

## Stage 03: Assessment Report

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

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 in specific circumstances.



Workgroup recommends  
**Rejection** of P270 Proposed Modification



High Impact:  
None



Medium Impact:  
LDSOs, Transmission Company, CDCA



Low Impact:  
Suppliers and embedded generators (via LLF and GSP Group Correction effects) all Parties (via Transmission Losses), ELEXON

What stage is this document in the process?

01 Initial Written Assessment

02 Definition Procedure

03 Assessment Procedure

04 Report Phase

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### Any questions?

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Contact:

**Dean Riddell**



[dean.riddell@elexon.co.uk](mailto:dean.riddell@elexon.co.uk)

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## About this document:

This is the P270 Assessment Report, which ELEXON will present to the Panel on 9 June 2011 on behalf of the P270 Workgroup. The Panel will consider the recommendations of this report and agree an initial view on whether or not this change should be made.

There are two parts to this report. This document outlines the solution, impacts, costs, benefits and the potential implementation activities associated with this change. Attachment A is the Detailed Assessment of P270, and sets out the Workgroup's discussions and development of the P270 solution leading to the conclusions and recommendations in this report.

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## Why Change?

The BSC does not allow a Line Loss Factor (LLF) to be assigned to a Grid Supply Point (GSP). LLFs are assigned to Boundary Points Metering Systems to account for the losses considered to be caused, or relieved, on a Distribution System by a flow at that Boundary Point. A GSP connects a distribution system to the Transmission System and is not considered a user Boundary Point. P270 contends that LLFs should also be assigned to GSPs that connect electrically isolated elements of the Transmission System to a Distribution System.

P270 contends that under the current BSC baseline the flow to a Distribution System from an Offshore Transmission Connection Point will distort the cost reflectivity of losses allocated to other Distribution System users, and that the System Operator does not have visibility of the full impact of offshore networks that connect to a Distribution Systems upon the losses of that Distribution System.

## Solution

P270 proposes that the BSC distinguish between GSPs based on the interconnection of the Transmission System to which they are connected and provide for LLFs to be assigned to appropriate GSPs. This would be accomplished by adding and amending BSC definitions. In effect, a volume of Distribution System losses (including where the connection relieves losses) would shift from the other Distribution System users into aggregated Transmission Losses.

## Impacts

Beside the necessary Code changes, relatively minor supporting changes to several BSCPs would be required. P270 would have a minimal impact on ELEXON and the CDCA service provider and would not impact central systems. Affected LDSOs would need to amend their LLF methodologies and determine LLFs for Remote GSPs. Transmission System users would be impacted by the consequential effect on calculated Transmission Losses. No significant direct impact on BSC Parties' systems or processes has been identified.

## Implementation

The group recommends that the Implementation Date of P270 should be ten working days after a decision is received from the Authority.

## The Case for Change

P270 contends that remote GSPs differ from GSPs connected to the main, interconnected Transmission System (which flexibly supply electricity to meet the needs of the Distribution System), and are more similar to Distribution System users, because such isolated GSPs use the Distribution System as a means of dispersing electricity flowing from the remote network to which they are connected.

A key question is whether it is justifiable to shift the effect of Distribution System losses into Transmission Losses where they result from the operation of an electrically isolated Transmission System element. The Proposer argued it would promote cost reflectivity in the allocation of losses, but the majority of the group believed it was not appropriate.

## Recommendations

The group's final majority view is that P270 does not better facilitate the Applicable BSC Objectives overall, and should therefore be rejected. The majority of the group believed P270 was either neutral or had a negative impact against Objectives (a), (b), (c) and (d).

The group put most weight against Objective (c). The majority believed P270 would have a negative impact against (c) because it transfers some Distribution System losses into Transmission Losses and discriminates between GSPs.

There was also a view that that P270 seeks to address an issue concerning Transmission and Distribution System losses incentives, and related investment decisions, that are outside the scope of the BSC.

A significant minority believed there was a marginal efficiency benefit against Objective (b) due to an increase in the visibility of Distribution Loss effects to the System Operator.

Applicable BSC Objectives	
a)	The efficient discharge by the licensee [i.e. the Transmission Company] of the obligations imposed upon it by the Transmission Licence
b)	The efficient, economic and co-ordinated operation of the national transmission system
c)	Promoting effective competition in the generation and supply of electricity, and (so far as consistent therewith) promoting such competition in the sale and purchase of electricity
d)	Promoting efficiency in the implementation and administration of the balancing and settlement arrangements

## 2 Why Change?

A flow of electricity from a relatively isolated GSP (a Remote GSP for the purposes of P270) onto a Distribution System must physically have some Distribution System losses associated with it (i.e. some energy is lost in transmission from the point of connection to the Distribution System to other point(s) on the Distribution System). Additionally, flows can be considered to reduce losses when taken in the context of the configuration and operation of the Distribution System as a whole (e.g. where a flow offsets another flow that would have resulted in greater overall Distribution Losses). However, this is also true for 'conventional GSPs', i.e. GSPs connected to the main, interconnected Transmission System.

An issue for P270 is whether there is any justification for differentiating between GSPs based on how they are interconnected (or not) with the rest of the Transmission System, and then treating GSPs differently with regard to Distribution System losses by allowing LLFs to be applied to the metered flows of some GSPs. P270 also raises a question around which participants it is justifiable for the effects of Distribution System losses to fall upon. The main arguments for and against P270 are summarised below.

### Argument for P270

A Line Loss Factor should be applied to a Remote GSP because it behaves differently to a 'conventional' GSP (i.e. one that is part of the main, interconnected Transmission System). A Remote GSP uses the Distribution System to distribute power produced by the generation to which it is connected without regard to the demand requirements of the Distribution System (it may be considered a customer of the Distribution System Operator). Conversely, a conventional GSP supplies power to the Distribution System in response to its demand, i.e. the Distribution System might be considered the Transmission System Operator's customer. If an LLF is not applied to a Remote GSP its effect on Distribution System losses must be shared in some way between some or all of the other connectees to the Distribution System, which P270 contends is not appropriate.

The LLF that should be applied to a Remote GSP should be determined by including it in the Distribution System Operator's LLF methodology and calculations in the same way as other elements of the Distribution System. The resultant LLF may be less than 1 (if the Remote GSP is determined to cause losses on the Distribution System) or greater than 1 (if the Remote GSP is determined to relieve losses on the Distribution System). This would reflect the arrangements in place prior to the introduction of OFTO arrangements.

### Argument against P270

A Line Loss Factor should not be applied to a Remote GSP because LLFs are intended to adjust energy volumes within a Distribution System in order to apportion losses on the Distribution System to users of that Distribution System. Whilst it may be argued that a Remote GSP has an effect on Distribution System losses (in the same way as other connections to a Distribution System), energy from a 'conventional' GSP also physically effects losses, but it is currently accepted that it is not appropriate to apply an LLF to flows from a 'conventional' GSP. There is no justification to discriminate between 'conventional' GSPs and Remote GSPs in the manner proposed by P270.

Application of an LLF to a Remote GSP would result, via the consequent adjustment of the metered output of that GSP, in an impact on Transmission Losses. This impact would result in the cost effect (positive or negative) of Distribution System losses associated with a Remote GSP falling upon, and being shared between, connectees to the national Transmission System in line with existing BSC rules, which is inappropriate.

### 3 Proposed Solution

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 particular types of GSP.

#### 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 of the Transmission System to which the GSP is connected. This is intended to restrict P270 only to GSPs whose characteristics are considered to 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 an offshore transmission interconnected grid is developed it would appear inappropriate for the GSPs involved to be treated differently to onshore GSPs since the offshore grid might act as a flexible energy source/sink in a similar way to an onshore GSP connected to the interconnected onshore Transmission System.

#### Retain the pre-OFTO status quo

P270 aims to retain the application of LLFs for Distribution System connections that are Offshore Transmission Connection Points that existed prior to them becoming Offshore Transmission Connection Points under the OFTO arrangements. This would reflect the fact that the change in classification does not change the physical losses arising on a Distribution System.

#### Impact of P270

P270 would assign LLFs to meters associated with remotely connected GSPs, such as Offshore Transmission Connection Points. This would effectively mean that Distribution System losses attributed to the Offshore Transmission System connection would be taken into consideration in determining GSP Group Take, and would have a corresponding opposite effect on calculated Transmission Losses. For example, a 1MW loss allocated to a Remote GSP's flow into a Distribution System would reduce GSP Group Take (where inflow is considered positive) by 1MW and increase Transmission Losses by 1MW. The relevant loss would be shared among all users of the Transmission System, as with other Transmission Losses.

Before introduction of the OFTO arrangements, sites affected by P270 may have been registered in SVA, with their generation affecting GSP Group Take only indirectly. Under the OFTO arrangements the flow from the offshore network is measured in CVA and therefore contributes directly to GSP Group Take as an Import to the Distribution System.

Note that P270 aims to assign an LLF to the Offshore Transmission Connection Point, not to Offshore Generators themselves.

An illustrative example of the application of the P270 solution and an explanation of the P270 Proposed legal text are set out in Attachment A.

## 4 Impacts & Costs

The changes to the BSC required to implement P270 are set out in Attachment B, and an explanation of the drafting is included in Attachment A. As well as amendment of Code, supporting changes would be made to several BSC Procedures (BSCPs 25, 75, and 128) to reflect the allocation of LLFs to Remote GSPs and ensure processes are documented clearly and consistently.

ELEXON would also update its procedures and guidance to reflect the P270 solution. We estimate that changing document and staff training would take 8 Man Days, with an associated cost of approximately £1920.

No amendment to central systems is needed for P270. The CDCA service provider would need to update process documentation, but the only practical impact is the application of the relevant aggregation rules. The service provider has estimated a cost of up to £1000 for the necessary activities but this would be expected to fall under 'business as usual'.

The only direct impacts of P270 implementation are on LDSOs with connections on their networks that would be considered Remote GSPs under P270. Such LDSOs would need to update their LLF methodologies and calculate LLFs for remote GSPs. National Grid and BSC Parties (as Transmission System users) would be impacted by LLFs being assigned to Remote GSPs though the consequential effect on Transmission Losses. All activities arising from these activities would fall under 'business as usual', and as such have no associated cost or lead time for P270 implementation.

## 5 Implementation

The group considered implementing P270 using an approach where the Code changes would be made five working days after an Authority decision, with the supporting BSC changes made in the next suitable BSC Release. The aim of this approach was to limit the impact of the P270 issue on LDSOs by enabling LLFs to be calculated for Remote GSPs and applied as soon as possible.

They did not identify any practical problems with this approach, particularly given that only two LDSOs would be immediately impacted by P270, and the most significantly impacted site is Robin Rigg, for which an LLF already exists (owing to its operation before the OFTO arrangements were applied to it). However, the group agreed that in principle all changes to the BSC and to Code Subsidiary Documents should be made simultaneously wherever possible.

Since the supporting BSCP changes are relatively minor the group agreed that ELEXON should draft the changes for inclusion in the P270 Report Phase industry consultation, to enable their implementation with the P270 Code changes in the event that P270 is approved.

The group therefore recommends that the Implementation Date of P270 should be ten working days after a decision is received from the Authority. All Code and BSCP changes would be made on the Implementation Date.



### Workgroup's final views against the BSC Objectives

The final majority view of the group was that overall P270 Proposed **would not** better facilitate the Applicable BSC Objectives compared with the existing Code baseline. The majority of the group (five) believed P270 would not improve on the baseline. Two group members believed P270 would be better overall than the current baseline.

The views of the group are summarised below. Not all members whose views aligned on the overall effect on a particular Objective necessarily agreed with all the arguments put forward in relation to it.

Applicable BSC Objectives - pros and cons		
	Benefits	Disadvantages
(a)	<b>One member</b> - positive impact: The Transmission Company has greater visibility of losses arising in a GSP Group, potentially promoting efficient network design because losses can be taken into account when considering Distribution System or Transmission-only connection approach	<b>Majority</b> - neutral impact
(b)	<b>Three members</b> - positive impact: Minor/marginal efficiency benefit due to increased visibility of losses caused by non-interconnected Transmission	<b>Three members</b> - neutral impact <b>One member</b> - negative impact: Although overall actual losses would be the same, losses attributed to Transmission would increase, which in relation to Transmission System efficiency is not beneficial
(c)	<b>One member</b> - positive impact: Remove loss allocation distortions, resulting in appropriate and cost reflective signals, meaning: <ul style="list-style-type: none"> <li>• Appropriate losses are used in calculating LLFs for other sites on a Distribution System</li> <li>• Losses impact of connection via Distribution System instead of direct connection to the Transmission System (via new transmission lines) is visible to the Transmission Company</li> </ul>	<b>Majority</b> - negative impact: <ul style="list-style-type: none"> <li>• Effectively transfers cost of Distribution System losses to Transmission users, which penalises GB Transmission System users</li> <li>• Cost reflectivity might be increased but singling out some GSPs and not others is not justified, and the resultant discrimination ultimately has a negative effect on competition</li> <li>• Tries to solve a Distribution losses incentive problem under BSC</li> </ul> <b>Two members</b> - neutral impact
(d)	<b>One member</b> - positive impact: Promotes efficiency and clarity in the administration of audit and approval of LLFs under the BSC	<b>Majority</b> - neutral impact <b>One member</b> - negative impact: Increases complexity of BSC by treating types of GSP differently

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## 7 Recommendations

The P270 Workgroup invites the Panel to:

- AGREE an initial recommendation that Proposed Modification P270 should not be made;
- AGREE an initial Implementation Date for Proposed Modification P270 of ten working days after an Authority decision is received;
- AGREE the draft legal text for Proposed Modification P270;
- AGREE that Modification Proposal P270 be submitted to the Report Phase; and
- AGREE that ELEXON should issue P270 draft Modification Report for consultation and submit results to the Panel to consider at its meeting on 14 July 2011.

## 8 Further Information

More information is available in

Attachment **A**: Detailed Assessment

Attachment **B**: Legal Text Proposed

Additionally, all consultation and impact assessment responses received, and all other P270 documentation, are available from the [P270 page](#) of the ELEXON website.