Telephone Number

01525 862870

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