November 2002

INITIAL ASSESSMENT OF MODIFICATION PROPOSAL P105 - Introduction of Zonal Losses on a Marginal Basis without Phased Implementation

Prepared by ELEXON Limited

Document Reference	IWA105
Version no.	1.0
Issue	Final
Date of Issue	8 November 2002
Reason for Issue	For Panel Decision
Author	ELEXON

I DOCUMENT CONTROL

a Authorities

Version	Date	Author	Signature	Change Reference
0.1	07.11.02	Roger Salomone		For Internal Review
1.0	08.11.02	Roger Salomone		For Panel Decision

Version	Date	Reviewer	Signature	Responsibility
0.1	07.11.02	Change Delivery		Internal Review
1.0	14.11.02	BSC Panel		Panel Decision

b Distribution

Name	Organisation
Each BSC Party	Various
Each BSC Agent	Various
The Gas and Electricity Markets Authority	Ofgem
Each BSC Panel Member	Various
energywatch	Energywatch
Core Industry Document Owners	Various

c Intellectual Property Rights and Copyright

II CONTENTS TABLE

1 SUMMARY

Modification Proposal P105 (P105), 'Introduction of Zonal Transmission Losses on a Marginal Basis without Phased Implementation', was submitted by Powergen on 24 October 2002. The Modification proposes that transmission losses should be allocated on a zonal rather than a uniform, system-wide, basis as at present. The Proposer contends that uniform allocation of losses fails to provide 'appropriate cost signals'.

The Proposer asserts that, under the current arrangements, the cost of transmission losses is not accurately targeted at BSC Parties in proportion to their contribution to such losses. Zonal differentiation would, according to the Proposer, not only more accurately target the cost of losses but would introduce appropriate cost signals. Such signals would reduce transmission losses in the short run through more efficient dispatch and encourage optimal siting of generation and demand in the long run. By virtue of such efficiency gains, the Proposer contends that achievement of the Applicable BSC Objectives (b) (the efficient and economic operation of the Transmission System objective) and (c) (the competition objective) would be better facilitated.

P105 explicitly rules out the phasing implementation of the proposed zonal differentiation on the grounds that this would delay rectification of the defect identified and, hence, the accompanying benefits.

The Modification is identical to an option considered, but not recommended as an Alternative Modification, under the Modification Proposal P75 'Introduction of Zonal Transmission Losses' Assessment Procedure. A new BSC Agent, the Transmission Loss Factor Agent (TLFA), would run a load flow model to calculate marginal Transmission Loss Factors (TLFs) on an ex-ante basis. The methodology used to perform such a calculation would be incorporated in the Code. The resulting TLFs, applicable for a month, would then be applied to BM Units deemed to be 'generation' grouped by TNUoS Zone and those deemed to be 'demand' grouped by GSP Group.

Initial assessment indicates that the main impacts and issues associated with the Modification are as follows:

- Sections E ('BSC Agents') , T ('Settlement and Trading Charges'), V ('Reporting') and Annex X-1 ('General Glossary') of the Code would be impacted;
- three of the existing BSC Agents (CDCA, CRA and SAA), their systems and key elements of the supporting documentation (i.e. Service Descriptions and User Requirement Specifications) would be impacted;
- a number of Code Subsidiary Documents (BSCP 01, BSCP 15, BSCP 42, the NETA Data File Catalogue, the Reporting Catalogue and the Interface Definition Document) would be impacted;
- a suite of Code Susidiary Documents would need to be created for the TLFA (i.e. a BSCP detailing its actions and interactions with Parties and existing BSC Agents, a Service Description and a User Requirement Specification);
- a requirement on NGC to provide the TLFA with appropriate network configuration data to run its 'load flow model';
- ELEXON's market monitoring system (TOMAS) would need to be updated to replicate changes to the existing BSC Agents' systems and flows and to accept any new reporting from the TLFA;

- a requirement on ELEXON to procure and establish a contractual relationship with a new BSC Agent whose purpose is the calculation of zonal TLFs (i.e. TLFA) would be introduced;
- a potential requirement for the Panel to determine certain prerequsites for the production of zonal TLFs (e.g. the distribution of the zones and the 'explicit mapping rules' referred to in P105);
- a potentially significant impact on various BSC Party systems and procedures (e.g. risk management, power pricing and billing); and
- a differential financial impact on BSC Parties depending on the location of their BM Units within England and Wales.

This initial assessment indicates that the issues and impacts associated with P105 are virtually identical to those associated with Pending Modification Proposals P75 and P82 'Introduction of Zonal Transmission Losses on an Average Basis'. Moreover, these impacts and issues have already been thoroughly analysed and debated during the Assessment Procedures of those two proposals. Therefore, on the basis that no new issues have been identified or arguments put forward in P105, the Panel is invited to:

- **DETERMINE that Modification Proposal P105 should be submitted to Report Phase in accordance with section F2.7 of the Code;**
- **AGREE that the draft Modification Report contain a provisional recommendation that P105 should not be made; and**
- **NOTE that no legal Text has been prepared with respect to the Proposed Modification; and**
- **CONSULT with the Authority to determine if it would like the draft Modification Report to contain such text.**

2 INTRODUCTION

This Report has been prepared by ELEXON Ltd. on behalf of the Balancing and Settlement Code Panel ('the Panel'), in accordance with the terms of the Balancing and Settlement Code ('the Code'). The Code is the legal document containing the rules of the balancing mechanism and imbalance settlement process and related governance provisions. ELEXON is the company that performs the role and functions of the BSCCo, as defined in the BSC.

An electronic copy of this document can be found on the BSC website, at www.elexon.co.uk

3 DESCRIPTION OF THE MODIFICATION PROPOSAL

P105 proposes the allocation of transmission losses to BM units on a zonal rather than a uniform, system-wide, basis[1].

Under the proposed arrangements, a new BSC Agent, the TLFA, would run a load flow model to calculate marginal TLFs on an ex-ante basis. The methodology used to perform such a calculation would be incorporated in the Code to ensure robust change management. The resulting TLFs,

[1] A copy of the Modification Proposal submitted by the Proposer is attached as Annex 1 of this paper.

applicable for a month, would then applied by the SAA to BM Units deemed to be 'generation' grouped by TNUoS Zone and those deemed to be 'demand' grouped by GSP Group.

The following key features of the arrangements are specified in the proposal:

1. the Transmission Loss Factor Methodology (TLFM) would be defined within the Code;
2. the TLFM would be 'fully marginal' (i.e. any form of 'scaling' to attenuate the factors is explicitly ruled out);
3. a DC load flow model would be run by the TLFA to derive marginal TLFs;
4. the network configuration entered into the model would represent an 'intact' network;
5. 'explicit mapping rules' would be established and applied to convert metered volumes into 'nodal' metered volumes for the purpose of modelling;
6. conversion of 'nodal' TLFs to zonal TLFs would be achieved through 'volume-weighted' averaging;
7. conversion of half-hourly zonal TLFs to monthly zonal TLFs would be achieved through 'time-weighted' averaging;
8. the zonal TLFs generated would be applicable for a month and calculated on an ex-ante basis using actual demand and generation data from the corresponding month in the previous year;
9. for purposes of allocating zonal TLFs to BM Units, 'generation' would be grouped by TNUoS Zone and 'demand' by GSP Group; and
10. the Modification explicitly **excludes the possibility of phased implementation** over time. This is **the sole difference** between this proposal and **Alternative Modification Proposal P75.**

4 IMPACT ON BSC SYSTEMS AND PROCESSES

BSC System / Process	Potential Impact of Proposed Modification
Registration	The CRA would be required to notify the TLFA of newly registered BM Units and of the de-registration of existing BM Units.
Contract Notification	None identified
Credit Checking	None identified
Balancing Mechanism Activities	None identified
Collection and Aggregation of Metered Data	None identified
Supplier Volume Allocation	None identified
Settlement	The SAA would be required to apply variable TLFs to BM Units on a zonal basis.
Clearing, Invoicing and Payment	None identified
Reporting	➢ the Settlement Report would need to be amended to report zonal TLFs ➢ existing CRA flows (i.e. concerning registration/de-registration of BM Units) and CDCA flows (i.e. those containing relevant metered volumes) would need to be supplied to the TLFA in addition to their existing recipients ➢ reporting requirements, flows and interfaces would need to be established for the TLFA
Contingencies	None identified
Dispute Resolution	None identified

5 IMPACT ON DOCUMENTATION

5.1 Impact on Balancing and Settlement Code

BSC Section	Potential Impact of Proposed Modification
A: Parties and Participation	None identified
B: The Panel	None identified
C: BSCCo and its Subsidiaries	None identified
D: BSC Cost Recovery and Participation Charges	None identified
E: BSC Agents	The TLFA would need to be detailed and accounted for under this section.
F: Modification Procedures	None identified
G: Contingencies	None identified
H: General	None identified
I: Not Used	N/A
J: Party Agents	None identified
K: Classification and Registration of Metering Systems and BM Units	None identified
L: Metering	None identified
M: Credit Cover and Credit Default	None identified
N: Clearing, Invoicing and Payment	None identified
O: Communications	None identified

BSC Section	Potential Impact of Proposed Modification
P: Energy Contract Volumes and Metered Volume Reallocations	None identified
Q: Balancing Mechanism Activities	None identified
R: Collection and Aggregation of Metered Data from CVA Metering Systems	None identified
S: Supplier Volume Allocation	None identified
S: ANNEX S-1 Performance Levels and Supplier Charges	None identified
S: ANNEX S-2 Supplier Volume Allocation Rules	None identified
T: Settlement and Trading Charges	The TLFM and a high-level description of the load flow model to be used by the TLFA would need to be defined under this section, perhaps as an annex.
U: Provisions Relating to Settlement	None identified
V: Reporting	The reporting requirements of the TLFA and extensions to the reporting requirements of the CRA and CDA would need to be documented under this section.
W: Trading Queries and Trading Disputes	None identified
X: Definitions and Interpretation	None identified
X: ANNEX X-1 General Glossary	New definitions may need to be introduced into this section to accompany the changes identified elsewhere in the Code (e.g. 'TLFA', Load Flow Model', 'Transmission Loss Factor Methodology', 'Node', 'Nodal TLFs', 'Zonal TLFs', 'Generation Loss Zone' and 'Demand Loss Zone').
X: ANNEX X-2 Technical Glossary	None identified

5.2 Impact on Code Subsidiary Documents

Code Subsidiary Document	Potential Impact of Proposed Modification
BSC Procedures	➢ BSCP 01 (Overview of Trading Arrangements) would need to be updated to include the TLFA, its role and the new process for the calculation and allocation of transmission losses ➢ BSCP 15 (BM Unit Registration) would need to be amended to include a requirement on CRA to notify TLFA of any registration/de-registration of BM Units ➢ BSCP 42 (BSC Business Community) would need to be amended to include TLFA ➢ a new BSCP would need to be produced detailing the actions of the TLFA and its interactions with Parties, existing BSC Agents and ELEXON
Codes of Practice	None identified
BSC Service Descriptions	➢ the CDCA, CRA and SAA Service Descriptions would need to be amended to include the new obligations placed upon each of them ➢ a new Service description for the TLFA would need to be produced
Party Service Lines	None identified
Data Catalogues	➢ The NETA Data File Catalogue (NDFC) would need to be amended to include the new flows to/from TLFA and amendments to impacted existing flows ➢ The Interface Definition Document (IDD) would need to be amended to reflect the interfaces (i.e. CDCA/TLFA, CRA/TLFA, SAA/TLFA, Parties/TLFA and ELEXON/TLFA
Communication Requirements Documents	None identified
Reporting Catalogue	The Reporting Catalogue would need to be amended to include the new flows to/from TLFA and amendments to impacted existing flows.

6 IMPACT ON ELEXON

Area of Business	Potential Impact of Proposed Modification
ELEXON Systems	TOMAS (ELEXON's market monitoring system) would need to be updated to reflect changes to BSC Central Systems' software and receive new/modified data flows.
ELEXON Procedures	Local Working Instructions relating to the new arrangements may need to be devised and implemented.
ELEXON Contracts (Excluding BSC Agent Contracts)	None identified
Other (e.g. costs, staffing, etc.)	There may be new resources required to provide Participant/BSC Agent support relating to the new arrangements.

7 IMPACT ON BSC AGENT CONTRACTUAL ARRANGEMENTS

BSC Agent Contract	Potential Impact of Proposed Modification
Logica (BMRA, CRA, CDCA, SAA, ECVAA, TAA(CVA))	The CDCA, CRA and SAA contracts may need to be reflect additional obligations placed on these agents to facilitate the new arrangements.
EPFAL (FAA)	None identified
ESIS (TAA(SVA))	None identified
Cap Gemini (SVAA)	None identified
PwC (BSC Auditor, Certification Agent)	The BSC Auditor's scope may need to be widened to cover the activities of the TLFA.
EASL (Teleswitch Agent, Profile Administrator)	None identified

8 PROCESS AND TIMETABLE FOR PROGRESSING THE PROPOSAL

Given that P105 was considered and thoroughly debated as a potential alternative to Modification Proposal P75 and rejected, ELEXON recommends that it be submitted to the Report Phase and that the draft Modification Report contain a provisional recommendation to reject. Subject to the Authority agreeing that no legal text is required to be prepared, it is proposed that a draft Modification Report would be issued for consultation by 22 November 2002. This will provide Parties with the opportunity to comment on the view that no further assessment of P105 is required because the issues associated with P105 have already been considered under the P75 and P82 Assessment Procedure. The draft Modification Report, together with any consultation responses received, would then be presented to the Panel at its meeting on 12 December 2002.

Legal drafting has not been prepared for this Modification. However, given the similarity of the Modification to Alternative Modification Proposal P75, this could be provided at short notice should the Authority so desire.

In making this recommendation, it is recognised that the issues associated with P105 have already been discussed in full by the Transmission Loss Factor Modification Group and consulted upon under the Modification Proposal P75 and P82 Assessment Procedure.

However, if the Panel believes that the issues associated with P105 were not fully considered during the P75 and P82 Assessment Procedure, the Panel may wish to submit P105 to an Assessment Procedure. Due to the issues associated with P105, a one-month assessment period would be recommended.

Alternatively, if the Panel believes that P105 has substantially the same effect as Pending Modification Proposal P75, it may refuse to accept the submission of P105. This would be in accordance with F2.1.4;

> *'Without prejudice to the development of any Alternative Modification pursuant to paragraph 2.6.2, the Panel may refuse to accept the submission of a proposal made pursuant to paragraph 2.1.1 if and to the extent that such proposal has, in the opinion of the Panel, substantially the same effect as:*
>
> *(a) a Pending Modification Proposal'*

9 ISSUES

Initial assessment of the Modification has identified the following issues:

- the Modification would have a differential financial impact on BSC Parties depending on the location of their BM Units within England and Wales;
- a potential requirement for the Panel to determine certain prerequsites for the production of zonal TLFs (e.g. the distribution of the zones and the 'explicit mapping rules' referred to in P105); and
- a potentially significant impact on various BSC Party systems and procedures (e.g. risk management, power pricing and billing).

ANNEX 1 – MODIFICATION PROPOSAL

Modification Proposal	**MP No: 105** *(mandatory by BSCCo)*

Title of Modification Proposal *(mandatory by proposer)*:

Introduction of Zonal Transmission Losses on a Marginal Basis without Phased Implementation

Submission Date *(mandatory by proposer)*: 24 October 2002

Description of Proposed Modification *(mandatory by proposer)*:

The modification proposes that transmission losses are allocated on a zonal rather than on a uniform system wide basis. Currently under Section T2 of the BSC, Transmission Loss Factors (TLF_{ij}) for all BMUs in all settlement periods are set to zero.

It is proposed that a Transmission Loss Factor Agent (TLFA) be appointed to calculate zonal marginal monthly TLFs for each BMU on an ex ante basis. Elexon would procure the TLFA service from a third party and they would determine TLFs in accordance with the Transmission Loss Factor Methodology (TLFM), which would be set out under the BSC. The key features of this approach are outlined below and this is consistent with a proposed P75 alternative developed and considered by the Transmission Loss Factor Methodology Group (TLFMG) and is to be fully described in the P75 Assessment Report to be submitted to the November 2002 BSC Panel:

- TLFM would be a 'fully marginal' and defined within the BSC.
- Ex ante calculation of monthly TLFs using actual demand and generation data from the relevant month in the previous year. There would be no scaling of TLFs.
- Zonal groupings would be TNUoS zones for generation and GSP Groups for demand.
- A DC load flow model used for derive marginal TLFs.
- Network configuration data based on an intact (historic) network.
- Explicit mapping rules to convert metered volumes into nodal metred volumes.
- Conversion of nodal TLFs to zonal TLFs on a 'volume-weighted' average basis.
- Conversion of half-hourly TLFs into monthly TLFs on a 'time-weighted average basis.
- The resulting zonal marginal TLF data would be submitted to Elexon and Transmission Loss Multipliers (TLMs) would then be calculated in accordance with Section T2.3.1 of the BSC.

Although this proposal preserves the full marginal loss signals from the network modelling, adjustments ($TLMO^{+}_{j}$ and $TLMO^{-}_{j}$) under T2.3.1 ensure Transmission Loss Multipliers (TLM_{ij}) recover the correct volume of total system losses in each settlement period. This uniform adjustment is considered more appropriate than any non-uniform scaling of TLFs, advocated in some quarters, that simply seeks to dampen (or attenuate) the marginal loss signals to roughly recover the correct volume of total system losses.

Governance of future changes to Transmission Loss Factor Methodology (TLFM)

Given the commercial importance of transmission losses, changes to the fundamental principles underpining the TLFM would only be permitted by means of a modification proposal[1]. As such changes could only be proposed according to the 'normal' modification rules by energywatch, market participants or NGC. This together with

[1] An exception to this would be in the definition of TNUoS zones where it is necessary to give the BSC Panel discretion to update zonal boundaries, to ensure there is consistency with NGC's transmission charging arrangements.

Modification Proposal	MP No: 105 *(mandatory by BSCCo)*

incorporation of the TLFM within the BSC will ensure a rigorous appraisal of any future proposed changes to the losses regime.

Description of Issue or Defect that Modification Proposal Seeks to Address *(mandatory by proposer)***:**

Currently the cost of transmission losses is not accurately targeted at BSC Parties that are to a greater or lesser extent contributing to those losses.

By introducing a zonal differentiation in the allocation of losses the proposal will provide appropriate locational signals to parties which will help reduce overall transmission losses in the short-term and encourage more optimal siting of generation and demand in the longer-term. Adoption of a marginal approach ensures that robust economic signals are provided to relevant users.

The current uniform approach to allocation of transmission losses fails to provide appropriate cost signals. It effectively provides hidden cross-subsidies for northern generation and southern demand, whilst unfairly placing additional costs on southern generation and northern demand. The industry has been aware of this long-standing distortion at the heart of electricity trading arrangements, from the inception of the England and Wales Electricity Pool. Indeed OFFER in its 1989 Annual Report stated that their should be locational pricing for the use of NGC's transmission system and made it clear that it envisaged transmission losses should include locational signals.

In 1997 the Pool Executive Committee approved a scheme for the zonal allocation of the cost of transmission losses. Although the project was shelved in the run up to NETA, Ofgem made clear that the issue would be revisited after NETA implemetation. The subject has also been discussed at length in various Ofgem Transmission Access and Losses consultation documents dated December 1999, May 2001 and February 2002.

The proposal seeks to address the issue/defect outlined above immediately. Any form of phased implementation is not considered appropriate as this would simply delay fully addressing the issue/defect, and hence full realisation of the benefits of the proposal.

Impact on Code *(optional by proposer)***:**

See P75 Assessment Report and DLIA.

Impact on Core Industry Documents *(optional by proposer)***:**

See P75 Assessment Report and DLIA.

Impact on BSC Systems and Other Relevant Systems and Processes Used by Parties *(optional by proposer)***:**

See P75 Assessment Report and DLIA.

Impact on other Configurable Items *(optional by proposer)***:**

See P75 Assessment Report and DLIA.

Modification Proposal	**MP No: 105** *(mandatory by BSCCo)*

Justification for Proposed Modification with Reference to Applicable BSC Objectives *(mandatory by proposer)***:**

The proposal more accurately targets the cost of transmission losses. In so doing it removes the cross-subsidies inherent in the current method for allocation of transmission losses between BSC participants, and hence helps ensure effective competition in the generation and supply of electricity.

The short-term effects are likely to be a reduction in the overall cost of system losses, although the longer-term efficiency gains in terms of influencing the locational patterns of generation and supply are likely to be more significant. Overall, this should assist the Transmission Company in the efficient, economic and co-ordinated operation of the Transmission System.

It is particularly important that the likelihood of inefficient locational choices, such as closure of generation plant in the south in preference to equivalent plant in the north are minimised, by ensuring this proposal is implemented at the earliest practical implementation date.

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Attachments: **No**