June 2002

CONSULTATION DOCUMENT – MODIFICATION PROPOSAL P79

Revised Rules for Default Energy Imbalance Pricing

Prepared by ELEXON on behalf of the Pricing Issues Modification Group

I DOCUMENT CONTROL

a Authorities

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0.1	7/06/02	John Lucas		
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Version	Date	Reviewer	Signature	Responsibility
0.1	7/06/02	Justin Andrews		Mods Group Chairman
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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

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1 INTRODUCTION

This Consultation Document has been prepared by ELEXON Ltd, on behalf of the Pricing Issues Modification Group, 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 Code.

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

The document supports the first consultation process in the assessment of Modification Proposal P79. It is based on the ideas presented at the first Modification Group meeting to discuss P79, which was held on 29 May 2002. P79 is currently in the Definition Procedure.

1.1 Structure of Document

The document is structured as follows:

- Section 2 provides background to the Modification Proposal;

- Section 3 provides details of the Modification Group membership and attendees at the first meeting;

- Section 4 provides an overview of the current rules for calculating default prices, and the Modification Proposal;

- Section 5 provides a summary of the issues discussed at the first Modification Group meeting; and

- Section 6 contains the consultation questions.

2   BACKGROUND TO MODIFICATION PROPOSAL

Modification Proposal P79 was submitted by London Electricity Group on 12 April 2002. It seeks to amend the rules for calculating default values of System Buy Price (SBP) and System Sell Price (SSP), in order to ensure that:

- A Bid or Offer won't set the default price unless it has some available volume; and

- Default prices include the Price Adjustment element of Balancing Services Adjustment Data (BSAD), in the same way as non-default prices.

The Modification Proposal argues that this will facilitate the promotion of effective competition in supply and generation, as the new default energy prices will be more meaningful, more robust against accidental or deliberate manipulation, and more reflective of the actual costs of energy balancing.

At their meeting of 16 May 2002 the Panel decided that P79 should be submitted to the Definition Procedure[1] and that a Definition Report should be presented to the Panel meeting on 18 July 2002. The Panel also decided that the Definition Procedure be undertaken by the Pricing Issues Modification Group (PIMG).

The PIMG met on 29 May 2002 to discuss P79 and the conclusions are presented within this consultation document. Parties and other interested parties are invited to respond to this consultation expressing their views with respect to the matters contained within this document, and in particular the questions listed in section 6.

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[1] Pursuant to Section F2.5 of the Code.

3   MODIFICATION GROUP DETAILS

The PIMG members who attended the meeting on 29 May 2002 were as follows:

Name	Organisation
Justin Andrews	ELEXON (Chairman)
Paul Mott (Proposer)	London Electricity
Rob Barnett	Campbell Carr
Bob Brown	Cornwall Consulting
Paul Dawson	Barclays Capital
Tony Doherty	Ofgem
Mandi Francis	ELEXON
Martyn Hunter	St. Clements Services
Paul Jones	Powergen
Danielle Lane	British Gas Trading
Richard Lavender	National Grid
Chris Leeds	Entergy
John Lucas	ELEXON
Martin Mate	British Energy
Graham Oxley	RWE Trading Direct
Bill Reed	Innogy
Lisa Waters	Dynegy
Michael Wilks	Williams Energy
Ben Willis	Innogy

4   MODIFICATION PROPOSAL

This section describes Modification Proposal P79, and is structured as follows:

- Section 4.1 describes the circumstances under which default prices are required;

- Section 4.2 describes the current rules for calculating default prices, as specified in Section T4.4 of the BSC;

- Section 4.3 describes possible issues with these default price rules, as reported to the BSC Panel on 14 March 2002; and

- Section 4.4 describes the change to the default price rules proposed by Modification Proposal P79.

4.1   Circumstances Requiring Default Prices to be Calculated

Section T4.4 of the BSC specifies the rules for determining the System Buy Price and System Sell Price. Under normal circumstances, these are calculated as follows:

- The System Buy Price (SBP) is the volume-weighted average of accepted Offer Prices, and the System Sell Price (SSP) is the volume-weighted average of accepted Bid Prices.

- For both SBP and SSP, the calculation excludes certain categories of acceptance:

    i)   De Minimis acceptances (as defined in section 1A of Annex T-1);

    ii)   Arbitrage acceptances (as defined in section 2 of Annex T-1);

    iii)   Trade Tagged acceptances (as defined in section 3 of Annex T-1); and

    iv)   Acceptances with a Continuous Acceptance Duration (CAD) less than the Continuous Acceptance Duration Limit (CADL), which is currently set to fifteen minutes.

- For both SBP and SSP, the weighted average also includes an energy volume and energy cost notified by the System Operator as part of Balancing Services Adjustment Data (BSAD). This allows the imbalance prices to reflect the cost of energy trades made for energy balancing purposes outside of the Balancing Mechanism.

- For both SBP and SSP, the price also includes a Price Adjustment notified by the System Operator as part of Balancing Services Adjustment Data (BSAD). This allows the imbalance prices to reflect the cost of option fees paid by the System Operator for purposes of energy balancing.

However, there are circumstances under which these rules will fail to calculate a price:

- If the total volume of eligible accepted Offers is zero, and the volume of energy purchases notified in BSAD is zero, it will not be possible to calculate SBP using the normal rules. This might happen, for example, if no Offers were accepted in a given Settlement Period, or if all the acceptances were deemed by the settlement system to be Arbitrage Accepted Offers.

- If the total volume of eligible accepted Bids is zero, and the volume of energy sales notified in BSAD is zero, it will not be possible to calculate SSP using the normal rules. This might happen, for example, if no Bids were accepted in a given Settlement Period, or if all the acceptances were deemed by the settlement system to be Arbitrage Accepted Bids.

If a system price cannot be calculated, alternative rules are used, as described in section 4.2 below. Prices calculated using these alternative rules are often referred to as 'default' prices.

4.2   Current Default Price Rules

The rules for calculating a default System Buy Price are specified in section T4.4.5 of the BSC. In summary, the default SBP is set to the maximum of System Sell Price and the Offer Price of the cheapest Offer that meets the following criteria:

- The Bid-Offer Pair Number is positive;

- The Offer Price is greater than the Offer Price of any Arbitrage Accepted Offer; and

- The Bid-Offer Volume is greater than zero throughout the Settlement Period.

The rules for calculating a default System Sell Price are specified in section T4.4.6 of the BSC. In summary, the default SSP is set to the minimum of System Buy Price, and the Bid Price of the most expensive Bid that meets the following criteria:

- The Bid-Offer Pair Number is negative;

- The Bid Price is less than the Bid Price of any Arbitrage Accepted Bid; and

- The Bid-Offer Volume is less than zero throughout the Settlement Period.

In the unlikely event that a default System Sell Price and a default System Buy Price are both required in the same Settlement Period, both prices are set to zero.

4.3   Possible Issues with Default Prices

On 14 March 2002, a report (P/41/27) was presented to the BSC Panel, describing possible issues with the rules for calculating default prices. The key conclusions of the report were as follows:

1. Default SBP values were being calculated in a large number of Settlement Periods (e.g. 24% of all periods in November and December 2001). The number of default SSP values was much smaller (1.7% of all periods).

2. In the majority of cases, the default SBP values were equal to SSP, and default SSP values were equal to SBP. The reason for this was that the default price rules described in section 4.2 above were picking very cheap Offers and very expensive Bids:

    - The cheapest Offer meeting the criteria typically had an Offer Price of £5/MWh or £8/MWh. However, in almost all cases these Offers could not have been accepted by the System Operator, as they related to nuclear plant which was already running at its Maximum Export Limit, and therefore had no more available capacity.

    - The most expensive Bid meeting the criteria typically had a Bid Price of £40/MWh or more. However, in almost all cases these Bids could not have been accepted by the System Operator, as they related to plant which was not running, and had a Maximum Import Limit of zero.

The Panel noted that some (but not all) members of the Imbalance Settlement Group believed these findings to be evidence of an anomaly in the default price rules. They further noted that any change to the default price rules to address the anomaly would require a Modification Proposal to be submitted in accordance with Section F of the BSC.

4.4 Modification Proposal P79

Modification Proposal P79 seeks to address the issues described in section 4.3 above by changing the default price rules so that a Bid or Offer with no available volume is not eligible to set the default SBP or default SSP value.

One of the key issues raised in the Initial Written Assessment of P79 was that the Modification Proposal doesn't explain in detail the rules for determining whether a Bid or Offer has available volume. This issue was discussed at the PIMG meeting on 29 May, and the results of that discussion are described in sections 5.1 and 5.2 of this document.

In addition, P79 seeks to change the default price rules to include the Price Adjustment element of Balancing Services Adjustment Data (BSAD), as for non-default prices:

- The Buy Price Price Adjustment (BPA_j) should be added to the default SBP value.

- The Sell Price Price Adjustment (SPA_j) should be added to the default SSP value.

5   ISSUES RAISED BY THE MODIFICATION PROPOSAL

The Initial Written Assessment suggested that further clarification was required of the mechanism for deciding whether a given Bid or Offer was 'feasible' i.e. whether it had any actual volume that could have been accepted by the System Operator. The Pricing Issues Modification Group meeting on 29 May considered this issue, and their conclusions are described below:

- Section 5.1 describes the proposed method for comparing Final Physical Notification (FPN) with Maximum Import Limit (MIL) or Maximum Export Limit (MEL).

- Section 5.2 describes an additional proposed check to take into account Acceptances issued in that period.

## 5.1   Method for Comparing FPN with MIL or MEL

Modification Proposal P79 requires that a Bid or Offer should not be eligible to set default system prices if in fact no volume was available to the System Operator, because of the MIL or MEL data for the BM Unit. The IWA for P79 raised a number of questions over how this should be interpreted:

- If volume is only available for part of the Settlement Period, should the Bid or Offer be eligible to set the default price?

- Should the settlement system be required to carry out moment-by-moment profiling of MIL and MEL values, or is some more approximate method appropriate?

After discussing these issues, the PIMG concluded that moment-by-moment profiling of MIL and MEL would add inappropriate complexity to the default price rules, and that instead the test should be based on integrated (MWh) values over the Settlement Period.

Example of Comparing Integrated Values

Consider the following hypothetical example:
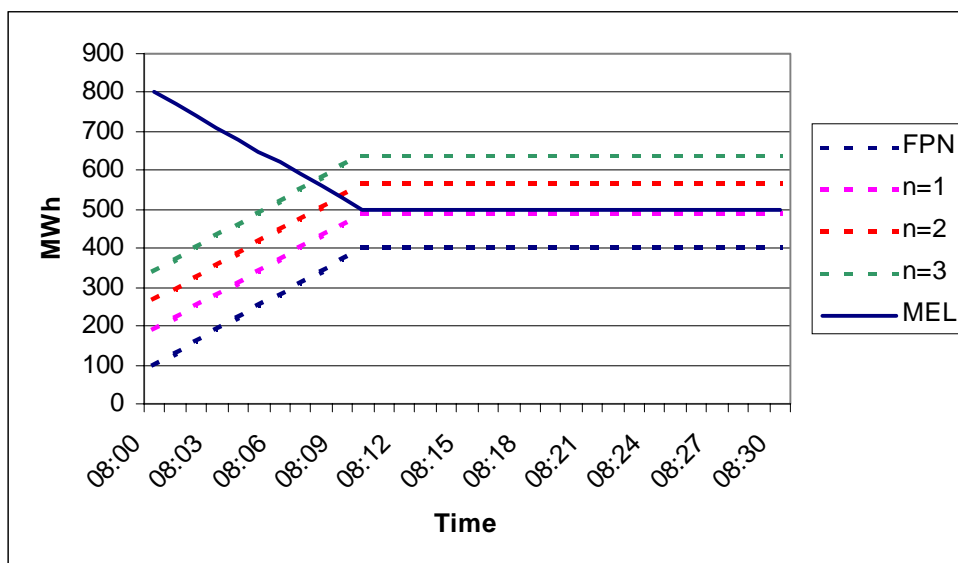
where the data shown on the graph is as follows:

Maximum Export Limit			
From Time	From (MWh)	To Time	To (MWh)
8:00	800	8:10	500
8:10	500	8:30	500

Final Physical Notification			
From Time	From (MWh)	To Time	To (MWh)
8:00	100	8:10	400
8:10	400	8:30	400

Offer Data					
Pair No.	From Time	From (MWh)	To Time	To (MWh)	Offer Price (£/MWh)
1	8:00	90	8:30	90	8.00
2	8:00	75	8:30	75	12.00
3	8:00	75	8:30	75	16.00
4	8:00	75	8:30	75	25.00

It is assumed for the purposes of this example that no Offer acceptance has been issued for this BM Unit. Section 5.2 below describes the additional issues that arise when an Offer has been accepted.

In order to determine whether the n=1 Offer is eligible to set the default System Buy Price, the system would compare the integrated FPN value with the integrated MEL value:

- The integrated value of FPN (i.e. the area under the FPN profile) is 175 MWh;

- The integrated value of MEL (i.e. the area under the MEL profile) is 275 MWh;

- As 275 MWh > 175 MWh, the n=1 Offer does have available volume, and is therefore eligible to set the System Buy Price.

In most cases the default price rules would only need to consider the n=1 Offer, and the availability of the n=2 and n-3 Offers would not therefore be an issue. However, if the £8/MWh Offer Price of the n=1 Offer was less than the price of an Arbitrage Accepted Offer, it would be ruled out from setting the default price, and the eligibility of the n=2, n=3 and n=4 Offers might therefore become an issue.

In order to determine the eligibility of the n=2 Offer, the system would compare the integrated MEL value (275 MWh) to the total volume of energy that would have been delivered, had the whole of the n=1 Offer been accepted:

- The energy delivered by the n=1 Offer is the area under the n=1 profile on the diagram i.e. 220 MWh.

- This is less than the integrated MEL value of 275 MWh, and therefore the n=2 Offer is eligible to set the default System Buy Price.

If necessary, the n=3 and n=4 Offers would be assessed in the same way:

- The area under the n=2 profile is 257.5 MWh, which is less than the integrated MEL value, and therefore the n=3 Offer has available volume, and is eligible to set the default System Buy Price.

- The area under the n=3 profile is 295 MWh, which is more than the integrated MEL value, and therefore the n=4 Offer does not have available volume, and is not eligible to set the default System Buy Price.

Formal Statement of Proposed Mechanism

A more formal statement of the proposed methodology described above is as follows.

For an Offer to set the default System Buy Price, it must meet the following criteria, in addition to those already listed in section T4.4.5(b)(i) of the BSC:

i)   An Offer with Bid-Offer Pair Number n equal to 1 must satisfy:

$$MEL_{ij} > FPN_{ij}$$

where:

- FPN_{ij} is the Period FPN determined in accordance with section T4.3.1 of the BSC; and

- MEL_{ij} is a new variable determined by integrating MEL over all spot times falling within the Settlement Period.

ii)   An Offer with Bid-Offer Pair Number n greater than 1 must satisfy:

$$MEL_{ij} > FPN_{ij} + \Sigma^{(n-1)+}QSBO^{n}_{ij}$$

where:

- FPN_{ij} and MEL_{ij} are defined as above;

- The Submitted Bid-Offer Volume $QSBO^{n}_{ij}$ is a new variable determined by integrating the Bid-Offer Volume $qBO^{n}_{ij}(t)$ over all spot times falling within the Settlement Period; and

- $\Sigma^{(n-1)+}$ represents the sum over the range of positive Bid-Offer Pair Numbers 1 to (n-1) of Submitted Bid-Offer Pairs.

Similarly, for a Bid to set the default System Sell Price, it must meet the following criteria, in addition to those already listed in section T4.4.6(b)(i) of the BSC:

i)   A Bid with Bid-Offer Pair Number n equal to -1 must satisfy:

$$MIL_{ij} < FPN_{ij}$$

where:

- FPN_{ij} is the Period FPN determined in accordance with section T4.3.1 of the BSC; and

- MIL_{ij} is a new variable determined by integrating MIL over all spot times falling within the Settlement Period.

ii)   A Bid with Bid-Offer Pair Number n less than -1 must satisfy:

$$MIL_{ij} < FPN_{ij} + \Sigma^{(n+1)-}QSBO^{n}_{ij}$$

where:

- FPN_{ij}, MIL_{ij} and $QSBO^{n}_{ij}$ are defined as above;

- $\Sigma^{(n+1)-}$ represents the sum over the range of negative Bid-Offer Pair Numbers -1 to (n+1) of Submitted Bid-Offer Pairs.

5.2   Effect of Offer Acceptances on Default Price Calculation

The PIMG meeting on 29 May also considered the question of whether the eligibility of a Bid or Offer to set a default price should be affected by any Acceptance of that Offer.

For example, suppose that the following Acceptance has been issued for the BM Unit described in section 5.1 above, using up the whole of the n=1 Offer, and part of the n=2 Offer.

Acceptance	
Time	Level (MWh)
8:00	250
8:10	550
8:25	400
8:30	400

Given that an Offer Acceptance has been issued, a default SBP value will not be required unless this (and any other) Offer Acceptances are excluded from the price calculation as Arbitrage acceptances, De Minimis acceptances, or on the basis of Continuous Acceptance Duration. However, if a default SBP value is required, the question arises of whether the n=1 Offer (which has no available volume left) and the n=2 Offer (which has a reduced volume available) should be eligible to set the default System Buy Price.

The PIMG discussed the possibility of modifying the calculation described in 5.1 above to take account of accepted Bid-Offer volumes. However, they concluded that the additional complexity this would introduce was inappropriate in the context of default price rules. They therefore agreed to use the following simpler criteria:

- An Offer will not be eligible to set the default System Buy Price if it has a non-zero Period BM Unit Total Accepted Offer Volume QAO^n_{ij}; and

- A Bid will not be eligible to set the default System Sell Price if it has a non-zero Period BM Unit Total Accepted Bid Volume QAB^n_{ij}.

6 CONSULTATION

Parties and other interested parties are invited to respond to this consultation expressing their views with respect to the matters contained within this document. In particular views are sought in respect of the following questions. Respondents are invited to supply the rationale for their responses

Respondent:	
Responding on Behalf of	Please list all Parties responding on behalf of (including the respondent company if relevant).

	Question	Response Yes/No
Q1	**Modification Proposal P79 seeks to amend the rules for calculating default prices to ensure that:** • A Bid or Offer won't set the default price unless it has some available volume; and • Default prices include the Price Adjustment element of Balancing Services Adjustment Data (BSAD), in the same way as non-default prices. **In principle (and to the extent that you're able to express a view in the absence of any assessment of implementation costs), do you agree that this change would better facilitate the Applicable BSC Objectives?**	
Rationale:		
Q2	**The PIMG has investigated how to determine whether a Bid or Offer should be regarded as having available volume for the purposes of Modification Proposal P79, and is proposing that:** • An Offer will be regarded as having available volume (and hence potentially eligible to set the default SBP value) if: 1. The MWh value of FPN (plus the total MWh volume of any Offers with lower positive Bid-Offer Pair Numbers) is less than the MWh volume of MEL (as explained in section 5.1 of this document); and 2. The accepted volume QAO^n_{ij} is zero (as explained in section 5.2 of this document). • A Bid will be regarded as having available volume (and hence potentially eligible to set the default SSP value) if: 1. The MWh value of FPN (plus the total MWh volume of any Bids with higher negative Bid-Offer Pair Numbers) is more than the MWh volume of MIL (as explained in section 5.1 of this document); and 2. The accepted volume QAB^n_{ij} is zero (as explained in section 5.2 of this document).	

	Do you agree that this is the most appropriate interpretation of Modification Proposal P79? If not, what interpretation would you prefer, and why?	
Rationale:		
Q3	**Do you believe that there are any alternative Modifications that the Modification Group should consider during the Assessment Procedure, should the Panel decide to submit the Modification to the Assessment Procedure?**	
Rationale:		
Q4	**Does the Modification Proposal raise any issues that you believe have not been identified so far and that should be progressed as part of any Assessment Procedure for this Modification?**	
Please state what the issues are:		
Q5	**Do you have any further comments on Modification Proposal P79?**	
Please state your comments		

Please send your responses by **17:00 Monday 24 June 2002** to Modifications@elexon.co.uk

Please entitle your email '**P79 Definition Consultation**'

Any queries on the content of the consultation pro-forma should be addressed to John Lucas (020 7380 4345), email address: john.lucas@elexon.co.uk.