

Stage 01: Initial Written Assessment

P270: The Application of Line Loss Factors to GSPs that are not Transmission-interconnected

What stage is this document in the process?

01 Initial Written Assessment

02 Definition Procedure

03 Assessment Procedure

04 Report Phase

The BSC does not permit application of a Line Loss Factor to a Grid Supply Point, including Offshore Transmission Connection Points, a GSP type introduced by the OFTO arrangements.

P270 proposes that distinction should be made between GSPs based on how they are interconnected with the Transmission System and LLFs should be applied to GSPs where appropriate.



ELEXON recommends:
A **3 month** Assessment Procedure



High Impact:
LDSOs



Medium Impact:
Transmission Company, CDCA



Low Impact:
Suppliers, ELEXON

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About this document:

This document is an Initial Written Assessment (IWA), which ELEXON will present to the Panel on 10 March 2011. The Panel will consider the recommendations and agree how to progress P270.

Further information is available in the P270 Modification Proposal, which is Attachment A to this document.



Any questions?

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1 Why Change?

Background

Line Loss Factors

A Line Loss Factor (LLF) is an adjustment factor applied to readings from a Metering System to adjust for electrical losses occurring on a Distribution System. The aim is to calculate the associated amount of energy that reaches the Transmission System Boundary. LLFs are covered by Section K of the BSC and BSC Procedure (BSCP) 128 'Production, Submission, Audit and Approval of Line Loss Factors'.

Licensed Distribution System Operators (LDSOs) calculate LLFs and submit them to ELEXON annually. LDSOs must calculate the LLFs in accordance with an LLF methodology that complies with the principles set out in BSCP128.

Grid Supply Points

Grid Supply Points (GSPs) are also covered in Section K. Section X of the BSC defines a GSP as 'a Systems Connection Point at which the Transmission System is connected to a Distribution System and includes an Offshore Transmission Connection Point'. Each GSP is the responsibility of a Distribution System Operator, who must ensure Metering Equipment is in place and registered, except that National Grid is responsible (as NETSO) for all Offshore Transmission Connection Points. LLFs are not assigned to GSPs.

Offshore Transmission Connection Points

The Offshore Transmission Owner (OFTO) arrangements introduce Offshore Transmission Connection Points. This reflects that the owner of the connection from the generator to the onshore Distribution System is the OFTO. Offshore Transmission Connection Points are a type of GSP, and as such cannot presently be assigned an LLF.

Prior to the OFTO arrangements, an LLF calculated by the Distribution System Operator would be applied to a connection from offshore generator to onshore Distribution System. Losses calculated using the LLF were taken into account in the GSP Group Take for the Distribution System. Under the OFTO arrangements, no losses would be applied to the Offshore Transmission Connection Point, i.e. the onshore/offshore connection.

What is the Issue?

P270 contends that differences between different types of GSPs exist due to the OFTO arrangements, and the BSC arrangements do not recognise these differences. The Proposer believes that this results in some types of GSP being treated in a manner that does not reflect their physical characteristics.

In particular, P270 focuses on the assignment of LLFs, and argues that the characteristics and situation (geographically and in network terms) of some GSPs, such as Offshore Transmission Connection Points, means that it would be appropriate to apply LLFs to them.

In the case of Offshore Transmission Connection Points this would amount to maintaining the pre-OFTO status quo by continuing to apply LLFs to them. The effect on LLFs assigned to other Metering Systems in the Distribution System is also relevant, since the effect of the now-Offshore Transmission Connection Points on Distribution System losses would previously have been taken into account in calculating LLFs for other Metering Systems.



Line Loss Factor

An LLF is a multiplier applied to data from a CVA Metering System connected to a Boundary Point of a Distribution System to convert it to an equivalent value for the Transmission System Boundary.



Grid Supply Point

A GSP is a point where the Transmission System is connected to a Distribution System.



Offshore Transmission Connection Points

A GSP that connects the Offshore Transmission System to an (onshore) Distribution System.

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Interconnected Transmission System and remote connections

The Proposer argues that there is a fundamental difference between the (onshore) interconnected Transmission System and a remote connection to the Transmission System (i.e. not interconnected directly with other parts of the Transmission System). Offshore Transmission Systems that are connected to a Distribution System are an example of the latter, and are used here to illustrate this difference.

P270 contends that an onshore GSP has no LLF because it effectively acts as an infinite energy source/sink to the Distribution System Operator, i.e. required energy flows at the boundary (the GSP) are achieved by the addition or reduction of despatched generation from the interconnected Transmission System. In other words, the Transmission System does not carry out activities that by their nature increase or decrease losses on the Distribution System; it responds to the Distribution System's energy requirements.

However, an Offshore GSP (an Offshore Transmission Connection Point) that joins an offshore Transmission System to the main Transmission System via a Distribution System effectively drives energy across that Distribution System in one direction only, either causing or reducing losses (depending on the interaction with the other elements of the Distribution System).

The Proposer believes that from the perspective of the Distribution System Operator, the behaviour of such an Offshore GSP is more akin to that of a Balancing Mechanism (BM) Unit (which would have an LLF to account of line losses between the BM Unit and the Transmission System) than a 'normal' GSP connected to the interconnected Transmission System. P270 contends that this demonstrates that LLFs should also therefore be applied to Offshore GSPs, and similarly remote connection points to the Transmission System.

Impact of the issue

The Proposer believes that it is appropriate in principal to apply LLFs to some GSPs, as discussed above. In terms of material impact, P270 contends that the identified issue unjustifiably distorts LLFs applied on an affected Distribution System.

Interactively Determined LLFs

P270 states that if multiple offshore sites are connected such that their LLFs are calculated on an interactive basis then the identified issue can have a pronounced and local impact.

Prior to the OFTO arrangements all the sites involved in such a situation would be assigned Site Specific LLFs, calculated to share the losses between the sites as determined by the Distribution System Operator. Consider such a scenario in which only two sites are involved, as follows.

If one of the sites is affected by the OFTO arrangements and is therefore connected via an Offshore Transmission Connection Point then it cannot be assigned an LLF. The losses previously attributed to that site remain, and would therefore need to be taken into account in the LLF assigned to the other site. So if, prior to the OFTO arrangements, the sites caused losses on the Distribution System and were therefore both assigned an LLF less than one, then the effect is that the Site Specific LLF of the other site is decreased. The degree of this impact will vary depending on the particular situation, and will be effected by the number of sites involved (and how many remain embedded in the Distribution System and how many are Offshore Transmission).

In summary, the LLFs of sites that remain outside the OFTO arrangements (as SVA) is altered, but neither the physical network, the characteristics of the sites involved nor the

physical losses arising on the Distribution System are changed. The Proposer believes that this is inappropriate, and also considers that the principle of the issue remains the same whether the LLFs involved are greater than or less than one, though this has a bearing on the practical effect.

Losses Incentive

The Proposer suggests that distortion of LLFs as a result of an LLF not being applied to an Offshore Transmission Connection Point could potentially have a direct financial impact on the Distribution System Operator under the Losses Incentive (Charge Restriction Condition 7 of the DNO Licence). This is not elaborated in the P270 Modification Proposal, and is probably outside the scope of a BSC Modification, but should be considered in the progression of P270 and, as appropriate, included in its assessment.

General Effect

The effect on sites where LLFs are calculated on an interactive basis, as detailed above, would have a significant impact on the sites involved. But the P270 issue still has an effect if a site previously assigned an LLF, but not involved in any LLF interaction with other offshore sites, becomes an Offshore Transmission Connection Point. While there is no direct effect on particular sites, the losses on the Distribution System remain the same as before the OFTO arrangements, and therefore the losses previously covered by the sites LLF need to be smeared across other sites in the Distribution System. This could affect Generic and Site Specific LLFs within the GSP Group and/or impact the Group Correction Factor.

Summary

P270 proposes that the BSC should:

- Recognise that physical differences (specifically with regard to losses) exist between conventional onshore GSPs and types of GSPs that are differently connected to the Transmission System (i.e. whose connection is remote, such as Offshore Transmission Connection Points);
- Distinguish between GSP types based on the nature of the interconnection between the GSP and the Transmission System; and
- Make provision for the assignment of LLFs to appropriate GSP types.

Applicability of P270

The particular issue identified by P270 relates to Offshore Transmission Connection Points, but the P270 solution would apply on the basis of the nature of the interconnection between the GSP and the interconnected Transmission System. This is intended to restrict applicability to only those GSPs whose characteristics justify the use of LLFs.

This approach would allow future network developments to be treated appropriately by the P270 solution. For instance, if in future a transmission interconnected offshore grid (incorporating GSPs) is developed it would appear inappropriate for the GSPs involved to be treated differently to onshore GSPs since the offshore grid would act as a flexible energy source/sink in a similar way to an onshore GSP connected to the interconnected Transmission System.

Retain the status quo

This Modification aims to retain the existing application of LLFs for existing offshore generators transferring to the OFTO arrangements, reflecting the fact that there is no change to the physical losses arising on a Distribution System. The Proposer believes it is therefore appropriate for the Modification, if approved, to apply from the effective date of the first Offshore Transmission Connection Point. This should be taken into account in determining its implementation approach, and retrospective application considered if necessary.

Illustrative Example

An example intended to illustrate the issues identified by P270, the effect of the P270 solution and how it would work at a high level is set out in Attachment B to this document. The example sets out a simple arrangement with an offshore generator connected to the Transmission System via a Distribution System, and compares the outcomes under the current baseline arrangements (in which the OFTO arrangements exist, though they are not yet applied in all relevant situations), the situation prior to introduction of the OFTO arrangements and under the arrangements proposed by P270 (based on our current understanding and subject to development of the P270 solution).

Impact of P270

P270 would assign LLFs to remotely connected GSPs, such as Offshore Transmission Connection Point. This would effectively mean that the losses on the Distribution System caused by the Offshore Transmission System connection would be moved out of GSP Group Take and instead included in Transmission Losses. This would mean that such losses would be shared among all users of the Transmission System as with all other Transmission Losses.

Note that P270 aims to assign an LLF to the Offshore Transmission Connection Point, not to Offshore Generators themselves. The Proposer believes that this approach is consistent with the principles set out in Ofgem's decision letter on rejected Modification P242 (see Related Changes, below).

Environmental Impact

The justification of P270 is based on the economic efficiency benefits achieved by providing appropriate and cost reflective signals to participants. The benefits of increased economic and operational efficiency would be expected to have a consequential environmental benefit as a result of reduced losses due to increased efficiency. However, the Proposer did not identify a readily quantifiable environmental impact for explicit consideration.

We do not believe that P270 has any environmental impact that warrants examination.

Justification against Applicable BSC Objectives

The Proposer believes P270 has benefits against:

- **Applicable BSC Objective (c)** by removing a distortion caused by the current LLF arrangements in the allocation of losses to sites on Distribution Systems, which would provide more appropriate and cost reflective signals to participants regarding siting and operation of generators. The Proposer regards this as the key benefit of P270.

The Proposer believes P270 would remove the following two distortions:

- Appropriate losses would be taken into account in the calculation of LLFs for other sites on a Distribution System (most pronounced for LLFs for sites whose losses interact with those of the remote GSP); and
 - The Transmission Company would be exposed to the losses consequences of using a Distribution System instead of creating direct connection to the Transmission System by building new transmission lines.
- **Applicable BSC Objective (a)** by promoting more efficient network design due to losses being properly taken into account when assessing the merits of an embedded approach (using Distribution Systems) versus a Transmission-only solution for connecting otherwise remote transmission assets (such as offshore networks). Without P270 the current arrangements mean losses arise in the GSP Group, and are therefore not visible to the Transmission Company; this distorts the decision-making process.

3 Areas for consideration

This section sets out the areas the Panel should consider when deciding how to progress P270. If P270 proceeds to the Assessment Procedure we recommend that these areas should be considered in determining the Terms of Reference of the P270 Workgroup.

P270 Solution

Development and finalisation of the P270 Proposed solution, including:

- Criteria to determine whether a site is subject to the P270 arrangements;
- Applicability of P270; should it aim to accommodate future developments or be more restrictive (i.e. possibly require further change be to take developments into account);
- Whether there are any alternative solutions that should be considered; and
- Implementation approach, including any interaction with other provisions such as the OFTO arrangements and whether any kind of retrospective effect might be justified.

Assessment

Examine benefits and impacts of P270, including:

- Assessment against the Applicable BSC Objectives;
- Identify any relevant wider considerations the Authority might consider under its wider statutory remit;
- Materiality of P270 issue and quantification of P270 costs and benefits where possible;
- Consider any environmental effects (not necessarily quantify);
- Impact on industry participants; and
- Consistency with wider industry arrangements, e.g. Offshore Transmission approach.

Related Changes

No changes directly relate to P270. However, rejected Modification P242, 'Treatment of Exemptable Generation Connected to Embedded Offshore Transmission Networks', proposed changes to preserve the status quo for some participants impacted by the Offshore Transmission Arrangements. Therefore some of the P242 arguments and discussions, and the Authority's decision, may be relevant to the consideration of P270.

P242 sought to allow Offshore Exemptable Generators that connect onshore to a Distribution System the option of being treated in the same way as onshore Exemptable Embedded Generators. Under the Offshore Transmission Arrangements such generators must be treated the same as directly-connected Generators.

The Authority rejected P242 because it considered that it would be inappropriate to introduce different treatment within the category of transmission connected generation, that seeking to amend the arrangements would arguably decrease regulatory certainty and hinder effective competition, and that P242 would not promote cost reflective charging and in any case the issues identified do not fall under the BSC.

We do not suggest that P270 is similar with respect to these areas, but note that there are apparent parallels between P242 and P270, given that both were raised in response to changes resulting from introduction of the offshore regime and both aim to retain the status quo in particular areas in some circumstances. We therefore recommend that during assessment of P270 consideration should be given to the issues identified by the P242 decision and whether they have any relevance to P270. Further information on P242 can be found on the [P242 webpage](#) on the ELEXON website.

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4 Proposed Progression

If P270 proceeds to the Assessment Procedure we recommend a three month assessment, conducted by the Settlement Standing Modification Group (SSMG), supplemented with any other relevant experts and interested Parties.

Terms of Reference

We recommend the P270 Workgroup is formed from members of the SSMG and considers the following areas.

P270 Terms of Reference	
1	Development of the P270 Proposed solution
2	Any alternative solutions
3	Implementation approach
4	Assessment of P270 against the Applicable BSC Objectives
5	Materiality of the issue identified by P270
6	Quantification of P270 costs and benefits where possible
7	Environmental effects of P270
8	Impact on industry participants
9	Consistency with wider industry arrangements

Timetable

The dates in the proposed timetable are provisional and are subject to change depending on factors such as whether they are required as P270 develops, availability of Workgroup members, etc.

Proposed progression timetable for P270 Assessment Procedure	
Activity	Date
Present IWA to Panel	10 March 2011
Workgroup meeting 1	16 March 2011
Workgroup meeting 2	22 March 2011
Issue P270 for impact assessment (10 WD)	28 March 2011
Impact assessment response deadline	11 April 2011
Workgroup meeting 3	13 April 2011
Issue P270 industry consultation (10 WD)	27 April 2011
Consultation response deadline	11 May 2011
Workgroup meeting 4	19 May 2011
Present Assessment Report to Panel	9 June 2011

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Estimated Progression Costs

Estimated progression costs based on proposed timetable	
Meeting costs (including Workgroup member expenses)	£2000 (based on four Workgroup meetings)
Non-ELEXON legal and expert costs	Zero
Service Provider impact assessment costs	£3000
ELEXON resource	68 man days, equating to approximately £16,300

The ELEXON resource cost is an estimate of how much time and effort it will take us to progress P270 through the Assessment Procedure and Report Phase. It includes time supporting industry groups, drafting documentation and producing legal text.

Below is our estimate of the cost incurred by the industry in assessing P270:

Estimate of total industry assessment costs					
Workgroup support	Est #mtgs	Est # att	Est effort	Est rate	Sub-total
	4	8	1.5	605	£29,040
Consultation response support	Est #con	Est # resp	Est effort	Est rate	Sub-total
	2	10	2.5	605	£30,250
Total					£59,290

Meeting costs reflect the expected number of Workgroup meetings and the industry effort spent supporting these meetings. The calculation is based upon an anticipated average number of eight members at each meeting putting in an average of 1.5 man days effort per meeting. A standard rate of £605 per man day is applied.

Consultation costs represent an estimation of the anticipated industry response to consultations issued to support P270 and the approximate time and effort spent on responses. The calculation is based upon an anticipated number of 10 responses to the intended two consultations (i.e. the Assessment Procedure and Draft Modification Report consultations), and assumes each response requires 2.5 man days of industry effort. A standard rate of £605 per man day is applied.

5 Likely Impacts

This is an initial view of the likely impacts of P270. Impacts will be further assessed as P270 is progressed and the P270 solution is developed.

Impact on BSC Agent

CDCA	Possible impact due to need to include LLFs in Aggregation Rules for Offshore Transmission Connection Points
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Impact on BSC Parties and Party Agents

LDSOs: LLF calculation and calculated Distribution System losses (and GSP Group Take)
Suppliers: effects from impact on GSP Group Take

Impact on Transmission Company

Responsible (as NETSO) for Offshore Transmission Connection Points assigned LLFs
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Impact on ELEXON

LLF validation	We audit and approve LLFs calculated by Distributors; under P270 we would do so for LLFs calculated for remotely connected GSPs
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Impact on Code

Section K Classification and Registration of Metering Systems and BM Units	Changes to reflect P270 solution
Sections R Collection and Aggregation of Meter Data from CVA Metering Systems	Possible consequential impact
Sections X Definitions and Interpretation	Possible consequential impact

Impacted Code Subsidiary Documents

BSCP75 Registration of Meter Aggregation Rules for Volume Allocation Units
BSCP128 Production, Submission, Audit and Approval of Line Loss Factors

6 Recommendations

On the basis of the initial written assessment, ELEXON invites the Panel to:

- DETERMINE that Modification Proposal P270 progresses to the Assessment Procedure;
- AGREE the Assessment Procedure timetable such that an Assessment Report should be completed and submitted to the Panel at its meeting on 9 June 2011;
- DETERMINE that the P270 Workgroup should be formed from members of the Settlement Standing Modification Group (SSMG); and
- AGREE the Workgroup's Terms of Reference.

7 Further Information

More information is included in the P270 Modification Proposal form (Attachment A to this document) and a simple illustrative example is supplied (Attachment B).