

CP Progression Paper

CP1519 'Treatment of Low Capacity Connections for Site Specific Line Loss Factor Calculations'

ELEXON



Committee

Imbalance Settlement
Group



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About This Document

This document provides information on new Change Proposal (CP) CP1519 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 capture any comments or questions from the Imbalance Settlement Group (ISG) Members on this CP before we issue it for consultation.

There are six 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 CP1519 proposal form.
- Attachments B-E contains the proposed draft redlined changes to deliver the CP1519 solution.

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1 Why Change?

Background

Line Loss Factors (LLFs) are values calculated and applied to Metered (and Unmetered) Volumes to account for Distribution losses. Importing sites are normally assigned a LLF value greater than 1, as more energy must be dispatched than required to account for the losses that will occur along the way. Exporting sites are normally assigned a LLF value less than 1 for the opposing reason. Section 3.1 of [Balancing and Settlement Code Procedure \(BSCP\) 128 'Production, Submission, Audit and Approval of Line Loss Factors'](#) lists 17 Principles to be used by Licensed Distribution System Operators (LDSOs) when calculating LLFs that will apply for the forthcoming BSC Year.¹

Before implementation of new annual LLF values at the start of each BSC Year, ELEXON is required to review LLF methodologies submitted by LDSOs against the BSCP128 Principles, and then submits these to the BSC Panel for approval. Following Panel approval of LLF calculation methodologies, each LDSO must subsequently calculate LLFs in accordance with the approved methodology and submit them to ELEXON. ELEXON then conducts an audit of the calculations in line with the previously approved methodologies, for Panel approval.

LLFs are calculated on an individual basis for sites connected at Extra High Voltage (EHV²) and at the customer's request where agreed with the LDSO and on a generic basis for all other connections.

What is the issue?

There are an increasing number of EHV Sites with a 'main' connection and one or more subordinate³ small-scale connections. The subordinate connection is often 1 MVA or less, and the majority are ancillary import connections for Generating Plant and Apparatus that may become the Sites only source of import when the 'main' connection is not being used. An example of a subordinate connection may be a low HV import connection to power aircraft avoidance lights on wind turbines when the turbine is not generating its own power. Another example may be a small import connection used to 'keep the lights on' when a power Station is not generating electricity to be used on Site.

Subordinate connections have low maximum demand and consumption and, if they were single connections in their own right, would be connected at lower voltage levels with generic LLFs.

Power-flow modelling⁴ is used by LDSOs (as part of their calculation of LLFs) when performing variable losses calculations where maximum demand values are key parameters. Low maximum demand can produce low signal-to-noise ratios during power-flow modelling, which can distort resulting LLF values, increasing their volatility. This adds the risk of misrepresenting the losses calculation accuracy and increasing loss value volatility.

In addition to low maximum demand, subordinate connections often have low (kWh) volumes, so associated losses have negligible material significance compared to the energy volumes for the main connection. Due to the potential for distortion in the LLF values, and



How does the LLF audit process work?

The process of the LLF Audit starts on 1 August each year, when LDSOs need to either submit their calculation methodology or (for Embedded LDSOs) confirm that they will be Mirroring the methodology of their Host LDSO.

For LDSOs that calculate LLFs a site visit is required. This part of the Audit takes place until December each year. For Embedded LDSOs that Mirror, ELEXON is required to review and approve the calculation methodologies and resulting LLFs of the relevant Host LDSO(s) first.

The process for LDSOs that Mirror takes place between January and March each year. By 10 March we have to make sure that all approved LLFs for the upcoming BSC Year are in SVA and CVA Settlement systems ready for 1 April.

For more information, please see [guidance on the BSC Website](#).

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¹ The BSC Year runs from 1 April to 31 March.

² BSCP128 requires each LDSO to define EHV for the purpose of calculation of LLF in the LDSO's approved LLF methodology. In most methodology statements EHV is defined as a nominal voltage of 22,000 volts or above.

³ Subordinate in this sense is used to refer to a low HV connection that is secondary to the Site's main connection. This is used to reflect the language used in LDSO's methodology statements.

⁴ A theoretical model used to predict output flow of energy at certain points within a System

subordinate connections having comparatively low overall losses, the use of site-specific calculations for subordinate connections would not provide any obvious benefits.

Following the LLF audit round for the 2018/19 Settlement Year ELEXON hosted its annual 'lessons learned' group with all LDSOs. The lessons learned group gave unanimous support to this CP being raised.

Proposed solution

CP1519 will amend Principle 17 (see rationale section below for further information about Principle 17) in BSCP128 and (amend three of its appendixes to reflect the changes) so that LDSOs can use a generic LLF for these subordinate connections as a default replacement process as permitted by Principle 17. The use of generic LLFs for subordinate connections will be optional for LDSOs but, if used, subject to scrutiny, including auditing, in the same way as any other LLF methodology.

The new calculation methodology will be subject to an apparent power limit of 1 MVA, which is based on input from LDSOs at the lesson learned forum. It is an industry wide standard volume and is a maximum value regularly seen already; therefore the recommendation of 1 MVA is based on industry precedence.

Proposer's rationale

[CP1492 'Causes and treatment of large Line Loss Factors'](#) introduced Principle 17 to BSCP128 in February 2018 ahead of the 2018/19 Settlement Year. Principle 17 was introduced to allow alternative LLF calculation steps for Sites with low consumption in a given Seasonal Time of Day⁵ (SToD) period which would otherwise result in high LLFs. High value LLFs are an exception. However, they can occur on generation/demand sites where energy usage or export can be low for a given SToD period, but the reactive power is high. These sites are rare but are becoming more common with the growth of embedded generation.

CP1519 address situations where low consumption and maximum demands potentially result in LLFs that do not reflect the appropriate losses and where assigning generic LLF values would provide greater consistency and transparency. Subordinate connections tend to have LLF fluctuations that do not have large material impact in absolute terms when compared to the losses for the main Plant and Apparatus e.g. where the main site is a large Power Station. The use of Generic LLF values would reduce signal-to-noise volatility and are likely to be as reflective as Site-Specific LLFs.

High volume (i.e. EHV) Sites with subordinate connections with irregular demand between SToD periods, and low consumption volumes are the type of scenario that were envisaged when creating Principle 17. Given the distortions caused by the subordinate connections when power-flow modelling, the distortion is likely to create high LLF values and therefore a default replacement process would be required to comply with Principle 17.

It is essential that generic LLFs as a default replacement process are only used when absolutely necessary to avoid inaccurate LLFs and not to simply avoid calculating Site-Specific LLFs. For that reason, the apparent power limit is being proposed as part of the solution.

The expectation in drafting Principle 17 was always that it would be refined following lessons learned activities, which have given rise to this CP.

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⁵ SToD distribution losses vary with the time the power is taken by the customer. Typically there will be LLFs for Day, Night, Summer Day, Winter Day and Winter Peak. SToD periods are specified in the LDSO's methodology statement and are available via the ELEXON Portal.

Proposed redlining

Attachments B-E of this paper set out the proposed redlined changes to deliver the CP1519 solution.

Housekeeping change

As we are updating BSCP128 Appendix 1, we will use the opportunity to make a housekeeping change to paragraph 1.3 question 8. This will correct a minor error in the text.

3 Impacts and Costs

Central impacts and costs

Central impacts

CP1519 will require changes to four Code Subsidiary Documents (CSDs):

Central Impacts	
Document Impacts	System Impacts
<ul style="list-style-type: none">BSCP128 – ‘Production, Submission, Audit and Approval of Line Loss Factors’BSCP128 Appendix 1 – ‘Methodology Self Assessment Document (MSAD) for Host LDSOs and Embedded LDSOs that do not Mirror’BSCP128 Appendix 3 – ‘Calculation Self Assessment Document (CSAD) for Host LDSOs and Embedded LDSOs that do not Mirror’BSCP128 Appendix 10 – ‘Calculation Self-Assessment Document (CSAD) for mid-year LLF submissions’	<ul style="list-style-type: none">Nil

In addition to the four CSDs, the LLF Guidance note will also need updating.

CP1519 will not impact BSC Central Systems as it’s a procedural, and document only change.

Impact on BSC Settlement Risks

Impact on BSC Settlement Risks
Risk 015 ‘SVA reference data is not created or transferred correctly, or at all’ and Risk 026 ‘Aggregation Rules in CDCA are incorrect such that CVA Metered Data is not correctly aggregated and the energy volumes required for Settlement are incorrect or missing’ will be mitigated somewhat by allowing LDSOs the ability to improve the accuracy of LLFs

Central costs

The central implementation costs for CP1519 will be approximately £720 (five ELEXON Working Days to implement the necessary document changes).

BSC Party & Party Agent impacts and costs

We envisage some minor impact on LDSOs (and embedded LDSOs that do not mirror their host LDSO) if they elect to use the additional methodology. This will be on a voluntary basis so, if they feel the impact and costs are too high, there is no obligation on them to implement this. We will seek confirmation of any impacts on market participants as part of the consultation process.

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BSC Party & Party Agent Impacts	
BSC Party/Party Agent	Impact
LDSO	May need to update their LLF Calculation Methodologies
Embedded LDSOs	May need to update their LLF Calculation Methodologies if they do not mirror their Host LDSO

4 Implementation Approach

CP1519 is proposed for implementation on **27 February 2020** as part of the February 2020 BSC Scheduled Release.

As we expect this change to have minor impact and lead times, we recommend CP1519 is included in the first available Release following its approval. We will request Market Participant views on the implementation approach for CP1519 as part of the CP consultation.

5 Proposed Progression

Progression timetable

The table below outlines the proposed progression plan for CP1519:

Progression Timetable	
Event	Date
CP Progression Paper presented to ISG for information	23 Jul 19
CP Progression Paper presented to SVG for information	6 Aug 19
CP Consultation	12 Aug 19 – 6 Sep 19
CP Assessment Report presented to ISG for decision	17 Sep 19
CP Assessment Report presented to SVG for decision	1 Oct 19
Proposed Implementation Date	27 Feb 20 (Feb 20 Release)

CP Consultation questions

We intend to ask the standard CP Consultation questions for CP1519 as outlined in the table below. We do not believe any additional questions need to be asked for this CP.

Standard CP Consultation Questions
Do you agree with the CP1519 proposed solution?
Do you agree that the draft redlining delivers the CP1519 proposed solution?
Will CP1519 impact your organisation?
Will your organisation incur any costs in implementing CP1519?
Do you agree with the proposed implementation approach for CP1519?

6 Recommendations

We invite you to:

- **NOTE** that CP1519 has been raised;
- **NOTE** the proposed progression timetable for CP1519; and
- **PROVIDE** any comments or additional questions for inclusion in the CP Consultation.

Appendix 1: Glossary & References

Acronyms

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

Acronyms	
Acronym	Definition
BSCP	Balance and Settlement Code Procedure
CPC	Change proposal Consultation
CSAD	Calculation Self-Assessment Document
CSD	Code subsidiary Document
EHV	Extra High Voltage
ISG	Imbalance Settlement Group
LDSO	Licensed Distribution System Operator
LLF	Line Loss Factor
MSAD	Methodology Self-Assessment Document
MVA	Mega Volt-Amperes
SToD	Seasonal Time of Day
SVG	Supply Volume Group

External links

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

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

External Links		
Page(s)	Description	URL
2	Balancing and Settlement Code Procedure (BSCP) 128 'Production, Submission, Audit and Approval of Line Loss Factors'	https://www.elexon.co.uk/bsc-related-documents/related-documents/bscps/?show=all
3	CP1492 'Causes and treatment of large Line Loss Factors'	https://www.elexon.co.uk/change-proposal/cp1492/
4	'Production, Submission, Audit and Approval of Line Loss Factors'	https://www.elexon.co.uk/bsc-related-documents/related-documents/bscps/?show=all
4	Methodology Self Assessment Document (MSAD) for Host LDSOs and Embedded LDSOs that do not Mirror	https://www.elexon.co.uk/bsc-related-documents/related-documents/bscps/?show=all
4	Calculation Self Assessment Document (CSAD) for Host LDSOs and Embedded LDSOs that do not Mirror	https://www.elexon.co.uk/bsc-related-documents/related-documents/bscps/?show=all

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External Links		
Page(s)	Description	URL
4	Calculation Self Assessment Document (CSAD) for mid year LLF submissions	https://www.elexon.co.uk/bsc-related-documents/related-documents/bscps/?show=all

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