ELEXON

# Metering Dispensation D/562 - Redbridge

**Imbalance Settlement Group (ISG)**

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Summary

**EDF Energy Ltd has applied for a Metering Dispensation (D/562) from Code of Practice 2 for the Metering Equipment associated with four Customers at the Redbridge site. Metering Dispensation D/562 updates and replaces Metering Dispensation D/549, which covered the Metering Equipment for the existing three Customers at the Redbridge site, and additionally, seeks to cover the Metering Equipment for a new Customer at the Redbridge site. We invite the ISG to approve Metering Dispensation D/562 on a lifetime basis.**


## 1. BSC requirements

1.1 Section L[1] of the Balancing and Settlement Code (BSC) requires all Metering Equipment to either:

- comply with the requirements set out in the relevant Code of Practice (CoP) at the time the Metering System is first registered for Settlement under the BSC (L3.2.2); or
- be the subject of, and comply with, a Metering Dispensation (L3.4).

1.2 Section L allows the Registrant of a Metering System, or prior to the appointment of a Registrant of a Metering System, BSCCo, to apply for a Metering Dispensation if, for financial or practical reasons, Metering Equipment will not or does not comply with some or all the requirements of a CoP.

1.3 The process for applying for a Metering Dispensation is set out in BSCP32[2].

## 2. Confidentiality

2.1 BSCP32 allows the Metering Dispensation applicant to request confidentiality via the application form (BSCP32/4.1).

2.2 In this case, the applicant has asked to keep certain information confidential (Attachments B - F). The applicant has made the application form itself (Attachment A) public by placing the confidential content into an appendix (Attachment B) and referencing to it from the application form.

2.3 The areas, in the application form, to remain confidential are:

- Part D1 - Loss Adjustments for Power Transformer and/or Cable/Line Losses
- Materiality
- Site details
- Technical details

[1] 'Metering'
[2] 'Metering Dispensations'

## 3. Perceived ambiguity around the applicable CoP for embedded circuits

3.1 Due to perceived ambiguity in the CoPs about which CoP is applicable to Metering Equipment for embedded circuits, that have a lower rated capacity than the Boundary Point (BP) circuit, Elexon recommended that applicants seek a Metering Dispensation from the CoP applicable to the BP circuit rated capacity (e.g. CoP2) when metering embedded circuits. If desired, an applicant could request to use Metering Equipment to a 'lower' CoP if the circuit capacity for the embedded circuit was below that of the BP circuit and fell within the scope of another CoP (e.g. CoP3[3]).

3.2 Elexon will implement P453[4] on 2 November 2023 and it will update the relevant CoPs and clarify that the applicable CoP for Metering Equipment, for embedded circuits, is based on the lowest rated item of Plant (e.g. transformer, line, etc.) of the embedded (i.e. metered) circuit and not the BP circuit.

## 4. Background to Metering Dispensation D/549

4.1 The Cowley Battery Energy Storage System (BESS) (T_COWB-1) connects directly to the 33kV Transmission System at Redbridge. Its Metering Equipment is to CoP2[5] standards and is located at the BP/Defined Metering Point (DMP).

4.2 Pivoted Power, part of EDF Renewables Energy, has built a private wire network to connect, initially, three Customers to the Cowley BESS network and, therefore, the Transmission System. These are:

- Tesla (with a 2MVA circuit capacity);
- Oxford City Council (with a 2.5MVA circuit capacity); and
- Fastned Charging (with a 2.5MVA circuit capacity).

4.3 The three Customers connect to the Transmission System via two intermediary 33kV substations[6] where additional Customers will connect in the future. One additional Customer is to connect in October 2023[7] and another potential Customer is due to connect in July 2024.

## 5. Existing Metering Dispensation D/549 - Redbridge

5.1 EDF Energy Ltd applied for a lifetime Metering Dispensation (D/549) from CoP2 because the Metering Equipment for the three Customers at Redbridge is not located at the DMP. This is because it is financially unviable to locate the Metering Equipment, for the private wire connected Customers, at the DMP (Attachment C).

5.2 The three Customers' circuits are:

- Located 7.2km from the DMP; and
- According to D/549, metered to CoP2 standards at 33kV, upstream of their own power transformers, and supplied from the same switch panel in the local switch room, which incorporates the measurement transformers and Meters.

5.3 Power Systems UK, an independent HV contractor who was responsible for the design and installation of the entire private wire network, calculated the losses between the three Customers' Actual Metering Points (AMPs) and the DMP. Each Customer has loss correction factors applied to account for losses on the private wire network, based on their consumption. The Meter Operator Agent (MOA) applied these loss correction factors as Meter scaling factors.

5.4 At its meeting on the 10 January 2023, the ISG (261/03) approved D/549 for Redbridge on a lifetime basis, subject to the condition that the Registrant submits, for review by the Electrical Loss Validation Agent (ELVA), any changes to loss correction factors applied, as a result of:

- A review based on the actual demand of the existing Customers on the private wire network; or
- When any new customer joins, or existing customer leaves the private wire network.

[3] 'Code of Practice for the metering of circuits with a rated capacity not exceeding 10MVA for Settlement purposes'
[4] 'Metering Dispensation process improvements and clarification to the CoPs'. Formal title: 'Amending the Metering Dispensation process, updating AMP/DMP in the CoPs and clarifying the relevant CoP'
[5] 'Code of Practice for the metering of circuits with a rated capacity not exceeding 100MVA for Settlement purposes'
[6] The applicant has recently removed one substation from the single line diagram (SLD), Attachment C, as it is not relevant to the application at present and will be for a future Customer.
[7] Delayed from September 2023.

## 6. Metering Dispensation application D/562

6.1 EDF Energy Ltd has applied for a lifetime Metering Dispensation (D/562) from CoP2 for the Metering Equipment associated with four Customers connected to the Cowley BESS private wire network at the Redbridge site.

6.2 Metering Dispensation D/562 updates and supplements the information provided in Metering Dispensation D/549, in order to further clarify non-compliances:

- It clarifies the non-compliances with CoP2 for the Metering Equipment associated with the existing three embedded Customers at Redbridge, as identified within D/549:

  – The current transformers (CTs) comply with CoP3 (class 0.5s) not CoP2 (class 0.2s); and
  – The voltage transformer (VT) is busbar connected, not circuit connected, and a single secondary winding (class 0.5, to CoP2 accuracy class) feeds all six Meters (i.e. three sets of main and check Meters). Each Customer's circuit should have its own VT and it should feed the related Customer's main and check Meters only.

  Note: The capacity of each existing Customer's circuit is limited, by the Customers' own power transformers, to 2.0MVA (Tesla), 2.5MVA (Oxford City Council) and 2.5MVA (Fastned Charging), i.e. below the CoP3 threshold.

- It covers the addition of a new embedded Customer (Oxford Bus Company) to the private wire network, identified in D/549, and clarifies the non-compliances with CoP2 for the associated Metering Equipment:

  – The CTs comply with CoP3 (class 0.5s) not CoP2 (class 0.2s); and
  – The VT is busbar connected not circuit connected (class 0.5, to CoP2 accuracy class).

  Note: The capacity of the new Customer's circuit is limited, by the Customer's own power transformers (3 x 2.5MVA), to 7.5MVA, i.e. below the CoP3 threshold.

- It covers the update of the Meter compensation factors, calculated in D/549, required for each existing embedded Customer on the Cowley private network, due to the addition of the new Customer load at the Oxford Bus Company. In addition, it covers a separate Meter compensation factor the MOA will apply to the new embedded Customer's Meter.

  – The AMPs for the existing three Customers, and the new Customer, are not coincident with the DMP, the point of connection to the Transmission System at the Redbridge substation. This is where the Metering Equipment for the Cowley BESS is located. As a result, the Registrant of the Cowley BESS Balancing Mechanism (BM) Unit will need to ensure that it updates its Aggregation Rule for the Cowley BESS BM Unit to deduct the Metered Volumes for all four Customers' BM Units, off the Metered Volumes for the Cowley BESS BM Unit.

6.3 If approved, Metering Dispensation D/562 will supersede (replace) Metering Dispensation D/549.

## 7. MDRG comments

7.1 We circulated the Metering Dispensation application and its attachments to the Metering Dispensation Review Group (MDRG) for comments (Attachments A – F).

7.2 Two out of four MDRG Members responded. Two MDRG Members support the application on the following bases:

- the overall accuracy at the DMP is within CoP2 limits for all the circuits; and
- subject to confirmation that the Metering System remains within the overall accuracy limits of CoP2 with Meter, CT, and VT losses as well as cable losses taken into consideration.

7.3 We contacted the applicant and asked it to confirm if overall accuracy will be maintained within CoP2 overall accuracy limits at the DMP, considering Meter, CT and VT errors as well as cable losses. The applicant confirmed that the MOA has not compensated the Customers' Meters for CT and VT errors but the actual errors of the class 0.5s CT (CoP3) used meet the class accuracy requirement of a class 0.2s CT (CoP2). The applicant also confirmed that without compensating the Meters for measurement transformer errors the overall percentage errors from the combination of CTs, VT, and Meters themselves are within the acceptable level as per CoP2.

## 8. NETSO comments

8.1 We circulated the Metering Dispensation application and its attachments to the National Electricity Transmission System Operator (NETSO) for comments (Attachments A – F).

8.2 The NETSO supports the application having concluded that the accuracy requirement at the DMP is met and there are no significant downsides causing a negative impact.

## 9. ELVA comments

9.1 We circulated Metering Dispensation application and its attachments to the Electrical Loss Validation Agent (ELVA) and asked it to validate the proposed cable loss compensation factors (Attachments A – F).

9.2 The ELVA confirmed that the compensation figure for the Oxford Bus Company Metering System of 0.375% (at full load) is satisfactory. The ELVA did seek clarification from the applicant as to why it used a larger current value for the newly proposed Meter compensations at full load of 0.657%, even though the circuit capacity has remained unchanged. Using these larger current values the ELVA achieved similar cable loss figure and thus find the proposed compensation of 0.657% suitable. The applicant confirmed:

"The change/increase in current is as a result of the consultant used here (PSUK) assuming 0.95pf and an operating voltage of 0.94p.u. in their study. According to PSUK, this is done as standard with all loss calculations they perform to ensure sufficient tolerance on a cable. In the initial dispensation, they used unity pf and an operating voltage of 1p.u. – but I'm told this isn't their typical practice.

If this updated assumption is incorrect and not in-line with the EVLA method, please let me know and I'll request an update to the figures provided in our dispensation."

9.3 In response, the ELVA suggested the applicant updates the application form if Elexon feels this is a concern. Elexon does not feel this is a concern but we will ask the ELVA to modify its methodology to accept calculations that do not assume unity power factor at rated voltage going forward.

## 10. Elexon's view

10.1 Elexon supports this application as CoP2 overall accuracy limits for the four Customers' Metering Systems will be maintained at the DMP. The applicant's MOA will apply loss compensation to the four Customers' Meters to account for their share of cable losses from their respective AMPs, at 33kV, to the DMP, at 33kV.

10.2 The use of a busbar VT to feed all three existing Customers' Meters will lower redundancy of all three existing Metering Systems. This could potentially mean three times more estimation is required if the VT itself fails for these Customers. The Central Data Collection Agent (CDCA) will estimate 'to trend' (i.e. for demand sites), which should minimise the impact but, the estimates could become more inaccurate over time if it takes a long time to replace the VT. However, due to the difference metering arrangement, the Cowley BESS Metering System will pick up any errors in estimates and not Registrants of other Metering Systems beyond the Redbridge site.

10.3 The new Customer's VT will also end up supplying voltage signals to another potential new Customer. If this happens, a new Metering Dispensation will be required for the five Customers. We therefore recommend the same condition that the ISG agreed for Metering Dispensation D/549 is applied to Metering Dispensation D/562, should the ISG approve it.

## 11. Recommendation

11.1 We invite the ISG to:

a) **APPROVE** Metering Dispensation D/562, from Code of Practice 2, for the Metering Equipment associated with the four Redbridge Customers, on a lifetime basis, subject to the Registrant submitting, as part of a new Metering Dispensation application, for the Electrical Loss Validation Agent to review their suitability:

- Any changes to loss correction factors applied, as a result of a review based on the actual demand of the existing Customers on the private wire network; or
- When any new Customer joins, or an existing Customer leaves, the private wire network.

## Attachments

Attachment A – Metering Dispensation D/562 application

Attachment B (CONFIDENTIAL) – Appendix 1

Attachment C (CONFIDENTIAL) – Updated Redbridge single line diagram (SLD)

Attachment D (CONFIDENTIAL) – Oxford Bus Company (OBC) metering schematic

Attachment E (CONFIDENTIAL) – HV cable sizing OBC and Redbridge

Attachment F (CONFIDENTIAL) – HV cable sizing OBC

**For more information, please contact:**

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