Issue 93 Digital Meeting Etiquette

- Welcome to the Issue 93 Workgroup meeting 9 – we'll start shortly
- No video please to conserve bandwidth
- Please stay on mute unless you need to talk – use IM if you can't break through
- Talk – pause – talk
- Lots of us are working remotely – be mindful of background noise and connection speeds

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Issue 93 - Metering Code of Practice Review

Meeting 9

24 June 2022

Meeting Agenda

Agenda Item	Lead
1. Welcome and Meeting objectives	Iain Nicoll (Chair)
2. Update on Actions	Stanley Dikeocha (Lead Analyst)
3. CoP Consolidation review	Iain Nicoll
4. Recommendation on reviewed aspects	Elexon Metering Team
5. A_18 ‘Clarify DMP for LV supplies	Mike Smith (Elexon SME)
6. Updates on reviewed Aspects	Stanley Dikeocha
7. AOB Items	Iain Nicoll
8. Next steps & Meeting close	Stanley Dikeocha

Meeting Objectives

Objectives for this meeting:

- Confirm the recommendation for previously reviewed aspects
- To review and confirm the next steps for Aspect 18 ‘Clarify DMP for LV supplies’
- Conclude the Issue 93 review

ACTION UPDATE

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Action Update

Owner	Action description	Captured from	Update
Elexon	Contact Central Volume Allocation (CVA) Meter Operator Agents (MOAs) to retrieve Calibration testing data/reports	WG6 – Calibration checks for Main and Check Meters	We have received no response from the CVA MOAs
Elexon	Contact Supplier Volume Allocation (SVA) MOAs to retrieve data, which will confirm if Calibration checks were performed on Prometer R/W Meter types	WG6 – Calibration checks for Main and Check Meters	We have received no response from the SVA MOAs
Elexon	Elexon to investigate the possibilities of creating a national private APN, which will be mandated for all Advanced HH Meters	Remote Communications Subgroup	Elexon to provide an update at the final WG meeting
Elexon	Elexon to establish a generic Metering Dispensation to allow 'like for like' replacement Meters or Outstations (i.e. a material change in Section L3.3), on a temporary basis (e.g. 1 year), so that Registrants have enough time to procure new Metering Equipment (including any racks) that comply with the prevailing version (and Issue) of the relevant CoP.	WG8 – Aspect 'Obsolete Metering'	This is currently being progressed.

COP CONSOLIDATION REVIEW

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CoP consolidation review

Category	LV Whole Current	LV CT	HV CT up to, and including, 40 MVA	HV CT over 40 MVA
Main / Check	Main only	Main only	Main and Check	Main and Check
Active Energy Meter	As per Electricity Act MID/MIR for < 100kWh/h or Class 0.5S for > 100kWh/h	Class 0.5S (MID/MIR)	Class 0.5S (MID/MIR)	Class 0.2S
Reactive Energy Meter	Class 3.0	Class 2.0	Class 2.0	Class 2.0
Different manufacturer for Main and Check Meters	N/A	N/A	Optional	Mandatory
CT	N/A	Class 0.5S	Class 0.2S	Class 0.2S – separate CTs for Main & Check Meters
VT	N/A	N/A	Class 0.5	Class 0.2 – separate secondary winding for Main & Check Meters
CT/VT Compensation	N/A	N/A	Optional	Mandatory
Communications	Single	Single	Use A_03 CP solution	
Outstation Auxiliary Supplies	N/A	N/A	Optional	Mandatory

CoP consolidation review

- Removed diverse CT/VT Cable Routing
  - Contractors running cables, unlikely to follow CoP requirements
  - Difficulties assuring compliance

- Proposed class 0.5s Meters for LV CT and HV CT up to 40MVA categories
  - Most accurate solution for Settlement
  - Improved Overall Accuracy
  - Confirm potential cost increase to move from class 1.0 to class 0.5s
  - ‘s’ class Meter accuracy matches CT requirements down to 1% Ir

- Proposed class 0.2s CT and class 0.5 VT for HV CT up to 40MVA category
  - Most accurate solution for Settlement
  - Improved Overall Accuracy

- Use solution from A_03 ‘Duplicate communications paths for Metering Equipment within CoPs 1 and 2’ CP for communications requirements

RECOMMENDATIONS ON REVIEWED ASPECTS

ASPECT 13 ‘SECURITY OF PUBLIC IP ADDRESSES FOR COMMUNICATIONS’

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Recommendation/Update – Security of using public IP addresses for communications

Issue/Background

- Many of the communications technologies mentioned in the CoPs are outdated and will soon need to be replaced with the newer emerging technologies such as NB-IoT or LTE-M.
- There is no clear requirements in the CoPs as to whether IP based communications methods should operate on a public or private basis. This can lead to interoperability issues within the Private IP space and security concerns within the public IP space.

Progression

- This was discussed and debated at the Issue 93 Communications Subgroup.

Our Recommendation

- The creation of a “Communications Guidance Note”.
- A new process (potentially in BSCP601) for the approval of communications methods. These methods (once approved) could then be added to either the CoPs or the new Guidance Note. This will also facilitate the removal of ageing and defunct Communications types (such as PSTN, Paknet, etc).
- An RFI to canvass views on Public vs Private IP communications methods.
- Elexon to investigate the establishment of a “national APN” to be required to be placed on all Advanced Metering Sims to resolve interoperability issues with Private APN.

ASPECT 04 ‘CALIBRATION CHECKS FOR MAIN AND CHECK METERS’

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Recommendation/Update – Calibration checks for main and check meters

Issue/Background

- Are calibration tests being carried out?
- No results of calibration tests on meter types being submitted to Elexon

Progression

- This was discussed and debated at the Issue 93 Workgroup 8.

Our Recommendation

- Continue and reinforce the current process (periodic and sample calibrations)
- End of life testing (CoP specific e.g. all for CoP1 and CoP2)
- End of life testing (CoP specific sample testing of existing meter types e.g. CoP3 and CoP5)
- CT non-domestic CoP10 not currently covered – align with CoP3 and CoP5 proposal

ASPECT 16 ‘OBSOLETE METERING EQUIPMENT’

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Recommendation/Update – Obsolete Metering Equipment

Issue/Background

- Following initial approval via Compliance Testing, there are no requirements under the BSC to end date approval for a Meter type that is no longer supported by the manufacturer
- There is a risk to Settlement where unsupported Meters go faulty and there are issues installing a different Meter type (e.g. rack mounted Meters that require a different type)

Progression

- This was discussed and debated at the Issue 93 Workgroup 8

Our Recommendation

- Process to be added to BSCP601 to check and confirm where a manufacturer has stopped supporting a Meter type
- Process to be added to BSCP601 to withdraw Compliance Certificate for unsupported Meter type
- Process to be added to BSCP601 to withdraw Protocol Approval where a Data Collector no longer can support the Protocol Approval
- Process to be added to give a transition period to remove unsupported Meter types
- Raise a Metering Dispensation to allow unsupported Meter types to be installed where a fault occurs and the Meter type is still in the transition period for removal

ASPECT 17 ‘MINIMUM BURDEN REQUIREMENTS AND CT RATIO VS CIRCUIT/AGREED CAPACITY’

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Recommendation/Update – Minimum burden and CT ratio vs circuit/agreed capacity

Issue/Background

- Standard ratio CTs being installed could cause issue with accuracy at low loads; no test points below 1%Ir
- Metering Equipment imposing a low burden on measurement transformers that could cause an issue with accuracy; no test points below 25% of Rated Burden (VA)

Progression

- This was discussed and debated at the Issue 93 Minimum Burden and appropriate CT Ratio Subgroup

Our Recommendation

- For minimum burden
  - evidence received from manufacturers that accuracy improves at lower burden where there is sufficient magnetising current
  - Extrapolation of VT errors to lower burden points methodology to be recommended to improve overall accuracy
  - Align across the CoPs that additional burden can be added to maintain overall accuracy
  - Add text to CoPs about things to consider for choosing a typical burden for Settlement purposes

- For CT ratios
  - Following implementation of CP1553 and recommendation that CTs are 0.5S and they have a test at 1% Ir the materiality is low
  - Cautionary text to be added to CoP if site can operate outside of specified limits

NEW ASPECT

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ASPECT 18 ‘CLARIFY THE DMP FOR LV SUPPLIES’

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Aspect 18 – Clarify the DMP for LV supplies – BSC and CoP requirements

- Appendix A of the Half Hourly Metering Codes of Practice (CoPs) set out the Defined Metering Points (DMPs) for measuring Imports/Exports at Boundary Points (BP) to the Total System and imports/exports at Systems Connection Points (SCPs)
- Generally, the DMP is 'the point of connection' to the Total System (at BPs) or between two Systems (at SCPs)
- When large (=>132kV) Offshore Wind Farms began connecting to Distribution Systems (at Offshore Transmission System Connection Points (OTCPs)), or directly to the Transmission System (at BPs), they connected some of their assets to low voltage circuits, in the onshore substations and Offshore substations, and the LV transformers are generally owned by the Offshore Transmission Owner (OFTO) and are consider part of the Total System.

- Nothing in the BSC says who should own Plant and Apparatus but, for BPs, considers whether Plant and Apparatus forms part of the Total System or not - Section K:

1.1.4 For the purposes of the Code:

(a) in relation to the terms Export and Import, references to the Plant or Apparatus of a Party shall be treated as including:

(i) the premises of a Customer supplied by that Party;

(ii) Plant and Apparatus of a Third Party Generator for whose Exports that Party has elected to be responsible in accordance with paragraph 1.2.2(a)(ii)(2);

(iii) Plant or Apparatus (whether or not owned or operated by that Party), not forming part of the Total System, by which electricity is transported from the Total System to premises supplied by the Total System or (as the case may be) to the Total System from Generating Plant providing electricity to the Total System;

(iv) an Interconnector in relation to which that Party is an Interconnector User.

1.3 Obligations of Parties in relation to Systems Connection Points

1.3.1 Subject to the further provisions of this Section K, the Party responsible for any Systems Connection Point shall:

(a) install, maintain and operate, or secure that there is installed, maintained and operated, in accordance with Section L, Metering Equipment by which (in accordance with the further requirements of the Code), at the Systems Connection Point, the quantities of electricity flowing between the Systems which are connected at that point can be measured; and

(b) register the Metering System(s) which result or will result from such installation in accordance with paragraph 2.

1.3.2 For the purposes of paragraph 1.3.1, the Party responsible for a Systems Connection Point shall be:

(a) in the case of a Grid Supply Point other than an Offshore Transmission Connection Point, the Distribution System Operator whose System is directly connected to the Transmission System at that point;

(b) in the case of a Distribution Systems Connection Point, the Distribution System Operator nominated in accordance with paragraph 1.3.3; and

(c) in the case of an Offshore Transmission Connection Point, the NETSO.

1.3.3 The Distribution System Operators whose Distribution Systems and/or Associated Distribution Systems are connected at a Distribution Systems Connection Point shall, in accordance with BSCP20 and BSCP25, agree between themselves and nominate which of them shall be responsible for such Systems Connection Point.

- We have therefore defaulted to saying the DMP for LV supplies (at BPs) is the point of connection to the Total System and issued specific guidance on metering Offshore wind farms (as a result of these LV supplies not being metered initially and then being subject to Metering Dispensations).

Aspect 18 – Clarify the DMP for LV supplies – Review of Metering Dispensations

- During the Review of Metering Dispensations and Non-Standard BM Units, we noted that there were a number of Metering Dispensations related to non-provision of LV Meters at Offshore Wind Farms and there were circuits where load was shared between the OFTO's and Wind Farm Operator's assets (e.g. Supervisory Control and Data Acquisition (SCADA) systems, communication or navigational lights). In both scenarios the WFO's loads then had to be accounted for as estimates in the Aggregation Rules.

- In relation to circuits sharing load we initially recommended that the relevant CoPs should be amended to not require metering for supplies where assets to run a windfarm are shared by the windfarm operator and the OFTO?

- **Two of three respondents agreed with our initial recommendation:**
  - One respondent (a WFO) recognised the benefits in having flexible and pragmatic arrangements.
  - One respondent (AMO) in his consultation response later clarified that he believed that the total low voltage site supply should be metered for Settlement purposes. This consumption should be included in a BM Unit of one of the parties responsible (site operator) for the platform. The split of the low voltage consumption between the various users of the platform is then a private arrangement between themselves (outside of Settlements). This could be done by installing non-settlement metering, using estimates or they may wish to ignore the consumption or agree a nominal value. In this way all the energy used for site supplies on the Offshore platform is accounted for within the Settlement arrangements. The respondent does not see the need for a Metering Dispensation (to not require metering for supplies where assets to run a windfarm are shared by the windfarm operator and the OFTO) if a DMP can be established on the low voltage side of the site supplies transformer. This may need a change to the DMP in the CoPs via a Change Proposal. This approach avoids the need for trying to meter multiple small low voltage supplies or even DC supplies. It allows for new equipment and evolution of the platform without having the worry about metering new or different circuits. The approach ensures that the users of the platform have a suitable commercial imperative to minimise the energy usage on the platform - they are paying for all the energy use on the platform. The respondent also noted that they see the usage on the Offshore platform as identical to the site supplies used on a land site. Again, all the site supplies should be metered/settled and how the energy is split between the various users of the site is a private arrangement between the users of the site. This framework would equally apply to the site supplies used at any transmission site – the site operator should pay for the energy used on site – either through a metered low voltage supply from the transmission system (CVA) and/or connection taken from the local distribution network (SVA). This removes the site energy use from the losses calculation and puts the clear commercial incentive on the site operator to minimise their own energy usage. This approach is also consistent with the approach already enshrined in the distribution price controls that require the distribution companies to meter (or include unmetered energy) in the SVA arrangement for their substation usage.

  - One respondent (NGESO) did not agree with our initial recommendation. They noted that OFTOs' networks can be integrated to link between multiple Offshore wind farms. This means that the allocation of energy between the OFTO and different wind farm operators can be complicated without clear metering at all Boundary Points and Systems Connection Points. Consequently, they believe that the Metering Dispensation process should continue to be used on a case-by-case basis for supplies shared between an OFTO and wind farm operator. However, this respondent also noted that they may be willing to agree to supplies not being metered if they are below a certain threshold such that the Transmission Company would not be exposed to material adverse effects, e.g. additional energy balancing costs or impacts on transmission loss calculations and costs.

- Our final recommendation was to set up a working group to propose solutions to the issue of metering LV supplies in Offshore wind farm substations (and onshore substations generally).

- WFO's now meter their LV supplies at the point of connection to the OFTO's assets so we do see a lot of Settlement Meters for LV supplies. In some cases, up to 70 (AC and DC).

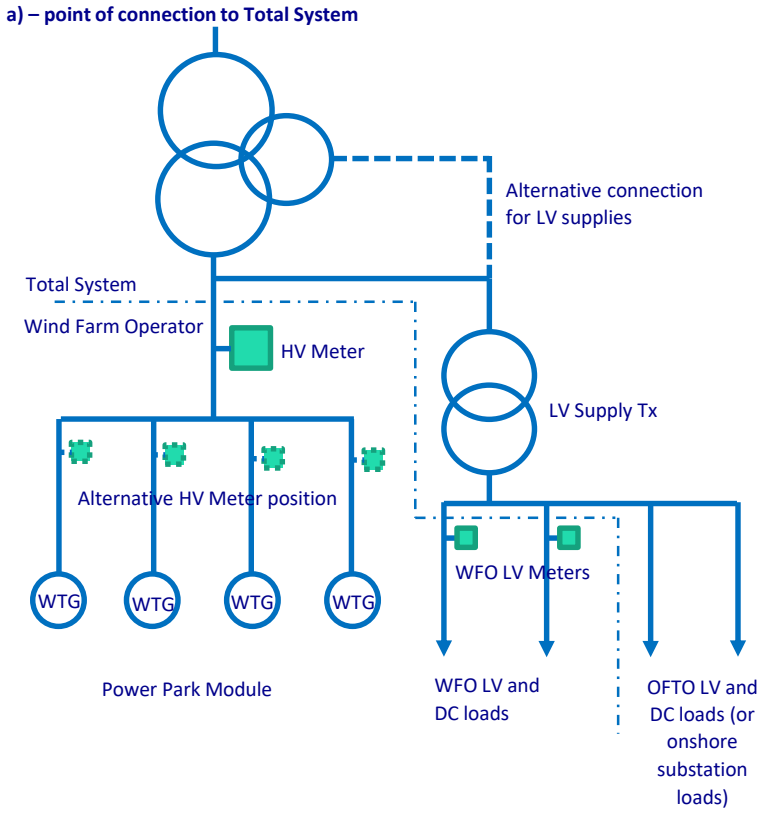
Aspect 18 – Clarify the DMP for LV supplies – Solution?

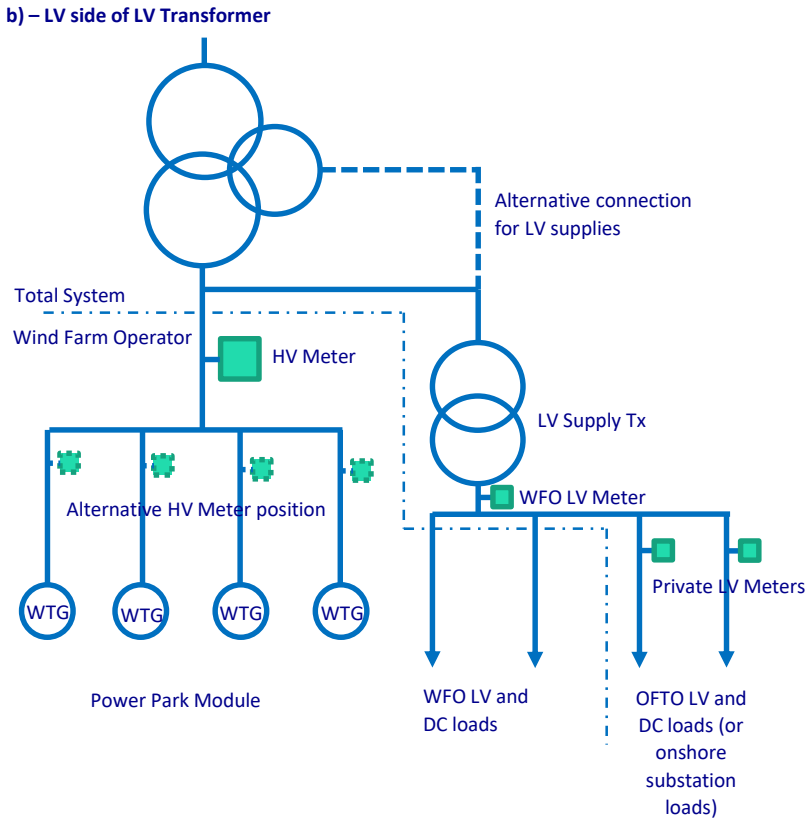
So, do we:

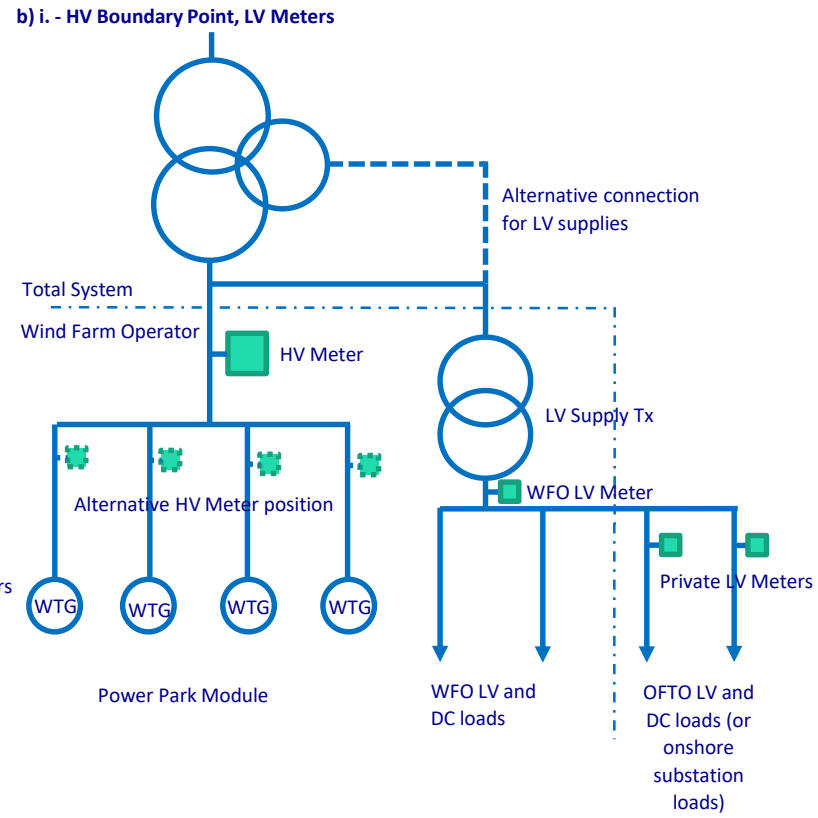
a) Formalize the DMP in Appendix A, for LV supplies, as 'the point of connection' to the Total System; or

b) Formalize the DMP in Appendix A, for LV supplies, as 'the low voltage side of the Low Voltage transformer' connected to the Total System?

i. Does/should ownership of the LV transformer affect this? E.g., if owned by the OFTO (and considered part of the Total System) or even the WFO (and not considered part of the Total System). Is this consistent with the BSC (i.e. Boundary Point doesn't coincide with DMP). Losses in LV Transformer (Tx)?







ASPECT UPDATE

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Aspect Update – CP/Mod raised, recommendation confirmed

Aspect number	Description	Progress	Status
A_09	Tightening the minimum accuracy classes for Meters (CoP5) and CTs (CoPs 3, 5 and 10)	CP1553 raised to address the issue. To be implemented in the June 2022 standard BSC Release.	Closed (CP pending implementation)
A_12	Future proofing changes to the IEC standards	CP1554 raised to address the Issue. To be implemented in the June 2022 standard BSC Release.	Closed (CP pending implementation)
A_15	Monitoring of Voltage failure alarms	CP1550 raised to address the issue in this aspect. To be implemented in the June 2022 standard BSC Release.	Closed (CP pending implementation)
A_11	Determining the relevant CoP for embedded circuits	CP to be raised in August 2022	Awaiting CP
A_07	Consideration of DMP vs AMP	CP to be raised in August/September 2022, which will effect the recommendation in options 1 and 3 Mod to be raised in August/September 2022, which will effect the recommendation in options 2 and 4	Awaiting CP
A_14	Requirement to provide SLDs for HV and EHV site	Recommendation confirmed and agreed with the Proposer. CP to be raised in August 2022	Awaiting CP

Aspect Update – CP/Mod raised, recommendation confirmed

Aspect number	Description	Progress	Status
A_06	MWh vs kWh	Recommendation confirmed and agreed with the Proposer.	Closed, recommendation confirmed.
A_05	De-energised circuits	Recommendation confirmed and agreed with the Proposer.	Closed, recommendation confirmed.
A_02	HH vs NHH requirements	Recommendation confirmed and agreed with the Proposer.	Closed, recommendation confirmed.
A_03	Duplicate communications paths for Metering Equipment within CoPs 1 and 2	Raise a CP to clarify the duplicate communications path requirement in CoPs 1 and 2	Awaiting CP
A_10	Reactive only sites	Raise a CP to include a cautionary text in CoPs 1, 2, 3 and 5, which will provide guidance on Active Energy accuracy where Settlement Metering Equipment is being used for a Reactive Energy ancillary service	Awaiting CP
A_08	Measuring elements on neutral and earth conductors	Use text from 5.3 ‘Meters’ in 5.1 ‘Measurement Transformers’ and provide guidance on neutral and earth conductors. Remove neutral and/or earth conductors sentence in 5.3.	Awaiting CP

The recommendation for each Aspect will be accurately reflected in the Issue Report, which will be shared with the Issue Group for review and feedback.

Aspect Update – in progress, awaiting recommendation

Aspect number	Description	Progress/update	Status
A_13	Security of using public IP addresses for Communications to Metering Systems	Elexon will confirm the final recommendation with the WG at the final Issue 93 WG meeting	Recommendation to be confirmed in WG9
A_04	Calibration checks for Main and Check Meters	Elexon contacted SVA and CVA MOAs to retrieve the calibration checks data, which will supplement the recommendation to the WG. No responses were received from the SVA and CVA MOAs.	Recommendation to be confirmed in WG9
A_16	Obsolete Metering Equipment	BSCP601 will be updated to effect the solution	Recommendation to be confirmed in WG9
A_17	Minimum burden requirements and CT ratio vs circuit/agreed capacity	The WG concluded that an appropriate CT ratio is used to ensure accuracy. Low burdens may not present an issue to accuracy if the appropriate CT ratio is specified. VT extrapolation of errors method deemed suitable. Received responses from four manufacturers.	Recommendation to be confirmed in WG9
A_01	Consolidation of the CoPs	To be finalised in June 2022	Considered by the Issue Group
A_18	Clarify DMP for LV supplies	To be considered in June 2022	Not Started

AOB AND NEXT STEPS

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AOB

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AOB

- Progressing the CoP4 changes under the Issue 93 backlog

NEXT STEPS

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Next steps

- Share the Issue 93 Report for review
- Table the Issue 93 Report at the August/September BSC Panel meeting
- Progress the recommended changes and close Issue 93

MEETING CLOSE

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THANK YOU

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24 June 2022