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

Contents

About This Document

The purpose of this CP1519 Change Proposal (CP) Consultation is to invite BSC Parties, Party Agents and other interested parties to provide their views on the impacts and the merits of CP1519. The Imbalance Settlement Group (ISG) and Settlement Volume Allocation Group (SVG) will then consider the consultation responses before making a decision on whether or not to approve CP1519.

There are seven 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's and SVG's initial views on the proposed changes.
- Attachments A-D contain the proposed redlined changes to deliver the CP1519 solution.
- Attachment E contains the CP1519 Proposal Form
- Attachment F contains the specific questions on which we seek your views. Please use this form to provide your response to these questions, and to record any further views or comments you wish to be considered.

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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 Apr – 31 Mar).

Before implementing new LLF values each BSC Year, ELEXON is required to review LLF methodologies submitted by LDSOs against the BSCP128 Principles, which are then approved by the BSC Panel. Following Panel approval, each LDSO must calculate LLFs in accordance with the approved methodology before submitting to ELEXON. ELEXON then audits the calculations in line with the approved methodologies, for Panel approval.

LLFs are calculated on an individual basis for sites connected at Extra High Voltage (EHV[1]) 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 subordinate[2] small-scale connection. 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.

Some (but not all) LDSOs[3] use Power-flow modelling[4] 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 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.

What is a subordinate connection?

A subordinate connection is often 1 MVA or less, and the majority are ancillary import connections for Generating Plant and Apparatus that may become the Site's 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.

[1] 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.
[2] 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.
[3] Other LDSOs use spreadsheet-based models as part of their LLF calculation methodologies and may not see the same level of distortion. This is entirely at the LDSO's discretion and is not mandate one way or another.
[4] A theoretical model used to predict output flow of energy at certain points within a System

2 Solution

Proposed solution

CP1519 proposes to amend Principle 17 in BSCP128, and three of its appendixes to reflect the changes, so that LDSOs can use a generic LLF for 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.

We acknowledge that the change will not be available for LLF Calculations being submitted this summer for 2020/21 but, once CP1519 is implemented, LDSOs may use it to amend LLFs 'in-year' using the methodology in BSCP128.

The new calculation methodology will be subject to an apparent power limit of 1 MVA based on input from LDSOs at the lesson-learned forum. It is an industry wide standard volume and is a maximum value regularly seen so 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. Principle 17 was introduced to allow alternative LLF calculation steps for Sites with low consumption in a given Seasonal Time of Day[5] (SToD) period that would result in high LLFs otherwise. 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 will 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 Principle 17 was created. 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 be only used when 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.

[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.

CP Consultation Question
Do you agree with the CP1519 proposed solution? *Please provide your rationale.*
We invite you to give your views using the response form in Attachment F

Proposed redlining

Attachments A-D 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.

CP Consultation Question
Do you agree that the draft redlining delivers the CP1519 proposed solution? *If 'No', please provide your rationale.*
We invite you to give your views using the response form in Attachment F

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
• 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'	• Nil

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

CP1519 will not impact BSC Central Systems, as it is a procedural 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 (three 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 ask if you could let us know in your response if this is not the case as part of this CP consultation.

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

CP Consultation Questions
Will CP1519 impact your organisation? *If 'Yes', please provide a description of the impact(s) on your organisation and any activities which you will need to undertake between the approval of CP1519 and the CP1519 Implementation Date (including any necessary changes to your systems, documents and processes). Where applicable, please state which of the roles that you operate as will be impacted and any differences in the impacts between each role.*
Will your organisation incur any costs in implementing CP1519? *If 'Yes', please provide details of these costs, how they arise and whether they are one-off or on-going costs.*
We invite you to give your views using the response form in Attachment F

4 Implementation Approach

Recommended Implementation Date

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.

CP Consultation Question
Do you agree with the proposed implementation approach for CP1519? *Please provide your rationale.*
We invite you to give your views using the response form in Attachment F

5 Initial Committee Views

ISG's initial views

We presented the CP1519 Progression Paper to the Imbalance Settlement Group (ISG) on 23 July 2019 (ISG219/04). In response to a Member's question, we confirmed that as the planned implementation is after the 2020/21 LLF Calculations have been submitted, LDSOs and embedded LDSOs would be able to adjust their LLFs during 2020/21 using the BSCP128 process. The ISG asked us to ensure that this is clear when we consult, which we will do.

We also discussed that ELEXON will be hosting education events in August to assist with LDSOs' and Embedded LDSOs' understanding of the LLF and Market Domain Data processes.

SVG's initial views

We presented the CP1519 Progression Paper to the SVG on 6 August 2019 (SVG 222/03). The SVG Progression Paper include the ISG's initial views. The SVG offered no further thoughts.

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

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
9	ISG 219 Webpage	https://www.elexon.co.uk/meeting/isg219/
9	LLF Education days	https://elexonexternal.newsweaver.com/1gmbg04lik/ttsriy1d3jl5lg80pc2kc3?email=true&a=1&p=355071&t=74531
9	SVG 222 Webpage	https://www.elexon.co.uk/meeting/svg222/