

INITIAL WRITTEN ASSESSMENT for Modification Proposal P229 'Introduction of a seasonal Zonal Transmission Losses scheme'

Prepared by: ELEXON Limited¹

Date of Issue:	05 December 2008	Document Reference:	P229IR
Reason for Issue:	For Panel decision	Version Number:	1.0

This document has been distributed in accordance with Section F2.1.10 of the Balancing and Settlement Code.²

P229 proposes to change the Transmission Losses arrangements in the BSC so a Transmission Loss Factor (TLF) for each BSC season is calculated for each 'TLF Zone'. TLFs would be calculated annually for the following year using historical data. The aim is to allocate transmission loss costs more appropriately across generators and demand customers on the GB transmission system.

BSCCO'S RECOMMENDATIONS

On the basis of the initial assessment, BSCCo invites the Panel to:

- **DETERMINE that Modification Proposal P229 should be submitted to the Assessment Procedure;**
- **AGREE the Assessment Procedure timetable such that an Assessment Report should be completed and submitted to the Panel for consideration at its meeting of 13 August 2009;**
- **AGREE that external consultants should be commissioned to carry out load flow modelling and cost-benefit analysis, subject to confirmation of the expenditure required to do so;**
- **AGREE that an update detailing the scope of the P229 analysis, and an assessment of the consequent timescales and expenditure, should be submitted to the Panel for consideration at its meeting of 12 February 2009;**
- **DETERMINE that the P229 Modification Group be formed from members of the P203 Modification Group as far as possible and Standing Modification Group members with relevant expertise; and**
- **AGREE the Modification Group Terms of Reference.**

Potential impacts:

- **Parties:** Generators, Suppliers, Licence Exemptable Generators, Interconnector users and the Transmission Company
- **BSC Agents:** the Central Data Collection Agent (CDCA), Central Registration Agent (CRA), Settlement Administration Agent (SAA), and Balancing Mechanism Reporting Agent (BMRA)

¹ ELEXON Ltd fulfils the role of the Balancing and Settlement Code Company ('BSCCo'), pursuant to Annex X-1 of the Balancing and Settlement Code (the 'Code').

² The current version of the Code can be found at <http://www.elexon.co.uk/bscrelateddocs/BSC/default.aspx>.

Purpose of this document:

This document is an Initial Written Assessment (IWA), which ELEXON will present to the Panel on 11 December 2008. The Panel will consider the recommendations and agree how P229 should be progressed.

Further information is available in the P229 Modification Proposal form, which is an appendix to this document.

CONTENTS TABLE

1	Why Change?	3
1.1	Background	3
1.2	Existing Transmission Losses Arrangements.....	3
1.3	Related Changes	4
2	P229 Solution	4
3	Proposed Progression	6
3.1	Proposed timetable.....	6
3.2	Areas for consideration	6
3.3	Estimated Costs and Impacts	8
4	Recommendations to the Panel	8
5	Terms Used in this Document	9
6	References	10
Appendix 1: Modification Proposal		11
Appendix 2: Initial Assessment of Impacts of Modification Proposal		15
Appendix 3: Costs and Timetable for Progression		19

Intellectual Property Rights, Copyright and Disclaimer

The copyright and other intellectual property rights in this document are vested in ELEXON or appear with the consent of the copyright owner. These materials are made available for you for the purposes of your participation in the electricity industry. If you have an interest in the electricity industry, you may view, download, copy, distribute, modify, transmit, publish, sell or creative derivative works (in whatever format) from this document or in other cases use for personal academic or other non-commercial purposes. All copyright and other proprietary notices contained in the document must be retained on any copy you make.

All other rights of the copyright owner not expressly dealt with above are reserved.

No representation, warranty or guarantee is made that the information in this document is accurate or complete. While care is taken in the collection and provision of this information, ELEXON Limited shall not be liable for any errors, omissions, misstatements or mistakes in any information or damages resulting from the use of this information or action take in reliance on it.

1 WHY CHANGE?

1.1 Background

When electricity is transmitted over the Transmission System some energy is 'lost'. The energy lost from the Transmission System is commonly referred to as 'transmission losses'. Transmission losses may be considered as comprised of two main elements, 'fixed' losses and 'variable' losses.

Fixed losses are losses which do not vary significantly with power flow. Fixed losses arise in:

- Transformers - from magnetising the iron core; and
- Overhead lines - include losses dependent on voltage levels, length of line and climatic conditions.

Variable losses are due to the heat caused by the flow of current through transformers and lines. Variable losses increase with:

- Current flow (and associated power flow); and
- Length of the line in which it flows.

'Total transmission losses' means the sum of fixed and variable losses. The total losses are the total energy lost from the Transmission System at any given time, which equates to the difference between total metered generation and total metered demand³.

1.2 Existing Transmission Losses Arrangements

The existing mechanism for allocating transmission losses to Parties is set out in Section T of the Balancing and Settlement Code ('the Code'). Under the existing Code provisions, fixed and variable transmission losses are allocated to Parties on a uniform (i.e. non-locational) basis in proportion to each Party's metered energy. The current allocation of transmission losses therefore does not take account of the extent to which individual Parties give rise to such losses.

Although a parameter for differential allocation of some or all transmission losses is included in the Code, it is currently set to zero so has no effect in practice. This parameter is represented in the Section T2 calculations by the Transmission Loss Factor (TLF), which is currently set to zero (TLF = 0). A modification of the Code is necessary to amend the TLF value. A simplified version of the Section T calculation of each BM Unit's share of total transmission losses in any given Settlement Period is:

Transmission Loss Multiplier = 1 + Transmission Loss Factor + Transmission Losses Adjustment

Or: **TLM = 1 + TLF + TLMO**

A Transmission Loss Multiplier (TLM) is a factor used to scale each BM Unit's Metered Volumes in Settlement. A TLM is generated for each individual BM Unit. The Transmission Losses Adjustment (TLMO) is used to allocate the proportion of transmission losses not already allocated via the TLF. The delivering TLMO uniformly adjusts generation by all BM Units in delivering (exporting) Trading Units; the offtaking TLMO uniformly adjusts demand from all BM Units in offtaking (importing) Trading Units.

TLMO calculation includes a factor α (alpha), which is a constant of 0.45. The result is uniform adjustment of the total transmission losses for the Settlement Period such that:

- 45% of losses are allocated across all delivering Trading Units in aggregate; and
- 55% of losses are allocated across all offtaking Trading Units in aggregate.⁴

³ At any point in time the total metered energy drawn from the Transmission System to meet demand is less than the electrical energy delivered to the Transmission System by generation.

Since the value of TLF is presently zero the TLMO determines the calculation of each BM Unit's TLM. This means two uniform TLM values are currently applied - one to all BM Units in delivering Trading Units, and one to all BM Units in offtaking Trading Units. Each Party's overall allocation of transmission losses is dependent on the Metered Volumes of the BM Units to which the TLM is applied. Transmission losses are allocated to Parties as part of their Trading Charges.

P229 proposes to change the Transmission Losses arrangements to allocate transmission loss costs more appropriately across generators and demand customers on the GB transmission system. TLF Zones would be determined, and a TLF for each BSC season calculated for each TLF Zone annually.

1.3 Related Changes

Between December 2005 and July 2006 four Modification Proposals were raised which all concerned Zonal Transmission Losses schemes, and were:

- P198 - Introduction of a Zonal Transmission Losses scheme
- P200 - Introduction of a Zonal Transmission Losses scheme with Transitional Scheme
- P203 - Introduction of a seasonal Zonal Transmission Losses scheme
- P204 - Scaled Zonal Transmission Losses

On 17 July 2008, the Authority published an open letter stating it was no longer in a position to reach a decision on these four Modification Proposals. The Modification Proposals are therefore closed.

The solution proposed by P229 is essentially the same as that proposed by P203, with the addition of a proposed method for dealing with offshore connections to the Transmission System.

2 P229 SOLUTION

P229 was raised on 28 November 2008 by RWE Npower ('the Proposer'). P229 proposes to change the Transmission Losses arrangements in the BSC to allocate transmission losses, and associated costs, more appropriately across generators and demand customers on the GB transmission system. Under P229 TLF Zones would be created based on the 14 GSP Groups. Historical data would be used to annually calculate a TLF for each BSC season for each TLF Zone for the following year.

As noted in section 1.1.4 above, and in the P229 Modification Proposal, the P229 solution is substantially the same as that proposed by P203. The P203 solution was based in turn on the P198 Alternative solution. The main areas in which P229 differs from some or all of the previous Transmission Losses Modifications (P198, P200, P203 and P204) are:

- P229 uses seasonal TLF values, **not** annual TLFs;
- P229 **does not** include any transitional scheme/phased implementation; and
- P229 includes a proposal for the treatment of offshore connections to the Transmission System.

Though the final P229 solution must be confirmed by the P229 Group, the solution can be summarised as:

- 1) An electrical model of the Transmission System (a 'Load Flow Model') would be built, containing 'Nodes' to represent points where transmission circuits meet, or energy flows on or off the Transmission System. Each Node on the Transmission System would be identified by the Transmission Company, and would be allocated to a specific Zone on the transmission network on the basis of a 'Network Mapping Statement' maintained by BSCCo. The TLF Zones would be set by

⁴ This is intended to deliver a 50:50 allocation in practice, allowing for the effect of metering for most generation connections being on the high voltage side of supergrid transformers, while metering for demand is on the low voltage side. The 45:55 allocation of transmission losses aims to take into account transformer losses for demand connections which are in addition to the metered flow.

the Panel, based on the geographic areas covered by GSP Groups. Since there are currently 14 GSP Groups, there would therefore be 14 TLF Zones.

- 2) TLFs would be calculated on an ex-ante basis (i.e. calculated before the relevant year) for each BSC Year, using Metered Volumes and Network Data for Sample Settlement Periods from a preceding 12-month period (the 'Reference Year'). The required Metered Volumes and Network Data would be provided by the Central Data Collection Agent (CDCA) and the Transmission Company respectively.
- 3) Prior to the start of each BSC Year (1 April – 31 March), the Load Flow Model would be run by a Transmission Loss Factor Agent ('the TLFA') to calculate how an incremental increase in power at each individual Node would affect the total variable losses from the Transmission System. The output of the Load Flow Model would be a TLF value for each Node in each of the Sample Settlement Periods.
 - Positive TLF values would be produced for Nodes where an incremental increase in generation (or reduction in demand) had the effect of decreasing variable losses.
 - Negative TLF values would be produced for Nodes where an incremental increase in generation (or reduction in demand) had the effect of increasing variable losses.

For example, if an injection of an extra 1kWh of energy at a Node increased variable losses by 0.02 kWh, the TLF for that Node in that Settlement Period would be -0.02. The TLFA would average the raw Nodal TLFs across all the Nodes in each TLF Zone by 'volume-weighted' averaging, to give 14 Zonal TLF values for each Sample Settlement Period (one per TLF Zone).

The TLFA would then convert these Zonal TLF values to Seasonal Zonal TLFs by 'time-weighted' averaging, calculating a set of four Seasonal Zonal TLFs for each TLF Zone – one for each BSC Season, as defined in Section K of the Code:

- BSC Spring: 1 March – 31 May inclusive;
 - BSC Summer: 1 June – 31 August inclusive;
 - BSC Autumn: 1 September – 30 November inclusive; and
 - BSC Winter: 1 December – 28 February inclusive (or 29 February in a leap year).
- 4) The TLFA would adjust the Seasonal Zonal TLFs by an appropriate scaling factor (0.5 was found to be a suitable value under both P82 and P203) such that the volume of energy allocated via the TLFs was comparable to the volume of variable losses calculated by the Load Flow Model. The Adjusted Seasonal Zonal TLFs would be made publicly available by BSCCo no less than three months prior to their use in the TLM Settlement calculation for the applicable BSC Season.
 - 5) Each BM Unit would be allocated to a specific TLF Zone by BSCCo on the basis of the Network Mapping Statement, with any question or dispute over zonal allocation to be resolved by the Panel. The TLFA would determine the TLF value to be applied to each BM Unit in the TLM Settlement calculation for the applicable BSC Season, which would be the Adjusted Seasonal Zonal TLF value for the relevant Zone.

All BM Units within a Zone would therefore receive the same single TLF value for every Settlement Period in the BSC Season. A positive TLF would increase the TLM value used to scale a BM Unit's Metered Volume (a benefit to generators and disadvantage to Suppliers), and a negative TLF would decrease the TLM value (a benefit to Suppliers and disadvantage to generators).

- 6) The BM Unit-Specific TLFs calculated by the TLFA would be registered in BSC Systems by the Central Registration Agent (CRA), and would be used by the Balancing Mechanism Reporting Agent (BMRA) and the Settlement Administration Agent within the Balancing Mechanism Reporting Service (BMRS) and Settlement calculations respectively.

- 7) The remaining 'fixed' element of transmission losses would continue to be allocated to Parties on a non-locational basis through the TLMO, and the overall 45:55 allocation of total transmission losses to generation and demand would be retained.
- 8) There would be no phased implementation or 'hedging' of exposure to the new zonal TLFs, which would therefore take full effect from the first Settlement Period on the Implementation Date.
- 9) The applicable onshore zones would be the geographical area defined by a GSP Group. For offshore nodes connected to the GB transmission system (including both DC and AC offshore networks and offshore networks connected to distribution systems) the relevant onshore GSP Group in which the network is connected would be used as the basis for the applicable zone subject to Panel determination using specific criteria.

3 PROPOSED PROGRESSION

3.1 Proposed timetable

ELEXON recommends that an 8 month Assessment Procedure is required for P229. This is greater than the standard Assessment Procedure length, and is based on the following approach:

- The first 2 months will be used to determine the scope of the required analysis. Specifications used for commissioning load flow modelling and cost-benefit analysis for previous Transmission Losses Modifications will be reviewed and updated to procure external consultants.
- After scoping is completed the remaining Assessment will be carried out; this will include load flow modelling, Impact Assessment, cost-benefit analysis and industry consultation.

This proposed timetable is based on the time required for completion of the Assessment of P198, which required similar levels of external analysis and took 8 months. Therefore ELEXON believes that the proposed P229 progression timetable is a realistic reflection of the work that is required to complete an effective assessment of the merits of P229.

Note that details of the timetable for the required external analysis will be presented as part of the update to the Panel in February 2009. An initial timetable for the progression of P229 can be found in Appendix 3.

3.2 Areas for consideration

An initial assessment of P229 has identified the following areas which BSCCo recommends should be considered further during the progression of the Modification Proposal:

3.2.1 Proposed Solution

The P229 solution as outlined in Section 2, above, should be confirmed and documented. The P229 Modification Proposal states the modification would be based on work already completed on the previous seasonal zonal transmission losses modification, P203. This means that, except for the additional offshore provision, all elements of the P229 solution should mirror the P203 solution, and differ only where required (e.g. due to the offshore provision), though the Group should ensure it has considered whether aspects of the solution remain applicable, e.g. the scaling factor, which is not defined in the P229 proposal.

This approach will avoid the need for the P229 Modification Group to repeat discussions already undertaken under the previous losses Modifications, and expedite progression of P229. The P229 Modification Group should therefore consider the solution areas set out in Section 2 and confirm the P229 solution matches the corresponding P203 requirements and that these requirements remain appropriate.

3.2.2 Offshore Transmission

Unlike the previous Transmission Losses Modifications, P229 includes a provision relating to offshore nodes. Offshore connections do not fall within the geographical area of GSP Groups, so determining which TLF Zone offshore nodes belong to is not straightforward. P229 states that 'for offshore nodes connected to the GB transmission system (including both DC and AC offshore networks and offshore networks connected to distribution systems) the relevant onshore GSP Group in which the network is connected would be used as the basis for the applicable zone, subject to Panel determination using specific criteria'.

Ofgem and DECC are presently in the process of jointly developing and putting in place a regime for offshore transmission. Under the proposals all offshore networks of 132kV or more will become part of the Transmission System. Go Active for this new regime is currently planned for June 2009, and the required BSC changes will be made without the need for a Modification Proposal, using specific powers in the Energy Act 2004. The current joint Ofgem/DECC consultation (which is the penultimate in a series) is available on the Ofgem website (see the [Offshore Electricity Transmission Ofgem/DECC Update](#))

Estimation of the increase in offshore nodes in future, and assessment of any impact on P229, will be taken into account in the P229 analysis in the same manner as other factors that could affect P229, such as growth in nuclear or renewable generation. However, further to this ELEXON believes that P229 Assessment should consider the following areas where offshore transmission may pose additional issues (this list is not intended to be exhaustive):

- The appropriate baseline against which to assess P229 (given Offshore Transmission has not yet been introduced into the Code);
- Detailing how offshore nodes are incorporated into the P229 solution;
- Any effect of using offshore nodes in load flow modelling;
- Impact on the load flow modelling requirements if it is necessary to model DC offshore networks;
- Treatment under P229 of offshore transmission systems connected to the onshore system through the geographical areas of more than one GSP Group (i.e. it is unclear which TLF Zone the offshore nodes should be assigned to; and
- Consideration of any interaction between the legal text to implement P229 in the Codes and the legal text to enact offshore transmission.

3.2.3 Environmental Impact

The BSC Modification Process is obliged to assess the environmental impact of proposals and suitably quantify such impact. This could be in terms of carbon emissions or carbon-equivalent values for other pollutants. The P229 Group should consider how to most effectively assess environmental impact for P229.

At the time the previous Transmission Losses Modifications were assessed no environmental obligation existed for assessment under the BSC, so environmental impact did not form part of the cost-benefit analysis. The P229 Group should review the P203 cost benefit work to establish that any assumption made are still appropriate and valid from the perspective of assessing environmental impact. The Group should also consider any assessment of the environmental impact of P203 that was produced under the Authority's wider remit, to establish if this can help in the assessment of P229.

3.2.4 Assessment and Analysis

Substantial analysis was undertaken for the previous Transmission Losses Modifications P82 and P198, and the P198 work was utilised for other Transmission Losses Modifications, including P203. This section summarises the analysis conducted, and explains why ELEXON believes new analysis is required for P229. Though the results of previous analysis can not be used for P229, efficiency benefits can be achieved by reviewing the previous analysis, as explained below.

a) Requirement to undertake new analysis under P229

Analysis was undertaken in the following areas to support the previous Transmission losses Modifications:

- **Load Flow Modelling:** an external consultant carried out load flow modelling for P198, including calculation of unphased seasonal TLF values using 2005/6 data.
- **Cost-Benefit Analysis:** an external consultant carried out a cost-benefit analysis for P198, including a comparison of the net benefits of unphased annual and unphased seasonal TLF values.

P203 used the results of analysis in these areas that was previously undertaken for P198. This was possible because:

- The P198 load flow modelling could be applied to the calculation of Adjusted Seasonal Zonal TLFs under P203; and
- And the P198 cost-benefit analysis could be applied to P203 because the calculation of Adjusted Seasonal Zonal TLFs P203 was basically the same as Alternative Modification P198.

P229 is based on P203. However, ELEXON believes that new load flow modelling and cost benefit analysis is required as part of P229 Assessment for the following reasons:

- In the time since the original work was conducted unforeseen events/changes could have occurred which will affect the outcome of analyses;
- The scope and requirements for cost-benefit analysis have been changed by the need to include assessment of the environmental impact of P229; and
- The inclusion of offshore nodes in P229 alters the model and assumptions on which the previous analysis was based.

b) Review and utilisation of previous analysis

Though up to date analysis is required for P229, ELEXON believes that consideration should be given to the use that can be made of the work completed for the previous Transmission Losses Modifications, such as:

- It is anticipated that the load flow modelling can be obtained from the same source, and that therefore no substantial procurement is required in this area;
- The load flow modelling work required is expected to be basically the same as for P198, therefore the P198 modelling specification can be used as the basis for the P229 specification (suitably updated, i.e. including offshore nodes);
- The previous sourcing and procurement of cost-benefit analysis could assist in these areas for P229; and
- Efficiency benefits could be achieved by using the P203 cost-benefit analysis request as a template for requesting cost-benefit analysis for P229 (suitably updated, i.e. including environmental impact).

3.3 Estimated Costs and Impacts

See Appendices 2 and 3 of this document for an initial assessment of the impacts P229 and an estimate of the cost of progressing P229, respectively.

4 RECOMMENDATIONS TO THE PANEL

BSCCo believes that further consideration of P229 by a Modification Group is required in order to further consider, and consult upon, the areas raised by this IWA. As the areas for consideration are sufficiently defined, BSCCo recommends that P229 proceed to the Assessment Procedure.

BSCCo recommends that P229 be submitted to an 8-month Assessment Procedure.

It is estimated that progression of P229 will require:

- 7 Modification Group meetings;
- 1 industry consultation;
- 1 BSC Agent impact assessment;
- 1 Party/Party Agent impact assessment;
- 1 Core Industry Document Owner impact assessment;
- 1 BSCCo impact assessment;
- 1 request for Transmission Company analysis; and
- The provision of external load flow modelling and cost-benefit analysis.

The proposed timetable and estimated costs for the progression of P229 are shown in Appendix 3.

BSCCo recommends that external resource is commissioned to provide load flow modelling and cost-benefit analysis, and therefore recommends that the Panel provisionally agree the commissioning of such resource, subject to confirmation of the expenditure required. BSCCo will submit details of the estimated cost of the external resource required as part of the P229 update that it is proposed will be presented to the Panel at its meeting in February 2009.

BSCCo recommends that the P229 Modification Group be formed from members of the P203 Modification Group as far as possible and Standing Modification Group members with relevant expertise.

BSCCo recommends that the areas for consideration raised by this IWA should form the basis of the Modification Group Terms of Reference, along with any additional areas proposed by the Panel.

5 TERMS USED IN THIS DOCUMENT

Other acronyms and defined terms take the meanings defined in Section X of the Code.

Acronym/Term	Definition
α (alpha) factor	The scaling factor applied to total transmission losses such that 45% are allocated to delivering Trading Units and 55% are allocated to offtaking Trading Units.
Ex-ante	Calculated beforehand.
Fixed losses	The element of transmission losses which is independent of the distance travelled by electricity.
Load Flow Model	An electrical model of the Transmission System, used to generate Transmission Loss Factor values.
Node	Used in a Load Flow Model to represent points where energy flows on or off the Transmission System.
Total transmission losses	The sum of fixed losses and variable losses in any given period.
Transmission losses	The energy lost from the Transmission System in transporting electricity (calculated as the difference between total generation and total demand).
Transmission Loss Adjustment (TLMO)	The parameter for recovering the costs of the proportion of transmission losses which are not recovered through the Transmission Loss Factor, and which is applied on a uniform basis.

Transmission Loss Factor (TLF)	The parameter for allocating some or all transmission losses on a non-uniform basis, and which is currently set to zero.
Transmission Loss Factor Agent (TLFA)	The entity responsible for calculating Transmission Loss Factor values.
Transmission Loss Multiplier (TLM)	The factor used to scale BM Unit Metered Volumes in Settlement in order to recover the costs of total transmission losses from Parties.
Variable losses	The element of transmission losses which occurs through heat, and which increases with the distance travelled by electricity.

6 REFERENCES

Ref.	Document Title	Owner	Issue Date	Version
1	Ofgem open letter on closing P198, P200, P203 and P204	Ofgem	17/07/08	1.0
2	ELEXON Modification P203 webpage	ELEXON	N/A	N/A
3	ELEXON Modification P198 webpage	ELEXON	N/A	N/A
4	Brattle review of Transmission Losses analysis	Ofgem	March 08	1.0
5	Offshore Electricity Transmission Ofgem/DECC Update	Ofgem/DECC	20/11/08	1.0

APPENDIX 1: MODIFICATION PROPOSAL

Modification Proposal – BSCP40/03	MP No: P229 (mandatory by BSCCo)
Title of Modification Proposal (mandatory by originator): Introduction of a seasonal Zonal Transmission Losses scheme	
Submission Date (mandatory by originator): 28/11/08	
<p>Description of Proposed Modification (mandatory by originator)</p> <p>This modification is based on the creation of seasonal zonal Transmission Loss Factors (TLF) (the “applicable TLFs”) derived <i>ex ante</i> for application to generation and demand BMUs within a zone (the “applicable zone”) for each of the four BSC seasons. The proposed scheme would retain the current process for allocating transmission losses to generation and demand (45% of transmission losses to production accounts and 55% to consumption accounts).</p> <p>Nodal marginal TLFs would be calculated for each BMU from a representative collection of historic power system conditions using an intact network simulation (the “load flow model”) during a previous period (the “reference year”) for each of the BSC seasons. The transmission company would provide appropriate data for the network simulation. BSCCo would provide a load flow specification for the load flow model. The calculation of the TLFs would be under the governance of the BSC. A TLF Agent or a service provider would undertake the load flow modelling. The modelling process and load flow model will be subject to independent review by the Panel and BSCCo.</p> <p>The applicable period for the seasonal zonal TLFs under this proposal would be the BSC year (from April to March). Seasonal zonal TLFs would be derived from nodal figures by volume-weighted averaging and time-weighted averaging for applicable zones.</p> <p>The applicable onshore zones would be the geographical area defined by a GSP Group. For offshore nodes connected to the GB transmission system (including both DC and AC offshore networks and offshore networks connected to distribution systems) the relevant onshore GSP Group in which the network is connected would be used as the basis for the applicable zone subject to Panel determination using specific criteria.</p> <p>The seasonal zonal TLFs would be adjusted by an appropriate scaling factor (the “applicable scaling factor”, which was set at 0.5 under P82/P203). The value of this scaling factor would be fixed under the governance of the BSC at a level that, to a first approximation, (a) allocated the heating element of the transmission system losses on an average basis, with little under or over recovery (heating variable losses), and (b) resulted in other transmission losses being allocated on a uniform basis (fixed losses) through the relevant parameters (TLMO). Any inaccuracy in (a) would be compensated for in (b). Separate Zonal TLFs will be calculated for both generation and demand.</p> <p>The seasonal zonal TLFs for each season would be published on the Elexon website at least one month prior to the applicable period. BSCCo will map BMUs to the applicable zones. This mapping would be published at least one month prior to the application of TLFs, made available to BSC parties in electronic format and be revised from time to time. The volume of transmission losses in each Settlement Period for the applicable period would be allocated amongst individual</p>	

<p>Modification Proposal – BSCP40/03</p>	<p>MP No: P229 <i>(mandatory by BSCCo)</i></p>
<p>BMUs in settlement by applying the relevant zonal parameters (TLFs, TLMO+j and TLMO-j).</p>	
<p>Description of Issue or Defect that Modification Proposal Seeks to Address <i>(mandatory by originator)</i></p> <p>Under the current BSC arrangements all transmission system losses are allocated to BSC parties in proportion to metered energy, whether production or consumption on a uniform allocation basis (45% to production accounts, 55% to consumption accounts). Therefore, the cost of heating (variable) transmission losses is allocated amongst BSC Parties regardless of the extent to which they give rise to them. This means that customers in the north of GB and generators in the south of England have to pay some of the costs of transmitting electricity to locations miles away from the source of generation.</p> <p>The proposed seasonal zonal scheme will enable the variable costs of transmission losses to be allocated on a cost-reflective basis and reflected on parties that cause them. The modification would remove the current cross subsidies and associated discrimination that is inherent in the uniform allocation of transmission losses.</p> <p>The current allocation of transmission losses fails to provide potential connectees to the transmission system with appropriate signals regarding the implications of siting in different parts of the country. This may give rise to inefficient decisions regarding the development of new power stations or connection of new industrial loads. This results in the inefficient use of energy and unnecessary carbon emissions. A seasonal zonal losses scheme will reduce carbon emissions in both the short term through dispatch and energy efficiency incentives and in the long term through locational signals for new investment in power generation and demand.</p> <p>The modification would be based on work already completed on the previous seasonal zonal transmission losses modification (P203), which was closed on procedural grounds.</p>	
<p>Impact on Code <i>(optional by originator)</i></p>	
<p>Impact on Core Industry Documents or System Operator-Transmission Owner Code <i>(optional by originator)</i></p>	
<p>Impact on BSC Systems and Other Relevant Systems and Processes Used by Parties <i>(optional by originator)</i></p>	

Modification Proposal – BSCP40/03	MP No: P229 <i>(mandatory by BSCCo)</i>
Impact on other Configurable Items <i>(optional by originator)</i>	
<p>Justification for Proposed Modification with Reference to Applicable BSC Objectives <i>(mandatory by originator)</i></p> <p>The proposal will better facilitate BSC Objective A relating to the efficient discharge by the licensee (NGC) of the obligations imposed upon it by its licence. A seasonal zonal transmission losses scheme will remove market distortions and the discrimination that exist in the present arrangements.</p> <p>The proposal will better facilitate BSC Objective B by enhancing the efficient, economic and co-ordinated operation by the licensee (NGC) of the licensees’ transmission system. Adoption of a seasonal zonal transmission losses scheme will remove cross subsidies which the present uniform charging for transmission losses create. A seasonal zonal transmission losses scheme will therefore enhance efficiency through more cost reflective charging which could be expected to influence both short term plant despatch and long term business decisions influencing investment in both generation and demand. In addition, cost benefit work during assessment of P198 and P203 has demonstrated that a seasonal zonal losses scheme is capable of delivering additional efficiency benefits in terms of reduced overall losses when compared to an annual losses scheme.</p> <p>This proposal will also contribute to better achieving the BSC Objective C relating to the promotion of effective competition in the generation and supply of electricity, and (so far as consistent therewith) the promotion of such competition in the sale and purchase of electricity. In particular:</p> <ul style="list-style-type: none"> • The proposal will introduce a cost reflective allocation of transmission losses according to the degree to which BMUs in an applicable zone give rise to losses; • The proposal removes the current cross subsidies between customers (north to south) and generators (south to north) that occur through the uniform allocation of transmission losses; • The allocation of losses to zones will enable the costs to be reflected on generation and demand in a manner that does not unduly penalise individual BMUs; • A scheme based on the ex ante calculation of zonal loss factors will enable users of the transmission system to estimate the impact and appropriately reflect the costs; • A seasonal zonal scheme would provide better information to users of the transmission system regarding the implications of siting generation and new load in different parts of the country; and • In the longer term seasonal zonal allocation of transmission losses would encourage appropriate investment in generation or new load in areas which currently have limited capacity relative either to generation or demand. This will ultimately bring down the overall costs of losses with benefits for customers and the environment. 	
Urgency Recommended: No <i>(delete as appropriate) (optional by originator)</i>	

Modification Proposal – BSCP40/03	MP No: P229 <i>(mandatory by BSCCo)</i>
Justification for Urgency Recommendation <i>(mandatory by originator if recommending progression as an Urgent Modification Proposal)</i>	
Details of Proposer: <i>Name: Charles Ruffell</i> <i>Organisation: RWE Npower</i> <i>Telephone Number: (0)1793 89 3983</i> <i>Email Address: charles.ruffell@rwenpower.com</i>	
Details of Proposer's Representative: <i>Name: Bill Reed</i> <i>Organisation: RWE Supply and Trading</i> <i>Telephone Number: 01793 893835</i> <i>Email address: bill.reed@rwe.com</i>	
Details of Representative's Alternate: <i>Name: Charles Ruffell</i> <i>Organisation: RWE Npower</i> <i>Telephone Number: (0)1793 89 3983</i> <i>Email Address: charles.ruffell@rwenpower.com</i>	
Attachments: No <i>(delete as appropriate) (mandatory by originator)</i>	
If Yes, Title and No. of Pages of Each Attachment:	

APPENDIX 2: INITIAL ASSESSMENT OF IMPACTS OF MODIFICATION PROPOSAL

An initial assessment has been undertaken by BSCCo in respect of all BSC systems, documentation and processes. The following have been identified as being potentially impacted by P229. Note that the impacts below are based on the P229 solution being the same as that developed for P203, with the addition of the proposal for offshore nodes.

a) Impact on BSC Systems and Processes

BSC System / Process	Potential Impact of Proposed Modification
BM Unit Registration	The CRA would be required to amend its BM Unit registration process so that Adjusted Seasonal Zonal TLF values for each BM Unit are obtained from the TLFA (via BSCCo) for each BSC Year, and are registered in BSC Systems. These values would be reported using existing data flows.
Central Data Collection	The CDCA would be required to provide the TLFA (via BSCCo) with Metered Volume data for the Sample Settlement Periods used in the Load Flow Model.
BMRS	The BMRA would be required to receive Adjusted Seasonal Zonal TLF values for each BM Unit from the CRA, and to use these values in BMRA reporting during the applicable BSC Year.
Settlement Administration	The SAA would be required to receive Adjusted Seasonal Zonal TLF values for each BM Unit from the CRA, and to apply these values in Settlement calculations during the applicable BSC Year.
Derivation of Zonal TLFs	<p>A new BSC process, with supporting systems, would be introduced for the TLFA to derive TLFs through the application of a Load Flow Model in accordance with a Network Mapping Statement, Load Flow Model Specification, and new calculations in Section T of the Code.</p> <p>The output of this new process would be a set of four Adjusted Seasonal Zonal TLF values (one per BSC Season in the year) for each of the 14 TLF Zones.</p> <p>All BM Units within a Zone would receive the Adjusted Seasonal Zonal TLF value for that Zone in the relevant BSC Season.</p>

b) Impact on BSC Agent Contractual Arrangements

BSC Agent Contract	Potential Impact of Proposed Modification
Transmission Loss Factor Agent	<p>New agent.</p> <p>A full BSC Agent procurement exercise would be required, and appropriate contractual arrangements created, for the TLFA, in accordance with Section E of the Code.</p>
BSC Auditor (PwC)	Extended the scope of the BSC Audit to include the TLFA.
LogicaCMG	BMRA, CRA, CDCA, SAA may be impacted.

c) Impact on BSC Parties and Party Agents

Parties may wish to verify the allocation of their BM Units to Zones. Parties that have developed their own systems to monitor the Settlement calculations would need to amend these to take account of non-zero TLF values varying by BSC Season.

No impact on any Party Agents.

d) Impact on Transmission Company

- Support BSCCo and the Panel in establishing and maintaining the Network Mapping Statement, including maintenance of an up-to-date list of all Nodes on the Transmission System, and assistance in resolving any questions or disputes over the allocation of individual BM Units to Zones; and
- Support the TLFA and the Panel in maintaining the Load Flow Model, including the provision of relevant Network Data and any necessary information to aid the Panel in determining Load Periods.

e) Impact on BSCCo

Area of Business	Potential Impact of Proposed Modification
Change Implementation	<p>A special release would be required to deliver the TLFA service, requiring (at a minimum) the following:</p> <ul style="list-style-type: none"> • Procurement of new BSC Agent (TLFA) and new service provider (Model Reviewer), managed as a procurement project within the P229 Release. • Testing of TLFA system for production of Annual TLFs. • Implementation and review of TLFA documentation, CDCA URS and related docs and the IDD Part 2, and other CSD changes. • Changes due to requirement for CRA to store and use seasonal TLFs.
Change Coordination	Implement approved changes to the BSC Sections and Code Subsidiary Documents.
Corporate Assurance & Finance teams	Support procurement and implementation.
Governance & Regulatory Affairs	Implementation and management of operational impact on the Panel.
Legal	Support development and assessment of P229.
Commercial Management and Procurement	<p>During P229 Assessment, procurement of:</p> <ul style="list-style-type: none"> • Load Flow Modeller to undertake modelling and advise the P229 group. • A consultant to undertake cost-benefit Analysis. <p>Procurement would be required as part of implementation of P229.</p>
Central Services Data and Planning	Support majority of the operational processes during lead up to implementation and on an ongoing basis after go-live.
Customer Operations	Training for the ELEXON helpdesk and OSM service regarding new processes.

f) Impact on BSC Panel

- Approval of the Load Flow Model, the Load Flow Model Specification, the TLFA Service Description, the Load Flow Model Reviewer Terms of Reference and the Network Mapping Statement;
- Establishing the definitive list of TLF Zones for use in the Network Mapping Statement and Load Flow Model, including resolution of any question or dispute over the mapping of individual BM Units to Zones;
- Establishing a number of different Load Periods to represent varying levels of load on the Transmission System for use in the Load Flow Model;
- Establishing the number of Sample Settlement Periods to be used in each Load Period for use in the Load Flow Model;
- Establishing a revised BSC Audit Scope incorporating the TLFA; and
- With the aid of an independent Load Flow Model Reviewer, ensuring that the Load Flow Model complies with the Load Flow Model Specification (including retrospectively, where the calculation or use of TLFs is the subject of a Trading Dispute).

g) Impact on Code

Code Section	Potential Impact of Proposed Modification
Section E 'BSC Agents'	Add TLFA to the list of BSC Agents in Section E.
Section H 'General'	Add the Load Flow Model Specification to the list of Code Subsidiary Documents in Section H.
Section T 'Settlement and Trading Charges'	Amend to detail the rights and obligations of all relevant parties regarding the derivation of Adjusted Seasonal Zonal TLFs and their use in Settlement.
Section V 'Reporting'	Amend to detail the provision by BSCCo of the following TLF data to Parties on request: <ul style="list-style-type: none"> • The Network Data and Metered Volumes used in the TLF calculation for the applicable BSC Year; • The raw nodal power flows calculated by the Load Flow Model and used in the TLF calculation for the applicable BSC Year; and • The raw Nodal TLFs calculated by the Load Flow Model and used in the TLF calculation for the applicable BSC Year.
Section X 'Definitions and Reporting'	Amend to detail any new Code-defined terms or acronyms for P229.

h) Impact on Code Subsidiary Documents

Document	Potential Impact of Proposed Modification
BSCP01 'Overview of the Trading Arrangements'	Amend to reflect the derivation of non-zero TLFs and their use in Settlement calculations.
BSCP15 'BM Unit Registration'	Amend to include the process for allocating four Adjusted Seasonal Zonal TLF values to each BM Unit in the applicable BSC Year.
BSCP38 'Authorisations'	Amend to include an authorisation process for Parties to request input and output data files relating to the Load Flow Model (Network Data, Metered

Document	Potential Impact of Proposed Modification
	Volumes, power flows and Nodal TLFs).
BSCP41 'Report Requests and Authorisations'	As above.
Reporting Catalogue	Amend to reflect new/amended reporting requirements.
Communications Requirement Document	Amend to reflect rules for communicating with the TLFA via BSCCo.
BSC Agent Service Descriptions	Amend BMRS, BSC Auditor, CDCA, CRA and SAA Service Descriptions to reflect new obligations on these Agents in respect of zonal TLFs. New Service Description – for the TLFA.
Load Flow Model Specification	New Code Subsidiary Document – establish the specification for the TLFA Load Flow Model.

i) Impact on Core Industry Documents and Other Documents

No impact.

j) Impact on Other Configurable Items

Document	Potential Impact of Proposed Modification
User Requirements Specifications	The BMRS, BSC Website, CDCA, and CRA URSs would need to be amended to reflect the new obligations on these Agents in respect of zonal TLFs. New URS required – for the TLFA.

k) Impact on BSCCo Memorandum and Articles of Association

No impact.

l) Impact on Governance and Regulatory Framework

The following impacts fall outside the scope of the Code and can not therefore form part of assessment of P229 against the Applicable BSC Objectives. However these areas could be taken into account by the Authority in the context of its wider statutory duties:

- Impact on consumers (through the passing on of costs or cost-savings by Parties, or changes in the location of demand);
- Impact on the existing locational signals provided by the Transmission Company's TNUoS charging.

APPENDIX 3: COSTS AND TIMETABLE FOR PROGRESSION**ESTIMATED COSTS OF PROGRESSING MODIFICATION PROPOSAL⁵**

Meeting Cost	£3,500
Legal/Expert Cost	Legal: £2,500 Expert consultants: cost to be confirmed (February 2009 update)
Impact Assessment Cost	£10,000
ELEXON Resource	117 man days £23,490

⁵ Clarification of the meanings of the cost terms in this appendix can be found on the BSC Website at the following link:
http://www.elexon.co.uk/documents/Change_and_Implementation/Modifications_Process_-_Related_Documents/Clarification_of_Costs_in_Modification_Procedure_Reports.pdf

Initial Timetable for Progression of P229 (note that the dates of Modification Group meetings are indicative)

