NETA Change Form	**MP/CP/TP No:** MP75
	Logica reference: ICR388
Title: Introduction Of Zonal Transmission Losses.	
Identified by: Powergen UK	**Date received:** 17-Jun-2002

Statement of requirement
Baseline affected: NETA Service Definition Baseline (V1.0)
Assumed changes over baseline: None
Description of Change: See attached original MP75.
Proposed solution: See attached original MP75.
Justification for Change: See attached original MP75.
Proposed changes to Service Levels: None
Proposed changes to the Agreement: None
Attachments/references: MP75.

To be completed by Logica			
	High Level Impact Assessment	Detailed Level Impact Assessment	Quotation
Tick which stage is being completed:	✓		
Signed by Logica Contract Manager:			
Date:	24-Jun-2002		
HLIA category: Large		Price for DLIA: £12 800	
If this is a Quotation, are consequential modifications needed to the DLIA? Yes/No.			

Logica's proposal
Logica's understanding of the requirement: Transmission Losses are currently allocated as zonal rather than on a uniform system-wide basis. This Modification aims to make Transmission Loss Factors (TLFs) vary by Settlement Period for each BM Unit (i.e. TLFij) rather than by Settlement Day for each BM Unit as is currently the case.

Logica's proposed design solution:

Database changes:
removal of TLF column from BM Unit Detail
creation of new TLF table

CRA
CRA-F032 Maintain Transmission Loss Factors: add explanation that TLF is specified for individual periods rather than date ranges.
6 Interface Requirements: update to reflect changes in flows as per CRA-Innn specific changes
CRA-I015 Issue BM Unit (etc) Data:
remove TLFij from BM Unit Registration
add sub group within BM Unit Registration: Date, plus 46 48 or 50 TLF values
CRA-I020 Issue Operations Registration Data
remove TLFij from BM Unit Registration
add sub group within BM Unit Registration: Date, plus 46 48 or 50 TLF values
CRA-I029
split into two. One (manual) will have Alpha, and the other (electronic) will have TLF:
BM Unit Transmission Loss Details:
BM Unit ID
Date; TLF[1], ... TLF[46], (TLF[47], TLF[48], (TLF[49], TLF[50]))
(implementation: new electronic file loader to load TLF data)
appendix - Logical Data Model
remove attribute TLF from BM Unit Detail
add new table (Date; Period; TLFij) as child records of BM Unit

SAA
SAA-F007 (implementation: select TLFij from new TLF table for period specific value in place of BM Unit Detail)
SAA-I001 Receive Registration Data
remove TLFij from BM Unit Registration
add sub group within BM Unit Registration: Date, plus 46 48 or 50 TLF values
(no implementation impact as shared database)
SAA-I014 (implementation: select TLFij from new TLF table for period specific value in place of BM Unit Detail)
appendix - Logical Data Model
remove attribute TLF from BM Unit Detail
add new table (Date; Period; TLFij) as child records of BM Unit

BMRA
BMRA-F003 (implementation: select TLFij from new TLF table for period specific value in place of BM Unit Detail)
BMRA-I001 Receive Registration Data
remove TLFij from BM Unit Registration
add sub group within BM Unit Registration: Date, plus 46 48 or 50 TLF values
(implementation: change to load new structure into new TLF table)
appendix - Logical Data Model
remove attribute TLF from BM Unit Detail
add new table (Date; Period; TLFij) as child records of BM Unit

Manual changes: remove TLF handling

Testing

Integration:

TLF loaded into CRA.
CRA publish to SAA & BMRA;
SAA & BMRA calculations;
SAA report - check computed values & reported TLF correct.
BMRA: check computed results correct.

System:

functional testing of CRA loader & all reports
functional testing of SAA calculation using TLF loaded by CRA & S014 reports
functional testing of BMRA loader & calculation using loaded data

Regression tests:

update to tests which use non-zero TLF
change in test cases to prove TLF works

Consequential changes to Project Deliverables:

CRA, SAA, BMRA

CRA URS[CRA-I015, CRA-I020, CRA-I029, CRA-F032]
SAA URS [SAA-I001, SAA-F007, SAA-I014]
BMRA URS [BMRA-I001, BMRA-F003]

IDD [Chapter 3, Ixxx as per URS changes and spreadsheet]
OSM, MSS

Consequential impact on BSC Service Users or Other Service Providers:

Testing strategy:

- Testing will only be performed on our own system with external interfaces being simulated as necessary. No allowance has been made for testing with external systems.
- No allowance has been made for ELEXON to witness testing.

Management plan for developing the Change:

Project plan for developing the Change:

The estimated time to complete the development of this change is 14 weeks.

Method of deployment:

Patch	Is a planned outage required? Yes

Price for Design and Build:

Item description:	Price (ex VAT)	Type of price:
CRA, SAA and BMRA changes.	£230 100	Fixed

Price for Operate and Maintain:

Item description:	Price per month (ex VAT)	Type of price:
Operate	£0	Fixed
Maintain	£2 685	Fixed

If this is a DLIA or Quotation, is a price breakdown in the agreed format attached? Yes/No

Terms attaching to the offer

Validity period of offer: 30 days	**Type of offer:** Indicative

Assumed start date:

Payment milestones:
Logica will invoice 30% on receipt of Purchase Order or authorised start of work, 50% on completion of acceptance tests, 20% on deployment or one month after completion of acceptance tests, whichever is sooner.

Document turnaround time:
5 days

Impact on Service Levels:
None

Impact on performance of the System:

Other terms:

If this is a Quotation, is a draft contract amendment attached? Yes/No

Responsibilities of ELEXON:

- For all DCRs which is subject to review, Logica shall provide one draft issue and a maximum of 5 working days has been allowed for ELEXON to review and comment on the updates. Comments will be addressed and the final issue will be provided. A maximum of 2 working days has been allowed for review confirmation and signoff by ELEXON.
- Within reasonable levels, ELEXON will make available appropriate staff to assist Logica during the development of this change.

Assumptions made by Logica:

- Price is for a separate patch to be deployed after Release 2.
- Price and duration assume that this change is developed in isolation and the effects of other changes are excluded.
- Price excludes provision for indexation of daily rates from 1st April 2003.
- Price is for creating DCRs, not a formal documentation issue.
- Deployment of any software on the Participant Test Environment is outside the scope of this impact assessment.
- It is assumed that TLFs will continue to be received by CRA from BSCCo, but that the interface will now be electronic reflecting the increase in volumes.
- It is assumed that where no TLF is available, the TLF will default to zero.
- It is assumed that if BMRA is to use TLF this will be provided to CRA before 2 p.m. the business day before the settlement day to which the data applies. An alternative would be to implement direct feed of TLM into BMRA if these details are deemed to come in late.

Options and alternatives:

Modification Proposal

MP No: 75
(mandatory by BSCCo)

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

Introduction Of Zonal Transmission Losses

Submission Date *(mandatory by proposer)*: 5 April 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 TLFs for each BMU in a given settlement period. Initially NGC would fulfil this role, however BSCCo could, in principle, choose to carry out this activity in-house or procure such a service from a third party other than NGC. TLFs would be calculated in accordance with the Transmission Loss Factor Methodology (TLFM), which would be set out in detail under the BSC. The methodology for deriving TLFs would be a marginal loss approach the exact form of which would be defined by the Modification Group. A suggested approach is summarised as follows:

- Demand and generation would be determined for all nodes on the system for each settlement period on an ex post basis.
- A load flow model would be run to determine how a small increment of demand is met by a suitable increase in generation spread across all nodes.
- Nodal marginal loss factors would then be derived by repeating this process for each node.
- These would then be grouped into the current TNUoS zones for generators and GSP Groups for demand. *(The Modification Group may wish to consider whether other zonal groupings are more appropriate).*
- The resulting zonal marginal TLF data would be submitted to BSCCo by the TLFA as soon as practicable and preferably in time for the Initial Settlement Run. There would be no scaling of these factors.
- 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. In addition, to ensure suppliers can manage the customer billing implications of this proposal implementation before 1 April 2003 is <u>not</u> advised.

<u>Governance of future changes to Transmission Loss Factor Methodology (TLFM)</u>

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

Modification Proposal	MP No: 75 *(mandatory by BSCCo)*

extent contributing to those losses. The proposal addresses this defect.

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.

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

Changes to Section T2 of the BSC.

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

Not known.

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

Likely to impact on supplier's customer billing systems.

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

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.

Modification Proposal	**MP No: 75** *(mandatory by BSCCo)*

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Attachments: No