11/010

Meeting name	BSC Panel
Date of meeting	25th January 2001
Paper Title	ISSUES ASSOCIATED WITH THE PRICE SETTING MECHANISM IN THE BALANCING AND SETTLEMENT CODE
Purpose of Paper	For Information
Synopsis	This paper highlights two potential issues surrounding the price setting methodology identified by the BRL sub group.

1. INTRODUCTION

1.1 In reviewing the monitoring requirements to support the Panel's review of the Balancing Reserve Level (BRL), the BRL sub-group identified two potential concerns with the price setting methodology in the Balancing and Settlement Code. In both cases, these concerns relate to the interaction between the costs that flow through into the price setting calculation from the "Balancing Services Adjustment Data" (often referred to as the BSAD parameters) and those that arise in the Balancing Mechanism.

1.2 It should be noted that the sub-group has not sought to quantify the probability that these concerns will materialise or, if they do, whether they would have a material impact on the Imbalance Price calculation. However, the sub-group considered that it was appropriate to advise the Panel of its concerns.

2. PRICE SPIKES

2.1 The sub-group concluded that significant price spikes could occur in half-hours where NGC incurs costs through its forward energy contracts (e.g. availability payments for Standing Reserve) but purchases virtually no energy in either the Balancing Mechanism or the forward markets.

2.2 This follows from the price setting calculation where:

$$SBP = \frac{\text{Untagged BM Purchase Costs + Forward Market Purchase Costs}^{1}}{\text{Untagged BM Purchase Volume + Forward Market Purchase Volume}}$$

unless the total on the bottom line is equal to zero, in which case the BSC defines a default calculation.

[1] For Energy and Reserve purchases only

2.3 Under this formulation, an almost infinite price could be generated during those half-hour periods when:

- NGC purchases only a de-minimis volume of energy in the forward markets and the Balancing Mechanism; **AND**
- it has contracts in play, which include payments for availability.

The default provisions deal with the extreme case of an infinite value.

2.4 It should be noted that, if this situation arises, it is most likely to do so at times when the system is net long, when the System Buy Price might be expected to be relatively benign.

2.5 It is difficult to envisage market situations where this would be expected to happen on a regular basis and it is thought that it is likely to be a rare event. However, there is at least a theoretical possibility that it could happen; the sub-group has not attempted to quantify the probability.

3. PRICE CHANGES DUE TO PURCHASING DECISIONS

3.1 The sub-group has also concluded that imbalance prices can be affected by NGC's decisions on whether to buy energy in the forward markets or the Balancing Mechanism, even if its costs would be identical in both markets.

3.2 The issue is illustrated in the very simple example set out in Appendix One. In the example, the System Buy Price changes from £25/MWh to £24.44/MWh depending on whether NGC buys energy in the forward markets or the Balancing Mechanism, even though the cost to NGC is identical in both cases. Similarly, the System Sell Price changes from £12.50/MWh to £15/MWh. In this example, the changes occur because a different methodology is used to separate energy costs from system costs in the Balancing Services Adjustment calculation and in the Balancing Mechanism Tagging methodology.

3.3 Again, whilst the sub-group has identified a potential issue, it has not attempted to assess its significance.

4. RECOMMENDATION

The Panel is asked to NOTE the issues identified in this paper.

BRL Sub-Group

APPENDIX ONE

The Effect of Procuring Energy in Different Markets on the Imbalance Prices

Example

The following hypothetical example has been developed to demonstrate the issue described in Section 3 of the main text of the paper.

NGC needs to sell 200MWh of Bids (100MWh at £15/MWh from Generator C, and 100MWh at £10/MWh from Generator D) in the Balancing Mechanism.
The system is 800MWh short, therefore NGC needs to buy 1000MWh of energy.
The Balancing Reserve Level is set at 100MWh.

Two generators are selling power, the price and volume available in the Balancing Mechanism is the same as that in the forward markets, provided the energy is not sold in the forward market.

OFFERS	BIDS
Generator A has 500MWh available at £20/MWh Generator B has 500MWh available at £30/MWh	Generator C has 100MWh at £15/MWh Generator D has 100MWh at £10/MWh

In Scenario One, NGC buys the full volume of Offers in the forward markets at a total cost of £25,000, and sells all the Bids in the Balancing Mechanism and receives an income of £2,500.

In Scenario Two, NGC buys the full volume in the Balancing Mechanism at a total cost of £25,000 and sells all the Bids in the Balancing Mechanism and receives an income of £2,500.

Scenario One – Forward Market Purchasing

Scenario One - Tagging Calculation

Accepted volume of BM Offers = 0MWh
Accepted volume of BM Bids = 200MWh

The Accepted Offer stack is the smaller of the two. As the volume of the smaller stack is less than the size of BRL, no Bids or Offers are tagged.

Scenario One - System Buy Price Calculation

- Untagged BM Purchase Costs = £0
- Forward Market Purchase Costs = £25,000
- Untagged BM Purchase Volume = 0 MWh
- Forward Market Purchase Volume = 1000 MWh

Therefore the System Buy Price would be **£25/MWh**.

Scenario One - System Sell Price Calculation

- Untagged BM Sales Costs = £2,500
- Forward Market Sales Costs = £0
- Untagged BM Sales Volume = 200 MWh
- Forward Market Sales Volume = 0 MWh

Therefore the System Sell Price would be **£12.50/MWh**.

Scenario Two – Balancing Mechanism Purchasing

Scenario Two - Tagging Calculation

Accepted volume of BM Offers = 1000MWh
Accepted volume BM Bids = 200MWh

The Accepted Bid stack is the smaller of the two and is larger than BRL by 100MWh. Therefore, 100MWh of low priced Bids (priced at £10/MWh) and high priced Offers (priced at £30/MWh) are removed from the price setting calculation.

Scenario Two - System Buy Price Calculation

- Untagged BM Purchase Costs = £22,000
- Forward Market Purchase Costs = £0
- Untagged BM Purchase Volume = 900MWh
- Forward Market Purchase Volume = 0MWh

Therefore the System Buy Price would be **£24.44/MWh**.

Scenario Two - System Sell Price Calculation

- Untagged BM Sales Costs = £1500
- Forward Market Sales Costs = £0
- Untagged BM Sales Volume = 100MWh
- Forward Market Sales Volume = 0MWh

Therefore the System Sell Price would be **£15/MWh**.